PLAN REVIEW
CONSTRUCTION GUIDE

It is important that you read this guide carefully. As part of the plan review submittal process, you will sign a plan review application indicating that you have read the Plan Review Construction Guide and agree to adhere to all items addressed in the document.

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Champaign-Urbana Public Health District
Champaign County Public Health Department

PLAN REVIEW CONSTRUCTION GUIDE

Statement of Purpose

This document is for use by owner/operators, architects, building contractors, and any other individuals involved in the design, construction, and operation of any food establishment regulated by the Environmental Health Division of the Champaign-Urbana Public Health District or Champaign County Public Health Department. This manual is based on applicable ordinances, food sanitation rules and regulations, the *FDA Plan Review Guide* (2016), the *Conference for Food Protection Plan Review for Food Establishments* (2016), and best practices from industry, other health departments and our experiences, and is not all inclusive. In addition to our public health authority, other jurisdictions such as city or county building and/or zoning departments, the fire department, and/or state agencies, may require plan submittal.

The local ordinance requires the submittal of plans for review on all proposed facilities and remodeling projects. No establishment shall be constructed, nor shall any major alteration or addition be made thereto, until detailed plans and specifications for the premises have been submitted to, and approved by, the health agency; nor shall any construction, alteration, or addition be made, except in accordance with approved plans and specifications. This includes plans for facilities in all of the following categories: new construction or conversion of existing structures (which were not previously food service facilities), change of owner, a remodeling project, or menu change.

Plan review allows our agency to determine if your facility's structure and equipment, and their capabilities, are in compliance with sanitation codes.

After plans and specifications have been approved, should it be necessary or desirable to make any material change, revised plans (addendum) and specifications shall be submitted to our agency for review. Approval must be obtained before the work affected by the change is undertaken.

Important points to remember:

1) A menu is a **critical** part of the plan review process. The type of food, preparation, and service style will influence the type and quantity of equipment required. Plans should be based on practical application HACCP (Hazard Analysis Critical Control Point) concepts. A menu based on risk assessment will help in the design and layout of the establishment.

2) Develop a safe, efficient food flow system, from the point of delivery to final service.

3) Install the equipment to be easily accessible for cleaning.

If you have any questions during the planning or construction of your establishment, please contact our office.

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PART 1
MENU

The menu is an integral part of the plan review process. The menu, or a listing of all the food and beverage items to be offered at the food service establishment, must be submitted by the applicant to our agency with the submission of all other plan review application documents.

As with the inspection process, the plan review process will focus on the food and what will happen to the food. The source and quantity of food to be served will be reviewed along with preparation and post-preparation operations and proposed storage practices. **No home prepared food or cottage foods will be permitted.**

Food preparation processes will be evaluated to determine the types and volumes of foods to be prepared. Special attention will be given to the review of complex food processes which will involve:

- multiple ingredients being assembled or mixed
- time/temperature control for safety (TCS) / potentially hazardous foods
- foods which will be prepared or held for several hours prior to service
- multiple-step processing (passing through the critical temperature zone of 41°F to 135°F more than once)
- special processes (ex. reduced-oxygen packaging, smoking, curing) requires a separate plan review and a HACCP plan – contact our office for more information

The type of food service will also be reviewed. The type of food service may be cook-to-order (cook-serve), self-service (buffet or salad bar), service of pre-packaged foods, service of large volumes of food, food preparation requiring multiple steps and handling, etc. This system is useful since the critical control points for each process often remain the same regardless of the individual menu ingredients.

The menu for a food service establishment 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 served. When looking at the menu, evaluate the flow patterns for the preparation of the foods to be served to be sure that the layout of the facility provides an adequate separation of raw ingredients from ready-to-eat foods, and that the traffic patterns are not crossing paths with waste items and other sources of contamination.

With proper understanding of the menu, the plans for food service establishments can be reviewed to assure that the food items proposed can be safely prepared and served.

PART 2
EQUIPMENT TO MAINTAIN PRODUCT TEMPERATURE

Cold Holding & Cooling Facilities

Refrigerators and freezers are required to maintain all potentially hazardous foods at or below 41°F and 0°F respectively. It is recommended that refrigerators be maintained between 36°F and 38°F. These units must be commercial-grade and meet ANSI/NSF standard #7.

Examples of approved sanitation certifications:

Refrigerators and freezers labeled "Household Use" will not be approved for food storage. We do not consider the use of domestic or household refrigerators appropriate for a commercial food setting. In fact, they are unacceptable because their cooling capacity, temperature recovery, air flow and durability are unknown. There are no performance requirements for domestic refrigeration equipment. Thermometers must be conspicuously located in all units.

Refrigeration and freezer storage involves five major areas:

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

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. The FDA and Conference for Food Protections plan review guides provide formulas for calculating refrigeration.

Walk-in Coolers
Walk-in coolers shall be installed when there is a need for long-term storage of perishable and potentially hazardous foods. These units may also be used for rapid cooling of cooked and prepared foods if the facility has validated and verified cooling processes. Walk-in refrigerators or freezers that open to the outside are for pre-packaged foods only.

