CONSTRUCTION GUIDE FOR FOOD ESTABLISHMENTS

DeWitt-Piatt Bi-County Health Department

Environmental Health Division

Contact Information:

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Purpose

The purpose of this plan is to provide individuals in the food industry a means of clarification regarding construction and design requirements within the food service operation.

Restrictions

A facility menu will be utilized to determine types of equipment that will be needed within the establishment. Please note that additional equipment may be required for specialized processes. Additionally, specialized processes will require the submission of a HACCP Plan to be approved by the department. A license will not be provided until all requirements are fulfilled.

Food service facilities are prohibited from the storage and preparation of food items within a private home.

Catering is an extensive procedure that requires close monitoring during transportation and preparation to ensure the overall health and safety of the consumer. Please notify the health department if catering is intended as this must be addressed during the plan review process.

Code Requirements

Facilities must prove to be compliant with the following codes prior to opening:

- Local Ordinances
- The State Plumbing Code
- FDA Food Code
- FDA Plan Review Code
- The State of Illinois Fire Code
- The 2010 ADA Standards for Accessible Design

****Please note that this guide is intended to provide prospective food service owners with general requirements for construction and equipment, please review all applicable codes for additional information.****

Fee Breakdown and Risk Classification

Based on the complexity of the day-to-day operations for the proposed food establishment and the type of population served, the health department will designate a risk category for the facility. Please note that each tier has additional requirements in the plan review process.

The fee breakdown for food establishments is as follows:

Category I Food Establishment	**$375.00 / year**
Category II Food Establishment	**$275.00 / year**
Category III Food Establishment	**$175.00 / year**

Please refer to "Determining Factors for Risk Classification" in the appendices for additional information. Permits are valid from January 1st to December 31st of the current calendar year. A pro-rated fee will be applied to new food establishments with the full permit fee to be paid on the deadline date for the next calendar year. Please note that under certain circumstances the expiration date is subject to change (Example: December 31st falls on a weekend).

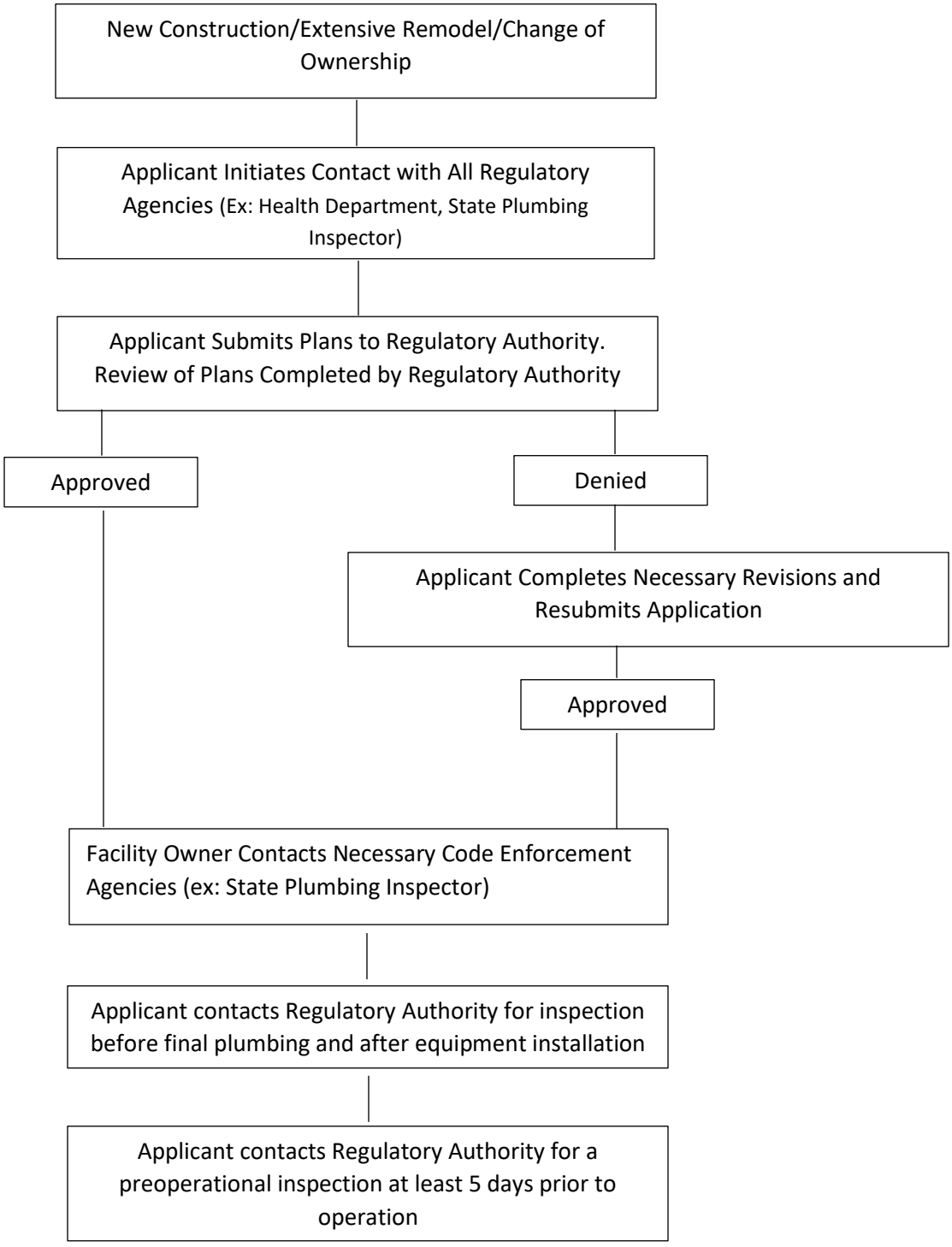
If a permit fee is not submitted by the deadline date, the facility is subject to immediate temporary closure.

