

UNIFIED FACILITIES CRITERIA (UFC)

DESIGN: DINING FACILITIES



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U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND

AIR FORCE CIVIL ENGINEER CENTER (Preparing Activity)

Record of Changes (changes are indicated by \1\ ... /1/)

Change No.	Date	Location

This UFC supersedes FC 4-722-01F, *Air Force Dining Facilities*, 2 July 2007; FC 4-722-01N, *Navy and Marine Corps Dining Facilities*, 1 December 2013; and *Army Standard for Permanent Party Enlisted Personnel Dining Facilities*, 15 February 2012.

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FOREWORD

The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with [USD \(AT&L\) Memorandum](#) dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate. All construction outside of the United States, its territories, and possessions is also governed by Status of Forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA). Therefore, the acquisition team must ensure compliance with the most stringent of the UFC, the SOFA, the HNFA, and the BIA, as applicable.

UFC are living documents and will be periodically reviewed, updated, and made available to users as part of the Military Department's responsibility for providing technical criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Systems Command (NAVFAC), and Air Force Civil Engineer Center (AFCEC) are responsible for administration of the UFC system. Technical content of UFC is the responsibility of the cognizant DoD working group. Defense Agencies should contact the respective DoD Working Group for document interpretation and improvements. Recommended changes with supporting rationale may be sent to the respective DoD working group by submitting a Criteria Change Request (CCR) via the Internet site listed below.

UFC are effective upon issuance and are distributed only in electronic media from the following source:

- Whole Building Design Guide website <https://www.wbdg.org/ffc/dod>.

Refer to UFC 1-200-01, *DoD Building Code*, for implementation of new issuances on projects.

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CHAPTER 1 INTRODUCTION

1-1 BACKGROUND.

In July 2007, the most recent version of UFC 4-722-01 was published. Later, each Service developed its own Facilities Criteria (FC) or standards. The following list summarizes the various Services' responses:

- Air Force: FC 4-722-01F, *Air Force Dining Facilities*
- Army: *Army Standard for Permanent Party Enlisted Personnel Dining Facilities*
- Navy/Marine Corps: FC 4-722-01N, *Navy and Marine Corps Dining Facilities*
- Space Force: The Space Force has not developed any criteria or standards related to dining facilities. The Space Force follows Air Force criteria.

1-2 INCORPORATES AND CANCELS.

This UFC incorporates and cancels FC 4-722-01F, *Air Force Dining Facilities*, FC 4-722-01N, *Navy and Marine Corps Dining Facilities*, and *Army Standard for Permanent Party Enlisted Personnel Dining Facilities*.

1-3 PURPOSE AND SCOPE.

This UFC presents the design and construction criteria for all DoD enlisted dining facilities both outside and inside the continental United States. Its purpose is to provide general and specific design guidance. Special attention is focused on planning and budgeting, energy conservation, state-of-the-art food service equipment, and design for durability. Emphasis is placed on the design of functional and pleasant food service facilities that attract and retain Service personnel.

1-4 APPLICABILITY.

This UFC applies to all military Service elements and contractors involved in the planning, design, and construction of DoD dining facilities. Programmatic differences for a specific Service are indicated throughout this UFC. They may be optional or not required by other Services. Comply with the agency requirements that apply to the project.

1-5 GENERAL BUILDING REQUIREMENTS.

Comply with UFC 1-200-01, *DoD Building Code*. UFC 1-200-01 provides applicability of model building codes and unique government criteria for typical design disciplines and building systems, as well as for accessibility, antiterrorism, security, high performance and sustainability requirements, and safety. Use this UFC in addition to UFC 1-200-01 and the UFCs and government criteria referenced therein.

1-6 AUSTERE DINING FACILITIES.

Chapter 4 contains requirements for dining facilities designated as “austere.” Austere construction is intended for facilities in locations determined by Commander, Navy Installations Command (CNIC) and approved by the Office of the Chief of Naval Operations (OPNAV) to be eligible for austere construction. The austere standards are intended to be flexibly applied and in varying degrees to all facilities at locations designated as austere. Flexibility is allowed to ensure the criteria are appropriate for individual austere locations. The Air Force and Space Force reserve the right to apply requirements under Chapter 4 as applicable and approved by the Air Force/Space Force Services Center (AFSVC).

1-7 SERVICE RESPONSIBILITIES.

1-7.1 Air Force/Space Force.

There are three participants in the development of Air Force/Space Force facility design. First, the local installation civil engineer identifies the need for a new, modernized, or enlarged dining facility and initiates the project development process. Second, an Air Force/Space Force project manager is designated to manage design and construction. Third, the AFSVC sets the standards for all Air Force food service operations and determines the facilities and equipment required to perform the operations.

Direct questions regarding Air Force projects to AFCEC/CFTP and AFSVC/SVXF.

1-7.2 Army.

Army activities and designers using this UFC are advised that there are three participants in the development of facility design. First, there is the local command that identifies the need for a new, modernized, or enlarged dining facility and initiates the project development process. Second, there is the Army Corps of Engineers, Center of Standardization for Army dining facilities, which is responsible for standards and reviewing all Army facility designs. Third, the Army Center of Excellence, Subsistence sets the standard for all Army food service operations and determines the facilities and equipment required to perform the operations. The Army Center of Excellence, Subsistence is the agent of the Army Chief of Staff for Installation Management (ACSIM) Installation Management Agency (IMA).

Direct questions regarding Army projects to CEW-EV, HQ USACE.

1-7.3 Navy.

There are four participants in the development of Navy facility design. First, the local installation and facility manager identifies the need for a new, modernized, or enlarged dining facility and initiates the project development process. Second, the Naval Facilities Engineering Systems Command sets the standards for developing the criteria and establishing the facility space requirements. Third, the Naval Supply Systems Command sets the standard food service operations, in conjunction with the TYCOM, (i.e., CNIC). Fourth, the management of the design and construction of Navy facilities is

a joint effort of the Naval Facilities Engineering Systems Command and the cognizant Navy Region.

Direct design questions regarding Navy projects to the following contacts:

- Office of the Chief Engineer, Naval Facilities Engineering Systems Command, or to the Commander, Naval Facilities Engineering Systems Command Atlantic, or visit the NAVFAC website at <https://www.navfac.navy.mil>
- Commander, Navy Installations Command, Fleet and Family Readiness (N92), Galley Program Manager

1-7.4 Marine Corps.

Headquarters Marine Corps, Logistics Food Service (Code LFS-4) manages policies, sets standards, and directs all food service operations within the Marine Corps. The design project manager is responsible for approving design and construction. Each new dining facility will have a technical representative assigned by the activity Food Service Office to coordinate needs and requirements between Code LFS-4, the cognizant Naval Facilities Engineering Systems Command component, and other activities as needed.

Direct questions regarding Marine Corps projects to the Criteria Specialist for Dining Facilities, Naval Facilities Engineering Systems Command, Facilities Criteria Office. Marine Corps requests will be forwarded by NAVFAC to Headquarters, U.S. Marine Corps, Facilities and Services Division (Code LF).

1-8 COORDINATION.

Prior to project development, coordinate the design team composition and facility requirements with the Service contacts provided in paragraph 1-7.

1-8.1 Design Professionals.

Include a food service consultant in the design team of record. The food service consultant is qualified as a member of Foodservice Consultants Society International (FCSI) or equivalent. The consultant's involvement will include, but not be limited to, developing specifications and schedules for all kitchen equipment, including utility connection sizes and capacities for all applicable items, location of floor sinks and floor drains, and kitchen hoods. Coordinate with the Installation Food Service Team.

1-9 SCOPE OF FACILITY.

Dining facility functional design is driven by the number of personnel to be served, meal schedule and duration, payment style, food delivery and eating methodologies, and any additional functions accommodated in the specific facility. These functions and how they drive the design of the facility are described in paragraph 2-2.

1-10 CYBERSECURITY.

All facility-related control systems (including systems separate from a utility monitoring and control system) must be planned, designed, acquired, executed, and maintained in accordance with UFC 4-010-06, *Cybersecurity of Facility-Related Control Systems*, and as required by individual Service implementation policies.

1-11 GLOSSARY.

Appendix B contains acronyms, abbreviations, and definitions.

1-12 REFERENCES.

Appendix C contains a list of references used in this document. The publication date of the code or standard is not included in this document. Unless otherwise specified, the most recent edition of the referenced publication applies.

CHAPTER 2 PLANNING AND LAYOUT

2-1 GENERAL.

Involve the installation's food service manager and food service officer (FSO) in the planning process to ensure new and renovated facilities meet the needs of the installation functional operators. This document includes space calculation tabulations for dining facilities serving up to 2,200 personnel. If facilities are required to feed more than 2,200 personnel, it is recommended to consider extending feeding hours or adding serving lines to accommodate additional personnel in lieu of constructing a substantially larger building.

2-2 FOOD SERVICE PLANNING DETERMINATIONS.

Planning the size and layout of dining facilities depends upon the following determinations.

2-2.1 Number of Personnel to be Served.

The number of personnel to be served drives the overall size of the facility. Refer to paragraph 2-3 for functional spaces, paragraph 2-4 for size of facilities, and paragraph 2-5 for space programs.

2-2.2 Meal Schedule and Duration.

The meal schedule and duration affect both the size and layout of the facility. The meal schedule may vary by Service, region, and installation. Determine meal schedule and duration as part of the planning process.

2-2.3 Payment.

The payment style affects the layout of the facility.

2-2.3.1 Cafeteria Style.

Patrons pay a set meal price upfront at a check-in station and choose from predetermined options.

2-2.3.2 À La Carte.

Patrons pick up individual menu items and pay only for the items selected at a check-out station at the serving area exit. Additionally, new innovations have established on-line ordering, "ghost kitchen," and meal pickup stations/areas within cafeteria-style operations. The Air Force/Space Force use food lockers for advance orders, as well as flight and ground meal pickup.

2-2.4 Food Delivery and Eating Methodologies.

Food delivery and eating methodologies affect the size and layout of the facility. Dining facilities may accommodate more than one of the following methodologies:

2-2.4.1 Serving Line or Station.

Patrons choose from predetermined options from serving lines or stations, such as hot bar line, salad bar, deli bar, pizza bar, taco bar. Food may be packaged for consumption in the facility or for takeout. Payment can be either cafeteria style or à la carte.

2-2.4.2 Short Order.

Patrons order items for custom preparation. Food may be packaged for consumption in the facility or for takeout. Payment can be either cafeteria style or à la carte.

2-2.4.3 Takeout/Meal Replacement.

Patrons choose from assorted prewrapped and prepackaged items that may range from hamburgers and pizza to full meals. Payment is typically à la carte.

2-2.5 Menu.

Determine menu options, nutritional guidelines, and the required variety prior to design and coordinate with the food delivery and eating methodologies. These will be used to determine the needed preparation, serving and storage area sizes, and equipment.

Menus, consumer information, menu boards containing prices and specials, and greeter boards are used within the serving line and dining area space to connect customers to what is offered on the menu. These information systems interact with back office and web-based platforms, typically automatically updated via operational day parts. As a general rule, the larger the space, the larger the menu display systems and independent menus at each station or serving area.

2-2.6 Staffing.

Determine staffing requirements prior to design and use to size the administrative areas, staff lockers, and toilets.

2-2.7 Bussing.

Patron self-bussing is required. Design the facilities to accommodate this mode of bussing, which affects the facility layout. Ideally, automating the patron side of a dining area allows for seamless dishware removal from the dining area into the dish room through automated belts, carousels, or similar systems. Patrons break down their dishware and recyclable items and then place them into automated systems to move dishware into the remote dish room. If used, bussing carts in dining areas should be appropriately sized and screened from the view of the dining area.

2-2.8 Other Facility Functions.

The dining facility may accommodate one or more of the following additional functions.

2-2.8.1 Field Feeding/Vat Chow.

The dining facility prepares group meals for field consumption. This function includes storing field preparation and serving equipment.

2-2.8.2 Flight Kitchens and Box/Bag Meals.

The dining facility prepares individual meals for field consumption. This function requires either storing individual meal packaging or storing commercially prepared individually packaged meals.

2-2.8.3 Satellite Kiosk Locations.

The Air Force/Space Force utilize a series of retail kiosks located adjacent to mission areas, allowing customers to briefly step away from the mission area. These kiosks rarely produce food items onsite, but finish, reheat, and utilize final-finish-in-front-of-the-customer technology. The bulk of all food and beverage items are produced in the primary business and industry cafeteria and then transferred in bulk to the remote kiosk locations. There is limited storage and access in these satellite operations due to their proximity to controlled mission areas.

2-2.8.4 Recreation Chow.

The dining facility prepares special event group meals for consumption outside the facility.

2-2.9 Mass Care Feeding Facility.

Dining facilities may be designated as mass care feeding facilities if mission, region, and installation requirements dictate. A mass care feeding facility is designed to remain operational after an emergency incident when other dining opportunities will not be available. This will significantly affect the project budget and requires classifying the building to meet a higher occupancy category per UFC 3-301-01, *Structural Engineering*. See paragraph 3-4 for more information. Also see paragraph 3-6.4 for emergency back-up power requirements. Coordinate with the installation antiterrorism (AT) plan or emergency management plan.

2-3 FUNCTIONAL SPACES.

The food service planning determinations along with site conditions and other basic building design, operation, and installation determinations establish the size, layout, and design of the facility functional spaces.

2-3.1 Entrance Lobby.

The entrance lobby is the main entrance to the facility and the size is determined by the number of personnel to be served. Provide a canopy or enclosure for patrons who arrive in advance of the opening of the facility or where the line of patrons is anticipated to extend outside the facility. In extreme-weather locations, this function can be accomplished in the form of a vestibule. Provide a bracket to accommodate hand sanitizer placement. Provide a shoe and boot brush cleaner outside the facility entrance.

2-3.2 Queue.

The queue is the space between the entrance lobby and serving area and is determined by the serving capacity, serving methodology, and payment style. Provide storage cubicles and/or coat/hat racks in this area to allow patrons to properly store personal gear. Provide hand sanitation areas/stations for patron use. For Air Force/Space Force, provide greeter information and digital menu display system informing patrons on what is available for à la carte service.

2-3.3 Serving Area.

The serving area accommodates ordering and delivery of food to patrons and is determined by the food delivery methodology and payment style. The design of the serving area impacts the serving capacity. Coordinate serving area design with the queue and dining area. For Air Force/Space Force, add within the dining area designated retail grab & go kiosk areas, ideally incorporated adjacent to dedicated point-of sale (POS) systems and may include retail self-checkout.

2-3.4 Cashier Station.

The cashier station accommodates patron payment. The configuration, location, and number of stations are determined by the number of personnel served, food delivery methodology, and payment style. Accommodate a variety of payment options such as cash, credit, debit cards, and Essential Station Messing (ESM) meal card customers. Provide electrical and data drops to allow for network connectivity, electronic menu board capabilities, and other POS accountability requirements.

Provide CAT6 cable runs between the main comms closet and back-office administrative area. This is required for POS, digital menu boards, and back-office computer systems interfacing with POS and credit card charge-processing systems. Include all in overall comms and data plan requirements.

See Figure A-9 for a schematic plan of the cashier station.

2-3.5 Dining Area.

The dining area accommodates patron eating and relaxation. It is determined by the number of personnel to be served and meal schedule and duration as expressed by

turnover/serving capacity and seating capacity. Coordinate the design with the food delivery methodology and bussing approach.

Air Force/Space Force dining areas contain Wi-Fi access. This is combined into the overall base communication plan for consumer education programs such as Go For Green (G4G), Healthy Food Initiatives, My Fitness Pal, and patron access to hosted online menus and online ordering.

2-3.5.1 Turnover/Serving Capacity.

Turnover is the number of times a dining area seat is occupied during a given period. Turnover drives the serving capacity, which is the number of patrons served within the set meal duration. The serving capacity is used to size the functional elements of the dining facility to ensure the required number of patrons can be served in the meal duration. Determine the serving capacity prior to design.

2-3.5.2 Seating Capacity.

Seating capacity is determined by considering the required serving capacity and the serving methodology. The seating capacity is used to size the dining area of the facility.

2-3.6 Public Toilets.

The public toilets are determined by the number of personnel to be served.

2-3.7 Dish/Pot Washing.

The dish- and pot-washing areas are determined by the number of personnel to be served, bussing considerations, food delivery methodology, and menu. Refer to Figures A-10 through A-13 for schematic dishwashing plans.

2-3.8 Kitchen and Preparation Areas.

The kitchen and all food preparation areas are determined by the number of personnel to be served, food delivery methodology, menu, bussing style, and storage capacity.

2-3.9 Storage.

Storage areas accommodate stocks of subsistence (consumables) and non-subsistence (e.g., tableware, cleaning supplies). The areas are determined by menu analysis, number of personnel to be served, and defined delivery cycles. Separate general storage from food storage areas.

2-3.10 Loading Dock.

The loading dock accommodates material transfer in and out of the facility. Coordinate loading docks with storage requirements. Separate pathways to/from the loading dock for food delivery and trash removal. For Navy and Marine Corps facilities, provide a fall protection system in accordance with OPNAV M-5100.23, *Navy Safety and*

Occupational Health Manual, where the elevation between the floor edge of the dock and adjacent surface is 4 ft (1.2 m) or greater.

2-3.11 Support Areas.

Support areas accommodate staff needs such as offices, training, cashier's office, other administrative tasks, toilets, lockers, and janitor closets. The areas are determined by the mission and staffing requirements. The cashier's office is used for counting money, contains the cashier's safe, and includes a lock on the exterior door.

2-3.12 Other Functions.

These spaces will be determined by the required specific facility functions as described in paragraph 2-2.

2-3.13 Building Services Areas.

These spaces accommodate building services such as mechanical, electrical, and communications.

2-3.14 Garbage Removal.

Determine garbage removal and recycling systems prior to design. Visually shield garbage removal/recycling systems from patron entrances and parking areas.

2-4 SIZE OF FACILITIES.

2-4.1 Air Force/Space Force.

The gross allowable area is defined by DAFMAN 32-1084, *Standard Facility Requirements*. Additionally, AFSVC/SVXF assists in determining requirements for unique Air Force/Space Force mission sets and standard à la carte designs.

2-4.2 Army.

See Table 2-1 for gross area of facilities.

Table 2-1 Permanent Party Enlisted Personnel Dining Facilities Army Standard

ITEM	MANDATORY CRITERIA	
Gross Area of Facilities	GSF (Gross Square Feet) Deviation: Facility constructed gross area shall not exceed 105% of space allocation set forth in this document to accommodate site, construction, or environmental factors.	
	Dining Facility: Includes dining, kitchen, storage, attached canopies and loading dock in GSF limits listed below.	
	Small (400–660 PN)	17,500 GSF
	With Field Feeding	17,750 GSF
	With Carry-Out	18,640 GSF
	With Field Feeding & Carry Out	18,890 GSF
	Medium (661–1056 PN)	18,900 GSF
	With Field Feeding	19,150 GSF
	With Carry-Out	20,040 GSF
	With Field Feeding & Carry Out	20,290 GSF
	Large (1057–1716 PN)	26,600 GSF
	With Field Feeding	26,970 GSF
	With Carry-Out	27,740 GSF
	With Field Feeding & Carry Out	28,100 GSF

2-4.3 Navy and Marine Corps.

Determine the number of personnel to be served by multiplying the projected maximum unaccompanied housing occupancy by the utilization factors in Table 2-2. Include the average on-board count of ships entitled to subsistence-in-kind while shipboard facilities are out of service in the projected occupancy. Do not include personnel on separate rations in the projected occupancy.

Table 2-2 Personnel to be Served by Mission

Mission	Utilization Factor
Training	
Basic and/or recruit training	95%
Service schools	85%
Permanent Party	
Remote locations*	90%
Naval stations	70%
Construction battalions	70%
Shipyards	70%
Weapon stations	70%
Personnel transfer and overseas processing centers	50%
Brig	100%

* Defined as a location with minimal available other feeding sources, on or off installation.

Note: Only include officers and civilians in the projected occupancy in overseas or remote locations where support is authorized.

The projected occupancy multiplied by the utilization factor equals the personnel served. The number of personnel served is used to establish the eight facility size classifications for dining facilities. See paragraph 2-2 for facility areas by size classification. Additional space planning criteria can be found in FC 2-000-05N, *Facility Planning Criteria for Navy and Marine Corps Shore Installations*, category code 722.

2-5 SPACE PROGRAMS.

2-5.1 Air Force/Space Force.

The Air Force provides design guidelines for its facilities. Refer to paragraph 2-4.1.

2-5.2 Army.

The Army provides design guidelines for its facilities. Refer to paragraph 2-4.2 and the *Army Standard for Permanent Party Enlisted Personnel Dining Facilities*.

2-5.3 Navy and Marine Corps.

Tables 2-4 and 2-5 identify functional areas in Navy and Marine Corps dining facilities and provide a target space allotment for each functional area. The space requirements are minimums to be provided for the range of personnel to be served. These targets have been provided to serve as a guide to the planner and designer considering the noted assumptions and are not restrictive. Actual gross allowable area for each project will be defined in DD Form 1391, *FY__ Military Construction Project Data*.

2-5.3.1 Space Program Assumptions.

The functional areas and associated space allotments identified in Tables 2-4 and 2-5 reflect the assumptions below. Adjust project areas and space allotments to align with the project-specific parameters.

- Preparation method is conventional cook-serve.
- Mission is basic or recruit training.
- Seating is based on 15 ft² (1.4 m²) per seat.
- Lobby queuing and circulation space is minimized.
- One serving line is needed for every 200 seats, with a minimum of two lines.
- Multiple station/serving areas versus cafeteria lines are recommended for dining facilities serving more than 100 personnel.
- Serving stations will include ventless grills, turbo ovens, and other quick-cook ventless equipment for made-to-order items.
- Baking operations reflect primarily scratch baking methods with capability to bake-off pre-prepared dough or other items.
- Three meals per day are served seven days per week.
- Warm/chill storage stations will be provided for pre-order customer pick-up.
- Dishwashing space reflects a rack dish machine.
- Bussing method is self-bus to remote dish room.
- No provisions for catering are allocated other than field feeding/vat chow.
- Beverages are available at a free-standing self-serve counter.
- Staff toilets do not include showers.
- Staff changing rooms will have personal storage lockers for 100 percent of staff.

2-5.3.2 Storage.

2-5.3.2.1 Storage area requirements typically range from 10 to 25 percent of the facility net area (public, preparation, serving, and support areas) and include dry foods, refrigerated and frozen foods, consumables, and non-food goods. Factors that influence the storage requirements are the method of preparation and the inventory period.

- Scratch preparation has different fresh, dry, and refrigerated storage requirements from frozen convenience and pre-prepared preparation. Determine the mix of preparation methods to correctly size and design the storage areas.
- Inventory period is the time between deliveries. It will be influenced by the facility location (CONUS vs. OCONUS and rural/remote vs. urban areas), facility mission, and the vendor location and delivery contract terms. The longer the inventory period, the larger the storage requirements. On CONUS projects, provide storage space based on an inventory period of 7 to 10 days.
- Under normal CONUS conditions, the distribution of storage space type is 50 percent dry, 30 percent frozen, and 20 percent chill.

2-5.3.2.2 See Table 2-3 for a breakdown of these factors and how they impact the storage requirements.

Table 2-3 Estimated Storage Requirements

Inventory Period Factors	Food Preparation Factors	
	Frozen/Chill	Scratch
Often (urban)	10–15% of net area	15–20% of net area
Infrequent (rural/remote)	15–20% of net area	20–25% of net area

2-5.3.3 Net-to-Gross Multiplier.

The net-to-gross multiplier accounts for mechanical and other utility space, wall thicknesses, and other construction requirements. It typically ranges from 15 to 25 percent of all net areas for dining facilities and is influenced by the mechanical system, the number of floors, and the overall layout and design of the building. Carefully consider the net-to-gross multiplier in the planning and design process as extreme anomalies can occur. Some OCONUS projects have resulted in net-to-gross multipliers as high as 50 percent.

