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RESEARCH
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Rhode Island Wholesale Food Distribution Facilities

U. S. Department of Agriculture
Agricultural Marketing Service
Transportation and Facilities Research Division

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This report was prepared under the general supervision of William C. Crow, Director, Transportation and Facilities Research Division.

5a Washington, D. C.

5c July 1961

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SUMMARY

The study on which this report is based was started in the fall of 1959, in cooperation with the Rhode Island Department of Agriculture and Conservation, the Providence City Plan Commission, and the Rhode Island Development Council. Its purpose was to assist in planning new and improved wholesale food handling facilities to replace existing facilities which may be displaced by highway and urban renewal plans.

The 105 independent wholesale dealers in Rhode Island handled 259,500 tons of food and food products in 1959. These foods included fresh fruits and vegetables, poultry, butter, eggs, cheese, meat and meat products, dry groceries, and frozen foods. Of the dealers, 95 are located in the Providence metropolitan area.

Of the 259,500 tons handled by Rhode Island wholesale dealers, 137,500 tons arrived by railroad, and 122,000 tons by truck, including 29,950 tons received from sources within Rhode Island. Of the total, 30,050 tons were handled by more than one Rhode Island dealer. Of the total volume, 84 percent was distributed within Rhode Island.

As a result of the inadequacies of present facilities, much more labor than necessary was involved in handling the foods. Moreover, many dealers would lose their present places of business if various highway and urban renewal plans were implemented.

Those costs most affected by the kind of facilities in which the dealers were conducting their businesses were determined. The measured costs, including cartage, handling, interdealer movement, spoilage, breakage, deterioration, shrinkage, and rental or occupancy charge, were estimated at more than $2.3 million.

A plan for a modern wholesale food center was developed to meet the present and anticipated needs of wholesale food dealers in the Providence metropolitan area. Facilities planned included buildings for several dealers (multiple-store units), and detached buildings, each for a single dealer. A "standard" multiple unit was suggested which could be modified to meet the specific requirements of various types of dealers. A total of 130 multiple units, 9 detached buildings, 24 offices, 1 container shed, and 120 farmers' open stalls was suggested. An area of 31 acres was included in the plan to accommodate various nonfood, but allied, industries. All of these facilities, including the allied industry area, would require 120 acres. The plan provides for direct single- or double-track rail spurs to all units, so that rail cars could be unloaded directly into a dealer's store or into delivery trucks. Parking space adjacent to the buildings and in special parking areas is provided for market vehicles. Nonmarket traffic would be eliminated from the food center. The major streets would be at least 150 feet wide, to prevent congestion.

The value of these sites, prepared for building, ranged from $6,000 an acre to $28,300. To simplify computation, an average land cost of $16,000 an acre was assumed for computing the cost of the wholesale food center.

The entire wholesale food center, as outlined in the master plan, would lend itself to development in several stages and over several years. Upon completion, the entire project would cost about $9.9 million. The various commodity sections, including a prorata share of streets and parking, would cost as follows:

Fresh fruits and vegetables...	$2.6 million
Poultry.....	0.5 million
Butter, eggs, and cheese.....	0.4 million
Meat and meat products.....	3.4 million
Dry groceries.....	2.5 million
Land for allied industries....	0.5 million.

In a modern wholesale food center, most dealers could operate for about the same costs as at present; however, some dealers would have higher costs. The industry could operate in the new facilities, if urban renewal or highway construction forces them out of their present locations, for only $124,598 per year more than the $2.3 million they have been paying. In addition to measurable benefits and cost reductions, various other benefits were nonmeasurable.

RHODE ISLAND WHOLESALE FOOD DISTRIBUTION FACILITIES

By Kenneth L. Utter and Earl G. Taylor,
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BACKGROUND OF STUDY

This study was begun in the fall of 1959 at the request of a committee appointed by the Governor of Rhode Island, and in cooperation with the Rhode Island Department of Agriculture and Conservation, the Providence City Plan Commission, and the Rhode Island Development Council. These agencies requested assistance from the U. S. Department of Agriculture to plan new and improved wholesale food handling facilities to replace existing facilities which, it was expected, might be displaced by new highways and by urban renewal.

In Providence, all or part of the present fruit and vegetable terminal on Harris Avenue was scheduled to be displaced by an approach of the downtown Providence Expressway Loop. Plans for displacement of the meat wholesaling facilities on Canal Street, located two miles from the fruit and vegetable terminal, included (1) a tentative plan for a National Historic Monument around the Roger Williams Spring and (2) urban renewal. Renewal of the Canal Street area was considered of primary importance to an overall East Side improvement project to bring a few blighted areas up to the standard of the remainder of the area.

After preliminary discussions, it became evident that a food-handling study of Providence alone would be impractical because of the many suburban towns surrounding it. In all, the city of Providence and other cities and towns in the metropolitan area comprised such a large part of the entire State of Rhode Island that the study was expanded to include the entire State.

This study of facilities for handling the major food commodities at wholesale in Providence is part of a broad program of research to aid in reducing costs of marketing farm products. It had the following objectives:

1. To analyze the existing wholesale food marketing situation in Providence and Rhode Island and to ascertain the adequacy of the facilities in the light of present and future needs.

2. To determine those facilities that would best suit present and future needs.

3. To estimate--should facility improvements be recommended--costs of facility improvements or construction, possible operating expenses, and the self-liquidating potential.

4. To estimate probable cost reductions and benefits from any suggested improvements.

Data in this report were obtained from wholesale food handling firms through personal interviews by a cooperating team from the Providence City Plan Commission. The records of selected firms were examined by representatives of the Agricultural Marketing Service in cooperation with the State of Rhode Island.

Information was obtained from buyers patronizing various firms and truckers hauling to and from these firms. The Rhode Island Extension Service assisted in analysis of the data.

Other data and statistics were supplied or made available by officials of city, State, and Federal Governments and the New York, New Haven and Hartford Railroad.

IMPORTANCE OF FOOD MARKETING IN RHODE ISLAND

Rhode Island in 1950 had 11 urban areas as defined by the U. S. Bureau of the Census. The largest of these was Providence. Adjacent to Providence were the cities of Central Falls, Cranston, Pawtucket, and Warwick. Other urban areas in the State include the Woonsocket and Manville areas north of Providence, the Bristol and Newport areas southeast of Providence, and the "South County" areas of Westerly and Wakefield.

The State in 1960 had a population of 859,488 1/ in an area of 1,058 square miles, which made it the most densely populated State in the United States. This represents an increase of 6.3 percent in population since 1950 (fig. 1). Of this population, the city of Providence had 207,498 2/ people. In the Rhode Island part of the Providence metropolitan area in 1960, there were 731,358 persons, or 85 percent of the entire State population. This was the 19th largest metropolitan area in this country.

Only one railroad serves the State, the New York, New Haven and Hartford Railroad. Many of the urban areas are located on the main New York-to-Boston line of this railroad (fig. 2).

Since Rhode Island is primarily an industrial State and is at a focal point for the entire New England complex, and because of the attitude of State officials, the State is served by a network of relatively good Federal and State highways. The proposed interstate highway program will improve on these highways, and provide limited-access highways to all parts of the State and connections to various urban areas in other States (fig. 2).

1/ Preliminary reports, population count for States, July 1960.

2/ Standard Metropolitan Statistical Areas, Executive Office of the President, Bureau of the Budget, 1961.

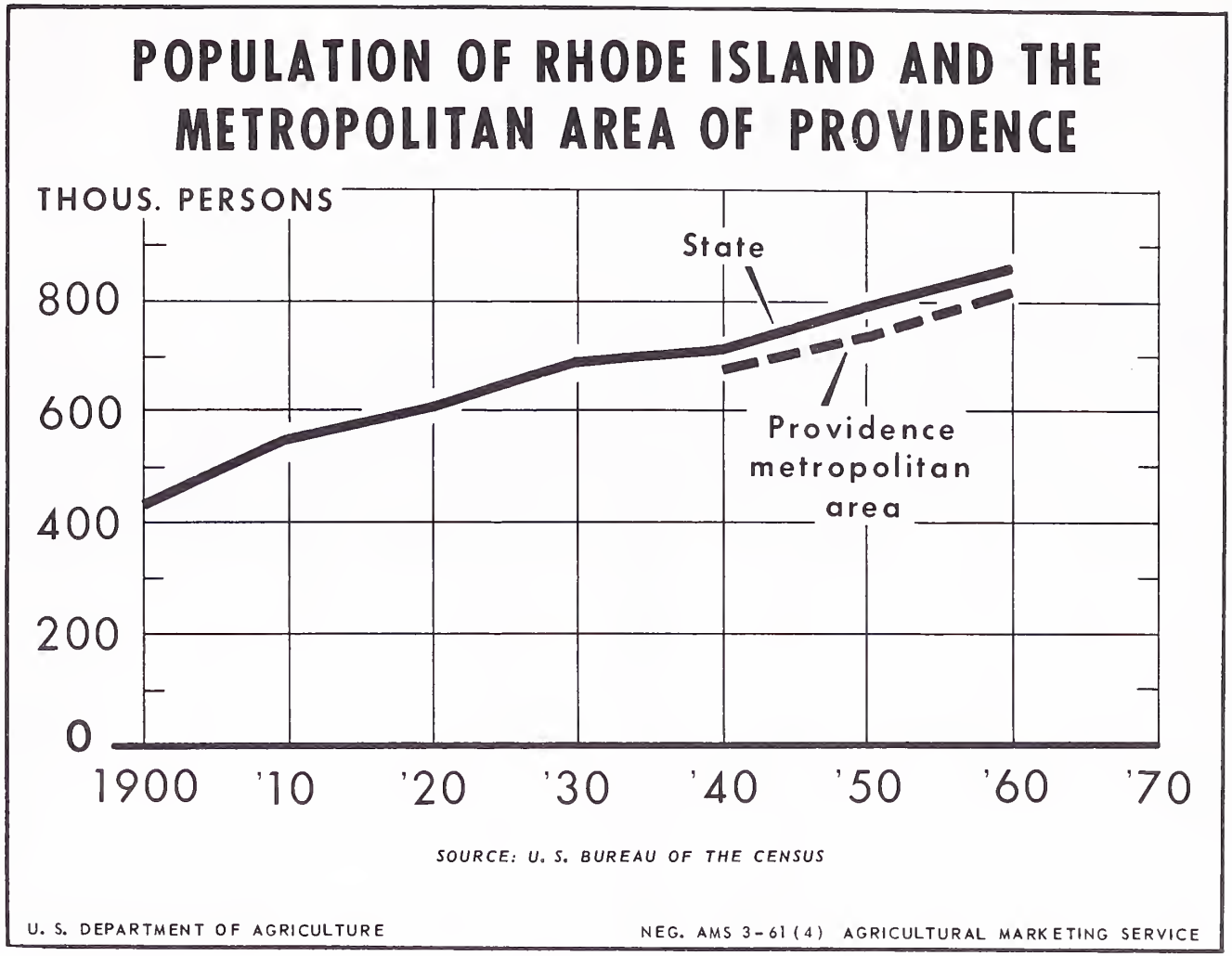
POPULATION OF RHODE ISLAND AND THE METROPOLITAN AREA OF PROVIDENCE
THOUS. PERSONS
800
600
400
200
0
State
Providence metropolitan area
1900
'10
'20
'30
'40
'50
'60
'70
SOURCE: U. S. BUREAU OF THE CENSUS
U. S. DEPARTMENT OF AGRICULTURE
NEG. AMS 3-61(4) AGRICULTURAL MARKETING SERVICE

Figure 1

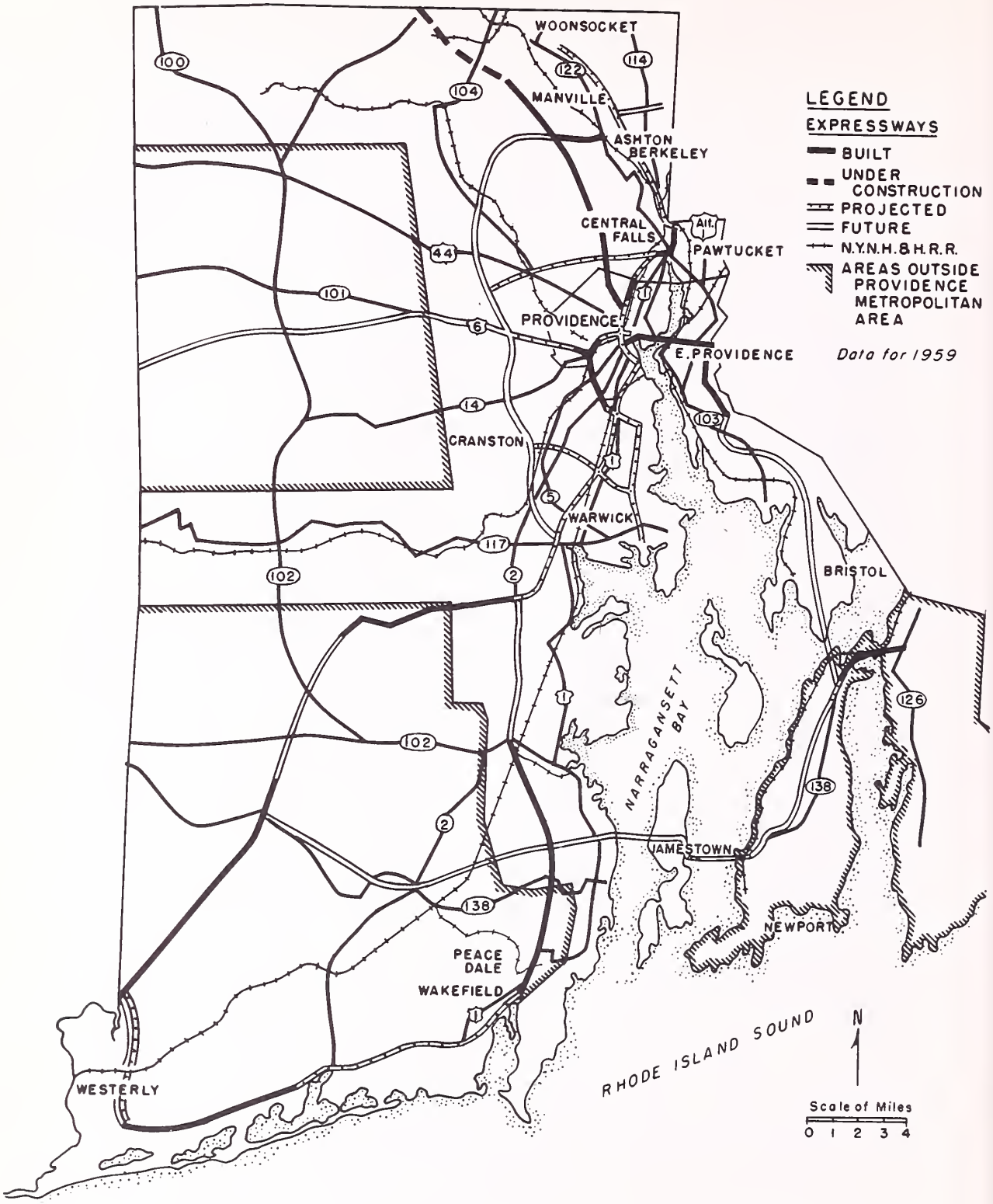

Figure 2.--Existing and proposed transportation arteries in Rhode Island.

PRESENT MARKETING OPERATIONS

Food distribution in and from the State, especially in the Providence area, is complicated by the proximity of Boston. Many Boston wholesalers, only 43 miles away, distribute in Rhode Island, but comparatively few Rhode Island wholesalers distribute into Boston. Because of this proximity Rhode Island wholesalers often rely upon Boston sources for low volume items.

The wholesale food business in Rhode Island was carried on in 1959 by 105 independent dealers. In addition, large amounts of food were moved into Rhode Island by nonindependent wholesalers, especially by food chain organizations. In this report, food chain organizations were not included because of difficulty in securing comparable data. An additional reason for excluding the chains was the fact that their present facilities, in Rhode Island, if not new, were adequate for their operations.

Location of the various independent wholesale food dealers, by type of commodity handled within the State, is shown in figure 3. Grocery specialty wholesalers, except for certain wholesalers dealing in Italian specialties, were excluded from this study. The wholesalers excluded were those handling products such as dry beans, candy, pickles, tea, and coffee.

The volume of food handled by the 105 wholesale dealers was estimated after each dealer had been interviewed, the records of selected dealers analyzed, and the commodity volumes substantiated. Volumes handled by dealers who were classified as handling one commodity, but who also handled another commodity, were apportioned to the various commodities. For example, if dealer "A" handled 200 carlots of meat and meat products and 10 carlots of eggs, dealer "A" was classified as a "meat and meat products" dealer, but 10 carlots of eggs were included in the "butter, eggs, and cheese" volume. The wholesale dealers, classified by types, and their volumes by method of transportation are listed in table 1.

Fresh Fruits and Vegetables

Fresh fruits and vegetables were handled in 1959 by 34 wholesale dealers, not including approximately 50 dealers and producers using the Governor Dyer Cooperative Farmers' Market. Of the wholesale dealers, 8 were wholesalers receiving in carlot quantities, 13 were commodity specialists, and 13 were small wholesalers reselling in small lots (jobbers).

Wholesalers usually had large-scale operations, received in carlot equivalents, and carried a full line of fruits and vegetables.

Commodity specialists specialized in either ripening and repacking tomatoes, or storing and ripening bananas, or storing and merchandising potatoes.

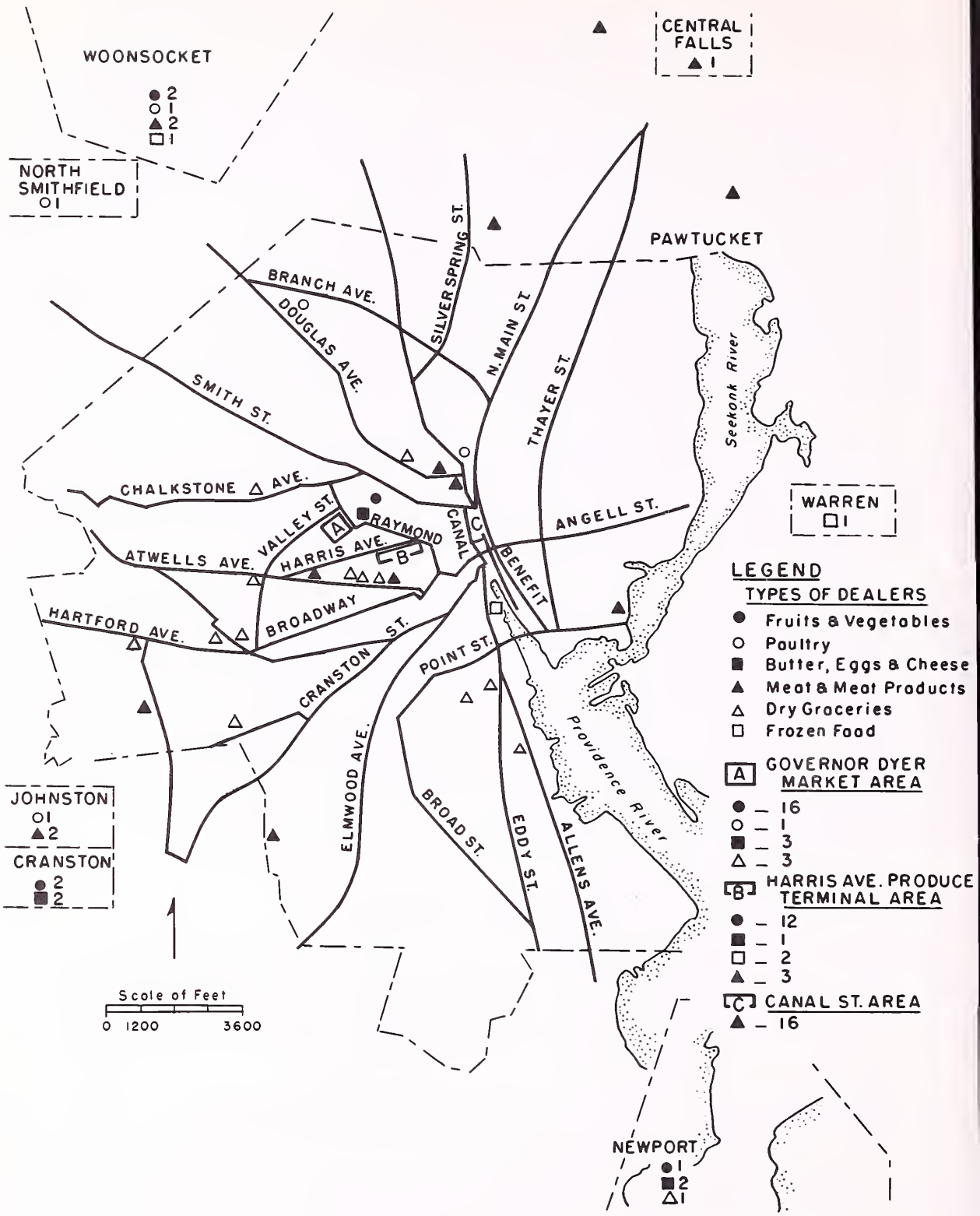

Figure 3.--Location of food wholesalers in Rhode Island.

Table 1.--Number of wholesale dealers and estimated volume of direct receipts,[1/] Rhode Island, 1959

Type of wholesalers	Dealers	Volume of direct receipts		
		Rail	Truck	Total
	Number	Tons	Tons	Tons
Fresh fruits and vegetables:				
Carlot receivers	8	41,000	34,700	75,700
Commodity specialists	13	7,300	26,500	33,800
Jobbers	13	--	9,600	9,600
Farmers' market	(50)	--	700	700
All fresh fruits & vegetables	34	48,300	71,500	119,800
Poultry	6	300	13,500	[2/] 13,800
Butter, eggs, and cheese	9	23,000	3,200	[2/] 26,200
Meat and meat products:				
Wholesalers	18	20,800	7,500	28,300
Restaurant suppliers	5	--	4,600	4,600
Processors	8	--	3,500	3,500
Packer branch houses	3	21,000	4,500	25,500
All meat and meat products	34	41,800	20,100	[3/] 61,900
Dry groceries:				
Wholesalers	10	19,600	4,200	23,800
Specialty handlers	7	700	8,600	9,300
All dry groceries	17	20,300	12,800	33,100
Frozen food	5	3,800	900	4,700
Grand total	105	137,500	122,000	259,500

1/ Does not include 30,050 tons handled intramarket.
2/ Includes direct receipts of this commodity by other types of wholesalers.
3/ Does not include slaughterers.

Jobbers were similar to the regular wholesalers except that they operated on a smaller scale and normally purchased their products from other Rhode Island dealers.

Farmers' market sales were made by local producers and speculators who rented open stalls on the Governor Dyer Cooperative Farmers' Market in Providence. About 50 such stalls were rented in 1959.

The 34 fresh fruit and vegetable dealers and the 50 sellers on the farmers' market handled a total of 119,800 tons. Of this volume, 48,300 tons, or 40 percent, arrived by rail. The remaining 71,500 tons came by truck.

Poultry

Poultry was handled by 6 wholesalers. Of these, all but one handled dressed poultry. The single wholesaler who slaughtered poultry did so under Federal poultry inspection.

A total of 13,800 tons of poultry was handled, of which 13,500 tons, or 98 percent, was received by truck, and the remaining 300 tons by rail.

Butter, Eggs, and Cheese

Butter, eggs, and cheese were handled by 9 wholesale dealers. Although various dealers had house specialties, such as a particular brand of butter or a particular type of cheese, all these wholesalers handled similar lines of products. To these dealers, processing was merely incidental to merchandising.

A total of 26,200 tons was handled in 1959. Of this volume, 23,000 tons, or 88 percent, arrived by rail, and the remaining 3,200 tons by truck.

Meat and Meat Products

Meat and meat products were handled by 18 wholesalers, 5 restaurant suppliers, 8 processors, and 3 packer branch houses. In addition to these dealers, but not included in the totals, were several shipping agents. The volume handled by these shipping agents would be included in the State totals if sales were made to the wholesalers included in the study. There were also several slaughterers in Rhode Island. These slaughterers and their volumes were excluded from this study (except where sales were made to wholesalers included in the study) because of the relatively small percentage of the total meat they supplied. Such slaughterers would probably have difficulty in moving, even if they wished, because most towns in the area do not issue new abattoir permits, but only renew old ones.

The 34 meat and meat product dealers handled a total of 61,900 tons. Of this volume, 41,800 tons, or 68 percent, arrived by rail, and the remaining 20,100 by truck.

Dry Groceries

Dry groceries were handled by 10 general wholesalers and 7 specialty handlers. The latter handled various Italian specialties as the major part of their business, but also sold more conventional items.

The 17 dry grocery dealers handled 33,100 tons. Of this, 20,300 tons, or 61 percent, arrived by rail and the remaining 12,800 tons by truck.

Frozen Food

Frozen foods were handled by 5 dealers specializing in such foods. In addition, certain other dealers sold frozen foods as a minor line. A total of 4,700 tons of frozen food was sold in Rhode Island. Of this volume, 3,800 tons, or 81 percent, arrived by rail, and the remaining 900 tons by truck.

Public Refrigerated Warehouse

At the time of this study, a public refrigerated warehouse was located adjacent to the produce terminal. This warehouse did some business with Rhode Island wholesale dealers, but did most of its business with processors and in handling products stored in transit.

Marketing Operations

In 1959, the wholesale food handlers in Rhode Island received a total of 259,500 tons of food. Of this volume, 137,500 tons, or 53 percent, arrived by rail. This relatively high percentage was contrary to that found in studies in other cities. The 122,000 tons that arrived by truck included 39,500 tons from local production areas, which was 15 percent of the total direct receipts.

As may be seen in table 2, there was considerable variation in the relative percentages of total food handled by different types of wholesalers. Fresh fruit and vegetable dealers handled 46 percent of the total tonnage; poultry dealers, 5 percent; butter, egg, and cheese dealers, 10 percent; meat and meat product dealers, 24 percent; dry grocery dealers, 13 percent; and frozen food dealers, 2 percent. Carlot receivers and general wholesalers in each category handled a larger percentage of the commodity than the dealers who specialized in specific commodities and services. The packer branch houses also are considered to be original receivers of meat and meat products.

Associated with the food handling business in Rhode Island, but not actually an integrated part, were several individuals such as food brokers and sales agents. They occupied offices in various areas not necessarily adjoining food handlers.

PRESENT WHOLESALE MARKETING FACILITIES

Facilities of the various types of wholesalers were physically examined and measured by either the Department of Agriculture survey team or the cooperating team from the Providence City Plan Commission. Facilities studied were located in the Providence metropolitan area, Newport, or Woonsocket. Some of the facilities in the Providence metropolitan area are pictured in figures 4 and 5.

Table 2.--Percentage of direct receipts handled by different types of wholesalers, Rhode Island, 1959

Type of wholesaler	Volume of direct receipts	Percentage of total volume
Fresh fruits and vegetables:	Tons	Percent
Carlot receivers	75,700	29
Commodity specialists	33,800	13
Jobbers	9,600	4
Farmers' market	700	1/
All fresh fruits and vegetables	119,800	46
Poultry	13,800	5
Butter, eggs, and cheese	26,200	10
Meat and meat products:		
Wholesalers	28,300	11
Restaurant suppliers	4,600	2
Processors	3,500	1
Packer branch houses	25,500	10
All meat and meat products	61,900	24
Dry groceries:		
Wholesalers	23,800	9
Specialty handlers	9,300	4
All dry groceries	33,100	13
Frozen food	4,700	2
Grand total	259,500	100

1/ Less than 1 percent.

Geographical Location

In the Providence metropolitan area, there were 31 fresh fruit and vegetable wholesale dealers, 5 poultry dealers, 7 butter, egg, and cheese dealers, 32 meat and meat product dealers, 16 dry grocery dealers, and 4 frozen food dealers. The large majority of the dealers were located either in the Harris Avenue area, the Governor Dyer Market area, or the Canal Street area. Eighteen dealers, including 12 fresh fruit and vegetable dealers, were located in or adjoining the Harris Avenue Produce Terminal. There were 23 wholesale handlers, including 16 wholesale fresh fruit and vegetable handlers, in the Governor Dyer Market area. In the Canal Street area, there were 16 wholesale meat and meat product dealers. Thus, 57 of the 95 wholesale food handlers in the Providence metropolitan area, or 60 percent of them, were located in the three market areas.

BN 13297

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Figure 4 (A).--Open stalls on Governor Dyer Cooperative Farmers' Market.
(B).--Canal Street wholesale meat stores.

BN 13302

BN 13303

Figure 5 (A).--The front of the Providence produce terminal.
(B).--Sales display and loading on the front platform at produce terminal.

The largest volume of meat and meat product wholesaling was concentrated in the Canal Street area, while most of the fresh fruit and vegetable wholesaling was concentrated in the Harris Avenue area and the Governor Dyer Market area. The 38 dealers who were not in the 3 market areas were distributed throughout the area. Specific locations, by commodity, are shown in figure 3.

In Newport, there were a fresh fruit and vegetable wholesaler, two butter, egg, and cheese wholesalers, and a dry grocery wholesaler. In the Woonsocket area there were two fruit and vegetable wholesalers, a poultry wholesaler, two meat and meat product wholesalers, and a frozen food dealer. 3/

Fresh Fruit and Vegetable Facilities

Facilities of the fresh fruit and vegetable carlot receivers, located in the Harris Avenue Produce Terminal, were three-story multiunit structures, each consisting of a basement, first floor, and second floor. All units had freight elevators. The facilities included both front and rear platforms, and were served by house tracks. The front platforms were used for display and shipping, and the rear platforms primarily for receiving. The basement was used in most cases for storage, while the second floor was generally used as office and storage space and in some instances for prepackaging. All dealers at Harris Avenue had house tracks (fig. 5).

Carlot receivers used 4,046 square feet for office space (506 square feet per wholesaler). These eight carlot receivers had refrigerated space totaling 21,380 square feet (2,672 square feet per wholesaler). They used a total of 158,728 square feet of floor space, of which 38,500 square feet was on the first floor. Additional first-floor space was occupied by firms in allied businesses. These dealers had an average of 19,841 square feet of space per dealer. All carlot receivers were assumed to have rented their facilities, although many were financially interested in the Providence Produce Terminal, and were in effect paying rent to themselves.

Commodity specialists, with a few exceptions, occupied two-story structures consisting of first floors and basements, and none were served by rail. These dealers used considerably less space than did the carlot receivers. Ten of them had office space amounting to 2,354 square feet, averaging 235 square feet per wholesaler. Eleven of them maintained either cooler space or ripening rooms, totaling 15,600 square feet and averaging 1,418 square feet per dealer. All commodity specialists used total space amounting to 35,004 square feet for an average of 2,693 square feet per dealer. Ten of the 13 commodity specialists rented their facilities.

The jobbers, like the commodity specialists, used two-story structures. The majority of these dealers used front platforms or loading areas. They were not served directly by house tracks, but used team tracks for rail receipts.

3/ Subsequent analysis will be by commodity instead of geographical location in order to prevent the disclosure of confidential information and to simplify presentation.

The facilities provided less space than did those of the carlot receivers, but nearly double the space of commodity specialists. Eleven of the jobbers maintained offices in their facilities, totaling 1,280 square feet and averaging 116 square feet per dealer. Ten of the jobbers had coolers totaling 5,534 square feet, averaging 553 square feet per dealer. Fruit and vegetable jobbers used 61,765 square feet, of which 49,182 square feet was first-floor space. These dealers had an average of 4,751 square feet per dealer. Ten of the 13 jobbers rented their facilities.

All fruit and vegetable dealers in Rhode Island occupied a total of 225,497 square feet of space, of which 45 percent, or 115,696 square feet, was first-floor space. The amount of floor space and averages are shown in table 3. Of the 34 fresh fruit and vegetable dealers, 28 rented their facilities, or 82 percent.

Poultry Facilities

Poultry wholesalers mostly occupied one-story facilities, although one dealer used a second floor. Four poultry dealers had 785 square feet of office space, an average of 196 square feet per dealer. Five of the poultry dealers maintained cooler facilities totaling 4,436 square feet, averaging 887 square feet per dealer (in addition, three dealers maintained freezer facilities totaling 528 square feet). All six of the poultry dealers occupied a total of 32,830 square feet, an average of 5,472 square feet per dealer. Three of the dealers used platforms for their loading and unloading operations, but none was served by rail to the store. There was only one poultry slaughterer in the area approved under the Federal Poultry Inspection Act.

Two of the six dealers owned their own facilities. The rest rented or leased them.

Butter, Egg, and Cheese Facilities

Butter, egg, and cheese wholesalers largely occupied facilities of one story, although some dealers used two- and three-story structures. Of the nine dealers, six had office space amounting to 2,278 square feet, averaging 380 square feet per dealer. Two of the dealers had freezer space totaling 300 square feet, and four maintained cooler facilities totaling 2,891 square feet, or 723 square feet per dealer. Four of these dealers used platform space, while three had direct rail service to their stores. These dealers used 18,009 square feet of first-floor space and 14,800 square feet on other floors, totaling 32,809 square feet, an average of 3,645 square feet per dealer.

Two of the nine dealers owned their own facilities; seven rented or leased them.

Meat and Meat Product Facilities

The facilities of the majority of the meat and meat product wholesalers were inadequate for their operations. Eighteen wholesale dealers used office

space amounting to 6,066 square feet, an average of 337 square feet per dealer. Two of the firms were served by house tracks; the rest used cartage from points of initial receipt. Five of these dealers used platforms in loading and unloading at their facilities. All meat and meat product wholesalers used cooler facilities (27,446 square feet, an average of 1,524 square feet per dealer), but only seven maintained freezer facilities, totaling 2,625 square feet, an average of 375 square feet. The meat and meat product wholesalers had a total of 154,224 square feet of space, an average of 8,568 square feet. Of this total space, 79,781 square feet, or 52 percent, was first-floor space.

Ten, or 56 percent, of the meat and meat product wholesalers rented their facilities, and the rest owned them.

The facilities of the five restaurant suppliers were similar to those of the meat and meat product wholesalers. Four of the restaurant suppliers utilized office space amounting to 280 square feet, averaging 70 square feet. Two of the dealers had freezer facilities. Cooler facilities, maintained by all dealers, totaled 3,090 square feet, an average of 618 square feet. None of these dealers was served by house tracks or used platforms in the facilities. These five firms averaged 2,950 square feet per wholesaler. Of the total of 14,752 square feet of space, 38 percent, or 5,637 square feet, was first-floor space.

Four of these five dealers rented or leased their facilities, while one dealer owned them.

The facilities of the meat processors ranged from one- to three-story buildings. The eight meat processors had 1,032 square feet of office space, averaging 129 square feet per dealer. These dealers had cooler space amounting to 4,940 square feet, averaging 617 square feet. Only two of the dealers used platform space, and none was served by house tracks. The eight meat processors used 49,285 square feet in their operations, of which 44,727 square feet was on the first floor. The average space utilized was 6,161 square feet. Five dealers owned their facilities, while three rented or leased them.

The facilities of the three national packer branch houses ranged from one- to three-story operations. These dealers had office space totaling 6,200 square feet, an average of 2,066 square feet per firm. The facilities were served by house tracks, and the dealers used platforms. These firms had 2,040 square feet of freezer space, an average of 680 square feet, and cooler space of 11,290 square feet, or 3,763 square feet per dealer. Packer branch houses used 138,383 square feet, of which 74,575 square feet, or 54 percent, was first-floor space. They averaged 46,128 square feet per wholesaler, second only to the dry grocery wholesalers in the area.

All packer branch houses leased their facilities on a long-term basis, from either the city, railroad, or private enterprise.

Table 3.--Tenure status and space used by wholesale food dealers, Rhode Island, 1959

Type of wholesaler	Tenure status		Space on first floor	Space on other floors	Total space	Average per wholesaler
	Wholesalers renting facilities	Wholesalers owning facilities				
Fresh fruits and vegetables:	Number	Number	Sq.ft.	Sq.ft.	Sq.ft.	Sq.ft.
Carlot receivers	8	0	38,500	120,228	158,728	19,841
Commodity specialists	10	3	28,014	6,990	35,004	2,693
Jobbers	10	3	49,182	12,583	61,765	4,751
All fresh fruits and vegetables	28	6	115,696	139,801	255,497	7,515
Poultry	4	2	32,000	830	32,830	5,472
Butter, eggs, and cheese	7	2	18,009	14,800	32,809	3,645
Meat and meat products:						
Wholesalers	10	8	79,781	74,443	154,224	8,568
Restaurant suppliers	4	1	5,637	9,115	14,752	2,950
Processors	3	5	44,727	4,558	49,285	6,161
Packer branch houses	0	3	74,575	63,808	138,383	46,128
All meat and meat products	17	17	204,720	151,924	356,644	10,490
Dry groceries:						
Wholesalers	5	5	250,101	97,664	347,765	34,776
Specialty handlers	5	2	25,936	19,191	45,127	6,447
All dry groceries	10	7	276,037	116,855	392,892	23,111
Frozen food	1	4	33,075	0	33,075	6,615
Total	67	38	679,537	424,210	1,103,747	10,512

Dry Grocery Facilities

The facilities of the 10 dry grocery wholesalers included buildings of one to three stories, the majority being one-story. Eight wholesalers maintained office facilities of about 6,800 square feet, averaging 850 square feet per wholesaler. One dealer had a freezer, while three maintained cooler facilities amounting to 302 square feet. Six of these dealers used platforms, and two were served by house tracks. Dry grocery wholesalers utilized 250,101 square feet of first-floor space and 97,664 square feet on other floors, for a total of 347,765 square feet, averaging 34,776 square feet per dealer.

Half of the 10 dealers owned their own facilities, and the rest rented or leased them.

Facilities used by the seven specialty handlers were similar to the type used by dry grocery wholesalers. All specialty handlers had offices within their facilities, averaging 213 square feet per dealer. Five of the dealers used 1,690 square feet of cooler space, averaging 338 square feet. These dealers used a total of 45,127 square feet, of which 25,936 was first-floor space and 19,191 was on other floors. These five dealers were not served by rail facilities. Five firms rented their facilities, and the rest owned them.

Frozen Food Facilities

Frozen food wholesalers either used one-story buildings or were located in a multistory refrigerated warehouse. The dealers in the refrigerated warehouse were the only firms having access to railroads. The five frozen food handlers used a total of 2,449 square feet of office space, averaging 490 square feet. Three of the firms maintained limited amounts of cooler facilities. The total freezer space for all five dealers amounted to 31,575 square feet, an average of 6,315 square feet per wholesaler. The total space used by these dealers amounted to 33,075 square feet, averaging 6,615 square feet. One of the dealers owned his facilities, and four leased them.

All Rhode Island Wholesalers

The total space used by all types of food wholesalers in Rhode Island was 1,103,747 square feet, of which 679,537 square feet, or 62 percent, was first-floor space. This provided the 105 dealers studied with an average of 10,512 square feet each. Sixty-seven wholesalers (64 percent) rented or leased their facilities, and the remaining 38 (36 percent) owned them. The interior of a Providence Produce Terminal store is shown in figure 6.

SOURCES OF SUPPLIES

The commodities handled by wholesale food dealers in Rhode Island originated in many areas of this country and in some foreign countries, especially Canada. The volumes handled, by commodity, are shown in table 4.

BN 13301

Figure 6.--The interior of a store, Providence wholesale produce terminal.

Fresh Fruits and Vegetables

According to USDA Market News figures for 1959, 4/ fresh fruits and vegetables arrived from 25 States, Canada, and Mexico, but States on the East and West Coasts were principal areas of supply. About 12 percent (29,950 tons) of all original receipts of fruits and vegetables were grown in Rhode Island, and 12 percent (30,050 tons) of all receipts were handled more than once by the Rhode Island wholesalers.

Poultry

Poultry wholesalers were almost evenly divided between those handling Rhode Island poultry exclusively and those receiving from northern and southern States. Of all poultry handled in Rhode Island, 36 percent came from producers in Rhode Island. An additional 7 percent was subject to interdealer movement within the market. Areas outside the State most often mentioned as sources of poultry included Maine, the Delmarva Peninsula (Delaware, Maryland, and Virginia), and Georgia. Some dealers sold their own products, but sold enough to make them important in the market.

4/ Carlot Unloads of Certain Fruits and Vegetables in 100 U. S. and 5 Canadian Cities, 1959, U. S. Dept. Agr., Agr. Mktg. Serv., Market News, March 1960.

Table 4.--Food products handled by 105 Rhode Island wholesale dealers, 1959

Type of wholesaler	Total volume handled	Volume originating in Rhode Island	Interdealer movement
	Tons	Tons	Tons
Fresh fruits and vegetables	119,800	15,700	10,000
Poultry	13,800	5,000	900
Butter, eggs, and cheese	26,200	4,000	3,200
Meat and meat products	61,900	5,000	14,900
Dry groceries	33,100	200	800
Frozen foods	4,700	50	250
Total	259,500	29,950	30,050

Butter, Eggs, and Cheese

Wholesale dealers in butter, eggs, and cheese were divided almost evenly between those who obtained nearly all their merchandise from Rhode Island producers and those who received almost everything from distant sources. However, only 4,000 tons, or 15 percent of the volume, originated in Rhode Island. Supplies of butter, eggs, and cheese received in Rhode Island from outside the State most often came from other areas of New England, except that one firm received large quantities of these products, especially butter, from the Midwest. About 12 percent, or 3,200 tons, of the butter, eggs, and cheese tonnage was subject to interdealer handling.

Meat and Meat Products

Meat and meat products were received mostly from slaughtering plants and meat packers in the Midwest, although milkfed calves and dairy cattle often came from Rhode Island. Only 8 percent (5,000 tons) of the total meat and meat product volume originated within Rhode Island. Of the total, 24 percent (14,900 tons) was handled more than once by Rhode Island dealers.

Dry Groceries

According to the dealers, less than 1 percent of the total dry groceries originated in Rhode Island. Much came from canners, preservers, and suppliers throughout the United States. Most of the volume of the specialty dealers came from foreign countries, especially Italy and Spain. It was estimated that a third of the total dry grocery volume was imported. A railroad receiving platform is shown in figure 7.

BN 13299

Figure 7.--Railroad receiving platform of a Providence dry grocery firm.

Frozen Food

Supplies of frozen foods also came from many areas of the United States. Only about 1 percent of all frozen food sold by Rhode Island wholesalers originated in Rhode Island. A similarly small amount (250 tons) was handled by more than one Rhode Island wholesaler.

DISTRIBUTION OF SUPPLIES

Unlike the distribution patterns found for food wholesalers in other areas, distribution by food wholesalers in Rhode Island was largely within short distances of their stores. Of all commodities handled, 217,800 tons (84 percent) was distributed within Rhode Island. The percentage distributed within Rhode Island ranged between 51 percent for poultry dealers and 91 percent for butter, egg, and cheese dealers. Tonnages of specific commodities handled are shown in table 5. Seventy-two percent of the volume of all commodities was delivered by wholesalers. This varied from 53 percent of the fresh fruits and vegetables to 98 percent of the frozen food. Specific amounts delivered and picked up by customers are shown in table 6 and figure 8.

COSTS INCURRED BY WHOLESALERS

An important part of the cost of marketing is the cost of moving merchandise. Such costs depend on the kind of operation and the type of facilities used. Each handling of a commodity increases handling and associated costs, such as spoilage. Many of the costs associated with handling food products are intangible and cannot be measured readily. Measurable costs which would be affected by facility improvement include: (1) Cartage from railroad track or point of initial receipt to wholesaler's store, (2) handling of the commodities from point of unloading at the warehouse until they are loaded for delivery on a truck, (3) interdealer movement costs, or the cost of handling products moved

Table 5.--Area of distribution by 105 Rhode Island wholesale dealers, 1959

Type of wholesaler	Distributed within Rhode Island	Distributed outside Rhode Island	Total
	Tons	Tons	Tons
Fresh fruits and vegetables	1/ 100,600	19,200	119,800
Poultry	7,000	6,800	13,800
Butter, eggs, and cheese	23,800	2,400	26,200
Meat and meat products	55,100	6,800	61,900
Dry groceries	28,800	4,300	33,100
Frozen food	2,500	2,200	4,700
Total	217,800	41,700	259,500

1/ Includes 700 tons through farmers' market.

Table 6.--Means of distribution by 105 wholesale dealers, Rhode Island, 1959

Type of wholesaler	Delivered by wholesalers	Picked up by customers	Total distributed
	Tons	Tons	Tons
Fresh fruits and vegetables	63,500	56,300	119,800
Poultry	13,400	400	13,800
Butter, eggs, and cheese	23,300	2,900	26,200
Meat and meat products	53,200	8,700	61,900
Dry groceries	28,800	4,300	33,100
Frozen food	4,600	100	4,700
Total	186,800	72,700	259,500

through more than one wholesaler, (4) spoilage, breakage, deterioration, and shrinkage, and (5) rental costs or charges for occupancy.

The cost data considered here were obtained by examining wholesalers' records and analyzing time-study information. These estimates were then checked with similar cost studies made for other cities. In computing costs, not all wholesalers' data were analyzed, but dealers were so sampled that all volumes would be represented.

Cartage

Cartage costs are those incurred in loading and moving commodities from rail tracks or point of initial receipt (such as public warehouse facilities) to the dealer's store. These costs did not include unloading at stores, which was included in handling costs. All dealers in the Harris Avenue Produce Terminal and most of the other dealers used railroad spurs. However, those firms not served by rail spurs and those using public storage incurred cartage costs. Only 9,960 tons, about 4 percent of the total tonnage handled by Rhode Island wholesalers, was subject to cartage charges. Of the amount subject to cartage, over 50 percent was meat and meat products. This was because of the heavy concentration of meat wholesalers along Canal Street, none of whom had rail spurs at their stores except a packer branch house. The total volume of cartage in Rhode Island was considerably below that of other cities studied. As may be seen in table 7, cartage in 1959 cost Rhode Island wholesale dealers $18,675.

Handling

Handling costs were incurred from the time a commodity was unloaded from a truck or rail car at the dealer's store until it was finally loaded on an outbound truck. Therefore, handling included unloading at the store, moving into the store, sorting, reassembling, preparing for loading, and loading onto a truck for delivery. When over-the-road truck drivers assisted in unloading at the store, the value of their services was included in the dealer's cost although the dealer may not have paid the cost directly. This computation was made so that the handling costs of various dealers would be comparable.

A comparison of the handling costs of the various commodity-group wholesalers indicates substantial differences. In general, commodities which were stored for shorter times had lower handling costs. Also, commodities handled in units such as palletloads or large boxes and in such ways that the bulk was not broken had lower handling costs.

The total cost of handling food commodities by wholesalers in Rhode Island during 1959 was estimated at $851,250, or about $2.95 per ton. These costs are summarized in table 8. Handling costs in Rhode Island were lower than those of wholesalers in some other areas of the United States. This probably can be attributed to: (1) Relatively good facilities occupied by wholesale food handlers of several commodities, and (2) relatively efficient handling methods employed by many handlers.

DISTRIBUTION OF FOOD COMMODITIES THROUGH RHODE ISLAND

IN TONS

Data for 1959

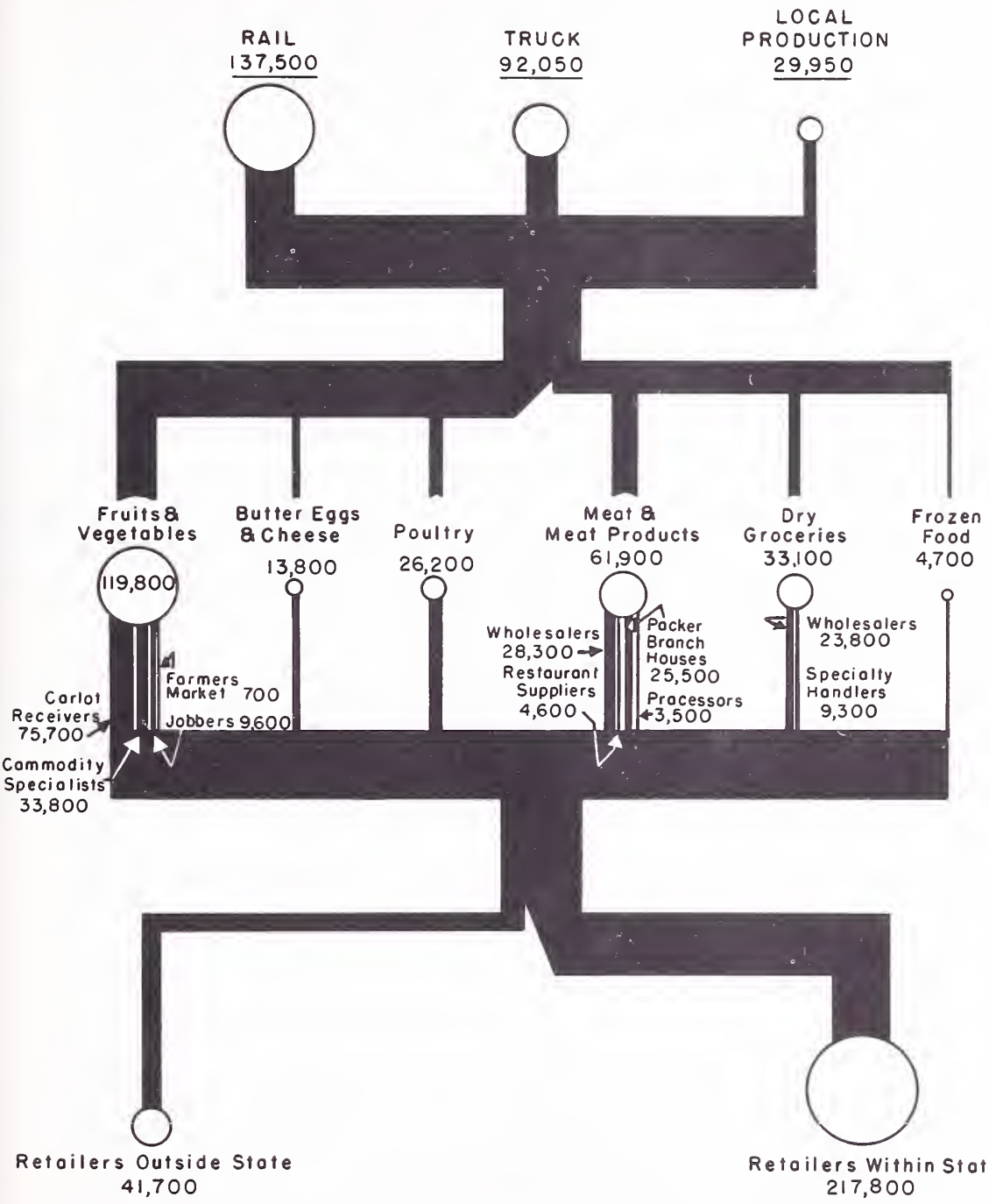

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Figure 8

Table 7.--Cartage costs incurred by food wholesale dealers, by commodity group, Rhode Island, 1959

Commodity group	Tons	Cost per ton	Total cost
	Tons	Dollars	Dollars
Fresh fruits and vegetables	1,500	1.65	2,475
Poultry	110	1.82	200
Butter, eggs, and cheese	1,300	1.85	2,405
Meat and meat products	5,000	2.00	10,000
Dry groceries	2,000	1.75	3,500
Frozen food	50	1.90	95
Total or average	9,960	1.88	18,675

Table 8.--Handling costs of food wholesalers, by commodity group, Rhode Island, 1959

Commodity group	Tons handled 1/	Cost per ton	Total cost
	Tons	Dollars	Dollars
Fresh fruits and vegetables	2/ 129,100	2.25	290,500
Poultry	14,700	3.30	48,500
Butter, eggs, and cheese	29,400	3.25	95,550
Meat and meat products	76,800	4.00	307,200
Dry groceries	33,900	2.80	94,900
Frozen food	4,950	2.95	14,600
Total or average	288,850	2.95	851,250

1/ Includes 30,050 tons handled intramarket.
2/ Excludes 700 tons moved through farmers' markets.

Interdealer Handling

In Rhode Island in 1959, a total of 30,050 tons of food was "second handled;" that is, the same merchandise was handled by two or more dealers in Rhode Island. This type of movement is normal and often in the best interest of economy, because an individual dealer may specialize in specific items while allowing others to stock low-volume items. However, when commodities are handled by more than one dealer because of physical defects in a dealer's store, interdealer handling costs become an extra cost which can be reduced. In the Canal Street area of Providence, several meat and meat product dealers purchased from other dealers simply because they lacked rail facilities or adequate cooler space. Wholesale fruit and vegetable dealers in the areas away from the Harris Avenue market had similar difficulties. As shown in table 9, almost 84 percent of the volume handled by more than one dealer was handled by those in two categories: Fresh fruits and vegetables, and meat and meat products.

The costs computed in table 9 were the complete costs of moving the commodities from one dealer's store to another's, but did not include the cost of handling within either the originating or receiving store, since this cost was included in the handling costs of the dealers. Variations in the costs of different commodities and in other cost breakdowns can be partially explained by the different methods used to transport commodities between dealers. Transportation equipment observed varied from a two-wheel handtruck to a refrigerated semitrailer truck. The commodities were moved varying distances, from a few feet to completely across the State. The total cost of interdealer handling in Rhode Island was $55,345, or $1.84 per ton handled.

Table 9.--Interdealer handling costs, by commodity group, Rhode Island, 1959

Commodity group	Interdealer handling	Cost per ton	Total cost
	Tons	Dollars	Dollars
Fresh fruits and vegetables	10,000	1.65	16,500
Poultry	900	1.70	1,530
Butter, eggs, and cheese	3,200	1.75	5,600
Meat and meat products	14,900	2.00	29,800
Dry groceries	800	1.80	1,440
Frozen food	250	1.90	475
Total or average	30,050	1.84	55,345

Spoilage, Deterioration, Breakage, and Shrinkage

Costs of spoilage, deterioration, breakage, and shrinkage were estimated for the various commodities. In many cases, these costs might have been materially reduced if less handling had been required or if handling had been improved. In other cases, little could be done to reduce these costs.

Costs were computed from estimates given by local wholesalers and confirmed by records of selected dealers. The resultant costs were then compared to similar costs in other areas. The average cost thus derived represented about $1\frac{1}{4}$ percent of the average value per ton.

The total cost of spoilage, deterioration, breakage, and shrinkage for all wholesale food dealers in Rhode Island in 1959 was $640,292, or $2.22 per ton. These costs, by commodity group, are shown in table 10.

Table 10.--Spoilage, deterioration, breakage, and shrinkage costs, by commodity group, Rhode Island, 1959

Commodity group	Tonnage incurring loss	Cost per ton	Total cost
	Tons 1/	Dollars	Dollars
Fresh fruits and vegetables...	2/129,100	2.50	322,750
Poultry.....	14,700	1.50	22,050
Butter, eggs, and cheese.....	29,400	2.00	58,800
Meat and meat products.....	76,800	2.25	172,800
Dry groceries.....	33,900	1.60	54,240
Frozen food.....	4,950	1.95	9,652
Total or average	288,850	2.22	640,292

1/ Includes 30,050 tons handled intramarket.
2/ Excludes 700 tons moved through farmers' markets.

Rental or Occupancy Charges

When individual wholesale dealers were interviewed, rent data were collected. Problems were encountered in estimating rental figures for dealers owning their own facilities, because most had no accurate means of estimating a reasonable rental value of their property. In such instances, the average rental for similar property was assumed to apply. The actual rent paid by individual wholesalers varied substantially--from 18 cents to $6.98 per square foot per year. Considerable variation also existed within commodity groups.

The highest cost per square foot was paid by poultry wholesalers, although the highest cost per ton handled was for frozen foods and dry groceries. Butter, egg, and cheese wholesalers combined a low cost per square foot and per ton. Apparent divergencies probably are attributable to (1) the location and type of facilities, (2) the degree of suitability of the facilities, and (3) the type of operation. For instance, the butter, egg, and cheese wholesalers had a relatively high turnover and were often located in low-rent areas, while dry grocery wholesalers did substantial storage and had facilities in more centrally located areas.

The total annual rent or rental value for all wholesale food handlers in Rhode Island in 1959 was estimated at $813,992, or $3.15 per ton handled or 99 cents per square foot used. This estimate does not include rents paid for the farmers' stalls, container sheds, brokers' offices,or similar facilities. A detailed description of rental costs,by commodity group,is shown in table 11.

Table 11.--Rental or occupancy charge of present facilities for food wholesalers, by commodity group, Rhode Island, 1959

Commodity group	Tons handled	Rental cost per ton	Area used in building	Cost per sq.ft.	Annual rental value
	Tons	Dollars	Sq.ft.	Dollars	Dollars
Fresh fruits and vegetables 1/	2/ 119,100	2.25	255,497	1.05	267,832
Poultry	13,800	3.56	32,830	1.50	49,160
Butter, eggs, and cheese	26,200	1.07	32,809	.85	27,920
Meat and meat products	61,900	3.84	356,644	.67	237,560
Dry groceries	33,100	5.62	392,892	.47	185,920
Frozen food	4,700	9.70	33,075	1.38	45,600
Total or average	258,800	3.15	1,103,747	.74	813,992

1/ Does not include space or cost for offices, container sheds, or farmers' stalls.

2/ Does not include 700 tons handled through farmers' markets.

Summary of Selected Marketing Costs

As may be seen in table 12, the estimated 1959 costs for cartage, handling, interdealer movement, spoilage, deterioration, breakage, shrinkage, and rentals or occupancy charges amounted to over $2.3 million.

Table 12.--Summary of selected costs incurred by Rhode Island food wholesalers, 1959

Commodity group	Cartage	Handling	Inter-dealer handling costs	Spoilage, deterioration, breakage, and shrinkage	Rental or occupancy charge	Total
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Fresh fruits and vegetables	2,475	290,500	16,500	322,750	267,832	900,057
Poultry	200	48,500	1,530	22,050	49,160	121,440
Butter, eggs, and cheese	2,405	95,550	5,600	58,800	27,920	190,275
Meat and meat products	10,000	307,200	29,800	172,800	237,560	757,360
Dry groceries	3,500	94,900	1,440	54,240	185,920	340,000
Frozen foods	95	14,600	475	9,652	45,600	70,422
Total or average	18,675	851,250	55,345	640,292	813,992	2,379,554

Other Marketing Costs

Traffic congestion, often a major cost factor in other cities, was not found materially to increase costs in the three market areas in Providence. Some delay was observed in Rathbone Street adjoining the Governor Dyer Market. Also, some delay during the morning rush hour was observed along Canal Street. However, the delay did not seem to be as much of an economic factor as it was a nuisance and inconvenience. Employee parking for the firms along Canal Street also presented some problem. In consideration of these factors, the monetary cost of traffic delay has not been included in this study.

Traffic congestion and parking problems in areas outside Providence seemed to be of the same nature: an inconvenience rather than a substantial economic cost. The difficulty was minimized also because food-handling facilities in these areas were not usually located near each other.

In addition to the inconvenience of traffic congestion, there was inconvenience because of the present split market situation. The split market was especially inconvenient, too, for buyers who picked up their own produce and merchandise (about 28 percent). The split market was inconvenient to both buyer and seller in that neither could keep well informed regarding prices and supplies in a fast-moving market. Various people stated that it was for this reason that buyers felt prices were often lower in Boston.

INADEQUACIES OF FACILITIES AND OPERATIONS

Many wholesale food handling facilities in Rhode Island are reasonably adequate for the operations being conducted in them, while others are totally inadequate. In general, facilities outside the Providence metropolitan area not only serve specific needs, but are also particularly suited to operations being conducted in them. For these reasons, it was assumed that relatively few wholesalers outside the metropolitan area would gain by moving to a wholesale distribution food center in or near Providence.

All wholesalers in the Providence area were considered as possible occupants for a wholesale food center. In some instances, such as at the Harris Avenue Produce Terminal, the multiple units at the Governor Dyer Market, and in certain individual instances, facilities were adequate. However, in the Canal Street area, the buildings in general were not designed for wholesale meat operations. Although one packer branch house on the west side of Canal Street did have a house track, rail service to buildings on the east side was lacking. In addition, Canal Street was a major traffic artery for southbound traffic. Many of the buildings surrounding the Governor Dyer Market, similarly, were not suited for the type of food handling operations being done in them. In addition, these wooden structures were fire hazards. Many of the other facilities in metropolitan Providence were not designed for their present uses.

In this study, establishing a wholesale food center only for those wholesalers not occupying suitable facilities was not a practical program because of State highway and urban renewal plans. There were several highway plans which would dislocate from one-third to all of the Harris Avenue Market. Applications had been filed to create an urban renewal project or National Historical Monument in the Canal Street area. Other urban renewal projects, such as the Federal Hill project, would displace several wholesalers in these areas.

Discussions with the frozen food dealers in the Providence metropolitan area indicated that they made extensive use of the cold storage warehouse across Harris Avenue from the produce terminal. It was learned also that these dealers would prefer to continue this relationship. Discussions with officials of the cold storage warehouse indicated that they would prefer a new location with deep-water facilities, because of anticipated movements in their business.

In all, various projects would dislocate a large proportion of the existing wholesale food handling facilities in Providence. With so many firms about to move, this seemed to be the time to improve wholesale food handling facilities. From the experience of other metropolitan areas and current research, the most efficient way to provide these facilities at the lowest cost would be to build a wholesale food center.

FACILITIES NEEDED FOR A WHOLESALE FOOD DISTRIBUTION CENTER

Five principles basic to the satisfactory development of a wholesale food distribution center are:

1. Suitability of design of buildings.
2. Proper arrangement and grouping of facilities.
3. Adequacy for both present and future needs.
4. Satisfactory location.
5. Reasonable cost.

The specific kind and amount of facilities planned for the food center suggested here are based on the estimated volume of business and general requirements of all wholesalers in the Providence metropolitan area (except frozen food dealers) and the need for some other facilities for more efficient operation. These 91 dealers (excluding 4 frozen food dealers) handled about 233,550 tons in 1959. In addition, the plan includes space for allied food industries and "service" industries for the food center.

