

This manual is to be used as a Guidance Document only and does not replace the actual Rules and Regulations as written in Chapter 511-6-1 for food service establishments.

SECTION H - FOOD EQUIPMENT AND INSTALLATION

REFERNCES (Chapter 511-6-1)

.05 Equipment and Utensils:

- (1) Materials.**
- (2) Design and Construction. (v) Molluscan Shellfish Life-Support. (jj) Food Service Equipment, Acceptability.**
- (4) Location and Installation (b) Fixed Equipment, Spacing, or Sealing.**
- (5) Acceptability of Existing Equipment.**

I. General:

1. *All equipment (see definition of in DPH Rule 511-6-1-.01) in food service establishments must comply with the design and construction standards contained in DPH Rule 511-6-1-.05 (1) and (2). Equipment certified or classified for sanitation by an American National Standards Institute (ANSI)-accredited program is deemed to comply with DPH Rule 511-6-1-.05 (1) and (2). However, for equipment that is not certified or classified for sanitation by ANSI-accredited programs, documentation from the equipment manufacturer must provide evidence that such equipment was designed and built according to standards set by the ANSI-accredited certification programs.*
2. The following equipment installation rules and recommendations will help ensure proper spacing and sealing allowing for adequate and easy cleaning:

II. Floor Mounted Equipment:

1. *Whenever possible, equipment should be mounted on approved lockable casters or wheels to facilitate easy moving, cleaning, and flexibility of operation. Moveable equipment requiring utility services, such as gas or electrical connections, should be provided with easily accessible, quick-disconnects or the utility service lines should be flexible and of sufficient length to permit moving the equipment for cleaning. If a flexible utility line is used, a safety chain that is shorter than the utility line must be installed. Check with local fire safety and building codes to ensure that such installations are acceptable. See Illustrations H-1 and H-3.*
2. Floor-mounted equipment that is not mounted on wheels or casters with the above utility connections should be:
 - A. *Permanently sealed to the floor around the entire perimeter of the equipment. The sealing compound should be pliable and non-shrinking. It should retain its elasticity and provide a water- and-vermin-tight joint; or*

- B. *Installed on a solid, smooth, non-absorbent masonry base.* Masonry bases and curbs should have a minimum height of 2" and be coved at the junction of the platform and the floor with at least a 1/4" radius. The equipment should overhang the base by at least 1" but not more than 4". Spaces between the masonry base and the equipment must be sealed as prescribed in 2A above; or
 - C. *Elevated on legs to provide at least a 6" clearance between the floor and equipment.* The legs shall contain no hollow open ends. See Illustration H-2.
 - D. *For equipment not readily moveable by one person,* spacing between and behind equipment must be sufficient to permit cleaning under and around the unit. Equipment shall be spaced to allow access for cleaning along the sides, behind and above. At least 6" of clear, unobstructed space under each piece of equipment must be provided or equipment must be sealed to the floor. See Illustration H-4.
 - E. *If equipment is against a wall and is not movable,* the equipment must be joined to and/or sealed to the wall in a manner to prevent liquid waste, dust and debris from collecting between the wall and the equipment.
 - F. *When equipment is joined together, or spreader plates are used between equipment,* the resultant joint must be sealed to prevent liquid waste, dust and debris from collecting between the equipment.
- 3. *Unobstructed and functional aisle and working spaces must be provided.* A minimum width of 36" should be provided or as required by fire and building codes. More functional aisle and working space may be necessary pending offset dimensions of equipment, such as door-swing of ovens and refrigerators, etc.
 - 4. *All utility and service lines and openings through the floor and walls must be adequately sealed.* Penetrations through walls and floors must be minimized. Exposed vertical and horizontal pipes and lines must be kept to a minimum. The installation of exposed horizontal utility lines and pipes on the floor is prohibited. Any insulation materials used on utility pipes or lines in the food preparation or dishwashing areas must be smooth, non-absorbent, and easy to clean. Electrical units which are installed in areas subject to splash from necessary cleaning operations or food preparation should be watertight and washable.

