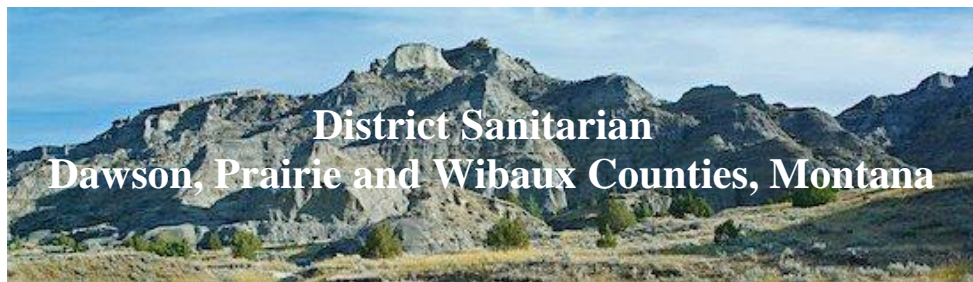


FOOD SERVICE CONSTRUCTION GUIDE

October 2011



PURPOSE

The purpose of this guide is to provide prospective food establishment operators, construction contractors, and architects assistance in designing food-service establishments in Dawson, Prairie and Wibaux counties, Montana.

PLANS, CONSULTATIONS AND INSPECTIONS

Montana Administrative Rule 37.110.241 (1) states that whenever a food-service establishment is constructed, remodeled or converted for use, plans and specifications must be submitted to health officials for review and approval prior to work on the facility.

The plans and specifications must indicate:

1. The proposed layout, arrangement, mechanical plans, and construction materials for work areas;
2. Type and model of fixed equipment and fixtures;
3. Menu items.

In addition to approval from state and local health officials, plans and specifications must also be approved by the local or state building official. Used and new equipment should meet standards specified by the National Sanitation Foundation (NSF) and/or American National Standards Institute (ANSI). Operators should look for NSF or ANSI stamps or labels on equipment.

Consultations

Before opening, free on-site, office and telephone consultations are available from the sanitarian to ensure all health rules are met and the establishment opens on schedule. Consultations are usually requested weeks in advance of the scheduled opening.

Permit application

Prospective operators must complete a permit application on a form provided by the District Sanitarian's office or the State of Montana Department of Public Health and Human Services. Part of the application process is submittal of the applicable fee(s) prior to opening the facility.

Pre-licensing inspection

The sanitarian must conduct a pre-licensing inspection and submit a written report before a facility is issued a license or permit to operate. Generally, a license to operate will not be granted if there are any violations noted on the pre-licensing inspection report. Therefore, scheduling the pre-licensing inspection should be done as closely to the date of opening as possible, but should also allow enough time for correction of deficiencies. All license applications and fees must be submitted before or during the pre-licensing inspection. You may not operate until applications and fees are submitted and final approval is given by the District Sanitarian.

To submit plans and schedule consultations and inspections, please contact:

District Sanitarian Office
207 West Bell Street
Glendive, MT 59330
406.377.5772 office telephone
406.939.1108 mobile telephone
406.377.2022 fax

Please allow at least 30 days for plan review approval. Plans must be approved before constructing, enlarging, altering, or converting any building for use as a food service establishment.

Plan submittal should include:

PLAN REVIEW CHECKLIST

	Completed plan review application
	One set of plans, drawn to scale (including building, equipment, plumbing, and mechanical schematics)
	Finish surfaces for walls, ceilings, floors and floor base for food processing and dishwashing areas
	Proposed menu
	If applicable, include water well number for privately owned wells

CERTIFIED FOOD MANAGER

A Certified Food Manager (CFM) is highly recommended for new food service facilities. Training for this certification is available from numerous public and private agencies, such as the National Restaurant Association. An owner or operator of a new food establishment should employ a certified food manager within 90 days of commencing operation. The CFM should be employed full-time or on duty during food preparation. The CFM should have the authority to take corrective action, if needed.