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

NOTE: Blast chiller or walk-in cooler is required for cooling TCS foods.

Reach-in Refrigerators
These units are for short-term storage of perishable and potentially hazardous foods. These units should be considered to meet the daily storage demands of the kitchen operation. They are to be conveniently located at points of food preparation and food assembly. *These units are not designed for cooling cooked and prepared foods.*

Refrigerated Worktables/ Make Tables
These units are needed when the menu includes assembling potentially hazardous foods. They provide easy access of foods from the top of the unit. *These units are not designed for long-term storage of food or for cooling cooked and prepared foods.*

Freezers
Walk-in freezers are for long-term storage. *These units are not designed for cooling cooked and prepared foods*. Reach-in freezers shall be placed on cook lines when items are cooked from a frozen state (i.e. French fries cooked in a fryer).

Refrigerated Processing Rooms
These areas should be considered when there is extensive handling of cold potentially hazardous foods (e.g. meat-cutting rooms). A dedicated ware washing area may be required.

Display Storage Refrigerators
These units are designed to display potentially hazardous foods under refrigeration. Examples of these units are deli display, produce (ex. cut melons), fresh fish, and meat and poultry cases.

Customer Service Display Units
These units are designed for holding foods under refrigeration for customer access. They are designed for short-term display. *Beverage display coolers are designed/ approved for storage of bottled/ canned beverages.*

Cold Buffet Units
Cold buffets and salad bars are designed for short-term display. They shall be mechanically refrigerated and have approved sneeze guards with side panel protection. If drain lines are needed, use rigid pipe to a floor drain, with an air gap.

Ice Machines, Bins, and Wet Storage
If ice is to be used for beverages and/or as a cooling medium, the ice machine(s) should be adequately designed and sized to meet all operational needs. *An ice machine/bin is considered food equipment and must therefore be located within 15 (easily accessible) feet of, and in the same room as, a hand sink.*

Ice bins must have a sliding cover, scoop and approved scoop storage.

Wrapped food items shall not be stored in direct contact with ice at all, nor shall any packaged foods be stored in contact with un-drained ice. All equipment and containers used for the storage of packaged food items in contact with ice shall be designed to allow gravity drainage only of melted ice to a floor drain, with an approved air gap. *Note: Mechanical refrigeration is required for the cold holding of all TCS foods).*

Refrigerator Shelving
All refrigerator and freezer shelving must be made of rust-resistant metal or other impervious material.

Hot Holding, Cooking & Reheating Facilities

The hot holding facilities must be capable of maintaining potentially hazardous foods at an internal temperature of 135°F or above during display, service and holding periods. Hot holding equipment (steam tables, hot boxes) must be mechanically operated and shall meet ANSI/NSF Standard #4. Picture examples of approved sanitation certifications are found under Part 2. Equipment labeled “Household Use” is not approved for food service. If drain lines are needed, use rigid pipe to a floor drain, with an air gap.

Cooking equipment (ovens, stovetops) cannot be used for hot holding, and hot holding equipment cannot be used for cooking/reheating. Reheating equipment must be capable of raising the internal temperature of potentially hazardous foods rapidly (within a maximum of two hours) to at least 165°F. Appropriate product thermometers will be required to monitor food temperatures.

PART 3
EQUIPMENT TO PROTECT FOOD

Food Shield Design
Salad bars, buffets, serving lines, and sneeze guards shall comply with ANSI/NSF standards or meet our approval. Sneeze guards shall be constructed of approved durable materials such as tempered glass, plexi-glass, plastic, stainless steel or other finished metal.

Food/ Produce Preparation Sink
Install a separate sink designed solely for produce washing or food preparation in the food preparation area. This sink must have an integral drain board of 18 inches (minimum) and must be indirectly drained to a floor sink with an air gap, or be floor drain protected (per the *Illinois Plumbing Code* – 77 Ill. Adm. Code 890). If large amounts of produce and raw meats/ seafood will be prepared, separate produce and meat/seafood sinks may be required.

Dipper Wells
Provide dipper wells with running water where you dispense bulk ice cream or other bulk foods such as cooked rice, whipped butter, etc. An indirect drain line with an air gap (minimum one-inch) is required. Another approved option is to keep the serving utensil in a container of water, if the water is maintained at a temperature of at least 135°F.

Cooking Utensil Storage
Designate areas for clean cooking utensils, cutting boards, glassware and dishware. Store them at least six inches off the floor in a clean, dry location where they will be protected from dust and splash. In use equipment must be changed every 4 hours of service.

Single-Service Dispensing Equipment
Single-service articles that are intended for food- and lip-contact (cups, lids, straws, utensils) shall be dispensed with the original individual wrapper intact, or presented so that only the handles are touched, or from an approved dispenser.

