Planning Food Service Facilities For Volunteer Organizations

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CHAPTER I: THE PLANNING STEPS

PURPOSE. Whether you are a church group, community center, a service club, or a program site for Nutrition for the Elderly this circular is designed to help you ask perceptive planning questions regarding a food service facility. It covers the plans, design, and equipment needed to serve food to a large group of people, using non-professional help from your organization. And it assumes the social aspects of working with volunteers will be as important to your group as efficient, economical food service operation.

If the planning steps provided by this circular are followed, your group can be well on its way toward an efficient, economical, and sociable food service facility designed to meet your specific needs.

“PRE-PLANNING” QUESTIONS. Since no two social organizations are alike in membership, aims, facilities, and resources, your group must first decide upon concrete objectives for its food service facility. Then the group must make a series of clear-cut decisions on details of scope and type of service before planning a facility that will effectively meet its objectives. Here are some questions to start you thinking:
1. Is the primary objective to provide food for your members or to raise funds?
2. Will you serve snacks, luncheons, or full-course meals?
3. How many people will be served? And how many times per month?
4. Will food be served cafeteria style? Family style?
5. Will you rework a building or build a new one to house your food service facility? How much space is available for receiving, storage, preparation, and production? Can utilities be expanded or extended? (The receiving, storage, preparation, production, and service sequence is explained in the Appendix.)
6. Will any professional food service workers be used? 
7. To what extent will food be prepared in the home? 
8. Will frozen, "convenience" foods be used? 
Now let's look more closely at the questions and some of the detail decisions they require.

**Open Operation**  
An "open" food service operation literally opens its doors—at least occasionally—to serve meals to non-members. Normally non-commercial organizations conduct open operations to raise money for their own organization or for civic or charitable objectives.

For example, by serving a local, moderately sized luncheon club once a week, your organization may make just enough profit to finance its own activities. Or you may have a big affair in mind, serving hundreds a widely advertised pancake luncheon each month with profits going to charity or paying the church mortgage.

Running a food service facility to earn profits for group activities or charity appears to be a practical idea. But two key points must be considered:

The first is the minute you enter the "for profit" field by serving more than your own members and guests, your group is legally "in business." Therefore, like any other business, your receipts are subject to state and local taxes, and your profit is taxable income. Even more important, operating profit-making facilities may affect your group's entire tax status. Not only the food service profit but even income from dues and contributions might be taxed!

However, institutions such as churches and community centers legally may rent facilities to another group that charges for an open meal. The rent should include the cost for utilities, a fair rate of depreciation, and a fair amount of the cost of the facilities. Such fees could wipe out any profit the renting group might make, but they would pay the furnishing institution a legitimate return on its investment. The fee can be considered a cost to the renting organization. Since \( COST + PROFIT = SALES \), a zero or "minus profit," or "loss" could result. That could maintain the non-profit status of the operating organization. The break-even formula would read: \( COST + 0 = SALES \), or \( COST = SALES \).

The second consideration, food served to non-members must fully comply with the regulations of the local Public Health Authorities. Compliance with these regulations inevitably increases the initial cost of food service facilities and the operational hazards of the group using them. Also check carefully with the Internal Revenue Service regarding the tax status of both the renting group and the organization furnishing the facilities. Above all, don't expect authorities to take the charitable position: "Sure, that's the law, but because of your objectives we'll look the other way." Remember, personnel, administrations—and the pressures on them—change. Don't be caught holding an expensive—and legally indefensible—bag!

**Closed Operation**  
A "closed" type operation, on the other hand, offers a special social advantage: preparing food for fellow members can be a rewarding social event in itself. But the right setting is important. To be enjoyable, the setting must encourage interaction among the working members. Then it can strengthen their bonds of fellowship and their sense of belonging. It also can enhance their mutual esteem and aid them in developing cooking and managing skills. Attaining for their members such self-fulfillment as this is the reason most community organizations exist.

But consider carefully in your discussions that all-important "if."

**If the setting is designed to encourage social interaction among those working in it.**

The social setting would be completely different from the commercial one. There, to cut costs, a conscious effort is made to keep stuffs small and to isolate each worker in an efficiently arranged "station." There is no time for visiting or other non-work communications. On the other hand, voluntary, non-professional groups normally have more than enough workers. And will continue to have them if they provide a work setting that makes preparing food much as it is at a family get-together like Thanksgiving.

**FAIR COMPETITION?**  
Let's take another look at the open operation. Volunteer, non-professional organizations in general consider their costs for producing a meal as the food cost alone. But what about the cost of labor? For commercial organizations that generally runs from 25 to 35 percent of the selling price. And what about the fixed costs commercial organizations must consider? Profit, depreciation, insurance, and interest on loans and mortgages must be provided for.

Consequently, volunteer organizations can offer the public more good food and service for its money than a commercial establishment.

That means volunteer groups give unfair competition to the legitimate commercial food service operator. Unlike the volunteer group, he must pay his workers and finance his share of their fringe benefits. He must pay sales taxes on his receipts and income taxes on his earnings. And he must consider such fixed costs as insurance and depreciation. In other words, an organization that offers meals at a price based on food costs alone plus a "contribution" is unfair. For the group actually imposes a forced contribution, in terms of customers and resultant profits, on a single industry. In effect, your local restaurant owner donates the profits he would have made to your organization because his customers have been drawn away by "ridiculously" low prices.

Or look at it this way: What if a church were to open a clothing or hardware store? They would only have to
pay the base cost for the goods sold, without paying the additional costs of labor, benefits, and other overhead.

Of course they could undersell the legitimate merchants by a wide margin!

Yet, the taxes those merchants pay often help support the organizations that compete with them. And contributions from merchants are often a major source of support for volunteer groups!

Cooperation seems to be a better solution. Volunteer groups serving non-members could contract with local operators to furnish the food, confining the organization’s activities to service and clean-up. Generally, commercial operators are happy to furnish food produced in their own places of business at, or only slightly above, actual production costs. They hope for a profit of good will that could lead to increased business at other times.

Cooperation offers other advantages too: First, the cost of equipment is much lower, both initially and over the long haul, if you only serve food, not produce it. The cost of storage, preparation, and production equipment would be saved. These constitute the greatest part of the cost of a complete food service installation. Second, the time and labor that would be spent storing and preparing food could be devoted to other, possibly more profitable activities. And third, the good will built with the business community by cooperating, rather than competing with them, may lead to further cooperation and a higher level of material support from businessmen.

Once your group has decided whether to have “open” or “closed” food service and full production or “contract production,” you can proceed with confidence to the next pre-planning decision.

**SCOPE OF YOUR OPERATION**

Your decision on scope affects the kind, amount, and types of equipment needed. In turn the equipment affects the amount of floor area you will need because different pieces require different amounts of space. Besides equipment, in determining work space consider the number of workers needed to serve the largest number of persons your dining facility can handle.

Also answer these questions: Will you confine yourselves to full-course dinners or snacks or luncheons? Or will you need to serve in several of those categories? If so, how many people will you serve in each? How often? (See the Planning Check list in the Appendix.)

**TYPE OF FOOD SERVICE**

Whether your service is cafeteria or buffet style, family style, or the sit-down, restaurant style, affects the kind and amount of equipment you will need and the space it will take. The type of service also affects the types and number of individual services performed and the serving utensils—pots, pans, cutlery, dishes, glasses, silver—you will need. For example, with table service you need cooks, people to set up foods, waiters or waitresses, and busboys. Cafeteria style cuts down upon these individual services by using servers in a serving line. No waiters carry food, water, and desserts or perform the other services waiters usually do. In buffet service individual services are further reduced because customers serve themselves. And if they return their own soiled dishes, no bus boys are needed either.

**SELF-SERVICE.** Cafeteria or buffet service requires bulk food counters where various foods are heated, chilled, or kept at room temperature. Customers either serve themselves or are served by counter personnel.
The advantages are:
- Self-service is fast.
- Less service labor and table service are required.
- It can be very attractive.
- When customers return their trays and service ware, it can speed clearing the service area for meetings or other activities, also reducing bussing labor.

Disadvantages:
- Sometimes there is too much movement of customers.
- Customers may be confused about seating—take too much time deciding where to sit.
- Customers must often wait in line.

FAMILY STYLE. A family style dinner, as you would suppose, is served the way you would serve a dinner at home. Hot foods are brought to the table in large, family-sized dishes and passed around by those eating.