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BUILDING MATERIALS

Area of Establishment	Floor						Base Cove				Walls						Ceiling					
	Stainless Steel	Diamond-Aluminum Treads	Sealed Concrete	Quarry/Ceramic Tile	Vinyl Composition Tile	Epoxy Resin Flooring System	Vinyl (Peel and Stick)	Coved Ceramic/Quarry	Aluminum	Stainless Steel	Stainless Steel (16 gauge min.)	Ceramic Tile	Fiberglass Reinforced Panel	Epoxy Painted Drywall	Epoxy Painted Concrete Block	Semi-gloss Painted Drywall	Open Studs	Metal Clad Tile	Semi-Gloss Painted Drywall	Vinyl-Coated Acoustic Tiles	Acoustical Tiles	Open Joists & Rafters
Food Prep Area	◆			X		■		X	X	X	X	X	X	◆	X			X	X	X		
Cooking Area	◆			X		■		X	X	X	X	X	X		X			X	X	X		
Dish wash Area	◆			X		■		X	X	X	X	X	X		X			X	X	X		
Walk-In Refrigeration	X			X		■		X	X	X	X											
Beer Cooler	X	X	◆	◆		■			X	X	X											
Toilet Room	◆			X	X	■	X	X	X	X	X	X	X	X	X			X	X	X		
Janitor Room	◆			X		■		X	X	X	X	X	X	X				X	X	X		
Laundry Room	◆			X	X	■	X	X	X	X	X	X	X	X				X	X	X		
Interior Refuse Storage	◆		X	X	X	■		X	X	X	X	X	X		X			X	X	X		
Wait Station	◆			X		■	X	X	X	X	X	X	X	X	X	X		X	X	X		
Hand wash Area	◆			X		■		X	X	X	X	X	X		X			X	X	X		
Bar Service	◆			X		■		X	X	X	X	X	●	X				X	X	X		
Dry Storage Room	◆		□	X	X	■	X	X	X	X	X	X	X	X	X	X	□	X	X	X	X	□
Other Storage	◆		X	X	X	■	X	X	X	X	X	X	X	X	X	X	□	X	X	X	X	□
Dressing Rooms	◆		X	X	X	■	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Shaded areas are not recommended and/or allowed.
 X = allowed
 ◆ = Not Recommended, based on manufacturers' recommendation
 ● = Drywall may be used in bars only in areas that are more than 18 inches from a moisture source.
 □ = For storage of **unopened case lots** of single-service food and beverages.
 ■ = All epoxy resin flooring systems must be pre-approved by the health authority prior to installation. Any proposed for installation shall be capable of coving up to 4 inches.

HANDWASHING STATIONS

1. A minimum of one, easily accessible hand-washing sink must be located in EACH AND EVERY food preparation area, warewashing area and toilet room;
2. All handwashing sinks must be conveniently located, and should not used for any other purpose;
3. Each hand washing sink shall be provided with hot and cold water tempered by means of a mixing valve or combination faucet. The water must be a minimum temperature of 80°F. For daycares, the maximum hot water temperature for hand sinks is 120°F;
4. Self-closing or automatic faucets shall be designed to provide a flow of water for at least 15 seconds without the need to reactivate the faucet;
5. If unpackaged food and/or clean equipment and utensils are in close proximity to a handwashing sink, a splash shield must be installed.

EQUIPMENT

All food-service equipment should meet NSF or ANSI standards:

1. **Table-mounted equipment** should be installed on legs of sufficient height to ensure unobstructed clearance beneath the unit;
2. **Floor-mounted equipment** should be a minimum of six inches off the floor and installed on casters, rollers, or gliders;
3. A separate **food preparation sink** is required, if food product is washed or thawed. A drain board should be provided for each basin. Every food preparation sink must be plumbed with an air gap in accordance with state plumbing codes and rules. Food preparation sinks should not be installed in plastic-laminated counters, in accordance with NSF Standard 2;
4. **Mechanical refrigeration** should meet or exceed NSF standards for potentially hazardous foods. All refrigeration units, including prep tables and salad bar units, should maintain potentially hazardous food at 41°F or below. Thermometers in the units shall be accurate to plus/minus 2°F.
5. **Walk-in refrigerators or freezers** should be installed without pre-fabricated floors and should have a pre-approved floor and base-cove installed on a smooth concrete surface. An insulated floor is required for walk-in freezers.
 - ▶ Condensate from walk-in refrigeration units shall be plumbed into a floor drain located outside the unit or onto an evaporator pan
 - ▶ Galvanized materials are not permitted in walk-in refrigerators and freezers
 - ▶ In beer refrigerators with no food storage, diamond aluminum tread-plate or an epoxy resin surface installed on a smooth concrete surface are acceptable finishes
 - ▶ A base should be stainless steel, manufacturers' pre-fabricated vinyl screed or a material matching the finish of the cooler floor. Vinyl bases are not recommended. A quarry tile base should only be used when placed against a rigid foam-filled cooler wall with the screed securely fastened to the floor. The base should provide a ¼-inch radius at the floor juncture and should be sealed to the floor
 - ▶ All joints and panel attachment areas should be sealed with food-grade silicone caulk or equivalent
 - ▶ Shelving should meet NSF standards for cold storage use and be corrosion resistant. Chrome-plated, zinc and galvanized shelving should not be in refrigeration units.
6. **Dipper wells** with flowing water should be provided, if bulk ice cream is dispensed. If provided, the dipper well shall be located adjacent to the proposed area of use. The water line shall have an air gap. The wastewater system must also be air gapped to a trapped waste pipe;
7. **Single-service articles** for consumer, self-service operations must be in the original, individual wrapper or contained within an approved dispenser;
8. **Consumer self-service facilities:**
 - ▶ Beverage dispensers should be push-button operated. Any lever-activated dispensers shall be designed to protect the lip contact surface of the drinking vessel;
 - ▶ Salad bars and buffets should utilize mechanical refrigeration, not just ice to keep foods cold;
 - ▶ Approved food shields or sneeze guards must be provided;
 - ▶ Liquid drainage systems for salad bars and steam tables must have an air gap;
 - ▶ Salad bars and buffets should be located on a smooth, durable, easily cleanable floor, or equivalent, which extends three feet beyond the edge of the salad bars or buffet.
 - ▶ A customer handwashing sink is highly recommended near the buffet or salad bar;

FOOD PREPARATION AND DISHWASHING AREAS

1. **Floors** in food preparation and dishwashing areas must be constructed of material that is:
 - ▶ Smooth
 - ▶ Durable
 - ▶ Easily cleanable
 - ▶ Nonabsorbent

Tile grout should be water-resistant and not exceed ¼ inch in width. Food establishments that water flush or pressure wash should have floor/wall junctures coved and sealed to no larger than one millimeter (1/32 inch). The floors should be graded to drain;

2. **Walls** in splash zones or high moisture areas, such as dishwashing or sink areas must be finished with smooth, cleanable, durable and nonabsorbent materials. Block walls must be smooth and sealed with epoxy or enamel paint
3. **Ceilings** must be smooth, nonabsorbent, and capable of withstanding frequent cleaning. Fissured, perforated or rough acoustical tile is not permitted in food preparation or dishwashing areas;

DISHWASHING

Operators may choose to manually or mechanically wash utensils and equipment. In some cases, food establishments have both a multi-compartment sink for manually washing and a mechanical dishwasher. The advantage of having both a multi-compartment sink and a mechanical dishwasher is there is a back-up system if one fails to be of service. Therefore, this agency encourages both manual and mechanical systems be installed in new food establishments.

Manual Dishwashing

1. A three or four-compartment sink with drain boards on each end is required. The sink should meet NSF standards. If a four-compartment sink is installed, the first compartment may be used as a handwashing sink. Warewashing sinks should not be used for washing hands;
2. Each compartment of the multi-compartment sink shall be large enough to immerse half of the largest utensil or equipment used in the establishment;
3. Each drain board must be of sufficient size to accommodate soiled and clean utensils and equipment;
4. When hot water is used for sanitizing during a manual procedure, the following apply:
 - ▶ A heating device must be installed in or under the sanitizing compartment. The water must be at least 170°F, and the heating unit should meet NSF Standard 5
 - ▶ A thermometer accurate plus or minus 2°F must be integral to the sink and
 - ▶ Dish baskets be provided that permit complete immersion of utensil
5. A test kit is required for verifying the effectiveness of the sanitizing step. Verification may be done through use of chemical test strips or 160°F thermolabels;
6. Spray arms at dishwashing stations must have an air gap or be fitted with an atmospheric vacuum breaker, in accordance with plumbing rules;