Operations of the firms examined were such that it seemed desirable to provide several types of facilities. Facilities recommended include (1) multiple-store buildings, each of which would house stores for several firms; (2) detached buildings, each with space for one wholesale dealer; and (3) miscellaneous specialized facilities. In general, wholesalers handling large volumes and those requiring special facilities should be located in detached buildings, while dealers not requiring special facilities and those who do not handle large volumes could most economically be placed in multiple-store units. Specific recommendations will be discussed by commodity.

The number of buildings and stores that should be erected depends on the number of responsible wholesalers who would make firm agreements to lease or construct buildings.

Fresh Fruits and Vegetables

The fresh fruit and vegetable wholesalers would require 60 multiple-store units to handle their 1959 volume. This number of units should adequately provide for the 8 carlot receivers, the 13 commodity specialists,and the 10 jobbers located in the Providence metropolitan area. An expansion area of 20 units would provide for possible growth of these firms. Also included was an asphalted area for 120 open stalls where growers and speculators could sell their produce. An expansion area of 60 units also was included.

The total space planned for fresh fruit and vegetable wholesalers was 172,500 square feet in multiple buildings, 9,000 square feet of office space (7,500 square feet net in offices), and 62,000 square yards of asphalt paving for farmers' open stalls. The space recommended in the proposed food center represents a decrease of 82,997 square feet below what has been used.

Multiple Units

In the plan, the 60 multiple-store units would be located in 4 buildings. Each unit would be 25 feet wide, 60 feet deep, and not less than 18 feet high. A 24-foot covered platform at the front and 14-foot covered platform at the rear, with 2 feet in the front and rear walls, make the overall depth 100 feet (fig. 9). The roof over the front platform should extend 6 feet beyond the

platform to provide protection in loading and unloading. The roof-supporting posts, if included in the design, should be set back from the edge of the platform so they will not interfere with the loading operations. A slight deviation in the specifications of these store units would not be particularly objectionable if they satisfied specific needs of the tenants.

The plan provides for continuous platforms and floors on the same level. The front platforms would be at truckbed height, or about 45 inches high, and the rear platforms at refrigerator-car level, or about 55 inches high. A wooden bumper about 6 by 8 inches could be bolted to the top of the front and rear platforms to protect them from damage by trucks. A continuous step along the front platform, about half the height of the platform and at least 24 inches wide, would accommodate small trucks and pedestrians. Under the plan, front-door openings would be 16 to 20 feet wide and rear-door openings 8 feet. A smaller door should be provided in the front door to allow pedestrian entrance without opening the entire large door.

Individual wholesalers may wish to lease two or more units for their operations, so removable partitions with as few columns as possible should be used. Such partitions, however, should be constructed so as to be waterproof. All units in the plan would contain mezzanine offices 15 feet deep by 25 feet wide. These mezzanines would be at the rear of the store and could be used as offices or for light storage. The area of the mezzanines would be approximately equal to the office space previously used by these dealers. To allow for construction of mezzanines that would provide adequate space underneath for walk-in coolers or ripening rooms and sufficient height in the rest of the unit for multiple-pallet stacking, the height of building ceilings would have to be at least 18 feet. All floors and platforms on the first-floor level should be concrete with nonskid surfaces and should be sloped to the drains. Heat would be provided by gas or electric space units. Because of variations in requirements of individual wholesalers, each should equip his store with the amount of refrigeration required.

The double parallel rail tracks provided at the rear of each building should be set into the pavement so that trucks could move over them. These double tracks would furnish extra capacity during peak periods and could be used as team tracks for direct delivery from rail car to buyer's vehicle.

Each store unit of the dimensions suggested would contain 1,500 square feet of first-floor enclosed space, 375 square feet of mezzanine space, 950 square feet of platform space, and 50 square feet of floor space in walls, for a total of 2,875 square feet. This totals 172,500 square feet, compared with 255,497 square feet previously used by these dealers.

Farmers' Stalls

Since the best local information suggested that dealers and growers in the Governor Dyer Market were satisfied with open stalls and would be reluctant to pay for sheds, 120 open stalls were included in the plan. These open stalls would be areas lined off on asphalt paving. Each space would be 10 feet wide by 25 feet deep, without platform or roof.

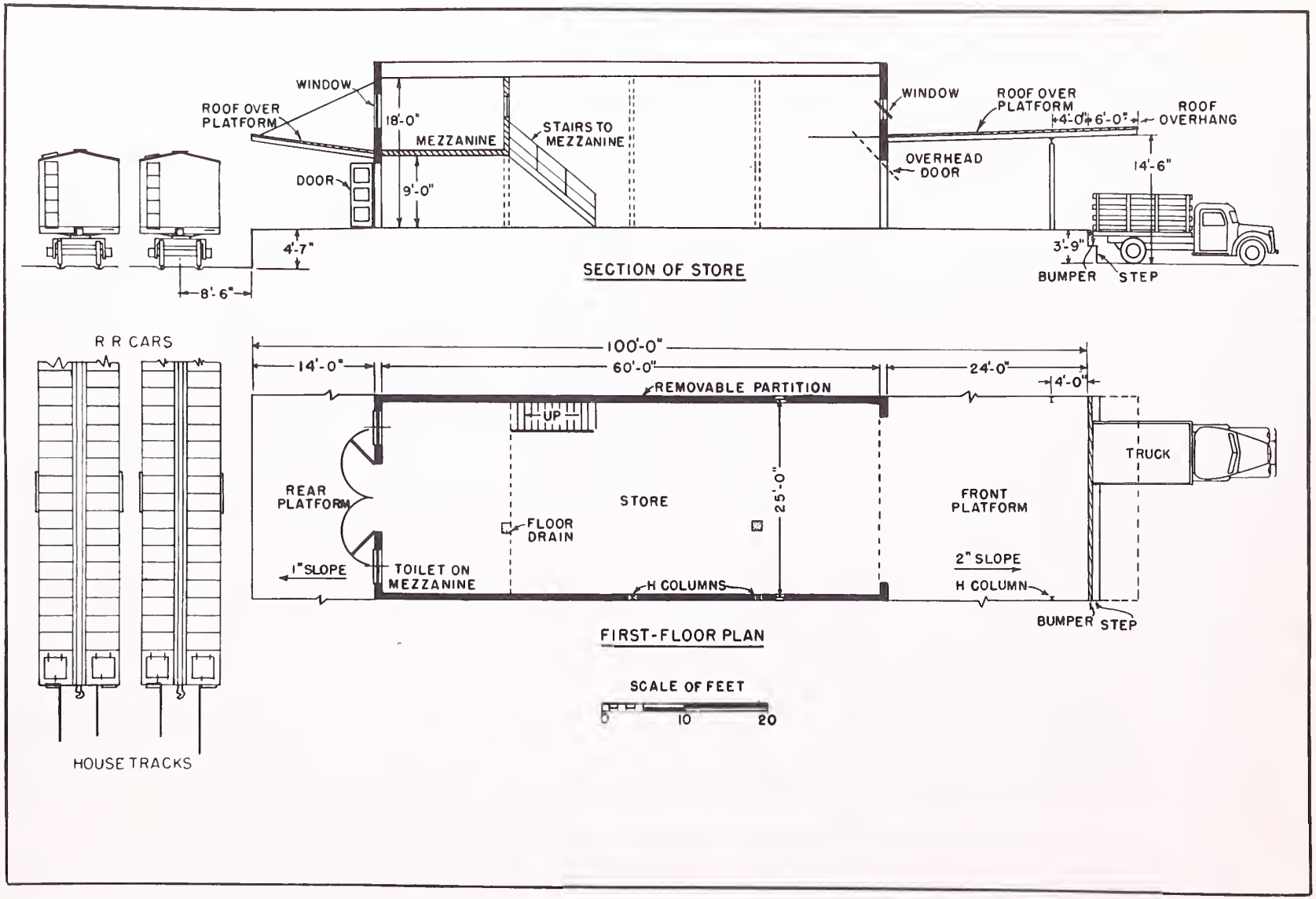

Figure 9.--Suggested plan for fruit and vegetable multiple-store unit with 24-foot platform in the Rhode Island wholesale food center.

Butter, Eggs, and Cheese

Under the plan, the 10 multiple-store units handling butter, eggs, and cheese would be located in one building. Each of these units would be similar to the fresh fruit and vegetable multiple-store units except that the front platform would be only 14 feet deep and the interior of the building would be 70 feet deep. The units would still be 25 feet wide and not less than 18 feet high, and have a 14-foot-deep rear platform and a 6-foot overhang on the front platform roof. The total depth, including the two 1-foot-thick walls, two 14-foot-deep platforms, and 70 feet of building interior would be 100 feet. As in the other multiple units, slight deviations in width and depth or in the width of platforms would not be objectionable if such modifications would enable tenants to improve operating efficiency. The suggested plan for these units is shown in figure 10.

These units also would have continuous platforms and floors on the same level; front platforms at truckbed height, or about 45 inches; rear platforms at refrigerated car level, or about 55 inches; and a continuous step along the front platform about half the height of the platform and at least 24 inches wide to accommodate small trucks and pedestrians. Also, as in the fruit and vegetable units, front door openings would be 16 feet wide and rear door openings at least 8 feet. A smaller door in the front door would allow pedestrian entrance without opening the entire door.

To facilitate the leasing of more than one unit and to allow flexibility in the arrangement of units, removable partitions and relatively few columns should be used. Especially where refrigerated rooms and wet products are to be handled, partitions should be waterproof. All units in this section would contain mezzanine offices similar to those in the fruit and vegetable area (15 feet deep by 25 feet wide) at the rear of the store. These areas could be used for light storage if not needed for offices. All floors and platforms, at least on the first floor, should be concrete, with nonskid surfaces sloped to the drains. Heat could be provided by gas or electric space units. Because of variations in requirements of individual wholesalers, each would probably want to equip his store with refrigeration to meet his own needs.

A single rail track is located at the rear of the butter, egg, and cheese units. Because of the relatively small tonnage of butter, eggs, and cheese arriving by rail, this track is primarily for convenience and as a means of getting cars to the fresh fruit and vegetable sections, but could be used for merchandise if it should be received by rail.

Each of these units would contain 1,750 square feet of first-floor enclosed space, 375 square feet of mezzanine space, and 700 square feet of platform space, for a total of 2,875 square feet per unit, including 50 square feet of floor space in the end walls. These 10 units would total 28,750 square feet. These dealers have been using 32,809 square feet.

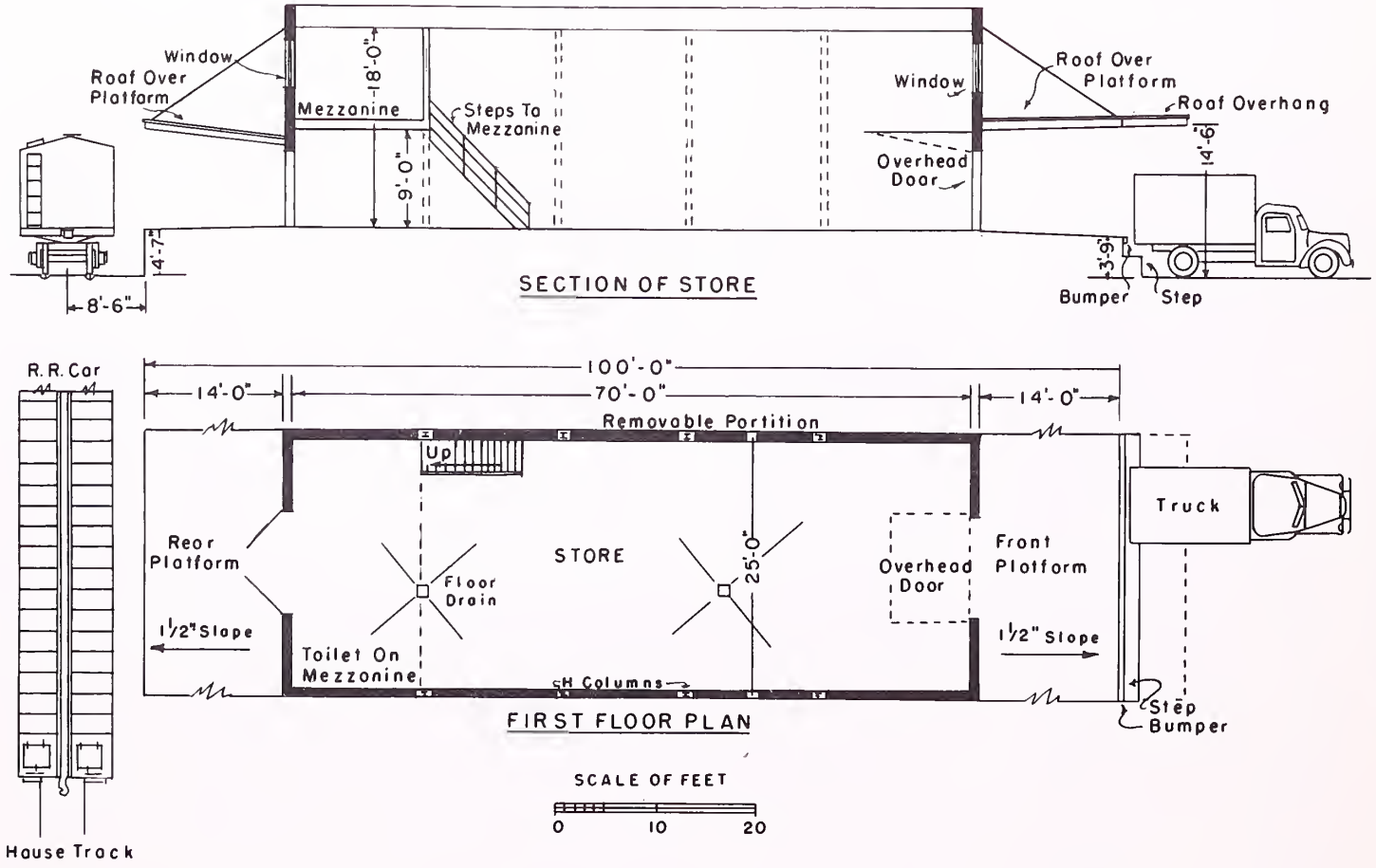

Figure 10.--Suggested plan for multiple-store unit with 14-foot front platform, in the Rhode Island wholesale food center

Poultry

Two types of facilities are suggested for poultry wholesalers. For wholesalers handling only dressed poultry and related products, four multiple units are suggested. For a poultry slaughterer, a separate building containing about 20,000 square feet is suggested. This building should probably be located away from those of other food handlers.

The multiple units, because of the relatively small number, could be constructed as part of the butter, egg, and cheese building, or could be separated if desired. Assuming that the multiple-store units are built to similar specifications (25 feet wide, 70 feet deep, 18-foot-high ceilings, 14-foot front and rear platforms, and 2 feet in the front and rear walls), each unit would contain 1,750 square feet of first-floor enclosed space, 375 square feet of mezzanine space, 700 square feet of platform space, and 50 square feet of floor space occupied by walls, for a total of 2,875 square feet per unit, or 11,500 square feet in the four units.

Because of different dealer requirements, each dealer should provide his own cooler and freezer space and special equipment for poultry dressing or handling so as to best meet his individual needs and the local and Federal regulations.

A single detached building containing 20,000 square feet of floor space is suggested for a poultry processor. The design and layout of this building would be the responsibility of the individual firm, but the building should meet all construction requirements of the U. S. Public Health Service, the Federal Inspection Service, State, city, and county sanitation departments, and city or county building codes. It should also conform to the master plan of the market. 5/ These facilities would total 31,500 square feet of space, compared to 32,830 square feet that has been used.

The building for the poultry processing operation included in the master plan would be 100 feet wide, to conform to the depth of other buildings in the area, 300 feet long, and should have ceilings about 18 feet high. However, dimensions of this building could be varied to the needs of the occupant. The interior design and layout of the building would depend on the operations and preferences of the occupant at the time the building was constructed.

Meat and Meat Products

In the plan are 35 multiple units in 2 buildings, 4 detached buildings for 2 large meat wholesalers, and 2 packer branch houses.

The operations of the meat wholesalers are such that certain modifications would be needed to adapt for their use either the butter, egg, and cheese or the fruit and vegetable multiple unit. For instance, front platforms probably would

5/ For additional information on poultry plant construction, see: Brasfield, Kenneth H., and Wenger, Raymond D., 1958, Remodeling Small Poultry Plants to Meet Inspection Requirements, U. S. Dept. Agr., Agr. Mktg. Serv., AMS-256, 37 pp. illus.

not need be so wide as for the fruit and vegetable units, because much of the merchandise must be kept under refrigeration, and therefore is not displayed. Also, since much meat is currently received in carcass or barreled form, meat rails and low-ceilinged coolers would be indicated. Additional modifications include locker rooms, offices for inspectors, and facilities for sanitary processing procedures required by city, State, and Federal inspection laws.

Possible modifications include a 40-foot-deep mezzanine over the cooler and 14-foot front and rear platforms. To provide for the installation of meat rails, the strength of the mezzanine floors would have to be at least 250 pounds per square foot. The mezzanine could be used for offices, machinery locker rooms, and storage. If more office and storage space were needed, a full second floor could be substituted for a mezzanine. The mezzanine is probably preferable because (1) such construction would cost less, and (2) it would allow more adaptability should future tenants desire higher cooler ceilings or should there be a large increase in the marketing of meats in packaged form resulting in palletized operations.

The plan provides continuous platforms and floors on the same level. As for most of the other stores, the front platforms should be at truckbed level and the rear platforms at refrigerator-car floor level. A wooden bumper should be bolted to the top edge of the front platform, and a continuous step provided along the platform. Door openings at both the front and rear should be adequate for meat handling operations. The front door should not be less than 5 feet wide. The rear door might open directly into a cooler and might be smaller.

Two meat rails should be constructed along the full length of both the front and rear platforms, with crossovers at each store, making it possible to unload meat at any point on the platform and to roll it into the stores. These rails also provide an excellent method for transporting meats among wholesalers within the buildings.

Major requirements of meat wholesalers, besides meat rails, are refrigeration facilities, hot and cold water, and steam. Because of variations in their requirements, individual wholesalers should provide their own refrigeration rooms and equipment. Each building should meet requirements of the Federal Meat Inspection Service, State and city sanitation departments, and city building codes. Each unit operating under Federal meat inspection may need to provide office space for the Federal inspector, either in the unit or in the office building. Special requirements of the Federal Meat Inspection Service must be met regarding employees' locker and toilet rooms, floor drainage, hot and cold water hose connections, and a collapsible retaining compartment for holding retained carcasses and produce in coolers. It is suggested that working drawings for the meat facilities be approved by the Meat Inspection Division of the U. S. Department of Agriculture before construction is undertaken.

The first floor of the store units is planned for meat handling operations. Since the operation of each dealer would vary, the facility requirements also would vary. For instance, a wholesaler doing little cutting might need a

large holding cooler and an unrefrigerated shipping area, while a restaurant supplier would need a relatively small holding cooler and a large area for cutting, packaging, and shipping. A small processor might have his own specifications, such as omission of meat rails if he receives no carcass meat. Possible adaptions of "standard" units for meat and meat product dealers are shown in figure 11. In these floor plans a freezer is included, but it could be omitted if it were not needed. Experience of dealers in such units indicates that freezers are seldom large enough.

The mezzanine would be about 8 feet high, 25 feet wide, and 40 feet deep. The finishing of this area should probably be done by the occupant to suit his own needs. To illustrate a possible arrangement, a typical mezzanine plan is shown in figure 11.

These multiple units, if built along the lines of this discussion, would be 25 feet wide, 70 feet deep, and 20 feet high, have 14-foot front and rear platforms, and have a 40-foot mezzanine over an area that could be used as a cooler. These units would contain 1,750 square feet of first-floor space, 1,000 square feet of mezzanine space, 700 square feet of platform space, and 50 square feet in walls, for a total of 3,500 square feet in each unit or 122,500 square feet in the 35 units.

The design of the four detached buildings for the two larger firms and two packer branch houses should be developed by the individual firms that would occupy them. However, these structures should conform to all codes and the master plan. Illustrative buildings were included in the plan, based on general space requirements of the dealers interviewed. These four detached buildings would contain an aggregate of 150,000 square feet. This plan would provide for 272,500 square feet of usable space, compared to 356,644 square feet that has been used.

Dry Groceries

Dry grocery wholesalers and specialty handlers have operations indicating a need for both multiple-store units and individual detached warehouses. A total of 21 multiple-store units in 1 building and 4 detached warehouses have been included in this plan.

To meet the specific needs of dry grocery wholesalers, some modifications of the "standard" unit appear desirable. Because these dealers make less use of platforms than fruit and vegetable dealers, dry grocery dealers would probably need only 14-foot-deep front and rear platforms. Another desirable modification is that the mezzanine should be at the front of the store instead of the rear. This would allow merchandise to be stacked a full three pallets high in the holding area to the rear of the store. Order assembling, which does not normally need a full 20-foot height, could thus be done in the front of the store in the 10 feet under the mezzanine.

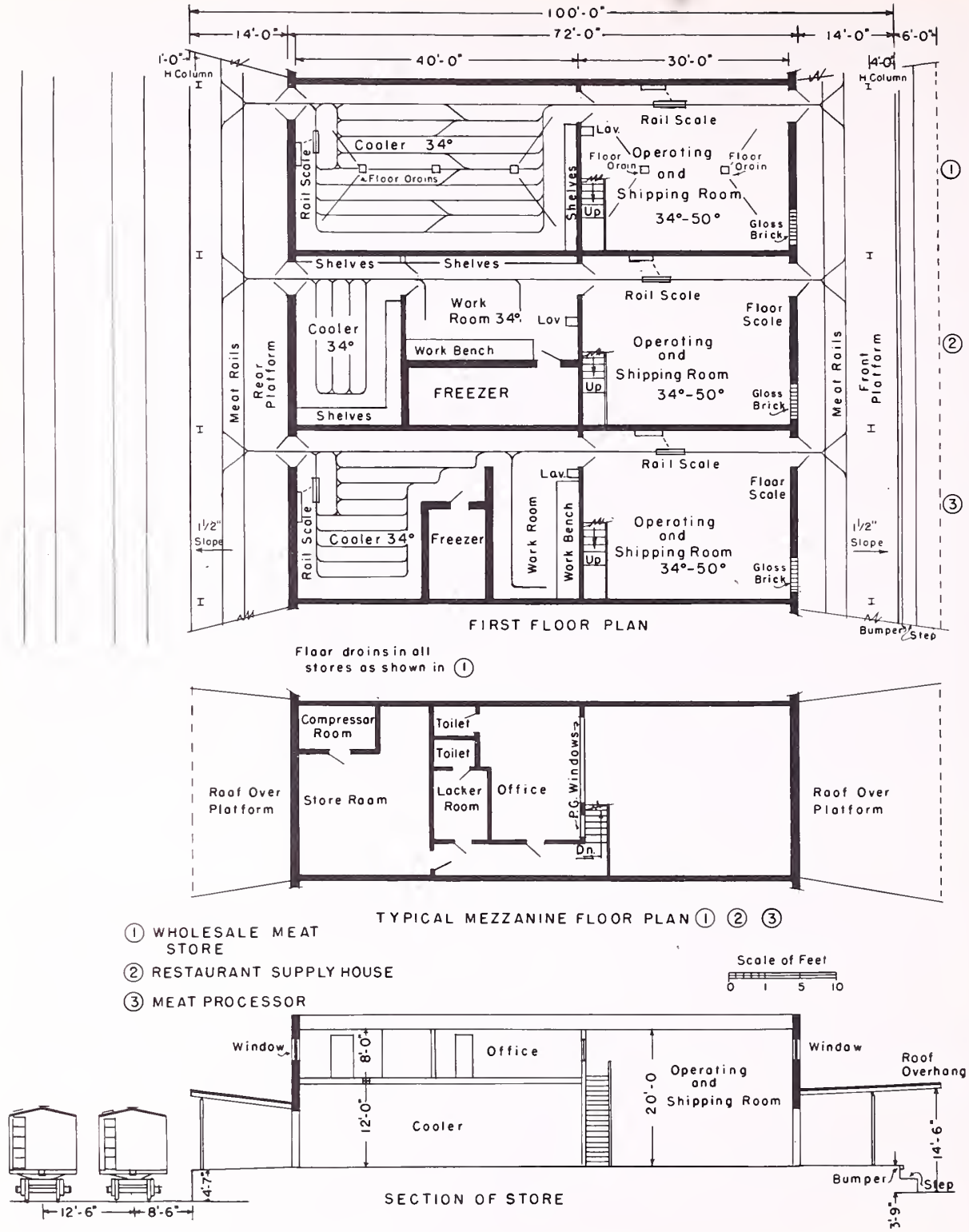

Figure 11.--Adaptations of a "standard" unit possible for wholesale meat dealer, restaurant supplier, and a processor.

The design of these units should provide continuous front platforms at truckbed level (45 inches high), and rear platforms at boxcar-floor level, also 45 inches high. 6/ There should be a wooden bumper and a continuous step along the front platform. Both front and rear door openings should be at least 10 feet wide, with a small pedestrian door for access to the store without opening the larger door. A typical layout showing adaptations of a "standard" unit for a dry grocery dealer is shown in figure 12.

To make it easier for dealers to lease more than a single unit, removable partitions should be used. All units in the plan contain mezzanine offices 15 feet deep, 25 feet wide, and about 8 feet high, located in the front of the store. The ceiling height of at least 20 feet would allow three-pallet stacking. All floors and platforms on the first-floor level should be concrete with nonskid surfaces.

Each unit would contain 1,750 square feet of first-floor enclosed space, 375 square feet of mezzanine space, 700 square feet of platform space, and 50 square feet of floor space in walls, for a total of 60,375 square feet in the 21 units.

The four dry grocery wholesalers, because of their individual requirements, should design the facilities they would require. These buildings should conform to all codes and the master plan. Illustrative buildings were included in the plan, based on general space requirements of dealers interviewed. These four detached buildings would contain an aggregate of 140,000 square feet. This plan calls for a total of 200,375 square feet of usable space, compared to 392,892 square feet that has been in use.

Rail Connections to Stores

Direct rail connections should be provided to each building occupied by dealers who receive food products by rail. The number of tracks needed would vary according to the volume of rail receipts. Under the plan, double tracks would be provided at the rear platforms of most buildings, but one would have only a single track. Where there are two tracks, the one farther from the building could be unloaded through a car on the inside track. In cases where direct sales were made from the car, the second track would function almost as a "team track."

The streets at the rear of the stores should be paved between and level with the top of the rails, so that the rear platforms could be used in loading or unloading trucks when the tracks were not occupied by rail cars, and so that the areas would be easier to keep clean.

6/ The 45-inch height is the average height of U. S. boxcars. This should not be confused with the average height of refrigerated cars, which are 55 inches high because of the racks on the floors.

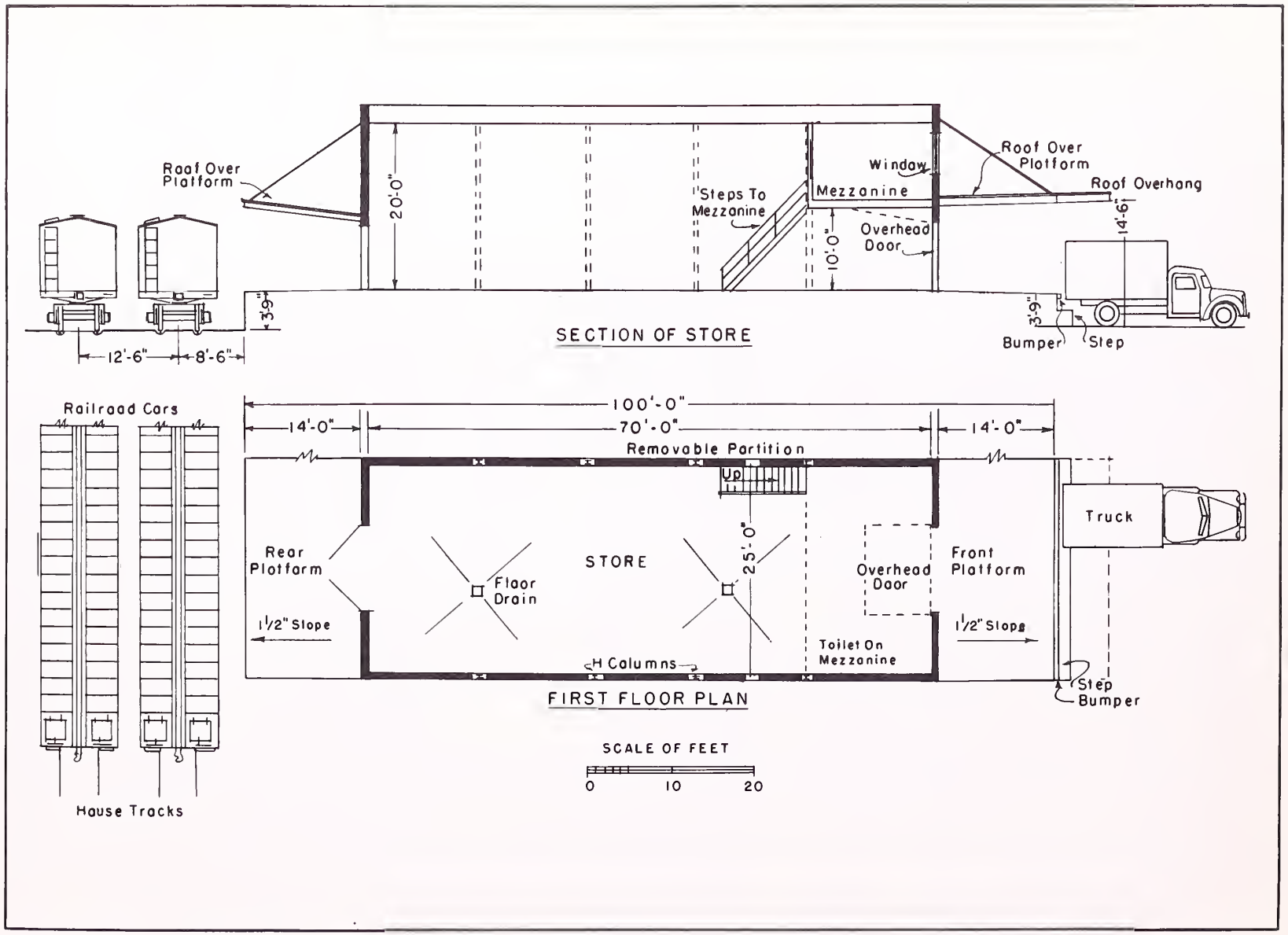

Figure 12.--Layout showing adaptation of a "standard" unit for a dry grocery dealer.

Streets and Parking Areas

The major streets in the food center should be paved to carry heavy traffic and to facilitate drainage away from the buildings. Paving consisting of a 7-inch rock or gravel foundation, 4 inches of macadam, and 2 inches of asphaltic concrete surface was assumed. All parking at the buildings should be at right angles to the loading platforms. Where two rows of buildings face the same street, and center parking is planned, the streets should be 160 to 190 feet wide, to provide for parking of trucks at right angles on each side of the street, for center parking, and sufficient space for the flow of traffic. Other streets might vary from 60 to 100 feet, depending on their use and the traffic load. In some cases it would be necessary to provide angle parking for cars and trucks, while in others only sufficient space to handle traffic would be needed.

Convenient parking spaces should be provided near the stores for vehicles that are not actually being loaded or unloaded. Such parking areas would be used for parking trucks bringing in supplies, for those that are not ready to unload, for buyers' cars and trucks coming to the food center for supplies, and also employees' cars. The parking areas should be as near the buildings as possible but should not interfere with market streets or loading areas. They should be marked off to permit orderly parking and to conserve space. It is suggested that parking space for about 1,200 vehicles be provided, in addition to the spaces along store platforms.

Other Facilities and Services

In addition to facilities for the major food commodity wholesalers, certain other facilities would be necessary or desirable. The 24 offices would provide room for brokers, shippers' agents, a bank, a communication center, and other types of operations. Such office space could be built most economically on second floors above multiple-store units. The actual number of offices constructed would depend upon requirements at the time of construction. Estimates here were based upon the actual number of food brokers in the market and the probable requirements of the various office occupants as previously enumerated.

To serve the market, a container shed of 20,000 square feet was included in the plan. This shed should be located away from food handling areas. Construction of this facility could be the most economical possible consistent with the facility function.

Areas in a food center should also be allocated for wholesalers in related food businesses. For example, a refrigerated warehouse or bakery might be located in the food center. A total of 31 acres is provided for allied industry in this plan.

In the proposed food center, a diner and a gasoline and truck service station were included near an entrance to the market. Public restrooms could be near the diner.

ARRANGEMENT OF FACILITIES IN A WHOLESALE FOOD DISTRIBUTION CENTER

In arranging the facilities of the various wholesalers on a given site, it is necessary to consider the basic objectives of commodity handling, which are:

1. Delivery of commodities to the facilities of a wholesaler in the original transportation units and without breaking bulk units.

2. The most expeditious and economic grouping of commodities into the units desired by customers.

3. Economical and sanitary movement of commodities to retailers and, ultimately, to consumers.

4. Effect on future development.

The designer of a wholesale food market, though primarily interested in the basic economic and functional objectives, should also consider the esthetic values.

Factors Considered

Factors in achieving the economic and functional objectives include location (to be considered next) and design of the food center. While various modifications are necessary for specific sites, the basic principles of market design can best be illustrated by assuming a level, rectangular site. Such a design, as presented in figure 13, could readily be adapted to a wide range of sites. A scale model of a possible wholesale food center, shown to interested persons at a public hearing, is shown in figure 14.

The layout in figure 13 illustrates one of many possibilities for food center development. This plan follows commodity groupings and segregates types of facilities. It promotes compactness but does not isolate any part. This type of development lends itself to sectional development along lines usually used in industrial parks. Expansion for each section, as well as general expansion for allied industry, is allowed within the area. The types of buildings would be readily adaptable to changing functions within the food industry. Adequate rail spurs, parking, and roadways have been included.

The fresh fruit and vegetable section was placed near the main entrance to keep a large segment of market traffic as close to the entrance as possible. Multiple stores for dealers in poultry, butter, eggs, and cheese, dry groceries, and meat and meat products were located near the fresh fruit and vegetable section because of the similarity in types of buildings, for the convenience of buyers, and for interchange of products. Office space on the second floor of one multiple-unit building was provided for market management, service facilities, and businesses dependent on the food industry. Farmers' stalls were located in a contiguous area because of interdependence of business.

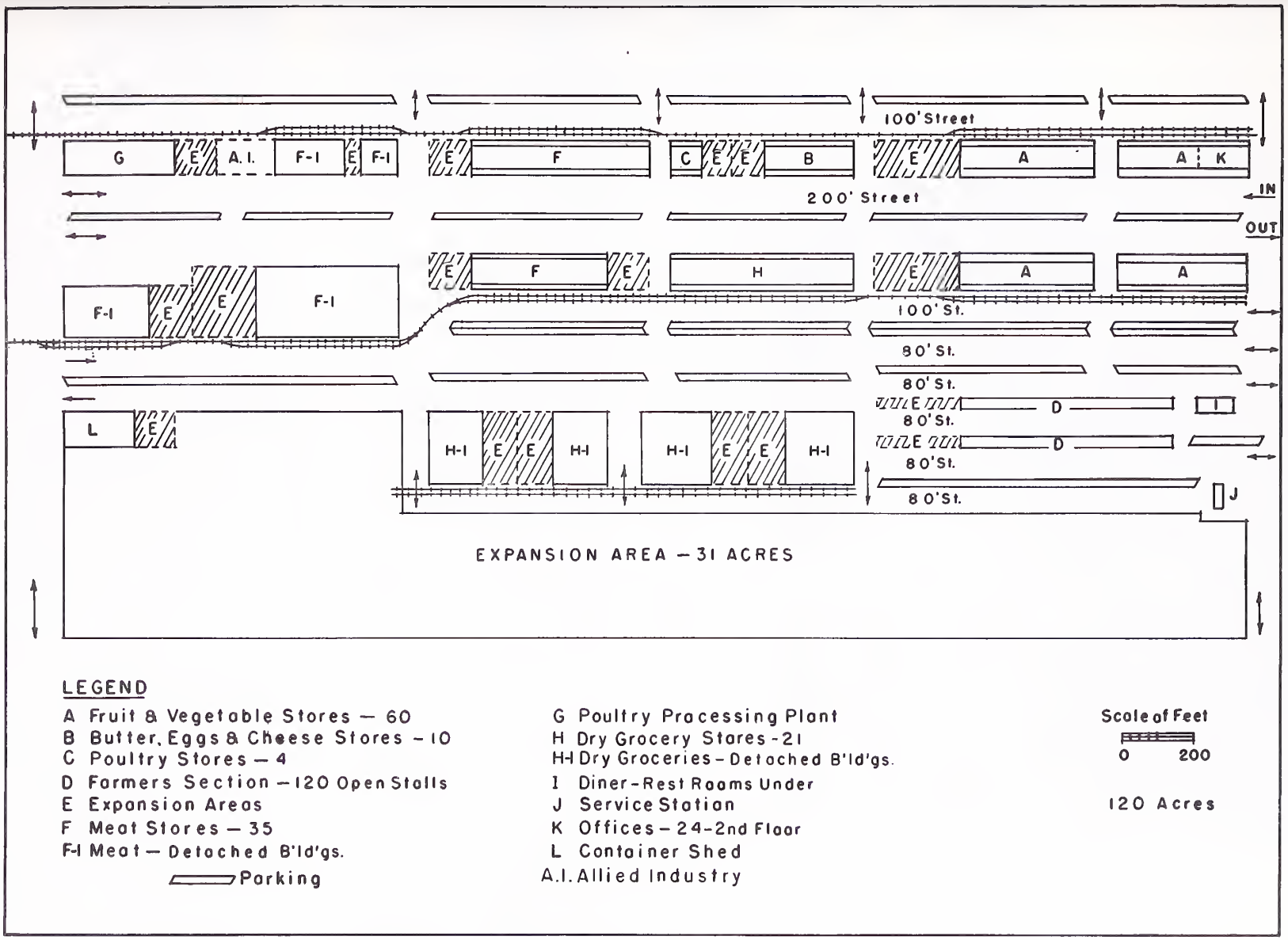

Figure 13.--Hypothetical layout of a wholesale food center in Rhode Island.

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Figure 14.--Interested persons viewing the model of the wholesale food center plan for Rhode Island.

Detached buildings were provided for the large firms dealing in meat and meat products and dry groceries. The access streets were planned so that traffic to these warehouses would not have to enter and leave the food center through other commodity areas. The poultry processing plant was located away from strictly wholesaling areas, because of the nature of this operation.

Provision should be made for rail tracks and parking areas in any food center plan. An area of 31 acres was included for allied food industries. A total of 120 acres would be adequate to provide for the needs of a complete wholesale food distribution center and for the facilities enumerated in this report.

Future Needs

In planning a food distribution center, both immediate and possible future needs should be considered. In the future, additional stores of the type originally constructed or other types of facilities may be needed. While the primary function of this food center would be the wholesaling of food products, other types of suitable industry could be accommodated on additional acreage. These facilities could provide space for food shippers, transportation and general warehousing companies, food processing plants, equipment wholesalers, and other allied industries. Provision might also be made for various service facilities if such facilities were not already available near the site selected.

The experience of other cities that have built wholesale food centers indicates that many types of wholesalers and food handlers gravitate to the market area over a period of time. In addition, wholesalers initially on the market frequently expand operations, or entire commodity areas may enlarge substantially.

SELECTING A SITE

During this study, numerous areas were examined in order to determine their potentials as sites for the proposed food center. Sites were considered in all parts of the State, and, after careful analysis, five were selected as worthy of consideration for this type of development. Some of the areas would require considerable demolition of structures to acquire the necessary acreage, and one site would require removal of substantial railroad trackage.

These sites comply with the various City Plan Commission land use development plans. These areas also have reasonable access to present or planned major traffic arteries and are accessible by rail.

The five sites studied are in Providence, Pawtucket, Ashton-Berkely, and Warwick. The acreage in these sites ranged from 95 to 450 acres. If the 95-acre site were used,only 6 acres would be available for allied industries. Locations and features of sites are shown in figure 15.

New Haven Railroad Hump Yard Site

The New Haven Railroad Hump Yard site, consisting of approximately 160 acres in a narrow rectangular shape (650 feet wide), is used by the railroad as a classification and storage yard. The boundaries of this site are: North, Main Street extended, Pawtucket; south, Branch Avenue; west, Silver Spring Street; and east, Smithfield Avenue. The site is partially in both Providence and Pawtucket. This fairly level area would be suitable for the proposed type of construction, and would probably require no piling. It is 2 miles from the State capitol, and is at one of the proposed traffic interchanges of Interstate Highway 95. It is served by the New Haven Railroad, and all public utilities are available. To prepare this site for construction, it would be necessary to remove extensive trackage and relocate the New Haven main line tracks to one side.

Data from the Providence City Plan Commission indicated that the value of the entire 160 acres would be about $1,400,426 7/ for the land and about $983,912 for the facilities on the land, a total of $14,900 per acre. In addition, putting this site in condition to build would cost about $100,000. This would include the cost of removing the rail tracks and relocating at least one main track, but would credit the scrap value of the removed rails. The total cost, in condition to build, for this site would thus be about $15,500 per acre, or a total of $1,860,000 for the 120 acres needed for a food center.

7/ Computed from assessment records of the State of Rhode Island, State Board of Tax Equalization data, and advice of local realtors and contractors.

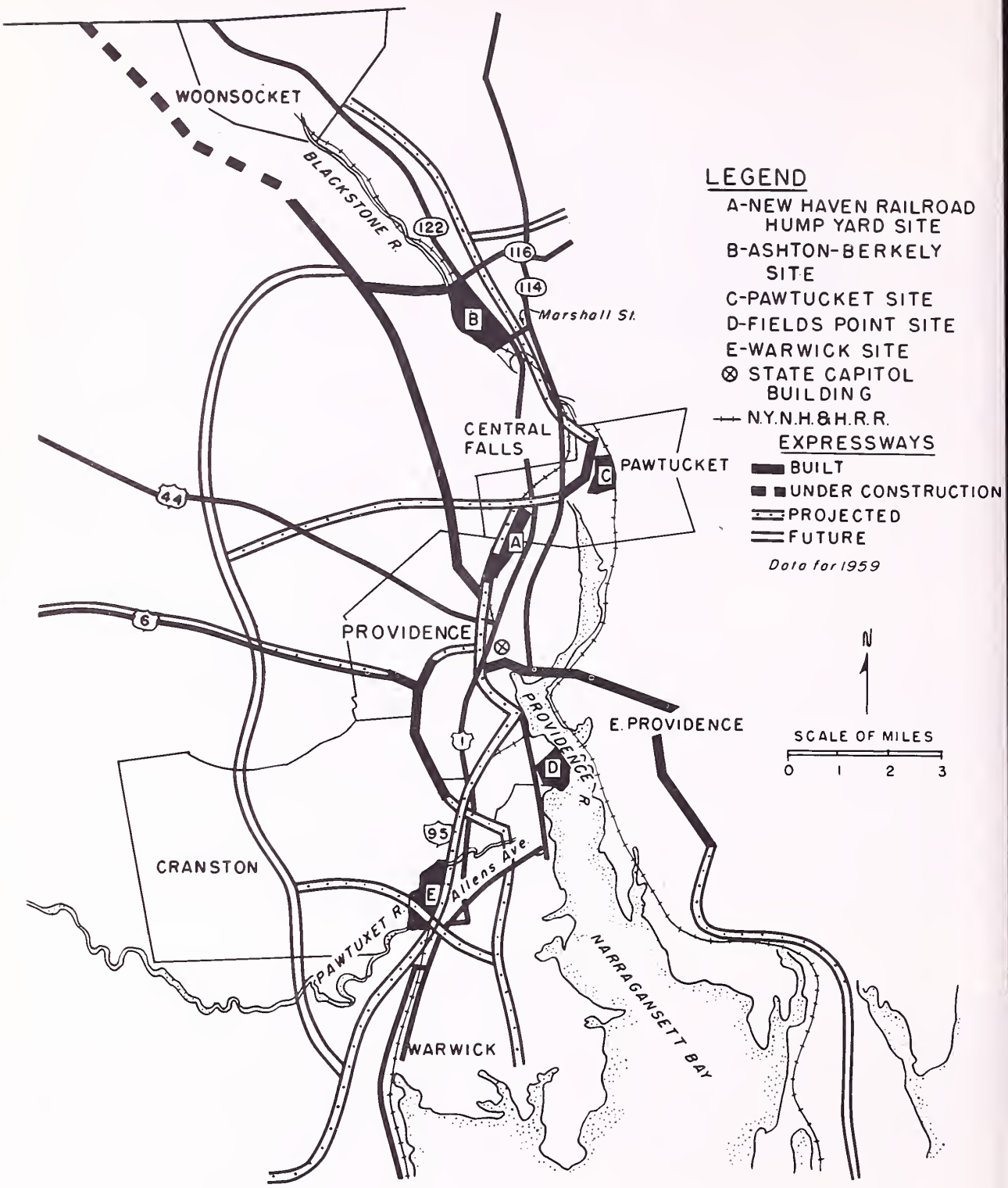

Figure 15.--Location of possible food center sites in Rhode Island.

The primary advantage of this site is its location. It adjoins a proposed interchange of a north-south expressway. It is mostly in Providence and would provide convenient access to almost all food handlers in Rhode Island and nearby Massachusetts. In addition, the site is under one ownership. The primary disadvantage is the shape.

Ashton-Berkely Site

The Ashton-Berkely site, in the town of Ashton-Berkely, contains approximately 125 acres which would require little grading. The boundaries of the area are: North, route 16; south, Marshall Avenue extended; west, Blackstone River; and east, route 122. It would be necessary to demolish some buildings and remove a small number of trees. The Blackstone River, under certain hurricane conditions, floods the area. While the completion of the Fox Point hurricane barrier will practically eliminate this threat, it is possible that some piling would be necessary for buildings near the river. This area would also require a private sewage disposal system or a 2-mile connection to Blackstone Valley Sewer District. The site is approximately 7 miles north of the State capitol and is served by the New Haven Railroad.

The cost for the land and the structures existing on this site would be about $300,000. It is believed about 200,000 square feet of building near the river would probably require piling. Local contractors estimated that 30- to 40-foot, 20-ton noncapped piles would cost about $1.50 per square foot, or about $300,000 for this site. In addition, approximately 2 miles of connector sewer lines would be necessary to connect with the nearest existing sewer lines. The cost of this connector would be about $100,000. This connector would probably cost less over an extended period than a private sewerage plant. Grading, filling, and other miscellaneous clearing costs would be about $50,000. Thus, the total cost of the 125 acres in this site would be $750,000, or $6,000 per acre. The 120 acres required for a wholesale food center would cost $720,000.

This site is at an interchange of the proposed interstate highway encircling Providence. Although away from existing wholesale marketing areas, it has the advantage of being relatively level and having few existing structures. It is in the direction of metropolitan growth.

Pawtucket Site

The Pawtucket site, in the city of Pawtucket, contains 95 acres. The area is bounded on the north by Armistice Blvd., on the south by McCoy Stadium, on the west by South Bend Street, and on the east by New Haven Railroad tracks. These tracks are on the Pawtuxet Branch. This site is fairly level, but would require grading and removal of some housing to obtain sufficient acreage. It is believed that the site would not require piling. The 95 acres available would not provide sufficient acreage for allied food industries. In order to use this acreage, demolition of several buildings and residences would be necessary.

Data from the Pawtucket City Plan Commission indicated that the value of the 95 acres in this area would be about $1 million plus $462,000 for the buildings now on the site. The total cost would be about $15,500 per acre. About $100,000 would be required to put the site in condition to build, including grading and demolition of present buildings. The total cost of 95 acres, in condition to build, would be about $1.6 million or $16,600 per acre. The 120 acres needed would cost about $2 million.

This site is in an area which the City Plan Commission would like to develop for light industry. It is 4 miles from the State capitol. The area, although not on an expressway, is accessible to major traffic arteries. Public utilities serve it.

Fields Point Site

The Fields Point site consists of approximately 440 acres adjoining the shipping channel of Narragansett Bay. Boundaries of this area are: North, New York Avenue extended; south, Narragansett Bay; west, Michigan Avenue; and east, Providence River. Part of this land is sanitary land fill. All of this site is vulnerable to inundation during severe high tides accompanying hurricanes. In 1955, there was 8 feet of water on it.

Because of the high water table in the area and the filled nature of the land, extensive piling would be required. All buildings would probably require 60- to 80-foot concrete capped piling. In addition, sewers and utilities would probably require cradle piling.

Substantial additional grading and filling would be necessary to give protection from high tides. Bulkheading and a sea dike would be desirable to protect the property from severe hurricane damage. The buildings used during World War II as a shipyard would be of little value to the food center.

The city of Providence would like to attract industry needing deep-water port facilities. If such an industry moved in, the food center would be located back from the waterfront. On this assumption, computation of the cost of 120 acres for the food center assumes only proportionate costs of developing the entire 440 acres.

The cost of the land and existing buildings would be $15,540 per acre. Piling for all buildings, computed at $5.50 per square foot, and cradle piling for sewer lines would cost about $4 million for the required 120 acres. Grading, filling,and establishing a bulkhead seawall would add about $5 million. The cost of the seawall could be prorated among industries which might be located in this area. This would tend to reduce slightly the cost per acre. Thus, the total cost of this site would be about $28,300 per acre. The cost of 120 acres would be $3.4 million.

Although this site has severe disadvantages, it is located near the center of the city, 3 miles from the State capitol, and is the only site completely within the Providence City limits. It is near Allens Avenue, a major traffic artery, now carrying route U.S. 1A. The site is not far from the Cranston Yard of the New Haven Railroad, and, according to railroad officials, it could be served efficiently.

Warwick Site

The Warwick site, in the city of Warwick, is bounded on the north and the west by the Pawtuxet River, on the south by the proposed expressway cloverleaf, and on the east by the New Haven Railroad shore line. The site contains about 143 acres and is served by public utilities. It would require substantial grading, fill, and demolition of a few houses. This area, due to its proximity to the Pawtuxet River, probably would require some piling and would need an earth dike to protect it from flash flooding. It is about 5 miles from the State capitol. It is not accessible to trucks, because the only entrances to the property are a narrow railroad underpass and a narrow overpass. However, interstate highway plans indicate that the interchange of two major interstate highways will be adjacent to this property, and after the completion of this interchange, the property would be readily accessible to all types of vehicles. Utilities are available.

The cost of the land for this site would be $300,000 for the 143 acres. Structures and their demolition would add $100,000. Grading and an earth dike would add $200,000. The cost of 30- to 40-foot, 20-ton noncapped piling for approximately 200,000 square feet of building, at $1.50 per square foot, would be about $300,000. Thus, the total cost of this site would be $900,000, or $6,300 per acre. The cost of 120 acres at this price would be $756,000. Disadvantages include multiple ownership, and the piling and grading necessary.

Harris Avenue Redevelopment

In addition to the sites here enumerated, there is also a possibility of building a food center around the present Harris Avenue Produce Terminal. Such a site might be developed through urban renewal. If the final highway plans did not call for demolition of the present terminal, it could become part of a food center, and the Governor Dyer Farmers' Market could be retained. Buildings between the produce terminal and farmers' market could be demolished to provide sites for additional food center buildings. The cost of such a site would depend upon many factors, but with urban renewal, costs might not be too high for a food center. Selection of this area as the site would necessitate careful attention to such problems as traffic flow and orderly arrangements, so as to achieve the potential economies and conveniences of a food center.

Costs of Sites

At the time of this study all known sites were examined and studied. Other potential sites which have not been evaluated may exist. The basic criteria used in selecting sites included: Adequate land in a convenient shape, reasonable proximity to the area served, accessibility to railroads and present or proposed traffic arteries, and economical price.

The cost per acre of these sites in ready-to-build condition would be:

New Haven Railroad Hump Yard site	$15,500
Ashton-Berkely site	6,000
Pawtucket site	16,600
Fields Point site	28,300
Warwick site	6,300

The cost of these properties, although estimated as accurately as possible, at the time of this report, certainly cannot be known until a definite option to buy is signed. This might be several years in the future, or the property might sell for a different value, or various other factors might affect the price of a specific piece of the land. For this reason, and to simplify the presentation, an arbitrary land value was assumed. This value was a compromise of the various most probable sites, and represents the "probable cost for light industrial property" in metropolitan Providence. In the analysis of the estimated cost presented next, it will be assumed that the land in ready-to-build condition will be available at $16,000 per acre, or about 37 cents per square foot. If, at the time of purchase, land prices are higher or lower, the appropriate adjustment can be made in total project cost. In general, a 10 percent increase in land cost will increase the total project costs about 2 percent. A 100 percent increase in land costs would increase the project costs about 19 percent.

ESTIMATED INVESTMENT COST

The cost of a complete food center in Rhode Island would involve two major components, land and facilities. Considerable variation in each of these is possible, depending upon the location and construction of the facility.

Land

As previously discussed, the cost of 120 acres of land "in condition to build" would depend upon which site was chosen and could vary from about $720,000 to $3.4 million. To estimate probable land costs, for purposes of this report, a land cost of $16,000 per acre, or about $1,920,000 for the 120 acres, was assumed. This value was selected as the representative value per acre for the sites. This price compares favorably with recent costs in Providence for light industrial developments. The estimate does not include costs of paving streets or extending utilities, sewers, and other similar services to individual stores, which are included in individual building construction costs. After final selection of a site, the actual value of the land could be used in a refined cost estimate.

Facilities

Facility costs are estimated on the basis of construction indexes as of March 1960, costs of similar facilities recently constructed, and estimates made by local contractors.

Floor space needed in the initial construction will depend not only on present needs but also on plans for expansion. Actual space used may differ considerably from these estimates when final plans for construction are completed. These estimates of space and facilities are based on estimates of area business trends.

Estimated construction costs are not intended to replace firm estimates made by local architects and contractors, and should be considered only as illustrative cost estimates.

Cost estimates are for structures of the type previously described. The multiple-store units throughout the food center would be similar, although adaptations would be made for certain commodity requirements. They would not have finished offices (except the 24 offices on the second floor of the fruit and vegetable building), but would include a mezzanine with stairway and railing, toilet facilities, sill cocks (spigots), fluorescent lighting fixtures, display lighting outlets, gas or electric space heaters, and platform lighting.

Detailed building cost estimates are for the shell only and do not include the various features that individual dealers might include in the design. Cost estimates are based on construction of the "light mill" type.

Paved surface estimates for each section include the prorata share of food center streets. Paving costs assume 7 inches of gravel or crushed rock foundation, 4 inches of macadam base, and 2 inches of asphaltic concrete surface. Concrete paving was assumed to be 6 inches, reinforced. Concrete paving is suggested in areas where gasoline and oil may drip, because of the dissolving effect of such chemicals upon asphalt.

Utility connections for all buildings, including electricity, were assumed to be underground. Other costs of construction, such as the architect's fee (6 percent), the construction loan (5 percent), and the contingency fund (10 percent), are the standard rates charged or included in construction. The cost of the construction loan (5 percent), represents the total cost of the loan and is not an interest rate.

The following sections list the cost estimates by type of building and by commodity handled in each type of structure. Unless otherwise specified, the facilities in each section would not differ from the general assumption just presented.

The 24 offices on the second floor of the one multiple-store building would be completely finished, ready for occupancy, but would not include office equipment or furnishings. The farmers' stalls would not have platforms, but would be areas lined off on the asphalt paving.

The following tabulations present estimated costs of facilities for the different groups of wholesalers, on the basis of values in early 1960:

Fresh Fruits and Vegetables

Buildings:	
60 multiple units in 4 buildings--2,875 sq. ft. per unit (including mezzanines) @ $21,645 per unit or $7.53 per sq.ft.	$1,298,700
24 offices over multiple fruit and vegetable units--9,000 sq.ft. (7,500 sq.ft. net office space) @ $10 per sq.ft.	90,000
Container shed--20,000 sq. ft. @ $3.85 per sq. ft.	77,000
Other facilities:	
120 farmers' open stalls, 62,000 sq.yds.--Blacktop paving @ $2.50 per sq. yd.	155,000
Paving:	
6" reinforced concrete in front of:	
Loading dock, 2,083 sq.yds. @ $5 per sq.yd. 1/	10,415
Blacktop paving, 11,112 sq.yds. @ $2.50 per sq.yd. 2/	27,780
Tracks:	
4,200 ft. @ $10 per linear ft.	42,000
1 switch @ $2,500	2,500
Sewers:	
1,600 ft. 12" sanitary @ $3	4,800
2,000 ft. 15" storm @ $4	8,000
Floodlights:	
20 @ $150 each	3,000
Fence:	
7 ft. high, 3,480 ft. @ $4 per ft. 3/	13,920
COST OF BUILDING AND FACILITIES...	$1,733,115
Architect's fee--6% of construction costs	103,987
Cost of construction, including architect's fee	1,837,102
Allowance for cost of borrowing construction funds, 5% of construction costs and architect's fee	91,855
Cost of construction including architect's fee and cost of construction loan	1,928,957
Contingency allowance on all costs @ 10% of construction costs, architect's fee, and construction loan	192,896
TOTAL COST OF BUILDINGS, OTHER FACILITIES, & ASSOCIATED COSTS.	2,121,853
Cost of 30 acres of land @ $16,000 per acre	480,000
TOTAL INVESTMENT COST.....	$2,601,853

1/ Computed to extend for the length of the multiple units and 50 ft. in front of each unit.

2/ Computed as total sq. yds. minus building expansion and other paving.

3/ Computed to include 3 sides and 330 ft. on 4th side as the prorata share of all fencing.

Buildings:	
10 multiple units in 1 building, 2,875 sq. ft. per unit(including mezzanines)@ $22,350 per unit or $7.77 per sq. ft. 1/	$223,500
Other facilities:	
Paving:	
6" reinforced concrete in front of loading dock, 1,389 sq. yds. @ $5 per sq. yd.....	6,945
Blacktop paving--15,193 sq. yds. @ $2.50 per sq. yd.....	37,982
Tracks:	
200 ft. @ $10 per linear ft.....	2,000
Sewers:	
300 ft. 12" sanitary @ $3.....	900
400 ft. 15" storm @ $4.....	1,600
Floodlights:	
4 @ $150 each.....	600
Fence:	
7 ft. high, 350 ft. @ $4 per ft.....	1,400
COST OF BUILDING AND FACILITIES.....	274,927
Architect's fee--6% of construction costs.....	16,496
Cost of construction including architect's fee.....	291,423
Allowance for cost of borrowing construction funds, 5% of construction costs and architect's fee.....	14,571
Cost of construction including architect's fee and cost of construction loan.....	305,994
Contingency allowance on all costs, 10 percent of construction costs, architect's fee, and construction loan.....	30,599
TOTAL COST OF BUILDINGS, OTHER FACILITIES & ASSOCIATED COSTS.....	336,593
Cost of 4 acres of land @ $16,000 per acre.....	64,000
TOTAL INVESTMENT COSTS	$400,593

1/ The higher cost per unit or square foot would include specialized equipment such as additional floor drains and a 70-foot-deep enclosed area.

Buildings:	
4 multiple units in one building, 2,875 sq. ft. per unit, including mezzanines, @ $22,350 per unit, or $7.77 per sq.ft...	$ 89,400
1 detached building containing 20,000 sq. ft. @ $8 per sq.ft.....	160,000
Other Facilities:	
Paving:	
6" reinforced concrete in front of loading dock, 555 sq. yds. @ $5 per sq. yd.....	2,775
Blacktop paving, 9,798 sq. yds. @ $2.50 per sq. yd. 1/.....	24,495
Tracks:	
600 ft. @ $10 per linear ft.....	6,000
Sewers:	
400 ft. 12" sanitary @ $3 per linear ft.....	1,200
500 ft. 15" storm @ $4 per linear ft.....	2,000
Floodlights:	
6 @ $150 each.....	900
Fence:	
7 ft. high, 700 ft. @ $4 per ft.....	2,800
COST OF BUILDINGS AND FACILITIES...	$289,570
Architect's fee--6% of construction costs.....	17,374
Cost of construction including architect's fee.....	306,944
Allowance for cost of borrowing construction funds, 5% of construction costs and architect's fee.....	15,347
Cost of construction including architect's fee and cost of construction loan.....	322,291
Contingency allowance, 10% of construction costs, architect's fee, and construction loan.....	32,229
TOTAL COST OF BUILDINGS, OTHER FACILITIES, AND ASSOCIATED COSTS..	354,520
Cost of 5 acres of land @ $16,000 per acre.....	80,000
TOTAL INVESTMENT COSTS.....	$434,520

1/ Paving costs assume that 2/3 of the detached building acreage not covered by structure would be paved for parking and driveways. The remainder, it is assumed, would be sodded.

Buildings:	
35 multiple units in 2 buildings, 3,500 sq. ft. per unit (including mezzanines) @ $22,863 per unit or $6.53 per sq. ft.	$ 800,205
4 detached buildings, 150,000 sq. ft. @ $8 per sq. ft. 1/	1,200,000
Other Facilities:	
Paving:	
6" reinforced concrete in front of loading dock, 39,861 sq. yds. @ $5 per sq. yd.	199,305
Blacktop paving, 54,728 sq. yds. @ $2.50 per sq. yd.	136,820
Tracks:	
4,500 ft. @ $10 per linear ft.	45,000
1 switch @ $2,500	2,500
Sewers:	
2,800 ft. 12" sanitary @ $3	8,400
2,400 ft. 15" storm @ $4	9,600
Floodlights:	
16 @ $150 each	2,400
Fence:	
3,000 ft. @ $4	12,000
COST OF BUILDINGS AND FACILITIES	2,416,230
Architect's fee - 6% of construction costs	144,974
Cost of construction including architect's fee	2,561,120
Allowance for cost of borrowing construction funds--5% of construction costs and architect's fee	128,056
Cost of construction including architect's fee and cost of construction loan	2,689,176
Contingency allowance on all costs @ 10% of construction costs, architect's fee, and construction loan	268,918
TOTAL COST OF BUILDINGS, OTHER FACILITIES, AND ASSOCIATED COSTS	2,958,094
Cost of 30 acres of land @ $16,000 per acre	480,000
TOTAL INVESTMENT COST	$3,438,094

The cost of the multiple units was computed by adding the cost of the basic unit, $22,350, the cost of the additional mezzanine, $313, and the cost of the mezzanine floor, to carry a load of 250 pounds per square foot, $200, for a total cost per unit of $22,863. The total cost was divided by the total square footage to compute the cost per square foot.

1/ The cost per square foot is less than for comparable multiple units although the total cost is more because these units are assumed to have 625 square feet more mezzanine space than comparable units.

Dry Groceries

Buildings:	
21 multiple units in one building, 2,875 sq. ft. per unit (including mezzanines) @ $22,350 per unit or $7.77 per sq.ft...	$ 469,350
4 detached buildings containing 140,000 sq. ft. @ $8 per sq.ft...	1,120,000
Other Facilities:	
Paving:	
6" reinforced concrete in front of loading docks, 10,139 sq. yds. @ $5 per sq. yd.....	50,695
Blacktop paving, 41,072 sq. yds. @ $2.50 per sq. yd.....	102,680
Tracks:	
2,350 ft. @ $10 per linear ft.....	23,500
Sewers:	
2,000 ft. 12" sanitary @ $3 per linear ft.....	6,000
2,400 ft. 15" storm @ $4 per linear ft.....	9,600
Floodlights:	
22 @ $150 each.....	3,300
Fence:	
7 ft. high, 1,700 ft. @ $4 per ft.....	6,800
COST OF BUILDINGS AND FACILITIES....	$1,791,925
Architect's fee--6% of construction costs.....	107,516
Cost of construction including architect's fee.....	1,899,441
Allowance for cost of borrowing construction funds--5% of construction costs and architect's fee.....	94,972
Cost of construction including architect's fee and cost of construction loan.....	1,994,413
Contingency allowance--10% of construction costs, architect's fee, and construction loan.....	199,441
TOTAL COST OF BUILDINGS, OTHER FACILITIES, AND ASSOCIATED COSTS..	2,193,854
Cost of 20 acres of land @ $16,000 per acre.....	320,000
TOTAL INVESTMENT COST.....	$2,513,854

Summary of Investment Costs

Total cost of facilities in project.....	$7,964,914
Total cost of land in project (89 acres).....	1,424,000
Total cost of land for allied industries (31 acres).....	496,000
TOTAL INVESTMENT COST IN WHOLESALE FOOD CENTER.....	$9,884,914

Types of Ownership

There are many ways to finance and operate a wholesale food center. Agencies that have handled such projects are: (1) Private corporations, (2) public benefit corporations, (3) direct public ownership, (4) cooperative associations or corporations, and (5) a combination of these. Descriptions of the methods followed, adapted from a report on types of ownership and methods of financing, follow: 8/

Private Corporations

A private corporation is a legal entity, organized in conformity with State statutes and made up of individuals bound together for a common purpose or objective. A private corporation usually is organized for profit, but may be operated as a nonprofit organization.

When a private corporation is operated for profit, there are usually no restrictions on the sale of voting stock to any individual because of his occupation or profession. Nor are there restrictions on the number of shares of voting stock that may be held by any one individual. Stockholders have one vote in corporate affairs for each share of voting stock held.

The primary advantage of corporate ownership is that the owners have complete control over operations, subject only to generalized legal restrictions. In addition, when the period of amortization expires, the entire investment belongs to the stockholders; tenancy changes have no effect upon stock ownership, and transfer of stock is unrestricted. The major problem of corporate ownership of a food center lies in the fact that a substantial financial equity is necessary.

When a private corporation is operated on a nonprofit basis, the sale of shares of voting stock usually is restricted. A nonprofit market corporation probably would restrict the sale of this stock to farmers, truckers, wholesalers, and others directly concerned with the operation of the market, and would base the amount of stock sold to one individual or firm on the amount of facilities used. In some cases, eligible purchasers of voting stock also would be required to purchase a specified number of shares of nonvoting stock. Through these restrictions on stock sales, the number of stockholders' votes and the voice in management exercised by any one shareholder are limited. Under the laws in some States, nonprofit corporations are variously referred to as cooperative corporations or as societies.

8/ Clowes, H. G., Elliott, W. H., and Crow, W. C., 1957. Wholesale Food Market Facilities--Types of Ownership and Methods of Financing. U. S. Dept. Agr., Mktg. Res. Rpt. 160, 96 pp. illus.

A number of wholesale markets are owned and operated by private corporations. In some instances, the principal stockholders in these corporations are food wholesalers. In other cases, the corporation is a railroad company or some other company organized primarily for other types of business. Most of the large terminal produce markets built in the 1920's were sponsored by railroad companies which believed that such markets would increase the volume handled by their lines.

Public Benefit Corporations

Market authorities are usually organized as public benefit corporations. This type of organization offers some desirable features not found in some other types of ownership. It differs from nonprofit private corporations only in that public benefit corporations are usually publicly owned.

Features of public benefit corporations include: A public benefit corporation is a nonprofit agency. As such, rentals and other charges do not exceed the amount needed to pay the costs of operation, amortize the original investment, and maintain a limited reserve for contingencies. Because under public ownership the revenues would be considered as public funds, the reserve funds could not be paid to lessees as dividends. However, there is the possibility that reserves of funds might be appropriated for other public uses while bonds remained outstanding unless such reserves were specifically committed to redemption of bonds.

Market authorities usually have the power of eminent domain, which can be useful in the acquisition of a site. Such corporations usually finance market improvements through the sale of revenue bonds. This type of financing normally is not a full obligation of a State or a political subdivision. These revenue bonds are often tax exempt, thereby lowering the interest cost. However, even if this is not the case, the bonds of a State or political subdivision usually have such established credit ratings that the sale of the bonds at favorable rates is possible. A public agency, such as a market authority, is more likely than some types of private ownership to provide for future expansion and to work toward the establishment of a complete wholesale food distribution center. A market authority may or may not be required to pay taxes to the community in which it is located.

Market authorities also have certain limitations, especially with respect to the financing and management of the facilities. For example, one of their most serious limitations is their inability to raise funds for capital improvements, except through the sale of revenue bonds. To overcome this limitation, some State or city governments have appropriated part of the funds needed for land acquisition and original construction. As a rule, a market authority must have either equity funds or State (or city) responsibility for its loans. The continuity of management on some markets has been dependent on the continuance of a State or municipal government administration in office. As a whole, market authorities do not have as complete freedom of operation as is possible under private ownership.

Direct Public Ownership

A number of wholesale food market facilities have been financed, constructed, and operated by States, counties, or municipalities. Several States and a number of municipalities have enabling legislation covering the improvement or establishment of produce markets.

Direct State ownership and operation of a wholesale market facility usually can be differentiated from ownership and operation by a State market authority by the methods of financing used and the delegation of authority made by the State legislature. Although a number of States have appropriated funds for and otherwise assisted market authorities with financial problems, they do not usually underwrite the total cost of a market constructed by an authority. Nor have the States usually assumed responsibility for the operation of these markets after they were constructed. Direct State ownership contemplates that a market facility will be financed in whole or in greater part by an appropriation of State funds. If the financing is not entirely by this method, the State usually is obligated for the remainder unless this balance is obtained through grants or donations. Also, the State is responsible for maintenance and other expense involved in the operation of a State-owned market.

Municipal or county ownership of a wholesale produce market is comparable in many of its basic aspects to direct State ownership. A number of municipalities are authorized in their charters to construct and operate food markets. However, in some cases, city councils or commissions are not authorized to make appropriations from general funds in the city treasury for the construction of market facilities on a basis comparable to that of a State legislative body. Three methods are usually open to municipalities for financing a market program: (1) Issuance of municipal bonds, (2) issuance of revenue warrants, and (3) loans from public corporations. In most cities the issuance of bonds for such purposes must be approved by a majority of the qualified electorate voting in a referendum. States usually finance, construct, and operate wholesale produce market facilities because legislative bodies feel that improved facilities will, in themselves, serve the public interest.

Facilities constructed with municipal or county funds would necessarily be owned by the county or municipality, and rent would have to be paid by the tenants indefinitely.

Farmer Cooperatives

A farmer cooperative is a business organization which operates for the mutual benefit of its members or stockholders as producers or patrons. It is usually incorporated, owned, and controlled by member agricultural producers. The association is operated on a cost basis, after allowing for the expenses of operation and maintenance, for any authorized deductions for expansion, and for a necessary reserve. In a cooperative, the financial benefits accrue to its clients, whereas in a commercial enterprise such benefits accrue to those who have invested their money in the business and have bought stock. In the

marketing of farm and food products and the purchasing of supplies, cooperatives usually own and operate such facilities as they deem necessary. Cooperatives, in theory, are extensions of the firms or individuals they serve.

Agricultural cooperatives, which comply with rather rigid requirements, are accorded special treatment under the Federal income tax laws. In some States, farmer cooperatives are exempt from payment of State income tax. However, cooperatives pay property taxes and other taxes paid by businesses, as required by law.

Combinations

Wholesale food markets have been established combining two or more of the types of ownership and operation previously discussed. For example, in Philadelphia a food center has recently been built by a nonprofit organization on land owned and put in condition for building by the city.

In Providence, it would be possible to use two or more of these methods to finance a food center. The entire food center could be constructed and operated by a single agency, or various parts could be constructed and operated by different agencies. To illustrate: The farmers' stall area could be constructed and operated by a cooperative or under city or State ownership, while multiple-store units could be constructed and operated by some other combination.

REVENUE REQUIRED AND SOURCES OF REVENUE

Revenue required could vary according to the methods used to finance a food center. For example, State ownership could not only reduce interest costs, but could also materially affect the amortization period. If a corporation were constructing its own facilities, one with substantial assets, obviously, could effect better financing arrangements than could one with limited assets. It is not feasible in this report to illustrate all possibilities; therefore, it was necessary to make certain assumptions.

For purposes of this study, it has been assumed that, if a food center were built containing the suggested facilities, it might follow the general layout presented in figure 13. For simplicity, it was assumed that the entire wholesale food center would be constructed by a single agency and leased for long periods to the occupants. Direct supervision of operations would be provided only for multiple-unit facilities. Such assumptions are not intended to suggest the most desirable arrangements, nor are they intended to exclude other arrangements, but they are presented so that some estimate of probable operating expenses may be included in this report.

For purposes of this report, revenue requirements will be considered under three different categories: (1) Cost of management and upkeep, (2) taxes on real estate, and (3) debt service.

Cost of Management and Upkeep

The operating expenses for the food center would consist of five categories: (a) Management expenses, (b) sanitation costs, (c) fire and liability insurance, (d) maintenance and repair, and (e) reserve or contingency fund. Management expenses would consist of salaries for the management staff, fees for special services, office rent, travel and per diem, advertising and promotion, office supplies and equipment, telephone and telegraph, and utilities. Sanitation costs would include janitor services for the offices, garbage removal, and general market sanitation.

Management expenses and sanitation costs are based upon estimates of what they would probably cost in Providence and upon comparative costs in other markets. Management and sanitation expense estimates are as follows:

Management Expenses

Manager	$ 10,000
Assistant manager	5,000
Secretary-clerk	3,600
Gateman-watchman	3,600
Legal, auditing, and other special services	3,000
Office rental allowance	1,800
Travel and per diem	1,200
Advertising and promotion	1,500
Office supplies and equipment	2,000
Telephone and telegraph	1,000
Utilities	2,000
Miscellaneous expenses	5,300
Total management expenses	$ 40,000

Sanitation Costs

Janitor services for offices	$ 3,000
Garbage and snow removal	5,000
General market sanitation	10,000
Miscellaneous expenses	2,000
Total management expenses	$ 20,000

Estimates of the costs of insurance and maintenance and repair were based upon construction costs. Fire and liability insurance was based on those rates for fire, extended coverage, and public liability which would most probably apply to the structures considered. The rates supplied by the New England Fire Insurance Rating Association as of June 1, 1960, averaged $1.11½ per $1,000 valuation for 80 percent of the facility cost for fire and extended coverage.

Liability insurance to cover all liabilities to the food center to the limit of $500,000 would cost about $700. To simplify computation, this amount was converted to a rate per $1,000 valuation. This rate was computed to be

10 cents per $1,000 valuation. The total annual cost of insurance for the food center would be $6,935. Maintenance and repairs were assumed to be 1/2 percent of facility costs and would amount to $39,825.

The lump sum costs have been allocated so they would apply to the entire food center. These costs have been prorated or allocated to the various groups of lessees considered. While the primary means of prorating was based on the relative value of facilities, an adjustment was made to compensate for the fact that multiple-store facilities and farmers' stalls would take more of the management staff's time. A reserve or contingency fund of 10 percent of the amount required for management and upkeep was included to allow for variations. This fund would be about $11,676 per year. The total estimated annual income needed for operation of the proposed wholesale food center would be about $128,436. The lump sum costs, as well as other costs of management and upkeep, by commodity group, are shown in table 13.

Real Estate Taxes

The food center management would pay taxes on land, buildings, and other taxable facilities on the basis of the current tax rate and the assessed valuation of the property. For purposes of this report, the 1958 city of Providence tax rate, $3.90 per $100 of assessed valuation, is used. According to the Rhode Island State Board of Tax Equalization, the assessed valuation would be about 68 percent of the current value--current value being assumed to be the same as the investment. Therefore, taxes paid by the fresh fruit and vegetable section would be $69,001, by the poultry section $12,675, the butter, egg, and cheese section $11,686, the meat and meat products section $100,296, and the dry grocery section $73,334, or a total of $273,892. To allow for changes in the tax rate, a reserve of 10 percent is included. This reserve could probably be discontinued when it amounted to a full year's tax payment. For the entire food center, having an assessed valuation of $6.4 million, the taxes and reserve would amount to $273,892. Table 14 shows the probable taxes, including reserve, that would be paid on the proposed food center.

Income Required for Debt Service

The third major group of costs which must be paid by a food distribution center is debt service. The proportion of the total that might be borrowed on mortgage loan and the terms of the loan depend to some extent on the money market. Facilities of the type described should not become obsolete in less than 20 to 30 years, and likely would be useful over a longer period. Such facilities are of desirable construction, and with only minor alterations, could be converted for use by many types of occupants.

The money required would probably be obtained from three sources: (1) First mortgage bonds, (2) a second mortgage or preferred stock, and (3) equity capital. Depending upon the money market at the time the money is borrowed, various amounts could be obtained from each of these sources. In general, about 65 percent might be obtained on a first mortgage and 20 to 25 percent on a second mortgage or by issuance of preferred stock. The remaining 10 to 15 percent would be needed as equity capital.

Table 13.--Estimated annual income, by commodity group, required for management and upkeep in the proposed wholesale food center, Rhode Island

Commodity group	Management expense	Sanitation costs	Fire, extended coverage and liability insurance 1/	Maintenance and repairs 2/	Reserve or contingency 3/	Total
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Fresh fruits and vegetables:						
Multiple units	8,974	6,731	1,584	8,487	2,578	28,354
Offices	682	511	110	637	194	2,134
Container shed	568	426	94	530	162	1,780
Farmers' stalls	1,136	852	189	955	313	3,445
All fresh fruits and vegetables	11,360	8,520	1,977	10,609	3,247	35,713
Poultry:						
Multiple units	662	497	109	638	191	2,097
Detached buildings	1,178	883	196	1,135	339	3,731
All poultry	1,840	1,380	305	1,773	530	5,828
Butter, eggs, and cheese	1,640	1,230	272	1,683	482	5,307
Meat and meat products:						
Multiple units	5,936	4,452	976	5,916	1,728	19,008
Detached buildings	8,904	6,678	1,465	8,875	2,592	28,514
All meat and meat products	14,840	11,130	2,441	14,791	4,320	47,522
Dry groceries:						
Multiple units	3,096	2,322	573	3,291	928	10,210
Detached buildings	7,224	5,418	1,367	7,678	2,169	23,856
All dry groceries	10,320	7,740	1,940	10,969	3,097	34,066
Total	40,000	30,000	6,935	39,825	11,676	128,436

1/ The insurance rates used were supplied by the Providence Board of Underwriters for the city of Providence. These rates are \$1.11½ per \$1,000. It was assumed that the buildings would be insured for 80% of their value. Fire and extended coverage was applied only to the value of the buildings and the cost of constructing them, or about 123% of the cost of the actual building. Public liability to the \$500,000 level was quoted at about \$700 or about 10¢ per \$1,000 valuation.

2/ Assuming 1/2% of the cost of buildings, other facilities, and associated costs.

3/ 10% of preceding items.

Table 14.--Estimated real estate taxes to be paid by the proposed wholesale food center, Rhode Island

Commodity group	Assessed value 1/	Income needed for real estate taxes: Tax 2/	Reserve 3/	Total
	Dollars	Dollars	Dollars	Dollars
Fresh fruits and vegetables:				
Multiple units	1,397,715	54,511	5,451	59,962
Offices	106,156	4,140	414	4,554
Container shed	88,463	3,450	345	3,795
Farmers' stalls	176,926	6,900	690	7,590
All fresh fruits and vegetables	1,769,260	69,001	6,900	75,901
Poultry:				
Multiple units	106,371	4,148	415	4,563
Detached buildings	189,103	7,375	737	8,112
All poultry	295,474	11,523	1,152	12,675
Butter, eggs, and cheese	272,403	10,624	1,062	11,686
Meat and meat Products:				
Multiple units	935,162	36,471	3,647	40,118
Detached buildings	1,402,742	54,707	5,471	60,178
All meat and meat products	2,337,904	91,178	9,118	100,296
Dry groceries:				
Multiple units	512,826	20,000	2,000	22,000
Detached buildings	1,196,595	46,667	4,667	51,334
All dry groceries	1,709,421	66,667	6,667	73,334
Total	6,384,462	248,993	24,899	273,892

1/ Assessed value in Providence reported as 68% of market value in 1959. Source: Rhode Island State Board of Tax Equalization, First Annual Report, August 18, 1959.

2/ Assuming 1958 Providence tax rate of $3.90 per $100.

3/ Assumed to be 10% of taxes.

For purposes of this report, a rate of 6 percent amortized over 25 years was assumed. This rate would be a composite of the varying rates charged for capital from each of the sources.

If the first mortgage were obtained for $5\frac{1}{2}$ percent, the second mortgage for $6\frac{1}{2}$ percent, the equity capital having a value of 7 percent, then the average interest rate would be about 6 percent. If the equity capital were supplied by tenants in proportion to relative cost of the facility, it is probable, because of the tax situation, that there would be no payment of dividends to stockholders. Under this assumption, of course, the 6 percent interest rate might be higher than the actual cost of borrowing the money.

If bonds were issued, financiers and persons purchasing the bonds would probably demand that current income exceed current expenses by some stipulated amount and that this amount remain as a reserve fund. Amounts required would vary according to the "tightness" of the money market, the financial rating of the bond issuer, and the nature of the collateral offered. Such a reserve fund should usually amount to about 20 percent of the annual costs. However, such a fund would not normally be required to be more than a full year's amortization payment. After a full year's amortization payment is in reserve, the allowance could be discontinued. In these computations, a 20 percent reserve or contingency allowance was included.

Until a financial plan is worked out, the terms of the loan cannot be known. However, to determine the amount of rental on the various facilities, the rate of 6 percent for 25 years, as mentioned, is used. Table 15 shows, by commodity groups, the estimated annual income required for debt service to amortize the cost of the food center. Should the city, county, State, or other agency lend its credit or tax exempt status, interest rates might be reduced.

Total Annual Income Required

Estimates of the amount of revenue needed to operate the food center, including costs of management and upkeep, taxes, and debt service, are shown in table 16. Costs of operation for the individual businesses occupying these facilities are not included. The total amount needed to operate the food center would be about $1,283,722.

Costs of operating, owning, and managing various sections of the food center would be approximately as follows:

Fresh fruits and vegetables.....	$355,867
Poultry.....	59,293
Butter, eggs, and cheese.....	54,599
Meat and meat products.....	470,572
Dry groceries.....	343,391
	1,283,722

Source of Revenue

Food centers may have several sources of revenue. The primary source in most markets is the rent from the various store units and facilities.

Table 15.--Estimated annual income required for debt service, by commodity groups, in proposed wholesale food center, Rhode Island

Commodity groups	Investment in land and buildings	Amortization charge 1/	Reserve or contingency 2/	Total 3/
	Dollars	Dollars	Dollars	Dollars
Fresh fruits and vegetables:				
Multiple units	2,055,464	160,799	32,160	192,959
Offices	156,111	12,213	2,443	14,656
Container shed	130,093	10,178	2,036	12,214
Farmers' stalls	260,185	20,354	4,070	24,424
Total	2,601,853	203,544	40,709	244,253
Poultry:				
Multiple units	156,427	12,237	2,447	14,684
Detached buildings	278,093	21,755	4,351	26,106
All poultry	434,520	33,992	6,798	40,790
Butter, eggs, and cheese	400,593	31,338	6,268	37,606
Meat and meat products:				
Detached units	1,375,238	107,585	21,517	129,102
Multiple units	2,062,856	161,377	32,275	193,652
All meat and meat products	3,438,094	268,962	53,792	322,754
Dry groceries:				
Multiple units	754,156	58,998	11,800	70,798
Detached buildings	1,759,698	137,661	27,532	165,193
All dry groceries	2,513,854	196,659	39,332	235,991
Total	9,388,914	734,495	146,899	881,394

1/ Assuming 6% annual interest rate amortized over 25 years.
2/ Computed at 20% of the annual amortization charge.
3/ Allied food industries area not included.

Table 16.--Estimated total annual income required, by commodity groups, for the proposed wholesale food center, Rhode Island

Commodity groups	Management and upkeep	Real estate taxes	Debt service	Total
	Dollars	Dollars	Dollars	Dollars
Fresh fruits and vegetables:				
Multiple units	28,354	59,962	192,959	281,275
Offices	2,134	4,554	14,656	21,344
Container shed	1,780	3,795	12,214	17,789
Farmers' stalls	3,445	7,590	24,424	35,459
Total	35,713	75,901	244,253	355,867
Poultry:				
Multiple units	2,097	4,563	14,684	21,344
Detached buildings	3,731	8,112	26,101	37,949
All poultry	5,828	12,675	40,790	59,293
Butter, eggs, and cheese	5,307	11,686	37,606	54,599
Meat and meat products:				
Multiple units	19,008	40,118	129,102	188,228
Detached buildings	28,514	60,178	193,652	282,344
All meat and meat products	47,522	100,296	322,754	470,572
Dry groceries:				
Multiple units	10,210	22,000	70,798	103,008
Detached buildings	23,856	51,334	165,193	240,383
All dry groceries	34,066	73,334	235,991	343,391
Total	128,436	273,892	881,394	1,283,722

However, in addition, some markets obtain revenue by charging fees to incoming trucks and charging such services as restaurants and truck service stations a percentage of their gross. There are certain other minor sources of income, such as revenues from vending machines and public telephones.

For purposes of this report, the only source of revenue assumed for the food center would be from rents charged for the facilities. As previously mentioned, rents could be materially affected by the methods used to finance and operate the market. However, it was assumed that private financing and operation would be used.

Rental charges per unit and per square foot are based on total computed costs. These costs represent an annual revenue required per square foot of

$1.55 for dealers in fresh fruits and vegetables, which includes cost for multiple units, container shed, and farmers' stalls; $1.88 for poultry; $1.90 for butter, eggs, and cheese; $1.73 for meat and meat products, and $1.71 for dry groceries, or an average of $1.68 for all sections. These costs are shown in table 17.

Table 17.--Estimated annual revenue charges required, by commodity groups, for the proposed wholesale food center, Rhode Island

Commodity groups	Space planned	Cost of operation	Annual revenue required per square foot
	Square feet	Dollars	Dollars
Fresh fruits and vegetables:			
Multiple stores	172,500	281,275	1.63
Offices	7,500	21,344	2.85
Container shed	20,000	17,789	.89
Farmers' stalls	30,000	35,459	1.18
All fresh fruits and vegetables	230,000	355,867	1.55
Poultry:			
Multiple units	11,500	21,344	1.86
Detached buildings	20,000	37,949	1.90
All poultry	31,500	59,293	1.88
Butter, eggs, and cheese	28,750	54,599	1.90
Meat and meat products:			
Multiple units	122,500	188,228	1/ 1.54
Detached buildings	150,000	282,344	1.38
All meat and meat products	272,500	470,572	1.73
Dry groceries:			
Multiple units	60,375	103,008	1.71
Detached buildings	140,000	240,383	1.72
All dry groceries	200,375	343,391	1.71
Total or average	763,125	1,283,722	1.68

1/ The revenue required per square foot is less than for the other types of units, because these units contain more square feet in the mezzanines.

The minor variations in the revenue required per square foot between similar facilities in the various commodity sections are due to small differences in land required, the amount of paving necessary, and other such items. The revenue per square foot required for the multiple meat and meat products units is substantially lower than any of the other facilities, because more space was added in the mezzanines. From a practical viewpoint, and in an actual situation, it would probably be desirable to charge similar amounts for similar facilities. Computed rents differ for similar facilities because of different expansion areas and different proportions of public streets and management costs. Rentals presented are only sufficient to cover costs and reserves.

If procedures used in other markets were followed, certain reductions in operating costs might be achieved. In some markets, governmental agencies have assumed such cost items as street cleaning and garbage removal, utility companies have assumed the cost of supplying service to the individual stores, and railroads have constructed lead-in and team tracks. If such agencies and companies could be interested in providing like services in Rhode Island, the cost of operation could be reduced.

Measurable Benefits and Cost Reductions

Certain marketing costs which would be affected most by improved facilities have been estimated for various food wholesalers in Rhode Island. These were for (1) cartage, (2) handling, (3) interdealer movement, (4) spoilage, deterioration, breakage, and shrinkage, and (5) rentals. Although these are not the only marketing costs, they represent the major sources of savings or cost change which would be effected in proposed new facilities. The costs of operation in present facilities were compared with the expected cost of operation in the recommended new types of facilities.

Cartage

Cartage is the cost incurred in loading and moving products from team tracks or point of initial receipt to the dealer's store. The new facilities recommended in this report provide rail connections for each store; these would reduce the amount of cartage necessary. Since most rail cars would arrive directly at the dealer's store, there would be a cost for unloading. This unloading cost was included, not in the cartage cost, but in the handling cost for both present and proposed facilities. It was assumed that the cartage cost per ton would not change in the new food center.

Although reduced about 49 percent, cartage costs would probably continue for most dealers locating in the new wholesale food center. The continuing cartage costs would include volumes received by "pool cars" or at the public warehouse, as well as shipments to other parts of Rhode Island. Possible savings in cartage, by commodity, are shown in table 18.

In the proposed food center, it would be possible to reduce cartage costs by $12,365. Although this reduction is low in dollars, it represents a substantial percentage reduction (49 percent).

Handling

One of the largest areas of potential savings from operating in new, improved facilities would be from increased labor efficiency. The recommended facilities provide for handling commodities in one-story buildings adapted for the use of modern handling equipment, with platforms at rail car level at the rear and at truckbed level at the front. Commodities would be received at the dealer's store at the rear platform from either truck or rail car.

One of the best ways to reduce costs is to use modern materials-handling equipment to handle merchandise, and to use the unit load principle whenever feasible. Facilities such as those recommended here are designed to take full advantage of this principle. Those commodities received in boxes or cartons

Table 18.--Comparison of cartage costs in present facilities with those in a proposed wholesale food center, Rhode Island, 1959

Commodity groups	Tonnage incurring cost		Cost per ton 1/	Total cost		Cost reduction
	Present	Proposed		Present	Proposed	
	Tons	Tons	Dollars	Dollars	Dollars	Dollars
Fresh fruits and vegetables	1,500	750	1.65	2,475	1,238	1,237
Poultry	110	50	1.82	200	91	109
Butter, eggs, and cheese	1,300	975	1.85	2,405	1,804	601
Meat and meat products	5,000	750	2.00	10,000	1,500	8,500
Dry groceries	2,000	750	1.75	3,500	1,312	2,188
Total or average 2/	9,910	3,275	1.87	18,580	5,945	12,635

1/ Cost per ton was assumed to be the same in the proposed food center as for the present markets.

2/ Differs from totals in table 7 because of the exclusion of frozen food dealers from the comparison.

could be loaded on skids or pallets in a car or truck or on the platform and moved into the store. Bulk products could be loaded on efficient handling equipment and transported to the display area, coolers, or platforms. Even without such equipment, large savings would accrue because of improved operations and facilities used by the food handlers. The cost reductions in this area have been classified as handling costs, which include flow of commodities through a facility from unloading to loading on outbound trucks.

Computation of cost reductions possible because of improved facilities was based largely on costs discovered through research. Supplementing research, percentage cost reductions of dealers in other markets who have moved to new facilities also were considered. The greatest cost reductions, those for the poultry and the meat and meat products dealers, would amount to about $0.90 per ton handled in the new facilities. This would be due largely to the improved facilities designed primarily for efficient handling of food commodities as compared with the previous inadequate facilities.

Other commodity groups would save various amounts: $0.80 per ton for dry grocery dealers, $0.75 per ton for butter, egg, and cheese dealers, and $0.55 per ton for fresh fruit and vegetable dealers. The low cost reduction possible for fresh fruit and vegetable dealers probably reflects these dealers' present reasonably efficient facilities. Probable reductions in handling costs, shown in table 19, amount to $202,520.

Table 19.--Comparison of handling costs in present facilities with those in the proposed wholesale food center, Rhode Island, 1959

Commodity groups	Tonnage incurring cost	Cost per ton		Total cost		Cost reduction
		Existing	Proposed	Existing	Proposed	
	Number	Dollars	Dollars	Dollars	Dollars	Dollars
Fresh fruit and vegetables	129,100	2.25	1.70	290,500	219,470	71,030
Poultry	14,700	3.30	2.40	48,500	35,280	13,220
Butter, eggs, and cheese	29,400	3.25	2.50	95,550	73,500	22,050
Meat and meat products	76,800	4.00	3.10	307,200	238,080	69,120
Dry groceries	33,900	2.80	2.00	94,900	67,800	27,100
Total or average 1/	283,900	2.95	2.23	836,650	634,130	202,520

1/ Differs from data presented in table 8 because frozen food is not included in the comparison.

Interdealer Movement

Another area of cost which would show considerable percentage reduction in an efficient wholesale food center would be the interdealer movement costs. These costs, although necessary, are especially high where there are scattered dealer facilities and a split market. In the proposed wholesale food center, facilities would be reasonably accessible to other dealers, and located in a more compact area than before. This should result in some savings in these marketing costs. These estimated savings amount to $17,305 (table 20).

Reductions in interdealer movement were based upon the assumption that the same volumes would be moved over shorter distances. In the proposed food center, much interdealer movement could be effected by simply moving the goods down a platform. The most notable saving in this area would accrue to the meat and meat products and dry grocery wholesalers, since these dealers have interdealer movements in their normal operations.

Spoilage, Deterioration, Breakage, and Shrinkage

Spoilage, deterioration, breakage, and shrinkage should be substantially reduced in a new wholesale food center because it would no longer be necessary to store perishable commodities outside. Pilferage would be reduced, and, with less handling required, there would be considerable reduction in breakage, bruising, and subsequent spoilage. Cost reductions in this area are based on the experience of dealers who have recently moved to improved facilities, and also on research results. It is estimated that wholesalers would save about $83,680 from this source, as may be seen in table 21. Considerable saving would accrue to all of the groups of food dealers.

Table 20.--Comparison of interdealer movement costs in present facilities with those in the proposed wholesale food center, Rhode Island, 1959

Commodity groups	Tonnage 1/ incurring cost	Cost per ton		Total cost		Cost reduction
		Existing	Proposed	Existing	Proposed	
	Tons	Dollars	Dollars	Dollars	Dollars	Dollars
Fresh fruits and vegetables	10,000	1.65	1.05	16,500	10,500	6,000
Poultry	900	1.70	1.25	1,530	1,125	405
Butter, eggs, and cheese	3,200	1.75	1.30	5,600	4,160	1,440
Meat and meat products	14,900	2.00	1.40	29,800	20,860	8,940
Dry groceries	800	1.80	1.15	1,440	920	520
Total or average 2/	29,800	1.84	1.26	54,870	37,565	17,305

1/ Tonnage subject to interdealer handling in the proposed facilities assumed the same as in the present facilities.

2/ Differs from data presented in table 9 because frozen food is not included in the comparison.

Rents

Rental charges would be increased in the proposed food center. However, this increase would be partially compensated for through the reduction of other costs made possible by improved facilities. Rents would be higher because the new food center would contain facilities and services not now available to Rhode Island food handlers, and because building costs are higher than when present buildings were constructed. Increased rents are the price which must be paid for reduced costs, improved working conditions, and an improved competitive position. The rental comparison does not include the present and proposed rentals for offices, the container shed, or the farmers' stalls. Such rentals were about comparable to those presently paid.

Comparison of rents charged when this study was made with rents in the new wholesale food center indicates that rents would have to increase $440,738 (table 22), which would be about 36 percent greater than the present rent paid. The increases range from 12 to 53 percent.

Summary of Measurable Costs

The cost reductions estimated for dealers in the proposed food center would compensate for $316,140 of the increased rentals. In other words, it would cost all dealers studied $124,598 more to operate in a modern, efficient

Table 21.--Spoilage, deterioration, breakage, and shrinkage costs in present facilities compared with those in the proposed wholesale food center, Rhode Island, 1959

Commodity groups	Tonnage incurring cost	Cost per ton		Total cost		Cost reduction
		Existing	Proposed	Existing	Proposed	
	Tons	Dollars	Dollars	Dollars	Dollars	Dollars
Fresh fruits and vegetables	129,100	2.50	2.25	322,750	290,475	32,275
Poultry	14,700	1.50	1.40	22,050	20,580	1,470
Butter, eggs, and cheese	29,400	2.00	1.75	58,800	51,450	7,350
Meat and meat products	76,800	2.25	1.85	172,800	142,080	30,720
Dry groceries	33,900	1.60	1.25	54,240	42,375	11,865
Total or average 1/	283,900	2.22	1.89	630,640	546,960	83,680

1/ Differs from data presented in table 10 because frozen food is not included in the comparison.

Table 22.--Comparison of rentals in present facilities with those in the proposed wholesale food center, Rhode Island, 1959

Commodity groups	Space used		Rent		Increase
	Present	Proposed	Present	Proposed	
	Sq. ft.	Sq.ft.	Dollars	Dollars	Dollars
Fresh fruit and vegetable multiple stores	1/ 255,497	172,500	267,832	281,275	13,443
Poultry	32,830	31,500	49,160	59,293	10,133
Butter, eggs, and cheese	32,809	28,750	27,920	54,599	26,679
Meat and meat products	356,644	272,500	237,560	470,572	233,012
Dry groceries	392,892	200,375	185,920	343,391	157,471
Total or average	1,070,672	705,625	768,392 2/	1,209,130 3/	440,738

1/ Does not include space for the offices, a container shed, or the farmers' stalls.

2/ Differs from total presented in table 11 because of the exclusion of frozen food data.

3/ Differs from total presented in table 17 because of the exclusion of facilities named in footnote 1, above.

wholesale food center than it cost to operate under the former conditions. This increased cost does not hold equally true for all commodity sections. The fresh fruit and vegetable section, the poultry section, and the butter, eggs, and cheese section could reduce operating costs about as much as their rents would increase. That is, they could operate in the proposed wholesale food center for about their present costs. Costs for the meat and meat products section and the dry grocery section would increase moderately. Figure 16 illustrates these cost reductions.

Estimates of costs in "possible" conditions are, of course, subject to error. Previous estimates of cost reductions, made in studies similar to that undertaken in Rhode Island, have generally reflected considerably greater savings than those assumed. It is the opinion of the authors that the actual increased costs in the proposed food center will prove negligible. This does not include the nonmeasurable benefits which will also accrue to the new tenants.

Nonmeasurable Benefits

In addition to measurable benefits, there are numerous benefits which are not readily measurable. Nonmeasurable benefits would not only accrue to wholesale food dealers but also to others interested in the food center.

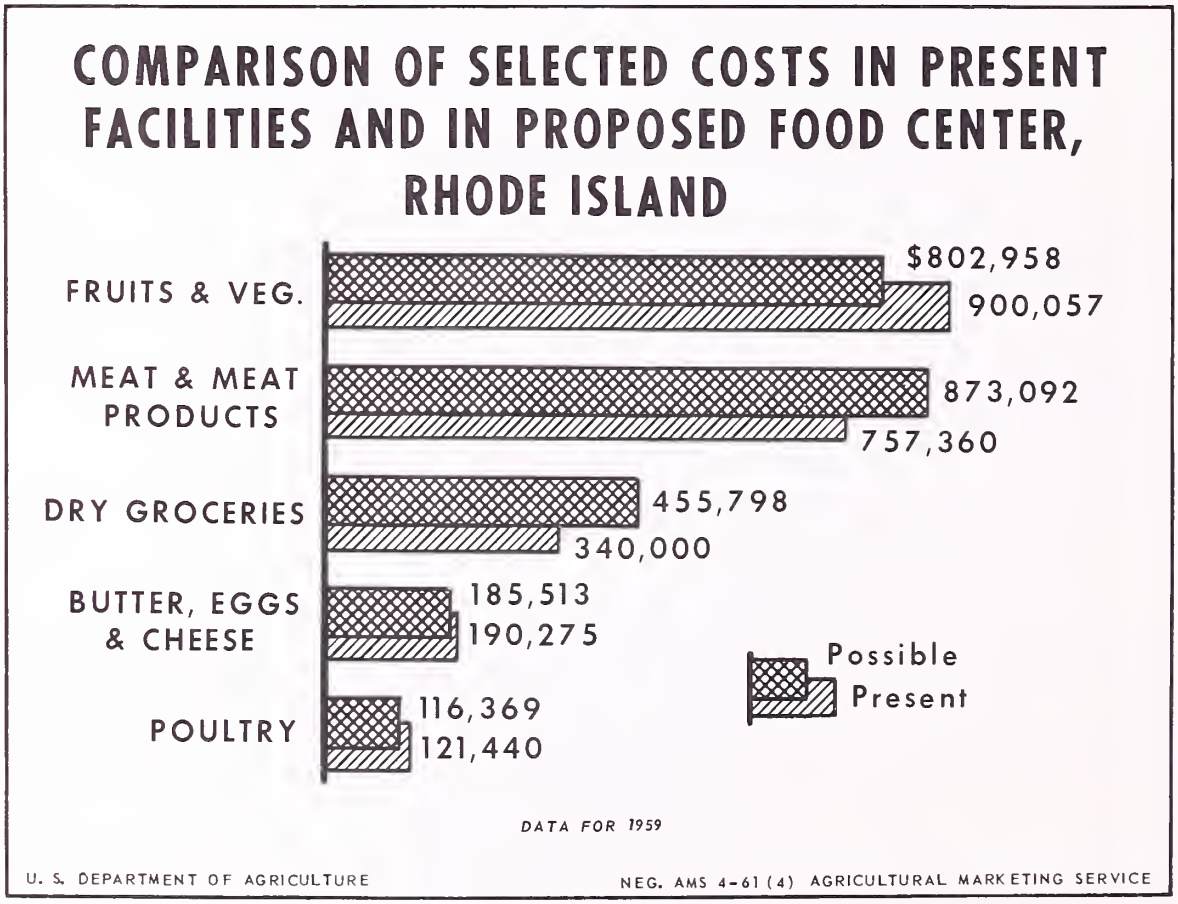

Figure 16

Benefits to Dealers

Wholesale dealers could benefit through savings in time for salesmen, a possible increased volume of business, and, in general, better working conditions. There could be improved prestige, made possible by improved operations and facilities in a new wholesale food center. Many of the defects of the present facilities, as earlier enumerated, which could be corrected in a wholesale food center are nonmeasurable. Such items as lack of rail spurs could be partially reflected in unnecessary cartage costs, and additional nonmeasurable costs could be encountered through the inconvenience of having to move a crew from the store to unload packages from a rail car on the team tracks. There is also the possibility of losing sales through inability to serve customers properly. Even defects such as lack of adequate facilities for employees' comfort or insufficient employee parking, while unmeasurable, could certainly be reflected in employee morale and, thereby, in work efficiency.

Benefits to Other Groups

Buyers using the proposed wholesale food center could expect to profit in various ways. Since it would no longer be necessary to visit the various market areas, buyers would be better informed regarding prices and supplies. The master plan for the market provides for wide streets with adequate parking and good loading facilities, which would reduce the time necessary for this phase of marketing and thus reduce costs.

The railroad serving Rhode Island is at some competitive disadvantage in regard to handling many food commodities because many dealers are not served by direct rail spurs. When shippers compare the cost involved in shipping by truck with that by rail (with the additional cost of cartage when by rail), their decisions are often in favor of shipment by truck. This situation could be alleviated in the new food center because all facilities would be provided with rail spurs to permit direct unloading at the dealers' stores.

Farmers could anticipate savings and benefits which are not immediately self-evident. The new facilities could be expected to offer a convenient central area for sales of farm products and would offer a continuing outlet for those producers wishing to make sales in this manner. Because of the proximity of the farmers' market to the wholesale dealers, producers would not need to rely solely upon retail purchasers of their products, and could therefore spend less time doing their selling.

The most important measurable and nonmeasurable benefit is this: If present highway and redevelopment plans materialize, most of the present wholesale food dealers will be forced to find new stores or go out of business. A wholesale food center would provide a desirable area and business climate for such relocations. Not only would such a wholesale food center minimize the cost of new facilities for specific dealers, but it would also offer a means of maintaining or improving the competitive position of these dealers among wholesale food dealers in other New England cities.

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