PART 4
HAND WASHING

Hand Sinks

Provide a sufficient number of hand sinks. For example, hand sinks shall be easily accessible, with no barriers or obstructions restricting their accessibility. A hand sink must be located within approximately 15 (easily accessible) feet of, and in the same room as, all work stations, food/beverage preparation, food/beverage service, and warewashing areas. *Sinks used for food preparation or for washing equipment or utensils shall not be used for hand washing; nor can hand washing sinks be used for purposes other than hand washing.*

Splash guards are needed when a hand wash sink is within 12 inches of a food-contact surface, food/utensil storage shelves, food service areas, produce preparation sink or dish washing sink. The waterproof splashguard should be at least as high as the faucet and as deep as the hand sink. We recommend the use of sinks with prefabricated splashguards.

Provide each hand sink with hot (minimum of 85°F) and cold water under pressure, by means of a mixing valve or a combination faucet.

Provide a supply of hand-cleansing soap or detergent and sanitary towels (required in kitchens) or a hand-drying device providing heated air. If disposable towels are used, easily cleanable waste receptacles shall be conveniently located near the hand washing facilities. The use of common towels is not allowed.

A sign or poster that notifies food employees to wash their hands shall be provided at all handwashing sinks used by food employees (including in toilet rooms) and shall be clearly visible to food employees.

PART 5
WATER SUPPLY AND SEWAGE DISPOSAL

Where non-municipal water supply and sewage disposal are utilized, the location of these facilities shall be noted on the plans, and certification of compliance with state and local regulations shall be provided. If a well and/or septic system is proposed, contact our office for construction permit applications. Note: these systems shall be approved prior to issuance of an annual health permit. If purchasing an existing food service facility with a well and/or septic system, contact our office for consultation.

For any plumbing questions not mentioned in this guide, contact your state or local plumbing inspector for guidance.

Water Supply

Provide an adequate supply of potable water, under pressure, to satisfy the needs of the food service establishment. Water must be from an approved public water supply source or from a source approved by our office.

Sewage Disposal

All sewage must go to an approved sewage system, constructed and operated according to law.

Waste lines and roof drains should not be directly above food preparation areas, ice bins, food display, food storage or utensil washing areas. If you have sewer lines over any of these areas, provide seamless gutters under the pipes that will divert leakage away from the food or utensil zone. Gutters shall drain to the sanitary sewer or in such a way as to not create flooding at the floor or other nuisance.

Floor drains/ floor sinks are to be located in areas that require frequent water flushing to clean the floor or equipment and shall be accessible for service and cleaning. Floor drains must be installed flush with the floor. Floor drains must not be installed in walk-in refrigeration units except with the approval of the state or local plumbing inspector.

Local municipalities determine the number and size of grease traps and grease interceptors. If required, refer to state or local plumbing inspectors for the installation requirements.

PART 6
FOOD EQUIPMENT AND INSTALLATION

Materials, Design & Construction

All food service equipment shall comply with the material, design, construction, and performance requirements of the food code. Several ANSI-accredited organizations (ex. NSF, UL, ETL) issue certification marks indicating that a piece of equipment meets nationally recognized standards. Picture examples of approved sanitation certifications are found under Part 2. If equipment bears one of these seals, it is generally a good indicator that the equipment will be approved. Equipment labeled for "Household Use" most often does not meet these standards and is not approved for use in a food service facility. Not all equipment labeled "commercial" meets the above approved standards. Also, equipment must be used for its intended design and purpose (ex. a glass door merchandiser is intended to be used for the display of packaged beverages, not opened foods; a steam table is intended to keep hot foods hot, not filled with ice and used to cold hold foods).

Equipment Installation Directions

Floor-Mounted Equipment

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

Equipment may be elevated on legs, as long as a minimum six-inch clearance between the floor and equipment is provided. Floor mixers may be elevated to provide at least a four-inch clearance between the floor and equipment. Install stationary equipment with sufficient space between adjacent equipment, floors, walls, cabinets and ceilings to facilitate proper cleaning. Equipment may be placed more closely together if at least every other piece of equipment has casters, gliders, or rollers.

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

Table-Mounted Equipment

All table-mounted equipment shall be: a) sealed to the table or counter; or b) elevated on approved legs to provide at least a four-inch clearance between the table or counter and equipment and installed to facilitate cleaning; or c) portable at 30 pounds or less, with no dimensions exceeding 36 inches, and no fixed utility connections. Maintain pieces of table-mounted equipment at least four inches apart to facilitate cleaning access.

Walk-in Units
Walk-in refrigerators, freezers, or other large equipment, with spaces 24 inches or less between the top surfaces of the equipment and the ceiling require flashing or closing off in a clean, tight, and vermin-proof manner. Flash, trim, or caulk spaces between walk-in refrigerators and adjacent walls. Penetrations shall be sealed smooth with the ceiling and wall panels.

Food-Contact Surfaces
Install work surfaces made of solid, smooth surfaces (i.e. stainless steel, granite, or other approved food-contact materials).

Custom Built Equipment
Shop drawings shall be approved prior to construction; final on-site approval is also required.

Cold Plates
When installed in ice bins, the cold plates must be an integral part of the bin. Drop-in cold plates are prohibited.