Table 2-4 Navy and Marine Corps Space Program (1–400 Personnel)

Functional Components		Facility Size Classifications							
		1-80		81-150		151-250		251-400	
		Personnel Served		Personnel Served		Personnel Served		Personnel Served	
		62 Min. Seats		108 Min. Seats		116 Min. Seats		172 Min. Seats	
		1.3 Min. Turnover		1.4 Min. Turnover		2.2 Min. Turnover		2.3 Min. Turnover	
		ft ²	m ²						
Public Areas	Dining Area and Circulation	935	86.9	1630	151.4	1875	174.2	3000	278.7
	Public Toilets	180	16.7	200	18.6	220	20.4	250	23.2
	Queue	130	12.1	250	23.2	325	30.2	500	46.5
	Sign-in Station	40	3.7	40	3.7	40	3.7	60	5.6
	Subtotal	1285	119.4	2120	196.9	2460	228.5	3810	354.0
Serving Areas	Regular Food Line	250	23.2	320	29.7	0.0	0.0	0.0	0.0
	Fast Food Line	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Combination Food Line	0.0	0.0	0.0	0.0	420	39.0	620	57.6
	Beverage Line/Salad Bar	200	18.6	250	23.2	350	32.5	500	46.5
	Cashier Station	30	2.8	30	2.8	50	4.6	50	4.6
	Dish Washing	180	16.7	250	23.2	320	29.7	380	35.3
	Subtotal	660	61.3	850	78.9	1140	105.8	1550	144.0
Preparation Areas	Kitchen	650	60.4	800	74.3	600	55.7	845	78.5
	Vegetable Preparation	0.0	0.0	0.0	0.0	220	20.4	255	23.7
	Meat Preparation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Bakery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Utensil Wash	0.0	0.0	0.0	0.0	175	16.3	220	20.4
	Subtotal	650	60.4	800	74.3	995	92.4	1320	122.6
Support Areas	Offices	230	21.4	310	28.8	400	37.2	580	53.9
	Staff Toilets	260	24.2	260	24.2	260	24.2	260	24.2
	Staff Lockers	0.0	0.0	0.0	0.0	120	11.1	160	14.9
	Janitor's Closet	25	2.3	25	2.3	25	2.3	50	4.6
	Can Wash	40	3.7	40	3.7	40	3.7	40	3.7
	Loading Dock	200	18.6	200	18.6	200	18.6	230	21.4
	Subtotal	755	70.2	835	77.6	1045	97.1	1320	122.7
FACILITY SUBTOTAL		3,350	311.3	4,605	427.7	5,640	523.8	8,000	743.3
Storage ranges from 10 to 25% of Facility Subtotal									
Net-to-Gross ranges from 15 to 25% of Facility Subtotal									
Flight Kitchen*		100	9.3	100	9.3	100	9.3	100	9.3
FACILITY TOTAL		To be determined based on storage and net-to-gross		To be determined based on storage and net-to-gross		To be determined based on storage and net-to-gross		To be determined based on storage and net-to-gross	

* Not all locations will require a flight kitchen. A flight kitchen is a staging area where food products are assembled and packaged for delivery to aircraft. This applies to all stations that require pick-up/delivery options, not just air stations.

Table 2-5 Navy and Marine Corps Space Program (401–2200 Personnel)

Functional Components		Facility Size Classifications							
		401-650		651-1000		1001-1500		1501-2200**	
		Personnel Served		Personnel Served		Personnel Served		Personnel Served	
		288 Min. Seats		345 Min. Seats		460 Min. Seats		575 Min. Seats	
		2.3 Min. Turnover		2.9 Min. Turnover		3.3 Min. Turnover		3.8 Min. Turnover	
		ft ²	m ²						
Public Areas	Dining Area and Circulation	4700	436.6	6320	587.1	7565	702.8	11000	1021.9
	Public Toilets	300	27.9	320	29.7	340	31.6	370	34.4
	Queue	750	69.7	1000	92.9	1100	102.2	1650	153.3
	Sign-in Station	80	7.4	100	9.3	120	11.1	120	11.1
	Subtotal	5830	541.6	7740	719.0	9125	847.7	13140	1220.7
Serving Areas	Regular Food Line	600	55.7	650	60.4	1050	97.5	1300	120.8
	Fast Food Line	600	55.7	650	60.4	650	60.4	650	60.4
	Combination Food Line	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Beverage Line/Salad Bar	650	60.4	700	65.0	810	75.2	1056	98.1
	Cashier Station	100	9.3	150	13.9	200	18.6	250	23.2
	Dish Washing	450	41.8	600	55.7	730	67.8	1032	95.9
	Subtotal	2400	222.9	2750	255.4	3440	319.5	4288	398.4
Preparation Areas	Kitchen	1000	92.9	1100	102.2	1285	119.4	1600	148.6
	Vegetable Preparation	300	27.9	350	32.5	360	33.4	600	55.7
	Meat Preparation	0.0	0.0	240	22.3	300	27.9	500	46.5
	Bakery	0.0	0.0	690	64.1	825	76.6	1035	96.2
	Utensil Wash	330	30.7	400	37.2	500	46.5	600	55.7
	Subtotal	1630	151.5	2780	258.3	3270	303.8	4335	402.7
Support Areas	Offices	700	65.0	700	65.0	700	65.0	900	83.6
	Staff Toilets	360	33.4	430	39.9	450	41.8	500	46.5
	Staff Lockers	260	24.2	380	35.3	380	35.3	480	44.6
	Janitor's Closet	50	4.6	75	7.0	75	7.0	100	9.3
	Can Wash	40	3.7	60	5.6	60	5.6	60	5.6
	Loading Dock	300	27.9	300	27.9	400	37.2	400	37.2
	Subtotal	1710	158.8	1945	180.7	2065	191.9	2440	226.8
FACILITY SUBTOTAL		11,570	1,074.8	15,215	1,413.4	17,900	1,662.9	24,203	2,248.6
Storage ranges from 10 to 25% of Facility Subtotal									
Net-to-Gross ranges from 15 to 25% of Facility Subtotal									
Flight Kitchen*		125	11.6	125	11.6	150	13.9	150	13.9
FACILITY TOTAL		To be determined based on storage and net-to-gross		To be determined based on storage and net-to-gross		To be determined based on storage and net-to-gross		To be determined based on storage and net-to-gross	

* Not all locations will require a flight kitchen. A flight kitchen is a staging area where food products are assembled and packaged for delivery to aircraft. This applies to all stations that require pick-up/delivery options, not just air stations.

** If facility is serving more than 2,200 personnel, consider extended feeding hours or adding serving lines to accommodate additional personnel in lieu of constructing a substantially larger building.

2-6 BUILDING SITE.

This facility will be a focal point of the local community. It should be an open and inviting gathering place for Service personnel. Address the following factors in the site selection and design.

2-6.1 Location.

Locate the facility along the pedestrian paths to existing unaccompanied housing and centralized support services. Accommodate patron access through the relationships to existing vehicular and pedestrian circulation patterns, bike trails, and bus stops. If served by shuttle buses, provide a porte cochere. Provide adequate parking as close to the facility as possible within AT requirements.

2-6.2 Natural Light.

Select a site to maximize the admission of natural light while minimizing heat gain through the glazing.

2-6.3 Separate Service Functions.

Separate service functions such as loading docks, maintenance yards, trash containers, on-grade mechanical equipment, and staff parking from the rest of the site by architectural screening, landscaping, or grading. Illuminate parking areas, pathways, and service areas. Do not impede visual access of pathways with landscaping shrubbery.

2-6.4 Patron Circulation.

Patrons arrive from many directions. Identify the various access points, both pedestrian and vehicular, and channel circulation to the entrance of the building. Encourage smooth circulation by landscaping and paving complementary to the building. Entry circulation begins as the patron enters the site and continues through the interior of the facility.

2-6.5 Outdoor Dining Area.

If climate and site permit, consider providing an outdoor area.

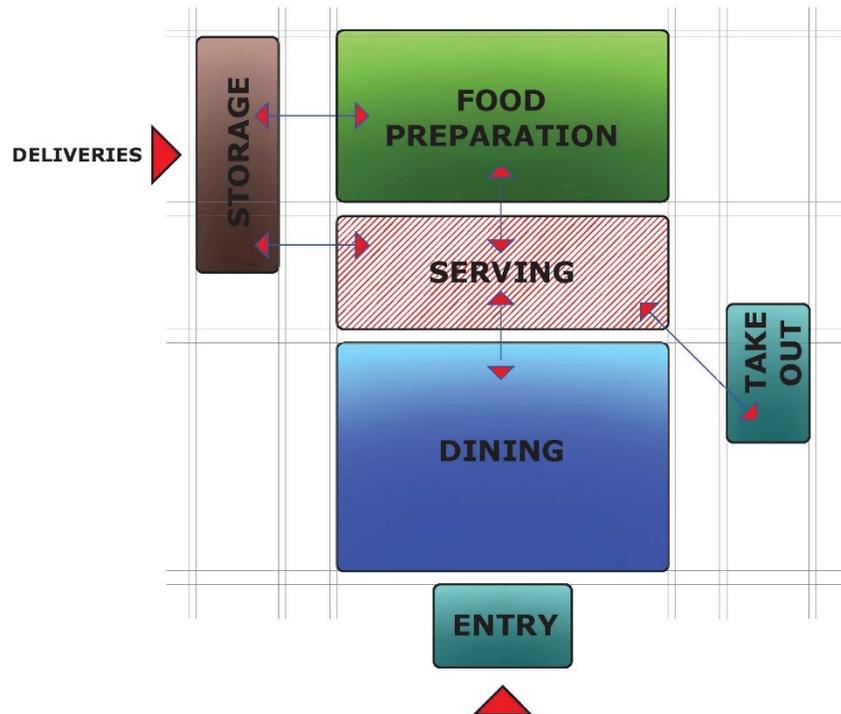
2-7 BUILDING LAYOUT

Foster efficient flow of people, materials, and work activities in the building layout. Visually and acoustically separate patron functions from food preparation and cleaning functions. Visible cooking stations are encouraged for individualized orders.

2-7.1 Flow Schematic.

Figure 2-1 schematically illustrates the building layout with major functional areas and displays the flow of people and material.

Figure 2-1 Dining Facility Flow Schematic



2-7.2 Functional Planning.

Carefully study the relationship among the various storage, preparation, cooking, serving, and cleaning functions to provide maximum flow and efficiency. Keep travel distances short and minimize crossover of circulation paths. Maintain open sight lines as much as possible and utilize mobile food service equipment for flexibility. Provide utility connections for mobile food service equipment. Plan for various serving styles.

2-7.3 Separate the Dining Area.

The dining area represents the conclusion of the patron process of arrival, queuing, identification, serving, and payment. To the extent possible, separate seated patrons from the congestion and movement of arriving and departing patrons. To avoid congestion within the dining facility, patron circulation space at the bussing area should be as large as possible.

2-8 BUILDING DESIGN.

Include the following design considerations in the planning and budgeting process. Emphasis is placed on the design of functional and pleasant food service facilities that help attract and retain patrons. Comply with command and installation architectural standards. The dining facility can represent a visual focal point on base, similar to a headquarters building, and its design can set the standard for the installation.

2-8.1 Design for Flexibility.

Planners and designers should recognize that future renovations, additions, and expansions of the facility are likely.

2-8.2 Aesthetics and Visual Image.

The dining experience represents a break in the patron's day. Its design should provide a visual respite as well. The designer should provide an aesthetic and visual image in keeping with the recreational functions of the facility.

2-8.2.1 Develop Architectural Character.

Create an appealing environment through interesting plan areas, spatial volumes, and other design elements. If outdoor dining is provided, consider the effect on both the facility layout and design character.

2-8.2.2 Signage.

Develop a comprehensive signage package (both exterior and interior) that addresses both way-finding and definition of all spaces within the facility. This may include signage that identifies serving stations. Signage should reflect and complement the environment through colors, images, and materials.

2-8.2.3 Menus.

Menus and their various versions are evolving into education/information instruments unlike anything envisioned a few years ago. As this evolution continues, the capacity to provide more locations and greater capabilities is a basic building block for the dining facility's target demographic.

2-8.3 Glazing.

The admission of natural light contributes significantly to the energy efficiency of the building and communicates a feeling of well-being and openness. Coordinate glazing design with the lighting design (see paragraph 3-6.4.3).

Direct sunlight on dining patrons can be uncomfortable and detracts from a positive dining experience. In addition to the site issues noted in paragraph 2-6.2, consider overhangs and other building features to preclude direct sunlight on the seating areas.

2-8.4 Design for a Quality Work Environment.

Ensure quality building systems, adequate employee facilities, easily accessible safety devices, and prevention of entry by vermin and insects.

2-8.5 Design for Durability and Maintainability.

The materials proven to be the most durable are shown in Table 3-1 and should be accommodated in the budget. The design should accommodate access for cleaning and maintenance in high-wear areas, including food preparation, dishwashing, and pot- and pan-washing areas.

CHAPTER 3 DESIGN CRITERIA, CODES, AND DESIGN STANDARDS

3-1 GENERAL.

Comply with UFC 1-200-01, which provides applicability of model building codes and government-unique criteria for typical design disciplines and building systems as well as for accessibility, antiterrorism, security, high performance and sustainability requirements, and safety. Use this UFC in addition to UFC 1-200-01 and the UFCs and government criteria referenced therein.

3-1.1 Authorized Building Program.

A DD1391 funding document is developed for all new construction projects, which establishes project requirements and authorized building size. The designer can use the functional diagrams contained herein to create the logical flow and individual space allocations for approved functions within the facility; however, the design may not exceed the square footage allowances of the DD1391 or add functional areas to the facility if the functions are not authorized in the validated DD1391.

3-1.2 Accessibility.

Comply with UFC 1-200-01 requirements for accessibility.

3-2 SUSTAINABILITY.

DoD requirements for sustainability apply to construction, redesign, renovation, and modernization projects. Refer to UFC 1-200-02, *High Performance and Sustainable Building Requirements*, for high performance and sustainable buildings (HPSB) criteria.

3-3 FOOD CODE.

Design facilities to meet the Food and Drug Administration's (FDA) *Food Code*.

3-4 STRUCTURE.

Comply with UFC 3-301-01 requirements for structural design. In addition, comply with the following:

- Provide clear spans as required for the dining area.
- If the facility has been designated as a mass care feeding facility (see paragraph 2-2.9), then the building is classified as Risk Category IV per UFC 3-301-01.

3-5 ARCHITECTURE AND INTERIOR DESIGN.

3-5.1 General.

Comply with UFC 3-101-01, *Architecture*, and UFC 3-120-10, *Interior Design*, requirements for architecture and interior design.

3-5.2 Coordination.

The following items require coordination with the architectural design:

- Requirements for floor drains, wall recesses, stub walls, and any pads or piers needed for food service equipment;
- All bumpers, guards, and protective devices;
- The use of special materials such as quarry tile, noncorrosive ceiling grid, skim coat plaster on concrete masonry unit (CMU) walls, metal acoustic ceilings, plaster ceilings, and smooth-face lay-in tile;
- Incorporate materials used in commercial restaurants for dining areas. Visible CMU walls are not permitted in the serving and dining areas;
- E.g, all roof, ceiling, floor, and wall penetrations for ducts, control lines, refrigerant tubing;
- Floor elevation and slope requirements to ensure proper water drainage in wet areas; and
- Between loading dock and kitchen, provide minimum 8-ft (2.4 m) -tall doors with adequate widths to accommodate equipment movement.

3-5.3 Materials and Finishes.

Approved finishes for functional areas are in Table 3-1. For deviation requests, see paragraph 1-7. Floors that are slip-resistant, drain well, and clean easily are of paramount importance. Provide floors that will endure cleaning by high-pressure spray equipment. Coordinate finishes with the interior designer.

Also comply with the following:

- Provide protective guards in all areas subject to cart traffic, i.e., walls, doors, and corners. Locate equipment to minimize cart damage.
- Provide door systems with acoustical properties between kitchen/dishwashing areas and dining areas. Where feasible, design doors for wheeled traffic without raised thresholds. Provide vision panels in doors to permit views of anyone entering and exiting.
- Ensure all joints and intersections of materials are sealed, free of pocketed or porous materials, and accessible for cleaning.

Table 3-1 Interior Finishes

Space	Finishes				
	Floor	Base	Walls	Protect	Ceiling
Entry/Vestibule	PT, RM	PT	Note 1		Note 3
Queue	PT or RF	PT or Rubber	Note 1		Note 3
Public Toilets	PT	PT	CT		MR GWB
Check-in	PT or RF	PT or Rubber	Note 1		Note 3
Dining Area	Carpet*, PT	Rubber or PT	Note 1	Note 2	Note 3
Serving, Patron Side	QT or PT	QT or PT	CT or GSU	Wall, Corners	MR Vinyl ACT
Serving, Server Side	QT, EF, or CUF	QT, EF, or CUF	CT or GSU	Wall, Corners	MR Vinyl ACT
Dishwashing	QT, EF, or CUF	QT, EF, or CUF	CT or GSU	Wall, Corners	MR Vinyl ACT
Food Preparation Area	QT, EF, or CUF	QT, EF, or CUF	CT or GSU	Wall, Corners	MR Vinyl ACT
Utensil Wash	QT, EF, or CUF	QT, EF, or CUF	CT or GSU	Wall, Corners	MR Vinyl ACT
Storage, Freezer	QT, EF, or CUF		MIP		MIP
Storage, Chilled	QT, EF, or CUF		MIP		MIP
Storage, Dry	SC or VCT	Rubber	GWC on CMU	Corners	ACT
Storage, Non-Food	SC	Rubber	GWC on CMU	Corners	ACT
Storage, Carb. Beverage	QT, CT, or CUF	QT, CT, or CUF	GWC on CMU		ACT
Offices	Carpet, PT or RF	Rubber or PT	Painted CMU		ACT
Staff Toilets	PT	PT	GWC on CMU		MR GWB
Staff Lockers	QT or PT	QT or PT	GWC on CMU		MR GWB
Janitor Closet	SC, PT or QT	Rubber, PT or QT	GWC on CMU	Corners	Exposed
Can Wash	Acid-Resistant EF or CUF	EF or CUF	Epoxy or CT	Wall, Corners	MR Vinyl ACT
Loading Dock	SC		Exterior		Exterior
Mechanical	SC		Painted CMU		Exposed

Note 1: Walls in public areas may be a variety of durable materials such as brick, split block, exposed concrete, plaster, or other materials as approved.

Note 2: Provide wall guard protection at locations subject to cart traffic.

Note 3: Ceilings in public areas may be a variety of suspended acoustic ceiling, sound reflectors, or barrier materials to add both acoustic and visual interest.

General Note: All grout to be epoxy. Consider use of darker grout to hide soiling.

Legend for Table 3-1:

ACT—acoustic ceiling tile	GWB—gypsum wall board	RF—resilient flooring
CMU—concrete masonry unit	GWC—glazed wall coating	RM—recessed walk-off mat
CT—ceramic tile	MIP—metal insulated panel	SC—sealed concrete
CUF—cementitious urethane flooring	MR—moisture resistant	VCT—vinyl composition tile
EF—epoxy flooring	PT—porcelain tile	
GSU—glazed structural unit	QT—quarry tile	

*If carpet is introduced, limit to dry areas and use patterned, restaurant-grade carpet tile.

3-6 MECHANICAL AND ELECTRICAL.

3-6.1 Plumbing Design.

Comply with UFC 3-420-01, *Plumbing Systems*, requirements for plumbing systems design.

3-6.1.1 Plumbing Systems.

Provide freeze-proof wall hydrants at exterior wash areas in addition to other locations around the building.

3-6.1.2 Waste Systems.

3-6.1.2.1 Locate grease traps near the loading dock but outside of vehicle pathways and ensure easy accessibility for cleaning. Provide exposed covers of rust-proof and skid-resistant construction.

3-6.1.2.2 If grease interceptors are used in lieu of central grease traps to service individual equipment, locate to provide easy accessibility for cleaning, outside of food preparation areas, and which do not project above the floor in open walkways or work areas. Provide exposed covers of rust-proof and skid-resistant construction.

3-6.1.2.3 The base environmental office or waste management program will determine the type of waste permitted from food grinders, waste pulping system, and floor drains.

3-6.1.2.4 Apply an air gap of two pipe diameters to all kitchen equipment drains not having other backflow protection. Navy projects also use cross-connection control and backflow prevention program implementation.

3-6.1.2.5 Coordinate floor sinks of adequate size and non-splash receptor design with drained equipment requirements. Prime floor drains are not used as indirect waste receptors or provided with deep seal traps.

3-6.1.2.6 Do not locate waste piping above kitchen and storage areas.

3-6.1.2.7 Provide chrome plating or chrome sleeve copper pipe and fittings for visually exposed equipment waste and drain lines.

3-6.1.2.8 Coordinate drain requirements for HVAC, cold storage refrigeration equipment, and the can wash.

3-6.1.2.9 Avoid usage of large trench drains. Maintain a maximum size of 8 ft x 8 ft (2.4 m x 2.4 m) drains to minimize food waste becoming trapped.

3-6.1.3 Water Supply Systems.

3-6.1.3.1 Coordinate specialized food service equipment needs for hard/soft water, delime, descale, and pressure such as ware-washing and water-chilled equipment.

3-6.1.3.2 Provide a filtration system on the building main water line. However, if building water is not filtered as part of a central system, provide a kitchen-based central water filter with filters for 0.5-micron particulates and taste. Split discharge for two circuits: The first circuit connects to soda, cold beverage machines, and water hydration stations and the second circuit includes a polyphosphate additive before connecting to coffee brewers, equipment with boilers, self-generating steam, combi ovens, and ice makers.

3-6.1.3.3 Provide high-temperature water supply in accordance with UFC 3-420-01 for the dishwasher, pot and pan wash, can wash, and field feeding area (if provided).

3-6.1.3.4 Provide a centrally controlled low-pressure washing system with remote wall-mounted workstations in the kitchen, can wash, dishwashing area, and receiving platform. Required accessories include water broom attachment, hose reel, spray nozzle, and freeze-proof valves for exterior use in cold locations.

3-6.1.3.5 Diversity factors for water heating are based on food service equipment usage. Dining facilities may require two or more different hot water temperatures zones. Provide public and employee handwashing sinks with either temperature-limiting devices or different incoming hot water temperature than for food equipment.

3-6.1.3.6 Hot water storage and recirculation. **Note:** Where limited flow fixtures are required, provide piping and recirculation system adjustments to ensure adequate hot water at the fixture.

3-6.1.3.7 Provide backflow protection on all water connections, including connections to beverage machines that may include internal backflow prevention, in accordance with UFC 3-420-01.

3-6.1.3.8 Provide UL- and NSF-approved/certified/listed sinks.

3-6.1.3.9 Provide one 8-inch (203 mm) empty conduit with pull string from the remote beverage room to each beverage station in the facility.

3-6.1.4 Coordination.

These items require coordination with the plumbing design.

3-6.1.4.1 The food service designer determines the locations and specifications for all food service equipment (fixed and relocatable). Coordinate food service equipment layout and specifications with the facility mechanical designer for coordination of facility plumbing design.

3-6.1.4.2 Coordinate locations of all water, waste, steam and steam condensate, refrigeration condensate, chilled water supply and return, floor drains, and gas lines with equipment requirements. Conceal these lines but ensure all lines are readily accessible for maintenance. Provide washable covers where the lines are exposed.

3-6.1.4.3 Coordinate unavoidable exposed vents for island or freestanding equipment with the architect for enclosure.

3-6.1.4.4 Coordinate the design and location of required grease traps with the mechanical, plumbing, architectural, and, possibly, structural designers.

3-6.1.4.5 If under-floor conduits are used for routing the beverage system, ensure they are sealed conduits with cleanouts and pull boxes every 100 ft (30.5 m), installed with pull lines, and sealed upon product line installation.

3-6.1.4.6 Provide floor drains and a hose bibb in the beverage storage area.

3-6.1.4.7 Provide plumbing and allocated hot water capacity to the automatic wash-down system with a battery back-up wash timer for exhaust hoods, if appropriate.

3-6.1.4.8 Coordinate any special requirements for plumbing connections to utility distribution systems.

3-6.1.4.9 For connections to gas-fired equipment, provide 300 series braided stainless steel flexible connections, brass, or stainless-steel fittings. Specify hose coverings to have NSF-approved coatings and fitted with required restraints.

3-6.1.4.10 Provide easy access to waste traps and collectors for cleaning.

3-6.2 Heating, Ventilation, and Air Conditioning (HVAC) Design.

Comply with UFC 3-400-02, *Design: Engineering Weather Data*, and UFC 3-410-01, *Heating, Ventilation, and Air-Conditioning Systems*, requirements for HVAC systems design.

Refer to NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*, ASHRAE 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*, and UL 710, *UL Standard for Safety Exhaust Hoods for Commercial Cooking Equipment*, for kitchen exhaust and ventilation.

Additional HVAC requirements unique to dining facilities include the following:

- Provide variable-speed kitchen hood fans in accordance with ASHRAE 90.1
- Design the HVAC system to allow for control of the following:
 - Large daily load swings
 - High space latent loads
 - High and variable ventilation requirements

3-6.2.1 Coordination.

The following items require coordination with the HVAC design.

3-6.2.1.1 Coordinate the location and size of all ventilated equipment, such as exhaust hoods, dishwashing equipment.

3-6.2.1.2 Coordinate the special requirements for ductwork connecting to equipment, such as drip pans and pitched or vented duct work.

