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Omnifare inc. A Commercial Food Service Production and Marketing Facility

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A COMMERCIAL FOOD SERVICE PRODUCTION AND MARKETING FACILITY

A commercial venture in Spartanburg, South Carolina.

Charles C. Martin III

A terminal project submitted to the Faculty of the College of Architecture, Clemson University, in partial fulfillment of the requirements for the degree of

MASTER OF ARCHITECTURE

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Dean, College of Architecture.

To Barb

acknowledgements

This offering is, hopefully, only a first effort. It has been a long time in coming and would not exist without the physical and emotional support of many others. I would like to extend my heartfelt appreciation to the following people who contributed so much in so many ways.

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Dr. Harold Cooledge

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ABSTRACT

Large scale food service has traditionally taken either the "industrial" or the decentralized "franchise" approach. Both approaches have inherent strengths and weaknesses with respect to Public Image, economy of operation, skill requirements of workers, and the ability to respond to market demands (or lack thereof). A corporation has been founded that combines elements of both approaches in a single commercial food service operation. *Omnifare* was chosen as the corporate name to reflect the many areas of involvement with food.

Omnifare, Inc. is an aggregation of independent commercial food service operations come together to gain efficiency and economic advantage in food production while providing superior quality control of that production. Toward this end, a facility is proposed that provides flexible production areas, testing and evaluation of products, research and development of new products, and controlled distribution of the same.

The facility's operational concept and form is generated by an industrial approach to bulk food production. The production is supported by a marketing strategy that involves the patronage of the public at on-site restaurants and food service outlets. This affords more accurate analysis of taste and buying trends that in turn direct efforts to better service and food quality.

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foreword

FOREWORD

In bygone years one's dining experience was, for the most part, limited to meals taken at home or in the homes of relatives and friends. Recent years, however, have seen a phenomenal growth in "fast food" establishments, "specialty" foods and restaurants, "convenience" foods and a number of other food deliveries. The result of this has been to acquaint more people with a wider range of experiences. Add to this the growing number of women working outside the home and the increasing number of occasions for leisure dining and it becomes easier to understand the public's growing impatience with inadequate food service.

As may be expected, food service technology has grown at an accelerated pace in order to stay current with food trends and service demands. New technology is generally expensive. In institutional buildings, for example, where cafeteria, catering, and individual meal service may all exist at once, new equipment and installation costs may approach ten percent of a total construction budget. It takes little mathematical ability to appreciate the sum of money in question.

Architects charged with institutional design and, therefore, efficient use of allocated monies are well advised to make a judicious study of any proposed food service system. The public expects effective food service and the client-owner demands it.[1]

Returning to the question of food service technology, an architect responsible for design of a food service system is faced with the task of evaluating the avalanche of technological data available. Here, he has a choice. He can take his education and acquired knowledge and develop an effective system that is operationally appropriate to his total design concept, or he can turn to a consultant who may or may not be capable or concerned about the food service system's integration into the greater building system.

Food service is a system that is at once complex and simplistic. It can be a veritable puzzle of parallel, repetitions, and sequential activities that must occur in some scheduled way to produce predictable food products. And yet, food service is simplistic in that it can be reduced to a few specific activities common to all food service systems: acquisition of food material, preparation of that food material, and distribution of the finished product for consumption.

Background

FOOD SERVICE IN PERSPECTIVE

Food service, of a sort, has existed since man discovered fire and came to appreciate its application to food preparation. Animal flesh was accumulated and taken to a point where it could be burned or singed. This activity signified a preference for and discrimination between prepared foods and those in a raw state. Over time other advantages of cooking became apparent; flavor was usually enhanced, consistency was more predictable, and the risk of deterioration was somewhat abated, thereby increasing the safety of eating.

Concurrent with civilization's progress from "hunting tribes" to agricultural societies was the advancement of technology. From charring over open flame to turning spits over charcoal to baking and boiling, the activity of cooking slowly became an art form; eating became dining; and consuming for sustenance became recreation and epicurean pastimes.

With the assimiliation of people into villages and increasingly complex societies the division of labor concept emerges to provide some order and efficiency in everyday life. From this division of labor came specialization and expertise in food preparation.

Specialization allowed development of more sophisticated foods and permitted some experimentation in the subtleties of taste. Large cooking staffs began to appear in the houses of

feudal lords and in abbey kitchens of the medieval church institutions.

With the Renaissance came the emergence of large private kitchens for the wealthy and contracted food service in hostels and boarding schools. This period also saw the introduction of a variety of spices, preservatives, and foodstuffs to the kitchens of Europe; thanks in part to Marco Polo's visits to the Orient. Cooking techniques, quality control, and recipes improved. Food preparation was becoming a fine art.

THE IMPACT OF ACCELERATING TECHNOLOGY

By the 1800's, the new surge of general technology accompanying the Industrial Revolution produced standardized and improved metal stoves and ovens. These improvements permitted more diverse cooking possibilities and consistent foods. Enclosed fireboxes vented to the outside and the stability and heat-retaining characteristics of metal permitted stoves to be moved from isolated kitchen buildings and to be located in the house-proper closer to the point of service. The efficienty of the new stoves required less cooking time, fewer attendants, and allowed domestic workers to be utilized elsewhere.[2]

The Twentieth Century brought electricity and gas into popular and domestic use for cooking and preparation appliances. Improved engineering and knowledge of thermo-dynamics produced

effective refrigeration and, for the first time, long-term storage of perishable foods became a reality. This one capability added a completely new dimension to food service. No longer were menus effected by season and locale as before. Food service operations were now becoming restricted only by the production capacity of their physical plants.

With the exception of nutrition studies, most food service technology was slowed by the Depression of the 1930's. World War II, however, with its mass feeding and logistical demands, opened new areas to research and development. Special food systems (K and C rations), preservation techniques (dehydration and concentrates, etc.) and preparation equipment (convection ovens, etc.) pioneered a new era in food service.

Many items common today, freeze-dried products, TV dinners, micro-wave ovens, blast-freezers, and cellophane pachaging are the results of intense research and engineering begun by the war effort of the 1940's and 50's.

CURRENT ACTIVITIES

In the thirty-odd years since World War II, there has been tremendous advancement in nearly all fields of endeavor. Food service has grown from independent and "cottage" operations into one of the largest industries in the United States. In 1978 it was estimated that one in every four meals prepared nation-wide was prepared outside the home accounting for 100

million dollars in food service sales. This, of course, includes fast-foods, restaurants, institutional meals, frozen TV dinners, but the number is impressive and growing. In 1980 meals prepared outside the home were estimated to be at one in three.

It takes little study to appreciate the impact of the food service industry on the national economy (and vice versa). The food service industry is today effected as every other industry, by inflation, ecological concerns, and availability of energy, and as in other industries, is developing new products, methodologies and delivery systems to meet these problem areas.

FUTURE TRENDS

Given the number of variables influencing food service now it may not be worthwhile attempting to predict future trends. As we approach the year 2000, however, it seems safe to suggest that there will be more leisure time for the public in general and, therefore, more leisure dining. Currently there are trends toward more "self-service" (as in salad and soup bars) and "natural" foods.

Societal developments along with economic pressures will probably be the final determinants of food service changes and trends. The Society for the Advancement of Food Service Research (SAFSR) has identified the following social factors as some of the shaping forces that will influence food service responses for the 1980's:

1. More people will be dining outside the home than ever before.
   (a) more leisure time opportunities
   (b) generally higher standards of living
   (c) more women than ever working outside the home
   (d) cultural sophistication and cultural foods
   (e) novelty appeal and specialized foods
   (f) social aspects of dining
2. Larger and younger workforce requires more facilities for feeding.
3. Eating habits of youth and young adults.[3]

The impact of the above factors will probably result in more restaurants (of whatever food service quality) and more large food processing plants.

The restaurants will tend to be convenience oriented with limited menus or "theme" approaches to dining: this will be in response to more diverse tastes, informality of dining, less skilled labor, and speed of service.

Such restaurants or dining facilities will require more food processing plants to supply the convenience foods. The plants will need to be relatively large in order to realize the economy of large scale production that in turn lends itself to industrial production techniques. Industrial production by its very nature provides easier quality control and testing and evaluation of products. It also can support research and

development that cannot be borne by most food service operations. One further advantage of the industrial approach is the variety of packaging and portioning possibilities available. This is important in meeting the changing tastes and preferences of the general public.

Definitions

FOOD SERVICE DEFINED

Food service, as discussed hereinafter, is a process by which food *items* are handled or located in such a way as to render them *finished* food *products*. The term *items* is used to preclude the need for distinguishing between processed and unprocessed foods. The term *finished product* is used to further distinguish the *items* consumed directly from vendors (as some dairy products and some baked goods) and those that are processed to completion "on the premises" and ready for distribution. See figure 1.

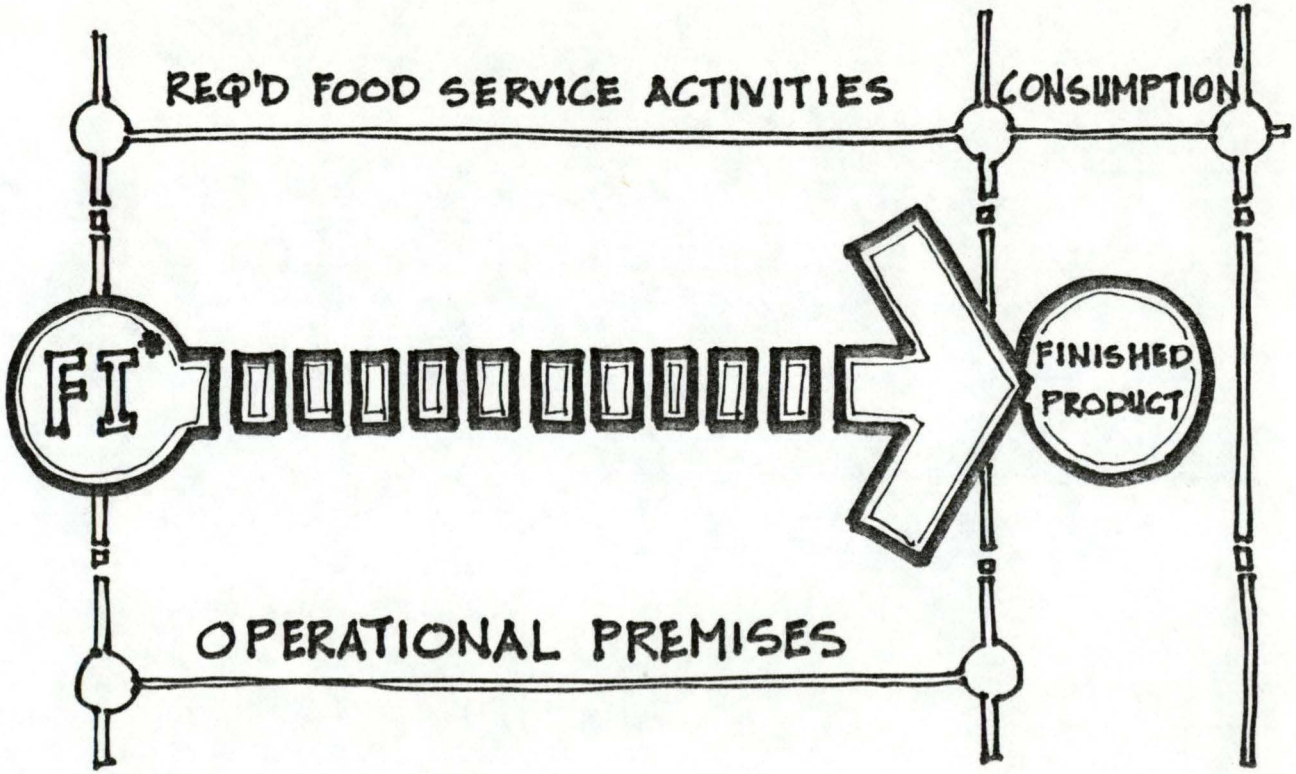
FOOD SERVICE PROCESS DEFINED

Food service as a *process* requires that certain activities occur in a predetermined sequence. See figure 3.

1. Food *items* must be obtained and provided *at* the food service location. This activity is *receiving*. Many ancillary operations may occur at this point such as, acceptance or rejection of food items, weighing and inventory, and testing and evaluation.
2. *Preparation* is the next activity common to all food services. This involves taking the food item(s) received and performing any tasks necessary to make them ready for finishing. This may require the stripping of celophane wrapping from pre-packaged "head-and-eat" servings or washing, paring, and dicing of carrots, and the like.
3. Following the preparation activity is *finishing*. This involves taking the prepared food items to a state of completion where food is ready to be served or distributed in some manner for consumption.
4. The last necessary activity of a food service process is that of *service and distribution* of the finished product. This may involve packaging for storage, serving cafeteria trays, or just "helping oneself to the pot."

While the preceeding four activities are necessary to the process, a fifth function, storage or holding, may be logically included. The importance of this function varies with the

FOOD SERVICE PROCESS DIAGRAM [FIG. 1]



* FOOD ITEM: FOOD NOT IN ITS FINAL CONSUMABLE FORM.

DIAGRAM SYMBOLS [FIG. 2]

(FI) FOOD ITEM(S) SEE FOOD SERVICE DEFINITION.

(R) RECEIVING (OF FOOD ITEMS).

(P) PREPARATION (OF FOOD ITEMS) P_o → OFF-PREMISE PREP.; P_p → ON-PREMISE PREP.

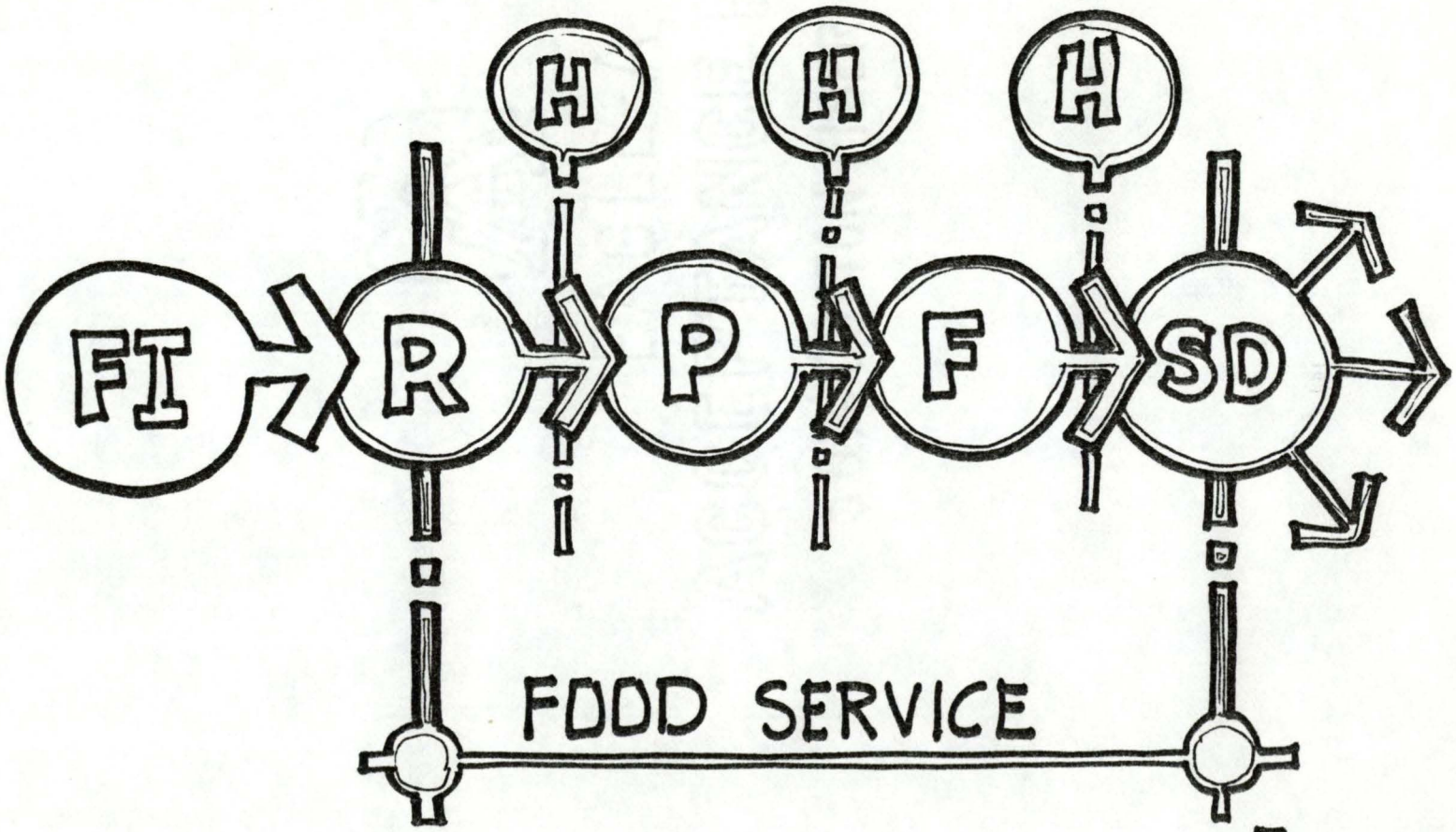
(F) FINISHING (OF PREPARED FOOD ITEMS) F_2 → READY FOODS OPTION: RECONSTITUTION.

(SD) SERVICE and DISTRIBUTION.

(H) HOLDING: DRY STORAGE OR ENVIRONMENTAL (HOT OR COLD) TEMPORARY STORAGE.

(PH) PRESERVE and HOLD (SEE READY FOODS OPTION.

(S) SERVICE (OF FOOD PRODUCTS "IMMEDIATELY" FOLLOWING FINISHING.



[FIG. 3]

element of time, environmental considerations, and its size relative to the rest of the food service activities. Where this function occurs and how often in a given food service process will reveal specific capabilities of that process.

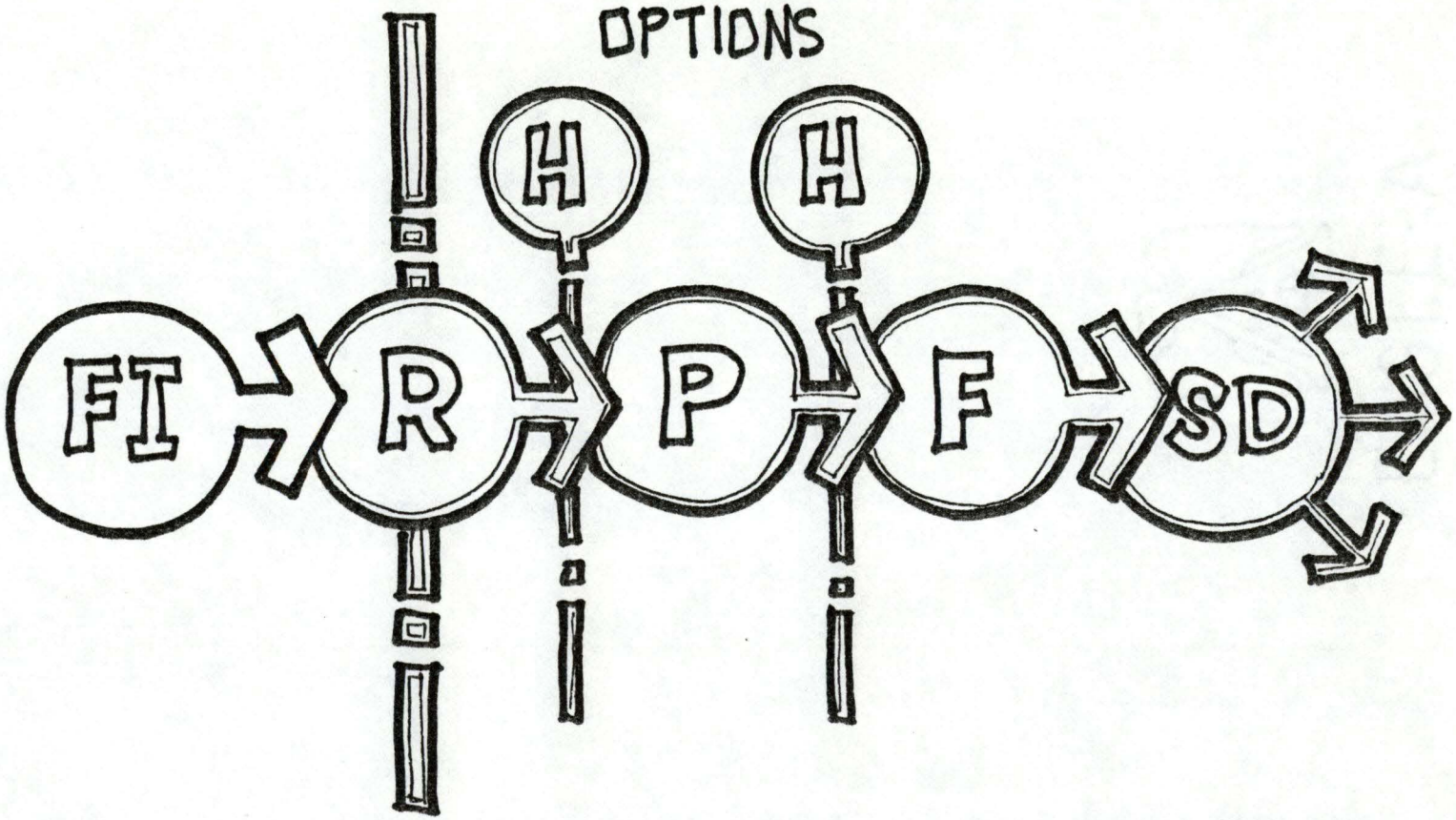
The placement of these activities with respect to the production sequence determines the identity of a particular food service approach. See figure 3.

