

SECTION 22: FOOD SERVICE

22.1 INTRODUCTION. This Section furnishes general direction for development of food service systems in both new and existing health care facilities. Past experience of military department consultants and post occupancy evaluations has been included in this criteria with the goal of minimizing errors on future projects.

22.2 SYSTEM CONCEPT. The Using Service in accordance with specific project requirements will determine the food service system concept. The system concept should be carefully planned with the end user to ensure that the proper system is designed and constructed. Care should be taken to include issues that directly impact on system functionality. These issues include labor, prime vendor, and the FIVE M's of food service: Menu, Market, Money, Management and Method of execution.

22.3 CONSULTING SERVICES. The designer will provide the services of a qualified food service consultant. A qualified food service consultant is a professional whom the North American Association of Food Equipment Manufacturers and/or Food Service Consultants Society International recognizes as a Certified Food Service Professional. The food service consultant will coordinate the functional and equipment design and will obtain guidance from the Using Military Department and their consulting agencies. The food service consultant must follow the basic principals of design which are flexibility, modularity, simplicity, flow of materials and personnel, ease of sanitation, ease of supervision, and space efficiency. The food service consultant must also design for human engineering. Issues include temperature and humidity of the workplace; properly sized work centers; properly designed equipment; material handling equipment; adequate lighting, noise, and the Americans with Disabilities Act. Finally, the end user must emphasize requirements while reducing unreasonable requests that cannot be supported by the project budget or facility strategic plan.

22.4 FOOD SERVICE OBJECTIVES.

22.4.1 Food service design will be based on the following objectives:

22.4.1.1 To provide a functional and aesthetically pleasing nutritional care facility for patients, service members, staff and guests, within budgetary guidelines.

22.4.1.2 To design dietary facilities to maximize performance from personnel, facilities and equipment while producing high quality nutrition care products.

22.4.1.3 To design a food service system with the ability to adapt readily to changing missions, requirements, food preparation processes, labor conditions and equipment technology. This is an objective that requires forethought from the service component, end user and food service consultant. Often the easiest methods of building in flexibility to a design is planning additional electrical capabilities, incorporating dual use equipment, including modular equipment that can be broken down by the facility management branch or end user and reconfigured.

22.4.1.4 Provide high quality food service equipment that is manufactured in the United States, sized to accommodate the maximum capacity of the facility at time of design. Food service equipment must meet National Sanitation Foundation (NSF) standards for acceptance. Equipment should be dual functional if possible. Electric equipment must be Underwriters Laboratory approved. Gas equipment must be American Gas Association (AGA) approved. Foil labels for both of these authorities shall be mounted on the

equipment items for easy identification. Finally, standard, readily available food service equipment should be planned as much as possible. Custom fabricated equipment should be limited to the servery, walk-in refrigeration and space restricted pieces of equipment only. Cost savings are a direct result for including more stock equipment over custom equipment. (See Section 16, Equipment, for additional guidance.)

22.4.2 Four food service systems will constitute the physical planning basis.

- Conventional Food Systems
- Convenience Food Systems
- Cook/Chill Food Systems
- Cook/Chill/Freeze Food Systems (also termed the Cook/Freeze or Ready Food System)

It is also very common to provide a combination of Conventional and Convenience Food Systems within the same facility. Recent history dictates that some consideration must be made to construct facilities that are easily converted from conventional food service production to a mix of conventional and convenience food service systems. Emphasis on walk-in freezers and rethermalization equipment is essential to a smooth conversion. Over time food service systems evolve in size and scope. Care should be taken to build in flexibility and modularity of food service equipment and physical plant design.

22.5 CONVENTIONAL FOOD SYSTEM. With a conventional system, foods are prepared from basic ingredients with full range of processing done on the premises. Foods are prepared and then maintained at appropriate serving temperatures until served; thus foods are prepared as near to meal times as possible (See figure 22.1).