Advantages:
- Family-style service is as fast or faster than cafeteria style, once customers are seated.
- No customer movement and confusion.

Disadvantages:
- Requires either a separate serving room from a meeting room.
- Or a long break is needed in a meeting to set the tables and another to clear them.

SIT-DOWN SERVICE. Like family-style, restaurant service requires tables set with silver, linens (if used), water— in fact, everything but the hot foods. These are served individually by the restaurant staff. Usually, one course is cleared before another is served, requiring both additional service personnel and time.

Advantages:
- Generally preferred for luncheon and dinner meetings when an after-dinner business meeting or address are planned.

Disadvantages:
- More service personnel required.
- More labor involved for this personnel.
- More time needed to serve the meal. And considerable waiting time may be needed to clear places afterward for an after-meal program.

Actual planning should begin after these decisions have been made. Should your group plan to use several different types of service upon occasion; equipment, space, and installations should be provided in the planning now. After the installation is planned exclusively for one type of service, later alterations may be difficult and expensive or even practically impossible. Ask any homeowner who has remodeled his home about the hidden costs of such work as putting in new installations for utilities or moving walls.

PLANNING THE INSTALLATION A hypothetical case will illustrate the planning procedure:

Suppose a progressive rural Missouri town, through dedicated community effort, succeeds in acquiring shoe and garment factories and in building a regional Junior College and Technical School. As a result, its population has grown from 10,000 in 1960 to 15,000 by the next census. Since our town draws no tourist traffic, its establishments are intended to serve small groups; they are inadequate to serve meetings of 100 or more. The Baptist Church, the largest congregation in town, has outgrown its sanctuary. Consequently, Baptists plan to build a new and larger one. Included in their plans is an ambitious community and youth center. Following the spirit of ecumenism, the next two largest churches in town, Methodist and Presbyterian, are working with the Baptists on a joint planning council for the center.

Suppose that in addition to the banquets and luncheons the churches would have, three service clubs meet each week for luncheons. Rotary with 100 members, Kiwanis with 90, and Optimists with 85—all find available meeting facilities cramped and inadequate. Nor is it likely commercial facilities will be constructed in the near future. And officers of the Chamber of Commerce want a monthly luncheon meeting for 150 persons at least.

Since members of these organizations are also members of the three cooperating churches, they are willing—even eager—to cooperate with the management of the new community center and to contract with it to serve their luncheons. This potential business, plus the normal activities of the three churches, appears to make a major food service installation in the community center feasible.

Church women are accustomed to holding meetings and social events such as dessert luncheons and bazaars at which modified types of food service are highly desirable—and profitable. Church youth directors also want snack service for members ranging from Boy or Girl scouts to the junior college students.

Pre-planning of the Joint Council includes space for a meeting hall that will accommodate a future maximum of 300 “covers” for sit-down, banquet-type food service. With flexibility as a keynote, the Council called for a dining hall that can be divided into three separate rooms using movable or folding partitions.

They also wanted a flexible food service installation. One that would provide not only sit-down service, but also cafeteria or buffet service and a snack-dessert-coffee service as well. The snack service would be portable for use in other parts of the building such as the proposed ladies parlor and seminar rooms.

For the present, the Council decided to limit food preparation and production equipment to that necessary to serve a full-course meal to a maximum of 150 covers.
The menu would include soup or appetizer, an entree, a potato component, a vegetable, a simple salad, bread or rolls and butter, and a simple dessert. Planners wanted the production equipment to serve double duty, handling the buffet and snack services as well. Kitchen space and utility connections provided in the initial design allow for easy expansion of equipment to meet a maximum of 300 covers at a later date.

While planning was in progress, the town acquired a unit of a national food processing company that makes a variety of frozen entrees and desserts for supermarket sales. Its local manager became interested in the community center. He offered to keep an ample supply of several prepared frozen entrees and desserts in his storage freezers, servable on a few hours' notice. That materially reduced the need for on-premises freezer and refrigerator storage. It also affected the types and sizes of the food preparation and production equipment required.

Using this information, the planning committee instructed the architect to lay out the meeting hall and food service facilities, first, to insure straight-line work flow through the sequence:
1. Receiving and inspection
2. Storage—frozen, refrigerated, and dry
3. Food preparation
4. Food production
5. Food service and

The meeting-hall/food-service complex was to be located in the building in a way that would insure easy access for receiving. In addition it was to be designed so that only short hauls were necessary to move food from receiving to storage, storage to preparation, preparation to production, and production to service. They said the procedures and equipment for sanitation and waste disposal, as well as all food handling, must satisfy or exceed the requirements of the local public health ordinance for food service.

Finally, the architect was told to meet fully the specifications of the industrial safety regulations for construction and equipment provided by the Williams-Steiger Occupational Safety and Health Act.

Then the architect and his Food Service Consultant drew these decisions from the planning committee:
1. That the operation of the food service facilities would be intermittent, rather than continuous, depending upon the bookings for specific events.
2. That a committee of members of the participating churches would direct the operation, not professionals.
3. That no food of a perishable nature will be stored on the premises between booked events. And that the only food to be stored will be dry staples such as sugar and flour, condiments, and spices.
4. That maximum use will be made of convenience items furnished by the local food processing plant or those available in frozen form from local supermarkets.
5. That aside from prepared frozen foods and from vegetables and salads prepared on the premises, the only entrees prepared will be confined to roasted meats, poultry, and grilled items such as hamburgers and frankfurters for the youth groups.

With this information, the architect and his food service consultant were able to start planning the food service installation.

**SPACE REQUIRED**

**A. DINING AREA:** The planning committee specified the dining area handle a maximum of 300 covers at sit-down, banquet-type service. From Lemoine's standard tables, they found community-type installations of 9 to 15 square-feet-per-cover represent current practices. For initial planning, the average of 12 square-feet-per-cover was adopted. Thus, the dining area requires 300 covers at 12 square-feet-per-cover, or 3,600 square feet. (See Note 2, Page 14.)

**B. KITCHEN AREA:** From the same tables, the kitchen area was found to require from 5 to 7 square-feet-per-cover. While the maximum use of convenience foods indicates the minimum area required, the projected use of volunteer help in greater than commercial numbers also indicates that greater-than-minimum space would be required. Therefore, the planners chose the 6-square-feet-per-cover average. At 300 covers, that totals 1,800 square feet for the kitchen.

**C. BACK-OF-THE-HOUSE AREA:** The same tables show a range from 10 to 12 square feet for the total back-of-the-house area. That includes the receiving and storage area in addition to the kitchen. But no sizable dry storage area and a minimum freezer and refrigerator storage area will be necessary because of the favorable delivery situation. That means the back-of-the-house area can be reduced below minimum recommendations to 8 square-feet-per-cover. Deducting the kitchen space of 6 square-feet-per-cover, leaves 2 square feet for storage and receiving. At 300 covers that makes 600 square feet.

Thus the estimated space requirements total:

- **Dining Area**: 3,600 sq. ft.
- **Kitchen**: 1,800
- **Storage/Facilities**: 600

**Total**: 6,000

With this information and the directives of the Joint Planning Committee, the architect and his food service consultant were ready to formulate a preliminary plan. This plan can also provide cost estimates for a facility that meets the committee's objectives.
CHAPTER II: THE ARCHITECT’S PLAN

An example of the type of preliminary plan the architect might present follows in Figure I, Page 8:

PRELIMINARY PLAN DISCUSSION

Starting at the receiving dock (2), note the dock is specified to be at truck bed height to assure maximum ease in unloading food and supplies and in loading trash and waste. This feature would also be useful when providing food for outside activities such as Sunday school picnics and youth rallies or for carry-out meals for the elderly or invalids.

An extension of the receiving-shipping dock provides a screened-in, garbage storage area (1). Next to the door, a can washing machine (3) makes washing and sanitizing trash containers fast, easy, and efficient.

Double doors and a wide receiving corridor make it possible to move food and supplies on flat trucks. They also make it easier to maneuver these trucks into the dry storage room (7) and into the kitchen.

Opening off the receiving corridor, a locker, rest, and toilet room (4) allows the volunteer ladies who operate the facility to freshen up. Men’s facilities are provided elsewhere in the building.

The dry storage room features shelving built on the "accordion" pattern (8). (See Figure 14 in the Appendix.) These shelves are mounted on flanged wheels that run on rails set in the floor. That way shelving requires only one access aisle and roughly one-third less space than with fixed shelving.