Food Service Options

ALTERNATIVE FOOD SERVICE SYSTEMS

As suggested above, certain activities and operations are necessary for the conversion of food items (raw or otherwise) to a ready-to-serve state. These activities when identified may be considered system components and, as such, may be manipulated and valuated to create specific and different conceptual approaches to the food service process.

The three most easily identified food service concepts are: *conventional*, *ready foods*, and *convenience*. Each of the three concepts or options has particular strengths and weaknesses that must be addressed in the earliest possible planning stages.



CONVENTIONAL OPERATION
[FIG. 4]

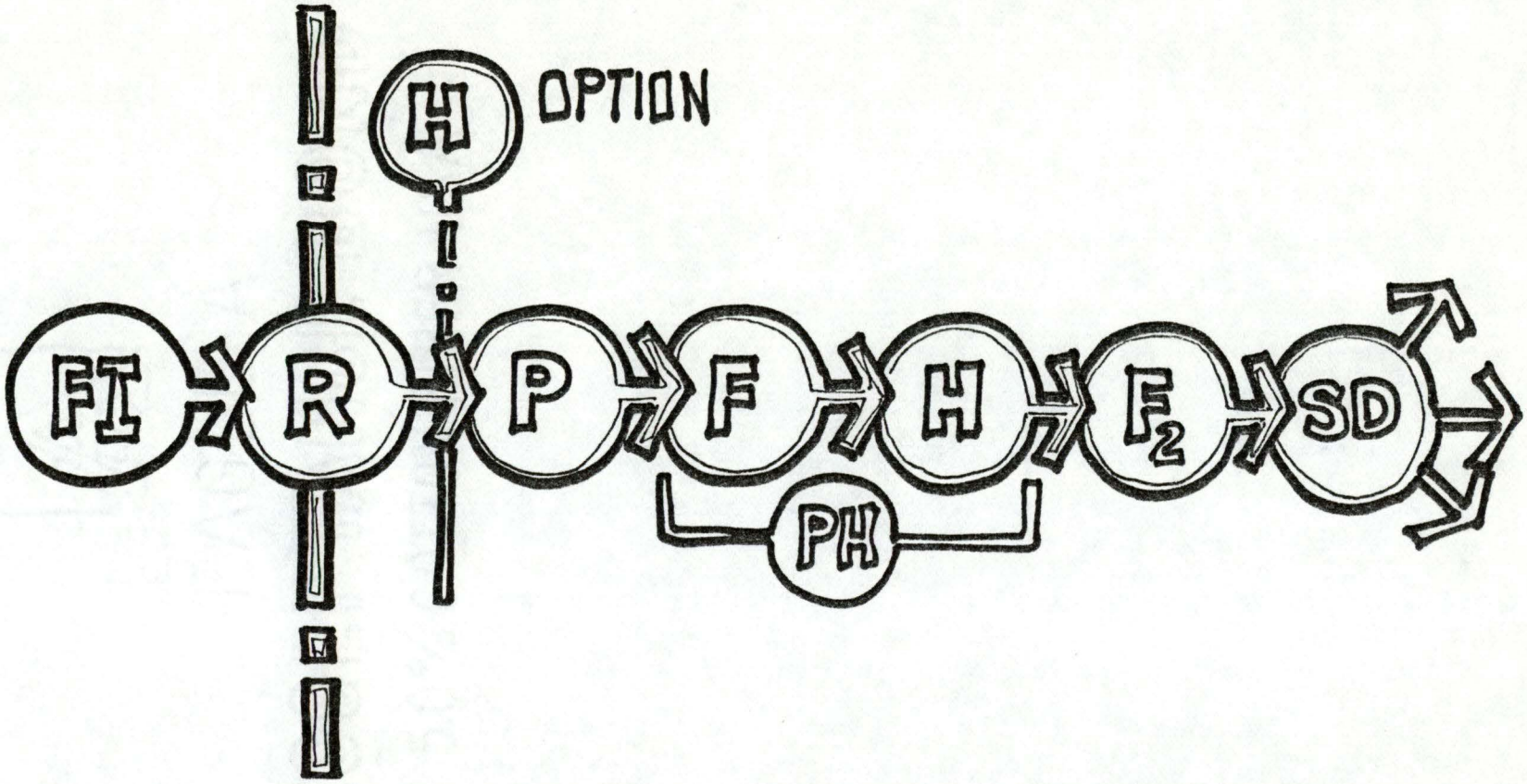
THE CONVENTIONAL FOOD SERVICE

As the name implies, this approach is the one which is most familiar to the average person. Essentially, the conventional food service is "get-cook-and-serve." *Raw* food is acquired, prepared, and finished all on the same premise.

The conventional operation is responsive to changes in menu and is able to accommodate a wide range of dietary and menu requirements. As was noted earlier the inclusion of holding functions greatly influences the operations ability to respond to certain menu requirements.

On a large scale it tends to be inefficient in terms of quality control and cost effectiveness. It is skill intensive, labor intensive, and waste is virtually uncontrollable. Where these costs are manageable, however, the fact that the kitchen operation is "known" to a large part of the labor force the savings in equipment and training can be significant.

If *raw* food items are considered to be an essential part of the process definition, *few* true conventional operations exist outside of very rural or very large food processing works.



READY FOODS OPERATION
[FIG. 5]

THE READY FOODS APPROACH

Ready foods is a term coined by the research department of the Cornell University School of Hotel Administration to describe its system for an on-premise production of food items, which are frozen after preparation in a form that requires only reheating (or nominal finishing) to be ready for serving.

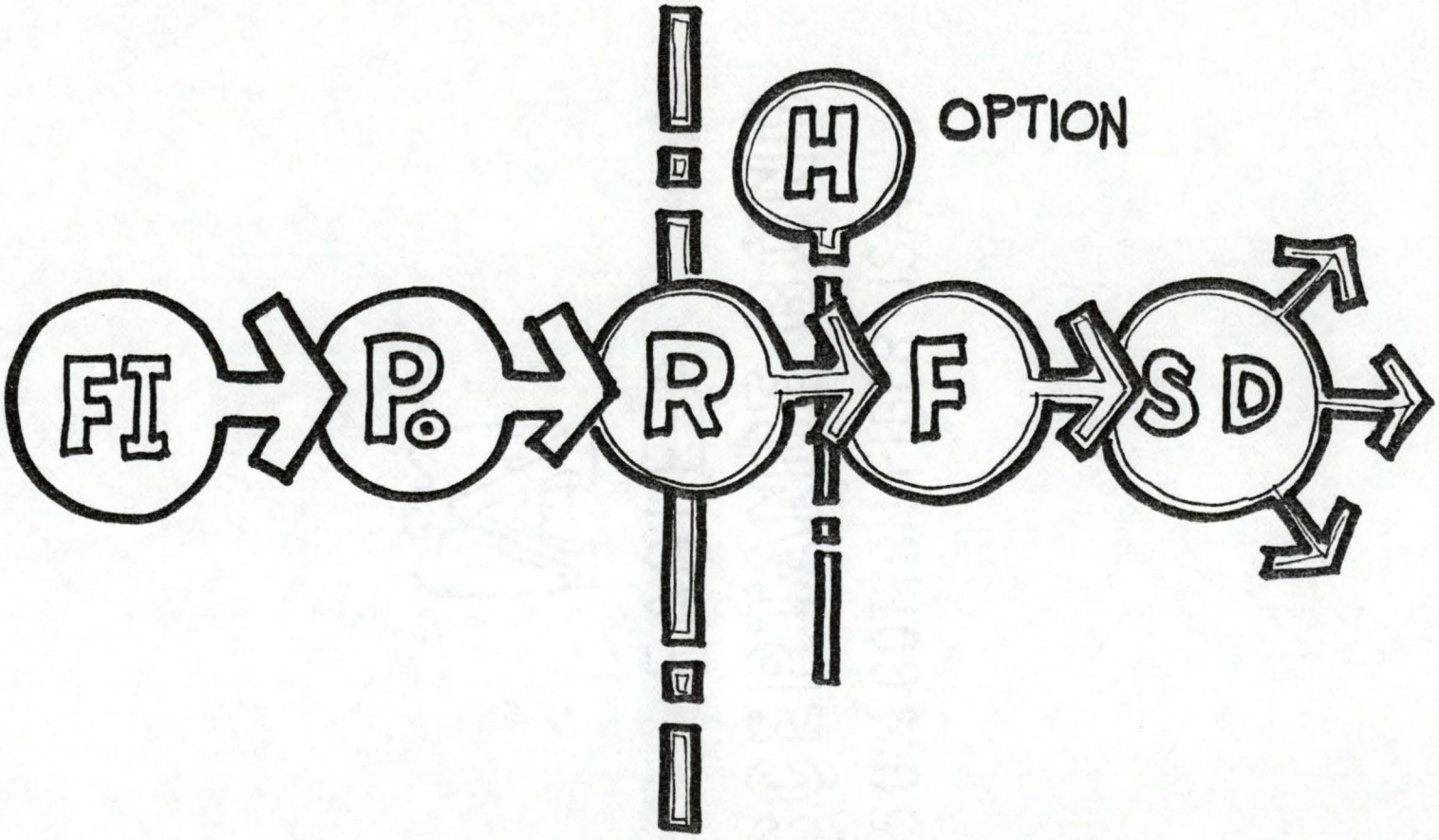
The ready foods approach is similar to the conventional approach in its initial activities. The food items in whatever state are received, prepared, and finished with basic seasonings and recipe condiments in-place. At this point, the food finished at (F-1) is specially packaged, quick frozen and placed in (H) environmental holding until that portion of the inventory is called out.

When the (F-1) finished food item is brought out it is thawed and finished at (F-2). How the "thawing" to "ready food" condition occurs depends upon how the food item was "put up" (i.e., what vessel or container it was in and what the temperature of holding was).

The container used in the holding activity, bulk or individual, determines also what must be done to accommodate the service and distribution activity in terms of time and space allocation.

The primary advantages in the ready foods approach are the bulk scale of food purchases, the ability to schedule and manage production efficiently, and quality control and waste management.

The disadvantages are primarily cost related. More production equipment is needed as is specialized storage and packaging capabilities. Ready foods operations require the most skilled workers and therefore higher salaries. It is contended, however, that a smoothly running ready foods operation when completely "on-line" working to scale performance is as economical as any other system.[4]



CONVENIENCE FOODS OPERATION

[FIG. 6]

THE CONVENIENCE FOODS APPROACH

The convenience food operation in its simplest form is the vending machine. The food items are acquired prefinished or in an advanced state of preparation and as such require only minimal effort to be ready for serving.

Food items are, as noted above, received in an advanced state of preparation, and depending upon the mission of the food service operation, either stored or served. Convenience foods are sophisticated enough now that there is a great range of offerings from the celophane wrapped crackers to preplated, frozen casseroles. Storage and holding obviously is important here as is the relationship between finishing and the service and distribution activities.

The dominant cost in a convenience foods approach is at the "front end." The convenience that is bought must include the manufacturer's labor, overhead, packaging and profit.

Complaints about convenience food quality and taste is well known. One tends, however, to get what one pays for. As *convenience* suggests, there is comparatively less equipment involved with this approach and relatively lower skill requirements. Both of these are, in terms of cost accounting, financial pluses. Additionally, waste management is virtually no problem.[5]

Convenience foods, however, are not particularly responsive to *special* dietary or menu needs. Where this is important, the selected approach should be closely scrutinized.

COMPARATIVE OPERATIONS ~ RULE OF THUMB [FIG. 7]

Factors	Conventional	Ready Foods	Convenience
Food Costs	●●●◐○○○	●●◐○○○○	●●●●●●●
Workers' Skill	●●●●◐○○	●●●●●●●	●●○○○○○
Labor Intensity	●●●●●●●	●●●●○○○	●●○○○○○
Amount of Equipment	●●●●○○○	●●●●●●●	●●○○○○○
Equipment Costs	●●●●◐○○	●●●●●●●	●●◐○○○○
Waste	●●●●●●●	●●◐○○○○	●○○○○○○
Menu Responsiveness	●●●●◐○○	○○◐○○○○	◐○○○○○○

Physical Nature of Food Service

PHYSICAL IMPLICATIONS OF FOOD SERVICE TO ARCHITECTURE

The process diagrams that preceded this section indicated specific activities required for a particular operation. The activities that *physically* concern a food service operation's architecture begin at receiving (R) and progress through service and distribution (SD), or beyond as the case demands.

Each activity in the process depending on its scale within a particular food service operation describes a certain physical space. A receiving area may require an extensive loading dock with canopy, levelers, scales, supervisor's office, and fork lift maneuvering area, or it may be no larger than the space needed to swing a screen door. If holding or storage is required it takes little imagination or insight to see the range that exists between a hall pantry and a refrigerated warehouse. Preparation areas, likewise, may vary from the sideboard of a kitchen sink to row upon row of stainless steel work tables with built-in sinks and garbage disposal units.

Finishing areas provide an even more complex set of options. Here one must establish whether the area involves cold food preparation (eg. green salads, gelatins, cold cuts and sandwiches) or hot food preparation. Obviously, the myriad possibilities of hot foods may require any and every conceivable cooking appliance possible.

The service and distribution function may, as the aforementioned activities, fall anywhere within a possibility range that reaches from "helping oneself from the pot" to elaborate restaurant service to special transportation systems with exotic containers.

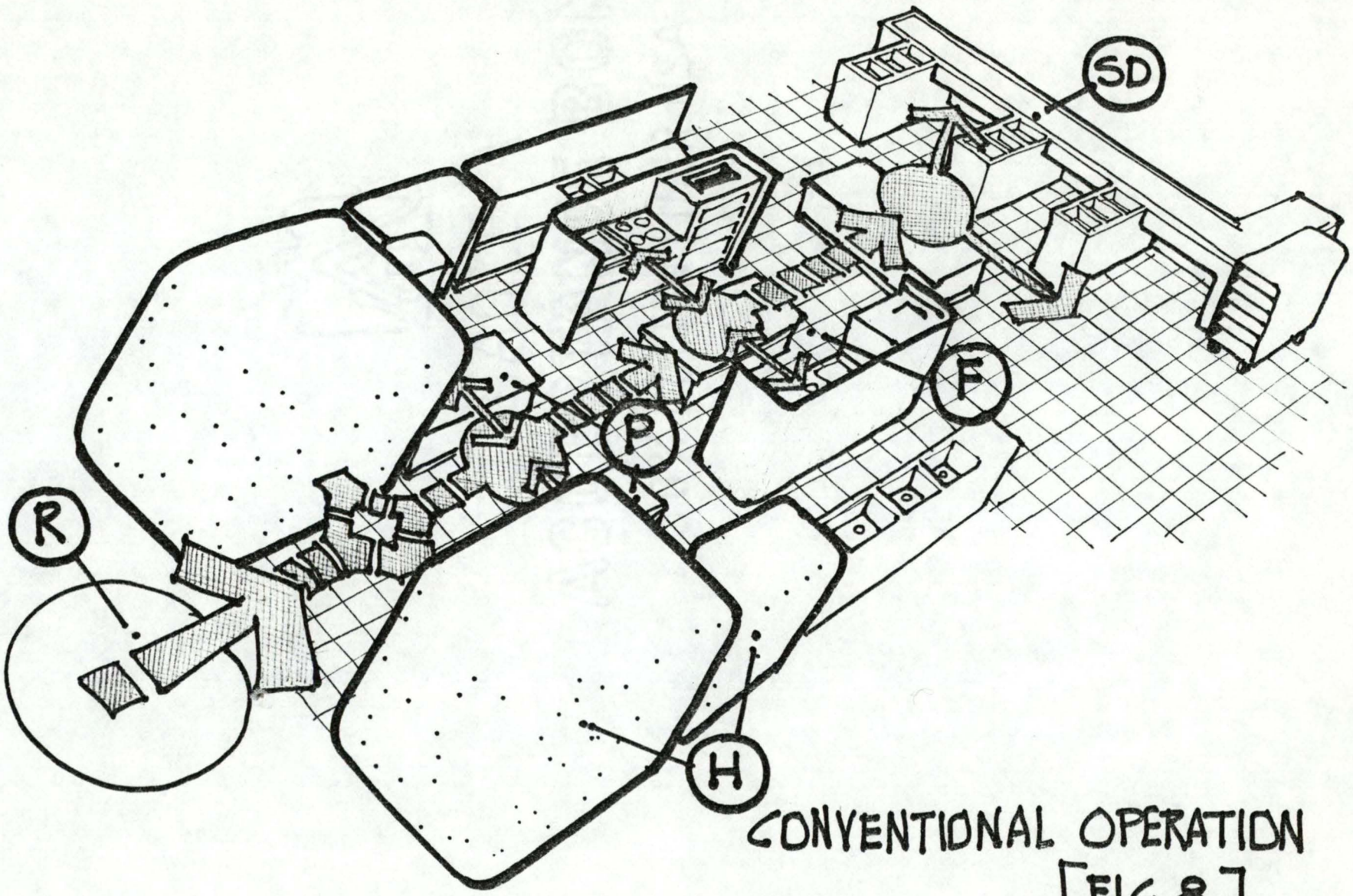
It should be clear that knowing the scope of a particular operation and the scale of the component activities is an important bit of information, but this does not address the many other factors that influence design and/or planning. The presence of human beings at whatever point in the process requires accommodation for their efficient and safe movement. Various subsystems are necessary for the successful existence of a food service process.

Structure must enclose, support, and define the process. Mechanical systems provide thermal comfort for the work force. Plumbing systems may supply gas for the certain appliances, water for cooking, and water for sanitation and maintenance services. Electrical systems provide energy for various appliances and lighting.