Mechanical Dishwashing

1. A dish machine is recommended for reusable dishes, flatware or glassware. All spray-type dishwashing machines should conform to NSF Standard 3;
2. A table or drain board must be of sufficient size to accommodate soiled and clean utensils and equipment. The table or board for soiled utensils shall not drain into the washing compartment of the dishwashing machine;
3. Mechanical ventilation shall be provided over hot-water sanitizing dishwashing machines;

4. Chemical sanitizing machines shall have an audio or visual alarm system that warns the user the sanitizer supply has been depleted;
5. A booster heater is required for hot-water sanitizing dishwashing machines;
6. Pressure measuring devices for the water supply must be marked in increments of one pound per square inch (1 PSI or 7 kPa) and must be accurate plus/minus 2 PSI (14 kPa). The device must measure the range up to at least 25 PSI (170 kPa);
7. Spray arms at dishwashing stations must have an air gap or be fitted with an atmospheric vacuum breaker, in accordance with plumbing rules;
8. A test kit is required for verifying the effectiveness of the sanitizing step through use of chemical test strips or thermolabels that indicate 160° F or greater.

FOOD-REALTED STORAGE

1. Separate storage areas are required for clean equipment and utensils. The items must be stored on approved shelving that is at least six inches off the floor. Pegboard is not acceptable. Utensil racks may not be located in areas subject to contamination.
2. Food, beverages and single-service items shall be protected from contamination by storing them in a clean, dry location where it is not exposed to splash, dust, or other contamination. Food, beverages and single-service items shall not be stored:
 - ▶ In a locker room
 - ▶ In a toilet room
 - ▶ In a dressing room
 - ▶ In a garbage storage room
 - ▶ In a mechanical room
 - ▶ Under a sewer line that is not shielded to intercept potential drips
 - ▶ Under a leaking water line, including a leaking automatic fire sprinkler head
 - ▶ Under an open stairwell
 - ▶ Under any other source of contamination
3. Poisonous or toxic materials shall be stored in a manner that they cannot contaminate food, equipment, utensils and single-use articles.

BAR SERVICE

1. At least one, handwashing sink is required in areas where alcoholic beverages are prepared or served
2. All refrigeration units should meet NSF standards;
3. A dishwashing machine or multi-compartment sink with drain boards is required for glass washing. A separate dump sink should be provided. If a four-compartment sink is used, the first compartment may be used as the dump sink and handwashing sink;
4. Ice bins shall be self-draining and air gapped into a wastewater system;
5. Ice for beverages shall be stored separately from ice used for cooling bottles, beverage lines and condiments. Beverage ice may not be stored in units that have drop-in cold plates for cooling beverage lines. Cold plates for beverage lines must be integrally formed into the ice bin unit, if the ice is used for beverages;
6. An approved, backflow preventer shall be installed on soda post-mix carbonators. The backflow preventer shall be located in the water line to the carbonator, preferably between the pump and the carbonator. No copper piping shall be installed downstream from the backflow preventer.

DINING ROOMS

In dining rooms, buffets and salad bars must have floors and walls that meet the following criteria:

1. The floor underneath and extending three feet from the side of the buffet or salad bar unit must meet the same requirements as in the “FOOD PREPARATION” section of this document;
2. The base cove shall meet the same requirements as in the “FOOD PREPARATION” section of this document;
3. When the buffet or salad bar is placed against a wall, the wall shall be smooth, nonabsorbent, durable and washable.

TOILET ROOMS

1. Wall finishes must be smooth, durable and easily cleanable to a height of four feet;
2. At least one toilet shall be provided for food workers and patrons. The numbers or toilets required are determined by Montana plumbing codes and rules;
3. At least one handwashing sink must be conveniently located within all toilet rooms.

JANITOR STATION

1. At least one service/utility/mop sink or curbed cleaning facility must be provided and conveniently located for cleaning mops and disposal of wastewater. The station must have hot and cold water, under pressure that is connected to a mixing faucet;
2. The mop sink should not be used for handwashing.
3. Chemical dispensers at mop sinks must be installed in accordance with plumbing codes and rules;
4. Wall finishes shall be smooth, durable and easily cleanable to a height of at least four feet;
5. Floors must be comprised of material that is smooth, non-absorbent, easily cleanable and durable;
6. An area shall be designated for the proper storage of maintenance equipment and cleaning supplies;
7. The janitorial station should be conveniently located for maintenance of food service areas, but shall be separated from food preparation and food storage areas;
8. Facilities shall be provided to allow mops to air-dry without soiling walls, equipment or supplies. A mop hanger and broom rack should be provided to elevate items such as mops, brooms and dustpans off the floor.

UTILITIES

Plumbing

All plumbing for water and wastewater systems shall be installed in accordance with Montana state plumbing codes and rules.

Utility Service Lines

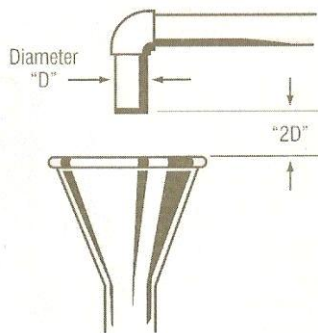
1. Utility service lines and pipes shall not be unnecessarily exposed;
2. Exposed utility service lines and pipes shall be installed so they do not obstruct or prevent cleaning of the floors, walls, or ceilings;
3. Exposed utility service lines and pipes shall not be installed directly on walls or floors, except for quick disconnect gas hoses approved by the American Gas Association or NSF International.

Potable Water Backflow Protection

1. Water inlets shall have an air gap between the water inlet and the flood rim of the fixture. The air gap shall be two times the diameter of the water inlet pipe or faucet. Any water inlet or faucet that does not meet this requirement shall be considered a submerged inlet. Any water inlet to which a hose can be attached shall be considered a submerged inlet;
2. Vacuum breakers shall be installed on any submerged inlet such as toilets, urinals, dishwashers, garbage grinders, and any threaded water outlets. Toilets must have anti-siphon ball cock assemblies;
3. Double-check valves with atmospheric vents or reduced pressure zone backflow preventers are required on any water outlet on which a vacuum breaker cannot be installed after the last shut-off valve or solenoid switch (i.e. pressure spray hoses). Backflow prevention shall be located in the water line to the carbonator, preferably between the pump and the carbonator;
4. Chemical dispensing systems shall have approved backflow devices;

Indirect Wastewater Connections

An indirect waste connection discharges waste through a trap and an air gap into the sewer system.



1. Air gaps are required on walk-in refrigerators, walk-in freezers, ice machines, steam tables, steam cookers, ice bins, salad bars, dipper wells and other similar food equipment must be indirectly plumbed to the sewer system.
2. The air gap for fixtures subject to negative pressure between the indirect waste system and the building drainage shall be at least twice the effective diameter of the pipe, but no less than one inch. All other air gaps shall be at least one inch;
3. Indirect waste pipes shall not discharge into hand sinks, food-prep sinks or multi-compartment sinks.

Water Supply

An adequate supply of potable water shall be provided from a municipal water supply or non-community public water supply that meets all state codes and rules. A permit for constructing a new well is required by the State of Montana Department of Environmental Quality.

Water Heater

1. A water heater for food service meeting NSF Standard 5 should be provided and appropriately sized for the operation of the establishment;
2. A water heater pressure relief valve is required and must end at least 18 inches above the floor. The relief valve shall be directed to the sanitary sewer;
3. Water heaters greater than six gallons in capacity may not be elevated more than six inches above the floor. Water heaters shall be accessible at all times.

Water Softener

1. A water softener shall be installed with an appropriate air gap;
2. A water softener shall be installed at least six inches off the floor if located in an area of food preparation or warewashing.

PEST CONTROL

1. Outer openings shall be protected against the entry of insects, rodents and other pests by:
 - ▶ Eliminating holes and other gaps on exterior of building
 - ▶ Installation of tight-fitting windows and screens that have at least 16-mesh per square inch
 - ▶ Self-closing, tight-fitting doors
 - ▶ Properly designed and installed air curtains, or
 - ▶ Other effective means
2. Inside the establishment, hollow enclosures should be eliminated to prevent pest harborage environments, such as under cabinets, shelving and foundations for booth seating

SEWAGE DISPOSAL

1. Sewage shall be discharged into a municipal sewer system or an on-site sewage treatment system, which meets Montana Department of Environmental Quality requirements. A permit for constructing a new on-site system is required in Dawson County. Systems that discharge more than 2,500 gallons per day must be designed by a professional engineer
2. Grease removal devices shall be installed in accordance with Montana plumbing codes and rules. A grease trap should be easily accessible for cleaning.
3. Sewage and waste lines should not be located directly above food preparation, food display, food storage, or dishwashing and storage areas. If sewer lines must be installed over the areas listed above, they shall be equipped with a seamless pan or gutter, which is open at the ends and pitched to carry any leakage away from the food or utensil areas.

SOLID WASTE

1. Trash containers shall be insect/rodent resistant with tight-fitting lids;
2. Interior garbage storage rooms shall meet the same finish requirements as splash zones in food preparation areas. The room should be equipped with hot and cold running water. A floor drain connected to the sanitary sewer should also be installed;
3. Inside the establishment, an area of sufficient size shall be provided for the storage of solid waste and recyclable materials. The area shall be separate from food preparation and food storage areas;
4. Outdoor trash storage surfaces should be constructed of concrete, asphalt or other nonabsorbent material. The surface should be smooth, durable and sloped to drain to a sanitary sewer;
5. Liquid waste from compacting units shall be disposed as sewage;

EMPLOYEE AREAS

1. If employees routinely change clothes in the establishment, areas shall be designated for dressing;
2. If needed, lockers or other suitable facilities shall be provided for the orderly storage of employees' clothing and other possessions;
3. Lockers or other suitable facilities shall be located in areas where contamination of food, equipment, utensils, linens, and single-use articles cannot occur;
4. Designated employee break areas shall be located where possible contamination of food, equipment, linens, and single-use articles is minimized.

LAUNDRY FACILITIES

1. If installed, a mechanical clothes washer shall be used where there is no exposed food, clean equipment, utensils or unwrapped, single-use articles;
2. If a mechanical dryer is provided, it shall be located where there is no exposed food, clean equipment, utensils or unwrapped, single-use articles.

LIGHTING

1. Food processing and preparation areas must be provided with at least 50 foot-candles of light on working surfaces. This requirement includes areas where there are ventilation hoods over cooking equipment, but does not include areas where alcoholic beverages are prepared;
2. Dishwashing and food storage areas must be provided with at least 20 foot-candles of light, which includes bar-service areas where glasses are washed;
3. Walk-in refrigerators and freezers must be provided with at least 10-foot candles of light;
4. All light bulbs in food preparation, food display, food service, food storage, dishwashing and utensil storage areas shall be shielded, coated or otherwise shatter resistant;
5. Infrared or other heat lamps shall be protected against breakage by a shield surrounding and extending beyond the bulb, leaving only the face of the bulb exposed.

MOBILE FOOD UNITS

Mobile food units must meet the same requirements as permanent food establishments with few exceptions and other additions.

1. Mobile food units must be fitted with a potable water tank of sufficient capacity to supply the needs of the facility. The department strongly suggests operators install at least a 40-gallon, potable water tank;
2. The water supply must be under pressure;
3. The water must be obtained from an approved source, which means it must be from a verifiably tested supply;
4. Hot and cold water must be provided for handwashing and dishwashing;
5. The wastewater tank must be at least 15 percent larger than potable water tank;
6. The operator must designate a service base at which the mobile unit will perform functions, such as obtaining water, loading food, discharging liquid waste, discarding solid waste and other functions;
7. Living quarters are not allowed in any part of the licensed food establishment. Any living quarters must be physically separate from the food establishment.