Reach-in storage freezers (9) and a refrigerator (10) provide immediate storage of frozen foods requiring refrigeration. (Continued on Page 10.)
TABLES AND COUNTERS feature mobility. Above, portable cafeteria counters can be rolled into different dining areas, making a facility more flexible. Right, portable hot food tables, top, and cold pans, center, keep foods at serving temperatures. The bakers table, bottom, features roll-out bins. (All tables by Duke, St. Louis.)

BELOW: DISHWASHER AND FOOD CONVEYOR. The Jackson Fospry, (Tampa, Florida), left, employs a round dishwasher design. Right, Duke's "food conveyor" can be rolled into place. With an option it keeps food cold as well as hot.
PROPOSED FOOD SERVICE FACILITY FOR A COMMUNITY CENTER
LEGEND FOR PROPOSED
FOOD SERVICE FOR
COMMUNITY CENTER

Item
No.
1. Garbage and refuse storage area (screened in)
2. Receiving dock, concrete, truck-bed height
3. Garbage and refuse can washer
4. Ladies' locker room
5. Day bed
6. Ladies' toilet
7. Dry ingredient and supply storage room
8. Accordion type shelving on rails (saves space)
9. Receiving storage—frozen foods
10. Receiving storage—refrigerated foods
11. Vegetable and fruit preparation work table, stainless steel
12. Vegetable and fruit preparation sink. One sink with agitator, second sink with garbage disposal unit, stainless steel
13. Domestic type work counter, formica top, domestic base cabinets (a) under, with overhead domestic type wall cabinets (b) Storage space for glasses in racks on dollies and clean dish carts under
14. Space and connections for second convection type oven to be added later if needed
15. Bakers' two-burner stove, overhead back shelf
16. Convection type baking and roasting oven
17. Cooks' and bakers' daily storage refrigerator
18. Cooks' and bakers' sink
19. Ventilation hood over cooking and baking equipment
20. Griddle top range, heavy duty
21. Ventilation fan and stack
22. Restaurant type range: six-burner, automatic controlled oven, backshelf and swinging water faucet fixture over it
23. Cold plate counter in space to be used for second range, to be added later if needed, backshelf over it
24. Three-compartment (wash, rinse, sanitize) pot and pan washing sink. Wash sink with garbage disposal unit, stainless steel.
25. Pot and pan rack, wire grid type, portable
26. 8' cooks' table, drawers and shelf under, pot rack over, stainless steel
27. Electric meat slicer on stainless steel portable stand
28. 40-qt electric mixer on stainless steel portable cabinet for storing mixer accessories
29. 8' bakers' table, stainless steel, roll edge trough, drawers and sugar-floor bins under, spice shelf over
30. Hand washing sink, enameled cast iron, with soap dispenser and paper towel dispenser over. Knee operated, tempered water faucet
31. Two special "socializing" type "gather round" work and set-up tables.
   a. Two 2' domestic base cabinets with drawers or cabinets, back-to-back (16 each cabinets)
   b. 30-gallon garbage and/or refuse containers on dollies under table (12 each receptacles and dollies)
   c. 4' x 8' x 1 1/2" plywood sheet, formica covered, counter tops (4 each)
   d. See-through shelf over work surface
32. 12" tray and silver dispenser cart, portable
33. 4' cold pan cart, portable, with "sneeze guard" and tray rail
34. 4' hot food cart, portable, with "sneeze guard" and tray rail
35. Lowerator type dinner plate dispenser, portable, heated.
36. 4' bread and butter dispensing cart, portable, with loaf bread dispensers and refrigerated butter chip dispenser on top; heated, two-drawer type hot bread dispenser and bread plate with shelves under, accessible from front and tray rail
37. 4' dessert dispensing cart with sneeze guard shelves over and dessert storage shelves under, and tray rail, accessible from rear
38. 2' counter-height, lift-top domestic type freezer with self-leveling device and tray rail, mounted on dolly for portability for pre-packaged or pre-dished ice cream
39. 2' counter-height, lift-top, domestic-type refrigerator with self-leveling device and tray rail, mounted on dolly for portability for pre-packaged milk, chocolate milk, juices, etc.
40. 3' 1/2' cart for cups in dishwasher racks and a lowerator type saucer dispenser, unheated, with tray rail
41. 4' cart with glass type coffee Brewer and heater and refrigerated cream dispenser (alternate—non-dairy packaged coffee whirriner dispenser and packaged sugar dispenser) mounted on top. Shelf under accessible from rear for storage of coffee and other supplies and additional saturers. With tray rail
42. 2' cart for cashier's stand with cash drawer and leg room under, accessible from rear, and tray rail
43. Pass-through-type salad and dessert storage refrigerator
44. Tray rail—fold-down type. Each unit in cafeteria line to be provided with a segment of this rail on customer side designed to be locked into segments on right and left to form a continuous rail at counter height.
45. Folding doors to enclose cafeteria line and kitchen when Parish Hall is used for functions not requiring food service
46. Service pantry for sit-down service functions
   a. Ice cube making machine
   b. Ice and water sink
   c. Coffee urn battery on counter, supply storage shelves under
   d. Work dresser—dish cart and/or glass and cup rack dolly storage under, plywood and formica top
   e. Cabinets over work dresser for linen, silver and supply storage, domestic type
47. Clean dish carts, stainless steel
48. Clean dish table, stainless steel—booster heater for rinse under
49. Door type, single rack, dishwashing machine
50. Salad bar, refrigerator unit
51. Soiled dish table with running water scraping trough and break drain ahead of dishwasher, stainless steel
52. Glass washer
53. Clean glass racks on dolly
54. Compactor for disposables and other refuse
55. Folding partitions to divide Parish Hall into two or three units.

NOTE: If electric floor outlets are provided in a line 4' from the outside wall of Section "C" the entire cafeteria line, or any segment of it, can be moved readily from the kitchen area where shown to this section, and a cafeteria type meal can be served in section(s) C and/or B at the same time that a sit-down function is being served from the kitchen and service pantry in section(s) A and/or B. This feature provides maximum flexibility of service.

56. Permanent water stations of combination drinking fountain-faucet type in each of possible Parish Hall sections.
57. Glass racks on dollies—stored under counter (13) except when Parish Hall is being used for food service. (b)
58. 4' portable waitresses-station carts, shelf over and under for bread, butter, condiments, silver, linen, etc. Stored in corridor of service pantry (46) when Parish Hall is not in use for sit-down food service.
Next in line, the fruit and vegetable preparation area consists of a preparation table (11) and a double vegetable sink (12). The water pump and agitating device on the first sink makes cleaning vegetables—particularly leafy ones—rapid and efficient, without bruising them. A garbage disposal in the second sink could eliminate preparation wastes immediately. Fruits and vegetables cleaned here are moved down the production line to the domestic-type counters (13) where they are set up for cooking or for salads. Then the salads are assembled on the "social" work table (31) nearest the preparation area.

The bakers station consists of a bakers table (29), a convection oven (16) with fans that circulate heat evenly throughout it, a two-burner bakers stove (15) for fillings and froствings, and a 40-quart electric mixer on a portable stand (28). The baker's desserts, hot bread and rolls go to the same "social" work table (31) as the salads. There they are cut, "plated," and garnishings are added.

Note the mixer (28), a "daily use" refrigerator (17) and a sink (18) are placed between the bakers and the cooks stations. That way both departments can use them. And both can use the electric food slicer (27) on a portable stand next to the cooks table.

The cooking department features a large griddle (20), a six-burner heavy duty range (22) with an automatic temperature-controlled oven, the cooks table (26) with an overhead pot-and-pan rack, and space and connections for a future range. That space now is filled with a cold plate (23) providing an additional work surface.

Next to the cooking bank, a three-compartment, pot-and-pan washing sink (24) and a mobile rack (25) for storing and moving pots and pans are located. The hand washing sink (30) next to this rack is required by the food service sanitation code. A domestic cabinet (13) with a counter top and cabinets above it extends from the sink to the front wall of the kitchen.

Cooked food is assembled, "panned" or "plated" and garnished on the social work table (31) in front of the cooks table. Over the range (22), a swinging extension water faucet allows cooks to fill heavy pots on top of the range without moving them.

