BOTTLE AND CASE DIMENSIONS

SIZE	BOTTLE DIMENSIONS (IN.) BORDEAUX	BURGUNDY	CHAMPAGNE	WEIGHT
375 ml				
Diameter	2.4	2.6	2.8	
Length	9.5	9.5	10.5	1.5 lb
Incremental height	2.1	2.3	2.5	
750 ml				
Diameter	3.0	3.2	3.5	
Length	12.0	11.8	12.5	2.9 lb
Incremental height	2.6	2.8	3.0	
1.5 L				
Diameter	3.8	4.2	4.4	
Length	14.0	14.0	14.8	5.5 lb
Incremental height	3.3	3.6	3.8	

NOTES

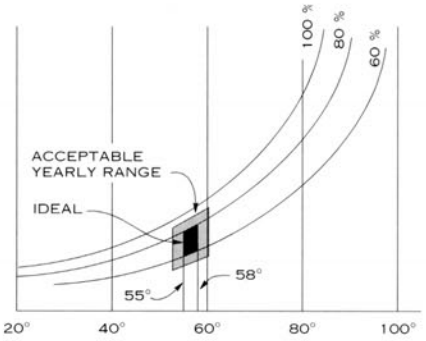
1. Bordeaux bottles represent the majority of wine from Italy, and from parts of France and the United States.
2. Burgundy bottles are from some parts of France and the United States.
3. Champagne bottle sizes are universal.
4. Incremental height of bottles is used where bottles are stacked staggered.

PREMANUFACTURED CELLARS

BOTTLE CAPACITY	HEIGHT (IN.)	WIDTH (IN.)	DEPTH (IN.)
50	34	24	24
465	74	52	27
765	80	73	49
1950	80	73	108

GENERAL NOTES

1. The ideal temperature range is 55-58°F. Temperature consistency is very important. Avoid diurnal swings in temperature, but a yearly variation of 5-10° is acceptable.
2. Relative humidity should stay in the 60-80% range. Lower humidity promotes evaporation loss through bottle corks; higher humidity allows mold, which breaks down the cellulose in labels and storage structures.



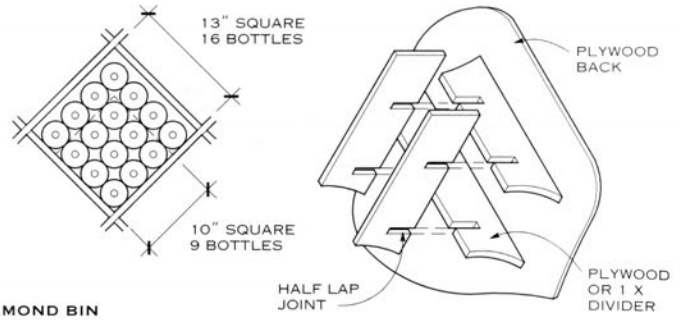
PSYCHROMETRIC CHART

3. Larger cellars should accommodate a range of storage options from individual bottles to full cases.
4. Air conditioning equipment may be single unit or split systems. Use systems designed for wine storage. Standard commercial refrigeration is too cold and lowers humidity. Standard room units are not designed to operate at low enough temperatures and coils tend to ice up.
5. In humid areas, provide a vapor barrier installed on the warm side of walls and ceilings.

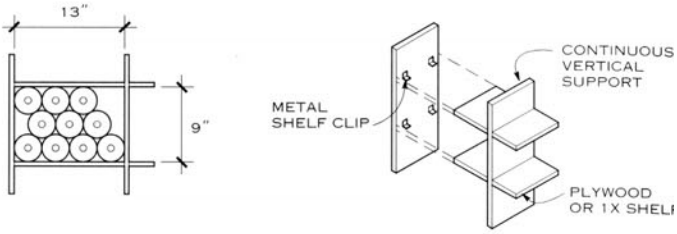
SAMPLE ESTIMATION OF AREA REQUIREMENTS

To find the area required for a cellar to hold 2000 bottles of wine:

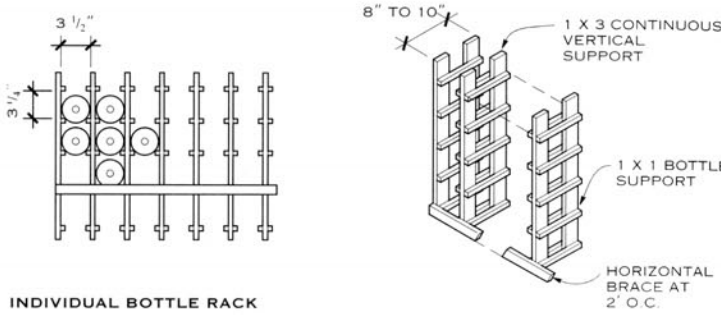
1. 2000 bottles (divided by) 12 = 166.66 cases
   Total weight = 5800 lbs.
2. One case occupies approximately one square foot of wall area.
3. Assume cases are raised off the floor one foot, and bottles are stacked five feet high. Therefore, 33.33 linear feet of wall area is required (166.66 (divided by) 5).
4. Assuming a minimum 3 ft aisle between storage bins along walls yields a cellar 5 ft wide by 16 ft long.



DIAMOND BIN

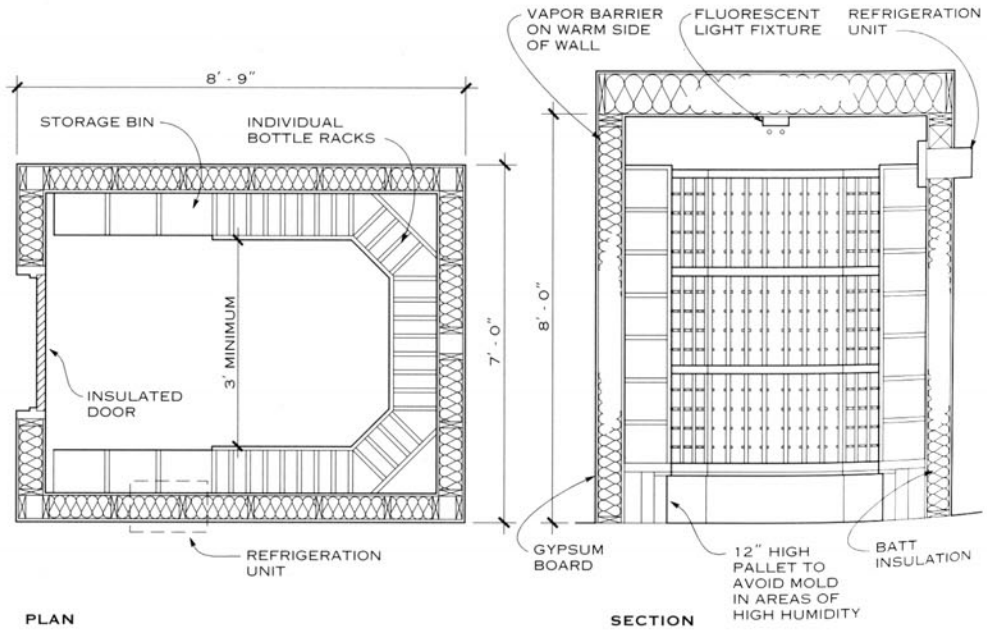


RECTANGULAR BIN



INDIVIDUAL BOTTLE RACK

BOTTLE STORAGE CONFIGURATIONS



WOOD FRAME CELLAR FOR 875 BOTTLES

J.T. Devine, AIA, and Robert E. Anderson, AIA; Robert E. Anderson Architect, AIA; Santa Rosa, California