3-6.2.1.3 Coordinate the ventilation of remote refrigeration condensers.

3-6.2.1.4 Air-condition the entire facility except for storage and service areas. Ventilate and heat storage and service areas as required by code.

3-6.2.1.5 Condition the kitchen, dish wash, and pot/pan washing not to exceed 85 °F (29 °C) and heat to maintain temperature no less than 68 °F (20 °C). Maintain a negative pressure in the kitchen, dish wash, pot/pan washing, service spaces, janitor closets, and restrooms. Maintain a positive pressure in the dining, point of sale, and interior queuing areas.

3-6.2.1.6 Incorporate testing, balancing, and commissioning into all dining projects to ensure proper airflow and fan operation upon construction completion. Execute testing and balancing with all kitchen equipment functioning.

3-6.2.1.7 Provide air curtain fans over all personnel entry/exit doors and receiving vestibule doors. Specify air curtain fans the full width of doors and mounted on the

interior side immediately above the door. Emergency “Exit Only” doors and mechanical/electrical rooms do not require air curtain fans.

3-6.2.1.8 Provide stainless steel all-welded construction kitchen hood systems, including lights, filters, grease troughs, and fire protection systems. Specify UL- and NSF-approved/certified/listed hoods, certified to meet International Mechanical Code-required velocities for the service application. If face discharge hoods are utilized, provide with tempered makeup air. Temper makeup air to 85 °F (29 °C) for cooling and 60 °F (16 °C) for heating.

3-6.2.1.9 Provide an independent on/off switch for the hood exhaust fans.

3-6.2.1.10 Ventless cooking equipment is encouraged.

3-6.2.1.11 “Spot cooling” with field-adjustable diffusers at predictable workstations at the kitchen and serving areas is encouraged.

3-6.2.2 Controls.

Specify direct digital control (DDC) system per UFGS 23 09 23.02, *BACnet Direct Digital Control for HVAC and Other Building Control Systems*, or UFGS 23 09 23.01, *Lonworks Direct Digital Control for HVAC and Other Building Control Systems*. Coordinate the DDC specification to ensure a proper interface to the existing or planned base-wide DDC/EMCS system.

Tie HVAC controls into the central location on base for controlling and monitoring systems.

3-6.3 Fire Protection.

Comply with UFC 3-600-01, *Fire Protection Engineering for Facilities*, requirements for fire protection systems.

Provide a kitchen hood fire-extinguishing system in accordance with NFPA 96.

3-6.4 Electrical Design.

Comply with UFC 3-520-01, *Interior Electrical Systems*, requirements for electrical systems.

3-6.4.1 Local Conditions.

Evaluate local conditions for their impact on facility design and backup power generation requirements.

3-6.4.2 Emergency Power.

When the facility is designated as a mass care feeding facility, provide a permanent, external, self-contained emergency generator that powers the entire facility load. Provide 72 hours of fuel storage.

When the facility is not designated as a mass care feeding facility, provide a service entrance with an external temporary emergency generator hook-up for the facility. At a minimum, loads to be supported by the emergency generator include 100 percent cold storage and facility lighting. If required by activity, support additional loads as determined on a case-by-case basis. Ensure availability of a hard surface area adjacent to the building service entrance to accommodate the generator. Provide signage at the external generator connection indicating the minimum load requirement for the portable generator (kVA, voltage, ampere).

3-6.4.3 Lighting.

Comply with UFC 3-530-01, *Interior and Exterior Lighting Systems and Controls*, requirements for lighting systems design and illuminance levels.

3-6.4.4 Closed Circuit Television (CCTV).

When a CCTV system for monitoring and recording of activities in the server and dining areas is required, provide the supporting infrastructure.

3-6.4.5 Special Systems.

Provide supporting infrastructure as required for the following:

- Local area network for computerized communications, such as food service and payment management system
- Energy monitoring and control system when mandated or economically justifiable
- Public address and intercom systems
- Security systems, alarm systems, and closed-circuit television (CCTV) systems
- Cable television (CATV) and audio-visual (AV) systems for dining areas

3-6.4.6 Lightning and Cathodic Protection.

Comply with UFC 3-570-01, *Cathodic Protection*, and UFC 3-575-01, *Lightning and Static Electricity Protection Systems*.

3-6.4.7 Coordination.

The following items require coordination with the electrical design.

- 3-6.4.7.1** Coordinate the location of all spot connections for equipment requiring an electrical connection.
- 3-6.4.7.2** Coordinate all projected power requirements for food service equipment (coordinated with the food service designer as early as possible). In addition to the power characteristics, determine the type of electrical connection required (plug-in, junction box) for each piece of equipment.
- 3-6.4.7.3** Coordinate special requirements for equipment, such as overload protection and control panels, located at the equipment being protected.
- 3-6.4.7.4** Coordinate integration of food service equipment with fire suppression system controls.
- 3-6.4.7.5** Coordinate integration of electrical requirements for the equipment utility distribution system.
- 3-6.4.7.6** Coordinate the location of conduit required for computer and electronic cash register stations.
- 3-6.4.7.7** Specify electrical service requirements for all equipment in accordance with UFGS 11 05 40, *Common Work Results for Foodservice Equipment*.
- 3-6.4.7.8** Coordinate potential future equipment upgrades.
- 3-6.4.7.9** Floor-mounted flush receptacles and conduit stub-ups are not permitted in the kitchen area or serving line. For safety reasons, provide ceiling cord reels in these areas.
- 3-6.4.7.10** Provide 15 percent spare electrical load capacity throughout the building electrical system. This includes, e.g, switchboards, feeders, panelboards, transformers, branch circuits.
- 3-6.4.7.11** Provide a building-wide, zoned paging/intercom system with announcement and music (plug-in) capabilities from the administrative office. This paging/intercom system can be integrated with the building's mass notification system.
- 3-6.4.7.12** Provide transient voltage surge suppressors (TVSS) at service entrance panels and panels supporting electronic equipment.
- 3-6.4.7.13** Provide cathodic protection for all ferrous underground pressurized piping systems and any ferrous underground structures. If plastic piping systems are used, then cathodically protect all ferrous valves and fittings. Provide a sacrificial anode type cathodic protection system designed for a 25-year life.

3-6.5 COMMUNICATIONS AND COMPUTER SYSTEMS.

General guidance for the design of telephone systems is provided in UFC 3-580-01, *Telecommunications Interior Infrastructure Planning and Design*. Guidance pertinent to the design of dining facilities is as follows.

3-6.5.1 Telephones.

Provide telephones with a page intercom system in coordination with the local command.

3-6.5.2 Electronic Cash Registers and Computers.

In preparation for future computer systems, provide empty conduit from the array of register terminals to a location in the food service officer's office for linkage to a computer in use by the food service officer. This office will have a variety of computer-based systems such as file server and POS terminals, credit card charge processing, digital menu boards, nutritional, and social media information, and computer systems for employee time clocks. Consolidate local email and systems for advance ordering of subsistence items in this office area. Install a primary telephone for the facility in the office with extensions at all register locations for operators and anti-robbery protocols. Provide CAT6 cabling for each separate system as determined by the end user in the overall communications plan.

3-6.5.3 Cable TV (CATV), and Audio-Visual (AV) Systems.

When required, provide the infrastructure for CATV, AV, and Wi-Fi systems. The Service contacts in paragraph 1-7 will determine if design and construction funds will be provided for Wi-Fi, CATV and/or AV equipment. Provide a CATV and/or AV system with structural supports, mounting brackets, electric, and CATV/AV jacks in each TV location. Provide mounting brackets suitable for minimum 50-inch flat panel televisions. Provide normal base/installation Wi-Fi in the dining area and facility for alerts, weather, and installation information management.

3-7 EQUIPMENT.

Provide the type, quantity, and size of equipment necessary and with sufficient redundancy and/or multi-function features to develop meals based on the following requirements:

- The facility's menu;
- The facility's staffing plan;
- The facility's hours of operation, meal schedule, and duration;
- Normal maintenance requirements;
- The standards of quality required in:
 - UFGS 11 41 11, *Refrigerated and Frozen Food Storage Equipment*

- UFGS 11 42 00, *Food Preparation Equipment*
- UFGS 11 44 00, *Food Cooking Equipment*
- UFGS 11 46 00, *Food Dispensing Equipment*
- UFGS 11 47 00, *Ice Machines*
- UFGS 11 48 00, *Cleaning and Disposal Equipment*
- All other code requirements in this UFC.

3-7.1 Walk-In Refrigerator/Freezer.

To retain refrigerated air and reduce insect infestations, provide vinyl slatted curtains hanging inside the doors or provide a blower-type air curtain outside the doors of walk-in refrigerators and freezers.

Provide a heated viewport window in the door of walk-in refrigerators and freezers to permit views of anyone entering or exiting and provide a means of egress on the interior side of each door.

3-7.2 Cashier's Safe.

Provide a three-tumbler safe containing individual combination-locked compartments for each cashier plus one cash collection agent.

3-8 SITE WORK.

Comply with UFC 3-201-01, *Civil Engineering*, requirements for site work.

3-8.1 Landscape.

Comply with UFC 3-201-02, *Landscape Architecture*, and local installation landscape standards. Ensure the landscape accentuates the building's main entrance. Provide landscaping at the outside dining area when one is provided, including but not limited to specialty paving (i.e., precast concrete pavers, brick pavers), shade trees, foundation planting, and screen planting, as required. Design all landscaping with an emphasis on low maintenance (reduced pruning, fertilization, pest control, leaf, flower, and fruit clean-up), drought tolerance, and native plant selection.

3-8.2 Parking, Access Drives, and Other Site Features.

Provide separate access drives for parking and loading dock access. Use turning radii for loading dock access roads appropriately sized for delivery trucks. For facilities serving up to 400 personnel, use minimum 6-ft (1.8 m) -wide sidewalks. For facilities serving more than 400 personnel, use minimum 8-ft (2.4 m) -wide sidewalks.

When a facility is designated as a mass care feeding facility, locate parking areas and other critical-use areas out of the 100-year floodplain to the extent practical.

CHAPTER 4 AUSTERE DINING FACILITIES

4-1 PURPOSE.

The purpose of this chapter is to provide requirements for austere construction established by CNIC. These requirements were developed to address construction of support facilities in CNIC-designated operating environments.

4-2 DEFINITION AND SCOPE.

An austere facility is defined as a structure designed and constructed with minimal infrastructure, footprint area, and finishes, incorporating applicable building codes and facility criteria to ensure adherence to all health, accessibility, and life safety standards and regulations required to fulfill the mission, including anti-terrorism force protection (AT/FP) appropriate to each site. Austere facilities should be built with the least total ownership costs (TOC) possible, including purchase, maintenance, and use of consistently available alternative local goods.

4-3 APPLICABILITY.

This chapter applies to Navy dining facilities designated as austere by CNIC. This chapter modifies requirements provided in this UFC. Austere construction is intended for facilities in locations determined by CNIC and approved by OPNAV to be eligible for austere facilities construction. The austere standards are intended to be applied flexibly and in varying degrees to all facilities at locations designated as austere. The flexibility should be allowed to ensure the criteria are appropriate for individual austere locations. The Air Force and Space Force reserve the right to apply these requirements as applicable and approved by AFSVC.

4-4 MODIFICATIONS.

The following are modifications to this UFC when designated austere.

CHAPTER 2 PLANNING AND LAYOUT

2-2.7 Bussing.

Delete the UFC paragraph and add the following:

Patron self-bussing will be the standard mode of bussing.

2-3.1 Entrance Lobby.

Add the following:

Canopies will not be used in austere facilities unless needed for weather conditions.

2-3.4 Cashier Station.

Delete this UFC paragraph and replace it with the following:

The cashier station/sign-in station accommodates patron payment. The configuration, location, and number of stations are determined by the number of personnel served, food delivery methodology, and payment style. Payment options (credit, Smart™ cards) will be determined prior to design. No cash payments allowed.

2-3.11 Support Areas.

Delete the UFC paragraph and add the following:

Support areas accommodate staff needs such as offices, training, other administrative tasks, toilets, lockers, and janitor closets. These areas are determined by the mission and staffing requirements. For austere facilities, provide a single administrative office that can accommodate up to three people.

2-4.3 Navy and Marine Corps.

Delete the UFC paragraph and replace it with the following:

Determine the number of personnel to be served by multiplying the projected maximum unaccompanied housing occupancy by the utilization factors in Table 2-2. Include the average on-board count of ships entitled to rations-in-kind while shipboard facilities are out of service in the projected occupancy. Do not include personnel on separate rations in the projected occupancy.

Table 2-2 Personnel to be Served by Mission

Mission	Utilization Factor
Austere Locations	90%

2-5.3 Navy and Marine Corps.

Delete the UFC paragraph and replace with the following:

Refer to FC 2-000-05N for space planning spreadsheets for austere dining facilities.

2-5.3.1 Space Program Assumptions.

Modify the UFC requirements as follows:

Seating should be based on 12 ft² (1.1 m²) per seat.

Bake shops are not allowed.

Separate meat and vegetable preparation areas will not be provided.

2-5.3.2 Storage.

Add the following to the UFC paragraph:

Austere facilities are identified the same as OCONUS rural/remote facilities due to infrequent delivery periods.

2-8 BUILDING DESIGN.

Add the following to the UFC paragraph:

For austere facility locations, the dining facility should not represent a visual focal point on base, nor will its design set the standard for the installation.

2-8.1 Design for Flexibility.

Delete the UFC paragraph.

2-8.2 Aesthetics and Visual Image.

Delete the UFC paragraph.

CHAPTER 3 DESIGN CRITERIA, CODES, AND DESIGN STANDARDS

3-2 SUSTAINABILITY.

Delete the UFC paragraph and use the following:

The Chief Engineer of NAVFAC has waived Sustainable Third – Party Certification requirements for projects designated austere (CONUS and OCONUS). However, requirements for the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (HPSB)* remain. Refer to UFC 1-200-02 for criteria associated with HPSB.

3.5.3 Materials and Finishes.

Delete Table 3-1 and use the following:

Table 3-1 Austere Facilities Architectural Finishes

General Space	Recommended Finishes			
	Floor	Base	Walls	Ceiling
Vestibule	CONCS/WM	RB	P	EXP/P, Note 1
Queue	CONCS	RB	P	EXP/P, Note 1
Public Toilets	CONCS	RB	P	EXP/P, Note 1
Check-in	CONCS	RB	P	EXP/P, Note 1
Dining Area	CONCS	RB	P	EXP/P, Note 1
Serving, Patron Side	QT, EF, or CUF	QT, EF, or CUF	P	EXP/P, Note 1
Serving, Server Side	QT, EF, or CUF	QT, EF, or CUF	P	EXP/P, Note 1

General Space	Recommended Finishes			
	Floor	Base	Walls	Ceiling
Dishwashing	QT, EF, or CUF	QT, EF, or CUF	P	P
Food Preparation Area	QT, EF, or CUF	QT, EF, or CUF	P	P
Utensil Wash	QT, EF, or CUF	QT, EF, or CUF	P	P
Storage, Freezer	QT, EF, or CUF	QT, EF, or CUF	P	P
Storage, Chilled	QT, EF, or CUF	QT, EF, or CUF	P	P
Storage, Dry	CONCS	RB	P	P
Storage, Non-Food	CONCS	RB	P	P
Storage, Carbonated Beverage	QT, EF, or CUF	QT, EF, or CUF	P	P
Offices	CONCS	RB	P	EXP/P, Note 1
Staff Toilets	CONCS	RB	P	EXP/P, Note 1
Staff Lockers	CONCS	RB	P	EXP/P, Note 1
Janitor Closet	CONCS	RB	P	EXP/P, Note 1
Can Wash	CONCS		P	EXP/P, Note 1
Loading Dock	CONCS		P	EXP
Mechanical	CONCS		P	EXP

Note 1: Ceilings are to be exposed and painted, including all exposed plumbing, mechanical, fire stops, and electrical conduit unless it is more cost-effective to provide a hard finish, painted ceiling.

Note 2: Provide wall and corner guard protection at locations subject to cart traffic.

Legend for Table 3-1:

CONCS—concrete, hardened and sealed (option: integrally colored for accent)

EXP—exposed

P—paint

QT—quarry tile

RB—rubber base

EF—epoxy flooring

WM—walk-off mat (surface)

CUF—cementitious urethane flooring

3-7.1 Walk-In Refrigerator/Freezer.

Add the following:

Bulk storage for chilled/frozen/dry goods may be located exterior to the building in appropriate environments.

3-7.2 Cashier's Safe.

Delete UFC paragraph and replace with the following:

In austere environments, there will be no cash taken at the facility and no safe is required.

3-8.1 Landscape.

Delete UFC paragraph. No landscaping is required.

3-8.2 Parking, Access Drives, and Other Site Features.

Delete UFC paragraph and replace with the following:

Apply austere decision-making to assess, modify, and incorporate requirements such as pedestrian circulation, bus access, service vehicle parking, and lighting plans appropriate to local conditions and to limit parking as much as possible while still meeting the facility mission. Review the security study and incorporate its requirements into the design. Ensure existing and proposed parking complies with antiterrorism requirements. In austere facilities, parking for residents, visitors, staff, and service personnel should be extremely minimal and directed only to the mission. Maintenance parking for service functions does not necessarily require dedicated space. Use the expected frequency of maintenance vehicles to determine whether dedicated parking is needed. Locate service access and parking to avoid disturbing residents.

APPENDIX A BEST PRACTICES

A-2 Acoustics.

Delete UFC paragraph. No acoustic provisions are required.

A-7 FOOD SERVICE EQUIPMENT.

A-7.1 Sample Equipment Schedules.

Delete Table A-1 and use the following.

Table A-1 Conceptual Equipment List for Austere Facilities

<ul style="list-style-type: none">• Air curtain• Anti-splash floor troughs• Area floor drain• Braising pan, 40 gal (150 L)• Bread display• Bussing cart• Can opener• Can rack• Carbonator• Cashier counter	<ul style="list-style-type: none">• Microwave oven• Mixer, 20 qt (19 L)• Mobile attachment shelving• Mobile chemical shelving• Mobile hot food cabinet• Mobile mixer table• Mobile pot/pan shelving• Mobile slicer table• Mobile tray rack• Mobile utensil soak sink
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Table A-1 Conceptual Equipment List for Austere Facilities

<ul style="list-style-type: none"> • Chemical storage shelving • Clean dish table • Cold food wells • Combination oven/steamer • Computers • Condensers for walk-ins • Condensers for ice makers • Condiment counter • Condensate exhaust canopy • Conveyor bagel toaster • Cook & hold cabinet • Counter with freezer base • Counter with sink • Cup dispensers • Declining balance card dispenser • Dish carriers • Dishwasher • Dishwasher vents • Disposer with pre-rinse faucet • Double-deck convection oven • Dry storage shelving • Dunnage rack • Electric can opener • Evaporators for walk-ins • Exhaust hoods, Type 1 • Exhaust hoods, Type 2 • Fire-suppression system • Griddle • Hand sink • Heat lamps • Heated shelf • Hose bibb • Hose reel • Hot food wells • Ice bin • Ice machine • Ice/soda dispenser • Janitor sink with can wash • Kitchen lockers • Knife rack 	<ul style="list-style-type: none"> • Mop rack • Office printers • Open-front refrigerated display cabinet • Plate dispenser • Platform truck • Pot/pan utensil rack • Pre-rinse faucet • Rack dolly • Receiving scales • Refrigerated equipment stand with cold rail • Reach-in refrigerator • Remote rack refrigeration system • Scale • Scanners • Serving counters • Sink heater • Slicer • Soiled dish table • Stainless steel wall panel • Storage cabinet • Strip curtain • Tray accumulator, five-tier • Tray cabinet • Tray carriers • Tray return opening frame • Twin soft serve dispenser • Two-compartment sink • Under-counter refrigerator • Utensil rack • Utility cart • Vertical cutter/mixer • Walk-in cooler shelving • Walk-in dunnage rack • Walk-in cook's cooler • Walk-in meat/dairy cooler • Walk-in freezer • Walk-in produce cooler • Wall shelf • Water temperature booster 180 °F (82 °C) • Work table with sink
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A-8.2 Staff Lockers.

Delete UFC paragraph and replace with the following:

Lockers are for storage of personal items only. Male and female lockers need not be separate and may be combined within an appropriate area. Locate lockers close to the staff toilets. Locker quantities are as indicated in Table A-2. All lockers should be half height except for facilities for 1,001 patrons and over, where three-tier lockers are used. The number of lockers scheduled for each space exceeds the projected number of

workers for each category to accommodate the likely shifting balance of male to female workers. Equip all lockers with sloped tops.

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APPENDIX A BEST PRACTICES

The Best Practices Appendix is considered to be guidance and not requirements. Its main purpose is to communicate proven facility solutions, systems, and lessons learned, but may not be the only solution to meet the requirement.

A-1 INTRODUCTION.

The following material identifies good design practices for each functional area as outlined in the space program. The designer is expected to interpret this guidance and configure the functional areas according to the needs of the project.

A-2 ACOUSTICS.

All facilities should be designed or treated to provide a comfortable acoustical environment.

A-2.1 Finishes.

In key areas, use finishes that absorb sound, reduce noise reflection, and minimize the generation and impact of noise. These finish materials have a high noise reduction coefficient (NRC) rating.

A-2.1.1 Ceilings in the dining area should have a minimum 0.6 NRC rating. Ceilings in the kitchen should have a minimum 0.6 NRC rating, be washable, and be United States Department of Agriculture (USDA) -listed for this application.

A-2.1.2 Acoustic wall treatments in the dining area should be implemented above wainscot height, located away from high-traffic areas, and have a minimum 0.8 NRC rating. If located near high-traffic areas, incorporate an abuse-resistant finish.

A-2.1.3 Floor finishes in the dining area should be selected to minimize noise generation.

A-2.2 Partitions.

The partitions separating noisy areas (such as the kitchen, dishwashing, and pot and pan wash) from sound-sensitive areas (such as the dining area and offices) should have a partition assembly with a minimum 50 sound transmission coefficient (STC) laboratory rating.

Openings between the kitchen and the dining area should incorporate baffles or screens, where possible, to minimize a direct noise path between these spaces.

A-3 QUEUE.

Dining facilities that accommodate large training commands or functions will experience surge conditions and require a larger queue than comparable facilities that do not.

When the queue is adjacent to the dining area, use a screen to separate queued patrons from the dining area.

A-4 DINING AREA.

The dining area provides one of the principal facility functions. Issues of particular importance are as follows:

A-4.1 Space Division.

Dining areas should be capable of being subdivided by plan or partition to close off portions during off-peak serving periods.

A-4.2 Visual Separation.

Visually separate the eating area from all other facility functions.

A-4.3 Seating.

Provide a variety of table sizes and seating options. Use non-fixed and easily cleanable furnishings. See Figure A-2.

A-5 SERVERY.

Design the lines and stations for flexibility and good traffic flow. Beverage station locations should accommodate patron refills without disrupting the serving line flow. For Air Force/Space Force facilities, locate beverage and water refresh stations in the dining area, selling a refillable cup. This greatly increases flexibility and flow considerations and repurposes this space for retail grab & go merchandisers adjacent to easily accessible POS stations. This allows customers to access grab & go, get to POS stations, and then obtain beverages in the dining areas. Locate beverage and CO₂ tanks nearby. Secure CO₂ tanks with safety straps or in a cage designed for the application. Consider providing space at the loading dock area for refilling and bulk storage of CO₂ tanks. See Figures A-3 through A-8 and A-31 through A-34.

A-6 FOOD SERVICE AREAS.

Food service areas include receiving, storage, preparation, and cleaning areas.

A-6.1 Loading Dock.

Include a can wash area with high-temperature water supply and drain connected to the sanitary line. Confirm loading platform heights with the majority of trucks servicing the facility. Dock levelers may be provided to accommodate varying truck platform heights. Provide a non-skid dock surface and bumpers at the dock to prevent impact damage. In locations with extreme weather conditions, the loading dock may need to be enclosed. Provide a ramp to connect the loading dock with the vehicular area to facilitate the use of hand trucks/carts and provide cart stops at the edge of the dock to prevent rolloff. Provide a canopy that extends 48 in. (1220 mm) beyond the edge of the platform.

Confirm canopy heights with the majority of trucks servicing the facility and confirm door widths with common delivery item sizes. See Figure A-22.

A-6.2 Refrigerator/Freezer.

The floor under the box should be depressed and insulated so the finished height is level with the surrounding kitchen floor. Provide separate exterior exits from both the freezer and the refrigerator/chill box to the loading dock. The interior exit from the freezer to the food preparation area to be through a thaw box via a door that is lockable on the freezer side. The refrigerator/chill box to be divided by a wire mesh partition between the exterior exit to the loading dock and the interior exit to the food preparation area. This partition to have a door that is lockable on the loading dock side. See Figures A-1 and A-27. Provide safety handles.