CONVENTIONAL FOOD SERVICE FLOW DIAGRAM

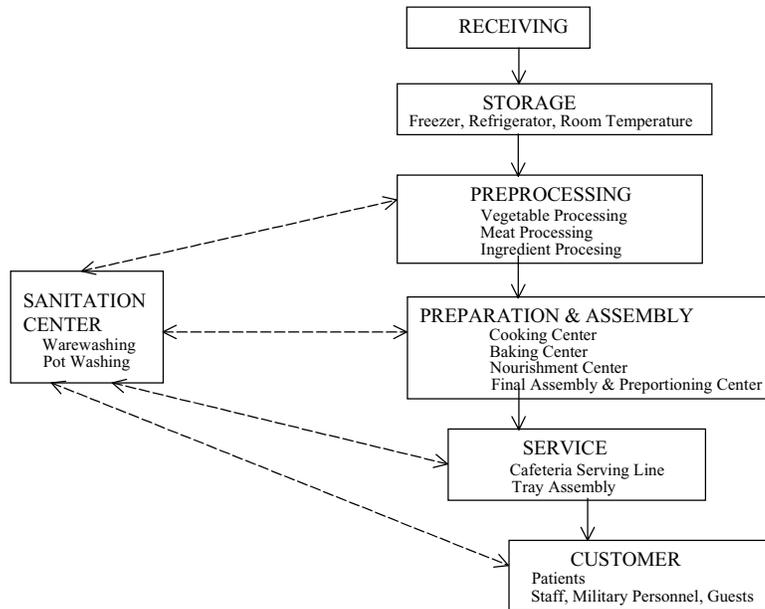


Figure 22-1: Conventional Food Service Flow Diagram

Conventional Food Systems are equipped with full service bakery, salad and sandwich preparation areas. Current studies show that temperature controlled cold rooms (50 F) are ideal for preparing cold salads, sandwiches and breaking down meat into meal quantities. Hazard Analysis and Critical Control Point (HACCP) studies show that food borne illness is decreased due to the increase of food safety created by the refrigerated food preparation environment. Butcher shops complete with meat saw and grinder, are not needed in most facilities. The salad/sandwich preparation area should be designed so that finished food products can be moved easily into a walk-in refrigerator that safely stores the items at or below 40 F. Coordinate table top equipment items with specific facility requirements.

22.6 CONVENIENCE FOOD SYSTEM. With a convenience system almost all foods utilized are fully prepared foods purchased from outside sources and properly stored. Some in-house cooking and/or preparation will supplement purchased prepared foods (salads, vegetables, etc.). The prepared foods are subsequently brought to their appropriate serving temperatures on the premises as near to meal times as possible and maintained at these temperatures until served. Today many food services are using different forms of convenience foods that require extensive rethermalization equipment units that also double as a holding unit, thereby increasing the flexibility of the equipment item. Refrigeration and freezer space is also an important consideration. Space for these units should be calculated at 0.014 cubic meter per meal served per day. This figure also depends on prime vendor delivery and should be significantly increased if deliveries are not scheduled at least three times per week. Material handling equipment and

aisle space is important when designing a convenience food system. Flow of personnel and food product is a strong consideration in designing a convenience food system.

22.7 COOK/CHILL FOOD SYSTEM. With a cook/chill system, foods are prepared from basic ingredients with the full range of processing done on the premises. Foods are prepared, appropriately packaged, then quick chilled and stored under refrigeration. The prepared foods are subsequently brought to their appropriate serving temperatures as near to meal times as possible and maintained at these temperatures until served.

22.8 COOK/CHILL/FREEZE FOOD SYSTEM. In a cook/chill/freeze system (cook/freeze or ready food), foods are prepared from basic ingredients, and all processing is done on the premises. Foods are prepared, appropriately packaged, then quick chilled or quick frozen. Currently, there are two methods of quick chilling: "Blast Chilling" and "Water Bath Chilling". Blast Chilling requires extensive refrigeration infrastructure, which must be considered and carefully planned. The water bath chilling method also demands extensive planning and a chilled water system from the physical plant. If a chilled water system is not available a "ice builder" which supplies ice water for chilling must be integrated into the plan at great expense and space. These methods of food service are complex and require extensive planning from specialized consultants with a proven track record of success. Equipment issues include: mixer kettles, pump and fill stations for Cryovac food processing, cook and chill tanks, tumble chillers for water bath chilling, casing (Cryovac bags) conveyors to move heavy food containers. The prepared foods are brought to their appropriate serving temperatures as near to meal times as possible and maintained at these temperatures until served (See figure 22-2).