GENERAL NOTES

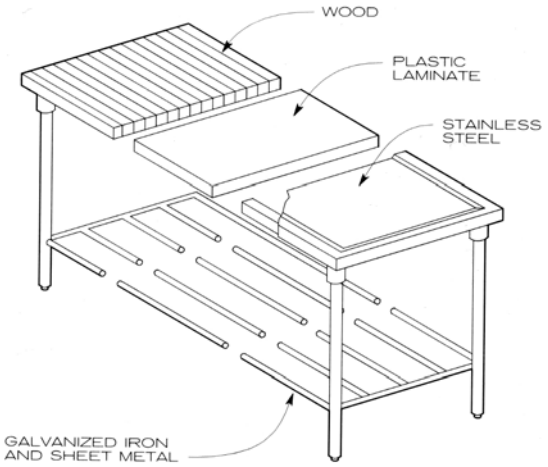
1. Food service equipment must meet the sanitation and safety construction standards of the National Sanitation Foundation, an independent nonprofit organization dealing with public health issues. Other organizations involved in standards for food service equipment are Underwriters Laboratories (UL) and the American Society of Mechanical Engineers.
2. Food service equipment is either fabricated from a custom design or selected from a catalog. There are many variations in equipment specifications for such elements as power supply, door swings, finish, metal type, metal gauge, capacity, and accessories. These food service equipment pages show typical layouts and equipment for a mid-sized hotel kitchen that must produce a la carte meals, room service meals, banquets, etc. Equipment size and type will vary according to variables such as dining room size, menu type, and building type.
3. Prefabricated and custom-built walk-in refrigerators and freezers are specified differently. Consult a food service consultant for sizing, since these units can be specified to an infinite variety of sizes and shapes.
4. Food service equipment is primarily gas-powered, unless fumes are a concern, in which case electricity is used. If possible, steam is the preferred energy source because of its economy and efficiency.
5. Confer with a qualified food service consultant to determine the precise equipment and layout for the space to be served.

GAUGE AND USE OF GALVANIZED STEEL

GAUGE	RECOMMENDED USE
12	Support channels and bracing
14	Undershelves and partitions
16	Undershelves and side panels
18	Utensil drawers, hoods, body panels, interior partitions

GAUGE AND USE OF STAINLESS STEEL

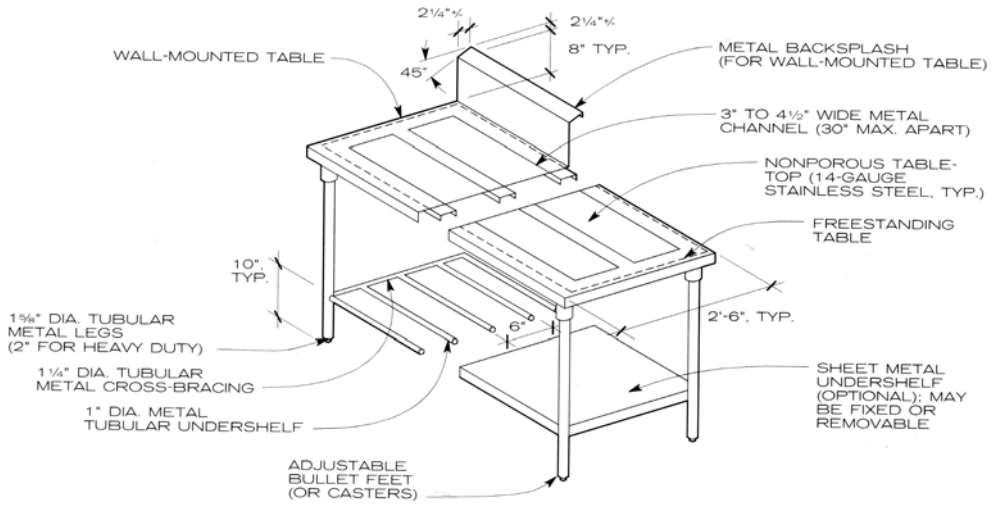
GAUGE	TYPICAL USE
8 and 10	Support elements for heavy equiment or at stress points
12	Heavily used tabletops, pot sinks, or other surfaces that will receive a great amount of wear
14	Tabletops, sinks, shelves, and brackets that will be used frequently or that will hold heavy objects
16	Small equipment tops and sides that will carry light objects; shelves under equipment and heavily used side panels
18	Side panels that are not exposed to much wear, equipment doors, hoods, and partitions
20	Covers for supported or insulated panels, such as refrigerators or insulated doors



NOTES

1. Wood is used only for dining room or bakery production tables. Hard rock maple and pecan cutting tops are usually specified. Not to be used for nonbakery food production; cracks in wood surface can harbor bacteria.
2. Plastic laminate should not be used where cutting, chopping, or carving will occur. It will not warp or crack; it is an inexpensive substitute for stainless steel for nonfood production or decorative countertops, where codes allow.
3. Stainless steel is the most commonly used material for all areas in a commercial kitchen. Although relatively expensive, it is extremely durable. Cold-rolled steel stock is formed under pressure; welded connections are used only within equipment (bolted connections are used to connect pieces of equipment).
4. Galvanized iron and sheet metal are used as underbracing for equipment and as an inexpensive substitute for stainless steel for legs, tables, and interior shelves.
5. Other materials, including glass, ceramic tile, copper, and brass, may be used for food service equipment, but all surfaces that come into contact with food or the food handler should be smooth and nonporous and resist chipping or wear under frequent use. Surfaces must also resist the corrosive effects of salt, food acids, and oils.