III. Counter-Mounted Equipment:

- 1. *Counter-mounted equipment is defined as equipment that is not portable and is designed to be mounted off the floor on a table, counter, or shelf.* All counter-mounted equipment shall be:
 - A. *Sealed to the table or counter;* or

- B. *Elevated on approved legs* to provide at least a 4" clearance between the table or counter and the equipment to facilitate cleaning, or
- C. *Elevated 3 inches* if the horizontal distance of the table top under the equipment is no more than 20 inches from the point of access for cleaning, or
- D. *Elevated 2 inches* if the horizontal distance of tabletop under the equipment is no more than 3 inches for the point of access for cleaning.

IV. **Other:**

- 1. *Equipment that is open underneath*, such as drain boards, dish tables, and other tables that are not moveable should be spaced to allow for ease of cleaning or should be sealed to the wall.
- 2. *Non-food contact surfaces of equipment* that are exposed to splash, spillage, or other food soiling or that require frequent cleaning shall be constructed of corrosion-resistant, non-absorbent, and smooth material.
- 3. *Legs of all equipment* should not have hollow, open ends.
- 4. *If running water dipper wells are installed*, methods for filling and draining the units must be identified.
- 5. *Equipment including icemakers and ice storage equipment* shall not be located under exposed or unprotected sewer lines, open stairwells or other sources of contamination.

V. **Food-Contact Surface Limitations:**

- 1. Galvanized Metal: May not be used in contact with acidic food.
- 2. Cast Iron: May be used as a cooking surface or serving utensils only as part of an uninterrupted process from cooking through service.
- 3. Copper and Copper Alloys (Brass): May not be used for foods with a pH < 6.0 such as vinegar, fruit juice, wine, etc., {except for the pre-fermentation & fermentation steps of a beer brewing operation} or for a water supply line between a soda carbonator & backflow preventer.
- 4. Wood: Wood & wood wicker may not be used as a food-contact surface.
Except:
 - A. *Hard maple or equivalently hard, close-grained wood* may be used for cutting boards & blocks, bakers' tables, and utensils such as rolling pins, doughnut dowels, salad bowls & chopsticks;

- B. *Wooden paddles* for pressure scraping kettles in confectionery operations with products reaching at least 230°F (110°C).
 - C. *Whole uncut raw fruit & vegetables*, and unshelled nuts may be kept in the original wooden shipping container.
 - D. *Whole, uncut, raw foods* requiring the removal of rinds, peels, husks, or shells may be kept in untreated wood containers or treated wood as specified in *21 CFR 178.3800 Preservatives for Wood*.
5. *Nonstick Coatings*: Cooking surfaces that have a perfluorocarbon resin coating shall be used with non-scoring or non-scratching cleaning aids.
 6. *Sponges*: May not be used in contact with cleaned & sanitized or in-use food contact surfaces.
 7. *Lead Limitations*: See Table H-1:

TABLE H-1
Lead Use Limitations

UTENSIL Category	Ceramic Article Description	Maximum Lead MG/L
Beverage Mugs, Cups, Pitchers	Coffee Mugs	0.5
Large Hollowware (excluding pitchers)	Bowls \geq 1.1 Liter (1.16 Quart)	1
Small Hollowware (excluding cups & mugs)	Bowls < 1.1 Liter (1.16 Quart)	2.0
Flat TABLEWARE	Plates, Saucers	3.0

Note: The food service permit applicant must include specifications indicating lead content from manufacturers of Ceramic, China, Crystal, Pewter and Solder & Flux used as food contact surfaces of equipment within plans and specifications for review by the Health Authority.

8. **Temperature Measuring Devices – TMD's:**

- A. *General Requirements*:
 - a. Designed to be easily readable.

- b. Food TMD's shall be provided & readily accessible for ensuring attainment & maintenance of food temperatures.
- c. Food TMD's may not have sensors or stems constructed of glass, *except stems encased in a shatterproof coating such as candy thermometers may be used.*
- d. *Mechanically refrigerated or hot food storage units:* equipped with at least one integral or permanently affixed, easily viewed TMD with sensors or a simulated product temperature shall be located in the warmest part of the refrigeration unit and in the coolest part of a hot storage unit. Except where a TMD is not practical for measuring ambient air surrounding the food, such as heat lamps, cold plates, steam tables, salad bars and insulated food transport containers.
- e. *Warewashing machine TMD's* to indicate water temperature in each wash and rinse tank; and entering the hot water sanitizing final rinse manifold or in the chemical sanitizing solution tank.