READY FOODS SYSTEM FLOW DIAGRAM

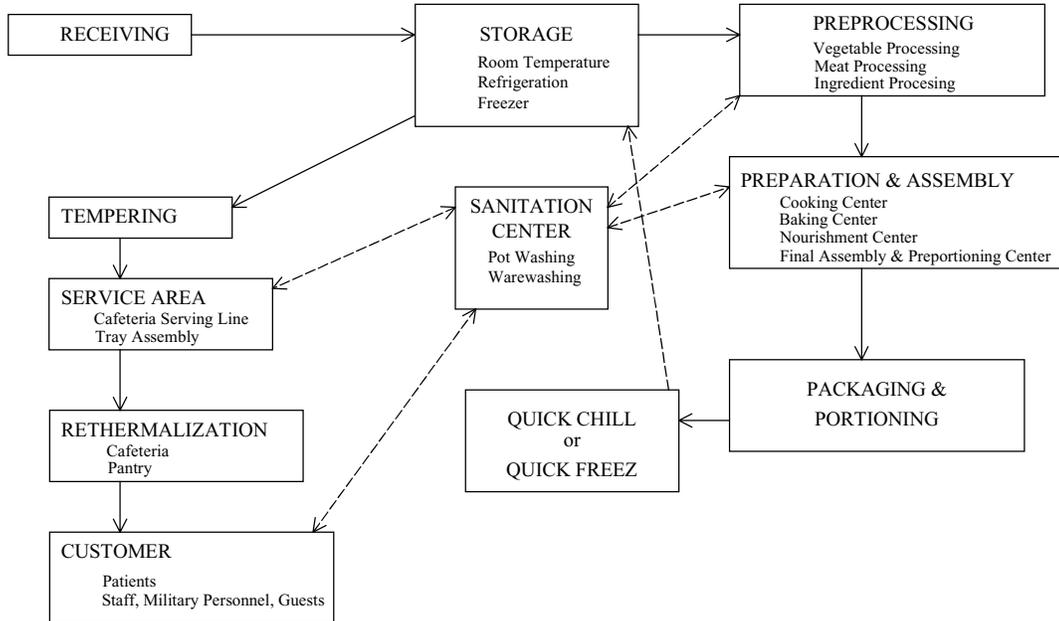


Figure 22-2: Ready Foods System Flow Diagram

Heating equipment should be flexible and perform holding functions in addition to rethermalization duties. Timers that heat food until “just done” and then hold food at a safe temperature should be included into planning of these systems.

22.9 PLANNING CRITERIA.

22.9.1 Food service design will provide for the movement of food products (raw, in process or finished), warewashing, patient tray carts, employees and ambulatory patients in a manner that will minimize cross traffic, backtracking and queuing conditions.

22.9.2 Planning principles that will be considered for food service system design are as follows:

22.9.2.1 All food storage, preparation, servery, assembly and sanitation operations will be located on a single floor. The general configuration of the food service operation will be rectangular.

22.9.2.2 The food service area will be in proximity to an independent covered food delivery entrance. If a loading/receiving dock is required, it shall be equipped with dock levelers to adapt to delivery trucks of varying heights and sizes. A stairway from the dock to the driveways shall be provided. The receiving area will include a platform scale with two digital readouts, one located at the receiving point, with the second located at the

receiving office. The receiving area will not be accessible from outside of the building.

22.9.2.3 The food service operation will be located in vertical and horizontal proximity to the maximum concentration of patients and to the staff cafeteria. All refrigerators and freezers will be connected to a single control panel with temperature readout. All refrigerators will be fitted with a visual and audible alarm that annunciates in the food service department. An alarm annunciator in the facility management control room is also suggested. All refrigerator systems shall be equipped with temperature gauges located at the outside entrance of the walk-in unit. Compressors shall be located in close proximity to the refrigeration's systems, in a ventilated room with a floor drain and hose bib. See Section 8 (HVAC) for ventilation criteria. Compressors shall be labeled as to which refrigeration unit they service. When using chilled water backup, a redundant pump should be included to avoid refrigeration and freezer compressor damage and food product loss. All refrigeration and freezer units shall be placed on the equipment emergency power system to provide department functionality during periods of crisis. See Section 10 (Electrical) and Appendix A for emergency power requirements.