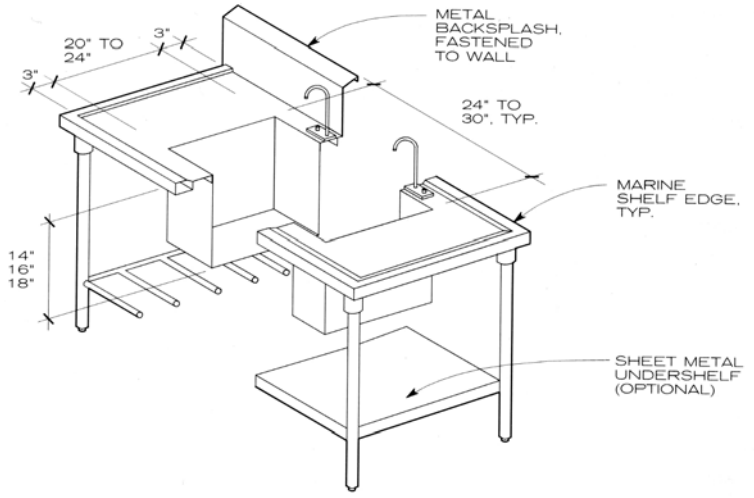
MATERIALS USED IN FOOD SERVICE EQUIPMENT



NOTE

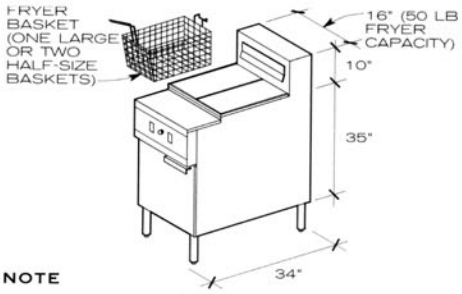
Tubular metal pieces should be welded, coved together, and sanded smooth. A layer of cork-based sound-deadening material may be applied to the underside of tabletops and finished with aluminum lacquer. Consult health codes for types of lacquer permitted.

FABRICATED WORKTABLE



FABRICATED WORKTABLE WITH SINK

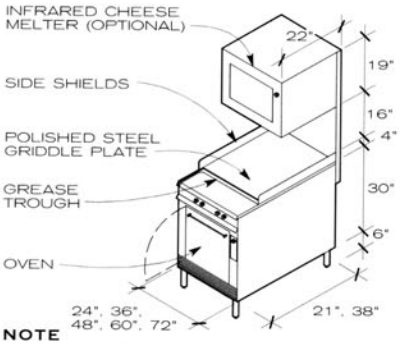
John Birchfield; Birchfield Foodsystems, Inc.; Annapolis, Maryland



NOTE

Fryers cook food by immersing it in hot fat and are powered by either gas or electricity. Fryers can be either freestanding, table mounted, modular (electric only), or drop-in (electric only). Typical capacities range from 15 to 75 lb of shortening or fat. Two modular units with a filter dump station between them is a common fryer configuration.

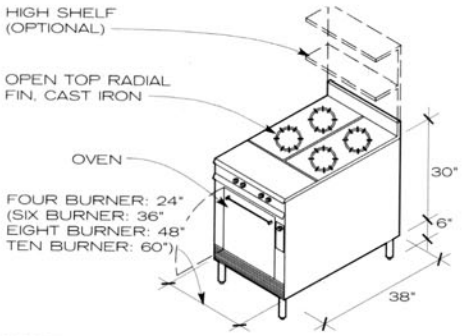
FRYER



NOTE

Griddles, also called grills, have a flat, heated surface that cooks food quickly. They can be freestanding units, part of a range, table models, or part of a modular unit and are either gas- or electric-powered.

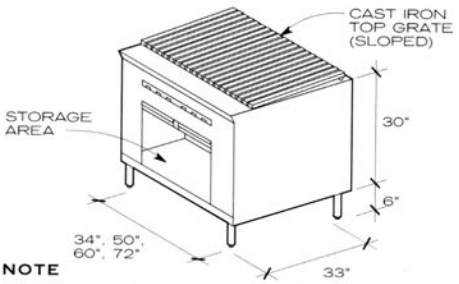
GRIDDLE WITH CHEESE MELTER



NOTE

The range is often the most heavily used piece of equipment in a food service facility. The open-top gas range is preferred by cooks, especially for sauteing, because the flame is visible and easily adjusted. Electric models are available.

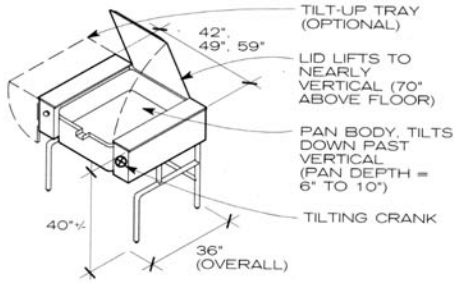
RANGE



NOTE

A charbroiler cooks food rapidly, one side at a time, usually with radiant heat produced by gas or electricity. There are many types: freestanding top burner broilers, charbroilers, salamanders (small above-the-range broilers for last minute browning), conveyor broilers, and rotisseries.

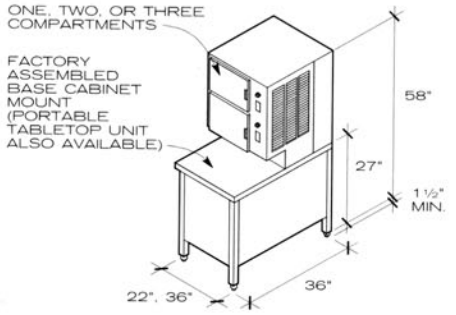
CHARBROILER



NOTE

Also called a tilting skillet or tilting frying pan, this braising pan can be used for grilling, steaming, braising, sauteing, or stewing. It holds a large volume of food, typically 20 to 40 gallons. The pan body tilts down so that liquids can be poured off, and also to aid in cleaning.

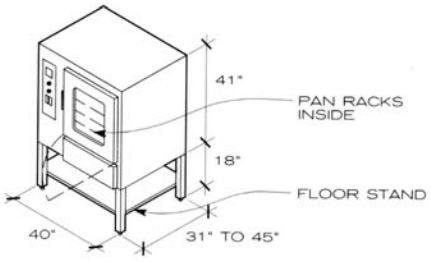
TILTING BRAISING PAN



NOTE

Low- (5 lb per sq in.) and no-pressure steamers are used to prepare vegetables, seafood, eggs, rice, and pasta and work very efficiently. They are powered by gas, electricity, direct steam, or a steam coil.

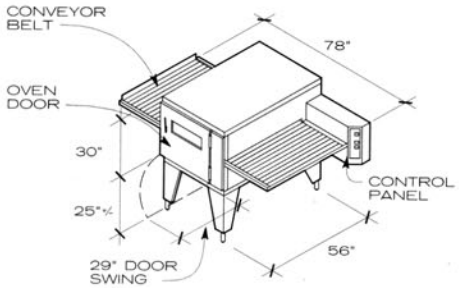
CONVECTION STEAMER



NOTE

Also called a "combi," it combines a convection oven with a steamer in one piece of equipment. It is popular because of its versatility.