The Plan Review Process

- Submit your Plan Review Application along with building plans and equipment specification sheets. The plan review application is available at each of our locations.
- A preliminary site visit of the facility can be arranged and is highly recommended.
- Once the Plan Review Application has been provided to the health department a representative will review the documents and note any necessary or recommended changes. Please allow a **minimum** of 10 days for this process.
- Once the review is complete, the representative will contact you and discuss any changes to the plan.
- Inspections or site visits will be conducted by the health department during construction. These site visits will be scheduled by the owner of the facility. A checklist regarding any necessary changes will be provided to the owner. Certain violations will require immediate action with the requirement of correction prior to opening.
- A final walk-through will be completed prior to opening to determine if the facility has met all requirements and made corrections to violations noted by the health department representative.

NOTE: Facilities that have specialized processes (Curing) in their menu plan may be required to receive additional approval from other enforcement agencies (Ex: Illinois Department of Public Health, Illinois Department of Agriculture, etc)

Plan Review Process Flow Chart



Projects Subject to Plan Review or Pre-Opening Site Visits

- ***New Construction***: Building that is newly constructed or an existing building that has never served as a licensed food establishment.
- ***Extensive Remodel***: Addition or change to the building, a major equipment change, or the addition of new equipment due to menu changes of a food establishment.
- ***Change of Ownership***: The property is sold or leased to another individual.

Hazard Analysis Critical Control Point (HACCP)

Hazard Analysis Critical Control Point (HACCP) is a program in the food industry that is crucial in determining where specific hazards in food preparation exist. Due to the importance of HACCP, the health department has required the following:

- Once the menu has been received, the health department will select one (1) food item from the menu. A discussion of HACCP principles and the creation of a HACCP Flow Diagram will be completed by the manager/owner of the facility and the health department.

Health Department Contact Information

DeWitt-Piatt Health Department
1020 S. Market Street
Monticello, IL 61856
Phone: (217) 762-7911
Fax: (217) 762-3422

DeWitt-Piatt Health Department
5924 Revere Road
Clinton, IL 61727
Phone: (217) 935-3427
Fax: (217) 935-4037

To speak directly to the Environmental Health Program Coordinator:

Phone: (217) 762-7911 x2222

(217) 935-3427 x2114

Email: enevius@dewittpiatthealth.com

General Equipment Information

Please provide the health department specification sheets for each piece of equipment purchased for the facility.

Equipment shall bear the certification of an ANSI accredited organization. Examples include:

- NSF International (NSF)
- Intertek (ETL)
- Underwriter's Lab (UL)
- Canadian Standards Assocation (CSA)

Please note that all new refrigeration and cooking equipment shall bear the certification mark of an ANSI accredited organization and adhere to nationally recognized standards and code requirements for equipment in a commercial setting.

Equipment may not be altered from its original design or intended use.

Used equipment may be approved for use in a facility if it:

- Was approved under existing standards when manufactured
- Is in good repair
- Is easily cleanable
- Is comprised of non-toxic food contact surfaces
- Does not pose a hazard to health

Note: The equipment must be inspected and approved by a representative of the health department prior to use.

Unapproved equipment

Food contact equipment shall be NSF approved. The following equipment is prohibited within a food service establishment:

- Unfinished wood
- Household crock pots
- Galvanized hoods and containers
- Enamelware
- Paintbrushes/metal banded brushes
- Plastic tables
- Household roasters

- Drills (for mixing)
- Home-use blenders
- Dorm style refrigerators
- Used non-commercial equipment
- Non-commercial refrigeration units
- Non-food grade plastic containers (Sterilite)

Floor Mounted Equipment

Floor mounted equipment should be placed on approved castors or wheels to allow for movability, cleaning, and routine maintenance. For equipment with utility connection (gas), should be provided with easily accessible quick disconnects.