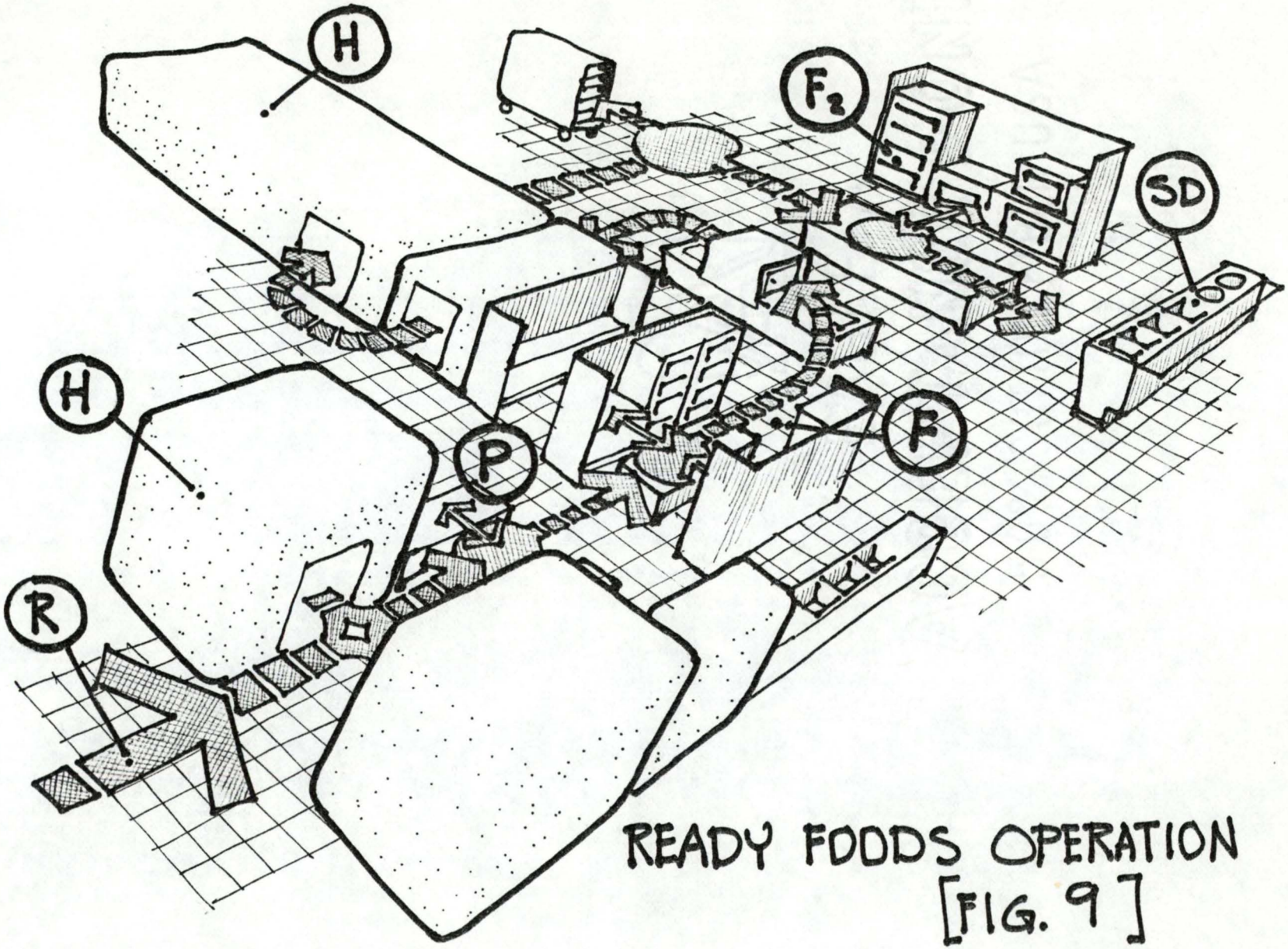
This is not to suggest that an architect must develop a consultant's knowledge of a particular system; he must, though, understand the basic physics, activity sequences, and involvements of that system with those parallel or adjacent. Understanding a system requires more than cataloging information.

Anyone attempting to initiate or to "install" a system should be aware of the resulting correspondence of the component activities and systems.

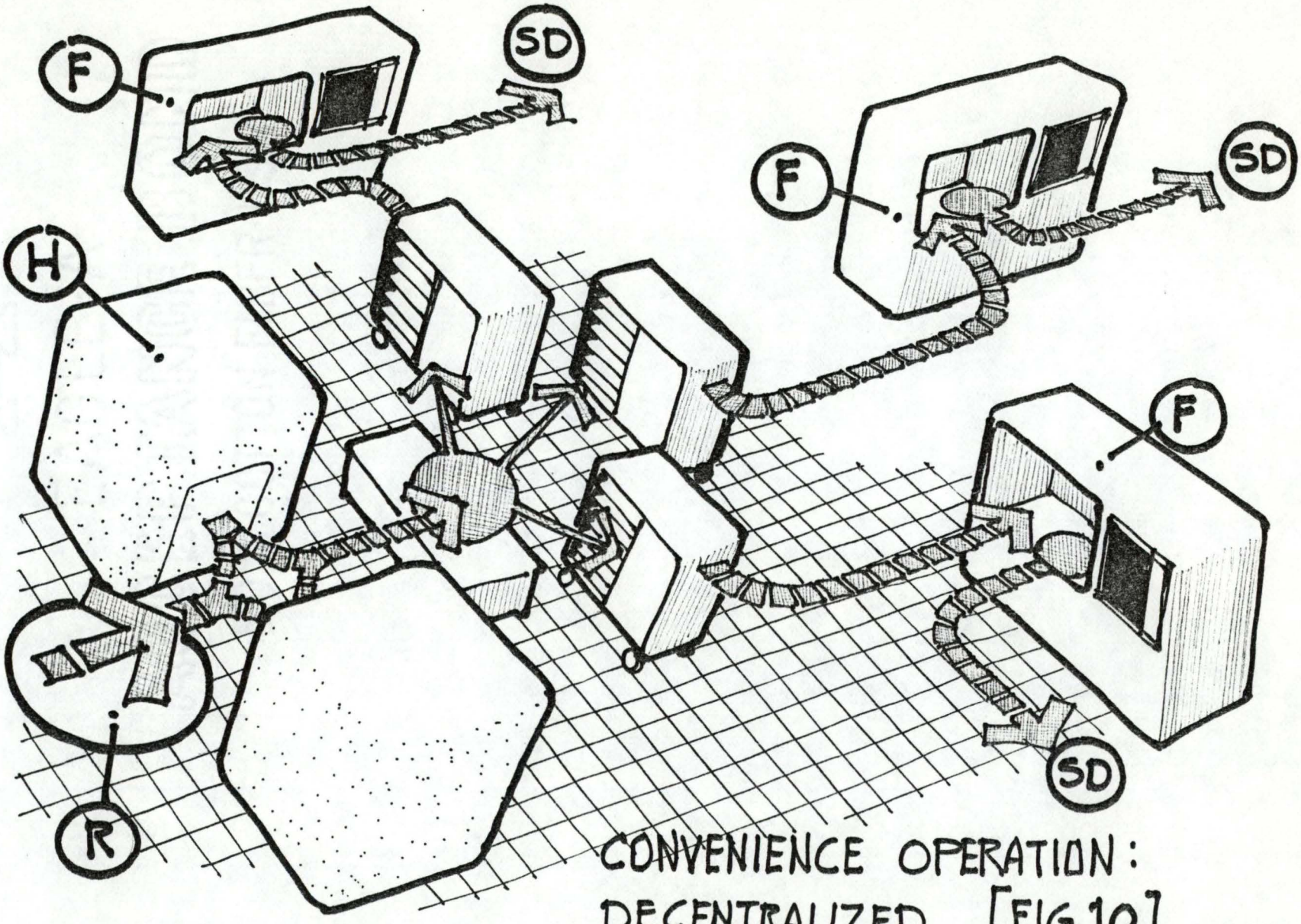
The following figures (8, 9, 10, and 11) are schematic representations of the three previously discussed approaches to the food service process: conventional, ready foods, and convenience. The drawings are in no way prescriptive but are to show potential massing-to-activity relationships.



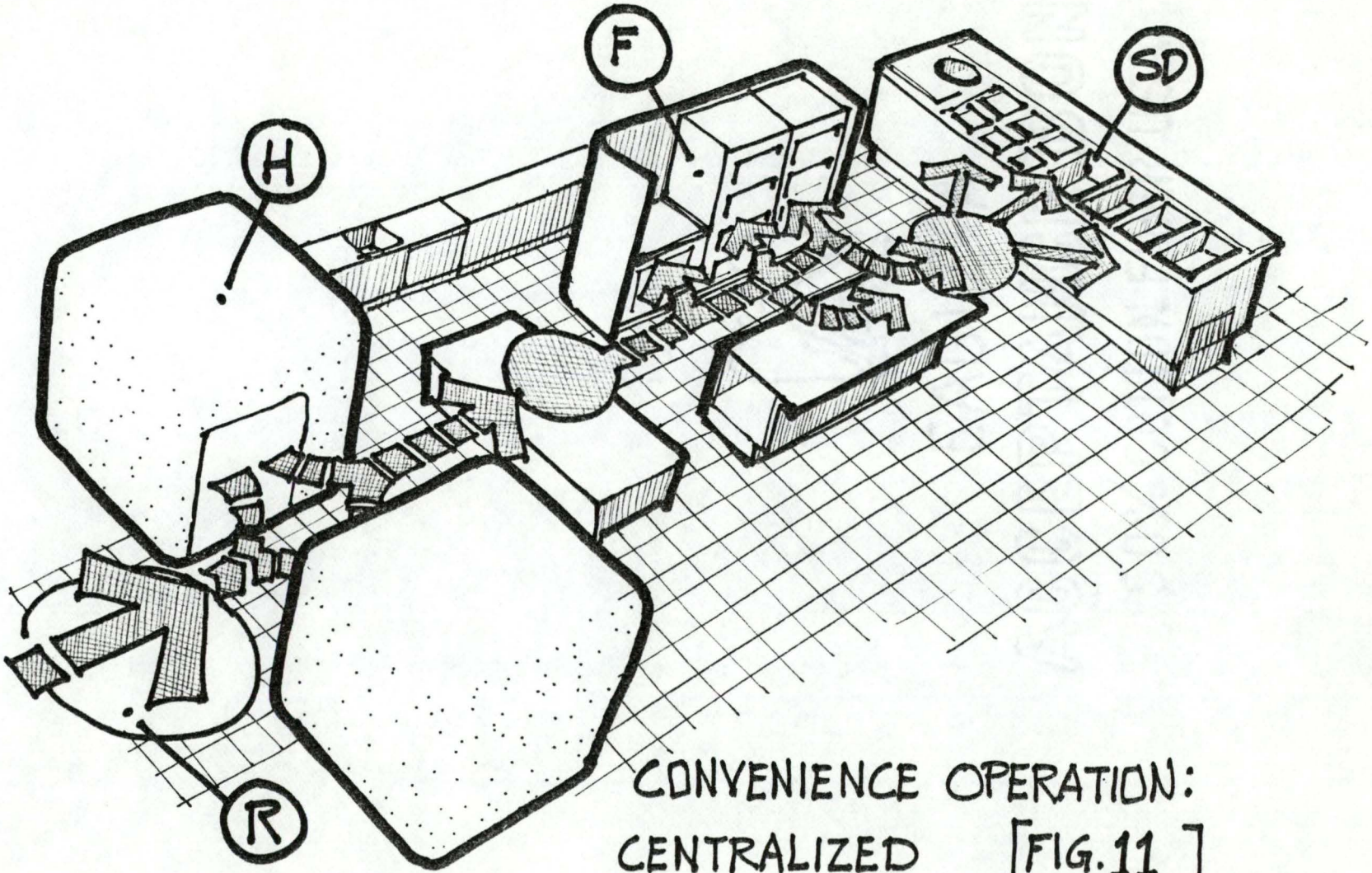
CONVENTIONAL OPERATION
[FIG.8]



READY FOODS OPERATION
[FIG. 9]



CONVENIENCE OPERATION:
DECENTRALIZED [FIG.10]



CONVENIENCE OPERATION:
CENTRALIZED [FIG. 11]

Operational Decisions

DETERMINING THE FOOD SERVICE: A FORMAT

Effective design of anything by an architect is dependent in a large part on the quality of the information used in that design. In the case of most food service operations, the architect is removed from the day-to-day activities and must therefore rely on information obtained from sources beyond his sphere of experience. It becomes important then that the information be selective and pertinent to the architect's needs.

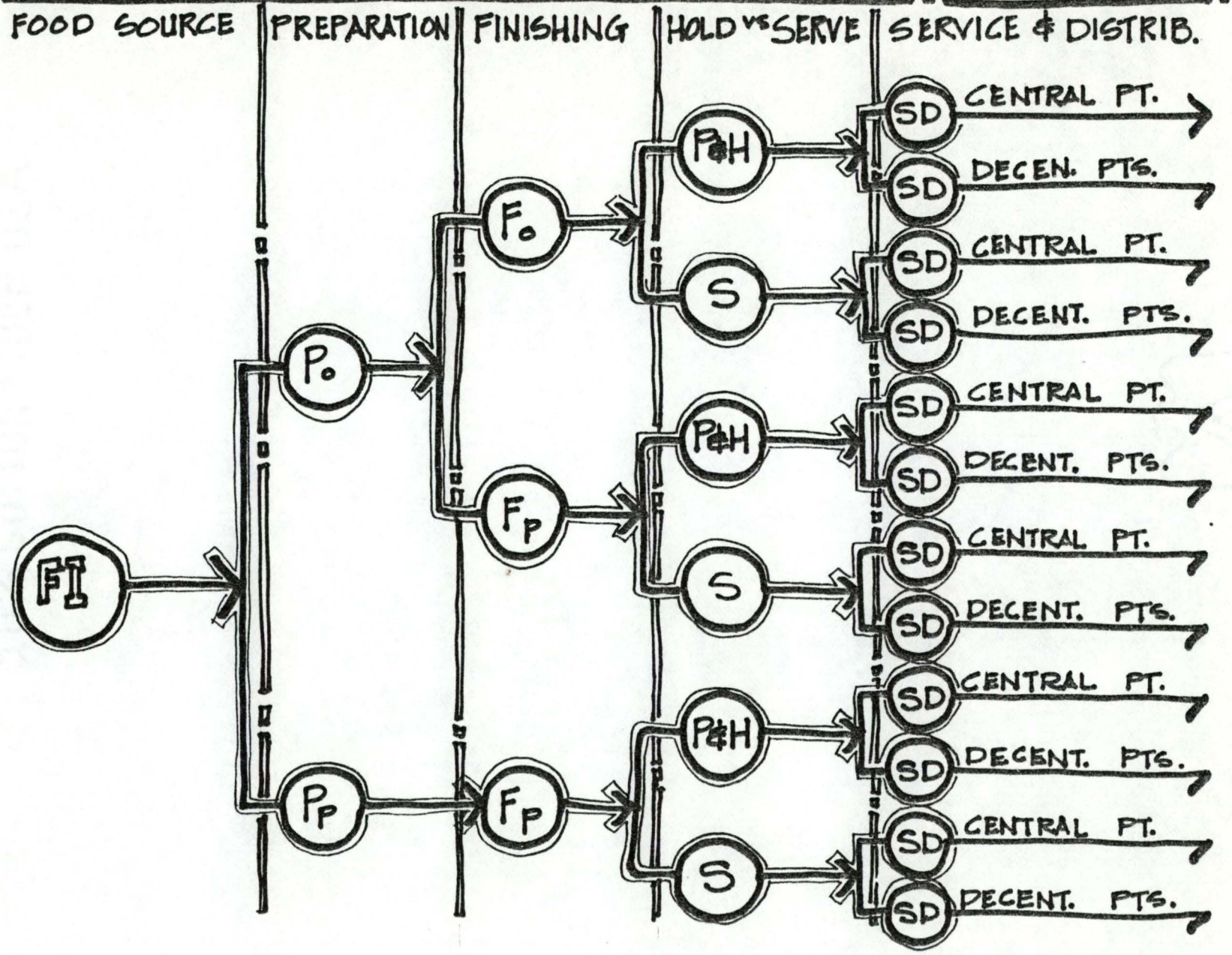
How can pertinent information be obtained? Time and economics seldom premits the architect the luxury of on-the-job-and-site experience and valuable first hand information. The most cost and time effective method might be a means of slecting and deriving that information which is pertinent.

The problem here is to identify those unseen, but meaningful, factors that are present just beyond the architect's current knowledge. Clients and informative sources who may have access to such factors frequently view them as administrative concerns, or, worst of all, meaningless. It is only when the food service has begun operations that its short-comings are understood and a place to lay blame is sought.

A partial solution that this writer proposes is a format that at once identifies a range of food service systems and the decision sequence necessary to develop a particular operations process. The format that follows is essentially a management

decision-tree superimposed upon a decision sequence that corresponds to the activities in a food service process.

FOOD SERVICE DECISION FORMAT [FIG. 12]



INFLUENCING FOOD SERVICE DECISIONS

In figure 12 the first decision area pertains to the *food source*. This assumes that the client or specified consultants have determined the consumer profile, the number to be served within a particular time frame, the food vendors, the economic aspects of these factors, etc.

PREPARATION

The information from the food source decision initiates the next decision: preparation. Is the preparation for the bulk of the food products to occur on-premise (Pp) or off-premise (Po)? The architectural implications are immediate. On-premise preparation suggests a working receiving area (R) as well as on-premise finishing (F) and their appropriate architectural responses.

FINISHING

If the decision was to prepare off-premise (Po) then the further decision as to finishing remains. Here, as expected, menu decision play a major part. If finishing occurs off-premise (Fo) the food service is essentially a convenience operation with its inherent strengths and weaknesses.

Selection of the on-premise finishing (Fp) develops a hybrid process that is being used more and more by hotel and office complex restaurants. The receiving and holding areas must

be more sophisticated but still requires less skilled workers than ready foods and conventional approaches.

If the original preparation selection was (Pp) on-premise the approach is toward the more *plant intensive* conventional and ready food systems. The most logical finishing selection for on-premise preparation is on-premise finishing (Fp). See figure 13.

HOLD versus SERVE

Following the selection of a finishing technique is the *holding versus serving* decision. The (Pp)(Fp) decision route yields a *ready foods* process with the selection of preserve and hold (P & H) and a *conventional* process with selection of "immediate" service (S).

The (Po)(Fo) route with the holding option (P & H) is virtually a "pure" *convenience* approach. The (Po)(Fo) route with the (S) is the basis for the "meals-on-wheels" system.

The on-premise route (Pp)(Fp) with the preservation and holding option is *ready foods* with the secondary finishing (if required) understood. Route (Pp)(Fp)(S) is the primary process for the *conventional* cook and serve approach.