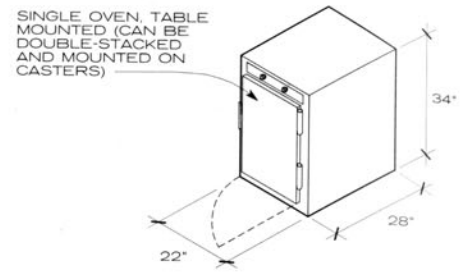
COMBINATION OVEN-STEAMER



NOTE

A conveyor oven moves food through a heated cavity at a predetermined speed, ensuring even cooking time and allowing high-volume production. Heating is by convection or radiant heat, on one or both sides of the belt. Pizzas, cookies, hamburgers, and seafood all travel this route.

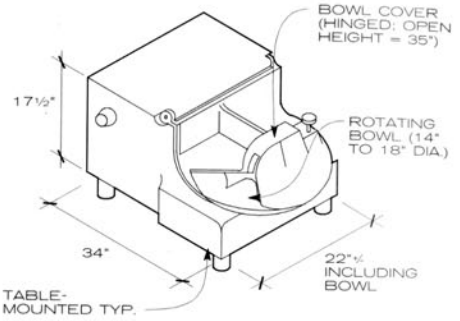
CONVEYOR OVEN



NOTE

Primarily used to roast meats, this oven can also be used to warm hot foods and proof bread or dough. Designed to cook at 200 to 240°F, these ovens reduce shrinkage of roast meats up to 40% and save energy.

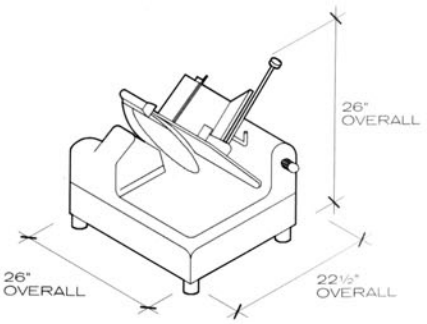
SLOW-COOK OVEN



NOTE

Used for chopping meats and vegetables, this machine is similar in function to a food processor. It is also called a "buffalo chopper." Another larger type is a vertical cutter mixer (VCM), with a capacity of 30 to 45 quarts.

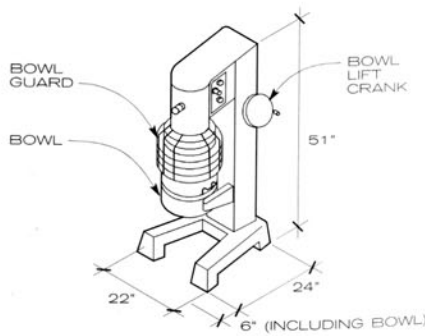
FOOD CUTTER



NOTE

Motor capacity varies from $^1/_5$ to $^1/_2$ HP.

FOOD SLICER

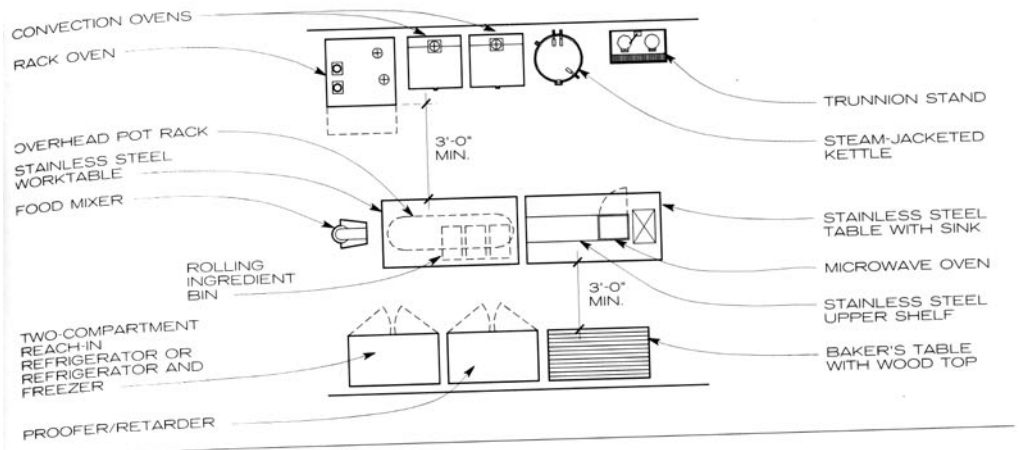


NOTE

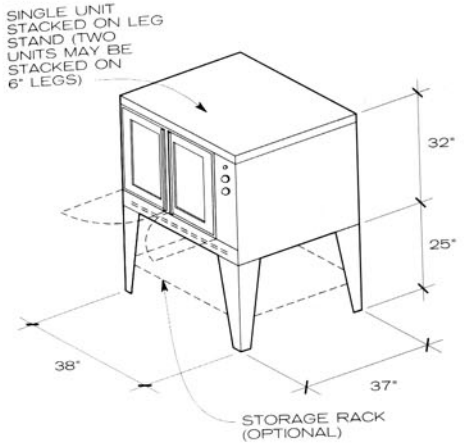
This is used to mix/process large quantities of food, especially if a variety of attachments is required.

FOOD MIXER

John Birchfield; Birchfield Foodsystems Inc.; Annapolis, Maryland



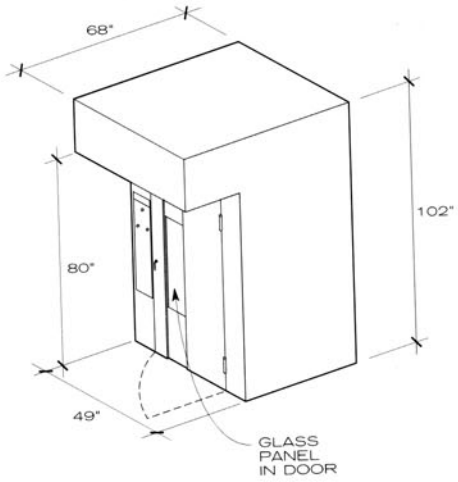
TYPICAL BAKERY AREA PLAN



NOTE

Convection ovens need less energy and less space than other commercial kitchen ovens. A fan circulates heat evenly throughout the oven chamber, and the interior shelves can be stacked very close together.