PART 7
DRY STORAGE CONSIDERATIONS

Adequate and suitable floor space shall be provided for the storage of food and beverages. In addition to working storage (i.e., wall-mounted shelves and cabinets over food preparation equipment or under-counter storage), additional dry-storage space shall be provided. Shelves shall be constructed of metal or other material which has been finished to provide durable, smooth, easily cleanable, non-absorbent surfaces. All shelving must be at least six inches above the floor with a clear unobstructed area below. A dry storage calculator can help with calculating specific needs.

Chemical Storage

Designate an area for chemical storage that is away from food and clean utensils. This includes detergents, sanitizers, related cleaning or drying agents and caustics, acids, polishes, pesticides, and other chemicals. Install cabinets, cages, or physically separate shelves for storage of chemicals.

We recommend that all pest control be provided by a licensed pest control applicator. If you do choose to apply pesticides yourself, be aware that all pesticides must be used according to the law, this code, and the manufacturer's directions, and applied in a way that is not hazardous to employees and does not leave any toxic residues. Restricted use pesticides shall be applied only by a licensed pest control applicator.

Personal medications and first aid kits shall not be stored in food storage, preparation or service areas. These may be placed near a hand sink or in an office.

Firewood

If any firewood is used, designate an area for firewood separate from food service and storage areas. Provide special measures to ensure insect and rodent control. Interior firewood storage areas shall be elevated on metal racks at least six inches above flooring. Exterior firewood storage areas shall be elevated at least 12 inches above the ground.

PART 8
WAREWASHING EQUIPMENT

Manual Warewashing

Provide a three-compartment, stainless steel sink with two integral drain boards where pots, pans or multi-use utensils are washed by hand. These drain boards must be sloped so that water drains back into the sink. Each compartment must be large enough to submerge the largest item to be washed by at least 50%. Drain board length is determined based on the number and size of items needing to be washed; **the minimum is 36 inches on both sides** (a reduction may be considered for facilities with limited ware washing needs). This sink must also be supplied with both hot (minimum 110°F) and cold water. *A three-compartment sink is required in most food service facilities, including retail grocery stores that prepare/display cut produce.*

Garbage grinders shall be connected and trapped separately from any other fixtures or sink compartments. Chemical dispensers with built-in backflow prevention or an air gap supplied to three-compartment sinks shall meet state and local plumbing codes, and must have dedicated, tempered water lines. Chemical test strips shall be provided for the appropriate chemical(s) in use.

Mechanical Warewashing

Mechanical dish machines must meet nationally recognized standards and be certified or classified by an ANSI-accredited certification program. The machine(s) must meet all code requirements and manufacturer specifications (i.e. wash/rinse temperature and time, final rinse pressure).

A dish table of adequate size is needed to handle soiled utensils before washing. Install a pre-rinse sink as needed, so those larger food particles can be rinsed off before entering the dish washing machine. A dish table or drain board must also be provided for clean dishware to drain and air dry. The length of these drain boards is dependent on the type of dish machine and the volume of the facility (ex. high temperature machines typically require at least three feet; chemical machines typically require at least six to nine feet).

High-Temperature Dish Machines

An irreversible registering temperature indicator that measures the utensil surface temperature shall be available and used. A booster heater is needed to supply at least 180°F water for the final rinse at the manifold. Mechanical exhaust ventilation is needed above high-temperature sanitizing machines to remove steam and vapors effectively. *Note: under-counter high-temperature dish machines are exempt from requiring an exhaust hood but should be balanced with the HVAC system.*

Chemical Dish Machines

An approved chemical test kit for determining sanitizer strength shall be available and used. A visual flow indicator must be provided to monitor the operation of the sanitizing agent feeder. Other indication devices such as audible alarms may also be used. The flow indication devices must be installed so as to be conspicuous to the operator.

PART 9
HOT WATER SUPPLY REQUIREMENTS

The hot water supply shall be sufficient to satisfy the continuous and peak hot water demands of the establishment. In the absence of specific hot water usage figures for equipment, the worksheets provided may be used to calculate an approximation. *Hand sinks require a minimum water temperature of 85°F. Three-compartment sinks require a minimum water temperature of 110°F and warewashing machines typically require a minimum water temperature of 120°F.*

In order to ensure that water reaches the fixture at the proper temperature, a recirculation pump must be installed where fixtures are located more than sixty feet away from the water heater. In some cases it may be more practical to install a separate, smaller water heater for remote fixtures, such as for toilet room hand sinks.

Storage Water Heaters

The recovery rate of the hot water unit is more important than the actual capacity. The water heater(s) shall have a recovery rate equal to, or greater than, the computed hourly hot water demand in gallons per hour, figuring a 70°F rise. *See chart below.* Use our calculator worksheet.

Instantaneous (Tankless) Water Heaters

Food facilities that install an automatic warewashing machine that utilizes a large quantity of hot water may be required to provide an instantaneous water heater exclusively for the warewashing machine. Tankless water heater units may also require a recirculation pump. *See chart below.* Use our calculator worksheet.