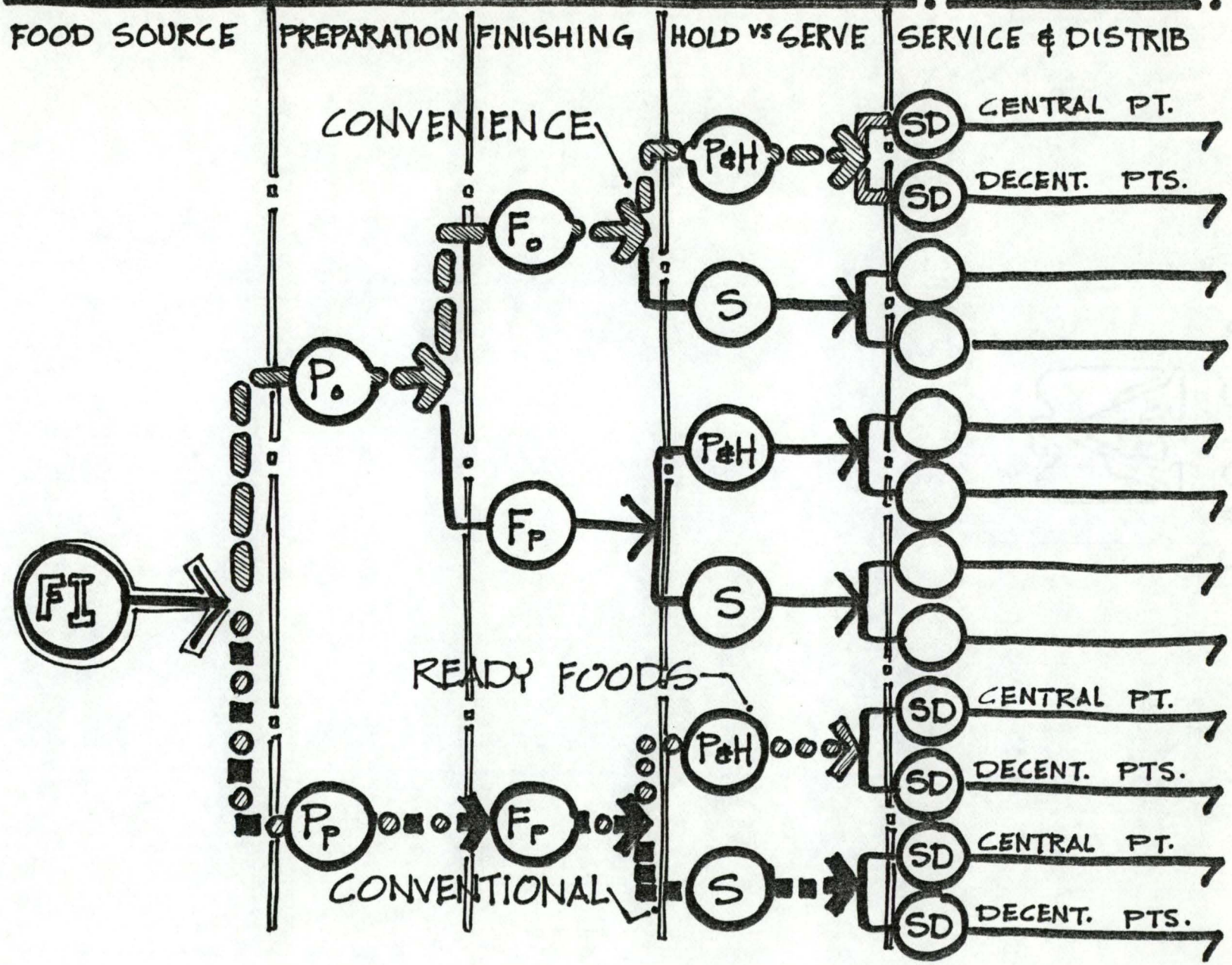
SERVICE AND DISTRIBUTION

The service and distribution decisions are separated into two main types: centralized (SDc) and decentralized (SDd).

For the purposes of this paper, *centralized* service or distribution will be limited to such arrangements as cafeteria lines, buffets, and sit-down service dining rooms near or adjacent to the food service operation.

Decentralized service is product distribution that is removed from the "neighborhood" of the food service operation. The options here are many and varied. Bulk containers may be delivered to restaurants, individual trays may be served in hopital patient rooms, catering trucks may visit plant or job sites, and, of course, meals-on-wheels service to the indigent elderly.

DECISION FORMAT ~ ROUTING OPTIONS [FIG.13]



FORMAT APPLICATION

The format illustrated in figure 12 is a simple one addressing only the most basic food service activities and only in a general way. Programming and research on any food service problem would reveal many other decision areas and operational options: prefinishing, types of environmental holding, sequential cooking operations to name but a few.[6] The intent of the format is to organize the operational decisions, to show relationships between the food service activities, and facilitate evaluation of available and pertinent information.

Physical Factors Considered

PHYSICAL CONSIDERATIONS

As was discussed earlier, food services involve different amounts of equipment and numbers of workers depending on the approach taken and its scale. While various rules-of-thumb are available from equipment and systems manufacturers for determining square footage areas for food services they seldom encompass or deal with the details and subsystems that are present and operating at some level in every food service of any size.

Of all the elements effecting the physical size and layout of a food service three general areas for consideration are immediately apparent: equipment, personnel, and the building system.

EQUIPMENT CONSIDERATIONS

A. The configuration of an existing or allotted floor area will affect the size of a food service and, in some instances, may be the deciding factor as to which particular approach is taken.

B. The operational sequences of particular approaches (given the same service scale) will be obviously greater for a *ready foods* system than for a *convenience*.

C. Types of equipment selected can cause a given food service system to be larger or smaller. Obviously one 60 gallon

steam cooker will require less space, plumbing, and work than three 20 gallon cookers. This kind of decision is generally effected by the menu type employed.

D. As has been alluded to earlier, the parallel services that support food service such as hygienic maintenance, "ware" and "pot" washing, waste management and transport, *usually* increase in size and application in direct correspondence with the size of the food service. Other aspects controlled by production policy and administration, such as periodic accelerated production schedules, portioning control, and inventory security, can also increase area requirements.

PERSONNEL CONSIDERATIONS

A. It requires little insight to see that more employees require more space to perform efficiently. The allocation of space for circulation, however, is not on a one-to-one basis in most food service situations. It must be determined what the requirements of the work areas must be to accommodate the particular work performed there.

The space requirements for a worker "panning" biscuits for baking may be determined by distance he must travel to get his pan, the size of the bakery preparation table (will it hold more than one pan?), how far must he travel to take the pan to the oven, how the pan is transported to the oven (i.e., manually or

by cart), and will the worker pass by another activity in route to the oven. Most of these considerations seem obvious, but are seldom completely addressed in design.

The concern for space is one of efficiency and safety. While necessary space and required clearances, etc., are desirable, there are situations where too much space may be present. This naturally requires more time to traverse, but it may also act to collect unused equipment, carts, and other hindrances.

Safe passage is important. Food service workers frequently have to maneuver heavy containers from table to table to oven. In this process they must avoid hot surfaces, other workers, parked food carts, and slippery floors.

B. Thermal comfort is more than a luxury in a food service, it is a necessity. Thermal comfort, or mechanical air-conditioning serves two main purposes: heating or cooling air for work comfort and ventilation of food odors, vapors, and excess heat. The volume of air supplied and exhausted can be tremendous in some situations and is substantial in most. Ceiling heights and floor-to-floor heights must be carefully considered to accommodate duct systems and their hardware. This, of course, also influences structural design.

BUILDING SYSTEM CONSIDERATIONS

A. How a food service is placed within a structure acts to determine much about its space needs. Direct access to the exterior permits easy service access and removes the need for expensive corridors and awkward cross-traffic. Carefully designed access to dining areas or distribution routes again precludes the need for special corridors, elevators, screw-lifts, etc.

There has been, recently, an encouraging trend toward removing the kitchens, and food services in general, from the "hole in the basement" approach that was the case for so long. With the current state of technology there is no reason why a food service need be treated any differently (in terms of design attention) than any other system within a building.

B. Food services, as such, present no "special" structural problems. Care must be taken to provide for point and area loads where equipment may be heavy with water. Additionally, attention must be given to the corrosive effects of spilled foods, cleaning agents, and capillary water action. Over time unprotected structural systems can suffer damage if not protected. This generally means that the structural components are "fattened" by protective coverings, this in turn effects clearances.

C. Mechanical, electrical, and plumbing systems all require close coordination in food service applications. Codes require

specified protection techniques and, as space is expensive, special attention should be given to the routing of the aforementioned systems.

Introduction to Problem

INTRODUCTION TO OMNIFARE

Spartanburg, South Carolina is the county seat of Spartanburg County, situated in the piedmont of the state at the crossroads of interstate highways I-85 (north/south) and I-26 (east/west).

The local economy is based primarily on the textile industry and agriculture. The city of approximately 40,000 people has become somewhat cosmopolitan, of late (if not metropolitan), by virtue of foreign industries and their employees locating in the area. Within the city are four colleges and several others nearby. Combined with foreign culture, the academic and native tastes provide a market potential for a fairly wide range of food service endeavors.

The existing food service industry has met most of the needs of the area. The 1980's to 2000, however, point to a "boom development" of this region of South Carolina and Spartanburg in particular. To meet this potential growth and its resulting impact on the local industries, a group of Spartanburg businessmen initiated a market and feasibility study for area food services. On the strength of that study, a corporation called Omnifare was formed.

Omnifare, Inc. is to be a new commercial food service facility. The name reflects a multi-faceted concern for production, product distribution, and marketing. The basic idea

is to provide for as broad a range of food services as possible (or appropriate) within a single facility thereby insuring a unified and directed approach to large scale food service.

The corporate goals are to promote a more sophisticated understanding of food and its possibilities, to respond to public needs and demands, and to produce consistently high quality products in a cost effective manner.

To achieve these goals, the foods will be distributed in several quantity units by different serving methods. Through innovative marketing techniques and engineered flexibility in the production and distribution operations, Omnifare will be able to adjust to changing tastes and business volumes.

ORGANIZATIONAL CONCEPTS

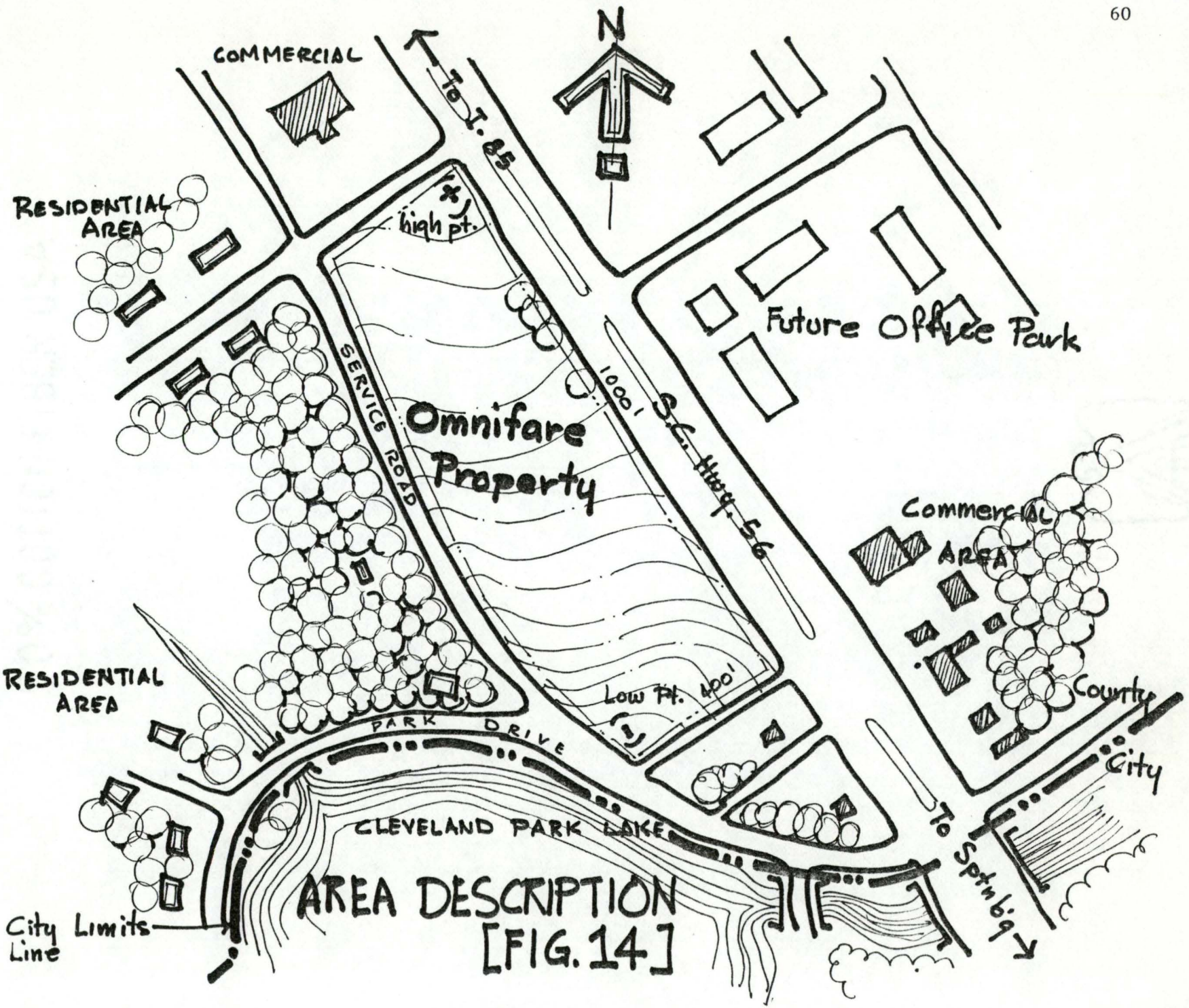
Because Omnifare, as a corporation, is an aggregation of existing businesses with operative food service markets the first prerequisite was an effective, efficient, and flexible food production capability. Because bulk food production was the most financially stable market in terms of predictability and volume its successful operation became the primary design consideration.

Following production efficiency, management and facility administration was considered the second most important design factor. Where Omnifare is concerned administration covers

three important elements: production management, personnel management, and marketing.

One of the things revealed by Omnifare's initial market and feasibility study was the necessity never to be static. To continually upgrade one's service, menus, and market areas is a must for the Spartanburg area where competitors, lacking imagination themselves, continually attempt to capitalize on successful new markets of others. This problem calls for innovative marketing. Images of stability, technical expertise, and value to the community must be developed at the Omnifare facility as well as extolled by the sales staff. In a very few words, the building must help sell Omnifare, Inc.[7]

Program Factors



AREA DESCRIPTION
[FIG. 14]

THE SITE

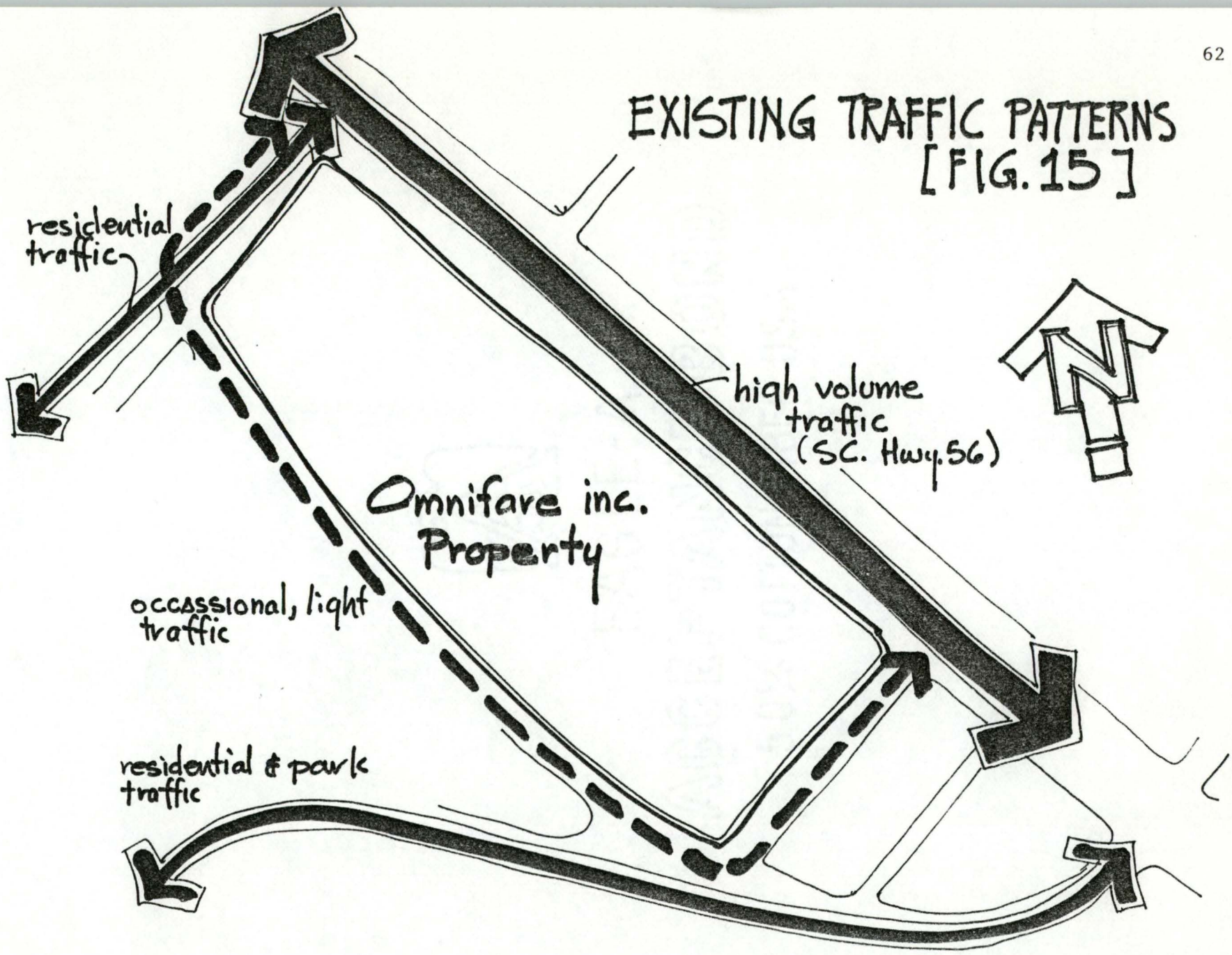
The site selected for Omnifare is in Spartanburg County just north and beyond the city limits on S. C. Highway 56. The property will likely be included in the next annexation drive by the city. The site is an open, sloping, unoccupied strip of land with few major trees and low, thick undergrowth. The parcel acts as a "gap" in a hodge-podge of miscellaneous commercial strip-development ahat is encroaching on the existing city limits and residential areas. See figure 14.

Existing sanitation, water, and power service in the area should be sufficient to handle the anticipated increased usage.

The frontage highway (S. C. 56) accesses I-85 one and a half miles to the north and enters the city to the south where it joins a network of highways (U.S. 29, 176, & 221).

The site is approximately 1,000' by 400' fronting S. C. 56 lengthwise and is surrounded on the remaining three sides by service roads. See figures 14 and 15.

EXISTING TRAFFIC PATTERNS [FIG. 15]



CONCEPTUAL CONCERNS

Discussions with Omnifare revealed certain conceptual elements that were considered important to corporate image and functional aspects of the facility.

1. Production will be flexible and efficient.
2. An on-site separation of service traffic from patron and consumer traffic.
3. Visual distinction between public-commercial operations and production-industrial activities.
4. An architectural statement that identifies and invites public use and participation.
5. The image of Omnifare's management, marketing, and production personnel sould be one of progressive professionalism.
6. The facility will have several unique methods of food service and as such should entice the public to enter, experience, and partake of all that is offered.

Programming

THE PROGRAMMING PROCESS - PROBLEM SEEKING TO PROBLEM SOLUTION

The process used herein to establish the basic program involved extracting through written and verbal exchange with Omnifare, general and specific information some of which is revealed in Conceptual Concerns above. This information was then examined to determine as nearly as possible what the intended goals of Omnifare were to be where the new facility was concerned.

Specific major issues were mutually determined and then related sub-issues. The issues and sub-issues were then researched for points of interface and functional cohesion. For example, the major issues for Omnifare were production, administration, and marketing. Each of these issues have at least three sub-issues: social-human, psychological, and physical. (The earlier discussion of the physical implications of workers in a food service points up some of the relationships to be established.)

The data accumulated from the researched issues is then synthesized. Conceptual approaches emerge. The concepts are then evaluated in terms of the client's goals, parametric data, and one's own perception of the problem at hand.

The most appropriate concept is selected and rationalized by the aforementioned goals, identified pertinent issues, and the best available information. The *rationalization* of the

concept is the design process: an identifiable problem resolved in terms of its known environment.

OPERATIONAL PROGRAMMING

Operational programming is the process by which the architect or designer attempts to identify the various functional requirements of a particular building or facility. To do this, one must establish what constitutes a successfully functioning facility; *who* and *what* contributes to and activates the successful function; and how this who and what can best be accommodated.

Various techniques and approaches are used to elicit this information: the most common being verbal, written, and diagrammatic exchanges with the users and/or client until a common *vocabulary* and a conceptual consensus are obtained.

The conceptual consensus (which must reflect the users or client's particular needs) is translated into spatial responses that functionally accommodate the various required activities. Ideally, this is achieved through joint effort with the users of those spaces.

The following section attempts to reflect some of the reasoning that determined the physical aspects of Omnifare's facility.

Concepts

DEVELOPING CONCEPTS

In the process of developing an operational program several tangible concepts emerged.

PRODUCTION

By honoring the process outlined in the Food Service Decision Format a general approach to bulk production was conceived. The production process would be basically a large scale conventional food service. Variations in production volume would be controlled by preparation and finishing modules that could be brought-on-line as demand required. The finishing element of the module would be so designed as to permit specific pieces of mobile equipment to be exchanged in response to menu variations. An in-house computer would assist scheduling of production to insure proper supplies, production time, equipment availability, and distribution techniques.

The bulk-food production process would provide the "base" food products for all food service outlets in the facility. Additionally it would supply bulk containers, pre-plates, and various prepared base items to markets off-premise.

Given the missions of bulk-food-production, it is necessary to provide a service and distribution system that can respond to many and varied menu delivery methods. Such an (SD) operation would have to be able to handle in-house distribution and accommodate both hot and cold off-premise delivery techniques.

MARKETING

While Omnifare tended to regard marketing as a major but tertiary concept, program research suggested that it was at least secondary, or better, in that so many of the facility's functions were involved with community/consumer participation and, therefore, were important to image and patron satisfaction. The bulk-food production process is considered the primary (or initial) income producer, but all of the facility's food service outlets serve as marketing agents and as such provide an excellent means of analysis for a large range of products.

This potential for analysis, in turn, provides the basis for in-house research and development of new and/or improved products; another aspect of progressive marketing.

To further insure community participation in marketing efforts, it is suggested that a community activity room be provided along with an atrium-like space dedicated to public oriented displays and activities. The public space would serve to orient visitors to the functional organization, lessen the image of community-commercial separation, and provide the means to generate a building mass of visual consequence.

ADMINISTRATION

Examining the preceding discussions or production and marketing concepts, several areas emerge that require the

presence of an active and unified administrative effort. Obviously, production, by its very nature, requires attention to material logistics, scheduling, personnel supervision, and maintenance of the production process. Marketing activities, likewise, require direction. An objective source is needed to evaluate returns on marketing investments of time and money. The multi-faceted approach to promotion taken in this facility suggests that while a strong, resource supported management center is called for, there, in turn, needs to be smaller decentralized administrative points located within the various operational components of the facility. In addition to production, there is a need for at least some administrative presence in the areas of receiving, shipping, maintenance, personnel management, in-house food services, and marketing.

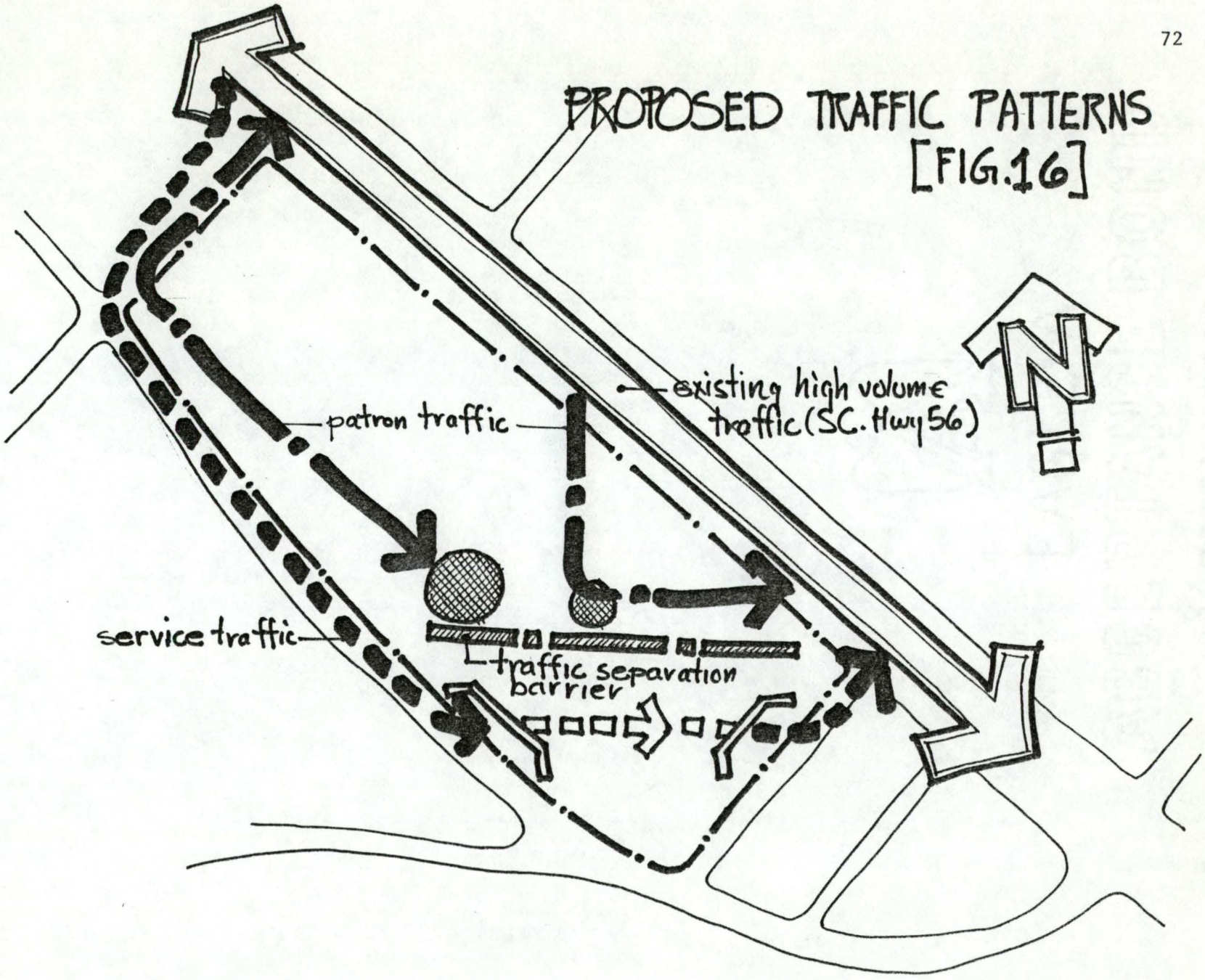
RATIONALIZING CONCEPTS

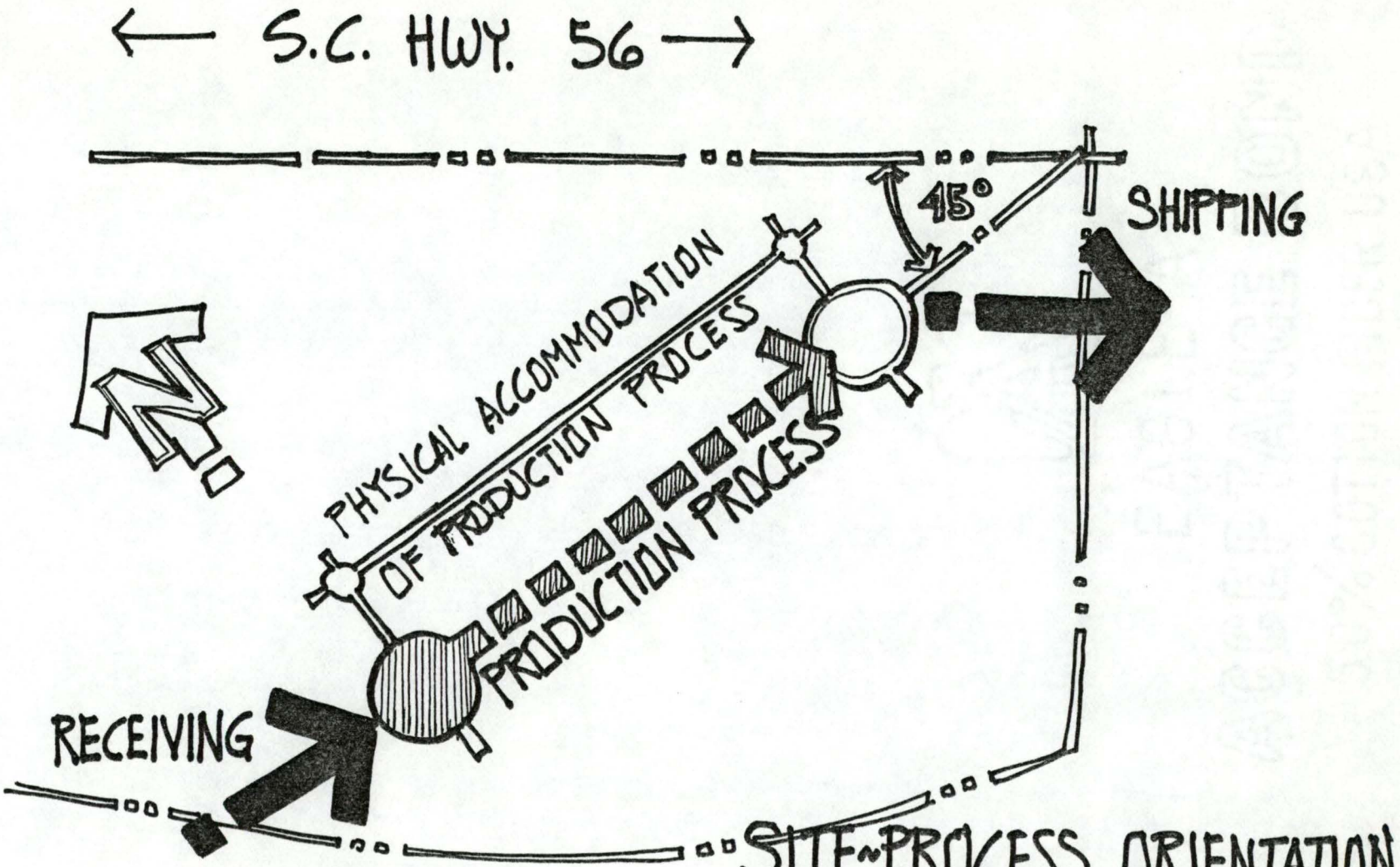
Production:

Site: Placing the facility on the site involved considera-tiona of five major factors. First, the site sloped from north to south, diagonally the length of the property. Secondly, it was desired that patron traffic be so routed that it did not cross or conflict with service traffic at any point. See figure 16. Thirdly, the receiving and shipping activities should be separated to negate the need for coordinating dock use and traffic scheduling. Fourthly, the facility's length was more or less determined by the linear accommodation of the production process. The resulting geometry of process-to-site required a placement that was forty-five degrees to the "front" property line along S. C. Hwy. 56. See figure 17. Fifthly, the slope of the site and the natural traffic flow as it related to the site, service access to the production process, and the desire to eliminate unnecessary excavation for the resulting building pointed to placing the facility at the lower, southern end of the property. The anticipated area required for the entire facility would be impossible to locate in this area and provide any parking or circulation space.

Production: The organization scheme most suited for modular production units is a linear approach with a main supply and

PROPOSED TRAFFIC PATTERNS [FIG.16]



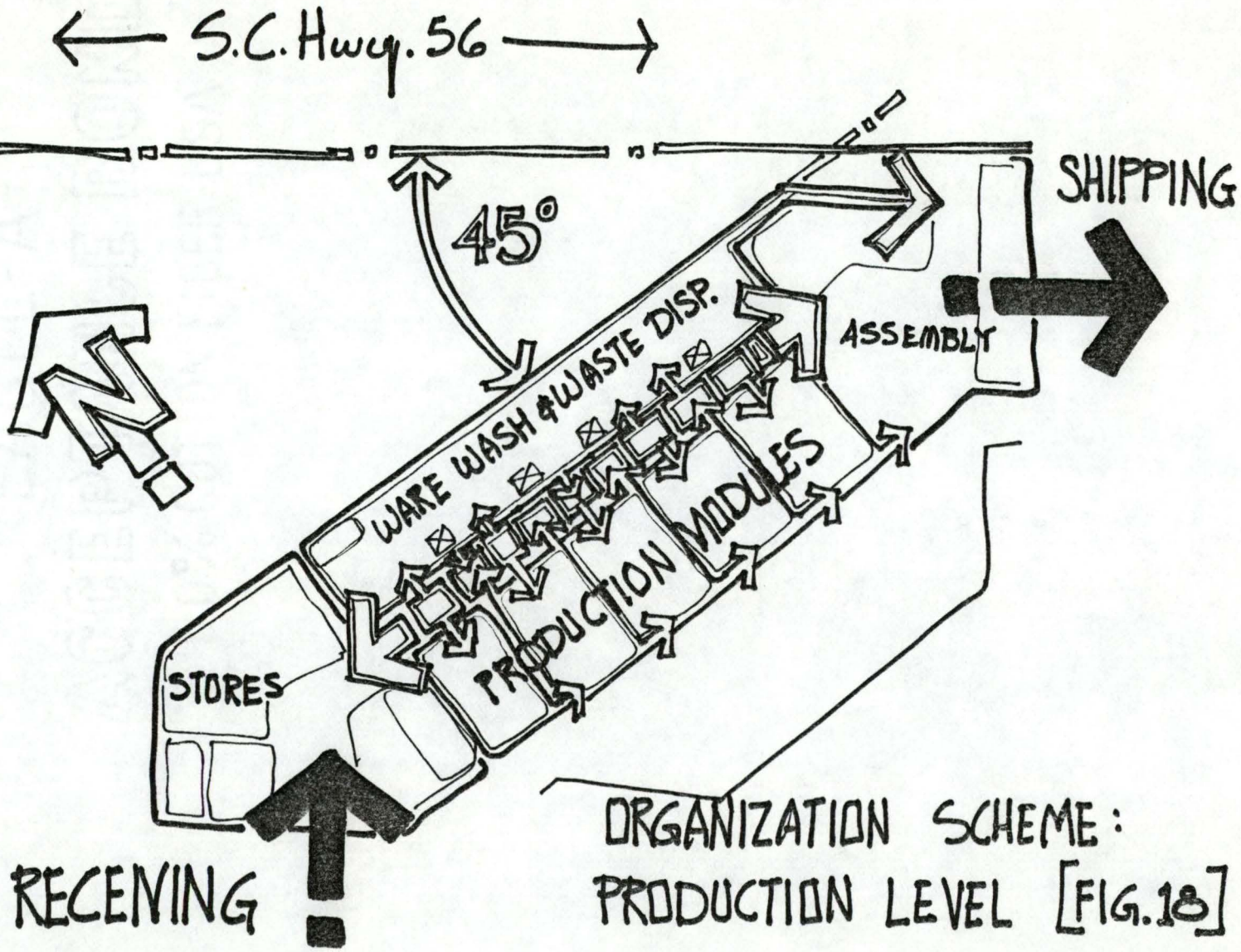


SITE~PROCESS ORIENTATION
[FIG. 17]

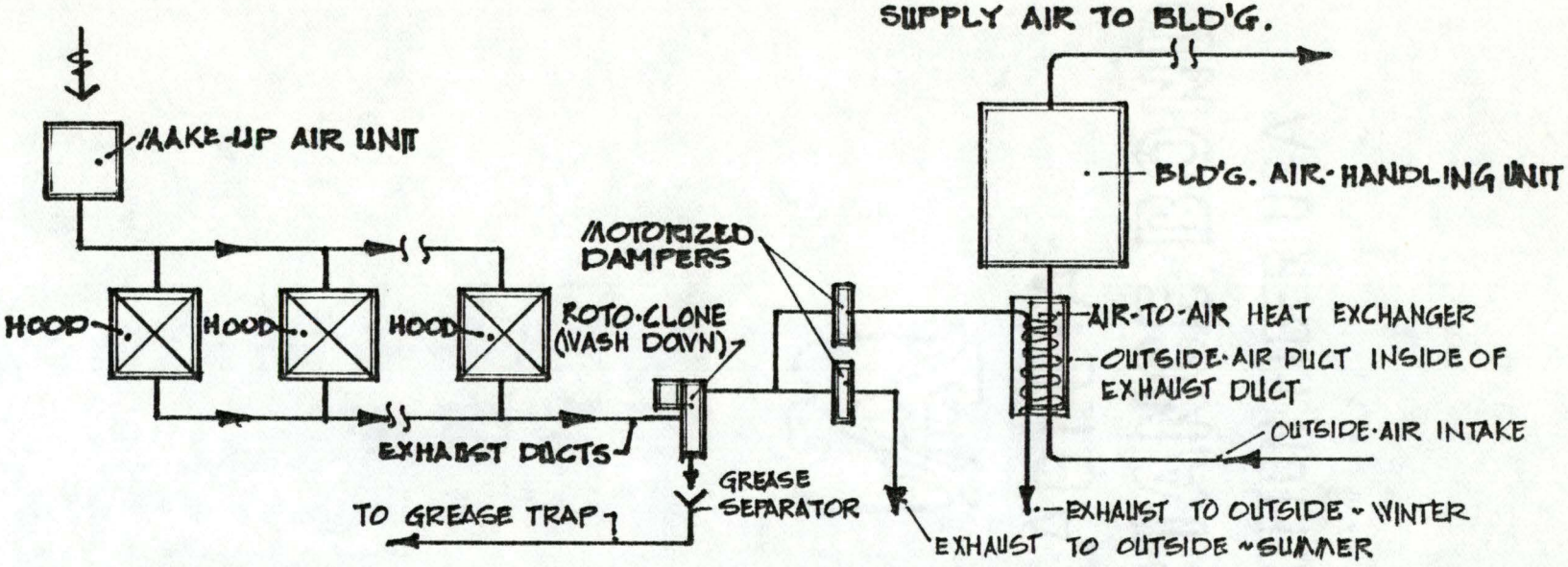
traffic corridor acting as an axis along which is located production on one side, maintenance (ware washing and waste disposal) on the other with receiving at one end and shipping at the other. See figure 18.

The production modules are composed of a holding area, a preparation area, and a finishing area. All activities are designed to provide passage of food carts by a worker at his (or her) task. Preparation areas are provided with stainless steel work tables with integral sinks and garbage disposal units. The finishing modules are designed to have two banks of "cooking" equipment facing each other with a stainless steel pan table between. Each bank includes a four pan convection oven. Pre-engineered energy and water taps are provided at predetermined intervals within each bank to receive a variety of mobile equipment ranging from tilting fry pans, to ranges and steam cookers and kettles. A menu calling for spaghetti and sauce could involve large steam kettles for spaghetti and steam cookers for the sauces. Casserole entrees may require convection ovens, fried chicken--range tops, and biscuits--deck ovens.

The two equipment banks at each module have integrated mechanical chases tied into an umbrella vent hood that extracts grease and vapor from the exhausted air through a wash down-grease separator. The air temperature is computer monitored to exhaust to the outside in warm weather and is directed through interior air-to-air heat exchangers during winter weather. See figure 19.



ORGANIZATION SCHEME:
PRODUCTION LEVEL [FIG. 18]



MECHANICAL SCHEME: RECLAMATION OF PRODUCTION EXHAUST

OPERATION: MAKE-UP AIR UNIT SUPPLIES UNCONDITIONED OUTSIDE AIR TO THE FACE OF PRODUCTION MODULE HOODS. AIR FROM THE HOODS IS EXTRACTED THROUGH A ROTO-CLONE, WASH-DOWN, GREASE SEPARATOR. THIS DEVICE CONTAINS FAN AND SPRAY NOZZLES TO REMOVE THE GREASE (AND VAPORS) FROM THE EXHAUST AIR AND DISCHARGE IT TO A GREASE TRAP. AIR IS THEN EXHAUSTE THROUGH THE DUCTWORK TO THE OUTSIDE IN SUMMERTIME. DURING WINTER AND COLD PERIODS THE AIR IS DIRECTED THROUGH AN AIR-TO-AIR HEAT EXCHANGER IN THE OUTSIDE AIR DUCT OF THE BUILDING'S AIR HANDLING UNIT.

INSTALLATION OF MOTORIZED DAMPERS IN THE EXHAUST DUCTWORK PERMITS THE OWNER/OPERATOR THE ADVANTAGE OF RECLAIMING HEATED AIR FROM EXHAUST HOODS FOR THE PURPOSE OF PREHEATING THE OUTSIDE AIR IN THE WINTERTIME. THIS METHOD SHOULD PROVIDE SUBSTANTIAL ENERGY SAVINGS AS IT RELATES TO WINTER THERMAL COMFORT.

[FIG. 19]

Within each module's area will be "undesignated space" for the parking of food carts, environmental holding carts, and miscellaneous temporary equipment needed for different procedures.

Paralleling the production process are four activities vital to an efficient food service: ware and pot washing, waste product disposal, equipment cleaning and maintenance, and wash down-cleanup of food service areas.

The ware and pot washing area is, with waste product disposal, located across the main traffic and supply corridor from the production. It is accessed by direct alignment of cross passages with the food service. The ware and pot washing area is, as waste disposal, arranged to conform to a linear task process.

Service and distribution takes basically two forms: horizontal and vertical. Bulk food products to off-premise markets travel horizontally to the shipping area. Depending upon the destination, the food products may be shipped in reusable steel or disposable foam plastics in specially equipped delivery vans. A few markets will require pre-portioned and pre-plated service. This will be accomplished by an order assembly area adjacent to the shipping area. There hot and cold serving tables will be built into an assembly conveyor system. This area will require either free-standing holding units or energized food service carts to accommodate shipping schedules. Additionally,

attention must be given to the degree of menu preparation and finishing to insure palatable food upon arrival at a particular destination.

Assisting the delivery to off-premise markets and helping to insure scheduled supply is a facility-maintained fleet of 20' vans with environmental holding modules built into the truck bodies. A motor-pool area adjacent to bulk food production is equipped with five service bays and provides sheltered parking for some of the vans.

For in-house distribution, the delivery is essentially vertical. There bulk items are sent by elevators to the levels above for final finishing and serving.

The food service outlets above will have holding and serving equipment as required to accommodate their particular menus and schedules.

MARKETING

As discussed earlier marketing for Omnifare is more than a sales/accounting force. All of the in-house food service outlets perform for marketing's product analysis. In order to cover a wide range of products, it was decided to provide a wide range of dining and distribution methods.

Specialty restaurants are to be provided on the uppermost level. The third level was selected to enhance the "sense of

arrival" and to prolong the experience of the public space. The restaurants are to be relatively small and, again, to be flexible in their dining and service arrangements. This provision is specifically to meet changes in consumer taste. A "Mexican" restaurant with diminishing clientele could simply, through change of base-food menu, minor equipment changes, and cosmetic revamping of dining areas, convert to a "continental cuisine" or other ethnic food approach.

A drive-in/carry-out service is provided for patrons at the ground level (at the entry level; just above the production level). This operation would serve delicatessen items (cold meats and cheeses, hot breads, etc.), bakery items (French bread, Italian bread, donuts, pastries, etc.), an "indigenous menu" (pork seasoned green beans, corn bread, slaw, and chicken, etc.), and various non-alcoholic beverages. Authentic deli-meats and sausages would be the only items prepared and bought off-premise (out of town, up north to be more specific).

Operation of the carry-out might typically involve baking of prepared pastry dough, packaging and sales at a pass-through counter. Selection of available items would be made from a fresh-food item display wall in the lobby, ordered through a pass-through separated from sales.

The employee dining area would provide cafeteria and/or buffet style dining. In-house catering to the community room, taste-test socials" in atrium area, and specially catered

executive meals in the administrative or marketing office would complete the range of potential dining experiences.

Included in the marketing domain is research and development. A small test-kitchen with appropriate preparation, measuring, and recording equipment is needed.

In conjunction with marketing's public relations work, community acceptance of Omnifare is encouraged through taste-test programs, social events, reserved use of a "community room." This space would be provided to assist developing a positive public attitude toward Omnifare. A small auditorium with stage, film projection room, and public toilets will provide needed activity space to this section of Spartanburg.

ADMINISTRATION

For Omnifare, administration covers all areas of management activity, whether production, marketing, sanitation, shipping, receiving, or personnel. While administration does not have quite the design impact as production and marketing, for the above reason, it demands careful consideration and thoughtful insertion in operational scheme.

Beginning with the production process, management is first involved with receiving. Here, supervision of off-loading of supplies is the first task. From this point supplies are recorded for inventory, accepted or rejected, weighed, sorted,

stored, or routed to appropriate operations areas. Receiving administration is located in an office area adjacent to the receiving dock. The offices are to be provided sufficient glazed openings to observe all off-loading, material handling, and personnel entries and exits at this area of the facility. Offices will also have under their jurisdiction forklift charging, secure storage, and traffic control of service and delivery vehicles. Supporting this activity will be a records section with a computer terminal to log deliveries, stock inventory, and logistic concerns.

Production management follows receiving in the production process. Management of this activity has two main concerns: portion control/stock consumption, and order production. Portion control is located adjacent to storage and is supported by a computer terminal. Order production management is located at a small records desk within each production module and on a twenty-four hour cycle reports to portion control. Besides the usual supervision of preparation and finishing activities, scheduling of support equipment, delivery carts, assembly time, and area main enance falls under production management's responsibilities.

Because of the diverse nature of Omnifare's service and distribution system, proper administration of this activity is vital to the overall success of the facility. A suite of offices is provided at the terminus of the main supply corridor.

Service and distribution management addresses two main concerns: packaging/containerizing food products and transportation (both on- and off-premise), of those products.

The packaging and containerizing of the food products involves maintaining proper and sufficient packaging supplies, maintaining assembly schedules, and staffing the assembly operation.

The transportation aspect of service and distribution is conceptually vertical and/or horizontal. The in-house transport system is by cart. From production the products may go directly to the vertical distribution points (elevators) for dispatch to predetermined destinations above, or the food produts may be directly routed to assembly and packaging areas for shipment off-premise.

Off-premise distribution is controlled through the shipping area. A loading dock is provided for client vehicles and Omnifare's own delivery vans.

Operation of the shipping dock and the motor pool and vehicle maintenance area falls under service and distribution management purview and each is provided with supervisory and administratve space.

Ware washing and waste disposal are, in ways, independent of production in that their work is continuous and receives dish carts and garbage from all areas. The administrative

responsibilities include wash scheduling of all reusable ware, "silver," stainless steel serving containers, and "independent" cooking vessels (pots, pans, etc.); segregation of waste products; removal and compaction of waste products. The ware washing and waste disposal area is provided with an office to accommodate a computer terminal. The terminal is required for scheduling of wash loads, inventory of equipment and state of sanitation, and inventory of ware availability, to name but a few functions.

The ware wash area is situated to have immediate access to elevators and the main supply corridor.

Note: All area maintenance and care of special equipment unique to a given activity is within the administrative purview of that activity.

The administration of marketing and personnel management is closely related. Marketing administration is concentrated spatially on the uppermost level of the facility's public space-atrium. The centralized approach is to enhance marketing's organizational direction of its various programs and involvements.

While marketing is charged with the operation of the food service outlets, personnel administration handles the staffing and fiscal aspects relating to the work force. Personnel management is under the general term facility administration. Corporate Omnifare is represented by facility administration and is located in the public space-atrium and entry level. This

area is an open space sub-divided as required to accommodate the various internal management departments. Included and enclosed within this area is the central computer room.

Omnifare's administrative concept is basically a twofold approach. Decentralized administration is employed at the food production (lower) level where a multitude of diverse activities require predictable and consistent operation. More or lexx centralized administrative approaches are employed at the upper levels of the facility. There control is required within the body of the organization.

Program Response

PROGRAMMATIC AREA RESPONSE

The facility is designed to accommodate 238 employees in three shifts daily. The day shift consists of 94 employees with 43 of those being executive/staff-clerical positions; the remainder being operations and production personnel. The two remaining shifts are composed of 72 employees each (including 12 staff-clerical positions).

Because the facility operates on a twenty-four hour, seven-days-a-week basis, receiving and shipping are continuous. This negates the need of excessive storage and warehousing space. Perishable food items are delivered daily and "dry" stock (food and sundries) are supplies every other day.

As the facility is designed to respond to varying volume demands and incorporates a wide range of possible responses, an exactly estimated production potential is difficult. Assuming an average demand day for midday luncheon service, Omnifare estimates the facility with little effort could serve 500-550 restaurant meals; 100-180 carry-out meals, and provide 3,500 bulk produced meals. (The first year goal is to achieve 7,000 bulk produced meals per day.)

Considering the functional, conceptual, and personnel requirements presented above, the following area requirements were determined:

TOTAL FACILITY (Heated Space)		93,426 sq. ft.
LEVEL ONE (Production Level)	Total	47,309 sq. ft.
RECEIVING		7,576
Receiving dock	1,610	
Bulk refrigerator	920	
Bulk freezer	440	
Compressor rooms	216	
Bulk stores	2,400	
Secure stores	720	
Fork lift: park & charge	170	
Offices & toilets	1,100	
PRODUCTION		8,499
Day stores (dry)	800	
Day stores (refrigerated)	720	
Cold prep.	630	
Beverage prep.	490	
Production modules (with prep. & finishing), 5 @ 870	4,375	
Production equipment storage	600	
Employee toilets (M & W)	400	
Admin. space (6 stations)	144	
Portion Control	340	

LEVEL ONE (continued)

ASSEMBLY		2,174
Assembly conveyors & cart space..	2,000	
Material &equipment storage.....	174	
WARE WASHING AND WASTE DISPOSAL		3,715
Ware washing equipment & work area.....	990	
Pot and Utensil washing equipment & work area.....	800	
Cart wash & work area.....	550	
Waste disposal bins (garbage & waste segregation).....	400	
Refuse channel & compactor.....	625	
Admin. offices.....	350	
SHIPPING		2,660
Shipping dock.....	560	
Cart parking & queuing.....	1,500	
Offices.....	600	
VEHICLE MAINTENANCE		8,120
Service & parking bays, 5 bays @ 1,000.....	5,000	
Fueling bay & lube station.....	900	
Parts & equipment storage.....	1,040	
Employee & driver toilets.....	550	
Office area.....	630	
MECHANICAL EQUIPMENT SPACE		2,000

LEVEL ONE (continued)

CIRCULATION		14,565
Main service corridor	2,930	
Horizontal circulation	4,000	
Vertical circulation (elevator & stairs)	1,260	
Vehicle service alley	6,375	

LEVEL TWO (Marketing and Administration) Total 28,308 sq. ft.

FOOD SERVICE OPERATIONS		6,205
Carry-out:		
Lobby & product display	475	
Sales & distribution	600	
Finishing & assembly	2,300	
Refrig. & freezer	280	
Catering:		
Portioning & assembly	1,500	
Equipment storage	300	
Offices	450	
Employee toilets	300	
RESEARCH & DEVELOPMENT KITCHEN		540

LEVEL TWO (continued)

EMPLOYEE AREA		2,632
Men's toilet & lockers.....	680	
Women's toilet & lockers.....	695	
Employee cafeteria.....	357	
Employee dining.....	600	
Employee lounge.....	300	
FACILITY ADMINISTRATION		4,830
Office area (open plan).....	4,200	
Computer room.....	630	
COMMUNITY AREA		2,906
Auditorium.....	1,274	
Projection & storage.....	170	
Classrooms (2 @ 216).....	432	
Reception.....	380	
Public toilets.....	650	
PUBLIC SPACES		5,995
Entry-foyer.....	1,815	
Reception.....	500	
Atrium-public space.....	3,680	
MECHANICAL SPACE		360
CIRCULATION		4,840
Horizontal.....	3,400	
Vertical (elevator & stairs).....	1,440	

LEVEL THREE (Marketing)		Total 17,809 sq. ft.
FOOD SERVICE OPERATIONS		8,719
Restaurant Service Area (R.S.A.) #1 (kitchen & dining spaces)	1,677	
R.S.A. #2	1,736	
R.S.A. #3	1,820	
R.S.A. #4	2,486	
Toilets [2 per R.S.A. (2 @ 125) x 4 R.S.A.]	1,000	
PUBLIC SPACE (CIRCULATION)		2,980
Patron waiting areas	1,680	
Galleries	1,300	
MARKETING		5,940
Offices (open plan)	5,400	
Toilets	540	
MECHANICAL SPACE		170

LINKAGE: CONCEPTS TO PROGRAM TO DESIGN

The property as described earlier, is a long, basically rectilinear piece of land that slopes down better than 40 feet diagonally across the site from north to south. The site must contain the building and its site access works, patron parking for at least 190 automobiles, a minimum of 90 employee parking spaces, and service access to and from the facility.

The building is situated with the production level at grade at the lowest elevation possible that would allow minimal grades at service points, interface with sewer and water connections, and to impound and control storm water run-off. As was also mentioned earlier, the building was set 48° to the frontage road (S. C. Hwy. 56) to accommodate the production process at the scale indicated in the Programmatic Area Response.

The marketing and food service outlets are "stacked" above the production level. To insure separation of consumer traffic and service traffic, the public entrances are located at Level Two on the north elevation ("building front") with the service access points on the southwest and southeast elevations at Leel One. The stacking of the three levels permits vertical product distribution for in-house service.

The upper two levels, Two and Three, are most concerned with public access and therefore oriented to receive the public from entries located on the north elevation. Two types of

access are required, public to the building interior and public to the drive-in carry-out food service. To avoid cross traffic is a one-way in and out driveway with strongly directional reinforcement. Access and egress is from and to S. C. Hwy. 56.

The public access to the building interior is identified by the "arms" of the building and a pedestrian drop-off traffic circle. The base majority of patron parking is oriented to this entry.

Patron entry is through a low foyer. There the visual orientation locates the community area and Omnifare reception. The reception area ushers the patron into the atrium, a two story space with galleries and a 40 foot x 150 foot sky-light above. From this space a patron has complete visual understanding of the facility's organizational concepts for the upper two levels.

Because a distinction between the industrial and commercial elements of the facility was desired initially, the external massing and finishes of the building were developed to aid such distinction. The roof structure of the production level (Level One) is contiguous with grade at the entry (north elevation) and effects a platform from the rear (south elevation). The platform is massive and monolithic in appearance by virtue of its formed concrete structure and finish. The upper levels are aesthetically removed by the use of aluminum cladding on the upper stories and

building appendages formed by the Employee Area and the Community Area. The aluminum clad upper story is further removed (visually) from grade by a veneer of smooth-faced, stacked-bond, ceramic "silo" tiles at the lower story of the central mass element. (See building elevations at sheet 5, page 100.)

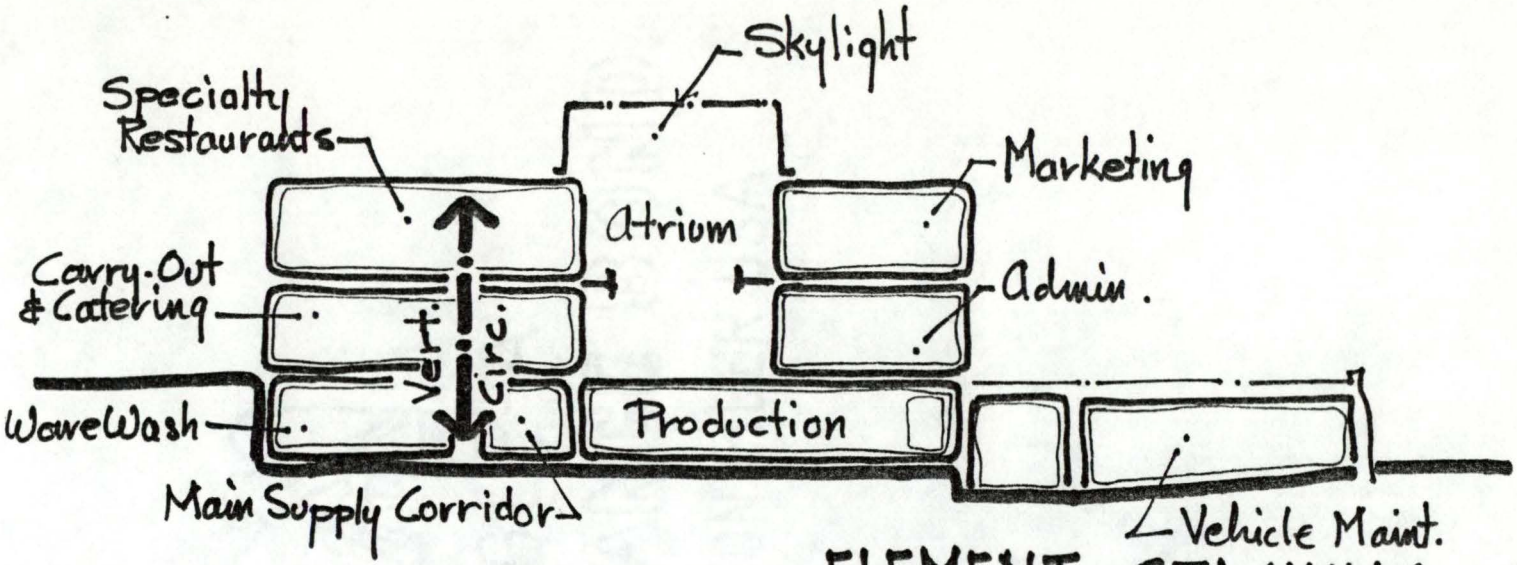
The internal organization is generated primarily by the production process and its placement on the site. The product level was situated at grade on the lower portion of the site to facilitate supply and distribution service, to negate the need for extensive excavation, and to locate the entry level at grade (above).

The production level is arranged with receiving and storage activities at one end of a main service corridor (running west to east). The production modules are arranged along the south side of the corridor permitting direct stocking of supplies. Ware washing and waste disposal is located to the north side of the corridor with elevators (as vertical circulation) accessed from the corridor. The position of elevators permits them to serve ware washing, waste disposal, and production activities. The production modules are located between the service corridor and product traffic lane that feeds directly into the assembly area. This permits unrestricted movement of food carts to and from the assembly and shipping area. See figure 18.

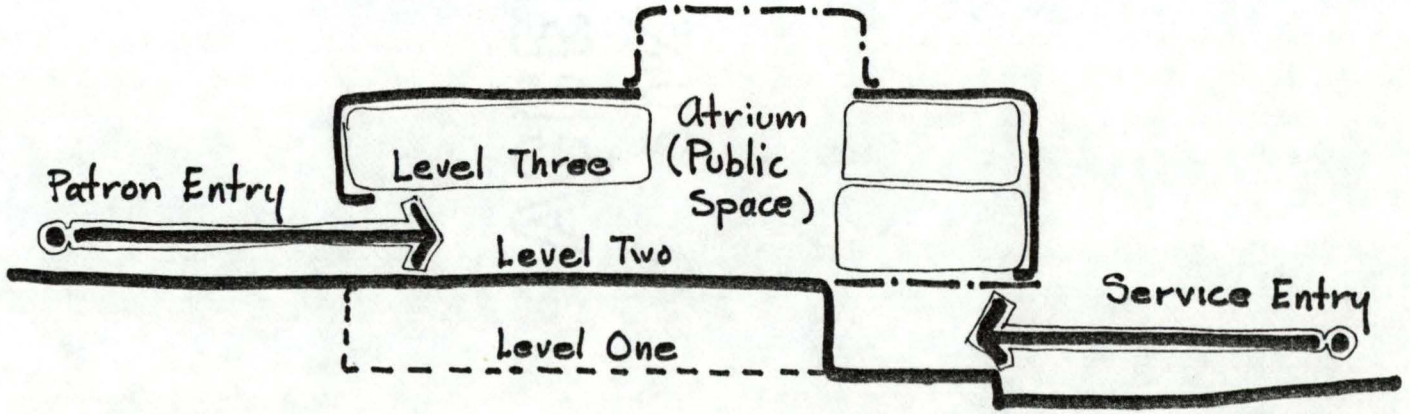
At the east end of the main service corridor is Shipping. There, all out-going products (and waste) are sent for distribution (and disposal).

The main service corridor creates an axis that, combined with the vertical circulation of the elevator shafts, locates the levels above. The elevators directly feed all of the commercial food service outlets on the two levels above and return all soiled ware and waste products to the sanitation area at Level One. See figure 20.

While "located" by the elevators, Levels Two and Three are organized about the two-story atrium. Level Two, acting as an entry level, is directed toward a more "casual" public involvement in that the atrium may serve as a display area and social gathering spot for community activities or specially catered events by Omnifare. Level Three, while not restricting public use, is dedicated to "committed" public involvement by virtue of the need to ascend to that level and location of the specialty menu restaurants there.



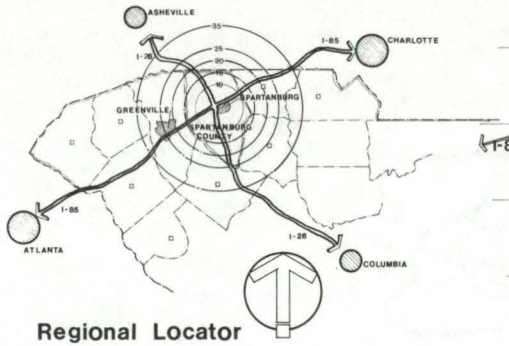
ELEMENT STACKING



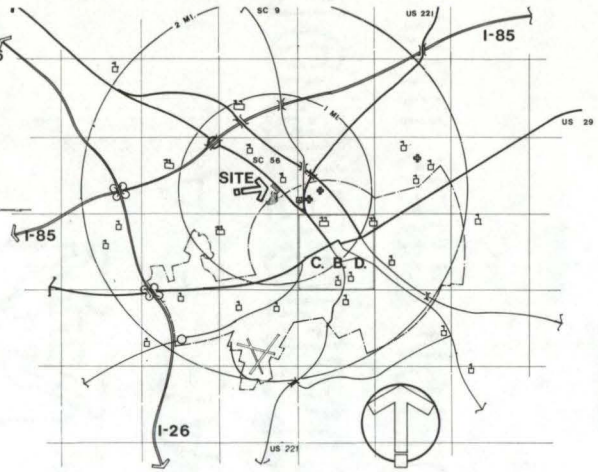
ENTRY SEPARATION

[FIG.20]

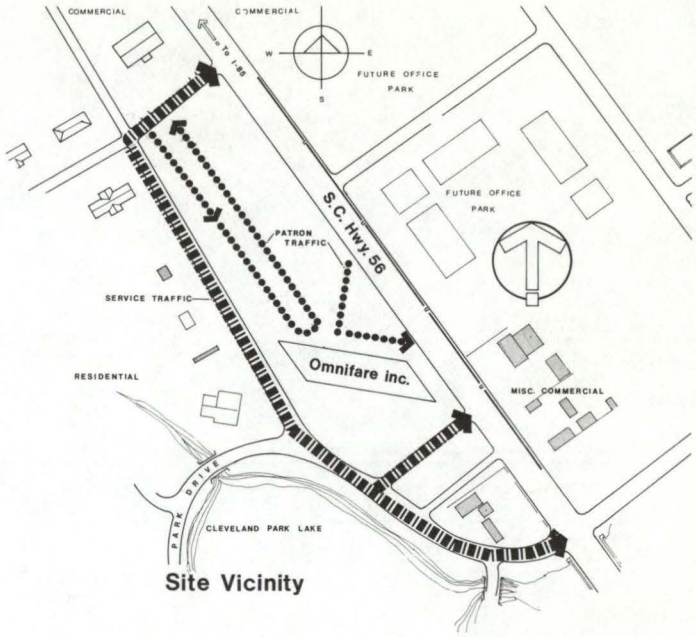
Design Proposal



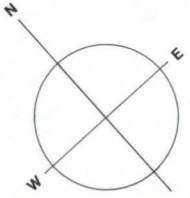
Regional Locator



Urban Locator (CITY OF SPARTANBURG)



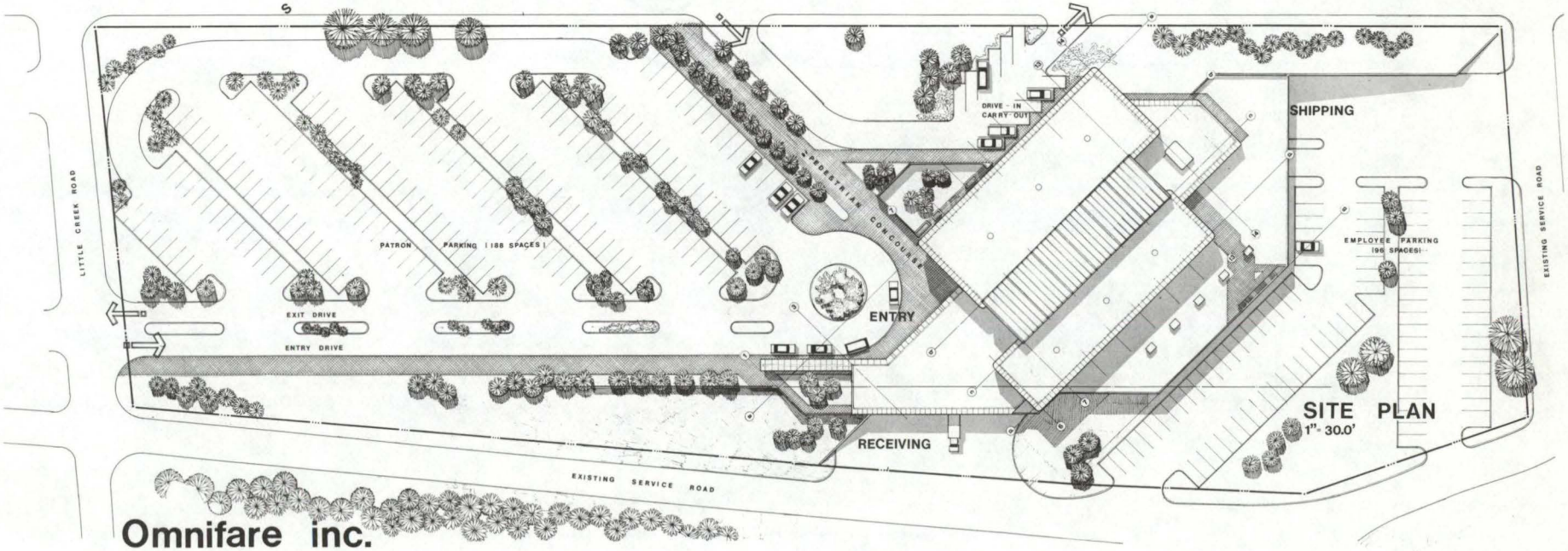
Site Vicinity



← To I-85

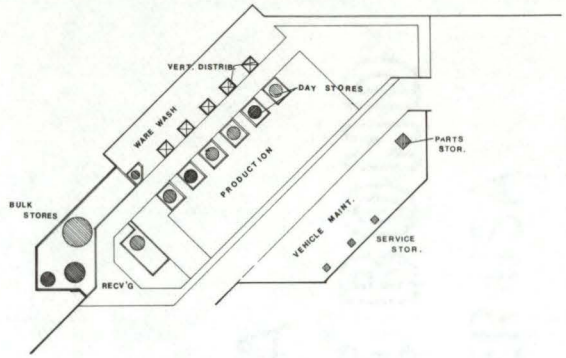
S.C. Hwy. 56

To Spartanburg →

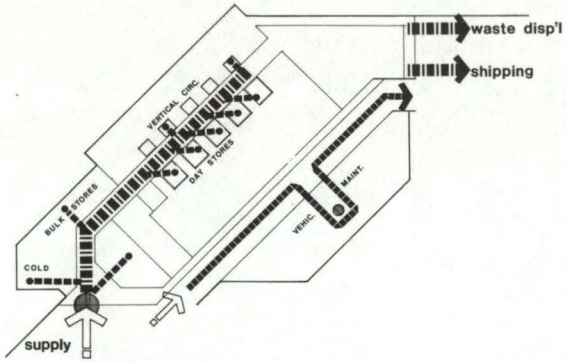


SITE PLAN
1" = 30.0'

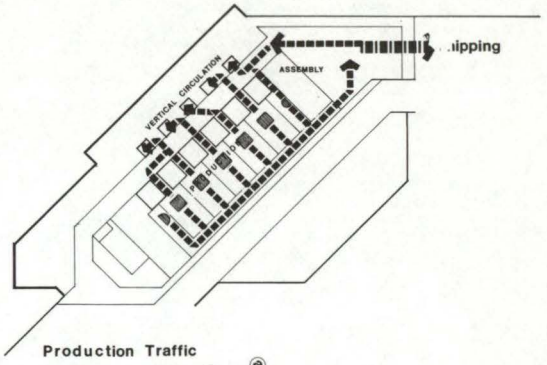
Omnifare inc.



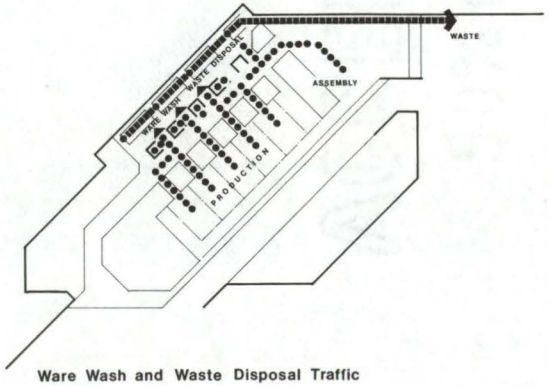
Material Stores



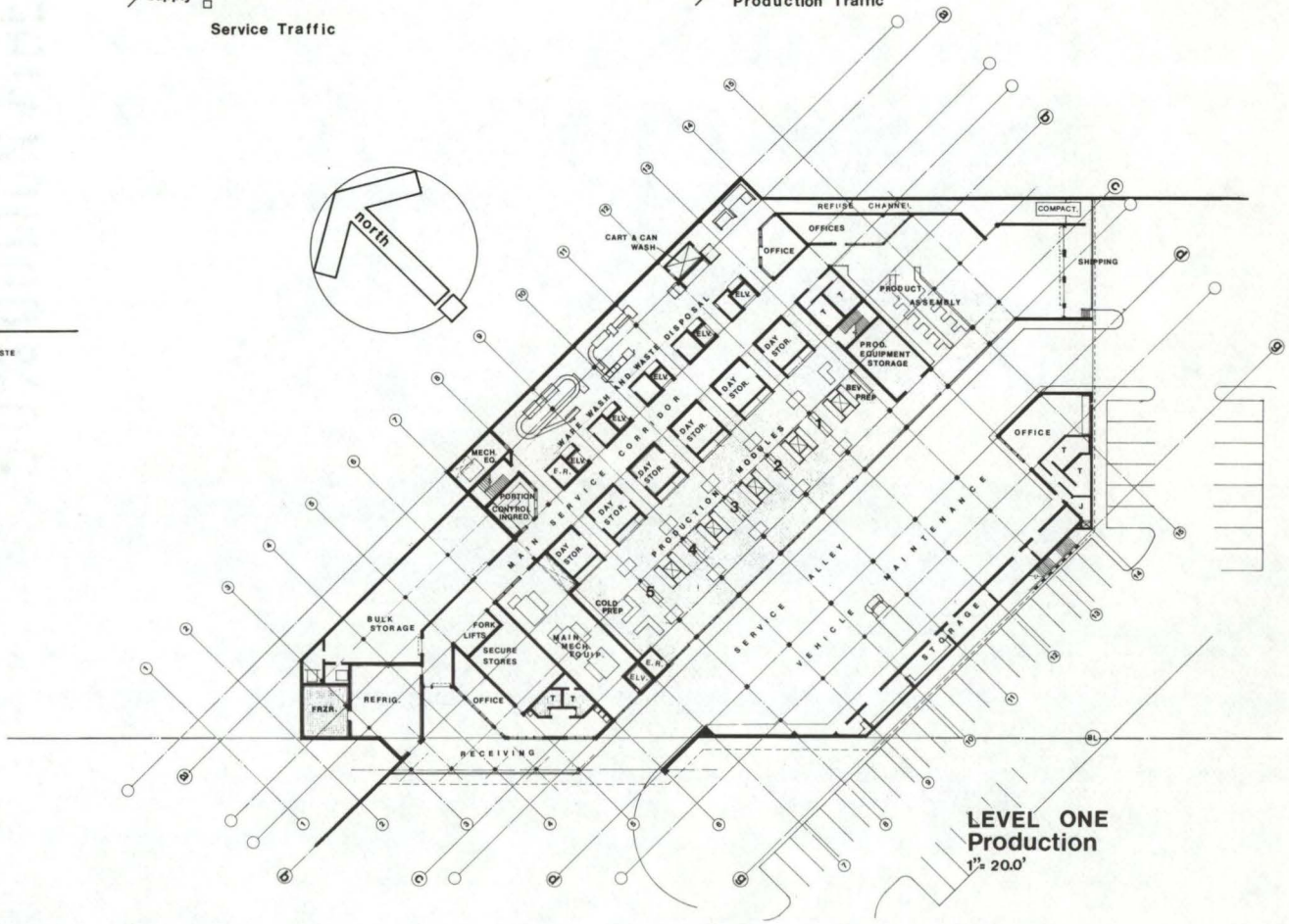
Service Traffic



Production Traffic

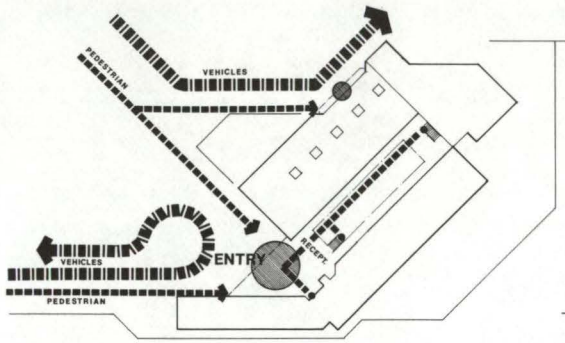


Ware Wash and Waste Disposal Traffic

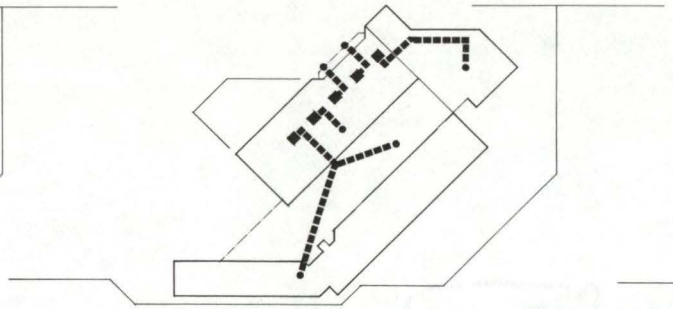


LEVEL ONE
Production
1" = 20.0'

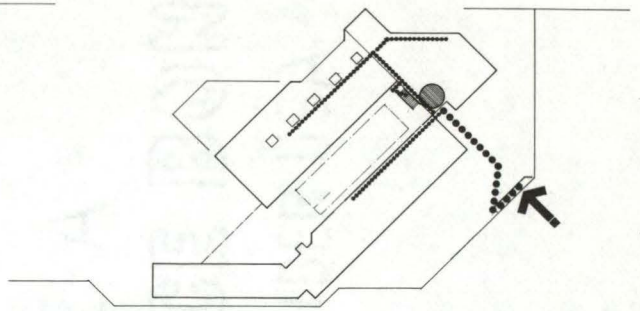
Omnifare inc.



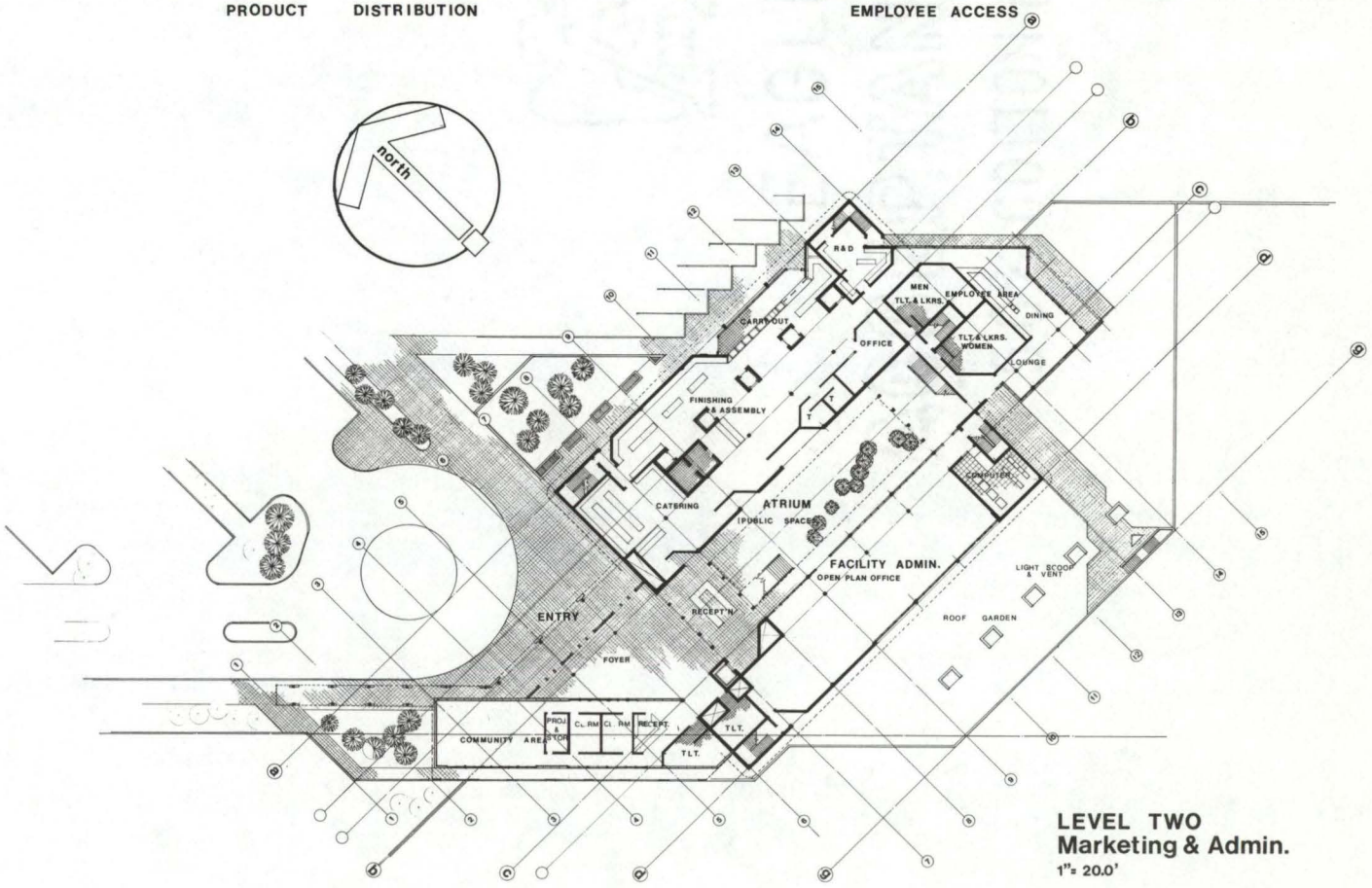
PATRON ACCESS



PRODUCT DISTRIBUTION

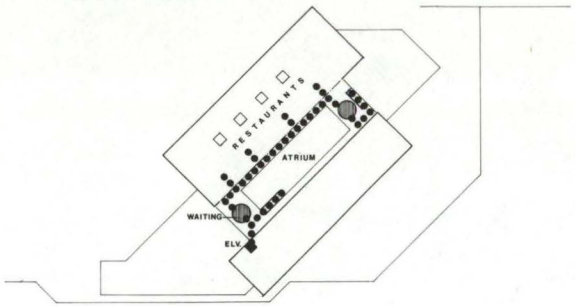


EMPLOYEE ACCESS

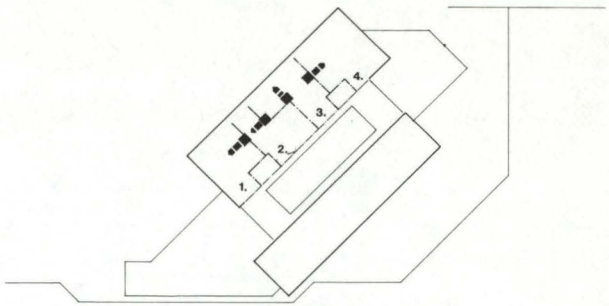


LEVEL TWO
Marketing & Admin.
1"= 20.0'

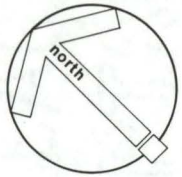
Omnifare inc.