A-6.3 Dry Food Storage.

Recommend exterior access from the dry food storage to exit directly to the loading dock and the interior access to exit directly to the food preparation area. The dry food storage to be divided by a wire mesh partition between the exterior exit and the interior exit. This partition to have a door that is lockable on the loading dock side. See Figures A-1 and A-21.

A-6.4 Nonfood Storage.

Separate cleaning product storage from food product storage.

A-6.5 Kitchen.

Provide individual or continuous floor grates with drains to facilitate cleaning and catch discharge from cooking equipment such as steam kettles and tilting frying pans. Provide sufficient separation between steam-generating cooking equipment and other open-type cooking equipment. See Figures A-16 through A-18.

A-6.6 Vegetable Preparation Area.

In some facilities, this area may be a separate, refrigerated room with its own dedicated walk-in refrigerator, sinks, slicers, choppers, mixers, worktables, and other equipment. See Figure A-19.

A-6.7 Bakery.

Some facilities may include a bakery. See Figure A-20.

A-6.8 Flight Kitchen.

Flight kitchens should have direct exterior access.

A-6.9 Field Feeding/Vat Chow.

Provide adequate power and amenities for food preparation. Provide direct access to the loading dock.

A-6.10 Takeout/Meal Replacement.

Provide adequate power and amenities for food preparation and packaging/storage. This area may have a separate entrance/exit and its own POS station.

A-6.11 Dishwashing Area.

The dishwashing area should be located as close to the dining area exit as possible to permit self-bussing by the patron. A tray conveyor bussing system or a cart bussing system may be incorporated into the design. See Figures A-10 through A-13.

A-6.12 Utensil/Pot and Pan Wash.

Ensure adequate moisture control and ventilation. See Figures A-14 and A-15.

A-6.13 Pulper/Extractor System.

Provide a pulper/extractor system adjacent to the dishwashing areas to reduce manpower and water consumption. Consider providing a piped connection to the trash areas to improve sanitation in the dish room and, depending on site layout, can eject directly into the trash dumpster, further reducing manpower.

A-6.14 Cashier Station.

See Figure A-9 for Cashier Station.

A-6.15 Miscellaneous Kitchen Details.

A-6.15.1 Provide doors in kitchen and dishwashing areas meeting industry standard, single or double swing, typically of metal construction, with appropriate door protection, safety vision panels, and door hardware. See Figures A-23 through A-24 for details.

A-6.15.2 Provide wall and corner guards in all kitchen and dining areas to protect walls from damage from mobile cart and chair movement. Provide wall guard rails of materials harmonious with the overall interior design and at locations subject to mobile cart movement and chair impacts. See Figure A-25 for details.

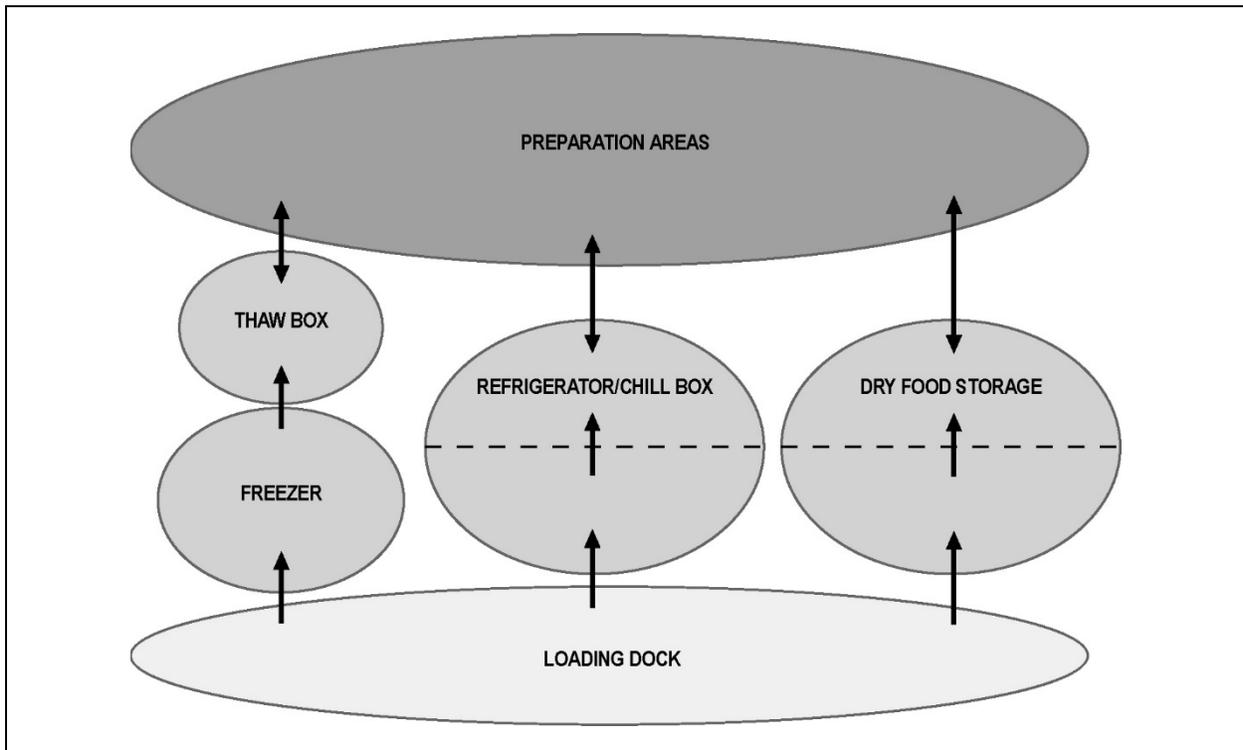
A-6.15.3 Provide serving line tray slides at configurations determined by overall facility design. See Figure A-26 for details.

A-6.15.4 For recessed cold storage coolers and freezers, provide insulated slab construction coordinated with the cooler and/or freezer manufacturer. See Figure A-27 for typical detail.

A-6.15.5 Provide sump drains as needed by kitchen equipment and UFC 3-420-01. See Figures A-28 through A-29 for details.

A-6.15.6 Provide dishwasher duct vents as required by dishwashing equipment. See Figure A-30 for details.

Figure A-1 Storage Access Diagram



A-7 FOOD SERVICE EQUIPMENT.

Present all design work relating to kitchen equipment separately for review. This design work is to include all information required for fabrication and installation of all kitchen equipment.

A-7.1 Sample Equipment Schedules.

The following is a conceptual equipment list. This is a partial list. Consideration should be given for all ventless equipment. Provide any equipment not listed here that is required to provide a complete working system for the stated demand per paragraph 3-7.

Table A-1 Conceptual Equipment List

<ul style="list-style-type: none"> • Air curtain • Air pot brewer • Air pots • Anti-splash floor troughs • Area floor drain • Audio-visual system • Bagel display • Bagel toaster • Bain marie • Bar code scanner • Benches • Blast chiller • Braising pan, 40-gal (150 L) • Bread display • Bussing cart • Cable television system • Can opener • Can rack • Cappuccino dispenser • Carbonator • Cash register • Cashier counter • Cashier scales • Charbroiler • Chemical storage shelving • Clean dish table • Closed circuit television system • Coffee brewer • Coffee dispenser • Cold food wells • Combination oven/steamer • Computers • Condensers for walk-ins • Condensers for ice makers • Condiment counter • Condensate exhaust canopy • Cone dispenser • Convection steamer, 10 pan • Conveyor bagel toaster • Cook & hold cabinet • Counter with freezer base • Counter with sink • Cup dispensers • Declining balance card dispenser • Dish carriers • Dishwasher • Dishwasher vents • Disposer with pre-rinse faucet • Double-deck convection oven • Dry storage shelving 	<ul style="list-style-type: none"> • Knife rack • Maximizer heat recovery • Menu duplex printers • Microwave oven • Mixer, 20 qt (19 L) • Mixer, 60 qt (57 L) • Mixer, 80 qt (76 L) • Mobile attachment shelving • Mobile chemical shelving • Mobile hot food cabinet • Mobile hot food cabinet/proofer • Mobile mixer table • Mobile pot/pan shelving • Mobile range • Mobile slicer table • Mobile tray rack • Mobile utensil soak sink • Mop rack • Office printers • Open-front refrigerated display cabinet • Panini grill • Pastry case • Pizza oven • Pizza make-up refrigerator • Pizza preparation table • Plate dispenser • Platform truck • Pot/pan utensil rack • Pre-rinse faucet • Pulper/extractor • Rack dolly • Receiving scales • Recirculating disposer • Recycling containers • Refrigerated cold pan • Refrigerated cream dispenser • Refrigerated equipment stand • Refrigerated equipment stand with cold rail • Reach-in refrigerator • Remote rack refrigeration system • Roll-in refrigerator • Safe • Scale • Scanners • Serving counters • Silver-sorting table • Sink heater • Slicer • Snack cabinet • Soiled dish table
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Table A-1 Conceptual Equipment List

<ul style="list-style-type: none"> • Dunnage rack • Electric can opener • Electronic programmable station signage • Electronic sandwich pre-ordering station • Espresso machine • Evaporators for walk-ins • Exhaust hoods, Type 1 • Exhaust hoods, Type 2 • Fire-suppression system • Floor troughs • Food guards • Food processor • Food cutter • Frost top • Frozen novelty freezer • Fryer battery with filter • Griddle • Hand sink • Handicapped kitchen worktable • Heat lamps • Heated display cabinet • Heated shelf • Hose bibb • Hose reel • Hot chocolate dispenser • Hot food wells • Hot/cold pan • Ice bin • Ice maker for soda dispensers • Ice machine • Ice/soda dispenser • Iced tea dispenser • Ingredient bins • Insect control equipment • Janitor sink with can wash • Kitchen lockers 	<ul style="list-style-type: none"> • Soup wells • Spent oil cooler • Stainless steel wall panel • Steam kettles • Storage cabinet • Strip curtain • Tabletop oven • Time clock • Toppings dispenser • Tray accumulator, five-tier • Tray cabinet • Tray carriers • Tray return opening frame • Turbo-wash, three-compartment sink • Twin soft serve dispenser • Twin 12-gal (45 L) kettles with stand • Two-compartment sink • Under-counter refrigerator • Uniform hot top range • Utensil rack • Utility cart • Vegetable dryer • Vertical cutter/mixer • Walk-in cooler shelving • Walk-in dunnage rack • Walk-in cook's cooler • Walk-in meat/dairy cooler • Walk-in freezer • Walk-in produce cooler • Wall shelf • Water filter • Water temperature booster 180 °F (82 °C) • Worktable • Worktable with sink
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A-7.2 Vibration.

Mount vibration-producing equipment on vibration isolators. Provide vibration-resistant pipe mounting and joints for equipment requiring plumbing.

A-7.3 Utilities.

Coordinate utilities with equipment selection. In general, steam-powered equipment is less expensive and easier to maintain than gas-powered equipment. To the degree possible, equipment should be standardized across an installation or region to facilitate maintenance and maintenance training.

A-8 STAFF FACILITIES.

A-8.1 Staff Toilets.

Government and contract personnel use staff toilets. Consult with the local command to determine staffing figures and shift population.

A-8.2 Staff Lockers.

Provide separate facilities for male and female personnel. Locate locker facilities adjacent to the toilets. Equip locker rooms with lockers, benches, and coat hooks to facilitate changing clothes. Locker quantities to be as indicated in Table A-2. All lockers should be half height except for facilities for 1,001 patrons and over, where three-tier lockers are used. The number of lockers scheduled for each space exceeds the projected number of workers for each category to accommodate the likely shifting balance of male to female workers. If equipment costs prohibit this number of lockers, provide space for the number of lockers in Table A-2. In this case, a portion of the lockers should be freestanding so they can be shifted from space to space as the staffing balance changes. All lockers to have sloped tops.

Table A-2 Staff Locker Count

No. of Staff	Military/Civilian		Contract	
	Male	Female	Male	Female
40 to 80	(Combined facilities, 10 male, 6 female)			
81 to 150	(Combined facilities, 16 male, 10 female)			
151 to 250	18	6	6	12
251 to 400	24	8	12	24
401 to 650	30	10	30	48
651 to 1000	48	12	44	70
1001 to 1500	64	16	64	96
1501 to 2200	96	24	88	132

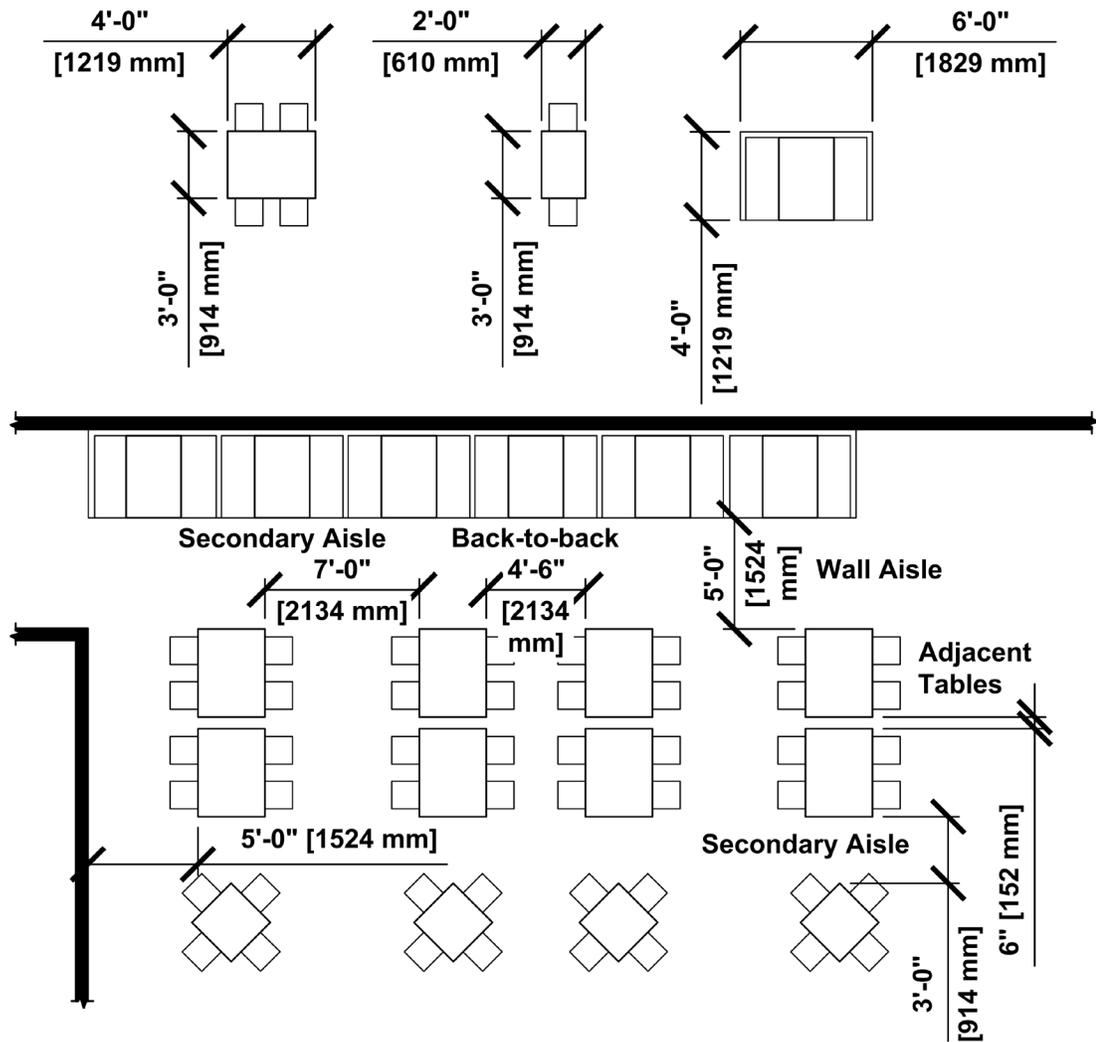
A-9 PLUMBING DESIGN.

Do not use cast-iron piping for sanitary waste lines in dining facilities due to susceptibility to deterioration.

A-10 HVAC DESIGN.

Where possible, use remote condensers to reduce internal heating loads (i.e., ice machines, built-in refrigerators and freezers).

Figure A-2 Table Sizes and Clearances



Notes:

1. A variety of table sizes and configurations should be used to avoid a monotonous arrangement. However, the use of round or square tables is not as space efficient as rectangular tables. Consideration should be given to avoid or minimize seating arrangements which cause one patron to disturb another for access or egress.
2. Aisle widths shown are minimum and must be verified with NFPA 101, *Life Safety Code*, requirements. Sizes may need to be increased for very long aisles.
3. If partitions at tables are desired, partition height should be not greater than 4'-6" (1372 mm) to maintain openness of space.
4. Booth seating should not exceed 30% of total seating.
5. Distribution of table capacities: 20% 2-top; 60% 4-top; 20% 6± top.