B. *Accuracy of Temperature Measuring Devices – TDM's: See Table H-2.*

TABLE H-2

TMD Accuracy	Food	Ambient Air & Water
Fahrenheit & Celsius, or Celsius only	+/- 1°C	+/- 1.5°C
Fahrenheit Only	+/- 2°F	+/- 3°F
Food or Warewashing TMD's shall have a numerical scale printed record or digital readout: increments are to be no greater than 2°F (1°C) in the intended range of use.		

VI. Molluscan Shellfish Life-Support System:

1. *Molluscan shellfish life-support system display tanks that are used to store and display shellfish that are offered for human consumption shall be operated and maintained under a variance granted by the Health Authority as specified in DPH Rule 511-6-1-.10 (5)(a) and (c). **Otherwise, the tank shall be conspicuously marked so that it is obvious to the consumer that the shellfish are for display only.***
 - A. *A variance for a Molluscan Shellfish Life-Support System shall ensure that:*
 - a. *Water used with fish other than molluscan shellfish does not flow into the molluscan tank;*
 - b. *The safety and quality of the shellfish as they were received are not compromised by the use of the tank; and*
 - c. *The identity of the source of the shellstock is retained as specified under DPH Rule 511-6-1-.4(3) (l).*
 - d. *See Subsection III, 13”Molluscan Shellfish Tank Life Support System in Section E entitled, “Facilities to Protect Food”, in this Manual for more specific information.*

VII. Equipment Specification References:

1. To help the planner and reviewer focus their plan review efforts concerning equipment and facility design, installation and construction and sanitation requirements found within Chapter 511-5-14, please *see Appendix-K “Equipment Specification Reference Sheet” and Appendix-L “Plan Review DPH Rules Specifications” in Part-II of this Manual.*