Floor mounted equipment not placed on approved wheels or castors should meet the following requirements:

1) The equipment should be sealed to the floor, or
2) Installed on a solid, smooth, non-absorbent masonry base. Masonry bases should be a minimum of two (2) inches in height.
3) Equipment installed on legs should extend a minimum of six (6) inches from the floor (from floor to equipment base). Hollow, open ended legs are prohibited.
4) Shelving units must extend six (6) inches from the floor and be a smooth and easily cleanable surface. Pressed wood shelving is prohibited.

Provide unobstructed and functional working space between units of equipment. A minimum of thirty-six (36) inches is recommended.

All utility and service lines and floor openings must be sealed adequately. Exposed vertical and horizontal piping must be kept to a minimum. The installation of exposed horizontal utility lines and pipes directly on the floor is prohibited.

Insulation material used on piping material must be non-absorbent and easily cleanable.

Equipment legs shall be stainless steel.

Table Mounted Equipment

Table mounted equipment shall be:

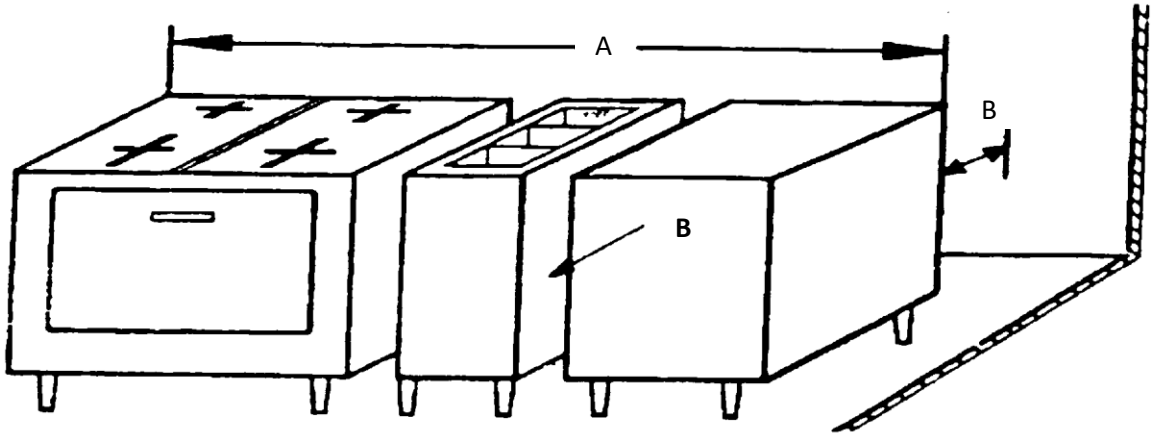
1) Sealed to the table or counter on which it placed; or
2) Elevated on approved legs to provide a minimum of four (4) inches clearance between the equipment and the table/counter surface; or
3) Portable (30 pounds or less), no dimensions exceeding 36 inches, and no fixed utility connections.

Equipment Location and Installation

Install equipment in locations that prevent the contamination of food, ice, and food contact surfaces. Prohibited storage locations include:

- Under an open stairwell
- In a mechanical/utility room
- In a garbage/refuse storage area
- Under unprotected/uncovered sewer lines
- In a basement with unfinished flooring
- Restrooms
- Underneath exposed condenser lines
- In a storage shed with unapproved walls, ceilings, and flooring

Equipment Spacing



Equipment Length (A)	Required Spacing from Walls and Other Equipment (B)
Less than/Equal to 4 feet	Six (6) Inches
Four (4) to Eight (8) Feet	Twelve (12) Inches
Great than Eight (8) Feet	Eighteen (18) Inches

Dry Storage

The space required for dry storage depends upon the complexity of the menu, number of meals served, and frequency of deliveries. The location of the storage area should be adjacent (or as close as possible) to the food preparation area and easily accessible by delivery personnel.

Adequate ventilation is required to maintain a low relative humidity (30% or less) preserving freshness of dry goods. Additionally, the dry storage area should not house unventilated pipes, exposed water lines, condensate lines, or heat producing equipment.

The temperature of the dry storage area shall be maintained at 50-70F.

A suggested formula for appropriately sizing dry storage areas can be found in the Appendix.

Shelving Requirements for Dry Storage Areas

Shelving units shall be a suitable finished hard wood, durable plastic, or corrosion resistant metal. The use of plywood or other pressed wood is prohibited.

All shelving must extend six (6) inches from the floor with a maximum height of seven (7) feet. Spacing between shelving should be a minimum of fifteen (15) inches.

The use of dunnage racks is permissible, however, these units must be adequately spaced from the wall to allow for proper pest control inspections. A minimum of eighteen (18) inches is recommended but not required.

Storage containers with tight fitting lids are required for bulk goods such as flour, sugar, cornmeal, and dried beans once the products are removed from original packaging.

Refrigeration Requirements

If potentially hazardous food items are prepared in advance or are cooled to be served at a later date, rapid cooling equipment is required to assure that the product is properly cooled within the required timeframe. Food items must be cooled from 135F to 70F within 2 hours and from 70F to 41F within 4 hours. The total cooling time may not exceed 6 hours.