22.9.2.4 Food preparation work centers will be located to minimize traffic from storage areas (ingredient issue room, dry storage and refrigerated storage), servery, cafeteria and tray assembly and sanitation warewash centers.

22.9.2.5 The patient tray assembly area, with appropriate serving equipment, shall be located adjacent to both hot and cold work centers. If hot food is served from the patient tray assembly, equipment will be arranged so hot food is placed onto patient trays last. In some large facilities a griddle with ventilation may be needed. Patient tray cart storage will be located adjacent to the patient tray assembly area. There will be a direct route from tray assembly to service corridors and/or elevators and to patient care areas. Dedicated elevators will be provided to food service in large medical centers. Depending on the cart delivery system, the reconstituting of patient food may be accomplished at the patient care floor nourishment center. Current practice is to serve patient food directly from a cart with a tray of food that has already been assembled and portioned. Patient tray assembly areas should also include some type of energy distribution system that provides flexibility to the end user. The design should also include pass through warmers and refrigeration to ease bulk food movement. Beverage islands should be planned and should include a water source, electricity, and an underfloor installation of a 100mm (minimum size) Polyvinyl Chloride conduit for "piggy-back" soda and juice fountains. The tray line itself should be flexible to decrease or increase trays without extensive infrastructure requirements. Electrical outlet drops should also be planned from the ceiling for versatility of tray line reconfiguration.

22.9.2.6 Dishwashing and warewashing (pot washing) will be designed to prevent crossing workflows between soiled and clean wares, and service and food preparation areas. Mechanical washers will be supplemented with compartment (three compartments minimum) sinks. All dishwashers will be equipped with blow-drying feature. All ware washers and pot and pan washers shall be installed with a condensation hood designed to remove hot moisture laden air. Special care will be taken to provide ware washers that pre-wash at 100 - 120 F, wash at 140 - 160 F, rinse at 160 - 180 F, and final rinse at 180 - 195 F. If low Temperature ware washers are used, they must be designed to dispense a chemical sanitation agent. Problems with environmental issues may outweigh the benefits of this type of ware washer. The design must include floor drains in the ware washer center, located to

directly service the piece of equipment requiring a drain. Minimize runs of piping from equipment to drains. Cart washers and can washers may be included in some large medical centers. If cart/can washers are provided, planners should consider water supply and drainage in these areas.

22.9.2.7 Telephones with speaker/microphone features are required throughout the food service department (offices, tray assembly, serving lines, storage and receiving areas). Coordinate telephone requirements with Section 11 (Communications), table 11-4. Voice and Data outlets are required in all office areas and at each cashier station. Hands-free intercom features are required in all offices, at each cashier station and at patient tray assemble workstations. A class B telephone line (post or base only capability) should be included in the dining facility for medical staff paging responses.

22.9.2.8 A toilet/shower/locker room shall be provided for the dedicated use of the nutrition care staff. Access to these rooms shall be from within the food service department only.

22.9.2.9 Dietary trash and waste handling requirements must be considered in conjunction with the total health facility waste handling requirements to minimize duplication of facilities (see Section 18 Waste Management). Dining, food preparation, servery and processing areas will be designed to avoid transporting trash through food handling and/or preparation areas for disposal. Waste pulping disposing systems will be provided to minimize the volume of solid waste product disposal. Recycling areas shall be provided within the food service department for separating and recycling of cardboard and plastics.