ILLUSTRATION H-1
Kitchen Equipment Mounted On Castors

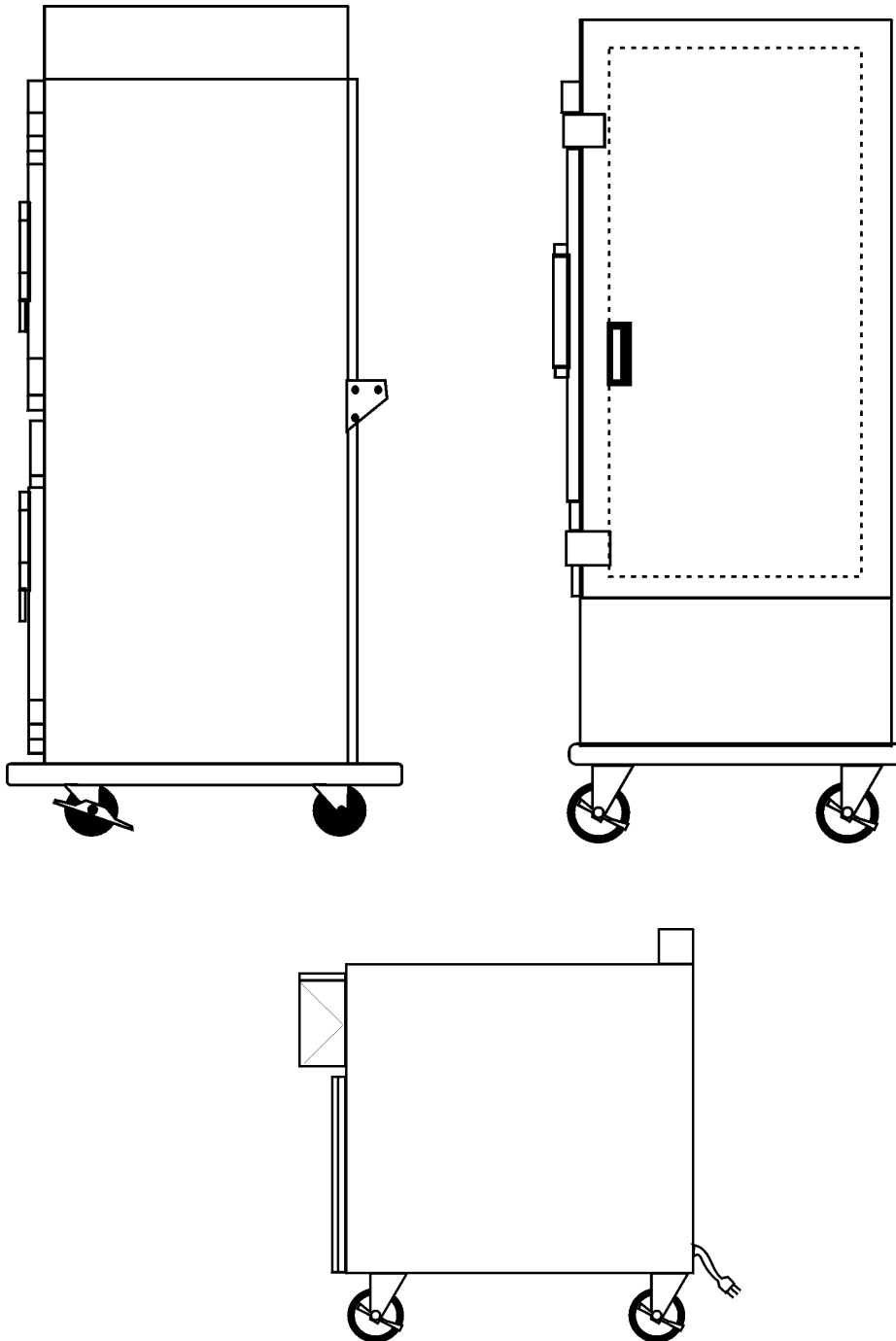


ILLUSTRATION H-2
Sanitary Legs