Equipment Type	GPH-Storage	GPM-Tankless
Hand sink (kitchen, bar, and restroom)	5	0.5
Preparation sink (produce and meat)	5	0.5
Blender and/or dump sink	5	0.5
Mop sink	5	0.5
Kitchen warewashing sink	*	2
Bar warewashing sink	*	2
Commercial dish wash machine	Check specification sheet	Check specification sheet
Clothes washer (9# and 12#)	45	Check specification sheet

*Basin size (in inches) L x W x H x number of compartments x 0.003255 = GPH

Note: When calculating, if you have multiple hot water heaters installed in line, add recovery rate of each unit together. If you have multiple hot water heaters separated, calculate each unit for the fixtures specifically attached.

PART 10
FINISH SCHEDULE AND MATERIALS

Floors
Provide floor finishes that are commercial-grade, smooth, durable, non-absorbent, grease-resistant, and easily cleanable in all food/beverage preparation and service areas, warewashing areas, storage rooms, toilet rooms, and around mop sinks. Provide at least three feet of a washable flooring/surface around the perimeter of all buffet, self-service areas, and dining room wait stations.

Quarry or ceramic tile, poured epoxy, and sealed concrete are preferred flooring because of their durability. Certain areas, such as flooring under beer kegs, require special consideration, as durability is essential. Smooth, bare concrete floors are approved but must have an appropriate concrete densifier applied (not just a water sealer). Concrete floors shall be finished smooth, sealed, and have all expansion joints, saw cuts, and cracks properly filled. All grout between tiles shall be smooth and finished flush with the surface of the tiles.

Coving
Provide a smooth, coved base (at least 1/4-inch radius and 4 inches in height) at the juncture of walls and floors. Cove bases are also required at the juncture of cabinets and floors. Examples of acceptable materials for cove base are four-inch vinyl or rubber, ceramic or quarry tile, and stainless steel. Cove base shall match the flooring (for example, if ceramic tile is used for the floors, the coved base shall also be ceramic tile).

Cove base tile shall not be installed on top of floor tiles at the floor/wall junctures. The floor/wall juncture shall be a true flush cove base.

Walls
Provide light-colored, smooth, durable, non-absorbent, easily cleanable wall surfaces in all food/beverage preparation and service areas (including self-service areas), warewashing areas, storage rooms, toilet rooms and around mop sinks. Raw wood and/or unfinished studded walls are not permitted.

Behind cook lines and under vent hoods, we recommend that wall finishes be of stainless steel or its equivalent and that the wall/floor juncture shall be finished with coved metal, coved ceramic tile, or other similar durable, easily cleanable material.

Apply a clean, smooth bead of silicone caulk on all gaps or seams between immovable equipment and walls. Seal all gaps, seams, and cracks. Seal spaces around pipes or conduit at all wall penetrations, as well as the wall/ceiling grid juncture.

Ceilings
Provide light-colored, smooth, durable, non-absorbent, easily cleanable ceiling surfaces that can withstand frequent cleaning in all food/beverage preparation and service areas (including self-service areas), warewashing areas, storage rooms, toilet rooms and around mop sinks. Exposed joists, studs and other support structures will not be accepted. Acoustical fissured/perforated ceiling tiles are not permitted in these areas. Vinyl-faced tiles or a drywall hard lid are acceptable.

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

Walk-in Refrigerator and Freezer Units
Walk-in refrigerator and freezer walls and ceilings shall be metal and floor/wall junctures shall be properly coved. The interior cove base shall be made of metal or other corrosion-resistant material. Because of adhesion problems, vinyl cove base is not acceptable in walk-in units. Due to breakage and separation concerns, we do not recommend the installation of ceramic or quarry tile as coving in walk-in units. Galvanized metal will rust when installed as a finish in a walk-in cooler and is, therefore, not approved. Concrete curbs in a walk-in cooler/freezer shall be finished smooth, properly coved, beveled away from the wall at the top edge, and thoroughly sealed.

Flash, trim, or caulk spaces between walk-in refrigerators and adjacent walls. Spaces 24 inches or less in height between the top surfaces and the ceiling will require flashing or must be finished off to the ceiling.

Shelving, Woodwork, Millwork & Countertops
NOTE: Wood-composite and/or plastic laminate will not be approved as a finish construction material (for counters, cabinets, shelving, etc.) in any food preparation areas, service or beverage stations, or storage rooms. Shelving in food preparation, utensil washing areas and walk-in coolers/freezers are to be of approved (ANSI/NSF) metal construction. Some examples of approved materials are stainless steel, hardwood, stained or polyurethane coated plywood with hardwood edge banding, and solid surface. Additionally, shelving for walk-in coolers/freezers must be stainless steel, epoxy-coated or otherwise impervious to rust or corrosion. Painted (or otherwise sealed) wood may be acceptable in separate DRY storage areas only, under certain circumstances, with specific approval from our office. Any cutouts or openings made in cabinets for drains, electrical conduit, etc. must be sealed off or boxed in so that all areas are accessible for cleaning.

Shelving over the three-compartment sinks and food preparation sinks must be solid, and installed a minimum of 24-inches above the flood rim of the sink basin. Wire shelving and grid systems are prohibited in these areas.