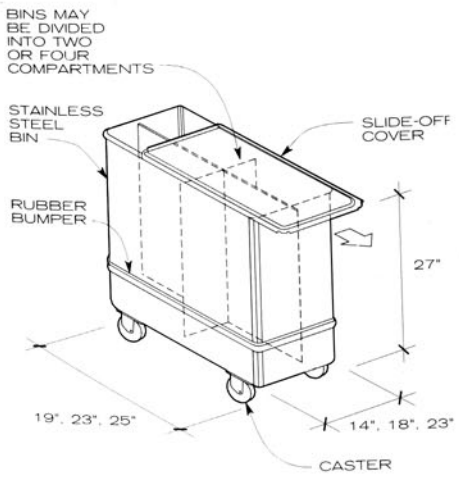
CONVECTION OVEN



NOTE

The rack is loaded, usually with baked goods, and wheeled into the oven. The rack rotates on a carousel or a ceiling hung bracket, baking food with a steady, even heat. Rack ovens are powered by gas, electricity, or oil.

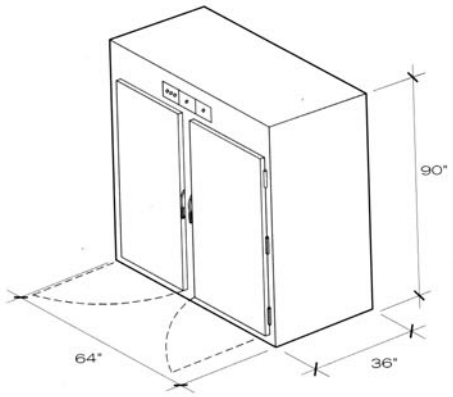
RACK OVEN



NOTE

Used for storage of baked goods and ingredients like flour, sugar, and rice. Bin can be stored under open-based tables.

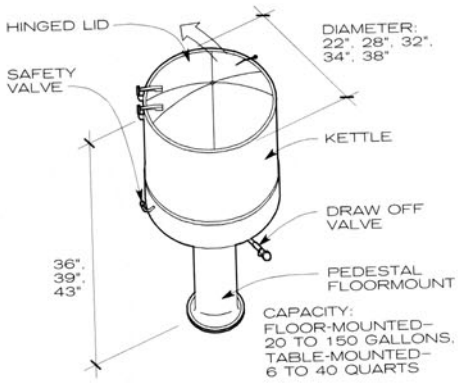
ROLLING INGREDIENT BIN



NOTE

This unit proofs bakery items (emits the moist, low heat that dough needs to rise), then, after a specified amount of time, issues cold air to halt the rising.

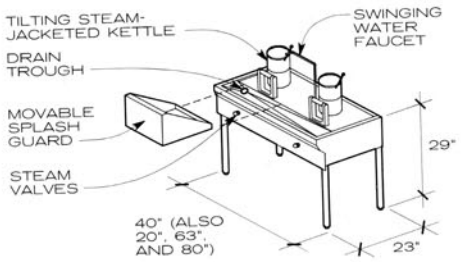
RETARDER/PROOFER



NOTE

A steam-jacketed kettle is used for soups, stews, sauces, boiled meats, etc. The kettle is double-walled; heat comes from an inner jacket that contains the steam. The kettle can be mounted either on a pedestal, on legs, on a yoke (trunnion) for tilting, on the wall, or on a tabletop.

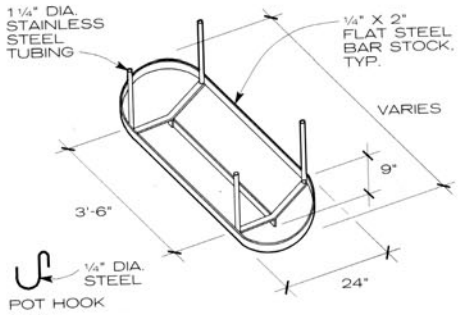
STEAM-JACKETED KETTLE



NOTE

This stand can hold up to four steam-jacketed kettles on pinions, or trunnions, which enable tilting and pouring.

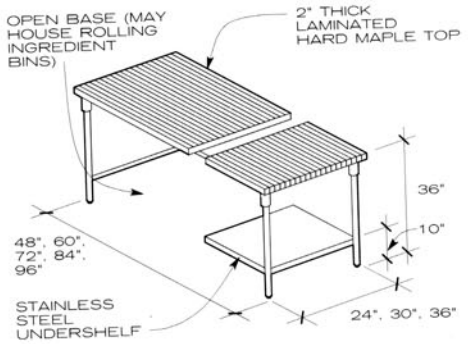
TRUNNION STAND



NOTE

Dimensions shown are for medium-use kitchens; review unusual conditions, such as use of extra large pots or need for wider support spans, with a structural engineer.

OVERHEAD POT RACK

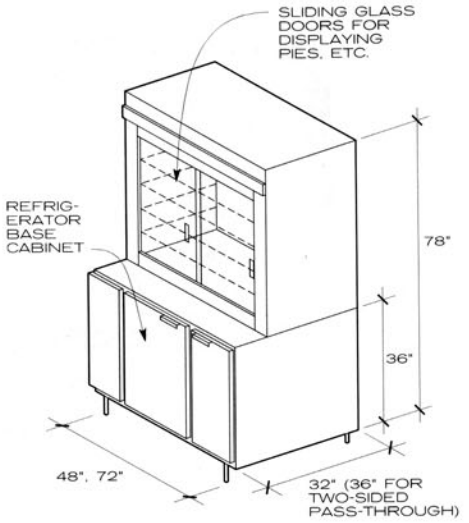


NOTE

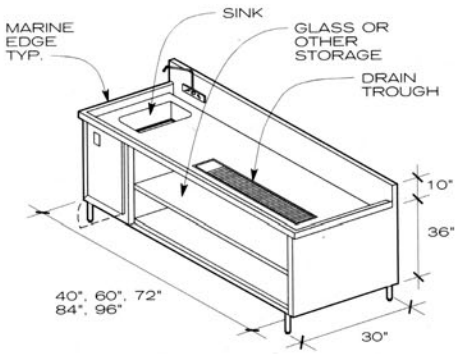
Baker's tables are used exclusively for making baked goods. Any other use that could bring bacteria-laden foods into contact with the wood surface is prohibited.