The completely mobile cafeteria line (44) is made of modular, wheeled units. Each unit is provided with a segment of the cafeteria rail. The rail may be either dropped to the side for "doorways" or locked into the segments on the adjoining carts to form a continuous rail. Completely independent in operation, each unit may be moved to any part of the building for specialty food service. For example, a dessert luncheon in the ladies parlor might require the coffee (41), cup-and-saucer (40), and dessert (37) carts, while a boy scout snack might use the milk (39) and ice cream (38) carts and the hot table cart (34) for hamburgers, hot dogs and rolls.

When food service is not needed or when a sit-down dinner is served, the cafeteria line can be screened from the access corridor by folding doors (45).

A pass-through refrigerator stores the salads and desserts that will either resupply the cafeteria line or be served at sit-down dinners. A waitstaff service pantry (46) includes work counters and storage cabinets for condiments, linen, and silver. The installation can provide for hot and cold beverage making, including an ice making machine.

In the sanitation area, a soiled dish table (51) is equipped with a scraping trough that uses water to carry scraps to a disposal. The disposal, a large "Salvator" machine (50), catches the silver. Dishes and silver are racked and sent through the dishwashing machine (49). A short clean-dish table (48) makes it easier to refill the dish carts (47) for their return to service points.

Glasses are washed separately in a glass washing machine (52), and the racks of glasses (53) are placed on dollies for return to service points.

The sanitation department may seem relatively small for an installation of this size, but maximum use of disposable table ware is planned. A compactor (54) will dispose of this type waste.

Three permanent water and ice stations (56) are located in the dining hall, one for each of the possible dining areas. Glasses in racks on dollies (57) and portable waitress point-of-service carts (58) may be placed next to these water-ice stations during sit-down service. Or only glasses placed there during cafeteria service.

Floor-type electrical outlets for the mobile cafeteria line are placed in line four feet from the right end wall (C). That makes it possible to use the same kitchen to serve a cafeteria meal in sections C and B, for example, while serving a sit-down meal in section A.

Separate machines for washing dishes, glasses, and even garbage cans may seem like unnecessary frills. Your volunteers will not have such automatic equipment to do their chores at home. Nor do they have 200 or 300 dishes to wash in an evening. Besides cutting down on the hours of cleaning, this equipment will sanitize dishes and waste cans better than hand washing. And reducing the labor of clean-up may make the rest of the work more enjoyable, keeping your volunteers coming back.

This arrangement should provide the complete flexibility desired by the joint planning committee.

OTHER TYPES OF FACILITIES This case study illustrates the steps needed in planning a full-service facility. There are many other ways of solving the problem for an individual institution. For example, the type of facilities needed will be significantly affected if only members are served. Or food service facilities may have to be put into constricted, poorly shaped, difficult-to-reach spaces in an existing building (Appendix, Figure 5). And, of course, the amount of available funds will affect the number and type of equipment and
facilities your organization can purchase. That could limit the scope of your food service operation although other factors are favorable.

A series of layouts in the appendix shows how institutions have solved these problems. For small installations the most obvious solution is to enlarge or modernize an existing kitchen (Appendix, Figure 7). Many groups have access to some type of food service facility, usually a small kitchen of the overgrown domestic type. However, these do provide some space and the electric, gas, and water utilities needed. By reducing the size of the dining area or appropriating an adjacent cloak room, classroom, or part of a furnace room, you may be able to pick up needed additional space.

If appropriating space means moving walls, for example, consult an architect or a building contractor. Some of the walls you may want to move might be supporting structures. Moving them could seriously weaken the building or add a great deal to the food service facility's cost. You probably have the talent to make this appraisal within your own group.

Plans should be made carefully with blueprints and detailed specifications before bids are taken for construction. Such planning will cut out expensive changes after construction has started. As many of you have probably found when building or remodeling a house, changes after construction has begun cost dearly. Do not be afraid to require your architect or contractor to furnish detailed plans and specifications. And certainly ask them for full explanations of why costly recommendations are necessary. They are used to these kinds of questions and actually prefer the active participation of the group. They know such interaction tends to avoid future misunderstandings and consequent ill will.

One word of caution: Appoint a small committee—one or two persons—to work with the architect and the contractor. Deal with these professionals only through the committee. Craftsmen and professionals become frustrated when a number of "amateur, sidewalk superintendents" buzz about giving various—and often conflicting—directions. Multiple instructions and confusion can cost you real money!

On the other hand, volunteer labor from skilled members of your group can save you money. Constructing service cart bodies and social work tables, installing domestic-type base and wall cabinets, painting and other work can be a community project. This additional involvement could result in added interest among your members. But be sure to discuss volunteer labor with your architect and contractor and to specifically exempt the volunteer work from their contracts.
CHAPTER III: OTHER GROUNDWORK

When you have completed preliminary plans for your project, be sure to submit them to your local Public Health Sanitarian for his approval. You may avoid future conflicts with health authorities. And the sanitarian, through his wide experience with quantity food service, may be able to make valuable suggestions that save you future expense and trouble. (See Note 3.) Even if you do not serve food to the public for profit, the new U.S. Public Health Service Food Service Sanitation Manual, currently in production, brings all food service facilities outside the home under the legal jurisdiction of public health regulations. It is the basis for most local food service sanitation ordinances. (See Note 4.)

Also secure the approval of your completed plans from the nearest office or enforcement agency for the Office of Occupational Health and Safety for compliance with their regulations. Non-compliance can cost you real money in the fines they may levy. (See Note 5.)

FINANCING YOUR PROJECT

Once your group has decided what kind of facilities it wants, where they will be, and what will be served and once they have identified their likely customers, they must consider the all-important matter of financing the project.

If your organization plans to serve outside groups for profit, estimate how much profit your organization's effort will yield. Allow a margin of error should this income be smaller than expected. In other words, the same principles that affect the decision to enter any business apply.

In addition to food service profits, current savings, donations, or a fund-raising drive are possible sources for financing the facility. However, should your organization want to pay for the installation with time payments, it should have a sound plan for meeting the payments fully when due.

Discuss financing the project with your local banker. He can give you sound advice and may be able to arrange a favorable loan himself. No banker would sanction borrowing over your head, because that would hurt him as well as your organization.

If your plan is sound—and it will be if you have carefully taken the proper steps up to this point—you should have little trouble acquiring the money you need.

SPECIFYING EQUIPMENT

You may acquire used equipment that can be used as is or with minor repairs. By spending moderately for repairs and adaptations, this equipment can serve you well for years.

Should you purchase equipment:
- It should meet the demands of the kind of service to which it will be subjected.
- Its operation should be within the experience of those who will operate it.
- It should be attractive enough to fit the atmosphere of a social gathering place. However, do not con-
fus attractiveness with shininess or with unneeded gimmicks.

Comparing your installation with the usual commercial establishment:
- Your installation will be operated intermittently rather than continuously.
- It will be operated by non-professional, volunteer personnel.
- And a greater number of workers normally are present than would be required in a professional operation.

That means there are considerable differences between planning for the equipment of a volunteer-operated facility and a commercial one. In the first place, equipment of the heavy duty, hotel-type is seldom justified. Volunteers, particularly homemakers who have a stake in the installation, are more careful with equipment than commercial help. Hence, in the normal volunteer-operated establishment, it is feasible to use domestic type cabinets, base cabinets, and counter tops rather than the heavy, more expensive, metal ones.

However, domestic range tops are not designed to support the weight of the heavier pots and pans used in quantity cooking and baking. They often warp or break at weld joints when pressed into quantity service. The intermediate "restaurant-type" of equipment—between domestic and "heavy duty"—will normally best meet your group's needs. Avoid the more specialized equipment generally found in commercial operations. Automatic fry kettles, broilers, and stock kettles, for instance, are not recommended because they usually go beyond the experience of most homemaker volunteers.

Like heating equipment, motorized equipment such as mixers and grinders should be of commercial quality. For example, a homemaker's mixer, designed for small light loads over short periods of time, may break down with heavier loads and longer periods of operation.

All equipment should be selected with an eye toward ease of cleaning and maintenance. After a busy, enjoyable day preparing and serving food, volunteers may find the inevitable "clean-up" a disagreeable chore if the kitchen is poorly designed. Stainless steel sinks, drainboards, cooks tables and other food-contact surfaces are the most durable and easiest to sanitize. But modern plastic counter tops and assembly work surfaces can be easily cleaned and can stand up under intermittent use by concerned homemakers.

Equipment needs can be considerably reduced: First, some items can be served as "covered dishes," prepared or partially prepared in the homes of members. If done on a regular basis, home-prepared dishes can materially reduce the amount and kinds of equipment your facility requires. On the other hand, that reduction means your organization would have to rely on home-prepared foods
at all times. For the installation would not meet the demands of a fully on-premise-prepared meal should that prove desirable.

Frozen foods too, particularly pre-prepared entrees, can save time and money. These foods require equipment for reheating or thawing and finishing. The modern convection-type oven probably is most generally useful for this. And it has the added advantage of being flexible enough to be used in baking and roasting.

Give special attention to storing bacterial-sensitive foods. Statistics show a large number of the more than two million yearly cases of food borne disease come from meals served by voluntary organizations or in the home. Sickness occurs most often when these groups are not equipped with an adequate amount of food storage facilities or when they are ignorant of the vital considerations necessary to serve sensitive foods safely. These foods are defined by the U.S. Public Health Service as those containing milk, eggs, and meat or fish proteins. Such foods are both easily contaminated with disease-causing bacteria and also support its rapid growth when held at temperatures between 45° and 140°F. Cream pies and pastry fillings, examples of these highly sensitive foods, must be kept refrigerated at all times. Thus equipment for holding them at proper temperatures—such as the “pass-through” refrigerator for desserts and salads in the planning example—is a “must”!

To be successful, a volunteer food service organization must be as interested in fellowship as it is in making money for the group project.

Homemakers—and quite often today, male volunteers—derive great satisfaction in working together in a friendly atmosphere while preparing and serving meals. Preserving this atmosphere is vital to the continuing success of the organization.

Therefore, kitchens and service facilities must be designed to stimulate interaction as well as to provide maximum convenience and flexibility.

One of the most successful methods of developing fellowship and cooperation is to design the kitchen around one or more “sewing circle” type work tables. There workers can work with each other around the table while preparing the food. A further incentive to fellowship, design the kitchen and its equipment to be as nearly like the home kitchen as possible. Both the planning example and the other layouts presented in the Appendix employ these features.

The relaxed, social atmosphere of these community kitchens adds to the fellowship and pleasure of the volunteer food service experience. And that's the ultimate "name of the game," isn't it?

NOTES

1. The provisions of this act are quite complicated, contact your local occupational health agency for information. See details below.


5. For the location of their nearest office or enforcement agency, contact the Occupational Health and Safety Administration of the United States Department of Labor through the Department of Health, Education and Welfare, 330 Independence Avenue S.W., Washington, D.C. 20201.

6. A list of books, pamphlets and other materials useful in food service planning is contained in the current Catalog of Books, Bulletins, Films and Pamphlets obtainable from the National Restaurant Association, Educational Materials Center. 1530 North Lake Shore Drive, Chicago, Illinois 60610.
THE PRINCIPLES APPLIED TO KITCHEN DESIGNS

The key to kitchen design is a straight-line flow of food through the kitchen. To follow this principle, the planner should recognize the categories of operations through which food passes from its receipt at the entrance to the kitchen through the entire preparation process and service. Then the straight-line principle continues with the return of wastes and soiled service utensils to the kitchen for cleaning and sanitation. Finally, cleaned utensils are left where they will be convenient for their next use.

RECEIVING All food received should be inspected promptly upon receipt. This inspection should determine not only whether the foodstuffs delivered meet the specifications for quality given in the order but also that the quantity delivered is the quantity charged for. Failure to make this acceptance inspection unnecessarily tempts distributors and delivery personnel to substitute inferior quality or to "short" the purchaser by weight or count. Space should be provided at the service entry for this inspection. Food should be allowed to flow into the kitchen only when the inspection shows that it meets the standards of the order.

TRANSPORTATION Where heavy packages are received, such as bags of flour, sugar, and potatoes, flat-bed or hand trucks should be provided to avoid strain or injury. Even for smaller packages, using utility carts to distribute the food in the straight-line flow pattern will save time, steps, and human energy. Many other uses can be found for utility carts: For example, they can carry service utensils, silver, linens, and the other items used to set up tables. They can be used as auxiliary work surfaces or to bus soiled tableware to washing stations.

STORAGE In intermittent-use operations, good practice means as little food as possible should be stored on-premises between affairs. However, some packaged foods store well—if placed in tightly covered containers—for fairly long periods of time. These include condiments (salt, pepper, sugar, catsup, mustard, and spices), flour, baking powder and other staples that do not re-
quire refrigeration. Remember to provide space for this storage as well as for storing cooking utensils, cutlery, dishes, glasses, cups and saucers, silverware, and linens or disposables. When disposable service ware is used, the installation of a waste compactor in place of a dishwashing machine is a great aid in waste disposal.

Storage is divided into four types: dry or shelf storage (for staples and canned goods, dishes, glasses, and utensils), refrigerated storage for perishable foods, freezers for frozen foods, and waste receptacles for trash and garbage. In dry storage, no food should be kept in open containers or in containers that can be penetrated by insects or rodents. Flour and sugar, for example, should be stored in receptacles of metal or plastic equipped with tightly fitting covers. Receptacles of the waste-can type, preferably mounted on dollys, may be used for this purpose and stored under the working surfaces where their contents will be used. Condiments and so on may be stored in bottles or metal containers with tight fitting, removable tops. Condiment containers should always be cleaned of any external soil or drippage before storing.

Approximately one-third of the storage space can be saved by using the "accordion type" shelves shown in Figure 14. With them the space for one aisle will serve a number of shelf units. This system also offers a means of locking up the stores without having a separate storeroom.

It is axiomatic that all "sensitive" foods—those which contain meat, fish, eggs, or milk products—be kept under refrigeration at all times except during actual processing, production, or service. A major portion of "food poisoning" cases are caused by failure to refrigerate "sensitive" foods for even relatively short periods of time. This fact cannot be stressed too strongly. Danger occurs when "sensitive" foods are left out at room temperature to cool before refrigerating them, or when frozen foods are left at room temperature to thaw before cooking or reheating. BE SAFE, NOT SORRY. WHEN IN DOUBT, REFRIGERATE!

Frozen foods deteriorate rapidly at temperatures above 10° below zero. In fact, frozen foods lose one half of their remaining "shelf life" for every 10° above -10° F. Thus, frozen foods allowed to reach even +3°F have lost one half of their shelf life. Should they reach +16°F, they will have lost another quarter (half the remaining shelf life) making the total lost three fourths of the original life. And when permitted to reach +29°F—still below the freezing temperature of water (32°F)—they will retain only one-eighth of the shelf life at -10°F! The remaining shelf life will also be cut in half for each time the food reaches the +3° temperature. We have already seen that the food would lose half of its shelf life for the first time it reaches +3°. But it would lose half the remaining shelf life if it were cooled to -10° only to reach +3° a second time. In other words, another one quarter would be lost, making the total lost three quarters of the shelf life the food would have had, had it been kept at a constant -10°.

"Shelf life" is closely related to acceptable quality in the retention of taste and color. That may explain why many frozen foods taste like "warmed-up left-overs" when served. They had probably been permitted to reach temperatures well above -10° during transport or while in the supermarket display case. Let us hasten to add, however, that this loss in acceptable quality does not necessarily mean that such foods are dangerous. Ordinarily, disease-causing bacteria do not grow rapidly enough to contaminate food until it reaches temperatures of over 40°F. Thus, while such foods may be nutritionally wholesome and free from disease-producing microorganisms, they may not be acceptable from the standpoint of flavor, color, or texture. KEEP FROZEN FOODS AT OR BELOW -10°F UNTIL READY TO HEAT AND SERVE IMMEDIATELY!

PROCESSING This part of the flow of food includes the cleaning, peeling, cutting or slicing of vegetables and fruits, and the preparation of meats, fowl, and fish for cooking. It includes the assembly of the ingredients to make up each menu item in the quantity required. And also the complete production of items, such as salads, made from uncooked foods. Work tables, sinks, slicers, choppers, and other equipment used in processing must be kept scrupulously clean. Even a stainless steel table upon which a turkey has been prepared for roasting may be contaminated with "salmonella" bacteria from that bird's skin. Wiped off to appear clean, the table may recontaminate the turkey when it is placed back on it to be carved after roasting. A chemical sanitizing solution, used in the wiping, would have prevented the recontamination.