Food-contact surfaces should be stainless steel or ANSI/NSF-approved surfaces. Hard maple, or equivalent, is acceptable for commercial cutting boards and baker's tables. Countertops shall be smooth and durable, solid surface-type materials, easily cleanable, impervious to moisture, and free of cracks or crevices.

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

PART 11
TOILET FACILITIES

A minimum of one conveniently located toilet room for employees is required. Contact the state or local plumbing inspector for additional requirements. Public access to toilet rooms through food preparation or utensil washing areas is prohibited.

Mechanically vent toilet rooms to the outside of the building. Toilet rooms shall be completely enclosed and shall have tight-fitting, self-closing doors.

Provide each hand sink with hot (minimum of 85°F) and cold water under pressure, by means of a mixing valve or a combination faucet, a supply of hand-cleansing soap or detergent, and sanitary towels or a hand-drying device providing heated air.

A supply of toilet tissue shall be available at each toilet.

A hand washing sink or group of adjacent hand washing sinks that are provided with disposable towels shall be provided with a waste receptacle. A toilet room used by females shall be provided with a covered receptacle for sanitary napkins.

PART 12
PLUMBING AND CROSS-CONNECTION CONTROL

All plumbing shall be sized, installed, and maintained in accordance with applicable provisions of the *Illinois Plumbing Code*. There shall be no cross-connection between the safe-water supply and any unsafe or questionable water supply, or any source of pollution through which the safe water supply might become contaminated.

Indirect Water Connections/ Floor Drain Protection

Commercial dishwashing machines, dishwashing sinks, pot washing sinks, pre-rinse sinks, silverware sinks, bar sinks, soda fountain sinks, produce sinks, potato peelers, ice machines, steam tables, steam cookers, and other similar fixtures shall be indirectly connected in compliance with the *Illinois Plumbing Code*. The only exception shall be when such fixtures are located adjacent to a floor drain, the waste may be directly connected on the sewer side of the floor drain trap, provided the fixture waste is trapped and vented as required by the *Illinois Plumbing Code* and the floor drain is located within four feet horizontally of the fixture and in the same room. Drain lines from the above-mentioned equipment may not discharge into food service equipment (steam tables, hand sinks, etc.) or buckets. Note: Garbage grinders shall be connected and trapped separately from any other fixtures or sink compartments.

Potable Water Backflow Protection

Provide vacuum breakers on submerged inlets such as urinals, dishwashing machines, garbage grinders and any threaded water outlets. Atmospheric vacuum breakers must be installed at least six inches above the highest outlet and cannot have a valve installed down line.

An ASSE 1022 or approved device is the minimum level of protection required for carbonator systems. Water supply lines and fittings between the backflow preventer and the carbonator should be flex-line or stainless steel. Do not use copper or brass. These units should also meet all other Plumbing Code requirements.

PART 13
INSECT AND RODENT CONTROL

All openings to the outside shall be effectively protected against the entrance of insects, dust and rodents. Effective barriers include: solid/tight fitting self-closing doors, fixed or self-closing screens of #16 mesh or finer, or approved air curtains.

Building
All masonry or cement foundations must be rodent-proof. Seal all openings into the foundation and exterior walls, including openings and penetrations around wall and ceiling penetrations (ex. utility lines). Cover all building vents with a minimum #16 mesh wire screen. Effectively seal all air ducts, skylight, transoms and other openings to the outside.

Doors
Any door used for receiving deliveries and/or for removal of garbage (including garage and roller-type doors) must be self-closing and tight-fitting and have an approved air curtain with a micro-switch. Install a door sweep and weather stripping to prevent the entrance of insects and rodents. *Note: Daylight is not to be visible around the perimeter of the doors***.**

Service Windows
Install serve-out (i.e. drive though) windows with a self-closing device, such as a spring-loaded mechanism, bump pad, electronic opener, or gravity operated system.

Air Curtains
All air curtains shall be approved (for example, see ANSI/NSF standard 37). Install an air curtain so that a layer of fast moving air is produced vertically downward and directed to blow outward. The air curtain must cover the entire width of the opening it is protecting. All air curtains shall be controlled by door-activated micro-switches. No manual switches are allowed. All roller doors or movable window systems that are not self-closing and create a continuous opening must have an approved air curtain installed across the entire opening.

Insect Control Devices, Design and Installation
Insect control devices, if used, shall be designed to retain the insect within the device. These devices should not be located above food preparation/ storage areas. Units should be installed so as to prevent the contamination of exposed food, clean equipment, utensils and linens, from insect fragments.

PART 14
LIGHTING

Food Preparation Areas
A minimum of 50 foot-candles (540 lux) of lighting must be provided on all surfaces where food employees work with food or work with utensils or equipment such as knives, slicers, grinders, or saws where employee safety is a factor.

Food Service, Warewashing, Equipment/ Utensil Storage, and Toilet Rooms
The light intensity in these areas shall be at least 20 foot-candles (215 lux), measured 30 inches above the floor. This requirement also applies to surfaces where food is provided for consumer self-service, such as buffets and salad bars, and where fresh produce or packaged foods are sold or offered for consumption. Intermittent light is not acceptable. The inside of equipment, such as reach-in and under-counter refrigerators, shall also have a light intensity of 20 foot-candles.