BAKER'S TABLE

John Birchfield; Birchfield Foodsystems Inc.; Annapolis, Maryland



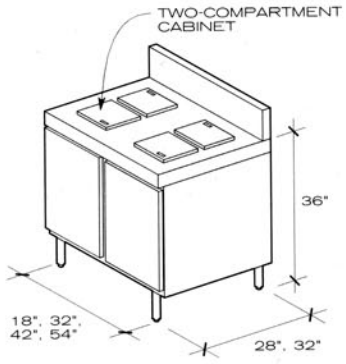
DISPLAY REACH-IN REFRIGERATOR



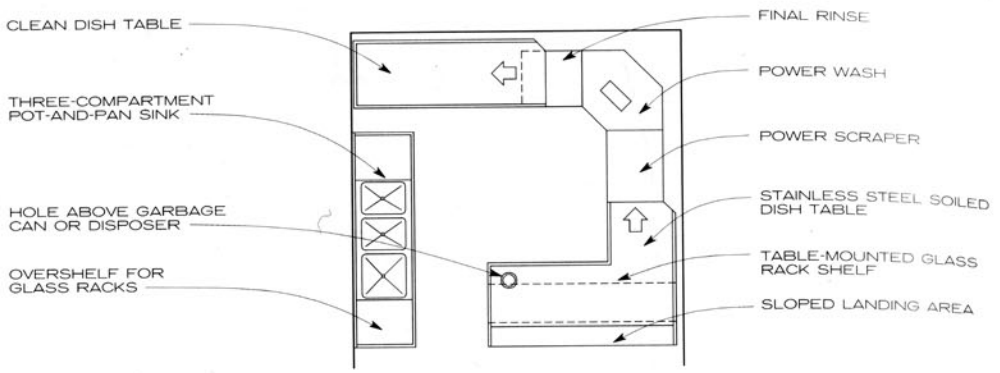
NOTE

Multipurpose table unit used to store cups and glasses and to prepare soft drinks, coffee, tea, and other beverages.

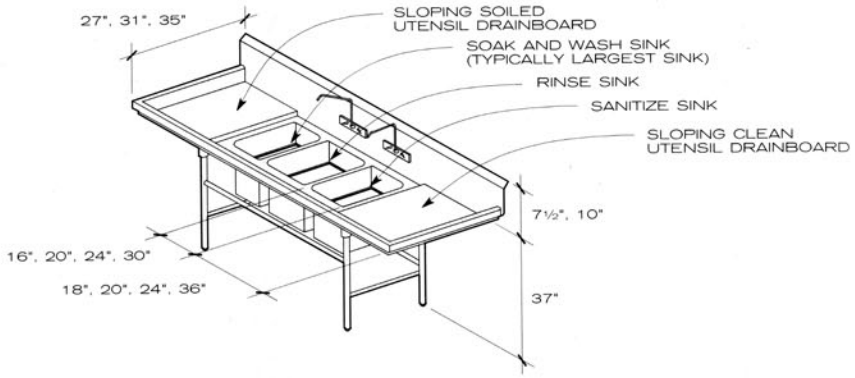
WAITRESS STATION COUNTER



ICE CREAM CABINET



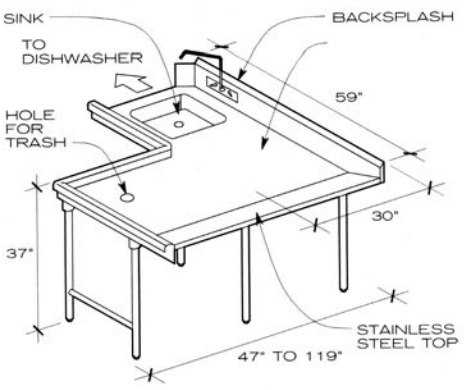
TYPICAL DISHWASHING AREA PLAN



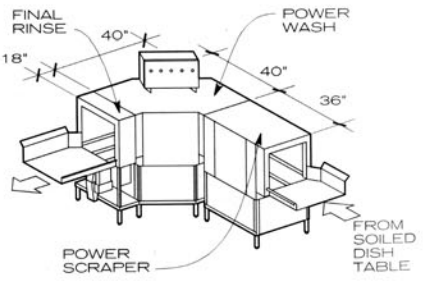
NOTE

The sink illustrated is a fairly common type, but depth of sinks, number of sinks, and size of drainboards can vary.

POT AND PAN SINK



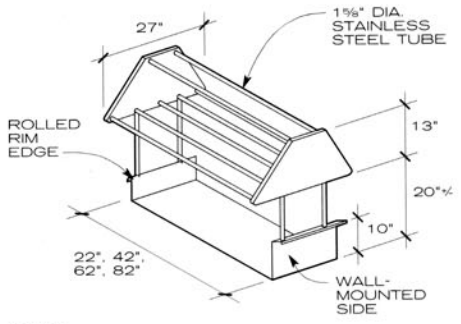
SOILED DISH TABLE



NOTE

A spray of hot water and detergent washes the dishes, followed by a rinse of 180°F water or chemicals to sanitize them. Sometimes an exhaust hood is used; the design of machines varies greatly.

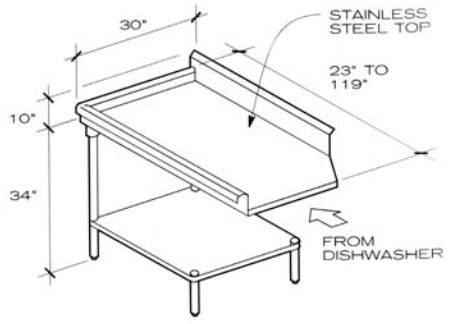
DISHWASHING MACHINE



NOTE

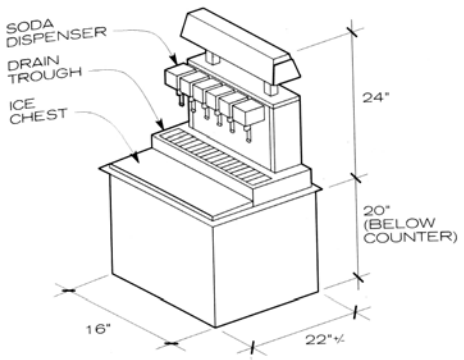
Typically this is mounted on the soiled dish table.

TABLE-MOUNTED GLASS RACK SHELF



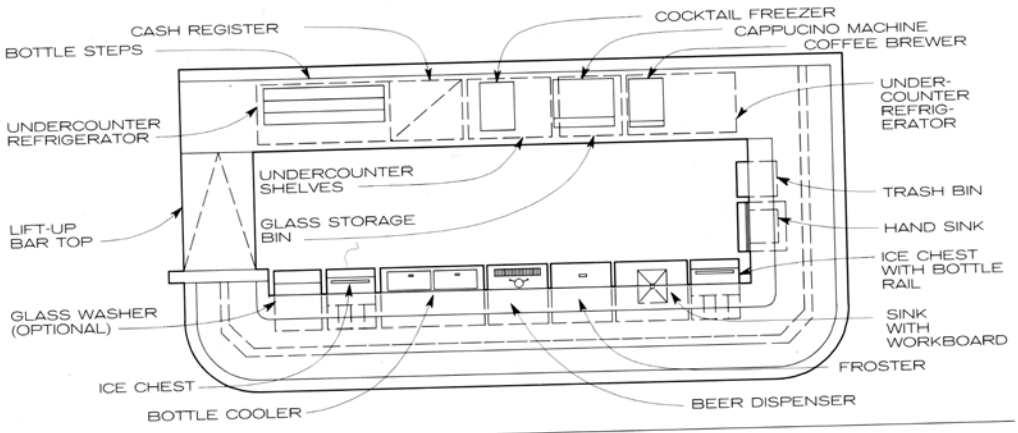
CLEAN DISH TABLE

John Birchfield; Birchfield Foodsystems Inc.; Annapolis, Maryland

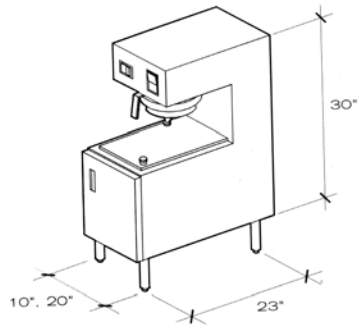


NOTE
This drops into a cutout in the wait staff counter.

DROP-IN SODA DISPENSER

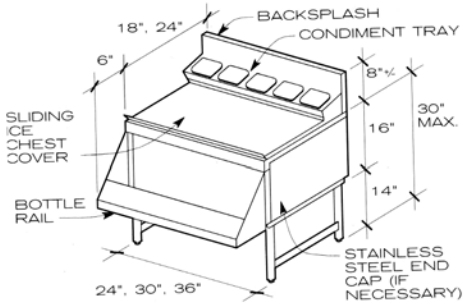


TYPICAL BAR EQUIPMENT LAYOUT



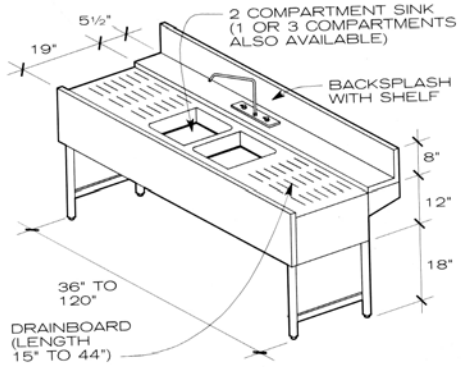
NOTE
Typically tea makers sit on top of the wait staff counter.

TEA MAKER



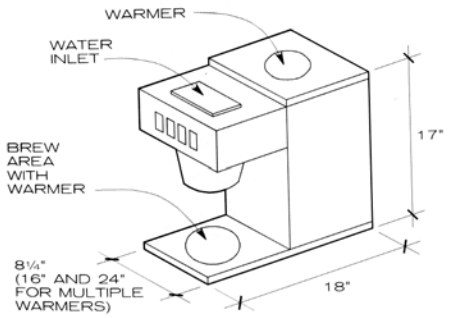
NOTE
These units vary according to use, with different cover opening styles (hinged or sliding), condiment tray configurations, and placement of ice dividers in chest.

ICE CHEST



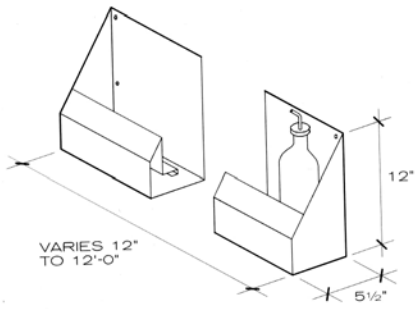
NOTE
A mechanical glass washer may be substituted for this.

SINK WITH WORKBOARD



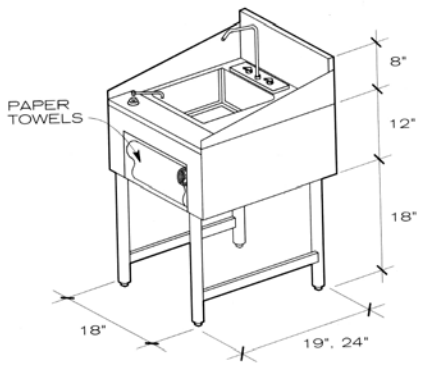
NOTE
Coffee brewers sit on top of the wait staff counter.

COFFEE BREWER

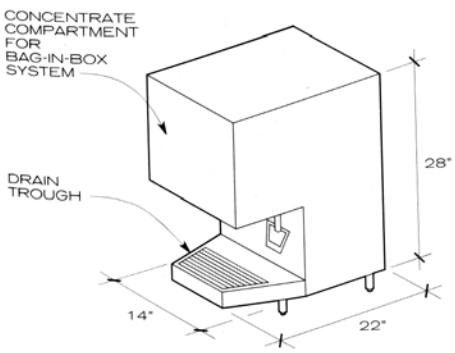


NOTE
Bottle rails are attached to the front of sinks, ice chests, or other bar equipment. Lockable models are available.

BOTTLE RAIL

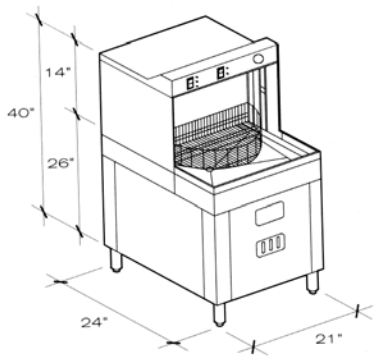


BAR HAND SINK



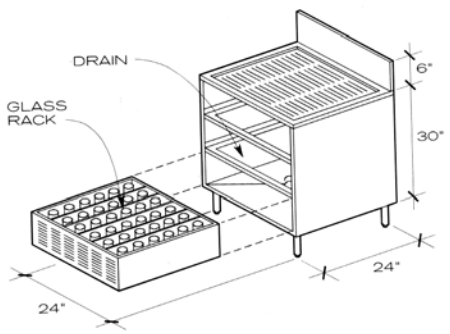
NOTE
Juice dispensers sit on top of the wait staff counter.

JUICE DISPENSER



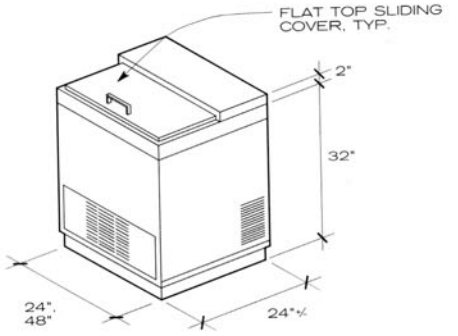
NOTE
A sink with drainboard may be substituted for this.

GLASS WASHER



GLASS STORAGE BIN

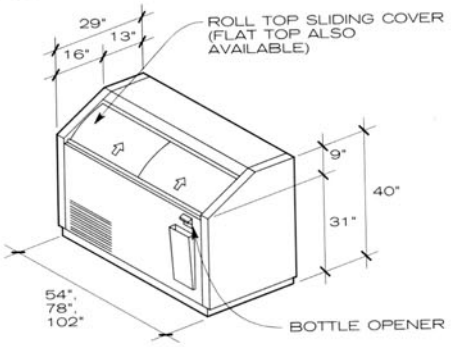
Richard J. Vitullo, AIA; Oak Leaf Studio; Crownsville, Maryland



NOTE

Frosters chill mugs, glasses, and plates to minus 10×°F on interior shelves. Usually they are placed under the front bar.

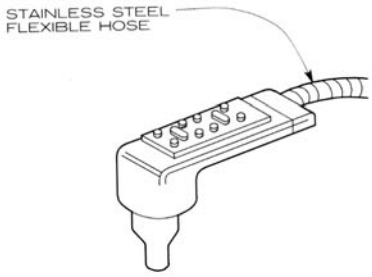
FROSTER



NOTE

These are used to cool beverages to between 34° and 40°F.

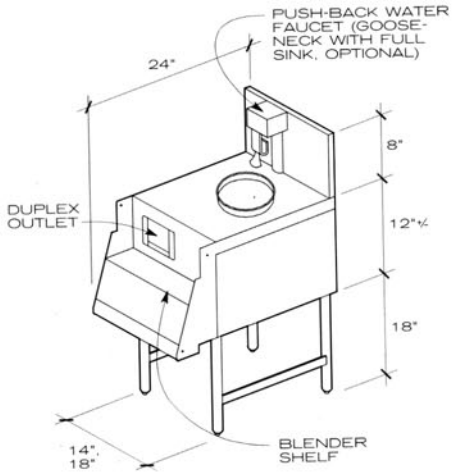
BOTTLE COOLER



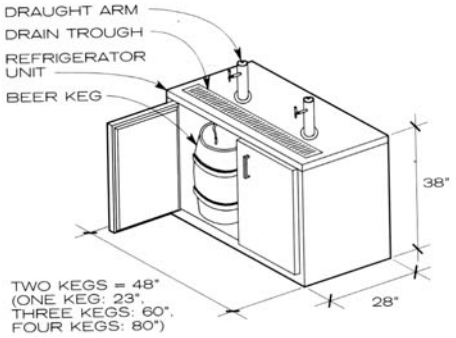
NOTE

This dispenses water, soda, wine, and other drinks.

MECHANICAL POSTMIX BAR DISPENSER



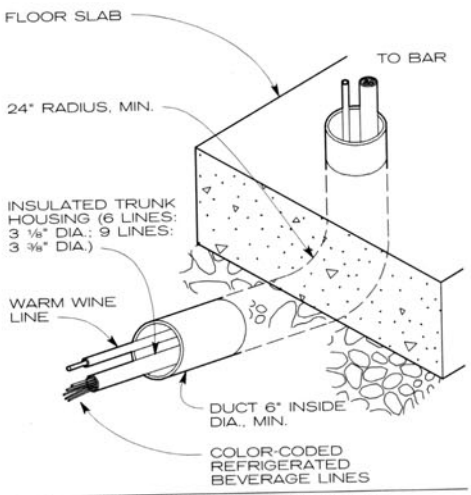
BLENDER STATION



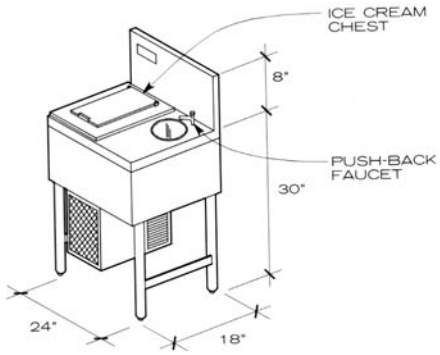
NOTE

The dispenser shown is a direct draw system. Kegs may be up to 300 ft away from the bar (usually in a walk-in cooler).

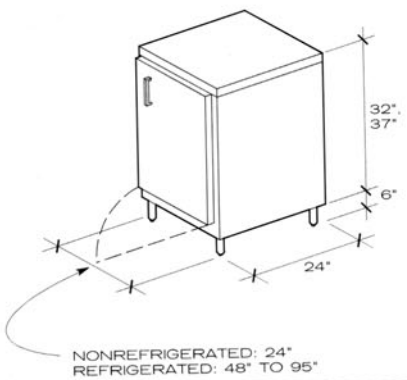
BEER DISPENSER



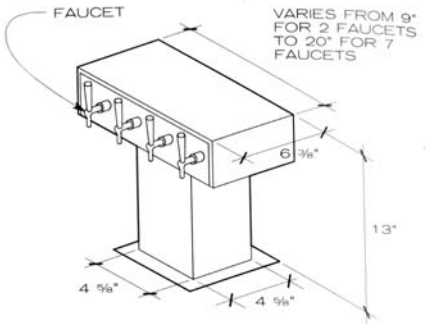
REMOTE BEVERAGE DISPENSER DETAIL



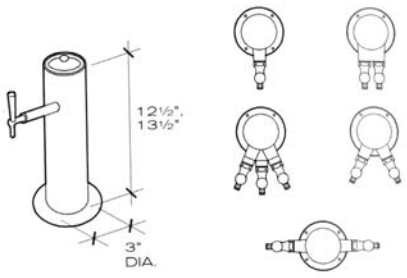
ICE CREAM CABINET



BACK-BAR DRY STORAGE CABINET

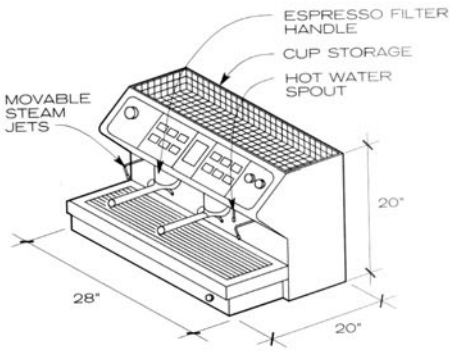


TEE TOWER

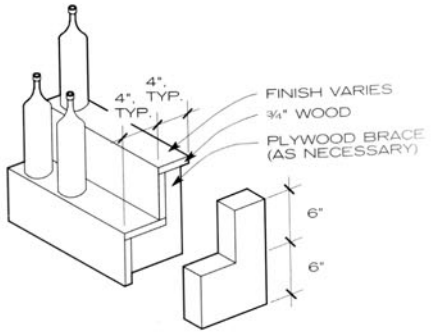


DRAUGHT ARM **DRAUGHT ARM CONFIGURATIONS**

BEER DISPENSING FAUCETS



CAPPUCCINO/ESPRESSO MACHINE



NOTE

These are also called bottle steps.

LIQUOR DISPLAY SHELVES

Richard J. Vitullo, AIA; Oak Leaf Studio; Crownsville, Maryland