Due to the relatively small surface area of upright refrigeration units and under-counter refrigeration units, these types of equipment are prohibited for use in the cooling process. The installation of a walk-in cooler is required as these units are capable of quickly cooling large quantities of food using low temperatures and high rates of air circulation.

Upright coolers, make tables, and under-counter (reach-in) cooler units may be used to maintain cold foods at appropriate temperatures. These units must not be stored next to cooking equipment or other high heat equipment as the extreme temperatures may negatively impact the ability of refrigeration units to maintain required temperatures.

All refrigeration and freezer units must meet the requirements of NSF standards.

Additional Requirements for Refrigeration/Freezer Equipment

- Shelving units must be smooth and easily cleanable. The use of galvanized shelving is not recommended in refrigeration units due to their tendency to rust.
- Interior finishings must be smooth, easily cleanable and not vulnerable to water damage (rusting). Galvanized wall coverings are not recommended.
- All refrigeration units must contain a numerically scaled thermometer accurate to plus or minus (+/-) three degrees Fahrenheit.
- Floor coverings of walk-in refrigeration units must be smooth, easily cleanable, slip resistant, and not subject to water damage. Recommended floor finishings include: quarry tile or epoxy-coated smooth concrete. The use of peel and stick laminate flooring is prohibited.
- Approved coved base junctures must be installed on the exterior and interior of all walk-in refrigeration and freezer units.
- Condensate lines must discharge to an approved floor drain with an air gap that meets the requirements of the Illinois Plumbing Code. Discharge to a bucket or pan is strictly prohibited.
- Pressure relief ports must be installed on all walk-in freezer units.
- Each walk-in cooler unit must be well lit. A minimum of ten (10) foot candles of light is required.

Hot Holding and Reheating Equipment

Hot holding equipment must be capable of maintaining potentially hazardous food items at 135F or greater at all times.

All hot holding equipment must meet NSF Standards. The use of crockpots as hot holding equipment is strictly prohibited.

Reheating equipment must be capable of raising the internal temperature on all potentially hazardous foods to 165F within one (1) hour. The use of crockpots and soup warmers as reheating equipment is not permissible as these units cannot effectively heat food items to appropriate temperatures within the required timeframe.

Facilities to Protect Food

Adequate facilities and design flow must be provided to promote good hygienic practices, sanitary food handling, and prevention of cross contamination.

General Food Protection

If possible, provide a separate area for the preparation for raw meats, poultry, and seafood items (if served). If the facility does not allow for separation of preparation areas, the use of color coded cutting boards is required.

Sneeze guards for buffet lines and salad bars must comply with ANSI Standards. According to the Food and Drug Administration, the food shield should intercept the distance between the customer's mouth and the food product. On average, the distance between the customer's mouth and the floor is 54-60 inches. For this reason, the shield must be installed no more than forty-eight (48) inches from the floor. Adjustments must be made for buffets or salad bars in educational settings.

Running water dipping wells must be installed in areas where frozen dessert products are being portioned and served.

Equipment that has been cleaned using the wash, rinse, and sanitize process must be stored in a clean and dry area not subject to contamination from dust, splash, or foreign material.

Tables, Counters, and Cabinetry

Include specifications and intended uses for all tables, counters, cabinetry and customer self-service areas in the plan review application.

Please note that hollow enclosed base cabinets are prohibited. Cabinets shall either be sealed to the floor or be provided with six (6) inch legs or castors to allow for cleaning. The use of laminate in food preparation areas is also prohibited. Stainless steel is **required** for all food preparation surfaces.

Food Contact Surfaces

Provide sufficient counter or table space to meet the food preparation and ware washing needs of your establishment.

Examples of activities requiring approved food contact surfaces:

- Chopping, cutting or mixing raw foods
- Assembling foods such as sandwiches or salads
- Storage of equipment before and after ware washing
- The final preparation of food items that were previously cooked
- Any storage of equipment used for cooking (grills, deep fryers, flat top grill, panini press, etc)
- Other activities creating splash food soiling that require frequent cleaning

For larger food contact equipment such as food preparation tables, stainless steel is permissible as well as hard maple for tabletop surfaces. Galvanized steel and laminate are strictly prohibited.

Cutting boards shall be constructed of hard maple or non-porous high density polyethylene (commonly referred to as white cutting boards).

Non-food Contact Surfaces

Examples of activities that would allow for the use of non-food contact surfaces:

- The storage of beverage dispensing units such as espresso or coffee machines
- Continental breakfast displays
- Storage of popcorn machines, pizza displays, or hot dog rollers
- Storage of soup warmers
- Bars
- Wait Stations
- Points-of-sale
- Storage of single service items and pre-packaged food items

The most commonly used surfaces approved as non-food contact surfaces are stainless steel and solid surfaces such as granite or quartz. Laminate is permissible but not recommended in non-food contact areas.

Sinks

Handwashing Sinks

Provide sufficient hand washing stations to meet the needs of day-to-day operations. Hand washing sinks must be located in areas free from obstruction and the potential re-contamination of hands. The Food and Drug Administration (FDA) recommends that hand washing stations be located within twenty-five (25) feet of any workspace. Depending on the design of the facility and equipment location, additional hand sinks may be required therefore negating this recommendation. At a minimum, a hand washing sink is to be required in each of the following areas:

- The main preparation area
- The dish washing area
- Bar Area
- Wait Station

Each handwashing sink must be provided with sufficient hot and cold running water under pressure through a mixing valve or combination faucet. The unit must meet the requirements of the State Plumbing Code. The hand sink may be wall mounted or free standing. The DeWitt-Piatt Health Department may require splash guards on each or one side of the hand washing sink if it poses a risk for contaminating food items or equipment located in the immediate area.

Hand washing sinks must be equipped with an automatic paper towel holder and soap dispenser containing an anti-bacterial hand soap (automatic not required). Common use cloths, open rolls of paper towels and bar soap is prohibited. The use of hand sanitizer is not an approved substitute for hand washing.

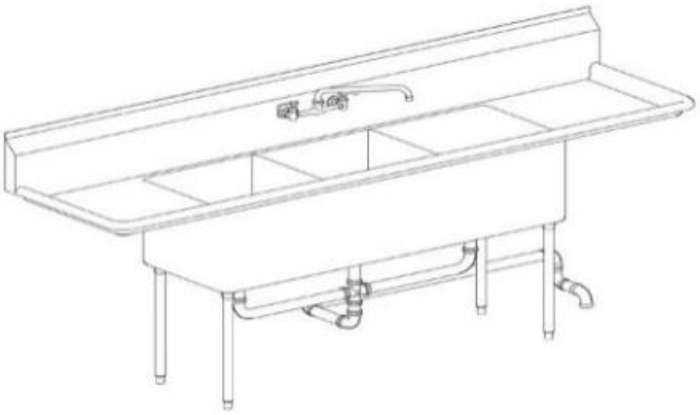
Manual Dish Washing Sinks

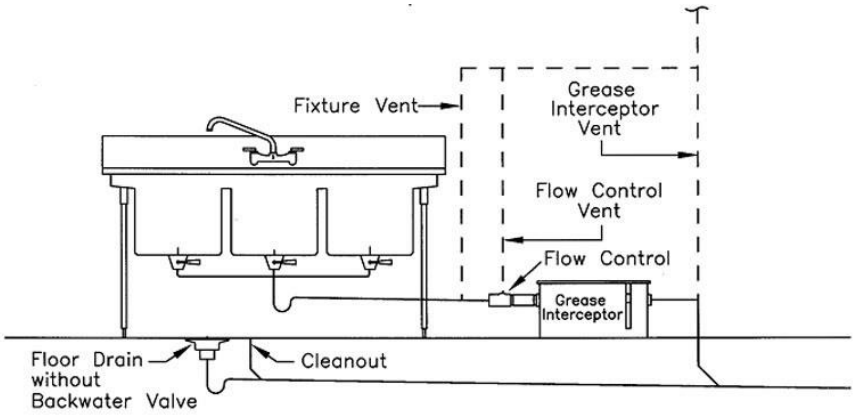
If the plans do not include the use of a dish washing machine, a three basin sink is required for the manual washing of all foodservice equipment. Each basin of the sink shall be large enough to allow for immersion of the largest piece of equipment.

Soiled and clean side drain boards shall be provided and must hold the largest piece of equipment. It is recommended that drain boards generally be the same size as the sink compartments. The minimum drain board length for any food handling capacity is 24 inches.

A grease trap is to be required for any utensil or equipment that produces fats or greases. The grease trap shall be sized in accordance with the regulations set forth in the State of Illinois Plumbing Code. See Appendix C for sizing requirements. Consult with plumber and plumbing inspector prior to installation.

All plumbing is to be approved by the State of Illinois Plumbing Inspector. Approval by the DeWitt-Piatt Health Department will not be granted until the owner can provide proof of inspection by the State Plumbing Inspector.





Preparation Sink

If the proposed menu calls for processes requiring the washing (including fruits and vegetable) or thawing of food in a sink, include in the plans the installation of a single basin food preparation sink. The guidelines for a food preparation sink are as follows:

- The sink must be stainless steel
- The fixture must be provided with adequate hot and cold running water.
- The sink is to be indirectly connected to the buildings plumbing lines.
- Food preparation sinks must be freestanding

Utility Sink

In order to comply with the Illinois Plumbing Code, all food service establishments and retail food stores must have at least one utility (mop) sink or curbed floor drain with a faucet. Install the sink in an area that is easily accessible to employees who are cleaning mops or disposing of mop water.

The installation of FRP Paneling around the mop sink is required.

Under the plumbing code, the use of shut-off valves or y-connectors are prohibited without proper backflow devices.

Hanging storage racks for mops is required.

Other Sinks

Other common sinks (depending on scope of operations) may include:

- Dump Sink – for bars, blender drinks or espresso areas
- Dipper Well Sink – for utensils in-use such as ice cream scoops.

Dish Machines

Include product specification sheets for all dish washing units to be installed at the facility. Please keep in mind that drain boards are required on both the soiled and clean side of the dish machine.

There are two types of commercial dish machines available. The units differ only by how they achieve the sanitizing process. A chemical dish machine utilizes sodium hypochlorite and a water temperature of approximately 120F for sanitizing. A high heat dish machine will sanitize using high heat (Wash: 155F Rinse: 180F).

In order to maintain a consistent temperature, the dish machine may require the installation of a booster heater.

A three compartment sink shall be installed as a secondary method of ware washing in the event of a dish machine breakdown. If a three compartment sink is to be utilized at all times, the installation of a commercial dish machine is not required.

Ventilation Systems

General Guidelines

- Include specifications and proposed locations for ventilation hoods in submitted plans. Ventilation systems should be installed in accordance with State of Illinois Code.
- For the hood to fulfill its purpose, there must be a sufficient volume of air movement to draw grease particulates from the cooking surface to the grease extractors. An effective air capture velocity shall be sufficient to overcome opposing air currents.
- All rooms shall have sufficient ventilation to reduce the potential for excessive heat, condensate, steam, obnoxious odors, smoke, and fumes.
- Adequate ventilation and make-up air is required above all equipment that produces heavy condensation, steam, grease laden vapors, obnoxious odors, and smoke.
- All hoods shall comply with ANSI standards and shall be constructed and installed in conformance with the National Fire Protection Bulletin #96.
- Make up air intakes must be screened and filtered to prevent entry of dust, dirt, insects, birds, and other potential contaminants.
- Adequate lighting is required in ventilation hoods exhausting fumes from cooking equipment.

Types of Ventilation Systems

Class I (1) Ventilation System: Required above equipment that produces grease laden vapors or smoke.

A Class II (2) Ventilation System: Required above equipment that produces heavy condensation or steam (Ex: Commercial dish machine).

Hood Sizing

Canopy and island hoods shall be a minimum of two (2) feet in depth and shall extend a minimum of six inches beyond any equipment requiring ventilation. No overhang is required on the sides of ventilation hoods where aprons are installed.

Fire Protection

Exhaust ventilation systems are under the jurisdiction of the State Fire Marshal, local fire departments, and building officials. Facility owners should verify that installation is compliant with all codes prior to operation. In jurisdictions where the fire protection district is strictly volunteer, contact should be established with the Illinois State Fire Marshal's Office.

Frequently Asked Questions Regarding Ventilation:

Q: Is Class I ventilation required above convection ovens?
A: Most convection ovens are self-ventilating but it is recommended that you verify on the specification sheet. If the oven is used for baked goods only (bread, rolls, cakes, etc) then ventilation is not required.

Q: We plan to utilize a commercial under-counter dish machine, is ventilation required?
A: No, Class II ventilation is not required.

Q: Steam tables produce steam, is ventilation required?
A: No. Class II Ventilation is for excessive steam only.

The DeWitt-Piatt Bi-County Health Department does not enforce the installation of fire suppression systems but please note that it may be required through your insurance agency.

Floors, Walls, and Ceilings

All building materials used on ceilings, walls and floors must be smooth, hard surfaced, easily cleanable, moisture impervious, and free of rust, splinters, etc. Painted surfaces are not recommended, but in the event that they are used, they must be free of any/all problems commonly associated with painted surfaces, such as peeling, flaking, chipping, blistering, etc.

Floors

Floors shall be constructed of a durable material that can withstand frequent traffic within the food preparation area. The surface must be smooth and easily cleanable.

The most commonly approved flooring surfaces include: quarry, ceramic tile, commercial vinyl or epoxy floor systems.

Restrictions for flooring surfaces:

- Vinyl flooring is not allowed in walk-in cooler or freezer units
- Sealed concrete is permissible in utility room and dry storage areas. Please note that the surface must be smooth.
- Carpet is prohibited within three (3) feet of any food service or preparation area. This includes the kitchen, bars, buffet lines, and salad bars.

NOTE: Alternative types of flooring may be utilized pending approval by the regulatory authority.

Coving at base juncture is required and must be compatible with both wall and floor coverings. At a minimum the coving should be at least four (4) inches high.

Floors must be adequately drained to prevent standing water. Properly installed, trapped floor drains must be provided in areas that are water flushed for cleaning or receive discharges of water from equipment. Floors shall be sloped at least 1/8” per foot to allow for proper drainage.

Walls

Similar to flooring, the walls of any food preparation area shall be constructed of a durable material that is smooth and easily cleanable. Fiberglass Reinforced Plastic (FRP) paneling, ceramic tile, and stainless steel are the most commonly used and approved surfaces. In areas where extensive food preparation is not being conducted, painted drywall is acceptable.