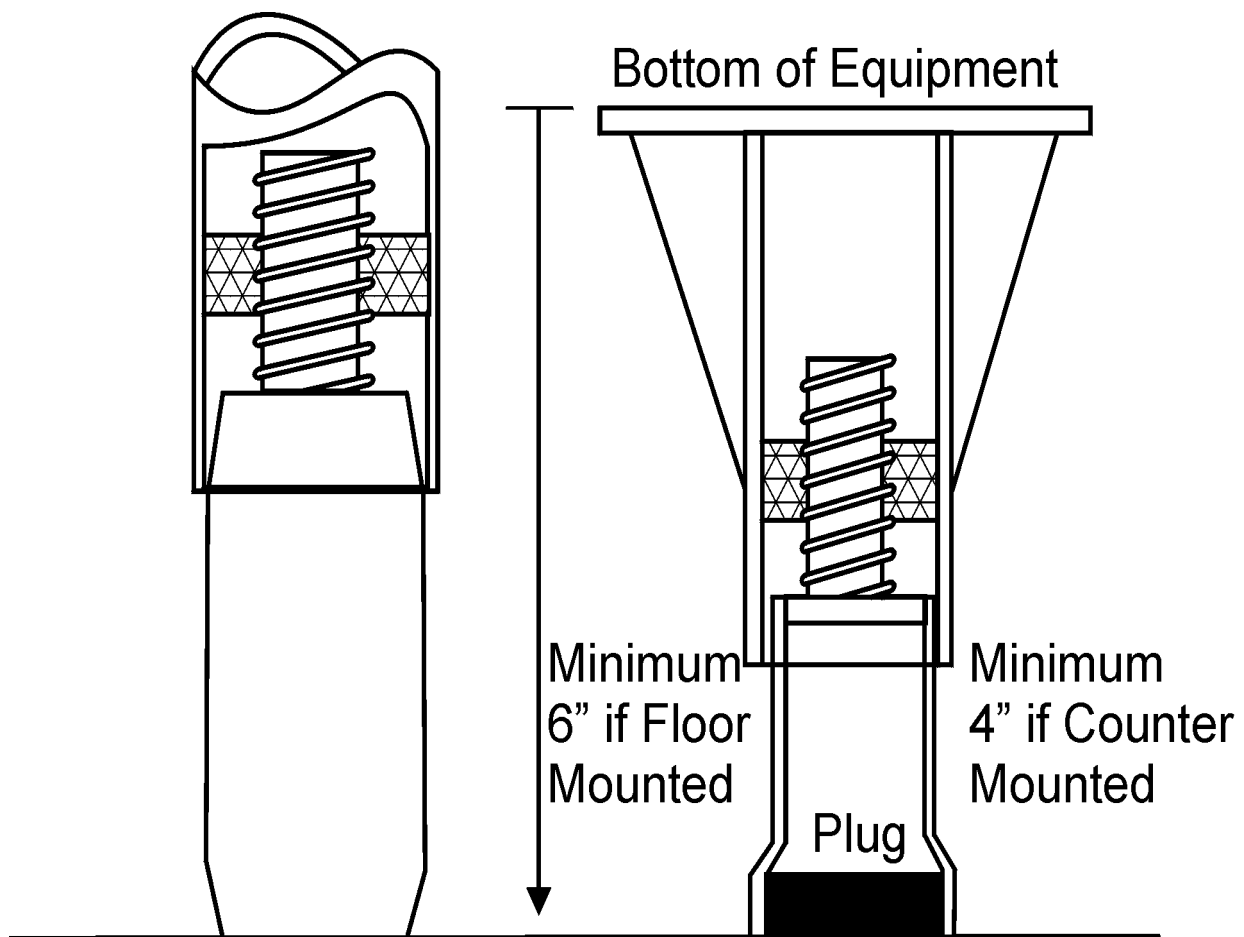
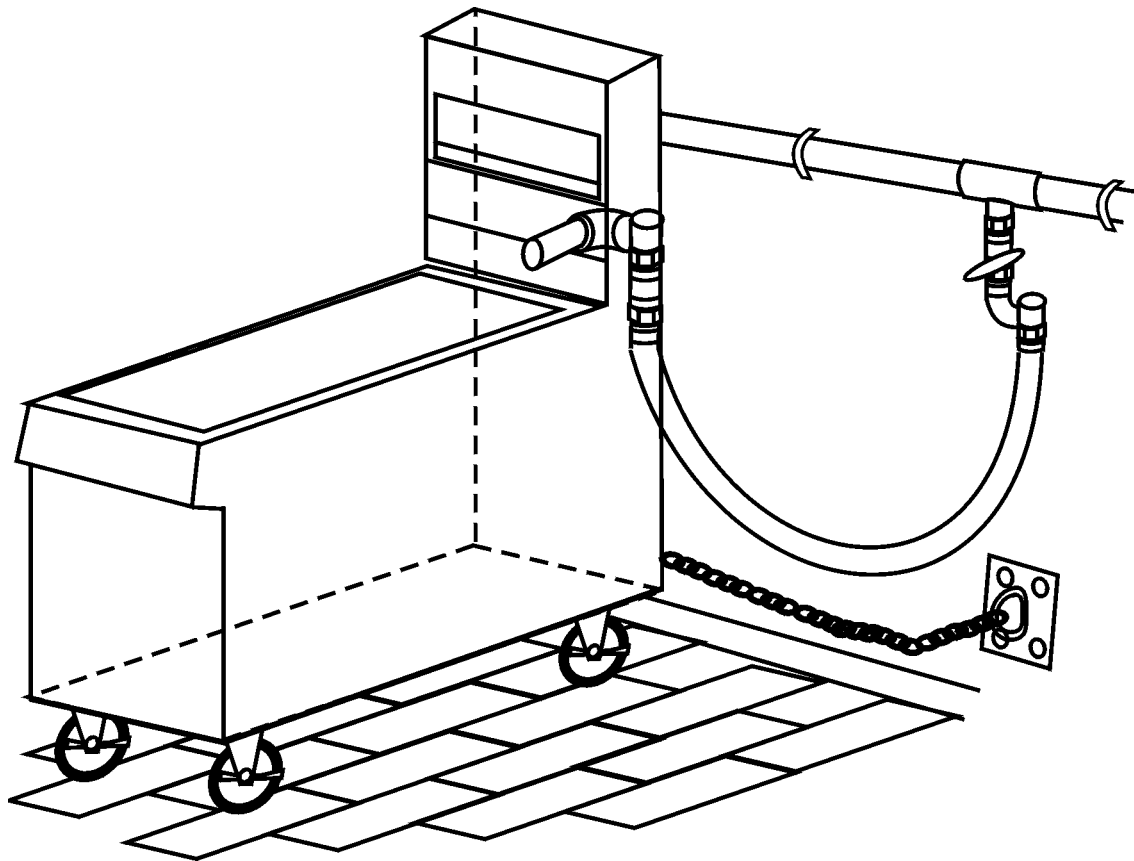
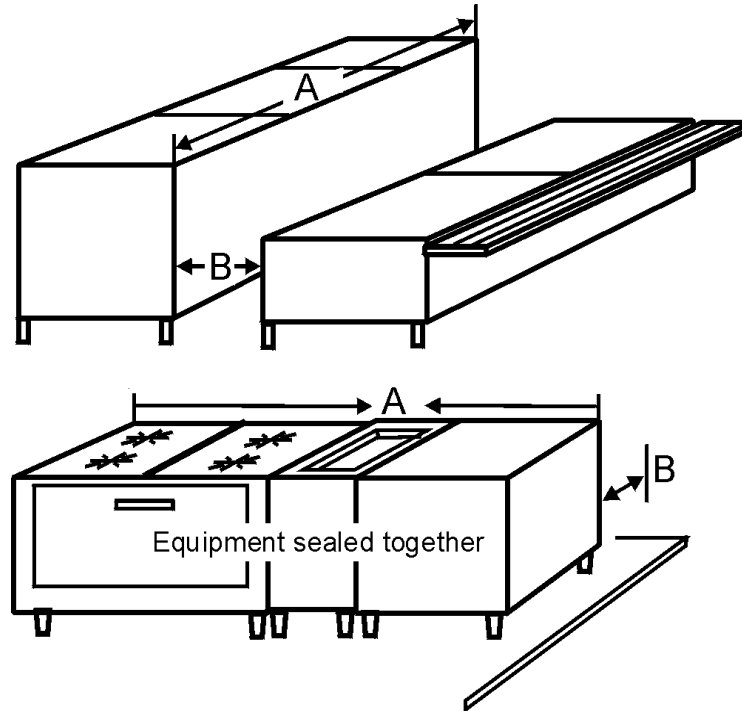