Figure A-3 Schematic Plan of Serving Line for Small Dining Facility

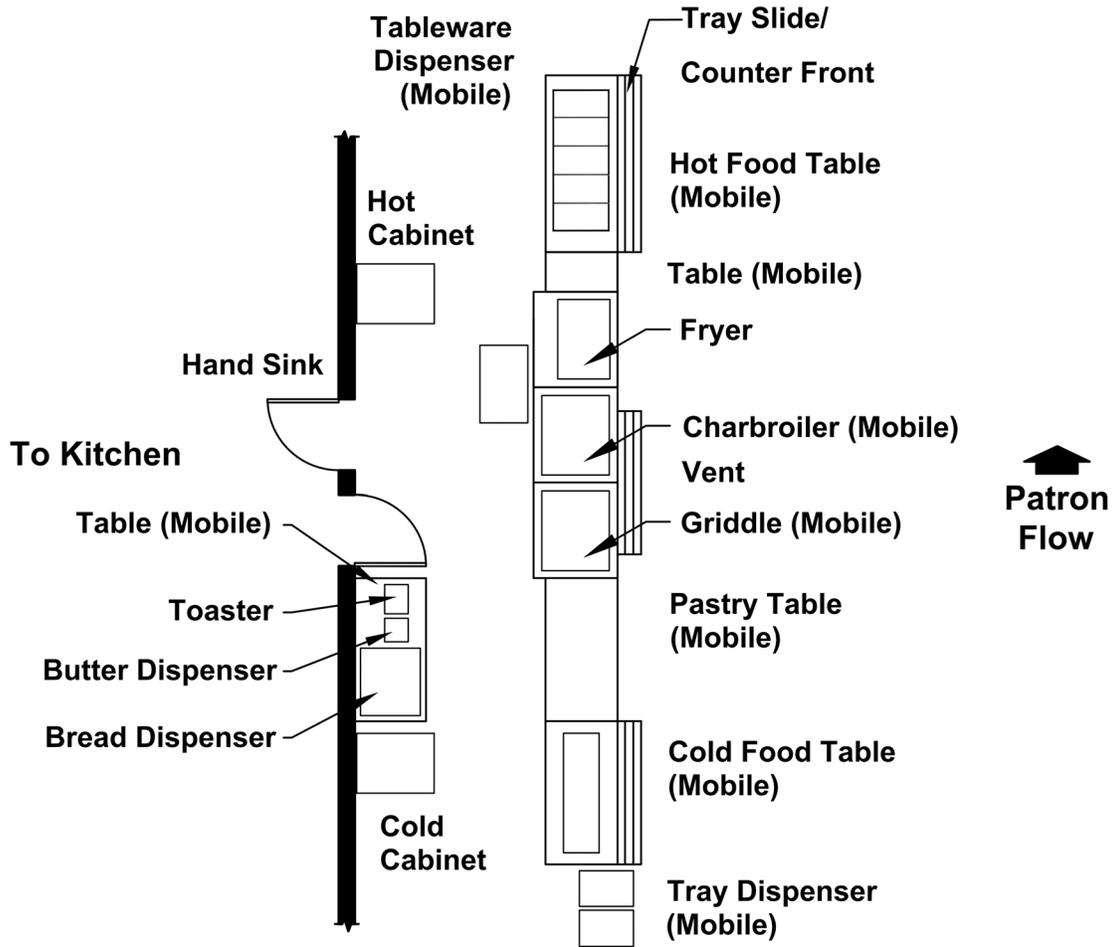


Figure A-4 Schematic Plan of Serving Line for Medium Dining Facility

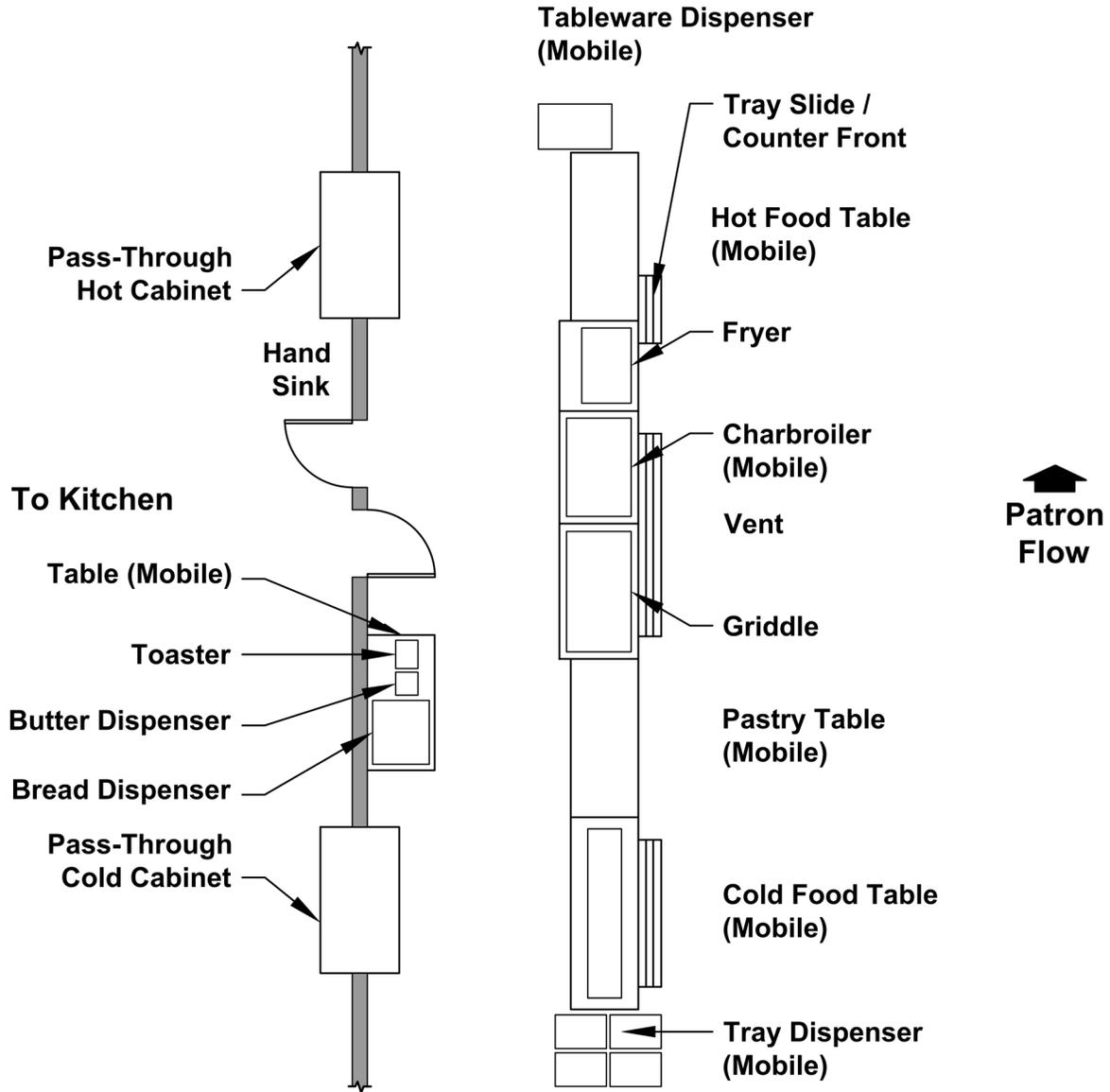


Figure A-5 Schematic Plan of Serving Line for Large Dining Facility

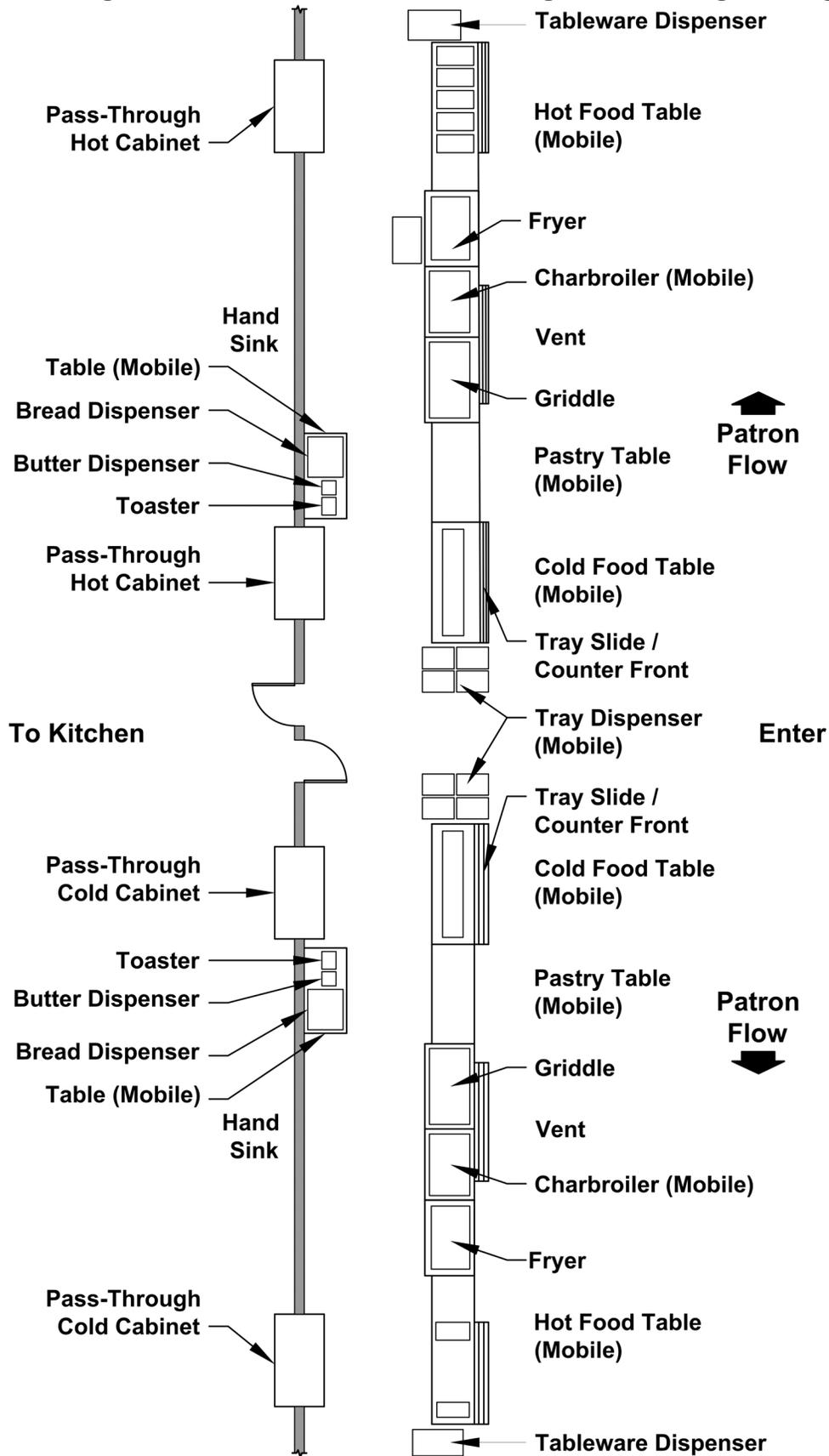


Figure A-6 Schematic Plan of Fast Food Serving Line

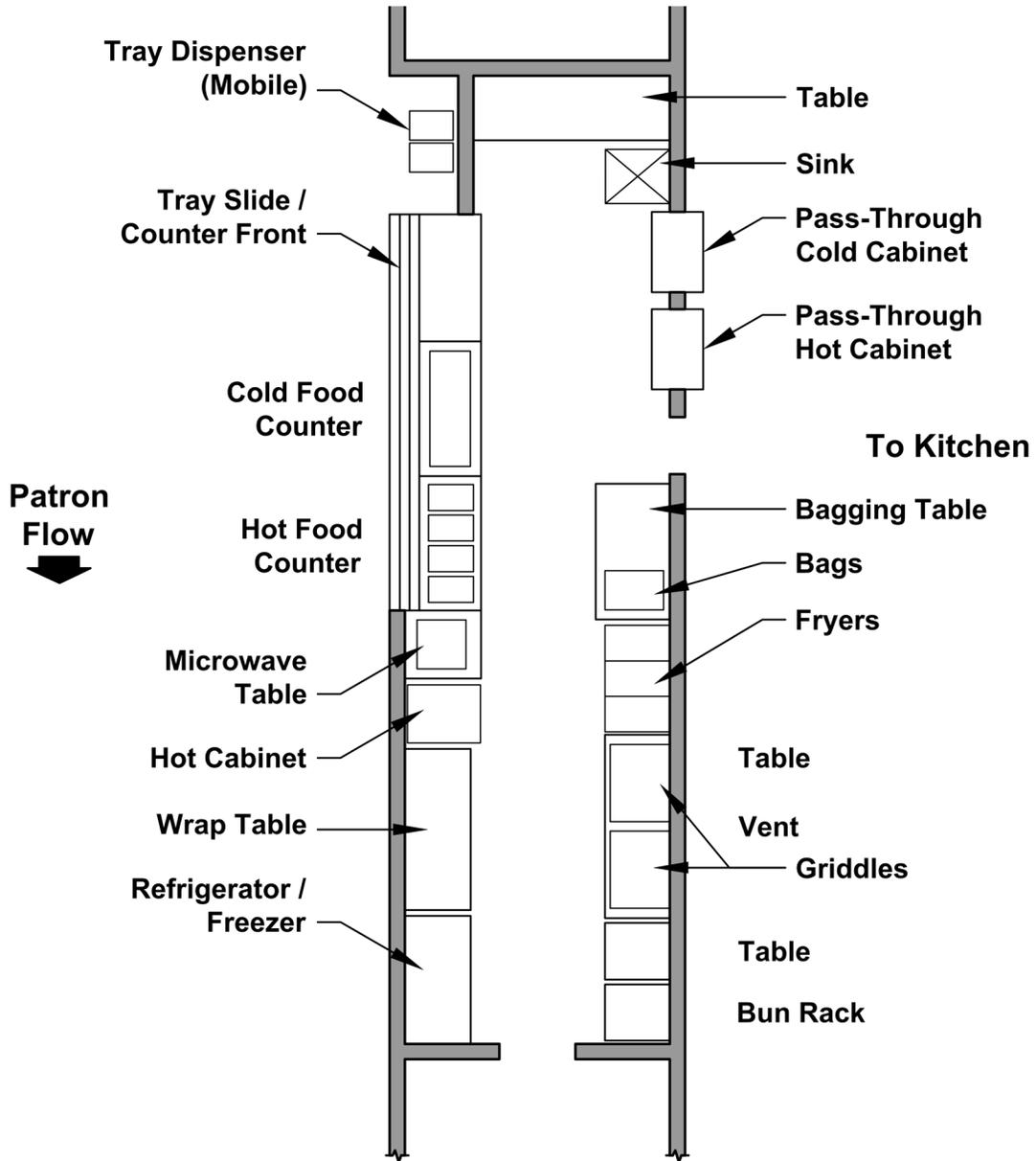


Figure A-7 Schematic Plan of Single Beverage Serving Line

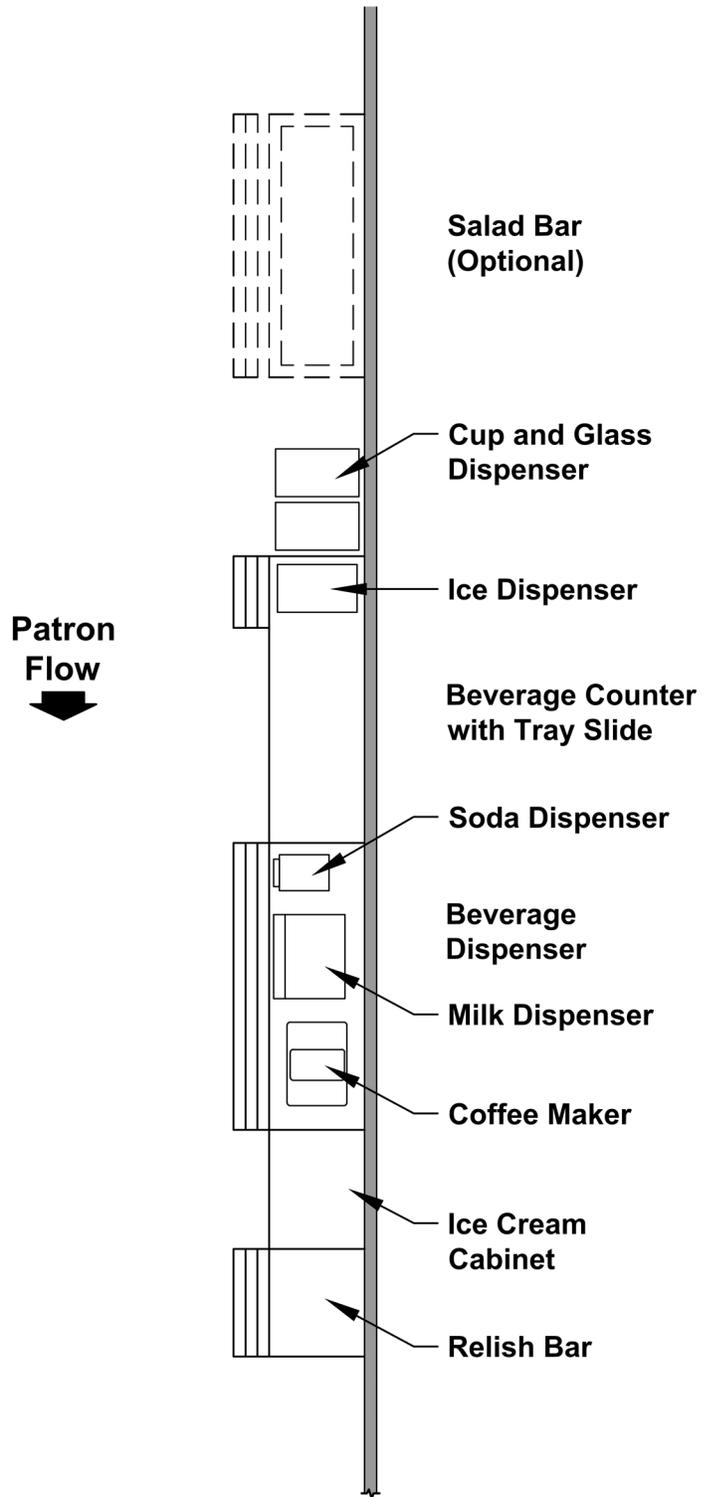
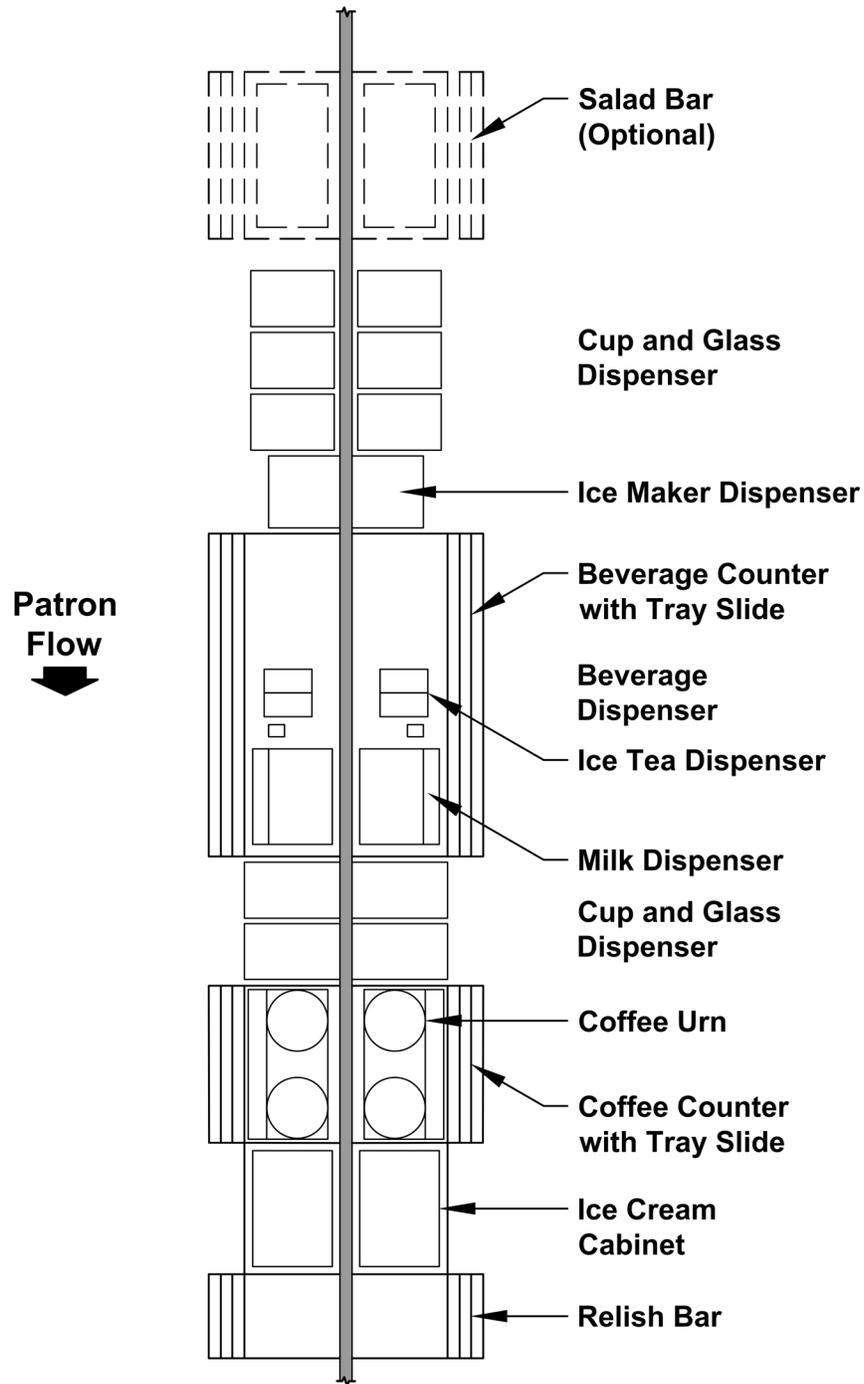
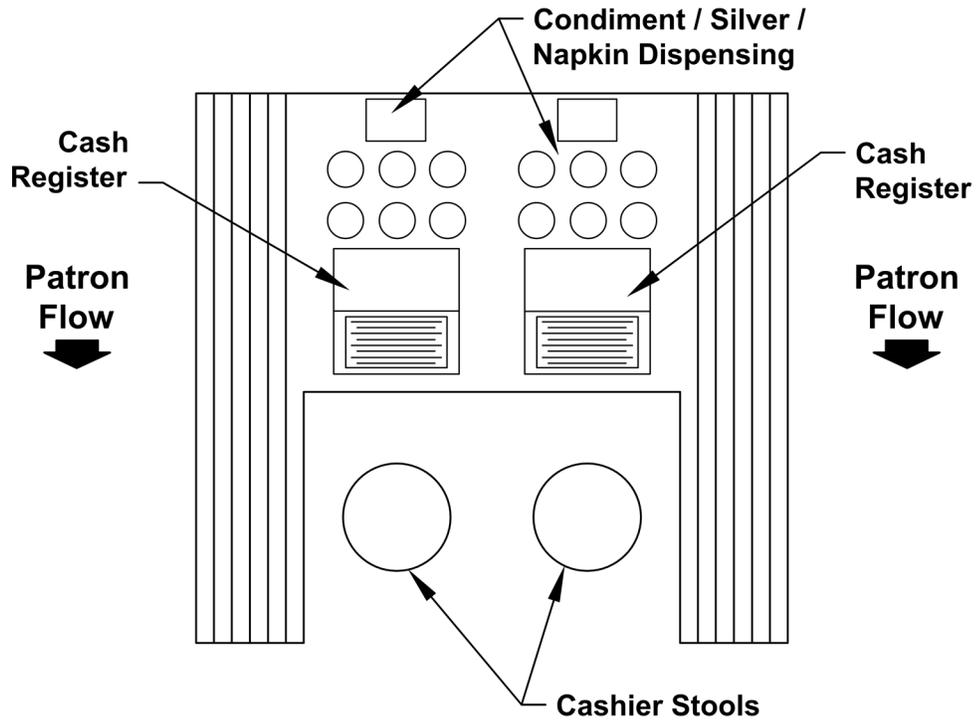


Figure A-8 Schematic Plan of Double Beverage Serving Line



Note:
Each line contains
identical equipment.

Figure A-9 Schematic Plan of Cashier Station



Note:
Cashier stands are produced in several configurations as standard items by several food service equipment manufacturers.