Areas subject to moisture require FRP Paneling to prevent damage. The juncture between equipment and wall surfaces must be sealed with a moisture resistant caulking or silicone. If sufficient space exists between equipment and the wall surface allowing for adequate cleaning, sealing is not required.

Stainless steel is required behind the cooking equipment of any food service establishment. Corners must be sealed with a heat resistant caulking or silicone.

The following surfaces are restricted in the food service establishment:

- Unfinished, porous concrete blocks or bricks
- Exposed studs, joists, and rafters
- Unfinished wood or wood paneling.
- Painted drywall in areas of extensive food preparation

Ceilings

Ceiling surfaces shall be light colored and constructed of a durable material that is smooth and easily cleanable.

The most commonly approved ceiling surfaces include: painted drywall, smooth metal, or vinyl tile. For drop ceilings, acoustic ceiling tile is not preferred but may be approved in certain areas of the facility.

Lighting

Adequate lighting is crucial in the food service establishment. Listed below are lighting requirements for each food preparation area. In the food code, the brightness of light is measured in “food candles”

- 10 foot candles – walk-in cooler, walk-in freezer, dry storage
- 20 foot candles – reach-in equipment, custom self-service area, bar
- 50 foot candles – food preparation areas, ware washing area, or areas where employee safety is a critical factor.

Light fixtures must be installed with adequate shielding or shatter proof bulbs.

Non-Food Areas

Restrooms

Toilet facilities shall be installed according to law. They shall be conveniently located and accessible to employees at all times. Toiled facilities shall be of adequate number for customers, workers, and individuals limited by mobility.

Toilet rooms shall be completely enclosed and shall have tight-fitting, self-closing doors.

Adequate ventilation is required.

Handicap accessible restroom facilities are required in all new food establishments. The restroom design must adhere to the rules and regulations set forth in the Illinois State Plumbing Code. **Please contact the State Plumbing Inspector – Champaign Region at (217) 278-5900.**

Floors, walls, ceilings, and fixtures must meet requirements stated in the appropriate sections of this guide.

Garbage receptacles

Provide an area physically separate from food preparation for the collection and storage of garbage and recyclables.

Use concrete, asphalt or other nonabsorbent material for outdoor dumpster areas and grease collectors. Gravel is not an approved material. Do not place dumpsters in grass.

Storage of Employee Belongings

Provide a location for the storage of personal belongings (locker room, office, etc). The area should be separate from main preparation sites and food storage areas.

Insect and Rodent Control

Openings to the exterior should be tight fitting to prevent the entrance of insects and rodents. All doors and windows shall be maintained in good repair so as to assure that each fixture provides adequate sealant from the outdoor environment. All exterior doors must be self-closing.

The installation of an air curtain is required above exterior doors that are opened frequently or remain open for extended periods of time. This includes:

- Delivery Doors
- Drive-Thru Windows
- Automatic doors

If screen doors are used, the door must be self-closing and tight-fitting. Screen material must be maintained in good repair.

All foundations must be rodent proof, this means no open access along the exterior of the foundation. Openings between the floor and bottom of outer doors shall have adequate flashing to eliminate the possibility of pest or rodent entry.

Utilities

Water Supply

Water must be obtained from an approved source. Facility water supplies from a private well will be sampled prior to opening.

A water heater of adequate size is an important aspect of the plan review process. The FDA has made available a sizing chart and equation to help determine the water heater required in a food establishment based on the number of sinks installed. This information can be found as an attachment at the end of this document.

Sewage Disposal

If the facility is served by a private sewage system, an application must be submitted to the Health Department during the plan review process. It is important to obtain approval of your system early in the planning stages as it is difficult to resize the system after installation has occurred.

Plumbing

Plumbing is the only utility in the State of Illinois that is code enforced. **A licensed, insured plumber shall be used for all plumbing work completed in the facility.**

Each facility must receive approval and inspection from the State of Illinois Plumbing Inspector on any plumbing modifications prior to approval of occupancy from the health department.

The State of Illinois Plumbing Inspector for the Champaign Region can be reached at (217) 278-5900

Appendix A: Determining Factors for Risk Classification

"Category I facility" means a food establishment that presents a high relative risk of causing food-borne illness, based on the large number of food handling operations typically implicated in food-borne outbreaks and/or the type of population served by the facility. Category I facilities include those where the following operations occur:

- Potentially hazardous foods are cooled, as part of the food handling operation at the facility;
- Potentially hazardous foods are prepared hot or cold and held hot or cold for more than 12 hours before serving;
- Potentially hazardous cooked and cooled foods must be reheated;
- Complex preparation of foods or extensive handling of raw ingredients with hand contact for ready-to-eat foods occurs as part of the food handling operations at the facility;
- Vacuum packaging, other forms of reduced oxygen packaging, or other special processes that require an HACCP plan; or
- Immunocompromised individuals, such as the elderly, young children under age four and pregnant women are served, in a facility in which these individuals compose the majority of the consuming population.