22.9.2.10 All point of sale equipment (cash registers and their interconnected Personal Computer) shall be on emergency power. See Section 10 (Electrical) and Appendix A for emergency power source requirements. Equipment shall be evaluated for inclusion on the emergency power system to assure food service operations are not impacted by loss of power. If gas and steam equipment is provided, verify its electrical needs to assure that adequate emergency power is available to maintain these items in operation. Some cooking equipment must not run if exhaust hoods are not operating, therefore, confirm emergency power to exhaust hoods is also provided, where required. Lighting within the food service areas must be at an acceptable level so continued food service operations can occur under emergency conditions. Provide a dedicated electrical supply for the cash register system. Provide conduit runs from each cashier station to the office which will house the managers' computer workstation. The cash register electrical power system shall be on emergency power.

22.9.2.11 Where gas and direct steam are locally available, a mix of gas, direct steam and electric equipment will be utilized. Care must be taken to minimize the use of electric equipment when gas and/or steam is available. The use of gas and/or steam equipment provides a significant cost savings that should be considered when planning utilities in the food service area.

22.9.2.12 Portable equipment (locking casters, quick disconnects, cords and plugs) will be utilized to the maximum extent possible (production, serving and assembly areas). When portable equipment is not possible, wall mounted equipment (i.e. kettles, trunnions) will be used. Equipment will not be installed on raised bases. When wall mounted or cantilevered equipment is used, adequate wall backing and bracing must be detailed in the contract documents.

22.9.2.13 Where steam operated equipment permits direct contact between food and steam, intermediate steam shall be generated directly or

indirectly, for example, using a plant-steam to clean-steam heat exchanger. Steam must be considered sanitary and/or "clean". The steam must not contain any chemical contaminants associated with descaling agents, which extend boiler life but pose significant health problems.

22.9.2.14 All storage areas (dry, refrigerated, and frozen) will be equipped with shelving systems appropriate to the application and to maximize space utilization. The use of high density or track shelving shall be considered to expand storage space and maximize the storage area. Shelving shall be finished with galvanized steel, zinc coated carbon steel, and chrome plated carbon steel or extruded aluminum. The style of shelving largely depends on the application of the shelving. Louvered and open wire shelving are most commonly used in walk-in refrigeration to encourage air movement. Dry storage areas often feature solid or embossed shelving for their strength and ease of cleaning.

22.9.2.15 All handwashing sinks shall have "hands free" operation (wrist, elbow, knee, or sensor operated). Sensor operated is preferred, however, material cost and maintenance costs must be evaluated before this type of fixture is used. If sensor operated is determined appropriate, the fixture must include a manual override. Wall mounted towel dispensers and waste receptacles will be provided in immediate proximity to each sink unit. Coordinate requirements for liquid soap dispensers with the facility user as these may be provided under a vendor contract.

22.9.2.16 Food Services will be designed to comply with Joint Commission Standards for Care of Patients, the National Sanitation Foundation Standards, and TB MED 530.

22.9.2.17 Cafeteria serving areas will be designed to accommodate a la carte pay pricing policies. Plan servery to serve large volumes of customers at one time. A scatter, hollow square or scrambled servery design should be included in all ala cart facilities. Cashier and serving stations and salad bars will be designed with tray glides for customer ease of movement. The design must allow for generous queuing room at the cash register stations. Beverage stands should be supplied with the following: water source, piggyback soda fountain conduit, steam (if available), ample electricity for expansion, and adequate drainage. Serving stations for breads, desserts, and short order cooking require extensive planning with the end user.

22.9.2.18 All kitchen exhaust hoods must be factory fabricated. Field fabricated hoods must not be used, as quality standards are inconsistent. All kitchen exhaust hoods will be designed to be self-cleaning. Kitchen ventilation shall be designed to provide the end user with adequate hoods to accomplish exhausting requirements. Care must be taken to increase ventilation capability when deep fat fryers and charbroilers are planned. Refrigeration equipment must not be planned under kitchen ventilation systems unless it is incorporated into a piece of cooking equipment.

22.9.2.19 Finishes throughout Food Service shall comply with Appendix A. Corner guards, wall guards and steel kick plates for doors should be planned liberally throughout the kitchen. Cart wash areas and dish machine areas should be finished for wet environments. Floors shall be finished with quarry tile for durability and resistance to moisture. Most quarry tiles do not require sealing. Care must be taken when preparing the contract specifications to not require sealing of quarry tile, which could produce a slipping hazard to staff. Quarry tile grout may be integrally colored to present a uniform color of the floor plane. Corridor floors should be finished in vinyl tile, with a polished finish. Dining areas and offices should be finished in carpet. The carpet shall be a commercial

grade, with stain and fade resistant properties, and include an anti-microbial feature.