ILLUSTRATION H-3



*Cooking Equipment on Casters
Flexible Gas Connection with Keeper Chain*

ILLUSTRATION H-4
Equipment Spacing



Equipment Spacing provided access is available from both ends:

<u>Equipment Length (A)</u>	<u>Space from Walls and Adjacent Equipment (B)</u>
4' or less	6"
4' - 8'	12"
8' or more	18"

The following is an example of spacing pending distances (A) and (B) as shown above in Illustration H-4:

- *Equipment length 4 feet or less, space at least 6 inches from walls and other equipment.*
- *Equipment between 4 feet but less than 8 feet, space at least 12 inches from walls and other equipment.*
- *Equipment length is 8 feet or more, space at least 18 inches from walls and other equipment.*

- *Obstruction between and/or behind equipment* by a chase or rigid utility connection may require additional spacing.

VIII. Barbeque Cooking Facilities:

1. Background:

A number of food service establishments around the State, known as Barbeque Restaurants, utilizing solid fuel burning, outdoor barbeque pits, barrel cookers, and smokers to cook volumes of whole pieces of meat, such as hams, slabs of ribs, or chicken. As a result of volume cooking using solid fuel burning cooking equipment, an increase in the volume of grease-laden smoke and heat has the potential to create an increase in the difficulty in maintaining good sanitation if conducted within the confines of the food service establishment. It is for this reason these establishments tend to locate these types of cooking equipment outside of the food service establishment building. In contrast, recent modern design of smoking, grilling, and pit-cooked barbequing equipment is available for inside commercial cooking that is designed to address the exhaust and sanitation issues of traditional barbequing/grilling. As a result, more and more establishments, especially chain barbeque establishments are utilizing indoor barbeque cooking equipment. Finally, the country style cooking process utilizing barbeque pits, grills, and smokers is viewed by country barbeque restaurants as a marketing tool – see *Illustration 9 and 10* for examples.

ILLUSTRATION U-9



Pit Cooked Bar-B-Q advertisement used to draw consumer attention to the establishment