Provide at least 20 foot-candles of lighting for cleaning purposes at bars. Dimmer switches, on general lighting, are acceptable as a suitable alternative for use in these areas.

Walk-in Refrigerators/ Freezers, Dry Storage Areas, Dining (during cleaning)
The light intensity shall be at least 10 foot-candles (108 lux) measured 30 inches above the floor. It is recommended that fluorescent lights with cold-tolerant ballasts and vapor-proof fixtures be installed. Install lights to avoid obstruction by food stored on shelves. Additional lighting (other than what is provided from the manufacturer) may need to be added to meet this requirement.

Protective Light Shielding
Provide shielded light fixtures above all food preparation, service, display, food storage and utensil washing areas. This requirement includes all can lights, compact fluorescent lights, lights under bar counters, in refrigerators and food display cases, at condiment/self-service stations, heat lamps, and under vent hoods. Protective tubes/lenses, plastic sleeves with end caps, coated shatterproof bulbs, or LED (light-emitting diode) bulbs, may be used.

PART 15
VENTILATION

All rooms shall have sufficient ventilation to keep them free of excessive heat, steam, condensation, vapors, obnoxious odors, smoke and fumes. Ventilation systems shall be designed and installed according to law.

Exhaust Hood Requirements

Commercial cooking or display equipment, which produces smoke, steam, grease, mists, particulate matter, condensation, vapors, fumes, odors, or creates sanitation or indoor air quality problems, will require a hood. Hoods shall be designed and installed to prevent grease and condensation from collecting on walls, ceilings, and dripping into food or onto food-contact surfaces. Canopy hoods must have at least a six-inch overlap, over all cooking surfaces, on all open sides. All hoods shall be flashed solid to the ceiling or adjacent walls with approved solid material. All hoods shall comply with all local building and fire safety codes, in addition to meeting the manufacturer's instructions. The interior of vent hoods are not allowed to be painted. We recommend not painting the exterior of the vent hood.

We will use the following chart, along with good industry practices, to determine when ventilation hoods are required.

Formula 1 – For hoods above solid-fuel cooking equipment and grease-burning charbroilers.
Formula 2 – For hoods above high-temperature cooking equipment, such as deep-fat fryers and woks.
Formula 3 – For hoods above medium-temperature cooking equipment, such as rotisseries, grills, and ranges.
Formula 4 – For hoods above low-temperature cooking equipment, such as roasters, roasting ovens, and pastry ovens. This formula is also used for Type II hoods.
+ Cooking equipment that uses solid fuel must be provided with a separate exhaust system.
# Electric ovens, rotisseries, and large clamshell grills shall be limited to one unit without a hood. Smaller clamshell grills (<2KW, normally kept closed) shall be limited to 2 units without a hood.
***** Equipment marked with an asterisk typically does not need mechanical exhaust ventilation. However, the following criteria should be taken into consideration when determining the need for mechanical exhaust ventilation:

- Installation of other unventilated heat-generating equipment in the same area, e.g., refrigeration condensers, steam tables, or countertop equipment;
- Presence of heating/cooling (HVAC) system;
- Size of the room or area where the proposed equipment will be installed, including ceiling height;
- How the proposed equipment will be operated, e.g., the types of food prepared, how often, etc.;
- Relative size of the proposed equipment, e.g., physical size and weight, BTU's/K W's
- Nature of the emissions, e.g., grease, heat, steam, etc.;
- Temperature at which the proposed equipment operates. Cooking equipment that has a factory-set thermostat that cannot exceed 250°F normally does not need mechanical exhaust ventilation;
- Method of producing heat, e.g., gas, electricity, solid fuel, etc.

- Adequate amount of general ventilation: In poorly ventilated confined areas where the proposed equipment (like an electric convection oven, clamshell grill**,** or low-temperature dishwasher) is located, adequate general ventilation could be provided by a ceiling or wall exhaust fan that provides an air change rate of 3-5 minutes per change.
- Adequate equipment performance, e.g. refrigerators unable to maintain cold food temperatures because the ambient air of the kitchen or mobile food truck kitchen is too hot.
- Satisfactory compliance with supplementing ventilation, e.g. opening of an exterior door or window with screens or with fans not blowing dust onto food or surfaces.