Figure A-10 Schematic Dishwashing Plan for Small Dining Facility

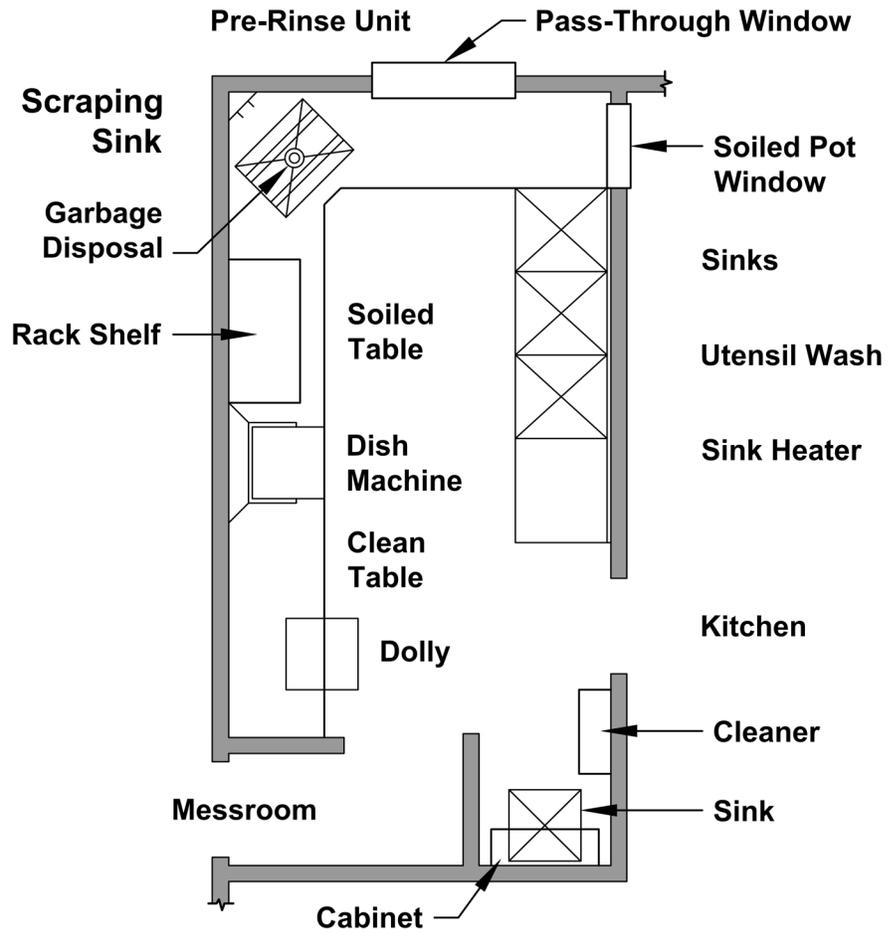


Figure A-11 Schematic Dishwashing Plan Medium Dining Facility

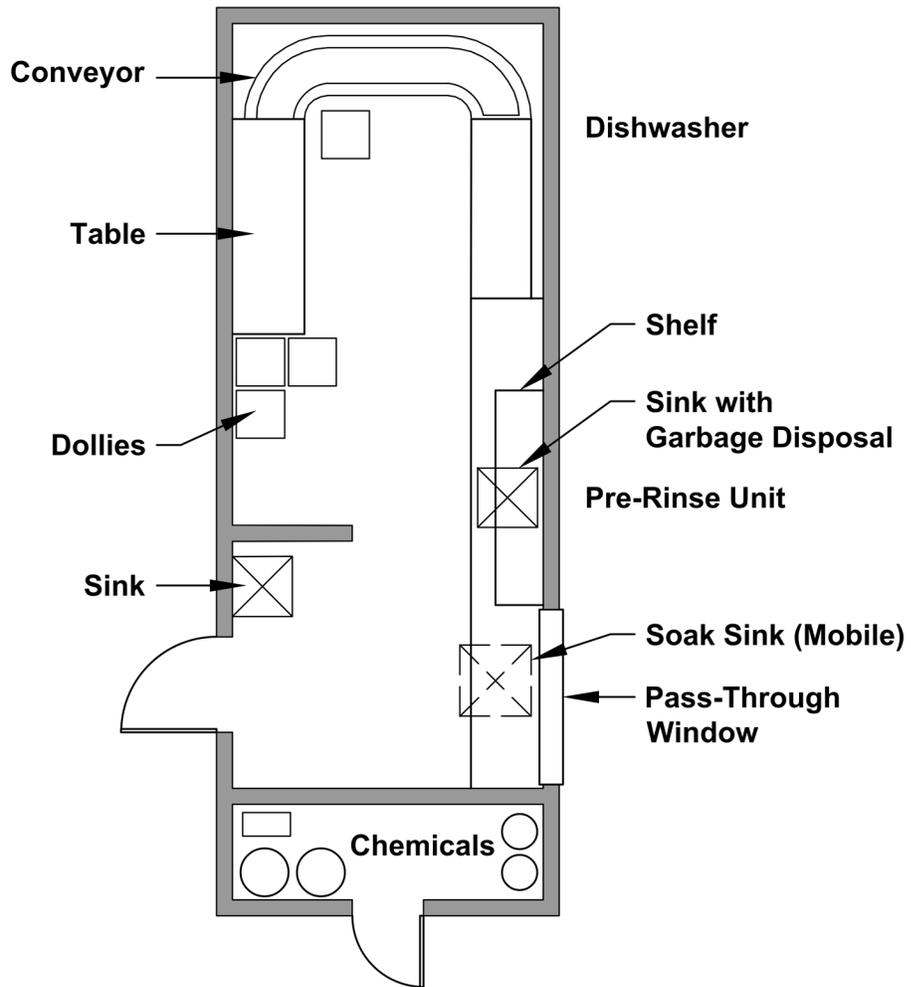


Figure A-12 Schematic Dishwashing Plan – Circular Type

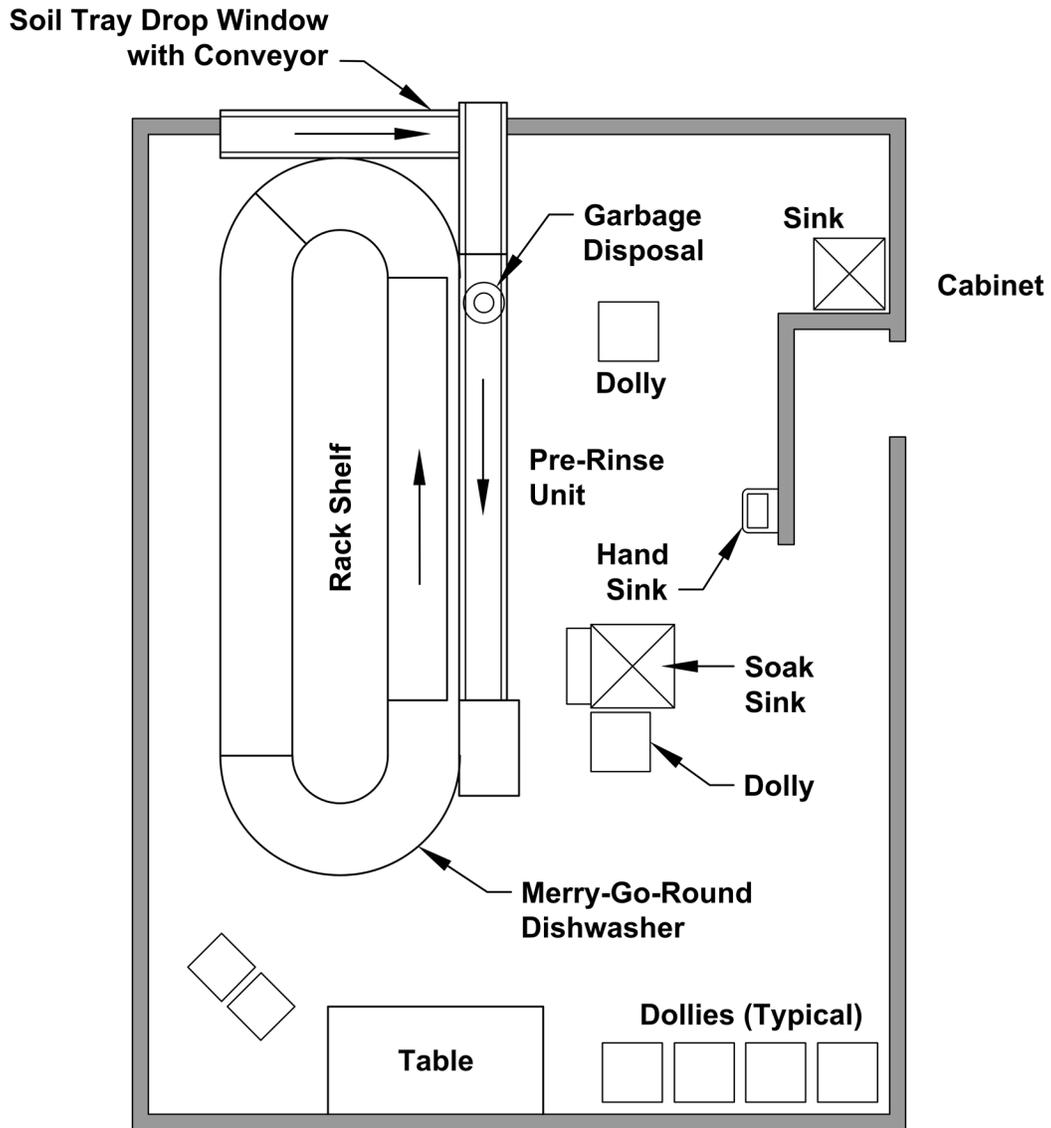


Figure A-13 Schematic Dishwashing Plan – Flight Type

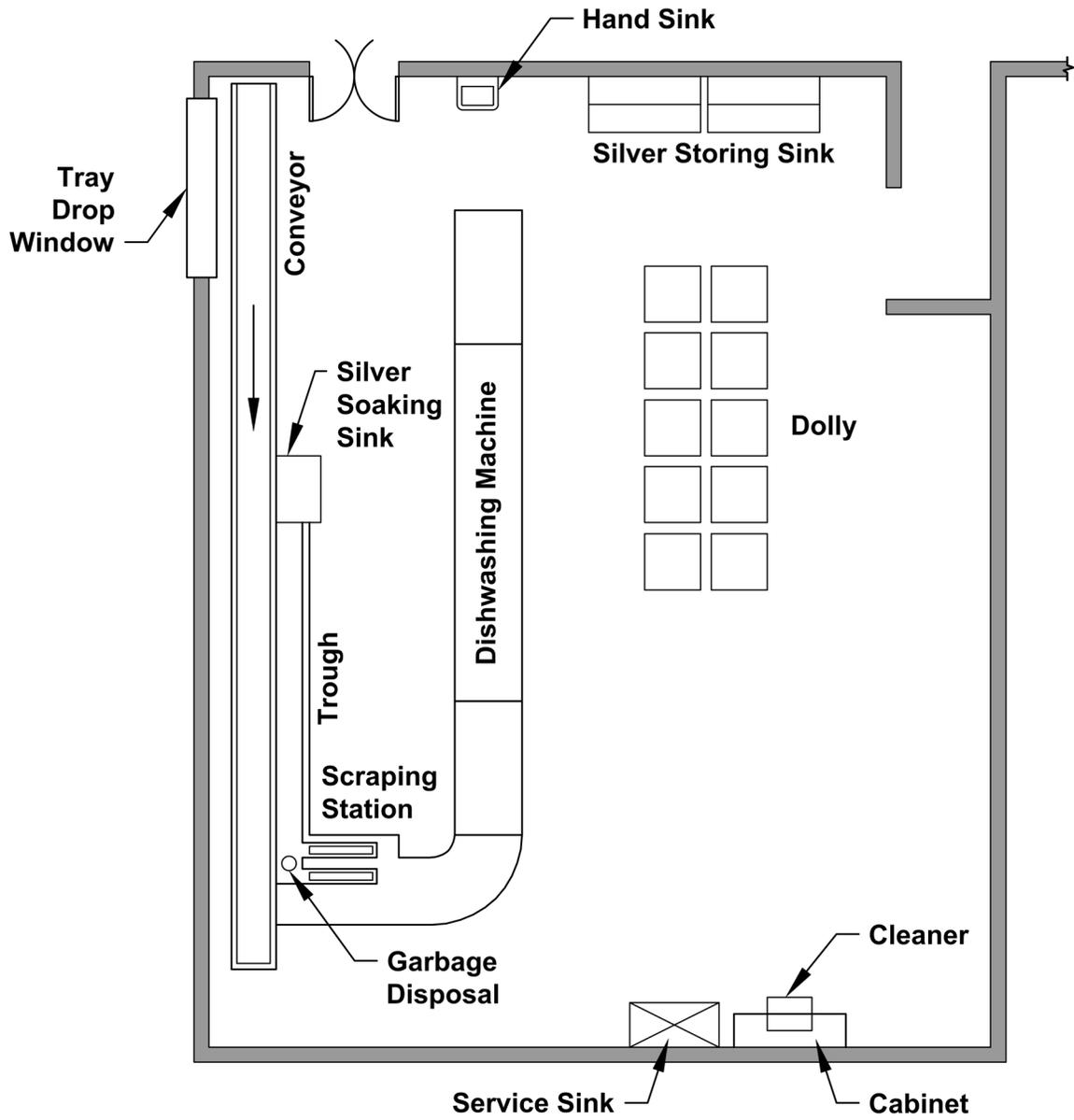


Figure A-14 Schematic Plan Utensil Washing

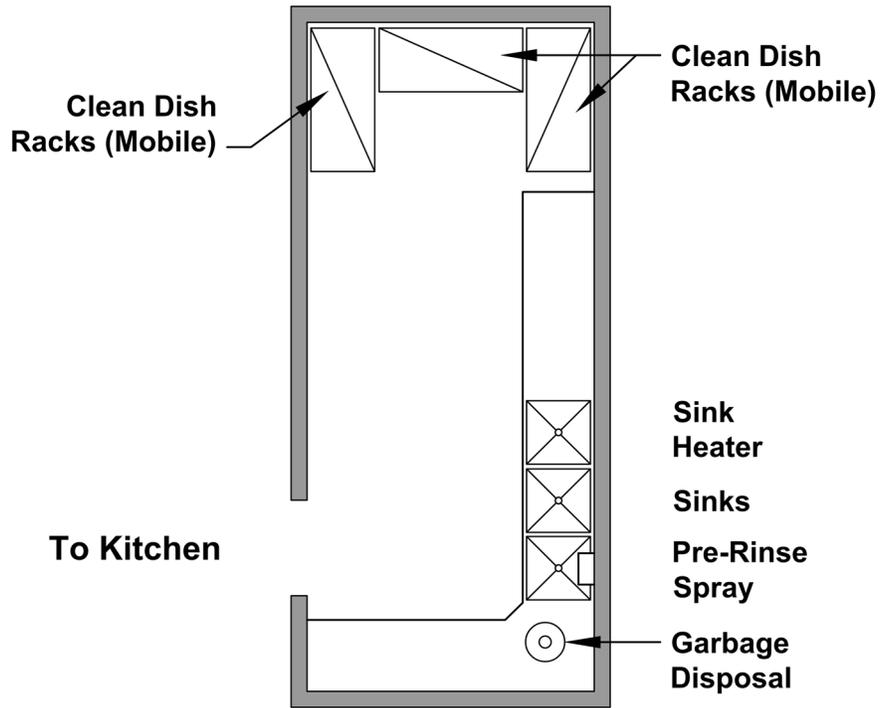


Figure A-15 Schematic Plan of Mechanical Utensil Washing

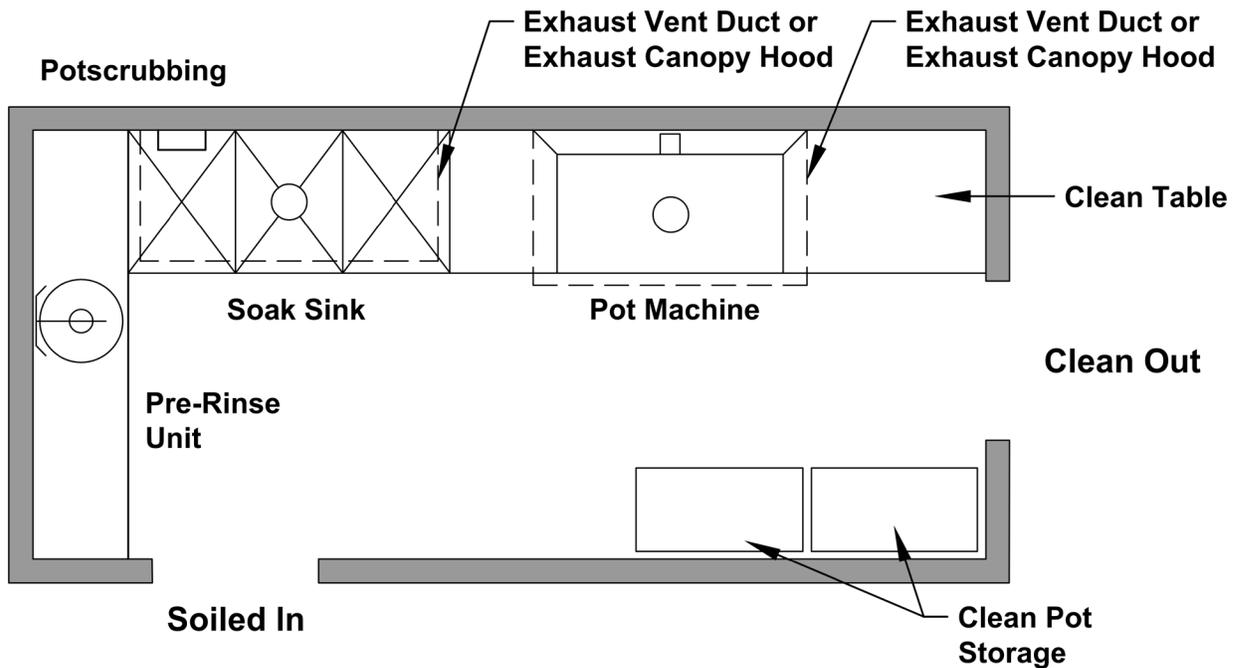


Figure A-16 Schematic Plan of Kitchen – Small Dining Facility (Pot Cookery)

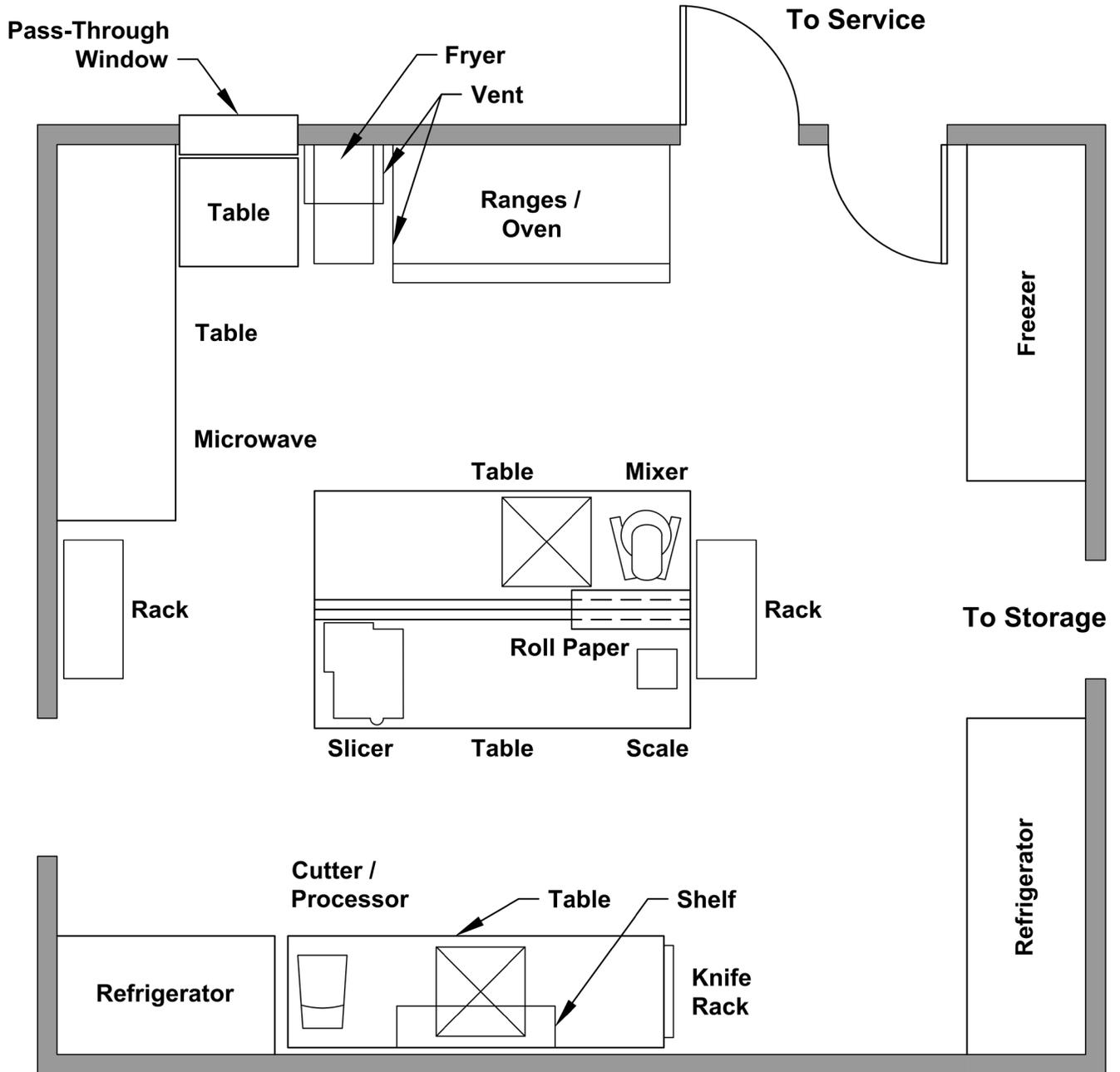


Figure A-17 Schematic Plan of Kitchen – Small Dining Facility (Ovens & Kettles)