PATRON ACCESS



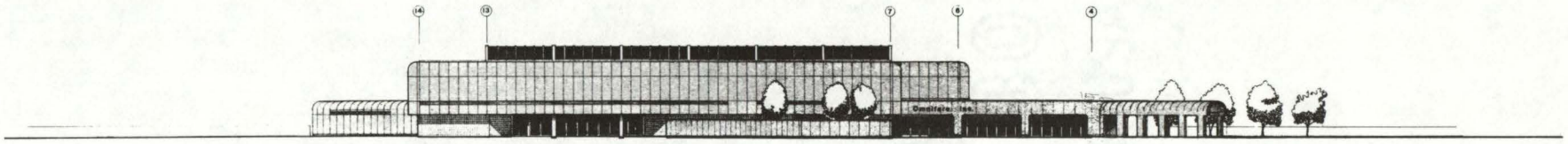
PRODUCT DISTRIBUTION



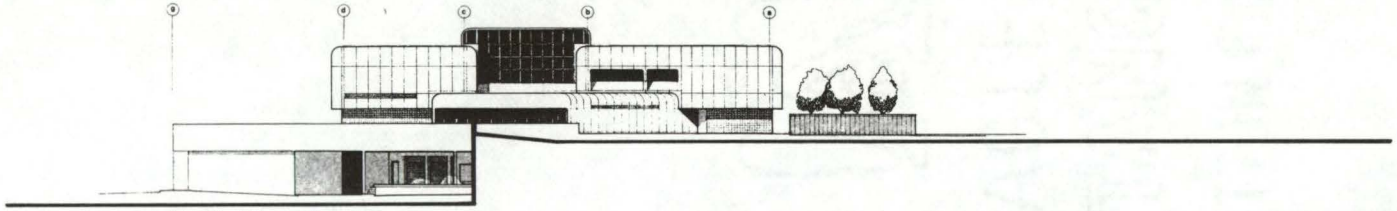
LEVEL THREE
Marketing
1"= 20.0'

Alternative Restaurant Settings

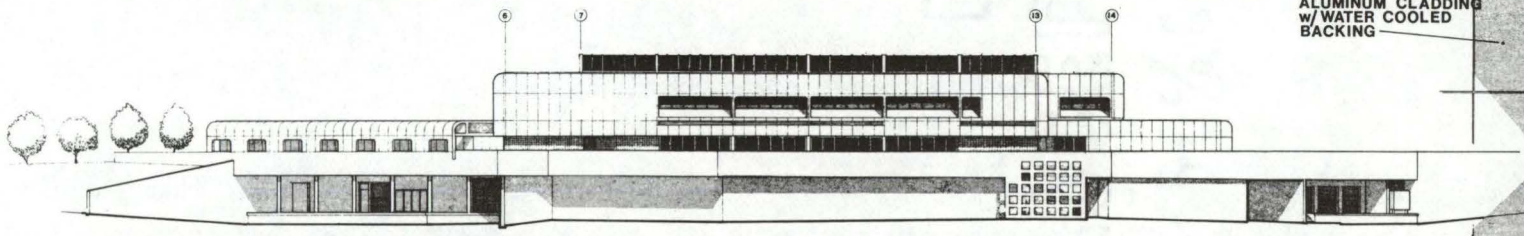
Omnifare inc.



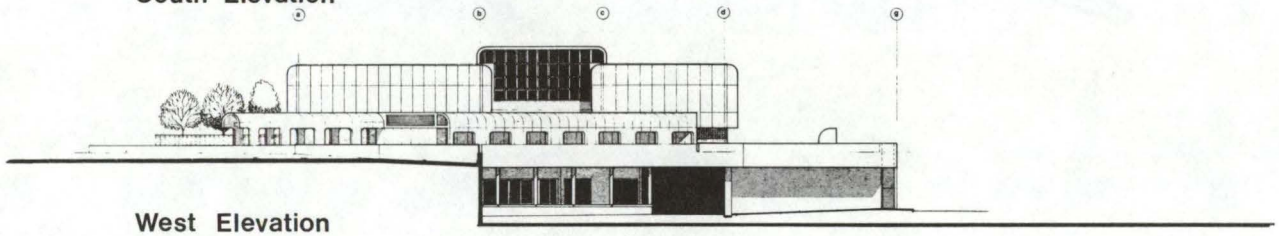
North Elevation



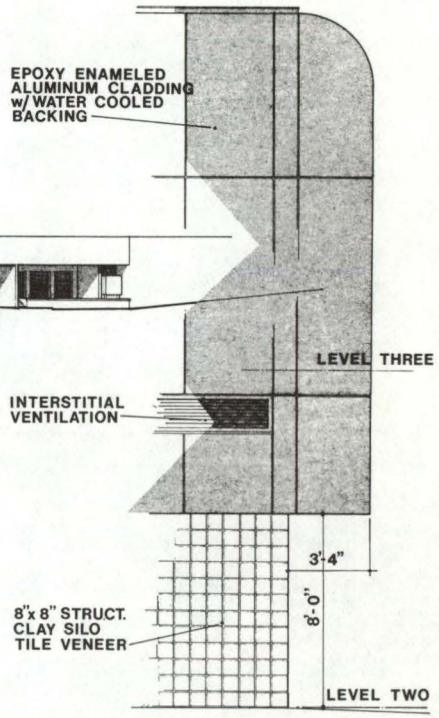
East Elevation



South Elevation

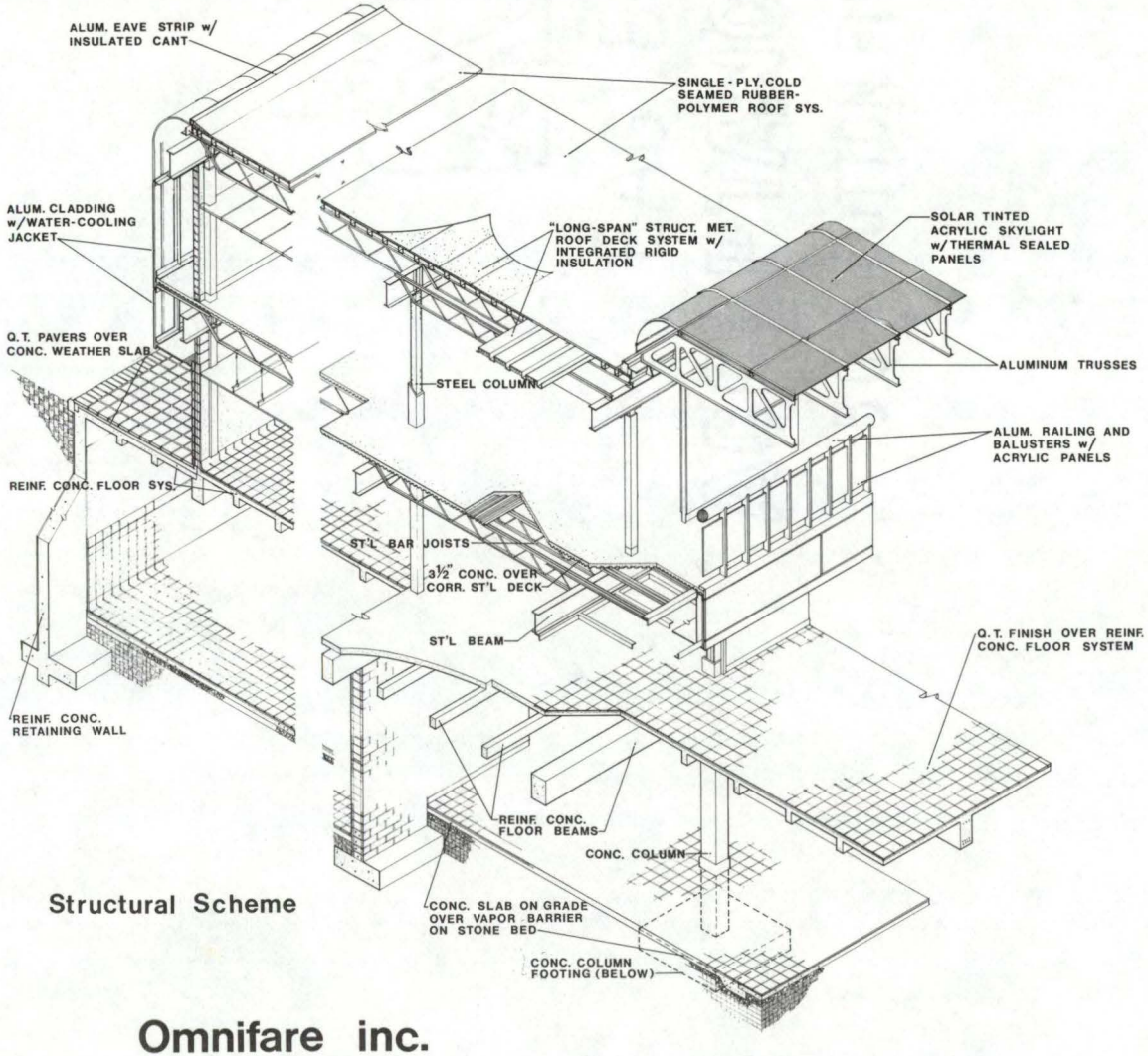


West Elevation

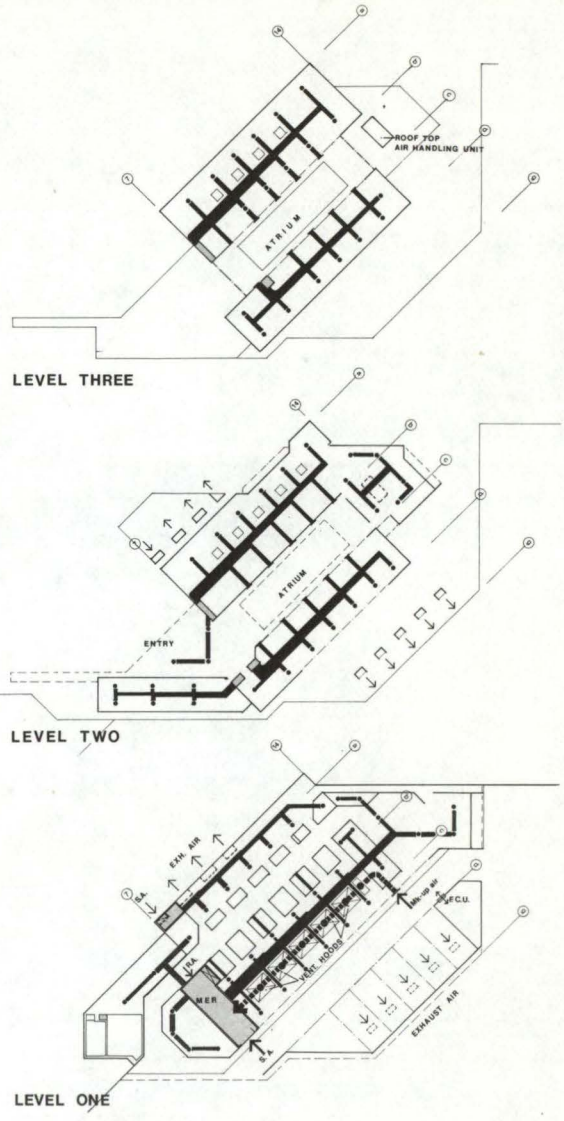


Typical Exterior Wall
Detail: Central Element

Omnifare inc.

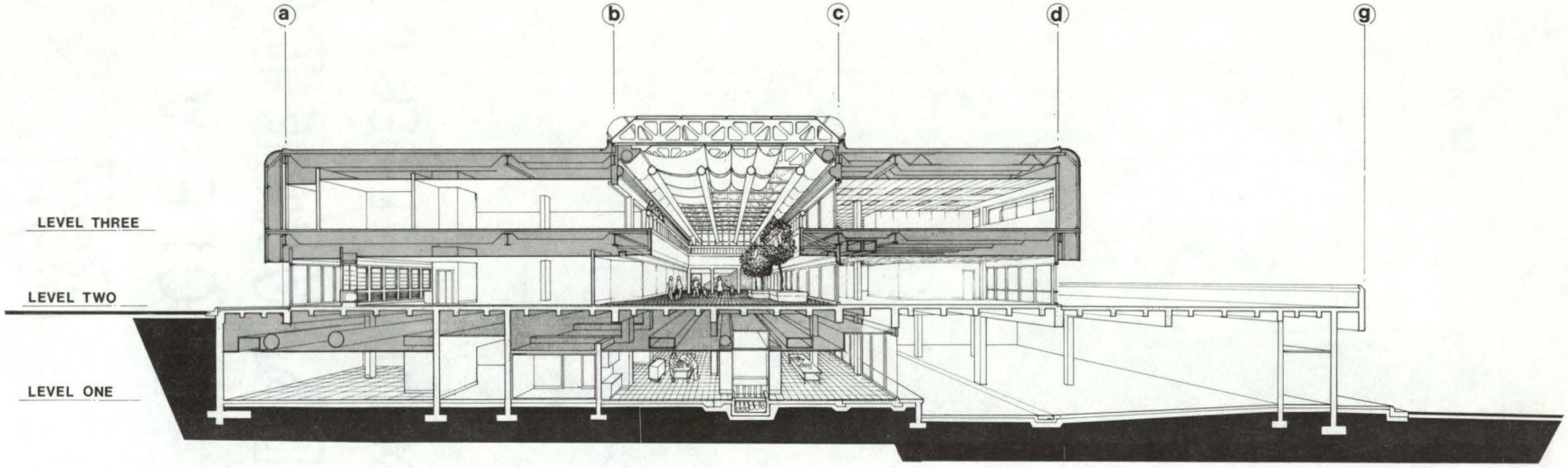


Structural Scheme



Mechanical Scheme

Omnifare inc.



Typical Cross Section Perspective

Omnifare inc.

FOOTNOTES

1. Eshbach, Charles E., Ed., FOOD SERVICE TRENDS, Cahners Publishing Co., Inc., Boston, Mass., 1974, pp. 28-30.

2. West, Wood, Harger, and Shugart, FOOD SERVICE IN INSTITUTIONS, John Wiley and Sons, N. Y., 1977: pp. 3-8.

3. "The Consumer--An Increasing Force in Food Service," Proceedings of the 28th Conference, THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH (May, 1973).

4. Hysen, Paul, "Ready foods may provide ready savings," MODERN HOSPITAL, Vol. 60, No. 6 (June, 1971): pp. 95-96.

5. Ibid., pp. 96-97.

6. Koogler, G. M. and Nicholanco, Susan, "Analysis of a Decision Framework for Prepared Food Systems," HOSPITALS, Vol. 51, No. 4 (February 16, 1977): pp. 95-98.

7. Kekas, Nicholas T., Omnifare, Inc., Spartanburg, S. C., June 1979, March 1981.

BIBLIOGRAPHY

Avery, Arthur C., *Human Engineering in Kitchen Designs*, Dept. of the Navy, Bureau of Supplies and Accts.

Buchanan, R. D., "A quality evaluation system for prepared foods; Part I." FOOD SERVICE MARKETING, 36:58 (January 1974).

Cloyd, Frances, Ed., Guide to Foodservice Management, pub. Institutions/Volume Feeding Magazine. Distrib. Cahners Books, Boston, Mass., 1972.

"(A) Conversation with George Lang," KITCHEN PLANNING, Vol. 13, No. 1 (First Quarter, 1975): 61-63.

"Designing is more than drawing lines," KITCHEN PLANNING, Vol. 15, No. 6 (November/December 1978): 23-29.

Eckstein, E. F., Ph.D., MENU PLANNING, The Avi Publishing Co., Westport, Conn., 1973.

Farevaag, H. L., and Matthews, M. E., "Evaluating ready-service food products," HOSPITALS, Vol. 47, No. 108, (Oct. 16, 1973): 60-68.

Friesen, Gordon A., *The Ready Foods System for Health Care Facilities*, American Institute of Architects, Cahners Pub., Boston, Mass., 1973.

George, N. L., and Heckler, R. D., *School Food Centers: A Guide to Operating the School Lunch Program.* The Ronald Press Co., New York, 1960.

Godfrey, Kenneth, Production Manager, Atlas Vending Co., Greenville, S. C., July 1978.

BIBLIOGRAPHY (continued)

(A) *Guide to Nutrition and Food Service for Nursing Homes and Homes for the Aged.* Dept. of Health, Education, and Welfare, DHEW Pub. No. (HRA) 74-3124, 1971.

Hancock, D. A., "Planning the Change to convenience foods for a hospital," JOURNAL OF THE AMERICAN DIETARY ASSOC., Vol. 63, No. 418, (Oct. 1973).

Konvalinka, J. W., and Trentin, H.G., *Management Information Systems*, MANAGEMENT SERVICES, (Sept./Oct. 1965): 27-39.

Keiser, James, and Kallio, Elmer, CONTROLLING AND ANALYZING COSTS IN FOODSERVICE OPERATIONS, John Wiley and Sons, Inc., New York, 1974. 63-64, 74-79, 103-111.

Nassikas, James A., "Monumentally Magnificent Trivialities," FOODSERVICE EQUIPMENT DEALER (April, 1976): 57, 64-68.

O'Connell, Daniel T., Foodservice Director, Greenville Memorial Hospital, Greenville, S. C., June-July, 1978.

Ross, L. N., WORK SIMPLIFICATION IN FOOD SERVICE, Iowa State Univ. Press, Ames, Iowa, 1972.

Shared Food Services in Health Care Institutions, AMERICAN HOSPITAL ASSOC., A.H.A. CATOLOG NO. 2636 (1976).

Springer, Roy E., Prof. of Foodservice Technology, Greenville Technical College, Greenville, S. C., July 1978.

"Third Annual Report," INSTITUTIONS/VOLUME FEEDING, Vol. 82, No. 6, (March 15, 1978): 36-40.

BIBLIOGRAPHY (continued)

Warner, Mickey, INDUSTRIAL FOOD SERVICE AND CAFETERIA MANAGEMENT, Cahners Books, Boston, Mass., 1973.

"We're Doctors," KITCHEN PLANNING, Vol. 11, No. 3 (Third Quarter, 1974): 27-30, 72.