Equipment	**Hood Type**	**Formula**
Bain Marie	**II**	4
Barbecue (solid fuel, e.g., wood or charcoal)	**I+**	1
Broiler (Gyro)	**I**	3
Charbroiler:		
• Under-fired (solid fuel or gas-fired, including radiant units)	**I+**	1
• Over-fired or salamander	**I**	2
• Under-fired (electric)	**I**	3
Cheese Melter (top browning and melting only)	**II**	4
Chinese Range (wok)	**I**	2
Coffee Equipment:		
• Urn or brewer	*	–
• Roaster (gas)	**II**	4
• Roaster (electric)	*	–
Corn on the Cob Warmer	*	–
Clam Shell Grill, for heating non-grease producing foods (tortillas, pastries, rolls, sandwiches from precooked meats and cheeses)	*	#
Crepe Maker:		
• Portable	*	–
• Non-portable	**II**	4
Deep-fat Fryer	**I**	2
Dishwashing Machine:		
• High-temperature	**II**	4
• Chemical sanitizing or any under-counter unit	*	–
Griddle, Grooved Griddle or Grill	**I**	3
Hot Dog Warmer	*	–
Hot Plate:		
• Electric (one burner only)	*	–
• Gas (Maximum of 5,000 BTU's)	*	–
• Multiple hot plates or larger than exempted units	**I**	3
Kettle (steam-jacketed)	**II**	4
Kettle (candy)	**II**	4
Mongolian Barbeque	**I**	1
Ovens:		
• Maximum temp. of 250°F (thermostatically-controlled)	*#	–
• Electric convection oven, 12 KW or less, without grease vapor generation (for baking bread products).	*#	--
• Gas or electric (except 12 KW or less conv. ovens), greater than 250°F, without grease vapor generation (such as enclosed ovens for baking pizza or bread products)	**II**	4

Equipment	Hood Type	Formula
(cont'd)		
• Gas or electric, greater than 250°F, with grease vapor generation (such as conveyor pizza ovens, roasting ovens, and rotisseries)	**I**	3
• Portable ovens (microwave, cook and hold)	*	–
• Solid fuel-fired pizza and baking ovens	**I+**	4
• Tandoor Oven (solid fuel or gas-fired)	**I+**	1
• Combi Oven	**I**	3
Popcorn Popper:		
• Without external grease vapor release	*	–
• With external grease vapor release	**I**	3
Pressure Fryer	**I**	2
Range:		
• High temp, e.g., "hot tops"	**I**	2
• All others	**I**	3
Re-thermalizer:		
• Without external grease vapor release	**II**	4
• With external grease vapor release	**I**	3
Rice Cookers:		
• Electric	*	–
• Gas	**II**	4
Rotisserie:		
• Open or high temp	**I**	3
• Enclosed with max. ambient cavity temperature of 250°F	*#	–
Skillet (tilting or braising)	**I**	2
Steam Cooker	**II**	4
Steam Table (hot-holding only)	*	–
Toaster (bread only):		
• Portable	*	–
Waffle Cone Maker / Waffle Iron:		
• Portable	*	–

Make-up Air

Follow local building codes and good industry practices for providing balanced and tempered make-up air in the proximity of the exhaust system.

PART 16
UTILITY AREAS

Mop Sinks

All facilities must have one **floor-mounted** mop sink/curbed cleaning facility for general clean-up activities. This sink must have a floor drain. It must also be provided with hot and cold water, under pressure with a mixing faucet and approved backflow protection. Multi-level facilities require one mop sink on each level, or the facility has an accessible elevator or ramp for transport of the mop bucket.

Stationary equipment, such as water softeners or water filter systems, may not obstruct the mop basin or sink. Allow for space adjacent to the mop basin/sink for storage of mop buckets. Place approved chemical dispensing systems so they do not interfere with maintenance equipment storage or use. Install separate water lines for chemical cleaning systems and include appropriate back flow protection (note that most sanitizer solutions have a minimum temperature requirement of 75°F). This may require a mixing valve. If you suspend a water heater over the mop basin, maintain a minimum clearance to provide adequate space for the storage of wet mops.

Maintenance Equipment

Designate an area, away from food or dishware, for storing maintenance equipment and cleaning supplies. Install heavy-duty mop hooks/racks that can support wet mops over the janitorial sink, and at least six inches away from the wall, so that wet mops may drip-dry into the sink basin. Provide open wire or solid metal shelving at each janitorial station for a working supply of cleaning items. The use of peg-board is not approved.

Laundry

Laundry facilities in a food service establishment shall be restricted to the washing and drying of linens, clothes, uniforms and aprons necessary to the operation. If such items are laundered on the premises, an electric or gas dryer shall be provided and used. Separate rooms shall be provided for laundry facilities except that such operations may be conducted in storage rooms containing only packaged food or packaged single-service articles.

An area, separate from soiled linens, should be provided to store and protect clean linens from contamination. Specify the location of covered, non-absorbent containers or washable laundry bags designated for holding damp or soiled linens, soiled uniforms, aprons, etc.

PART 17
DRESSING AND LOCKER ROOMS

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

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

PART 18
GARBAGE AND REFUSE STORAGE

Garbage Containers

Each establishment is to secure their own garbage. Provide sufficient outdoor garbage containers with tight-fitting lids or covers, sized to hold all garbage or refuse in a nuisance-free manner until it is picked up.

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

PART 19
STANDARD OPERATION PROCEDURES

Standard Operating Procedures are written practices and policies that describe how your specific facility will produce safe food. These are used to train employees on the approved practices and to ensure consistency in requirements. Use our Standard Operating Procedures worksheet as the template.

Public Health
Prevent. Promote. Protect

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