PRODUCTION This is the final combining of ingredients and the actual heating of the product in cooking (or freezing as in the case of ice cream) to produce a ready-to-serve menu item. The greatest skill in the kitchen or bakery is required in production. The order and quantities in which ingredients are combined and the time, temperature and manner employed in cooking require consummate skill.

Skilled cooks should be relieved from such activities as assembling the ingredients needed for the menu items which they are to prepare. Instead, less skilled personnel should assemble all ingredients in the quantity (weight or measure) and form (sliced, diced, etc.) needed. Cooks are also aided materially by having water immediately available at their stations. Cook's sinks help and swinging faucets over the range allow them to draw water directly into utensils on the range itself.

While commercial cooks speed production by using such equipment as fry kettles, volunteer cooks are generally homemakers unfamiliar with specialized equip-
ment. Consequently, the fry kettles, broilers, steamers, stock kettles and similar specialized utensils generally are not considered feasible for volunteer manned kitchens.

PACKAGING  "Packaging" means the process of plating the food for service. Except when ravensively hungry, people judge the acceptability of food as much by its appearance as by its odor or flavor. Color, symmetry of arrangement, tastefulness and suitability of garnishings, size, type and even the temperature of the serving utensil—all enter into customer acceptance of the food offered. It is a good idea to have the most artistic or skilled of the production staff make an initial arrangement of a plate for service. Then photograph his production and place a copy of the photograph where it can be seen by each server. Finally, supervise to see that each plate looks like the photograph. SERVE HOT FOODS HOT. COLD FOODS COLD. ALL FOODS PRETTY!

SERVICE  The actual presentation of food to the consuming public is an important aspect of its acceptability. However, here we will only deal with the equipment and layout. For both do play a major part in acceptability by affecting the ease and speed with which the customer's desires are satisfied. When meals are served, all adjuncts to service—water, bread and butter, coffee, condiments, linen, silver, etc. should be placed at waiter service stations. These stations should be located so that each waiter takes only a minimum number of steps in serving the customers on his station. Make as many of the items served as possible accessible to the waiter outside of the kitchen—perhaps in a waiters' pantry. The pantry could include appetizers, soups, salads, desserts, and beverages. Returning to the kitchen for such items takes the service personnel out of eye-range of their customers, making it difficult to either anticipate or respond to customer needs promptly.

Where buffet (normally self service) or cafeteria (service provided by personnel behind the counter) are used, arrangement of equipment and training of counter or buffet supervisory personnel is essential for speed, accuracy and customer satisfaction.

"Remote" service is becoming more popular. With it specialized service carts can be loaded in the kitchen and rolled out to form a service line, then returned after service, clearing the room rapidly for other purposes. These specialized carts may be used for various affairs and at many locations, adding much flexibility to the offerings of an establishment.

SANITATION  Perhaps the most difficult and disagreeable part of all food service is the inevitable cleaning up and disposal of wastes. It is, however, one of the most essential activities—and one of the most health sensitive. Volunteer personnel should be familiar with their local Health Department's food service sanitation regulations. In many localities the Public Health Sanitarian conducts short courses in sanitation. At least one person qualified in food service sanitation should be in charge of sanitation at every affair. In some cities the presence of a qualified sanitation person at every affair is required by law.

Dishwashing is easier and breakage can be materially reduced if dishes are bussed properly. Soiled china, glasses, and silver should be separated as collected and properly placed in trays or in bus boxes. Good "scrapping" procedures, including a pre-rinse, materially increases the effectiveness of dishwashing. Water temperatures in the dishwashing machine are crucial. A temperature of 140°F for washing and 180°F for the final rinse is generally required by law. A temperature of 180°F is much hotter than the normal hot water supply. Therefore it requires either a "booster" heater for the rinse water or a dual-temperature water heater. An alternative is chemical sanitation, in which sanitizing chemicals are injected into the rinse water.

Where dishes, pots, and pans are hand washed, a three-step process is required. Utensils are washed in one sink, rinsed in a second sink, and sanitized in a third receptacle which either maintains the water at above 180°F or utilizes an approved chemical sanitizing solution. Where a three-compartment sink is not available, a third receptacle may be improvised by using a clean metal or plastic waste can to hold the chemical sanitizing solution.

All garbage and trash receptacles must be cleaned after every use and must be kept tightly covered to protect contents from insects and rodents. Particularly where disposable table ware is used, a compactor that compresses the waste material and bags it in vermin-proof bags is a useful and economical appliance.

All surfaces that come in contact with food must be kept scrupulously clean and should be sanitized frequently with a chemical sanitizing solution.

The following figures provide examples of planning successful kitchens for voluntary food service establishments of different sizes and types.
It is designed around a central, "gather 'round" work table (17), made by mounting a 4' x 8' sheet of 1” thick plywood on four, 2' x 2' domestic base cabinets. The two cabinets behind the three-compartment sink (20) are mounted back-to-back and face outward. The two cabinets at the range end (7) are mounted the same way. A 2' x 4' x 2" thick maple cutting board (14) is mounted on the cooks table. A 1' x 1' stainless steel hand washing and cook's sink is inset in the board. The remainder of the table top is covered with heavy duty plastic. Two condiment shelves (18) of open construction are mounted on top of the table from the cutting board to the three-compartment sink.

Cooking utensils are stored on the pot and pan rack (16) over the cutting board and in the base cabinets under it.

The cafeteria counter and soiled dish section open directly into the dining area. They may be separated from it either by rolling doors housed above the openings or folding doors. Locker and rest room facilities for workers are provided elsewhere in the building.

Note how space is saved by placing the hot water heater (25) under the clean dish table (24).

This kitchen will serve from 30 to 50 simple full-course meals. Its "ideal" design was applied to the food service facility at Browning Methodist Church in Missouri.

Design by Dr. John M. Welch, Department of Food Science, UMC, for Willie C. Taylor, Sherwood Smith architect, Topeka, Kansas.

FIGURE 2:
TYPICAL KITCHEN LAYOUT:
NON-COMMERCIAL
FOOD SERVICE I

COMMENTS:
This kitchen occupies only 12' x 22', or roughly 240 sq. ft. of floor space. Designed for volunteer, occasional operation, it allows for the preparation and service of simple meals only by fixed cafeteria-type service.
A. Production  
B. Assembly  
C. Serving  
D. Sanitation  
E. Preparation  

EQUIPMENT LIST:  
1. Clean dish table  
2. Dishwashing machine  
3. Table drain  
4. Garbage disposal  
5. Pre-rinse spray  
6. Soiled dish table  
7. Silver soak sink  
8. Pass-thru with overhead door  
9. Wall cabinets  
10. Base cabinets—formica tops  
11. 6' refrigerator: double door  
12. Duct and exhaust fan  
13. Base cabinet stainless steel top  
14. Hood  
15. Range: eight-burner, two-oven  
16. 30" griddle-top, broiler under  
17. Stainless steel filler top  
18. Cooks table  
19. Pot and pan rack  
20. Base cabinet—formica top  
21. Handwashing sink  
22. Stainless steel pot sink—double  
23. Base cabinet  
24. Four 12" x 20" hot food pans  
25. Maple cutting board  
26. Cold plate  
27. Ice cream and milk cooler  
28. 2 five-gallon coffee urns  
29. Coffee and water station  
30. Tray and silver station  
31. Sliding door for closet  
32. Portable cashier stand  
33. Folding tray rest  
34. Tray rail—fixed  
35. Overhead door  

COMMENTS:  
This kitchen occupies a space 14' x 29', or approximately 306 sq. ft. Designed for volunteer operation on an occasional basis, it does not provide storage facilities, other than for condiments and staples. Sugar and flour will be stored in plastic, 15-gallon, refuse-type receptacles mounted on casted dollies and kept under the work tables (20) and (23). Condiments are stored in the domestic-type wall cabinet (9), clean dishes in the domestic-type base cabinet (10), and silver in the drawers of these cabinets. Service plates may be stored in a compartment under the hot food table (24) which can be heated, and salad plates in a similar compartment under the cold food plate (26). Pots and pans may be stored on a shelf below the cooks table (18), on the pot and pan rack above the cooks table (19) and in the base cabinet (13). Cooks' cutlery may be stored in the drawers of the table or the base cabinet (33) to enable it to be housed in a closet when not in use. Note that a hand washing sink (21) is provided to meet sanitation requirements. The two-compartment general purpose sink (22) may be supplemented with a clean trash can filled with chemical sanitizing solution for washing cooking utensils. Locker and rest room facilities for workers are provided elsewhere in the building.  
This kitchen will serve from 50 to 75 on-site-prepared, full-course meals.  

Design by Dr. John M. Welch, Department of Food Science, UMC, for Willie C. Taylor, Sherwood Smith architect.

FIGURE 3:  
TYPICAL KITCHEN LAYOUT:  
NON-COMMERCIAL  
FOOD SERVICE II
EQUIPMENT LIST:
1. Tray and silver cart
2. Cold plate and salad cart
3. Hot plate cart
4. Beverage cart
5. Roll and ice cream cart
6. Mobile cash station
7. Mobile clean dish cart
8. Permanent water station
9. Ice machine and glass racks
10. Clean dish table
11. Dishwashing machine
12. Disposal, drain and pre-rinse spray
13. Soiled dish and pass-thru
14. Mobile carts: in loading position
15. Hand wash sink
16. Pot sink with disposal and drain tables
17. 5'x6' refrigerator
18. Range: six-burner, griddle
19. French fry unit
20. Convection or bake-deck oven
21. Mixer on utility table
22. Cooks table with shelves
23. Pot and pan rack
24. Base cabinets with plastic top
25. Refrigerator
26. Cooks sink
27. Planning desk and corner cabinet
28. Base cabinet with flour bins

COMMENTS:
The same principles of layout and design employed in figures 1 and 2 to preserve a straight-line flow of food have been used in this layout together with the "gather 'round" work table. However, here a more sophisticated form allows for the preparation and service of more elaborate meals.

An innovation—a flexible, mobile serving line—consists of a series of individual carts, each specialized for the service of one category of food.

Food is produced in the kitchen and loaded on the service-line carts. When ready to serve, loaded line carts are rolled out of the kitchen and placed in the desired sequence in the serving line at any location in the building. The kind and number of carts used for each service is determined by the kind of menu to be served. The serving line shown in the figure is for a full-course meal. A ladies' dessert-luncheon might require the beverage cart (4) and the cold-food cart (2) only, while a boy scout hamburger-and-milk snack might require the hot-food cart (3) and the roll-and-ice cream cart (5) only. A "coffee" can be served from the beverage cart (4) only.

Other features of this layout include the storage of clean dishes on special carts. These carts may be covered with plastic covers between uses for protection from contamination. And an external water-ice-glasses station (8 & 9) is permanently located in the normal serving area.

This type of service is highly useful when the food service area must be cleared quickly for meetings.

Design by Dr. John M. Welch, Department of Food Science, UMC, for Willie C. Taylor, Sherwood Smith architect.
AREAS:
A. Production
B. Assembly
C. Serving
D. Sanitation
E. Preparation
F. Office, storage
G. Landing

EQUIPMENT LIST:
1. Two-compartment sink, stainless steel, with drainboard
2. Garbage disposal
3. Refrigerator
4. Range: six-burner, griddle, broiler
5. Two-compartment convection oven
6. Hood over cooking surfaces
7. Bakers table, base cabinet, maple top with spice shelf 16” above
8. Twenty-quart mixer with 20” high portable base cabinet
9. Cooks table with maple top, shelf
10. Assembly table
11. Base cabinets
12. Wall cabinets
13. Round stainless steel hand sink in base cabinet
14. Coffee maker on portable cabinet
15. Self leveling cup rack and saucer stack
16. Serving table on base cabinet
17. Service shelf, roll down door above
18. Soiled dish table
19. Sink with garbage disposal
20. Slop guard drain
21. Dishwasher, single tank, door type
22. Clean dish table
23. Telephone port and shelf
24. Planning desk
25. Cabinets, file
26. Shelving for stores, etc.

COMMENTS:
No freezer is provided since they are only used when groups plan between-affairs storage or when foods have to be held for some time. The storage area (26) combined with the office is for dry storage only. Since no between-affairs storage exists the group is not tempted to hold foods between events, reducing the danger of contamination. The telephone port (23) makes the phone convenient to both the volunteers in the kitchen and the office staff. A rolling door would allow the phone to be locked in the office between affairs.

Design by Dr. John M. Welch, Department of Food Science, UMC, for Willie C. Taylor, Sherwood Smith architect

FIGURE 5:
PRESBYTERIAN CHURCH
CAPE GIRARDEAU, MO.
**AREAS**

A. Receiving  
B. Storage  
C. Processing  
D. Sanitation  
E. Service  
F. Production  

**EQUIPMENT LIST:**

1. Outside service door  
2. Windows  
3. Exhaust port and fan from hood  
4. Upright freezer  
5. Refrigerator  
6. Exhaust hood  
7. Range: griddle, broiler, two-oven, six-burner  
8. Stainless steel top cabinet  
9. Pot and pan sinks with disposal  
10. Portable pot and pan cart  
11. Bakers table, laminated maple top, two bins, spice shelf over  
12. Cooks table, plastic top, sink inset, base cabinet under  
13. Base cabinets, plastic top, wall cabinets for dish, glass, silver storage  
14. Two temperature (180°F and 140°) water heater  
15. "Gather 'round" work and assembly table—two twin-sinks inset, base cabinets under back to back  
16. Soiled dish table  
17. Dish scrapping sink  
18. Table drain  
19. Dishwasher (Hobart)  
20. Clean dish table  
21. Door  
22. Cold pan for salads and desserts  
23. Dresser for bread and butter  
24. Hot table, with three 12" x 20" pans  
25. Spacer  
26. Self leveling rack, refrigerator milk unit  
27. Self service coffee urn on stand  
28. Pass thru port  
29. Rolling door  
30. Service units  
31. Rolling door

**COMMENTS:**

The direction of flow is opposite that of Figure 5. Base cabinets (13) provide a work surface. The two-temperature water heater (14) could be provided in a short version that could go under the clean dish table (20). That would leave space for a three-compartment sink for washing pots and pans (9).

**FIGURE 6:**  
FIRST BAPTIST CHURCH  
WEST PLAINS, MO.

Design by Dr. John M. Welch, Department of Food Science, UMC, for Willie C. Taylor, Sherwood Smith architect
EQUIPMENT LIST:
1. Refrigerator
2. Base cabinet, wall cabinets over
3. Work surface, formica base cabinets under
4. Double sink
5. Water heater
6. Broom etc. cabinet
7. Present (cooks ready) refrigerator
8. Base cabinet, formica top
9. Cooks sink, open under for drain
10. Present range
11. Present grill
12. Hood over cooking surfaces
13. Work surface, stainless steel base cabinets under and wall cabinets over
14. Tray (lowerator) silver, napkins over
15. Hot food table
16. Roll warmer under, bread dispenser over
17. Cold pan for salads and desserts
18. Reach-in package ice cream cabinet
19. Counter supply cabinet
20. Milk dispenser, glasses under
21. Coffee urn stand—cups, saucers under
22. Soiled dish pass-thru
23. Soiled dish table
24. Garbage disposal
25. Protective drain
26. Door type dishwashing machine
27. Clean dish table
28. Dish storage carts
29. Glasses, cups in racks on dillies
30. Soffit over rolling door closure
31. Tray rail
32. Separate beverage service

COMMENTS:
The problem was to use present equipment, but to use it in a more efficient work flow. The original refrigerator (7) was too small so another (1) was added. No freezer was used because no interim service was planned, meaning no interim storage was needed.

Design by Dr. John M. Welch, Department of Food Science, UMC, for Willie C. Taylor, Sherwood Smith architect

FIGURE 7:
NORTHERN BLVD. METHODIST INDEPENDENCE, MO.
AREAS:
A. Production
B. Assembly
C. Serving
D. Sanitation
E. Preparation

EQUIPMENT LIST:
1. Pressurized water heater
2. Three-compartment sink with drainboards, stainless steel utensils
3. Shelves for cooking utensils—over
4. Dressers—stainless steel top—shelves under
5. 4' hot storage table with three 12 x 20 pans
6. 4' cold pan for salads and desserts
7. Roll warmer—bread on top
8. Cooler, carton milk—glasses under
9. Coffee urns, cups and saucers under
10. Freezer, ice cream with self-leveling racks
11. Work table, stainless steel top, storage cabinet, under
12. Work table, stainless steel top, storage cabinet under
13. Cooks table, maple top, drawers and cabinet under
14. Hot rack over cooks table
15. Food preparation sink with single drainboard
16. Refrigerator
17. Six-burner, two-oven gas range
18. Hood over range and griddle
19. Gas griddle, broiler
20. Mobile tray stand, work table, stainless steel top. Used in three positions.
   A. salad preparation
   B. as backup bar during service
   C. receive and transport soiled dishes to washing sinks
21. Water cooler and ice station

COMMENTS:
The original kitchen area included the small dining room. Consequently, much time and effort were lost simply moving around an inefficiently large kitchen. At the same time a small dining room was needed. Grouping kitchen facilities at

FIGURE 8:
WESTMINSTER CONGREGATIONAL KANSAS CITY, MO.

receving dishes at (20C) and moving them back to (20A) where they can be washed in either sink.

Design by Dr. John M. Welch, Department of Food Science, UMC, for Willie C. Taylor, Sherwood Smith architect.
AREAS:
A. Production  
B. Assembly  
C. Serving  
D. Sanitation  
E. Preparation

EQUIPMENT LIST:
1. Soiled dish port—swing-up door 14” high  
2. Garbage disposal  
3. Three-compartment sink—two drainboards  
4. 1” plywood counter top—plastic covered  
5. Present refrigerator  
6. Present 61” domestic sink cabinet  
7. Domestic wall cabinet  
8. Ventilation hood  
9. Range: four-burner, griddle, broiler  
10. Base cabinets—1” plywood top—plastic covered  
11. Table, laminated maple top—drawers, shelf under

Serving positions, items 12, 13, 14, 15

12. 4’ portable beverage cart  
13. 4’ portable dessert, bread cart  
14. 4’ portable salad cart  
15. 4’ portable hot food cart

COMMENTS:
This simple layout graphically illustrates the equipment saved when the facility is planned for occasional use, buffet service. Essentially no food storage space is needed. Since wear is minimal, plastic counter tops are used over the cabinets (4 and 10).  

Design by Dr. John M. Welch, Department of Food Science, UMC, for Willie C. Taylor, Sherwood Smith architect.

FIGURE 9: CHURCH KITCHEN
IRONTON, MO.
AREAS:
A. Production
B. Assembly
C. Serving
D. Sanitation
E. Preparation

EQUIPMENT LIST:
1. Exhaust duct and fan from hood
2. Base cabinet, stainless steel top with cabinet over
3. 50" refrigerator
4. Double stainless steel sinks
5. Dish storage, cabinet over
6. Clean dish table
7. Dishwasher
8. Table drain
9. Scrapping spray fixture
10. Garbage disposal with dish rails
11. Soiled dish table
12. Hand sink
13. Base cabinets—plastic top
14. Pot and pan rack
15. Laminated wood cutting board
16. Hood over range
17. Range: six-burner, two-oven, griddle, broiler
18. Base cabinet, stainless steel top
19. Tray and silver
20. Three 12" x 20" hot food tables
21. 30" cold plate for salads, desserts
22. Ice cream and milk cooler
23. Water and coffee station
24. Two to five-gallon coffee urn
25. Tray rail
26. Rolling or folding door

FIGURE 10:
LIBERTY METHODIST CHURCH
CHILlicothe, MO.

COMMENTS:
The garbage disposal sink (10) is provided with
dish rails so dishes in racks may be rested on them
and refuse sprayed through to the disposal below.
A shower-type scrapping spray is used. The hot
food table (20) shows the "hot wells" for food
trays.

Design by Dr. John M. Welch, Department of
Food Science, UMC, for Willie C. Taylor, Sher-
wood Smith architect
AREAS:
A. Production
B. Assembly
C. Serving
D. Sanitation
E. Preparation

EQUIPMENT LIST:
1. Range: two-oven, griddle, broiler
2. Hood
3. Exhaust fan
4. Cooks table on base cabinet
5. Hand sink
6. Refrigerator-freezer
7. Work table; 7A, portable
8. Garbage cans—for storage
9. Work shelf
10. Soiled dish table
11. Scrapping trough
12. Garbage disposal with scrap sink
13. Dishwasher
14. Clean dish table
15. Shelf
16. Three-compartment pot and pan sink
17. Tray and silver dispenser cart
18. Refrigerator salad pan cart
19. Heated plate cart
20. Hot pan cart with three 12" x 20" openings
21. Portable roll warmer
22. Plate dispenser cart
23. Dispenser cart—desserts
24. Ice cream cart
25. Milk cart
26. Cup and saucer dispenser cart
27. Coffee maker cart
28. Cashier cart
29. Tray rail
30. Sneeze guard

COMMENTS:
The cafeteria line may be either portable or fixed. Storage is provided outside the kitchen area. Garbage cans with tight lids are used to provide additional storage space for dry staples. Portable table (7A) provides a flexible work surface.

Design by Dr. John M. Welch, Department of Food Science, UMC, for Willie C. Taylor, Sherwood Smith architect

FIGURE 11:
PAROCHIAL SCHOOL KITCHEN
PORTAGEVILLE, MO.
FIGURE 12: UTILITY CART

4' FT. CART FRAME
Items 33-34-36-37-41

4'-10" SHELF BRACKET WELDED TO END FRAME (FOR REMOVABLE SHELF)

1/8" STAINLESS STEEL CAP MOLDING

HEAVY GAUGE STEEL BASE PLATE WELD TO FRAME

LIFT OUT PANELS—PLASTIC FACED—FRONT & 2 ENDS

SPACE FOR 8" LOCKING TYPE RUBBER TIRED CASTORS, BOLTED TO FRAME & BASE PLATE

INTERCHANGEABLE TOP

FIGURE 13:
GATHER 'ROUND WORK TABLE

PLAN

SCHEDULE

PERSPECTIVE VIEW

4'-0" "GATHER 'ROUND" WORK AND ASSEMBLY TABLE
SUGGESTED CHECK LIST FOR
NON-COMMERCIAL FACILITIES PLANNING

Institution requesting layout  
Address ___________________ City _________ Zone ________
Individual to contact ______________ Title ________
Address ___________________ City __________ Phone ________

1. Type of service:
   a. What type of organizations or groups will the proposed kitchen serve? (i.e.: ladies church groups, men's clubs, service clubs, etc.)

   __________________________

   b. Maximum number to be served at one meal ________.
      Average or normal number expected to be served at one meal ________.

c. Type of service: Cafeteria ________ Buffet ______
   Table service: (a) Plate service ________ or (b) Family style ________

d. List a typical menu of the type proposed to be served from this kitchen:

2. Is the installation: (a) new ________ or (b) a remodeling of existing facilities ________?

3. Attach sketch or blueprint showing all dimensions of kitchen, storage and dining area.
   a. Indicate on sketch exact position of doors, their width and direction of swing; windows with height of sill above floor level.
   b. Any peculiarities of piping, drains, or electrical wiring which might limit the scope of the layout.

4. If equipped at present, show location, size and type of all equipment and location of water, drain and electric connections.
   a. If present equipment is in condition to be utilized in a future layout, indicate items of equipment to be retained in the new layout.

5. Can the position of walls, doors and windows be altered in the layout?

6. Types of Cooking Fuel
   a. Electricity ________
   b. Bottled or tank gas ________
   c. Artificial city gas ________
   d. Natural city gas ________
   e. Other (please specify) ________

7. Water supply: City ________ Own water supply ________

8. Hot water supply: Is installation equipped with a hot water heater at present?
   Yes ________ No ________
   a. If "yes", give capacity as ________ gallons per minute at ________ °F. and ________ pounds per square inch pressure.
   b. Is system arranged for dual temperature water delivery 140° and 180°F.? ________

9. Waste disposal: City sewer system ________ Private septic tank ________
   a. If city sewer system, will city permit installation of waste disposal units? Yes ________ No ________

10. Extent of food preparation:
    a. What proportion of food will be brought in already prepared? ________%
    b. What proportion of food will normally be prepared in this kitchen? ________%
    c. Will professional or amateur help prepare the food in this kitchen?
       Professional ________ Amateur ________
    d. What proportion of food will be served on: (1) Disposable service ________%, (2) China and glassware ________%, Silver ________%, Disposable spoons, forks, etc. (wood or plastic) ________%.

11. Will professional or amateur help handle sanitation? (Dishwashing, pot washing, general cleaning?) Professional help ________%; Amateur help ________%.

List any other peculiarities which may apply to this layout or suggestions which may be useful to the designer in relation to the wishes of the client.