ILLUSTRATION U-10



Commercial Portable Barbeque Grill



Commercial Barbeque Smoker



Commercially Built Barbeque Trailer



Brick Barbeque Pit

Meat Smokers

2. Indoor Barbeque Cooking Facilities - An indoor barbeque facility shall meet the structural and equipment requirements for a food service establishment as specified within *DPH Chapter 511-6-1*.
3. Outdoor Barbeque Cooking Facilities – An outdoor barbeque facility shall meet at least the following requirements:
 - A. Location – Outdoor Barbeque Cooking Facilities site selected shall be in the immediate vicinity of and convenient to the permitted food service establishment. It shall be located in an area of a permitted food service establishment which suitably protects the food and/or equipment from dust, dirt, and overhead contamination. The surface of the ground adjacent to the outdoor barbeque cooking facility must consist of a material which will inhibit the generation of dust.
 - B. Floors – Floor surfaces shall be in good condition and graded to drain. Approved flooring materials may be sealed concrete, sealed machine-laid asphalt, or sealed tile. All flooring materials shall be smooth, non-absorbent, easily cleanable and be durable enough to withstand steam cleaning or power washing with high pressure water should it become necessary.
 - C. Walls – Consideration must be made to environmental conditions to provide adequate food protection from potential contaminants such as blown dust, dirt, rain, bird droppings, and vermin such as flies, rats and mice. This may be accomplished with the use of block walls, screening, tight-fitting, self-closing screen doors, or other effective barriers as determined by the Health Authority.
 - D. Overhead Protection – All outdoor barbeque cooking facilities are required to have overhead protection. All overhead structures must preclude the perching and nesting of birds. Additionally, all runoff from rain shall be directed away from the cooking area.
 - E. Ventilation and Fire Protection – If necessary, mechanical ventilation of sufficient capacity shall be provided to keep areas free of excessive heat, steam, condensation, vapors, obnoxious odors, smoke, and fumes. The outdoor barbeque cooking facility must be in compliance with all applicable building, ventilation, and fire safety codes.
 - F. Lighting – Adequate lighting for day and night operations shall be provided. The minimum lighting intensity requirements as specified within *DPH Rule 511-6-1-.07(3)(f)* must be provided for within the outdoor barbeque cooking facility. All light bulbs shall be shatterproof or shielded. Consideration should be given at to

the type of lighting used during night time hours of operation to reduce insect attraction to the outdoor barbeque cooking area.

G. Outdoor Barbeque Cooking Equipment:

- a. General Material and Construction Requirements - All outdoor barbeque cooking equipment, including custom-made equipment shall meet applicable construction design and material requirements set forth within *DPH Rule 511-6-1-.05(1) and (2)*. Cooking equipment may be designed to be movable or be permanently installed. In general, surfaces shall be smooth, easily cleanable, free of rust, dents or pitting, and durable under the intended normal outdoor use conditions. Cooking equipment shall be provided with lids or covers to protect the equipment and food contact surfaces from insects, birds, animals, contamination and inclement weather conditions. It shall be the burden of the permit applicant or permit holder to provide documentation to the Health Authority that all proposed equipment associated with the outdoor barbeque cooking facility meets at least the minimum material and design requirements as cited herein.
- b. Barbeque Pit Walls - Pit walls (exterior sides only) shall be smooth, easily cleanable, and washable. Concrete blocks or other masonry products used for pit construction must be trowelled, skim coated, or receive sufficient coats of full strength block filler applied to the exterior wall prior to the application of a washable paint.
- c. Barbeque Pit Grills, Grates, and Other Supports - Pit grills, grates, and other supports shall be constructed of smooth, easily cleanable, nonabsorbent, and non-toxic material and shall be in sections that are easily removable for cleaning. Expanded metal and cast iron grating are recommended materials which can be cleaned and maintained. Hog wire, chicken wire, hardware cloth, and similar materials are permitted for single-use only and must be discarded after each cooking period.
- d. Functionality – All outdoor barbeque cooking equipment must be designed and constructed to be capable to meet at least the applicable minimum cooking time/temperature requirements within *DPH Rule 511-6-1-.04(5)(a)*. It shall be the burden of the permit applicant or permit holder to provide documentation to the Health Authority that all proposed cooking equipment associated with the outdoor barbeque cooking facility is design and constructed so as to be capable to meet at least the applicable time/temperature cooking requirements as cited herein.
- e. Food Transport Containers and Utensils – All food shall be properly transported in approved covered containers and protected during transport between the indoor preparation site and the outdoor barbeque cooking equipment. Separate utensils and containers must be provided for handling

raw food from cooked, ready-to-eat food. All food storage and preparation will be conducted inside the food service establishment.

- H. Restroom Facilities – Approved and accessible toilet facilities shall be located no more than 200-feet from the outdoor barbeque cooking facility.
- I. Equipment and Utensil Washing – Warewashing is not permitted outside. All utensils and cooking equipment used in the outdoor barbeque cooking facility's operation must be returned inside to the food service establishment for cleaning and sanitization; except that in place cleaning may be allowed for grills and other similar equipment.
- J. See Illustration U-11 for examples of outdoor barbeque cooking facilities.

ILLUSTRATION U-10
Examples of Barbeque Sheds