"Category II facility" means a food establishment that presents a medium relative risk of causing food-borne illness, based upon few food handling operations typically implicated in food-borne illness outbreaks. Category II facilities include those where the following operations occur:

- Hot or cold foods are held at required temperatures for no more than 12 hours and are restricted to same-day services;
- Foods are prepared from raw ingredients, using only minimal assembly; and
- Foods that require complex preparation (whether canned, frozen or fresh prepared) are obtained from approved food-processing plants, high-risk food service establishments or retail food stores.

"Category III facility" means a food establishment that presents a low relative risk of causing food-borne illness, based upon few or no food handling operations typically implicated in food-borne illness outbreaks. Category III facilities include those where the following operations occur:

- Only potentially hazardous foods commercially pre-packaged in an approved processing plant are available or served at the facility;
- Only limited preparation of non-potentially hazardous foods and beverages, such as snack foods and carbonated beverages, occurs at the facility; or
- Only beverages (alcoholic and non-alcoholic) are served at the facility.

Appendix B: HOT WATER HEATER SIZING REQUIREMENTS

Equipment Type	GPH – High	GPH - Low
Vegetable Sink	15	15
Single Compartment Sink	20	15
Two Compartment Sink	40	30
Three Compartment Sink	60	45
Pre-Rinse Dish Sprayer	45	45
Bar Sink – Three Compartment	20	
Bar Sink – Four Compartment	25	
Chemical Sanitizing – Glassware	60	
Lavatory	5	5
Filling Faucet	15	15
Bain Marie	10	10
Coffee Urn	5	5
Kettle Stand	5	5
Clothes Washer	60	60
Dish Machine	64	64

To calculate the required hot water supply needed, first determine whether the hot water heater is a gas or electric unit. Gas heaters will be calculated in BTUs and electric units in KW.

Use the following formulas to calculate the BTU's or KW's:

Note: 1 gallon of water is equal to 8.33lbs

Gas Heaters

$$\text{Required BTU's} = \frac{\text{Gallons/Hour of Water} \times \text{Temperature Rise} \times 8.33}{.70 \text{ Operating Efficiency}}$$

Assumption: The average water temperature in Illinois is 55F

Electric Heaters

$$\text{Required KW} = \frac{\text{Gallons/Hour of Water} \times \text{Temperature Rise} \times 8.33}{3412 \text{ (BTUs per KW)}}$$

TO CALCULATE THE GALLONS/HOUR OF WATER PLEASE REFER TO THE TABLE AT THE TOP OF THE PAGE

Example: Three Compartment Sink

$$\text{Required BTU's} = \frac{\text{Gallons/Hour of Water x Temperature Rise x 8.33}}{\text{.70 Operating Efficiency}}$$

According to the chart, the gallons per hour for a three compartment sink is 60gph. The temperature of wash and rinse water must reach 120F therefore the temperature rise is 65F.

$$\frac{\text{60gph x 65F x 8.33}}{\text{.70 Operating Efficiency}}$$

= 46,410 BTUs

Example: Hand Sink

According to the chart, a hand sink requires 5gph.

The required temperature of a hand sink is 110F. The temperature rise will be 55F.

$$\text{Required BTU's} = \frac{\text{5gph x 55F x 8.33}}{\text{.70 Operating Efficiency}}$$

= 3,272.5 BTUs

Example: Vegetable Preparation Sink

Required gph = 15

Required temperature = 110F

Temperature Rise = 55F

$$\text{Required BTU's} = \frac{\text{15gph x 55F x 8.33}}{\text{.70 Operating Efficiency}}$$

= 9,817.5 BTUs

This facility would require 59,500 BTUs therefore a hot water heater with at least a 60,000 BTU inlet/hour would be needed.

Appendix C: Sizing the Grease Interceptor

A grease interceptor installed on the same floor as the fixture shall have one-half the liquid-holding capacity of the fixture. A grease interceptor located on a floor below the fixture shall have 60 percent of the liquid-holding capacity of the fixture.

To determine the liquid holding capacity:

$$\frac{(\text{Length} \times \text{Width} \times \text{Height}) \times 3 \text{ (for each compartment)}}{231} \times 50\% \text{ or } 60\% \text{ capacity}$$

= Liquid Holding Capacity

APPENDIX D: Dry Storage Room Sizing

A suggested formula used in estimating required storage space is as follows:

$$\text{Required Storage Area (square feet)} = \frac{\text{Volume per meal} \times \text{Number of meals between deliveries}}{\text{Average height} \times \text{Fraction of usable storeroom floor area}}$$

(1) Volume per meal = .025 to .050 cu. ft. per meal served
(2) Useful storeroom height = 4 to 7 feet
(3) Storage time between deliveries = 3 to 14 days
(4) Fraction of useable storeroom floor area = .3 to .6

For example assume 100 meals per day and a 10 day storage between deliveries = 1000 meals for which to provide storage:

$$\text{Required Storage Area} = \frac{.05 \text{ cubic feet} \times 1000 \text{ meals}}{5 \text{ feet} \times .3}$$

Required Storage Area = 33 square feet