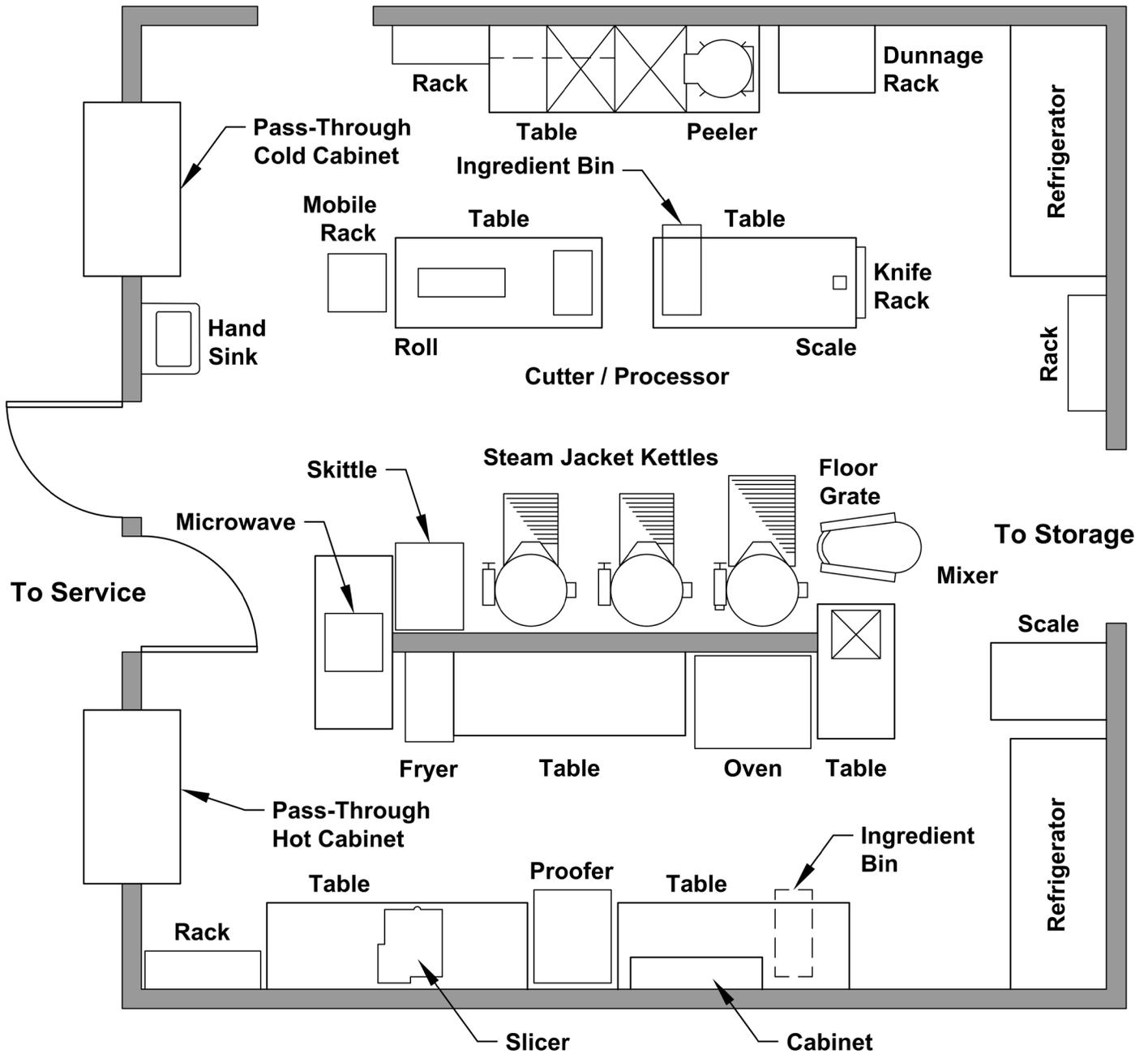


Figure A-18 Schematic Plan of Kitchen – Medium Dining Facility

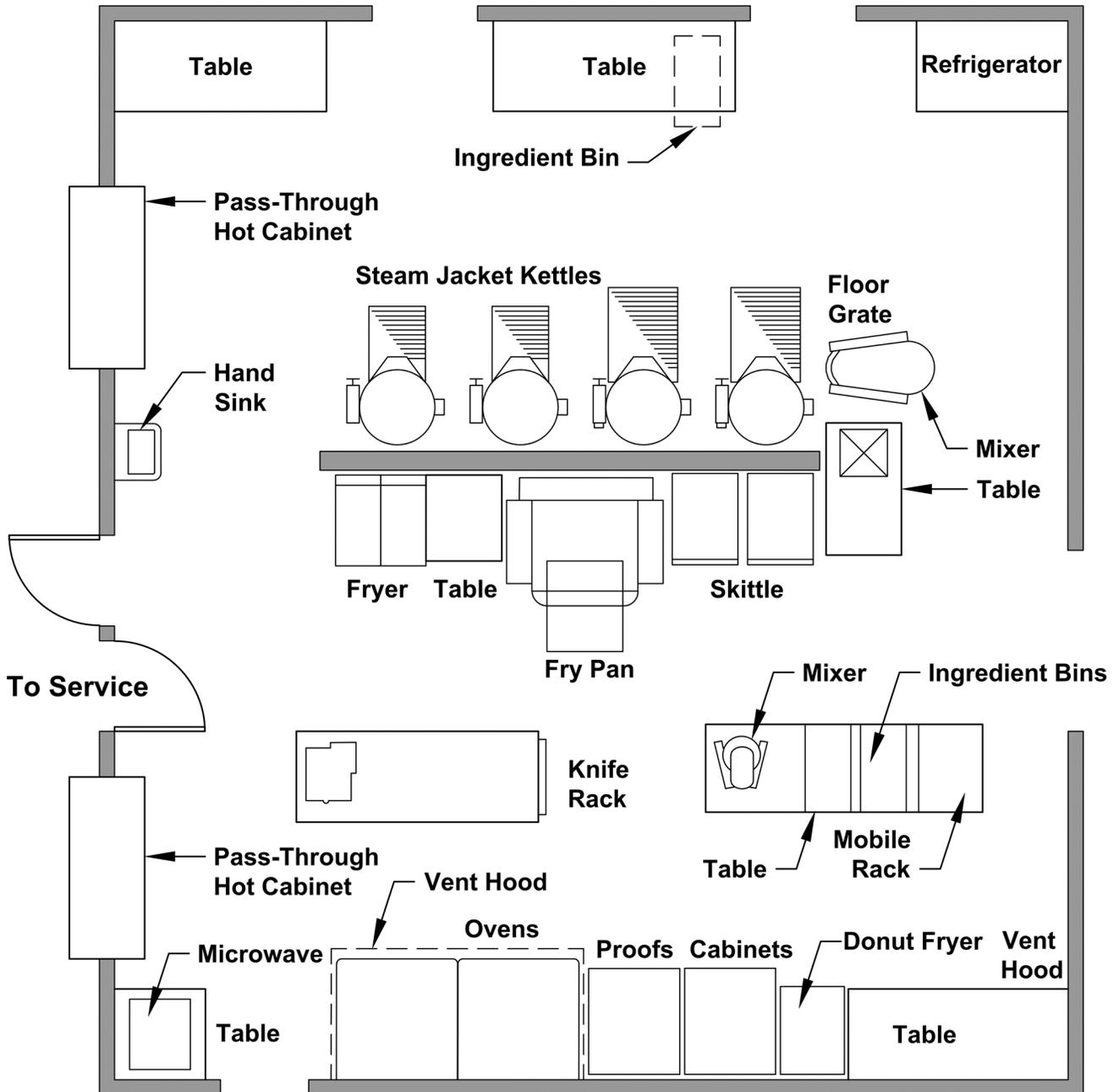


Figure A-19 Schematic Plan of Typical Vegetable Preparation

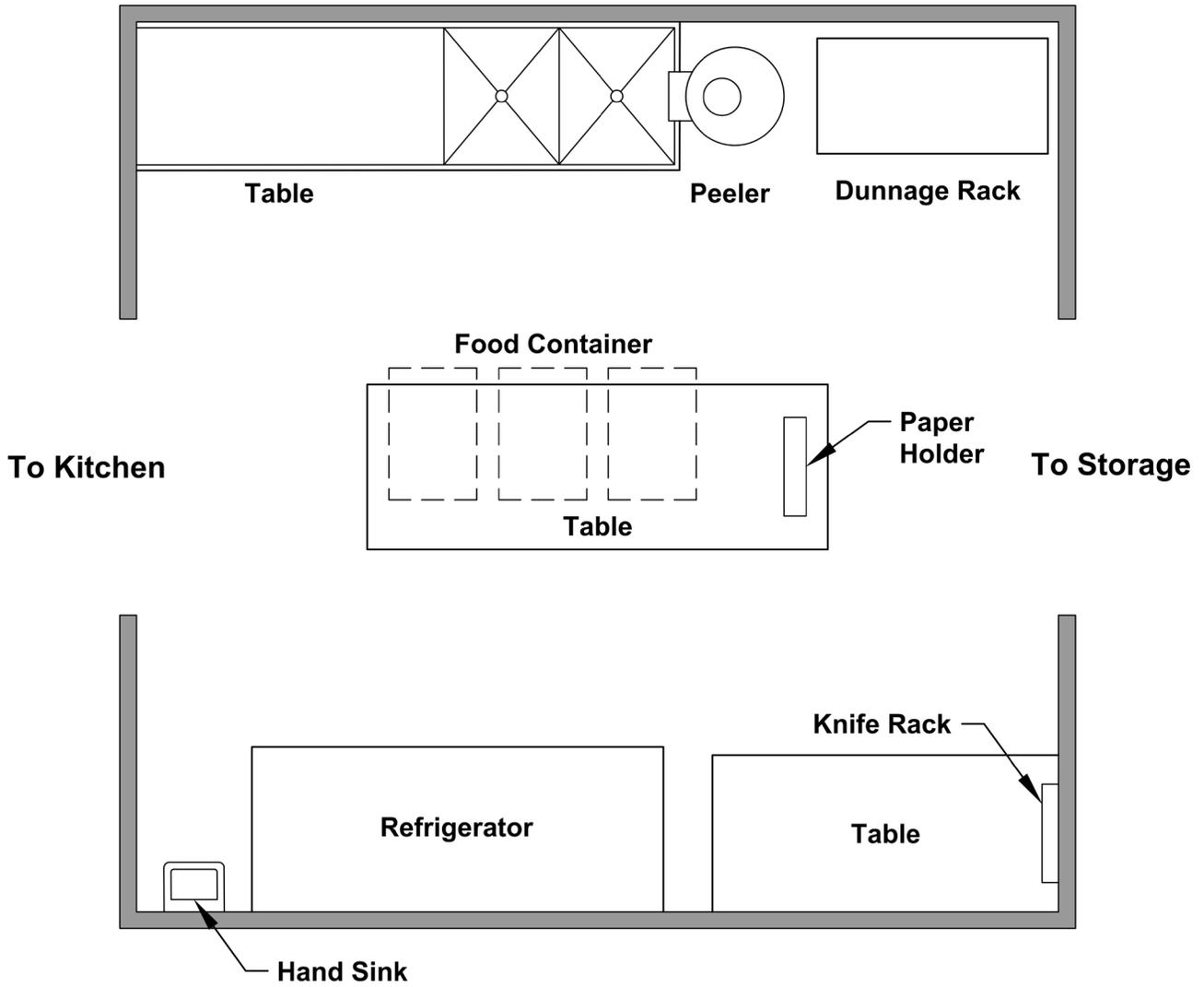


Figure A-20 Schematic Plan of Typical Bakery

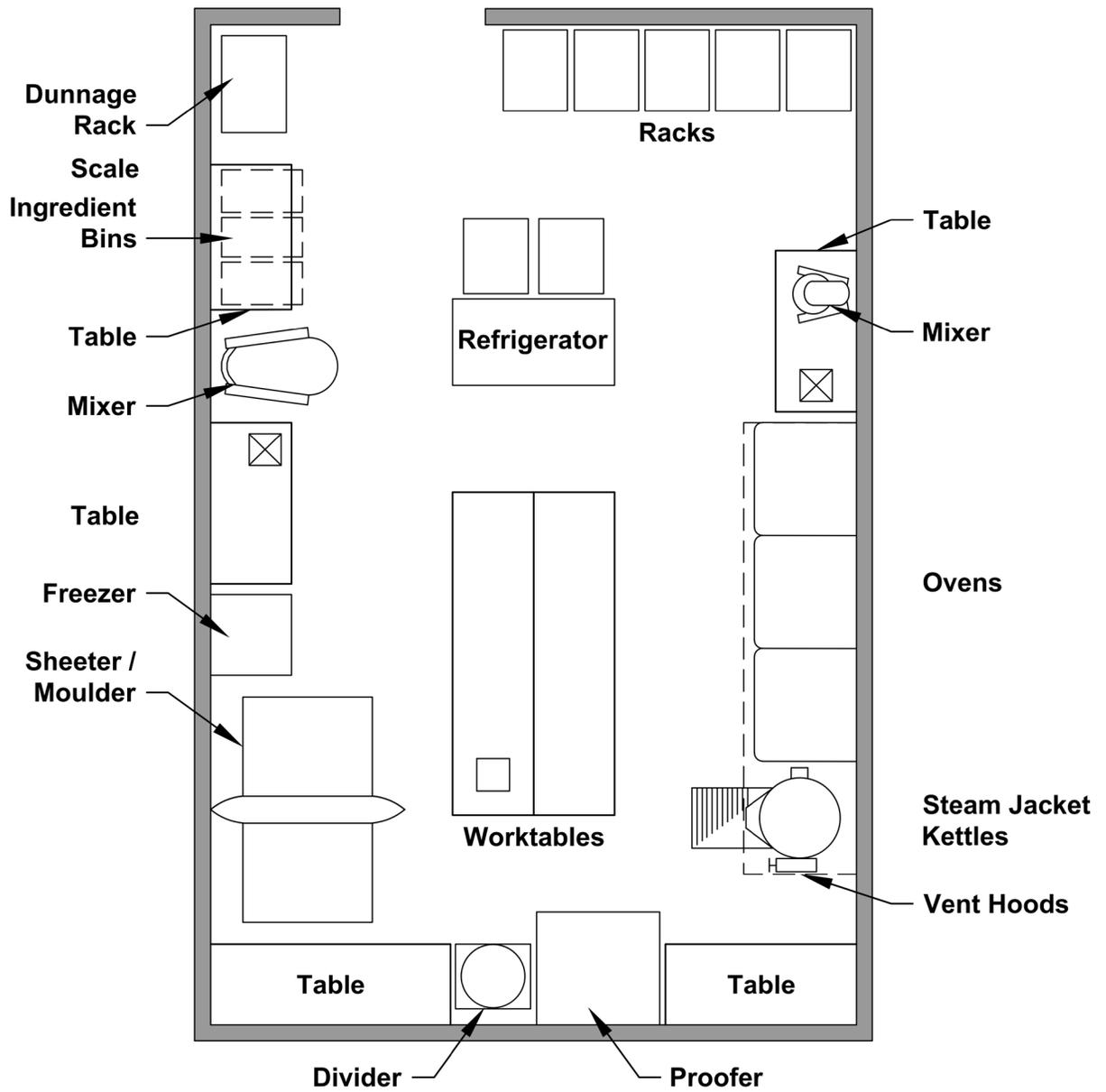


Figure A-21 Schematic Plan of Typical Storage Areas

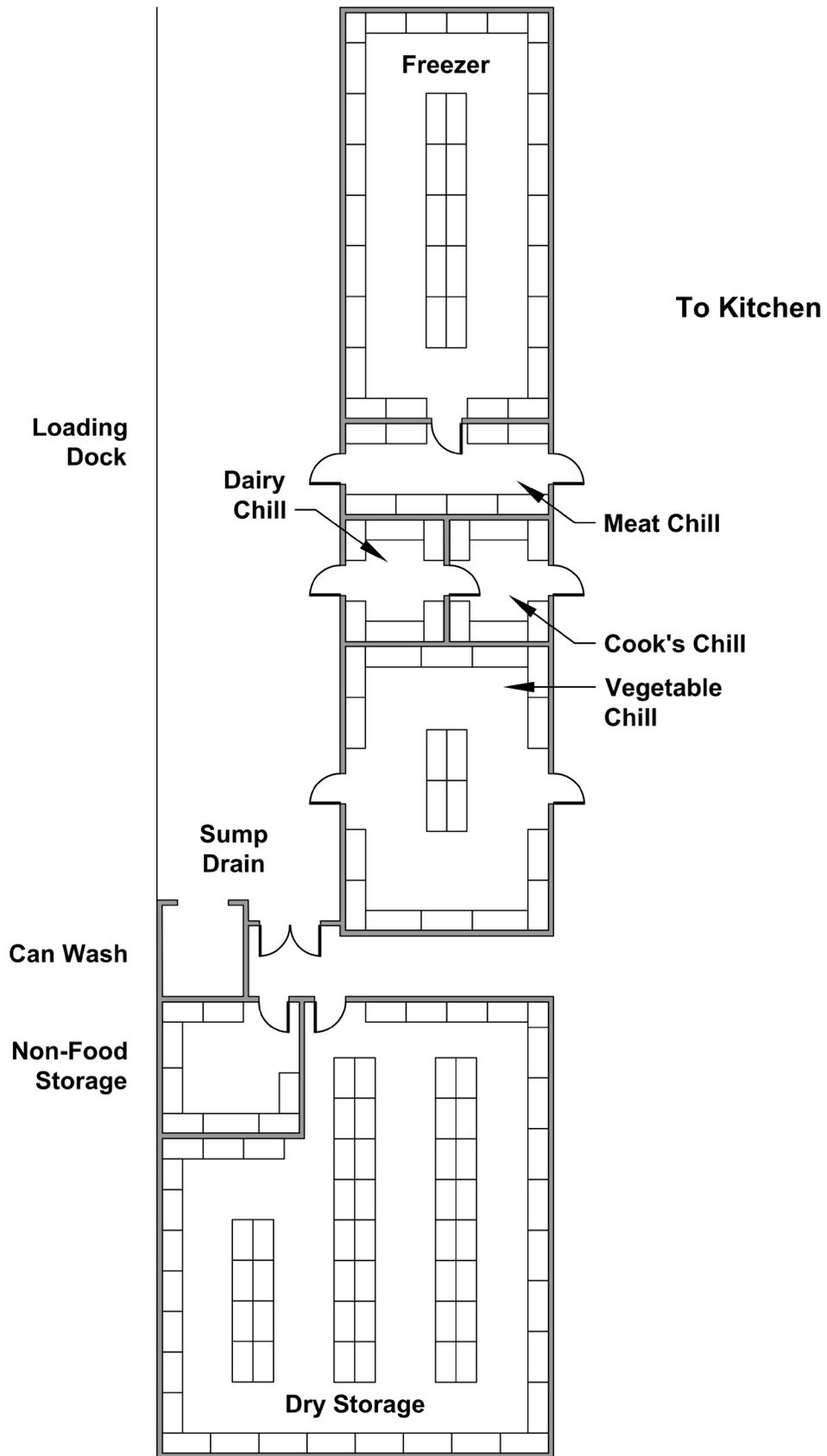
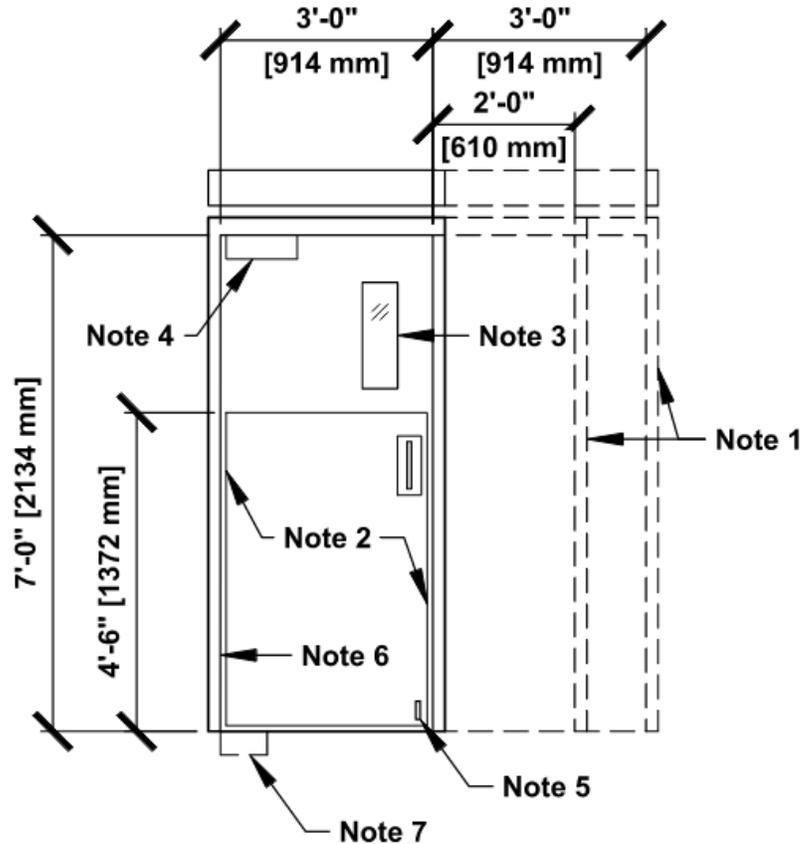


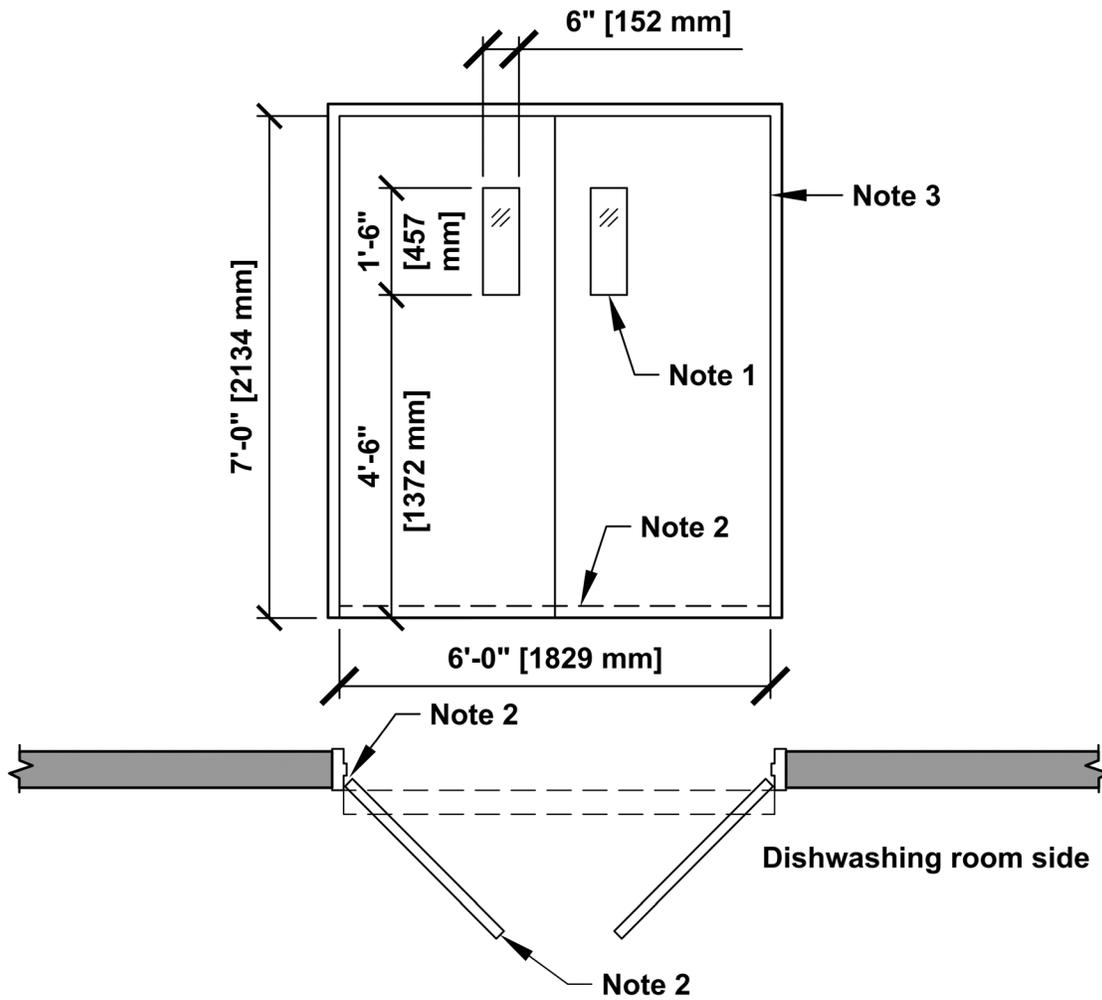
Figure A-23 Doors in Kitchen Area



Notes:

1. All doors in the kitchen area must be a minimum of 3'-0"x7'-0" [914 mm x 2134 mm]. Doors to storage and loading dock areas must be 6'-0" [1829 mm] wide double doors. If space limitations require the use of a 5'-0" [1524 mm] door, the inactive leaf should be 2'-0" [610 mm].
2. Provide 16 ga. stainless steel protection to all doors in areas having cart traffic.
3. Provide vision panel in all doors with two way traffic.
4. Provide heavy duty door closers with time delay closing feature at doors with heavy cart traffic.
5. Provide hold open device, either concealed indoor head or wall mounted. Floor mounted hold open devices are not approved.
6. Provide heavy duty ball bearing hinges at all single swing doors.
7. Provide heavy duty recessed pivot hinges at all double swing doors.
8. Provide plastic closure flaps at all exterior doors in cold storage spaces.

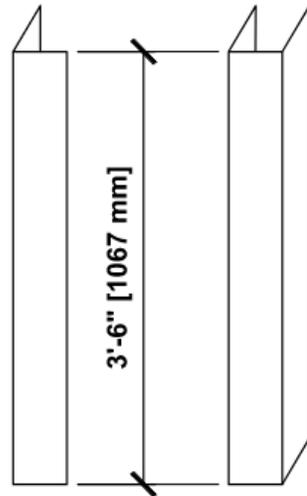
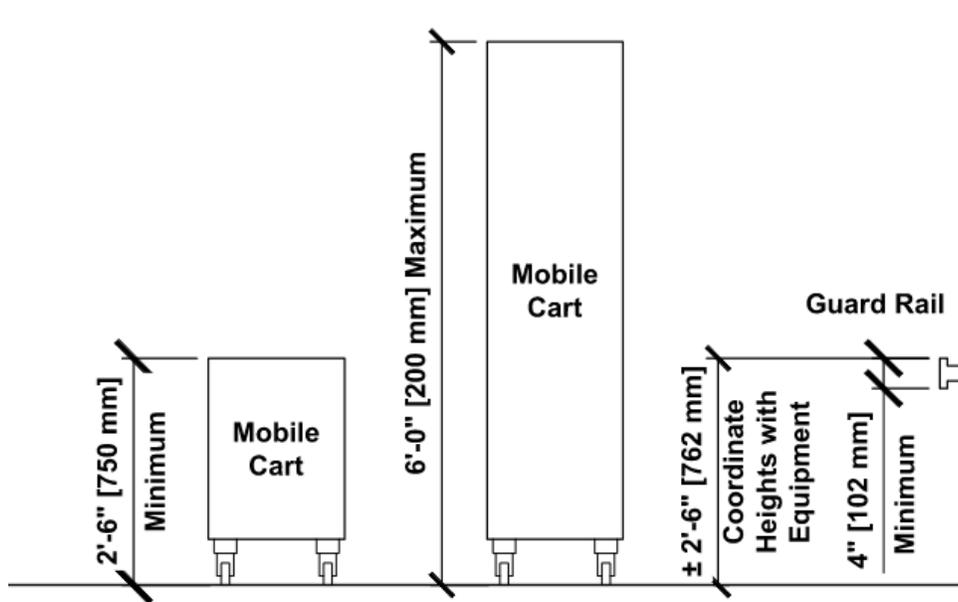
Figure A-24 Double Doors at Dishwashing Station



Notes:

1. Provide vision panels as indicated.
2. Provide sound seal hardware at all door edges.
3. Heavy duty ball bearing type hinges.

Figure A-25 Miscellaneous Guard Rail Locations and Corner Guards



Mount 14 ga. [1.90 mm] stainless steel corner guards flush with base. Attach with stainless steel fasteners and caulk with silicone sealant.

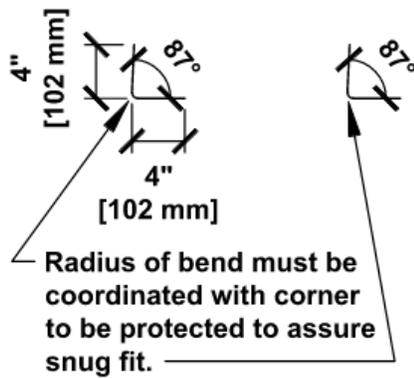
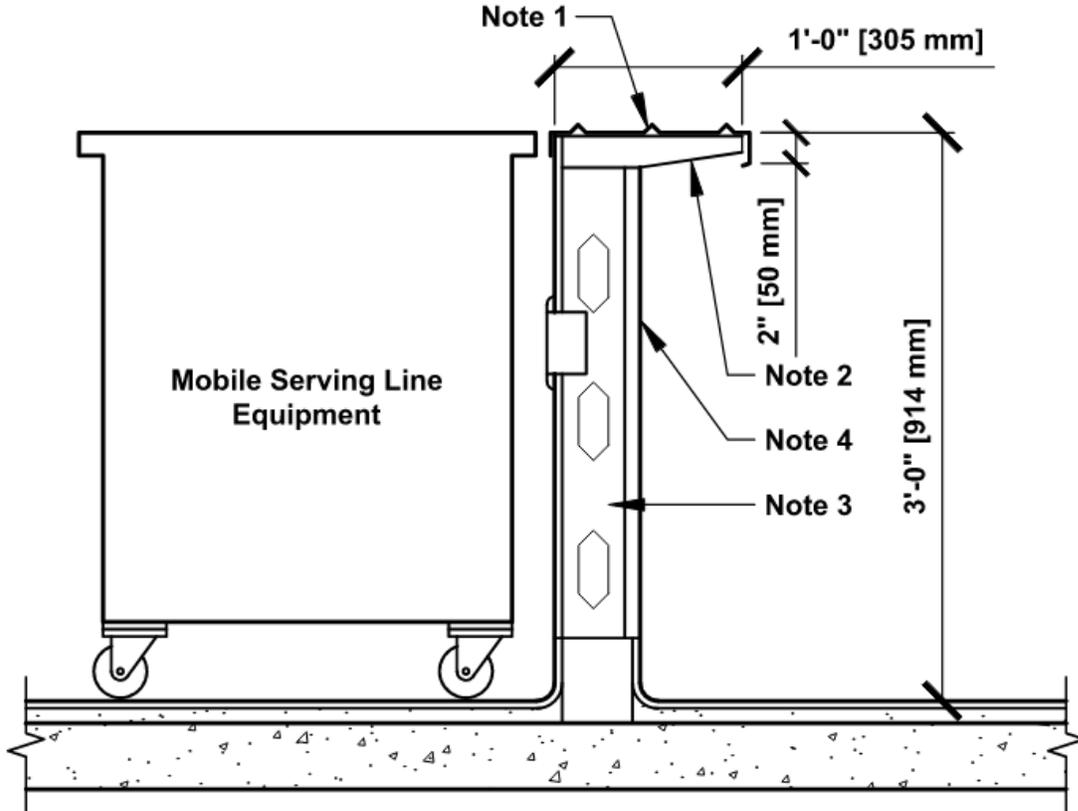


Figure A-26 Serving Line Tray Slide

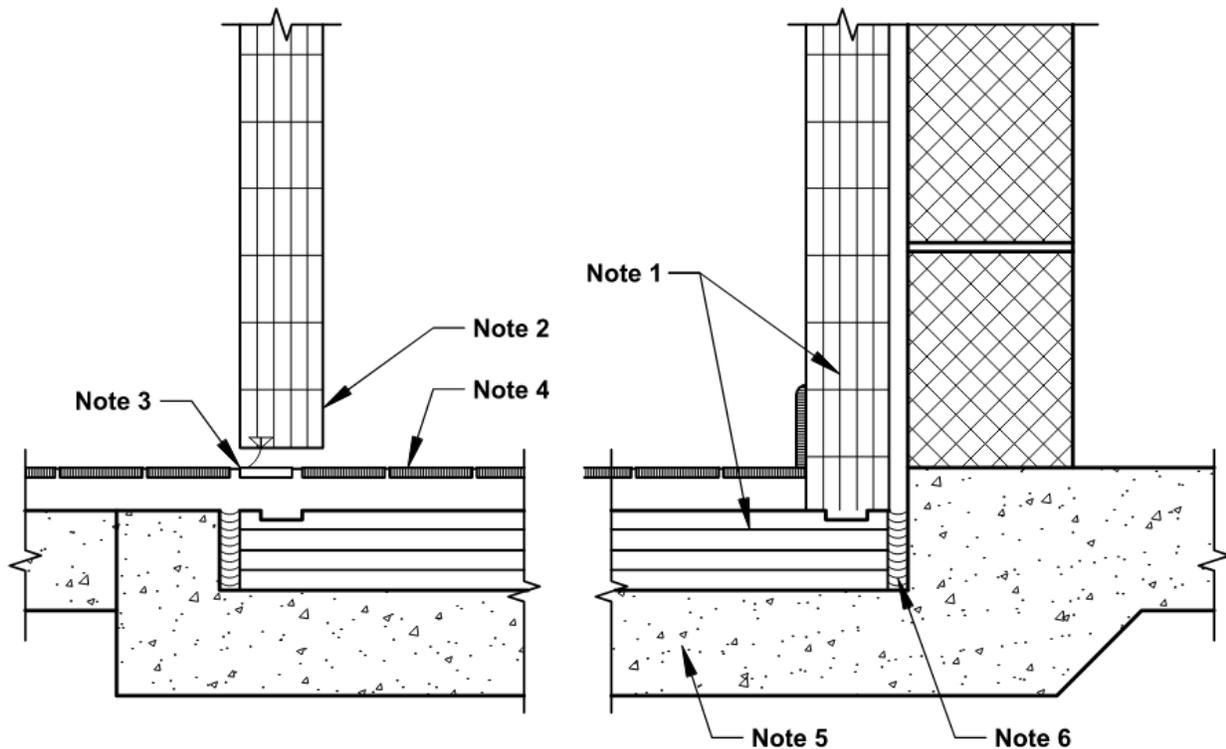


Notes:

For more information on trayslide details, contact Food Service System Office for current standard drawing.