22.9.2.20 Space shall be provided for automatic data processing operations and equipment that are components of the food service department. Space for a floor safe shall also be included within the food service department.

22.9.2.21 If the medical facility utilizes an information system or other interdepartmental system (i.e. automatic writing transfer equipment), food service shall be linked to this system. Any and all Nutrition Management Information Systems will be connected to the hospital information management computer room.

22.9.2.22 Equipment in nourishment pantries shall be included on emergency power. See Section 10 (Electrical) and Appendix A for emergency power requirements. Include the following equipment on the equipment emergency power system: ice machine, microwave oven, and refrigerator/freezer. The service pantries will be designed to provide 24-hour access to the ice machine and refrigerator/freezer. Food cart storage will be adjacent to 24-hour access areas, but shall be designed so that they can be secured. Coordinate requirements for full service pantries with the facility user. Provide a small area to rethermalize foods and maintain refrigerated food items. A sink, drinking water and ice source should also be planned in these areas.

22.9.2.23 A lockable refrigerator will be provided in a controlled, secure area within the Department of Nursing for storage of emergency late meals (patient and/or staff night suppers).

22.9.2.24 Grease traps, when utilized, will be located outside the buildings. Grease trap access should be planned so that cleaning is easy to accomplish. Coordination with local environmental regulations is required.

22.9.2.25 All openings or penetrations of any horizontal or vertical finish surface must be thoroughly sealed so as not to provide hiding places for vermin or encourage the growth of bacteria. Sealant must be water and detergent resistant silicone.

22.10 FACILITY DATA REQUIREMENTS FOR FOOD SERVICE. To assure an accurate design is prepared, facility and patient data will be provided by the using service to the designer and the food service consultant as follows:

- The number of hospital beds.
- Pantry requirements.
- The required number of dining rooms meals.
- Vending requirements.
- The number of male and female dietary employees.
- Staffing projections per shift in critical areas
(warewashing, tray assembly, cafeteria service)
- Peak Meal
- Service Style
- Meal hours and peak hour
- Percent of take-out meals

22.11 SEISMIC CRITERIA. The planning, selection and installation of food service equipment will be carefully considered with regard to potential damage by earthquakes. Special attention will be given to the mounting of fixed equipment, to utility connections and to the design features of selected equipment. The required seismic protection will depend on the seismic design level prescribed for individual projects. All bracing

details for food service equipment shall be indicated on the contract documents. See the Seismic Section for additional requirements.

22.12 FOOD SERVICE EQUIPMENT SPECIFICATIONS. All contractor provided food service equipment items identified on the contract drawings shall be specified in detail. The latest technology shall be specified. All equipment shall meet Environmental Protection Agency standards where required. All equipment shall be specified to meet NSF, UL and AGA standards. As a minimum, each equipment item shall be specified to include the following:

- 22.12.1 Applicable codes, standards and references
- 22.12.2 Joint Schedule Number (JSN) identifier
- 22.12.3 A requirement to provide Operation and Maintenance Manuals
- 22.12.4 Materials, components, colors and finishes
- 22.12.5 Any optional features or devices selected by the using military department
- 22.12.6 Full and complete description of the item, including all salient features
- 22.12.7 Structural and seismic requirements, including backing, kits, etc
- 22.12.8 Complete utility requirements (steam, water, electric, gas)
- 22.12.9 Complete installation instructions
- 22.12.10 Testing and inspection requirements
- 22.12.11 Training requirements
- 22.12.12 Submittal requirements, including layout and installation plans; components, materials, colors and finishes; and full description of any optional features or devices

22.13 FOOD SERVICE DRAWINGS. Contract drawings shall indicate a mounting height for all wall hung equipment items. Provide complete mounting details, including type and location of backing or blocking, for all wall mounted equipment. Details shall be provided for equipment that is contractor furnished-contractor installed, government furnished-contractor installed, and government furnished-government installed.