1. 14 Ga. [1.9 mm] stainless steel trayslide secured to bracket with welded studs.
2. Stainless steel trayslide bracket welded to continuous stainless steel channel at 4'-0" [1200 mm] on center.
3. 16 Ga. [1.50 mm] structural steel stud frame at 16" [400 mm] on center, anchor bolted to concrete curb. Frame must turn corner at ends and run 2'-6" [750 mm] to stabilize free standing ends. Openings in stud work must be used as raceway for electrical wiring and other utilities as required.
4. Face panels may be plastic laminate, ceramic tile or approved wall surfaces.
5. Manufactured trayslide systems providing similar features to the above may be submitted for approval.

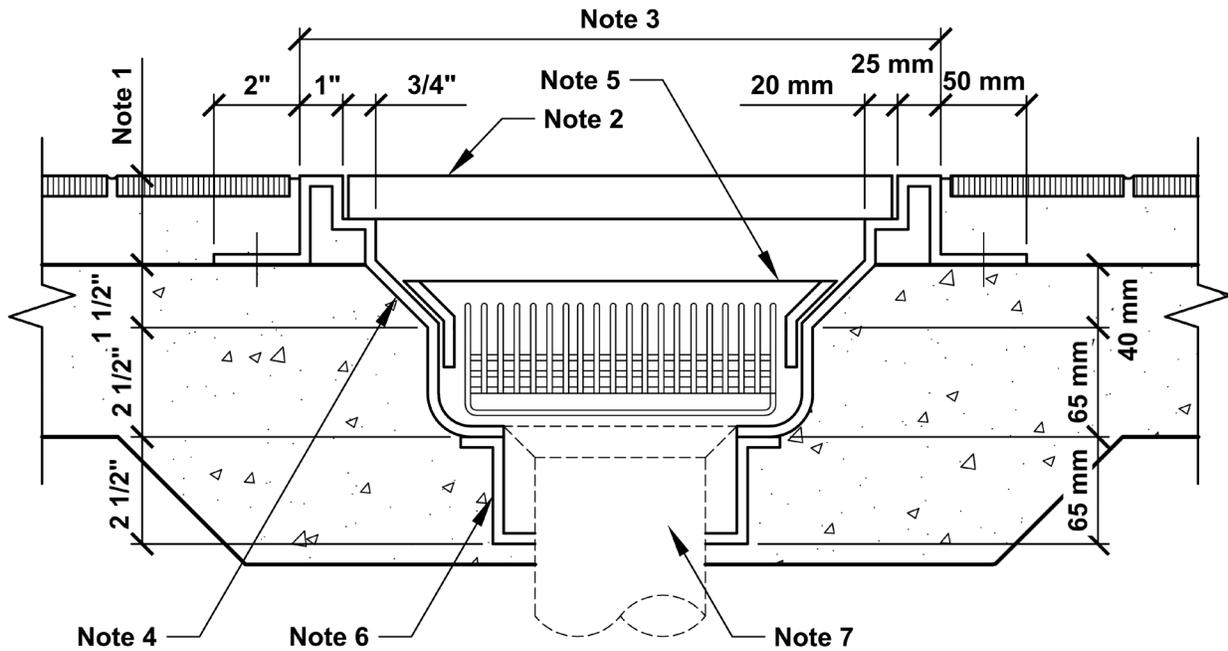
Figure A-27 Cold Storage Slab Insulation



Notes:

1. Metal covered insulated wall and floor panels.
2. Metal covered insulated walk-in door with adjustable floor wiper gasket.
3. Anti-sweat heater.
4. Quarry tile-in setting bed. Set tile dead level.
5. Recessed concrete slab on polyethylene vapor barrier. Depth of recess must be equal to thickness of insulated panel as specified and quarry tile and setting bed.
6. Provide sealant at edges of slab as indicated.
7. At freezer locations, if any portion of the slab is greater than 20'-0" [6000 mm] from the perimeter, the slab must be heated to prevent freezing.

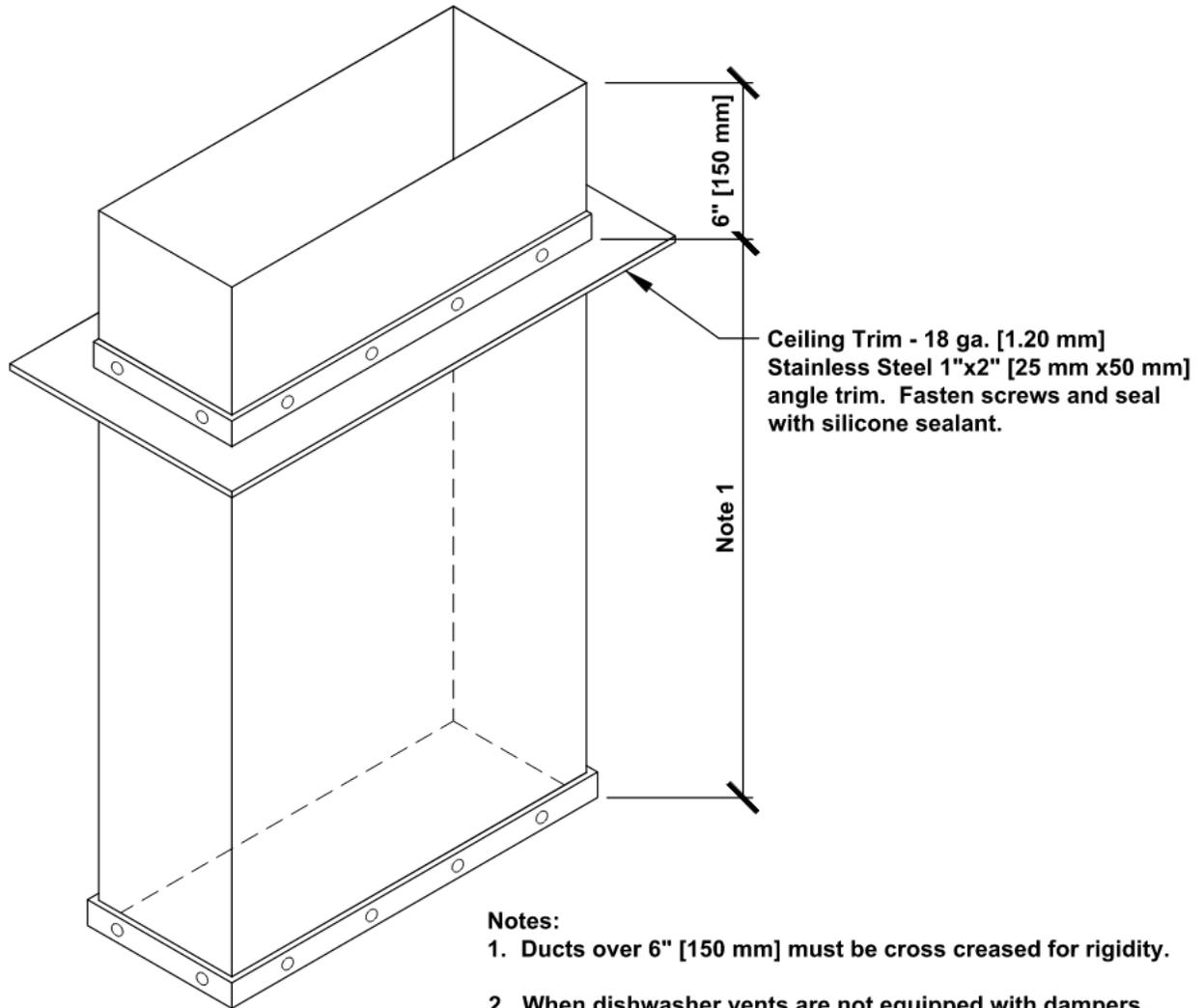
Figure A-28 Sump Drain – Pan Type



Notes:

1. Coordinate depth of frame with depth of quarry tile setting bed.
2. Grating to be 1/4" x 1" [6 mm x25 mm] stainless steel bars fully welded at all connections. Allow 1/8" clearance on all sides.
3. Size of grating to be determined by designer.
4. 14 Ga. [1.90 mm] stainless steel pan with all covered corners and fully welded seamless construction.
5. Removable mesh basket of #4 [5.75 mm] stainless steel wire mesh reinforced at top with 16 Ga. [1.50 mm] stainless steel perimeter frame.
6. 12 Ga. [2.65 mm] stainless steel stuffing box.
7. 4" [100 mm] waster plumbing with bell hub inside of stuffing box.

Figure A-30 Dishwasher Duct Vent



Notes:

1. Ducts over 6" [150 mm] must be cross creased for rigidity.
2. When dishwasher vents are not equipped with dampers, duct must be provided with an 18 ga. [1.20 mm] stainless steel damper and locking quadrant located between the louvers and the dishwasher vent.

Figure A-31 Schematic Plan of Scatter System Serving Line

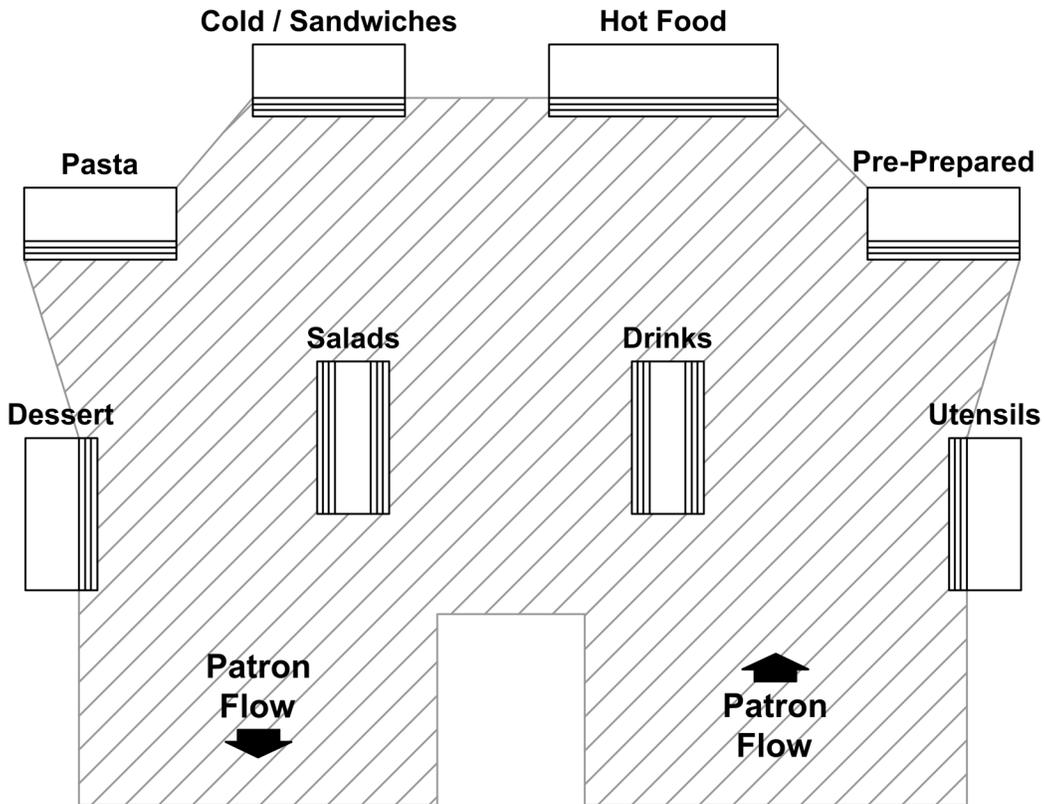


Figure A-32 Schematic Plan of Horseshoe-Shaped Serving Line

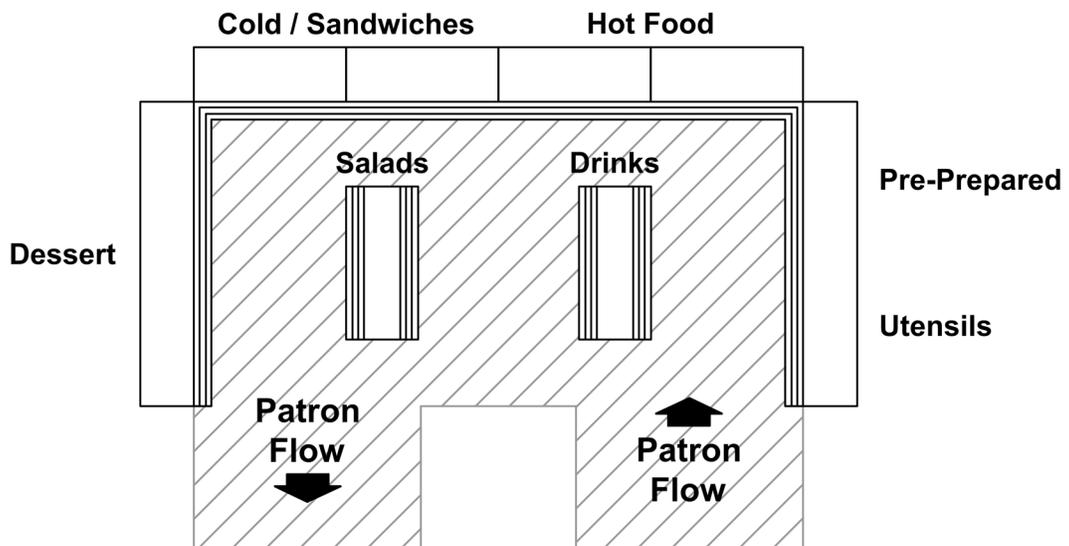


Figure A-33 Schematic Plan of Tee-Shaped Serving Line

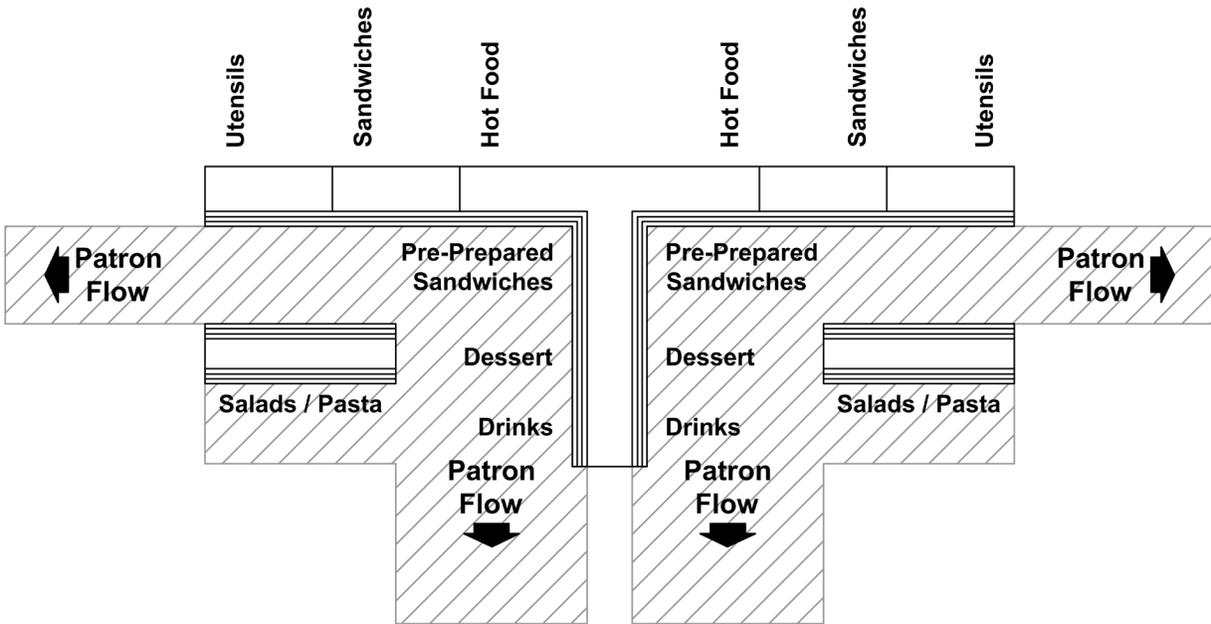
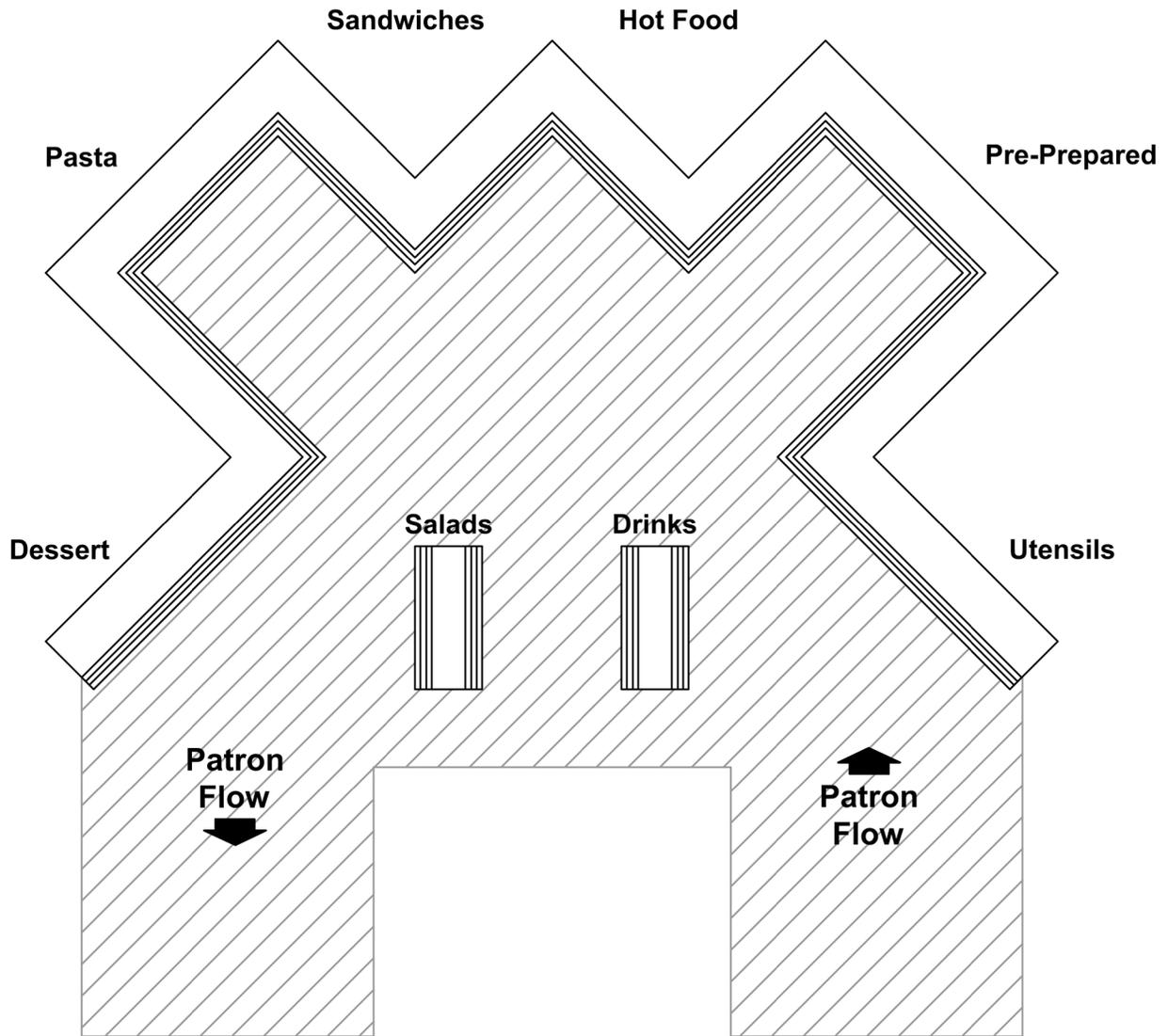


Figure A-34 Schematic Plan of Sawtooth-Shaped Serving Line



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APPENDIX B GLOSSARY

°C	Degree Celsius
°F	Degree Fahrenheit
AT	Antiterrorism
AV	Audio-Visual
CATV	Cable Television
CCTV	Closed-Circuit Television
CNIC	Commander, Navy Installations Command
CO ₂	Carbon Dioxide
CONUS	Continental United States
DAFMAN	Department of the Air Force Manual
DD1391	DD Form 1391, <i>FY__ Military Construction Project Data</i>
DoD	Department of Defense
EMCS	Energy Management Control System
FC	Facilities Criteria
FSO	Food Service Officer
ft	Foot
ft ²	Square Foot
gal	Gallon
HVAC	Heating, Ventilation, and Air-Conditioning
in.	Inch
kVA	Kilovolt-Ampere
L	Liter
LEED	Leadership in Energy and Environmental Design
m	Meter
m ²	Square Meter

min.	Minimum
mm	Millimeter
NAVFAC	Naval Facilities Engineering Systems Command
NFPA	National Fire Protection Association
NRC	Noise Reduction Coefficient
NSF	National Sanitation Foundation
OCONUS	Outside the Continental United States
OPNAV	Office of the Chief of Naval Operations
PN	Personnel
POS	Point-Of-Sale
qt	Quart
TYCOM	Type Commander
UFC	Unified Facilities Criteria
UFGS	Unified Facilities Guide Specifications
UL	Underwriters Laboratories

APPENDIX C REFERENCES

AIR FORCE

DAFMAN 32-1084, *Facility Requirements*, <https://www.e-publishing.af.mil/>

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS

ASHRAE 90.1 (latest edition), *Energy Standard for Buildings Except Low-Rise Residential Buildings*, <https://www.ashrae.org/technical-resources/bookstore/standard-90-1>

ARMY

Army Standard for Permanent Party Enlisted Personnel Dining Facilities (EPDF)

NAVY

OPNAV M-5100.23, *Navy Safety and Occupational Health Manual*,
<https://www.secnave.navy.mil/doni/manuals-opnav.aspx>

FOOD AND DRUG ADMINISTRATION (FDA)

Food Code, <https://www.fda.gov/food/retail-food-protection/fda-food-code>

ENVIRONMENTAL PROTECTION AGENCY (EPA)

Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings, <https://www.epa.gov/greeningepa/guiding-principles-sustainable-federal-buildings>

INTERNATIONAL CODE COUNCIL (ICC)

International Mechanical Code, <https://codes.iccsafe.org/content/IMC2021P1>

NATIONAL FIRE PROTECTION ASSOCIATION

<https://www.nfpa.org/Codes-and-Standards>

NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*

NFPA 101, *Life Safety Code*

UNDERWRITER'S LABORATORY

UL 710, *Standard for Exhaust Hoods for Commercial Equipment*

UNIFIED FACILITIES CRITERIA

<https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc>

UFC 1-200-01, *DoD Building Code*

UFC 1-200-02, *High Performance and Sustainable Building Requirements*

FC 2-000-05N, *Facility Planning Criteria for Navy and Marine Corps Shore Installations*

UFC 3-101-01, *Architecture*

UFC 3-120-10, *Interior Design*

UFC 3-201-01, *Civil Engineering*

UFC 3-201-02, *Landscape Architecture*

UFC 3-301-01, *Structural Engineering*

UFC 3-400-02, *Design: Engineering Weather Data*

UFC 3-410-01, *Heating, Ventilating, and Air Conditioning Systems*

UFC 3-420-01, *Plumbing Systems*

UFC 3-520-01, *Interior Electrical Systems*

UFC 3-530-01, *Interior and Exterior Lighting Systems and Controls*

UFC 3-570-01, *Cathodic Protection*

UFC 3-575-01, *Lightning and Static Electricity Protection Systems*

UFC 3-580-01, *Telecommunications Interior Infrastructure Planning and Design*

UFC 3-600-01, *Fire Protection Engineering for Facilities*

UFC 4-010-06, *Cybersecurity of Facility-Related Control Systems*

UNITED FACILITIES GUIDE SPECIFICATIONS

<https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs>

UFGS 11 05 40, *Common Work Results for Foodservice Equipment*

UFGS 11 41 11, *Refrigerated and Frozen Food Storage Equipment*

UFGS 11 42 00, *Food Preparation Equipment*

UFGS 11 44 00, *Food Cooking Equipment*

UFGS 11 46 00, *Food Dispensing Equipment*

UFGS 11 47 00, *Ice Machines*

UFGS 11 48 00, *Cleaning and Disposal Equipment*

UFGS 23 09 23.01, *Lonworks Direct Digital Control for HVAC and Other Building Control Systems*

UFGS 23 09 23.02, *BACnet Direct Digital Control for HVAC and Other Building Control Systems*

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APPENDIX D SUPPLEMENTAL RESOURCES

AIR FORCE

CC 721215, *Dining Hall in Airmen Dormitory*

CC 722345, *Fast Food Service Facility*

CC 722351, *Airman Dining Facility (Detached)*

CC 722356, *Officers Dining Facility (Detached)*

CC 723388, *Flight Kitchen*

UNIFIED FACILITIES CRITERIA

UFC 3-540-01, *Engine-Driven Generator Systems for Prime & Standby Power Apps*,
<https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc>