A SURVEY OF THE PROPOSED CENTRALIZED WHOLESALE PRODUCE MARKETS
FOR THE CITY OF BOSTON

by
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ABSTRACT

Boston's wholesale produce markets which consist of three separate locations, Faneuil Hall, the South Boston Market Terminal and the Charlestown Fruit Section and Potato Shed, have been rigorously surveyed since 1945 in an attempt to clarify the major problems of receipt and distribution of produce in this area.

This thesis is a study of these findings. While further surveys are being made at present to determine the exact scope by the Market Authority it was felt that sufficient criteria has been uncovered to attempt a reasonable site plan and space allocation.

The major problems approached have been the question of site plan form and relationship of buildings. The most important factors to consider in this or any market are the flexibility of operations for transportation, commodity shipment, processing and storage, and the economic aspects of merchandising and materials handling.
The site plan can assume two forms either centralized or decentralized; while either can operate satisfactorily, both contain highly involved problems. Present operations in the three markets are hampered mostly by bad siting and poor physical communication between them. Each market in this case would comprise a distinct problem.

There are many arguments, well founded, against either form of market but the greatest opinion appears in favor of the central establishment. An understanding of both types is necessary for the study of either.
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Boston, Massachusetts
August 22, 1951

Professor Laurence B. Anderson
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Dear Sir:

I submit herewith the report on my thesis entitled A SURVEY OF THE PROPOSED CENTRALIZED WHOLESALE PRODUCE MARKETS FOR THE CITY OF BOSTON as partial fulfillment of the requirements for the degree of Master of Architecture.

Respectfully,

Malcolm M. Stern
ACKNOWLEDGMENTS

The preparation of this thesis was made possible through the assistance and cooperation of many individuals, groups and organizations.

Its basis for the most part has been the United States Department of Agriculture Report on the Wholesale Produce Markets of Boston, Massachusetts. A report that was two years in the making, it surveyed existing conditions in all the major market areas of Boston and attempted to establish criteria of space involved in the centralization of all related facilities. All tables and statistics included have been taken from this report.
INTRODUCTION

The products of agriculture are of basic importance to the consumer, for practically all that we eat, wear, drink, or smoke comes from the farm. A large part of our population is engaged in producing agricultural products; other thousands find employment in organizations which distribute them to the consumer. When measured by their absolute strength, relative importance, or by their peculiar characteristics, institutions engaged in wholesaling farm products are important to the consumer. A consideration of the wholesale institutions distributing farm products destined for ultimate consumption without basic change in form and the factors which account for the manner in which these institutions function is the task of this thesis.

Farm products differ from manufactured goods in a number of ways, all of which affect the methods of marketing and distributive organizations which have been built up. In the first place, they come from small producers as a rule. Relatively few farmers produce but one crop or in large quantities. Most farmers raise a number of crops and carry on what is known as diversified farming. Eggs, fruits, vegetables, livestock and grain are produced by thousands of farmers in small quantities and sold at frequent intervals in even smaller amounts. Rarely does one farmer have enough produce ready for market at any one time for shipment in carload quantity, the normal minimum for direct sale to central markets. Hence, there must be a large number of local buyers if the farmer is to be relieved of the problem of further marketing.

A second important characteristic of farm products is that their grade cannot be determined in advance. Weather conditions make it impossible to
determine in advance the amount which will be produced. Hence, supply cannot be adjusted to demand.

Lack of adequate storage space and financial needs of farmers being more urgent than in average factories means that the producer cannot withhold any considerable part of them from the market.

Central or wholesale markets provide facilities for the concentration and dispersion of farm products in large quantities. They draw supplies from the local growers' markets and also directly from producers and sell to other wholesale markets on a smaller scale, to retailers and to large consumers such as hotels, restaurants and institutions(1).
SUMMARY

A two year study made by the United States Department of Agriculture of wholesale produce market facilities in Boston was done at the request of the wholesale trade, the Massachusetts Department of Agriculture, and a commission known as the "Market Authority". This study covered the wholesale handling of fruits, vegetables, poultry, eggs, meats, dairy, and related products, a business with an annual volume of about 95,000 carlot equivalents, valued at approximately $540,000,000. The Boston market distributes these products through an area having six and one half million people who inhabit most of New England and part of Eastern Canada.

Most of the facilities used in the wholesale distribution of perishables in Boston are inadequate. The wholesale business is divided into several scattered market areas, which make cross hauling necessary and causes excessive handling and much waste of time. The vast majority of wholesale stores are without platforms or rail connections and are multiple story buildings of improper design that lack adequate equipment for low cost operations, streets are too narrow and traffic is congested; farmers and truckers do not have proper facilities or lack them entirely; and buyers, farmers, and truckers must travel excessive distances between markets and in congested traffic to obtain a complete line of supplies.

Recommended in this report and accommodating present requirements of wholesalers of all types of perishable foods, 460 store units of various sizes would be needed. Farmers and truckers would need 100 covered stalls. Direct rail connections to all wholesale stores with additional team tracks would provide trackage for unloading nearly 1,000 cars at one time. A produce auction and office space is recommended. Parking space adjacent to buildings, under sheds, and in special parking areas would make it possible to park more than 2,250 trucks at one time.
For the proposed market, eight sites were considered from the point of acceptability. The best site studies was the South Bay area which contains more than 170 acres. This site, only slightly more than a mile from the present Fanueil Hall Market, would be adjacent to a new super highway to be developed for facilitating the movement of traffic through Boston. The filling of Fort Point Channel and South Bay would improve this site and at the same time make it possible to construct the highway at a substantially lower cost than at another location.

The estimated cost of the 170 acres of land in the South Bay site, placed in condition to build was $3,720,000. The construction of facilities needed initially would cost about $10,234,000, making the total cost of the initial development slightly less than $14,000,000.

In August of 1950 an act establishing the Massachusetts Market Authority and defining its powers and duties was passed by the state legislature.

"There is hereby created a body politic and corporate, to be known as the Massachusetts Market Authority, in this act called the Authority, which shall be an instrumentality of the commonwealth, consisting of seven members, including the commissioner of agriculture and the director of markets of the City of Boston ex-officio, and four members, appointed by the governor, one of who shall be a farmer, with the advice and consent of the council, and one member to be appointed by the mayor of the City of Boston. All members shall be sworn to the faithful performance of their duties as members of the Authority."

The Authority is hereby authorized:

a) to prepare a masterplan with specifications and estimates of costs and the cost of acquiring land, and to develop, construct, maintain, repair and operate within the territorial limits of the cities and town named in paragraph (a) of section 1, (Boston, Cambridge, Chelsea, Everett, Malden, Medford, Revere,
Somerville, and Watertown), a modern market project suitable for convenient, economical and speedy distribution of foods primarily at wholesale without cost to the commonwealth or any political subdivision thereof, except services contributed without charge \(^{(3)}\).

It was conservatively estimated that the market recommended would make possible a total annual saving of about four million dollars in the cost of handling food, over and above the cost of paying for the market.

Expressed otherwise, the savings would pay for the market in a little more than three years. The greater part of this saving would be realized by reduced cartage, shortened hours of market operation, reduced losses from deterioration and spoilage, elimination of trips to two or more markets by buyers, and reduced traffic congestion in the market area. Other savings which cannot be measured would accrue to farmers and others operating in the area, as well as to the City of Boston.
I. PRESENT MARKETING OPERATIONS

A. A Brief Historical Sketch

Boston, one of the oldest cities in the United States, was organized in 1630. Like most other cities, it established market places where produce might be assembled for the convenience of its citizens. Only fragmentary data are available with respect to the produce markets up to 1740. During this early period, however, mention is made of a market place near Dock Square and another in South Boston. These market places were situated near the first residential and store buildings of the city, which were adjacent to the edge of the water near the foot of Beacon Hill. At that date, the edge of the water is reported to have been around Dock Square or near the area now occupied by the Faneuil Hall Market. By the late 1600's by filling and erosion, the water's edge had been pushed beyond Dock Square, and the principal market place was in the area now occupied by the Faneuil Hall Market.

During the first century of existence of the city, its population grew substantially and Boston became one of the principal coastal market places for all types of commodities, including produce. Business and industrial expansion came into competition with facilities for handlers of produce in the Dock Square area. As a result of the expanding import and industrial activities, the produce trade and farmers began to experience difficulty in finding adequate facilities in which to do business.

Around 1740, Peter Faneuil, a leading merchant and importer, offered to provide a suitable market building to accommodate all the market dealers under the civic administration of Boston. With the inclusion of a public meeting hall besides sellers' stalls the building was finished two years later. It has since been destroyed, rebuilt, and enlarged.
The City of Boston increased their facilities again in 1826 when the Quincy Market was built across the street from Faneuil Hall. It is a three level building containing a basement, stalls on the first floor and offices on the second which contain the Boston Fruit and Produce Exchange and the market manager.

Following this and due to the rapid growth commercially, adjacent structures to the city-owned buildings were taken over and the development of the area extended to wharves on Atlantic Avenue. The growth of the fishing industry in the same area added to the over-crowding at this time and was later removed in 1910 to a special pier facility provided by the Commonwealth of Massachusetts in South Boston. Most fish dealers operate there now.

With the advent of the railroads in the middle of the 19th century, the continued increase in population of the city and distribution areas, additional changes took place in facility requirements. The Boston and Maine Railroad providing a receiving point on Front Street in Charlestown about 1 1/2 miles from Faneuil Hall for storing and unloading of potatoes coming from points north of the city. In 1897, they also established a fruit and produce auction here to take care of the ever increasing volume of produce.

The development of the refrigerator car, public refrigeration, and specialization of public refrigeration also contributed to this increase in volume.

The greater part of this volume received at this unloading point in Charlestown was hauled to the Faneuil Hall Market area for resale to wholesale and retail buyers. The out-of-town buyers and large retailers bypassed the Faneuil Hall Market area and transported the produce direct to their own establishments.

Another development was undertaken at about the same time and facilities were provided by the New York, New Haven and Hartford Railroad in South Boston.
for receipt of produce. These include fruit and vegetable sheds.

The Boston and Maine Railroad, due to this South Boston Market Terminal, later improved their facilities by building a new auction house where only fruits are now sold.

B. The Economic Importance of the Industry Volume Handled

The wholesale produce business of the City of Boston is one of the largest businesses in the city. The wholesale produce markets, not including fish or dry groceries, do a combined annual volume of business of approximately 94,750 carlot equivalents valued in 1947 at about 540 million dollars. The fish business is reported to amount to an additional 30 million dollars.

C. Distribution Areas Served

Boston distributed produce into most of New England. The market serves a large area extending north and northeast to include the States of Maine and New Hampshire and parts of eastern Canada; south to include Cape Cod, much of Rhode Island, and parts of Connecticut; west and northwest to include central and western Massachusetts and southern Vermont. Within this territory are numerous cities large enough to support wholesale dealers who, while they obtain part of their supplies by rail and truck direct from producing sections, depend on Boston for part of their supplies.

As of 1940, Boston's population is 770,816 but there are many nearby densely populated areas that are not a part of the city proper, but are separate cities. Including the metropolitan area and those cities and towns for a twelve mile radius, the total population is 1,948,047. This figure is almost one-half the total population for the State of Massachusetts. This growth in population has been the primary factor in the growth of the wholesale produce market. The total area served is estimated at or more than 6 1/2 million people.
The Boston market is the largest distributive center in New England. Approximately 55% of the produce it handles is distributed in metropolitan Boston, 45% is distributed to wholesale and retail buyers beyond the limits of metropolitan Boston, and about 1/2 of 1% is distributed to seagoing ships. Many carloads of special meat cuts are shipped regularly for consumption in markets along the east coast, some as far south as Florida. In addition, the Boston area is one of the principal receiving and processing markets for fish, and there are an estimated 6,000 carlot equivalents of fish shipped from Boston for consumption throughout the United States and into foreign countries. Likewise, potatoes are handled through Boston for sale in distant markets, and this volume is reported to have been about 2,500 cars in 1947.

Of the produce moving outside the metropolitan area from the Boston market, approximately 24% moves northeast, 25% moves north, 25% moves south and 26% moves west. Most of this movement is hauled in buyers’ or hired trucks.

D. Present Marketing Areas

The physical facilities used for produce in Boston are in several different locations causing what is termed a "split market".

1. Faneuil Hall Market Area - This is the only market area in Boston where a retail buyer may procure practically a complete line of merchandise. All types of commodities are handled here.

The Faneuil Hall Market area is a wholesale distributive center for fruits, vegetables, meat and packing house products, dairy products, poultry, eggs, dry groceries, coffee, fish and many other products. A total of 400 individuals and corporations occupy facilities for wholesale operations.

In Faneuil Hall only the basement and first floor are used for produce. On the first floor arranged with two central aisles are sellers' stalls. Average dimensions are 14 feet deep and from 12 to 30 feet in width. Each dealer
maintains show cases, meat blocks, refrigeration and mechanical grinders and other equipment in his stall. There are 15 dealers using 5,000 square feet on the first floor. Sales are partially retail.

Basement dealers sharing 7,600 square feet also display on the sidewalk under surrounding canopy.

Quincy Market across Merchants Row from Faneuil Hall is much larger. It is 535 feet long and 50 feet wide. The first floor is approximately 3 feet above sidewalk level allowing light into the basement. There is a center walkway with stalls for storing, display and sales. Basement firms maintain offices on the first floor. Mezzanine offices and storage space is incorporated on either side of the aisle under the 18 foot high ceiling. It has canopies on both long sides over 24 feet and 15 feet of sidewalk.

The basement has a middle dividing partition and stall widths vary from 20 to 80 feet. Additional space has been dug under the sidewalk. Mostly storage and wholesale activities take place in the basement.

The second floor offices are grouped about a central corridor opening into a large central space occupied by the Boston Fruit and Produce Exchange. Offices are maintained here by the market master, brokers, railroad representatives and the Western Union Telegraph Service, along with others connected with various commodities and services. Refrigeration comes from the Quincy Cold Storage Company which pipes brine the whole length of the building. Produce stacked on the surrounding sidewalk gets so dense that a very small passage becomes available which can barely accommodate a hand truck. City police and private watchmen guard this property.

Since only 10 percent of the dealers are housed in the Quincy Market or Faneuil Hall, the majority of wholesalers occupy privately owned buildings.
Over 300 dealers in produce and 100 more in dry groceries constitute the surrounding area with restaurants, taverns, stores selling paper, boxes, twine, hardware and store fixtures, also small clothing stores catering to market men intermingled.

Numerous local express companies maintain loading and assembly points. With the exception of part of South Market Street, Cross Street and North Street which have been widened to 80 feet, all the other streets vary from 30 to 50 feet in width.

Traffic gets so dense that it often takes 1/2 to 3/4 of an hour between stops only a few blocks away. High-axle pushcarts are the fastest vehicles in the market.

Privately owned buildings are from 1 to 6 stories high with basements. Widths vary from 12 to 60 feet and depth from 20 to 100 feet. Most of the basements have low ceilings, but upper stories are 12 feet or more. The age varies from 50 to 100 years for all the buildings. Despite repeated remodeling and improvement the stores remain unsuited to efficient handling of perishable foods. Very few are fireproof or rodent proof and inside space is cut up by abandoned stairwells, elevator shafts and other obstructions.

Interchange between floors is by elevator, power conveyors or skids. The latter two used mostly for movement between sidewalk and basement. Few if any loading platforms at truckbed height exist. Floors are badly worn obstructing hand truck movement. Sidewalk frontage varies from almost nothing to 20 feet. Sidewalk space is rented by store owners from restaurants and the like which have no use for it. Additional sidewalk space is gained by extending curb high platforms into the street for several feet.

Cold storage space for both cooler and freezer, is available at three large public plants in or adjacent to the Faneuil Hall Market area. Refrigerant
is piped to many private buildings as well as the public markets. Rail connections serve two of these plants.

Outside of several packing house products stores along Mercantile Street and Clinton Street, Atlantic Avenue, and South Market Street, no other stores in the district have direct rail connection from the Union Freight Railroad operating on Atlantic Avenue.

Large quantities of produce are shipped into Boston by rail and are consigned to dealers in the Faneuil Hall Market area. Trucks travelling over downtown streets containing heavy traffic transport the produce from team tracks of three different railroads a distance from 3/4 to 2-1/2 miles from the market.

No established opening or closing hours of business exist. Most firms open at 5:00 a. m. during the summer and 6:00 a. m. in winter months.

On Saturdays the traditional "pushcart market" is held for retail sales of surplus goods. Blackstone Street between Hanover and North Streets is then closed to vehicular traffic. The entire street becomes a bedlam of activity where sales are made from pushcarts and horse drawn vehicles by peddlers and hawkers.

2. **Boston Market Terminal** - During the past 20 years, an important area of wholesaling food products has developed in South Boston. This area, where freight terminals of the New York, New Haven, and Hartford Railroad have long been maintained, is connected with Boston proper by three bridges across Fort Point Channel, at Summer and Congress Streets and Northern Avenue. The area consists of team track yards to the north and south of Northern Avenue known respectively as the "fan yard" and the "watermelon yard". Freight railroad yards to the south form the western boundary of the area on which buildings
and receiving tracks of the Boston Market Terminal are located. Summer Street which is elevated at this point above other streets and railroad tracks forms an access to both the Terminal and the Fish Pier by means of ramps.

The Boston Market Terminal Company consists of three buildings, with adjoining platforms and tracks. The largest is approximately 1000 feet long by 55 feet wide. To the west and parallel to it are two buildings approximately 650 feet long by 50 feet wide. The total enclosed square footage is approximately 120,000 square feet where 250 carloads of fruits and vegetables may be unloaded for display and sale at one time. Alongside extra platforms and on adjoining team tracks an additional 300 cars may be set for delivery and inspection. A total of 550 cars is the daily capacity.

Offices and locker rooms of the stevedoring company and rooms where buyers and salesmen congregate prior to time of sales are located on the ground floor at the entrance end. The second floor contains passageways connecting buildings off which are offices of the company and individual member firms including brokers, private bureau of inspection, Western Union, barber shop and a restaurant.

On each day preceding scheduled sales, receivers furnish the Terminal Company with a description of merchandise to be offered for sale. The Terminal Company orders via the railroad agent placement of cars at the houses or team tracks for unloading. All contents of fruits and vegetables are unloaded on the floor for display while a few samples of team track cars are also shown.

Sales take place from 7:00 a.m. to 10:00 a.m. during winter months and from 6:00 a.m. to 9:00 a.m. during the summer.

Across the street is an area that has grown from a parking lot into a point for truck receipts and sales. It is a concrete block building 125
feet by 35 feet with a platform on one side. Partitions divide the building into eleven rental units. Half of these are on a day-to-day basis.

Other facilities adjoining the area consist of ripening rooms for tomatoes, two chain store warehouses, grocery houses, coffee roasters, spice merchants and wine and liquor companies. All businesses have direct rail connections except the truck terminal.

3. Facilities in Charlestown - Three important market facilities are located in Charlestown, namely, the fruit auction, grape yards, and the potato shed.

The produce auction is contained in a building 485 feet by 113 feet, including two platforms 4 feet five inches on the north side and 7 feet 9 inches on the south. Double tracks are fitted along both sides adjacent to the platform. Except for 20 feet on the first floor at the street entrance where offices, locker and toilet facilities and a lunch stand are located, the platforms run the entire length of the building. The second floor, 110 feet long and the width of the building contains 2 auction rooms seating 225 buyers each, and company offices. House tracks have a capacity of 50 cars while two team tracks to the north are more than sufficient. The parking area can accommodate 100 cars and trucks. Night unloading by stevedores prior to sales takes place and merchandise is stacked for display and sale for following days. Catalogues pinned to the stacks are taken by the buyers while inspecting and are used for reference during the auction. Sales proceed at 8:30 a.m. and run until all fruits are sold. Deliveries are taken immediately after sale. No delay is caused due to individual stacking of goods on the floor. Flush tracks and good platform height at 39 inches enables the trucks to be loaded by plate and hand trucks.
The grape yards consist of four team tracks parallel to an unloading platform four feet wide and four feet high with a covered roof. The length is 1560 feet. They are only used during the months of September and October during the grape season and have been decreasing in volume of receipts. Freight cars are unloaded to trucks across the short platform.

The potato shed is an outmoded wooden structure with first and second floors. The first is used for unloading and delivery of produce such as potatoes, cabbage, onion and turnips. Dry produce is stored on the second floor. Offices of the Boston and Maine Railroad have a center location for tenancy convenience and other offices are scattered on both floors. No regular business hours exist. Sales and deliveries start around 7:00 a.m. and continue until late afternoon.

Near to this area are distributors of milk and dairy products, a chain store warehouse and one spice merchant. Nonrelated industrial plants and substandard dwellings also abut the property.

4. Other Facilities Outside Market Areas

a) Farmer's Market in Cambridge - An area of 4 acres was developed in 1935 in an attempt to locate all wholesale operations in this area because 90 acres were available. No significant movement took place and at present only six dealers and a number of farmers are using the facilities. It includes some one-story frame buildings with a spur track. The area is unpaved and roads are covered with gravel and cinders. No platforms are present. A small restaurant is included.

b) Long Wharf - Although wharfage rights are maintained, Long Wharf at the foot of State Street had decreased in volume receipts. It was
headquarters for many years for banana cargoes. Few ships arrive now. It has since been converted into ripening and cutting rooms for bananas arriving by rail and truck. One day each week trucks line up along Atlantic Avenue to load bananas. This adds to the heavy traffic already in existence.

5. **Brighton Abattoirs and Stockyards** - These yards comprise 12 acres in Brighton city limits and are used for native cattle which have been steadily decreasing. Animal pens, chutes and scales maintained are more than ample.

The abattoir is the only licensed one in Boston. On its premises are 8 packers. Nearby is a rendering plant. Other more up-to-date houses are established in Cambridge and Somerville.

6. **Streets and Traffic in Market Area** - The width of streets, the volume and direction of traffic movement in the streets, the type of business conducted in buildings along the streets, and the accesses to major streets and highways are important factors in the analysis of traffic in a marketplace.

Boston is bounded by the Atlantic Ocean and the Metropolitan area is broken up by the Charles River, Mystic River and Fort Point Channel into many parts. Docks and heavy industrial developments have been built along these estuaries. From these industries originated and is received a high percentage of merchandise moving by truck. It may be observed that many streets lead to downtown Boston but because of traffic restrictions only a few are open to trucks. On these streets vehicular traffic increasingly worsens as the downtown area is approached. The focal point is at Faneuil Hall.
The several parts of Boston are connected by drawbridges and the Sumner Tunnel. All act as barriers to flow of traffic.

Most of the market areas lie in the heart of severest traffic conditions. Interchange of goods between these areas add to the problem.

An average of 2,500 buyers visit Faneuil Hall each day. Those servicing the market also add hundreds of cars and trucks to the problem. Many vehicles not directly concerned with the market are forced through it to reach their destinations.

At the Market Terminal most trucks arrive between the hours of 5:00 a.m. and 7:00 a.m. when a minimum of non-market traffic exists. Egress streets are for the most part unimpeded, Summer Street -elevated and Northern Avenue with few street intersections.

When loaded trucks are ready to leave, however, they are ensnared in the late afternoon non-market traffic. Grade crossings on Northern Avenue are often the cause of considerable delay.

The three access points to the Charlestown facilities, City Square, Prison Point Bridge and Sullivan Square are heavily used at all times. Street cars and elevated structures act as barriers at both squares and both ends of the bridge terminate in heavy cross traffic.

7. Public Cold Storage - There are 6 public and 5 private cold storage warehouses available to wholesale food merchants. The total space is 11 million cubic feet, 7 million for freezer, and 4 million for cooler space.

All warehouses have rail connections and ample platforms. Labor saving equipment is in common use.

Most of this storage space has been used for large quantities of fish, poultry, eggs, butter, cheese, and other dairy products. In more recent
years a large amount of cold storage space has been converted into freezer
space to take care of the growing business in frozen foods.

8. Present Space - Wholesale dealers in fruits and vegetables, poultry
and eggs, meat and meat products, and dairy products own or rent a total of
2,200,000 square feet, excluding chain store warehouses, slaughtering plants,
and fish auctions. The Tables 7 and 7A show the allocation of this space.

9. Equipment in Present Facilities - Table 8 shows special equipment
in use by Boston dealers. Special attention is called to the large amount of
cold storage space in wholesale stores, particularly in those dealing in meat
and meat products, where refrigeration space occupies about one-third of the
total space. The small number of motor trucks owned is accounted for by the
fact that a majority of the dealers employ contract haulers.

Location of space on several floors and the design of buildings prevent
general use of labor saving devices in wholesale stores. In fruit and vege-
table stores, even those using elevators and conveyors, much hand labor is
necessary in moving merchandise. The only labor-saving device in use is
the two-wheel hand truck. The use of special equipment like skids or banana
racks mounted on four-wheel trucks, is confined to stores dealing in specialty
merchandise. The majority of the meat stores have overhead rails for move-
ment of goods into the stores. Hand carry is used for transfer between truck
and rail. For the most part, however, the carrying operation has been
eliminated.

In stores handling eggs, dressed poultry, and dairy products, four-
wheel hand trucks and sometimes skids are used in place of two-wheel hand
trucks.
For the most part, meat dealers doing processing and manufacturing, and poultry and egg dealers make good use of basements and space above the first floors. Production lines and modern equipment carry out these processes.

10. Employment in Present Markets - Table 9 gives more than 5,000 people directly and regularly employed by all wholesale dealers in produce. Many others are employed in the Market Terminal, the Fruit Auction and in chain store warehouses. Besides this are many brokers and sales agents on full time in several different channels. Hundreds of truck drives are also employed by contract haulers.

11. Cost of Doing Business in Present Market - In 1947 costs of rent, cartage, spoilage, deterioration, theft, and labor except for stevedores for independent dealers in all types of produce exceeded $25,000,000. This figure excludes charges such as taxes, cost and maintenance of equipment, refrigerant, demurrage, rodent and pest control, etc.

E. Major Problems

1. Split Market - The primary function of a wholesale produce market is to provide a common meeting place for buyers and sellers. This is accomplished in the Faneuil Hall Market area by cross hauling from the other markets.

   Many dealers have to maintain more than one place of business and cannot keep a full knowledge of supplies available.

2. Lack of Proper Kinds and Sizes of Wholesale Stores - Most buildings are multistoried, are not of the proper shape and volume to hand fast-moving produce, and lack raised truck platforms. Mechanical lifting devices between floors are missing. Ground floors are some distance above the street, preventing handling of hand trucks. Narrow streets restrict display. Lack of
rear entrances is noted. Unsanitary conditions exist in not being rodent or insect proof.

Lack of store arrangement on public streets causes interference of receipt and delivery.

3. Lack of Rail Facilities - Excessive trucking costs are involved because most dealers' stores have no spur trackage. This cost of trucking is estimated at $1,000,000 annually. Deterioration by exposure to weather is also a result of this.

4. Lack of Adequate Streets and Parking Facilities - Parking areas at present are limited to the fronts of the stores, thus blocking trucks in transit and transfer of produce.

The majority of the streets besides having gross traffic are too small for turning and backing up large trucks.

5. Lack of Farmers and Truckers Facilities - Only open street space is at present provided for both farmers and truckers and this is seriously limited. The space available is quite restricted by traffic movement on both sides. Unprotected open display of produce receives deposit of dust and soot accumulation, causing deterioration. Because of time and distance buyers do not take time to visit the market regularly in Cambridge.

6. Lack of Market Regulations - For a wholesale market to operate efficiently, it must operate as a unit. The very nature of the business tends to make certain regulations beneficial to both dealers and buyers and other parties.

A shorter market period tends to reduce fluctuation in prices and disputes over price and quality. Firmly established hours of sale enable definite planning of arrivals of produce in the best condition.
F. Experience in Other Cities

New facilities have been built in many cities during the last twenty years either supplementary to old markets or as actual relocation and rebuilding. Many of these new facilities have not served the purpose for which they were intended or have embodied such service shortcomings as largely to affect the gains that may have been made.

Common faults in market development have been:

1. lack of provision for direct rail receipts.

2. failure to allow street space large enough for motor trucks.

G. Importance of Railroads

The three railroads serving Boston have built a major portion of the markets today and carry substantial tonnage to the markets. Although the locations are such as to split the market, the distribution area served today could not have been handled otherwise.

Railroad research has brought many new features which are being incorporated slowly. Some of these are switch engines which can turn on very small radius, advanced design of freight cars for cooler refrigeration and freezing. Icing of freight cars is being eliminated in favor of power units for boxes. A greater basic interchange of freight between rail and truck is taking place with a lessening discrimination against trucking facilities.

H. Importance of Trucks

The many new and improved highways have eased the transport of goods into Boston from outlying areas near and distant to produce areas.

The development of trailer trucks has in the past 20 years been phenomenal. It has enabled a carrying capacity to be reached equal to
or in excess of the average freight car. In addition, transfer methods of tractor and trailer enable through shipment with reduced delay due to mechanical troubles. Trailers are being shipped by flat car to transfer points in order to gain certain time and weather advantages.

Present statistics show a maintained increase in motor truck receipts with a slight decrease in rail receipts. However, proper facilities to meet the new demands of the truck have not been given enough careful consideration.

I. Importance of Water Transport

Boston's volume of receipts has been through three stages of development: water to rail to truck transport. Although water shipments have been light in recent years, reports of shippers show a return to this type of transportation in certain types of produce which has slow deterioration. Ample facilities already exist should this reach a major importance in the future.

J. Importance of Air Transport

A few successful shipments of produce by air have shown a new opportunity. All experiments were done with conventional types of aircraft. In all cases goods shipped were those at the very start of the season which enabled a good price to be realized to cover the cost plus profit of this type of shipment. Steady hauling of produce in this fashion might prove highly unrealistic in the long runs for the future. However, large capacity jet helicopters operation on a cheap fuel are in the late stages of development. Future needs are unpredictable in this respect except for speculation. Large landing strips are not necessary and direct shipments are possible. Transfer of cargo between water, rail, truck, and air without unnecessary handling might also be a future need.
K. Importance of Distributive Groups

Wholesale distribution of produce in Boston is made by independent dealers, chain store warehouses, slaughtering plants, packing houses, fruit and fish auctions, by farmers and many other concerns.

The independent wholesale dealer is the most important group in the receipt and distribution of produce.
TABLE 1.
ESTIMATED VOLUME AND VALUE OF DIRECT RECEIPTS OF PRODUCE
BOSTON WHOLESALE MARKETS

<table>
<thead>
<tr>
<th>KIND OF PRODUCE</th>
<th>1947 VOLUME CARLOTS</th>
<th>VALUE PER CAR DOLLARS</th>
<th>1947 TOTAL DOLLARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRESH FRUITS AND VEGETABLES</td>
<td>61,700</td>
<td>2,100</td>
<td>129,570,000</td>
</tr>
<tr>
<td>MEAT AND PACKINGHOUSE PRODUCTS</td>
<td>25,000</td>
<td>12,500</td>
<td>312,500,000</td>
</tr>
<tr>
<td>POULTRY AND EGGS</td>
<td>5,450</td>
<td>9,900</td>
<td>53,955,000</td>
</tr>
<tr>
<td>DAIRY PRODUCTS (NO MILK OR CREAM)</td>
<td>2,600</td>
<td>16,500</td>
<td>42,900,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>94,750</td>
<td></td>
<td>538,925,000</td>
</tr>
</tbody>
</table>
TABLE 2.
VOLUME OF FRUITS AND VEGETABLES BY TYPE OF HANDLER
BOSTON WHOLESALE MARKETS 1947

<table>
<thead>
<tr>
<th>TYPE OF DEALER</th>
<th>NUMBER</th>
<th>RAIL</th>
<th>DIRECT AREAS (CARLOTS)</th>
<th>LOCAL FARM (CARLOTS)</th>
<th>TOTAL (CARLOTS)</th>
<th>PURCHASES FROM OTHER DEALERS (CARLOTS)</th>
<th>TOTAL SALES (CARLOTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDEPENDENT DEALER</td>
<td>170</td>
<td>29,950</td>
<td>7,560</td>
<td>9,860</td>
<td>47,370</td>
<td>12,675</td>
<td>60,045</td>
</tr>
<tr>
<td>FRUIT AUCTION</td>
<td>1</td>
<td>5,600</td>
<td>0</td>
<td>0</td>
<td>5,600</td>
<td>0</td>
<td>5,600</td>
</tr>
<tr>
<td>CHAIN STORES</td>
<td>5</td>
<td>6,750</td>
<td>840</td>
<td>1,140</td>
<td>8,730</td>
<td>2,270</td>
<td>11,000</td>
</tr>
<tr>
<td>TOTAL - ALL DEALERS</td>
<td>176</td>
<td>42,300</td>
<td>8,400</td>
<td>11,000</td>
<td>61,700</td>
<td>14,945</td>
<td>76,645</td>
</tr>
</tbody>
</table>
**Table 3.**

**Volume of Meat and Meat Products by Type of Handler**

**Boston Wholesale Markets 1947**

<table>
<thead>
<tr>
<th>Type of Dealer</th>
<th>Dealers</th>
<th>Meat from Local Livestock</th>
<th>Receipts from Points Outside of Boston</th>
<th>Purchases from Other Dealers</th>
<th>Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NUMBER</td>
<td>CARLOTS</td>
<td>CARLOTS</td>
<td>CARLOT UNITS</td>
<td>CARLOTS</td>
</tr>
<tr>
<td>Local Slaughterers</td>
<td>11</td>
<td>5,000</td>
<td>500</td>
<td>0</td>
<td>500</td>
</tr>
<tr>
<td>Processors</td>
<td>15</td>
<td>0</td>
<td>2,965</td>
<td>35</td>
<td>3,000</td>
</tr>
<tr>
<td>Independent Dealers</td>
<td>63</td>
<td>0</td>
<td>5,220</td>
<td>380</td>
<td>5,600</td>
</tr>
<tr>
<td>Hotel and Restaurant Jobbers</td>
<td>35</td>
<td>0</td>
<td>780</td>
<td>70</td>
<td>850</td>
</tr>
<tr>
<td>Subsidiaries of National Packers</td>
<td>8</td>
<td>0</td>
<td>6,785</td>
<td>215</td>
<td>7,000</td>
</tr>
<tr>
<td>Chain Store Warehouses</td>
<td>4</td>
<td>0</td>
<td>2,750</td>
<td>300</td>
<td>3,050</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>136</td>
<td>5,000</td>
<td>19,000</td>
<td>1,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>
### Table 4.
VOLUME OF EGGS AND POULTRY SALES BY TYPE OF HANDLER
BOSTON WHOLESALE MARKETS
1947

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Type of Dealer</th>
<th>Direct Receipts</th>
<th>Purchases from Other Dealers</th>
<th>Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rail</td>
<td>Truck</td>
<td></td>
</tr>
<tr>
<td><strong>Shell Eggs</strong></td>
<td>Independent Dealers</td>
<td>300</td>
<td>600</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>Branch Packinghouses</td>
<td>75</td>
<td>165</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td>Chain Stores</td>
<td>200</td>
<td>745</td>
<td>945</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>All Dealers</td>
<td>575</td>
<td>1,510</td>
<td>2,085</td>
</tr>
<tr>
<td><strong>Frozen Eggs</strong></td>
<td>Independent Dealers</td>
<td>190</td>
<td>95</td>
<td>285</td>
</tr>
<tr>
<td></td>
<td>Branch Packinghouses</td>
<td>10</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>All Dealers</td>
<td>200</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td><strong>Live and Dressed Poultry</strong></td>
<td>Independent Dealers</td>
<td>800</td>
<td>1,815</td>
<td>2,665</td>
</tr>
<tr>
<td></td>
<td>Branch Packinghouses</td>
<td>135</td>
<td>185</td>
<td>320</td>
</tr>
<tr>
<td></td>
<td>Chain Stores</td>
<td>80</td>
<td>5</td>
<td>85</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>All Dealers</td>
<td>1,065</td>
<td>2,005</td>
<td>3,070</td>
</tr>
<tr>
<td>TYPE OF DEALER</td>
<td>RECEIPTS FROM OUTSIDE OF BOSTON</td>
<td>PURCHASES FROM OTHER DEALERS</td>
<td>TOTAL SALES</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---------------------------------</td>
<td>------------------------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RAIL</td>
<td>TRUCK</td>
<td>TOTAL</td>
<td>CARLOTS</td>
</tr>
<tr>
<td>Chain Store Warehouses</td>
<td>650</td>
<td>50</td>
<td>700</td>
<td>15</td>
</tr>
<tr>
<td>National Dairy Products Companies</td>
<td>1,090</td>
<td>25</td>
<td>1,115</td>
<td>0</td>
</tr>
<tr>
<td>Branch Packing Houses</td>
<td>360</td>
<td>15</td>
<td>375</td>
<td>0</td>
</tr>
<tr>
<td>Wholesale Meat Dealers</td>
<td>185</td>
<td>5</td>
<td>190</td>
<td>80</td>
</tr>
<tr>
<td>Poultry and Egg Dealers</td>
<td>215</td>
<td>5</td>
<td>220</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>2,500</td>
<td>100</td>
<td>2,600</td>
<td>100</td>
</tr>
<tr>
<td>Type of Produce</td>
<td>Direct Receipts from Distant Areas</td>
<td>Direct Receipts from Local Growers</td>
<td>Purchases from Wholesale Dealers</td>
<td>Total Sales</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-----------------------------------</td>
<td>------------------------------------</td>
<td>----------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td>CARLOTS</td>
<td>CARLOT UNITS</td>
<td>TOTAL</td>
<td>CARLOTS</td>
</tr>
<tr>
<td>Fruits and Vegetables</td>
<td>6,750</td>
<td>840</td>
<td>7,590</td>
<td>1,140</td>
</tr>
<tr>
<td>Meat and Packinghouse Products</td>
<td>2,750</td>
<td>300</td>
<td>3,050</td>
<td>0</td>
</tr>
<tr>
<td>Poultry and Eggs</td>
<td>280</td>
<td>750</td>
<td>1,030</td>
<td>0</td>
</tr>
<tr>
<td>Dairy Products</td>
<td>650</td>
<td>50</td>
<td>700</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>10,430</td>
<td>1,940</td>
<td>12,370</td>
<td>1,140</td>
</tr>
<tr>
<td>Location &amp; Dealer Type</td>
<td>Basement</td>
<td>First Floor</td>
<td>Second Floor</td>
<td>Third to Sixth Floors Inclusive</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>----------</td>
<td>-------------</td>
<td>--------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td><strong>Faneuil Hall Market Area in City-Owned Building</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit &amp; Vegetable Dealers</td>
<td>16,970</td>
<td>4,130</td>
<td>800</td>
<td></td>
</tr>
<tr>
<td>Meat &amp; Meat Products Dealers</td>
<td>11,890</td>
<td>3,220</td>
<td>2,890</td>
<td></td>
</tr>
<tr>
<td>Poultry and Egg Dealers</td>
<td>4,893</td>
<td>2,441</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total - 3 Dealer Groups</strong></td>
<td>34,753</td>
<td>9,791</td>
<td>3,690</td>
<td></td>
</tr>
<tr>
<td><strong>In Privately-Owned Buildings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit &amp; Vegetable Dealers</td>
<td>99,174</td>
<td>140,466</td>
<td>83,705</td>
<td></td>
</tr>
<tr>
<td>Meat &amp; Meat Products Dealers</td>
<td>165,495</td>
<td>241,898</td>
<td>192,143</td>
<td></td>
</tr>
<tr>
<td>Poultry and Egg Dealers</td>
<td>43,910</td>
<td>53,025</td>
<td>42,635</td>
<td></td>
</tr>
<tr>
<td><strong>Total - 3 Dealer Groups</strong></td>
<td>308,579</td>
<td>435,389</td>
<td>318,483</td>
<td></td>
</tr>
<tr>
<td><strong>Total - Faneuil Hall Area</strong></td>
<td>343,332</td>
<td>445,180</td>
<td>322,173</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 7B.
PRESENT SPACE ALLOCATION BY LOCATION AND TYPE OF DEALER
BOSTON WHOLESALE MARKETS
1947

<table>
<thead>
<tr>
<th>LOCATION &amp; DEALER TYPE</th>
<th>BASEMENT SQ. FT.</th>
<th>FIRST FLOOR SQ. FT.</th>
<th>SECOND FLOOR SQ. FT.</th>
<th>THIRD TO SIXTH FLOORS INCLUSIVE SQ. FT</th>
<th>TOTAL ALL FLOORS SQ. FT.</th>
<th>OFFICE SPACE SQ. FT.</th>
<th>PLATFORM OR SIDEWALK SQ. FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAILROAD-OWNED FACILITIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOSTON MARKET TERMINAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRUIT &amp; VEGETABLE DEALERS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOSTON &amp; MAINE PRODUCE MARKET</td>
<td></td>
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<tr>
<td>FRUIT &amp; VEGETABLE DEALERS</td>
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<tr>
<td>FRUIT AUCTION BUILDING</td>
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<td>FRUIT &amp; VEGETABLE DEALERS</td>
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<tr>
<td>TOTAL—RAILROAD FACILITIES</td>
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<td>FACILITIES OUTSIDE DEFINED MARKET AREAS</td>
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<tr>
<td>MEAT &amp; MEAT PRODUCTS DEALERS</td>
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<td>TOTAL—2 GROUPS OUTSIDE MARKETS</td>
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<td>TOTAL—ALL LOCATIONS &amp; GROUPS</td>
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<thead>
<tr>
<th>TYPE OF EQUIPMENT OR FACILITY</th>
<th>USED BY DEALER GROUPS</th>
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<tr>
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<td>FRUIT AND VEGETABLE DEALERS</td>
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<tr>
<td>REFRIGERATED SPACE IN STORES — CU. FT.</td>
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</tr>
<tr>
<td>RIPENING ROOMS IN STORES — CU. FT.</td>
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<td>FREIGHT ELEVATORS IN STORES — NUMBER</td>
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<td>POWER CONVEYORS IN STORES — NUMBER</td>
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<td>MOTORTRUCKS OWNED BY DEALERS</td>
<td>122</td>
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<tr>
<td>CLASSIFICATION OF EMPLOYMENT</td>
<td>DEALER</td>
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<td>-----------------------------</td>
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<tr>
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<td>FRUIT AND VEGETABLE DEALERS</td>
</tr>
<tr>
<td>SERVICE PERSONNEL</td>
<td>NUMBER</td>
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<tr>
<td>OWNERS</td>
<td>634</td>
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<td>MANAGERS</td>
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<tr>
<td>SALESMEN</td>
<td>838</td>
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<tr>
<td>OFFICE WORKERS</td>
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<td>MANUAL PERSONNEL</td>
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<tr>
<td>TRUCK DRIVERS</td>
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<td>HOUSEMEN</td>
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<tr>
<td>REPACKERS</td>
<td></td>
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<tr>
<td>TOTAL - EMPLOYEES</td>
<td>1,472</td>
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<tr>
<td>LOCATION OF SPACE BY LEVEL</td>
<td>PRESENT SPACE</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>SQ. FT.</td>
</tr>
<tr>
<td>BASEMENT</td>
<td>125,620</td>
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<tr>
<td>FIRST FLOOR</td>
<td>188,203</td>
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<tr>
<td>SECOND FLOOR OR HIGHER</td>
<td>366,049</td>
</tr>
<tr>
<td>TOTAL</td>
<td>679,872</td>
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II. FACILITIES NEEDED IN A NEW MARKET

A complete wholesale market is needed including:

1. Buildings for all types of wholesale dealers.
2. A produce auction.
3. Rail connections to stores.
4. Rail connections for a team track yard.
5. A railroad hold and inspection yard combined for assembling transfers of different produce.
6. Office space for management, brokers and others.

Related basic facilities for service are needed including:

1. Service garage to handle over-the-road trucks.
2. A public cold storage warehouse with a power plant and incinerator.
3. Restaurants, public toilets, etc.
4. Space for expansion and related facilities.

A. Stores for Wholesale Dealers

Wholesale dealers stores should be arranged in a row of one or more long rectangular concrete platforms, with each store extending crosswise. The ideal design calls for wide unobstructed platform on front and rear of the building. Canopies over and beyond both platforms are also needed.

The wider platform at the front is the "sidewalk" of the market where much selling is done and deliveries are taken. The rear narrower platform is for rail receipts and also truck deliveries. Since hand trucks are a basic tool for handling produce, ramps at ends of the platforms and toward the middle are necessary to give ease of transition to street level when
shifting produce from one store group to another. The height of platform varies from 39 inches to 55 inches. The platform in front, regardless of depth, should be maintained at 45 inches from street level to meet the average height of buyers and sellers trucks. The edge detail is such that it should have a bumper rail for truck wheels set at a distance far enough away to prevent tailboard collisions. One or two steps should run the entire length of platform edge to provide access at any point. This also gives better access to smaller delivery trucks and low-bed vehicles. These steps are modified to allow vents into the basements. Heavy iron gratings should shield the openings.

The rear platform height varies with the type of freight car used: box car delivery - 44 inches, refrigerator car delivery - 55 inches.

Two sets of rails spaced 13 feet o. c. and 8 feet from platform edge to center line of inside rails should be used. Both rails placed flush with the pavement allow movement of vehicles across them. Plates can be used to take up the variation of height from freight cars. H columns should be set back at about 4 feet from platform edge to prevent bumping by trucks. In cold months temporary partitions could be installed along the column line to enclose part of the platform, leaving a small protected outside strip for pedestrian access.

At least 14 feet should be established for eave height to clear any trucks backing up. This might be reduced somewhat because of height limitation by state code for trucks being set at 12 feet six inches, not materially however. This 14 foot height also accounts for freight cars which average 13 feet six inches in height. Further obstructions might be encountered due to railroad regulations which tend to firmly establish minimum height at this figure and limit overhang. Drainage should be inward to eliminate runoff onto vehicles and workers from the roof. Platform
drainage for wet produce and washing should be outward to the street. Interior floors should be of reinforced concrete where basements are used or ground slabs otherwise for best wear from stacking and metal wheeled hand trucks. Two drains per store unit are recommended. Floor voids with semi permanent covers should be provided in all stores where basements are used. In this way if conveyors or skids are adopted at some time in the future these plug covers can be removed and replaced by street hatches for access. Opening sizes are determined by package type and size handled. In each store unit, outlets should be provided for sewage, electric light and power, public refrigeration, toilet facilities, either public hot water or steam heat or individual gas or oil heat. Ventilators for each store unit are needed.

Where mezzanines are required, the office space provided should be for most purposes 15 feet deep and the width of unit. Placement at the rear of the store gives visual control over the front platform where trading and delivery is made and to the rear in some cases where team track surveillance is established. Overhead doors are recommended for front platforms while horizontal or overhead moving doors are suitable for rear platform access. In both cases a fixed outward swing door would be appropriate where the main doors might be maintained in a closed position. Mezzanine toilet facilities outlets could be limited to the number of dealers contemplated.

Ceiling height might be set at 18 feet for roof support and where future mezzanines might be built. Mezzanine floors can then be set at 8 feet from floor to floor giving a height in the office of approximately 10 feet. Basements would extend under both platforms and a 9 foot ceiling is desirable. Removable partitions with good durability are needed. These might be clay, concrete, or cinder block or steel sheeting. Hollow block has a disadvantage in the respect that if broken open it might allow a
nesting place for rodents. Column spacing for roof support could be around 15 feet o. c.

Variations in design are needed to accommodate the type of dealer and his particular needs.

1. Wholesale Fruit & Vegetable Stores – For the 154 dealers in Faneuil Hall it is recommended that 200 store units with first floor and basement be built. Store unit dimensions are 22 1/2 feet wide and 60 feet deep with mezzanine offices and covered platforms 24 feet wide in front and 12 feet wide in the rear.

For 16 dealers now operating at the Boston Market Terminal it is recommended that 24 standard units of size mentioned be provided but without basement. These dealers desire to continue operating without a designated store space such as they now do. Additional parallel tracks next to the store would be needed in this case to permit maximum unloading of cars between market periods.

Also one chain store requested one store unit for assembling products brought to market by farmers, truckers, and supplies from dealers stores procured by rail and truck in excess of its requirements. The unit should contain a basement and mezzanine office.

According to Table 12 the reduction in first floor space at present is by 23 percent but total space in stores is cut by 15 percent. However, total usable first floor space including front platforms means 92 percent of present first floor space used.

When proper transportation facilities and proper space allocation are made, business can be carried on in less space than used at present with a reduction of total operating expenses.
The inclusion of second floor space in buildings of fruit and vegetable dealers is possible. It could be added at a fraction of cost of first floor space. If built, the space necessitates the use of vertical lift equipment to transport produce up the 12 foot height of the ceiling. Experience has illustrated that rather than rent second floor space, dealers have sought additional first floor space or basements. Basements, because of cheap construction costs and ability to maintain even temperatures and humidity, are desirable for certain dealers. They provide room to store equipment, repacking, and other operation unwanted on the first floor.

2. Stores for Meat Dealers - For 84 dealers a total of 192 store units are suggested. The dimensions given are 22 1/2 feet wide, 70 feet deep, and with covered platforms front and rear 14 feet and 12 feet deep respectively, total depth of 96 feet. All store units should have double rail connections at the rear for unloading freight cars direct.

Of the 192 units, 74 consist of first floor space only, 11 include basements as well as first floor; and 107 include basement, first floor and second floor. Basement space is recommended for all dealers whose business is such that it can be used for storage of supplies, processing, toilets, dressing rooms, etc. It is advantageous to include basements wherever they could be used at about 1/3 or more of capacity, and particularly where there is no large amount of movement of products between floors. Second floors likewise are suggested for use for processing, storage, offices and dressing rooms. All buildings must meet the requirements of the Bureau of Animal Industry.

Interior operations vary greatly between dealers. Some dealers having first floors only will have all facilities on the same floor. Multiple floor dealers will require power conveyors according to their production
line design. Whatever the arrangement may be, overhead rails connecting
the store with freight cars and trucks are needed for transportation of
heavy beef on hooks.

Recommended total space as compared to present space is 105 percent
representing a slight increase over the amount now in use.

Meat does not move as fast as fruits and vegetables, therefore requir-
ing smaller platforms. It is, as a rule, processed in some degree before
being resold.

3. Stores for Poultry and Egg Dealers - A total of 40 store units
are recommended with the same dimensions as those provided for meat dealers.
Twenty stores include both first and second floors and twenty have first
floors and mezzanines. This space is 50 percent of the present space now
in use, extra platform space being in addition. The ceiling height would
be lower in units with second floors. Basements and second floors are
recommended for smoking, candling, breaking and similar operations for those
handling meats, eggs, poultry, dairy products and fish. Considerable space
in cooler and freezer is needed by them for holding products since they are
not distributed directly to buyers. Cheap rental space as is found in base-
ments and second floors is needed for storage in this case.

The height of ceilings in stores of meat and related products dealers
leasing second floors would be reduced to 12 feet, allowing for construction
of coolers and cooler equipment. Since this is insufficient for mezzanine
space, first floor offices are suggested. This need is established by
Federal Inspection as desired by dealers.

Poultry and egg dealers would retain mezzanine offices where possible.

Space provision should also be made for installation of elevators or
conveyors according to the number of dealers desiring them. The equipment
should be paid for and installed by the dealers, however. Space allocation determined by specific needs of dealers for ripening rooms, coolers and freezers needs further study based upon changing methods of operations after moving into the new market.

Fruit and vegetable dealers use very little freezer and cooler space as compared to meat, poultry, egg and fish dealers. They do have need for the ripening rooms.

4. Stores for Other Types of Wholesale Dealers - Those engaged in wholesale dairy products other than milk have been included in the number of stores for poultry and egg dealers. Standard units for meat dealers would suffice in their case. The Federal survey did not attempt to specify the total needs in this group.

Wholesale fish dealers are also included in the group. They might also operate from the cold storage plants if need be. Also not covered were dry groceries, container merchants and handlers of various other commodities. Future space allocation is taken into consideration.

B. Produce Auction

Auction companies operating in certain city wholesale markets for consumer farm products are concerns which sell at wholesale by the auction method. Products sold consist largely of fruit but some vegetables are also auctioned. Sales are conducted under definite rules, are open to the public, and are made or "knocked down" to the highest bidder unless the seller reserves the right to reject any and all bids.

Auction companies do not take title to the goods but handle them for the clients on a commission or fee basis. They provide space for public inspection and the sale of the merchandise consigned to them and may even extend credit to the purchasers on their own responsibility.
1. Importance of Auctions - Fruit auctions originated in Chicago
and Philadelphia in 1885 and have since then developed in a number of
leading cities, Baltimore, Boston, Pittsburgh, Cleveland, Cincinnati, St.
Louis, New Orleans, Detroit, and for deciduous fruits only, St. Paul and
Minneapolis. The California Fruit Growers Exchange conducts an auction at
Los Angeles for the sale of "culls", i.e. fruits not high enough in quality
to justify shipment to the eastern markets. Today the auctions which oper-
ate in the 13 cities sell eight percent of all the commercial crop of fruit
and vegetables in this country. It is true, however, that aside from some
sales of bananas and a good many potatoes, practically all of the produce
sold on the auctions consists of deciduous and citrus fruits. In a single
year the New York and Philadelphia auctions together sold over 57,000 carlot
equivalents of fruits and vegetables. Cooperative shipping associations
supply about two-thirds of the volume sold on the auction, while the inde-
pendent cash buyers send the remainder, except for the small percentage
supplied by a few large growers who are able to ship in carload lots and
prefer this method of sale.

Large users of the auctions for the sale of their produce maintain
salaried representatives to represent them, while others depend on "auction
receivers" or brokers who work for a fixed fee or a percentage of the proceed
of the sale. In either case the receiver inspects the car for quality, grade
and condition. If the goods have received damage in transit, he files a
claim with the carrier. He also seeks to prevent undue delay in handling
the shipment. He supplies the auction company with a manifest giving the
description of the goods for sale and for inclusion in the auction company
catalogue in which this and other shipments are announced for sale. If
the receiver is not satisfied that fair value is being offered for the goods at auction, he may withdraw all or part of the shipment. A receiver may also conduct sales building activities for his client by seeing that samples are properly displayed and interesting prospective buyers in his particular shipment.

2. Auction Outlets - The classes of buyers who frequent the auction necessarily vary with the different markets, and with the commodities involved, particularly as regards the proportionate amounts of business transacted with each class. Jobbers, nevertheless, constitute the principal purchasers, with retailers, who buy directly or through buying brokers next in importance. The larger retailers, including chain stores and motor truck-line hucksters, ordinarily have their own representatives at the auction. Even many of the smaller retailers, including hucksters, retail grocers, fancy fruiterers and peddlers, may purchase directly at the auction by pooling their requirements through one of their own group. More often, however, they employ buying brokers, either because they cannot afford individually to buy in quantities equal to one or more auction units or because their line is limited. They do not want to wait in the auction room for the opportunity to bid on a small line of goods when they can fill their needs promptly at a private sale or can employ the services of a broker at a small charge. Out-of-town customers, also, buy substantial quantities of merchandise through brokers. It is estimated that the auction sales, taking all 13 auction markets together, are distributed as follows: chain store buyers 70 percent, brokers buying for out-of-town customers 13 percent, jobbers and wholesalers 57 percent, and miscellaneous buyers, including large retailers, peddlers, etc., 10 percent.
3. **Methods of Operation of Auctions**  
Upon arrival of the cars, the goods are unloaded and placed in storage, usually adjacent to the auction room. The next step is the separation of the goods into lines or lots consisting of packages of the same brand, size, and grade from a single car. Samples are then selected at random by representatives of the auction company and made available for inspection by prospective buyers. Sales are made on a strictly "as is" basis but on the assumption that the samples have been fairly taken.

A catalogue showing all lots to be offered and essentials of grade and size is prepared by the auction company and used by the auctioneer and the buyers.

The auctioneer's clerks record the transactions as they occur and the buyers arrange for removing their purchases. Usually credit is granted for 10 or 15 days, although some of the sales are for cash only. Commissions charged by auction companies are sometimes as high as 7 1/2% but the normal range is from 1 1/2 to 2 1/2%. Some auction companies, such as those that operate on the docks, have an additional terminal charge per package of a cent or two for the use of storage and unloading facilities.

4. **Advantages of Auction Sales**  
Probably the most significant advantage claimed for the auction method of sale is the free play of supply and demand thus made possible. It brings the buying power of the market together and stimulates active and unrestricted bidding. Consequently, it exerts a stabilizing influence on the market, to the benefit of both buyer and seller, the latter presumably securing as high a price as market conditions warrant. The auction also affords a market for goods which must be sold quickly because they are perishable, or which enjoy no established market, although best results are not secured on ungraded and defective
merchandise. It is further claimed that the auction is a cheap method of selling, but such claim must be discounted, for the auction method ordinarily involves an additional middleman known as the auction receiver or some city representative of the shipping organization. In addition, buying brokers are of necessity called into existence to serve the needs of the smaller buyers or the out-of-town clients.

5. Facilities - Recommended is essentially a building 450 feet long and 150 feet wide with side interior double rails behind roll-up doors. The second floor contains office space for the auction company and two auction rooms to seat 250 and 200 buyers. A check out office is provided on the first floor along with lockers and toilets.

An increase over the recommended width of 72 feet to 100 feet is justified by designing for both rail and truck receipts. The extra 50 feet is to enable freight cars to be worked behind doors affording cold weather protection to stevedores. Trucks can be worked with doors partially closed on them also. It is planned that the auction would sell all types of produce including fruits, vegetables and eggs along with locally grown produce.

Since a major problem is the heating of the space a panel heating system is suggested, installed preferably in the floor. The forced air blowers now in use are inefficient in that the heat rises too fast and collects in the trusses. Lowering the duct outlets would interfere with the stacking of produce on the floor. A forced air system using oil or gas heat might be used on the second floor for auction rooms and office space.

Platform height should be established at 45 inches with step treatment as mentioned for dealers stores. This size facility affords placement of railroad cars at one time or double this capacity by additional switching. Street ramps are also necessary.
First floor offices are provided for the floor foreman, cooperer division, and check out clerks involved for both deliveries and receipts of produce.

Locker rooms should provide for approximately 25 stevedores, 10 coopers and about 15 personnel involved with inspection and supervision. Toilet facilities should adjoin the locker room. Storage on the main floor is needed for box parts and equipment used by the coopering gang.

The auction rooms should be furnished with folding desk arms on chairs grouped around the auctioneers' platform. Special attention to acoustics is needed here due to high noise level caused by shouting and aroused tempers as the auction progresses. Police supervision has been warranted in the past to break up minor skirmishes. Chair spacing should be more than ample as activity between auction office and buyers' rooms is heavy while orders are made, confirmed and telephoned.

The auction company space is approximately 8500 square feet which is more than ample for future needs. This could be distributed as follows:

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<thead>
<tr>
<th>Department</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Manager</td>
<td>600</td>
</tr>
<tr>
<td>Main Office</td>
<td>1150</td>
</tr>
<tr>
<td>Mimeograph Room</td>
<td>500</td>
</tr>
<tr>
<td>Auction Room to Seat 250</td>
<td>2400</td>
</tr>
<tr>
<td>Auction Room to Seat 200</td>
<td>2150</td>
</tr>
<tr>
<td>Treasurers and Auctioneers Office</td>
<td>600</td>
</tr>
<tr>
<td>Public Toilets</td>
<td>200</td>
</tr>
<tr>
<td>Stairway, Halls and other Access</td>
<td>900</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8500</strong></td>
</tr>
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</table>
The main floor should be as free as possible of columns and covered by fireproof construction. This would require a truss or arch either in concrete or steel construction to span 100 feet. It should be well lit both naturally and artificially for proper display of produce being sold by sample on the floor.

An additional feature to be incorporated could be one of the three restaurants recommended in the report. At present in the Charlestown auction it is of a quick-lunch type. Future needs suggest a cafeteria style restaurant with both tables and counters. It is assumed that it would serve most of the 1,472 employees in fruits and vegetables. Second floor location is desirable for views of both truck and rail working and main floor activities. Average patronage is estimated at 50 percent for space allocations. Inter-communications by an amplifier system would facilitate contact with people away considerable distance from the auction offices.

C. Restaurants, Employees Rooms, and Public Toilets

In the initial construction, three restaurants are recommended. However, the full development could justify an additional one or two more for a total of five. It is not known specifically the types of service to plan for in these. There has been space set aside in three store units, two first floor with basement units and one first floor unit.

It is contemplated that it would be better integration to include one of the restaurants in the produce auction. There is a quick lunch stand in the present auction which opens at 4:00 a.m. while in the Market Terminal a cafeteria on the second floor is in operation. Past experience seems to indicate this auction restaurant would operate by cafeteria service.
A second restaurant could be developed either adjoining the proposed central office space or in close proximity to it. At present, Durgin and Park, a very famous establishment serves the offices in the Quincy Market and nearby dealers. The central restaurant would seem to desire table service with an operation very similar to Durgin and Park. The third restaurant would bridge the areas served by the other two and might be either table service or cafeteria style or a combination thereof.

Since first floor space is at a premium in most markets a second floor or mezzanine location would appear to be best for location of restaurants. This would also afford an outlook over the various market operations.

Two public toilets are recommended for the new market due to the size and scope involved. Each would have facilities for both sexes and is in addition to the store space. Within the public toilets, employees rooms should be established with locker space and showers. Storage space for supplies used in market management should also be set aside.

D. Rail Connections to Facilities

Since rail connections are of major importance careful provision should be made for them in initial planning in order to bring the cars as close as possible to the buildings. Parallel tracks should be space 13 feet on center and 8 feet from platform edge to the center line of the inside track. Although there are certain types of operations and commodities handled for which placement of cars on team tracks are preferred, it is estimated that at least 70 percent of fruits and vegetables, 95 percent of meat and packing house products, about 100 percent of poultry and eggs, and all other products received by dealers in Boston will need to be placed on spur tracks alongside platforms of buildings.
Double tracks are recommended for all stores and produce auction so as to enable the outside car to be worked through the doors of the inside car at the same time. Around 500 cars should be able to be placed alongside buildings in daily operation.

The reason for the 22 1/2 foot module of store width is the length of half a freight car. Two cars can be placed on tracks behind every other unit with this spacing.

All switching is timed so as not to tie up truck traffic. Where night unloading by stevedores is not desirable, as in cases of meats, early morning hours are utilized. Where spur tracks cross major traffic points it is desirable to separate the two to prevent delays. All switching would probably be done by engines of the diesel type. Track curvature should be laid according to a 22° arc or a radius of 300 feet as being the desirable bend. Straight line trackage and reduction in number of curves and switches are economic factors governing design. An extreme minimum curve possible but done only in most restricted cases is around a 100 foot radius.

A systematic layout of trackage although unneeded to a great degree in the Boston Market is where the incoming freight is directed to receiving and inspection yards where it is classified. Strings of cars are then made up for spur tracks delivery either to buildings or team tracks. Present operations seem to indicate that all freight is to be received in the yards at South Boston and backswitched to the market. In a few cases dealers wish to load a mixed shipment to other markets. This is easily accomplished by proposed rail connections.

It is felt that icing facilities for refrigerator cars is unnecessary due to short length of time the cars are left standing before unloading.
Most freight requiring icing is checked outside of New London and New Haven for the Boston Market.

1. Team Tracks  Team tracks may be used by dealers in a number of different ways. They are mainly for the purpose of unloading directly to trucks but this can work to the opposite for loading from a truck.

Certain produce is nearly always sold from team track to eliminate unnecessary handling such as lettuce, watermelons and cabbages. Since rail facilities to stores gives part of total rail capacity only between 250 and 450 cars need be handled by team track whereas present team tracks can hold 1,600 cars. The final number of cars to be held on track depends upon the use of existing facilities at the South Boston Market Terminal.

E. Farmers and Truckers Sheds

Initial farmer and trucker facilities should account for 100 stalls or sheds. While it is felt at present that the truckers would want little more than space to park for sale of their load or to consolidate a return load, there might be a need for permanent stalls. The design is essentially a covered platform with center supports and a depth of 12 feet. The space for each farmer or trucker would be leased in 10 foot lengths. One of the uses it will serve is for sale of locally grown produce. This could possibly develop into a farmers' auction which would require an auction block. Farmers could drive their trucks to the auction block where sales would be made to buyers from either side. Heating facilities might be considered for winter months with a temporary shelter.

F. Office Space

Office space should be provided for the market manager, brokers, railroad representatives, inspectors and such other public and private agencies. The
Boston Fruit and Produce Exchange and meeting rooms have to be considered. This area would be in addition to that office space provided in the produce auction. The auction salesrooms could serve well as meeting rooms. The three ways of providing office space are (1) by building a separate structure, (2) using vacant stores, (3) by adding a second story over part of a one-story unit.

As the market develops there will no doubt be a number of other activities desiring space. Federal, state and city inspectors of various food products handled and those engaged in the market news facility might require facilities.

For the market management there will be a need for about 600 square feet of office area and 600 square feet for a board of directors' room. For 12 brokers in fruits and vegetable, 13 in meats and related products and for approximately 10 representatives of railroad companies and other interests a unit space of 200 feet per individual occupant is given. The total immediate space needed is 8,000 square feet. Added to this is area for the Boston Fruit and Produce exchange using 750 square feet of space for business and a meeting room of about 600 feet square. The meeting room could serve both the market management and Produce Exchange. About 2,250 square feet is needed for hallways and three public toilets. Total second floor space would amount to 12,250 square feet for primary construction.

The location of the market management and office space should provide control over and access to the principal entrance. A second story area is contemplated over first floor meat dealers requiring 11 stalls. This would provide a total space of 17,325, which includes the one of three restaurants mentioned. Removable partitions of steel, wood or cinder block would separate
the offices and a 5 foot corridor would provide access. Utilities provided would include heat, light, power, telephone and teletype outlets.

Full development might include a market bank, barber shop, lawyers offices, public accountants and branch offices of the previously mentioned Federal, state and city agencies concerned with the activity. No indication of size of these agencies is possible to estimate total construction but they also would be relegated for the most part to further second story expansion.

G. Parking Areas

One of the very basic elements for good operation of the market is parking space. At least 600 parking spaces are needed in excess of center lane parking on streets and expansion area should be a necessity. Since the market will cover many acres and will function in all weather these spaces should be broken up and distributed for maximum ease of reaching one's destination.

H. Streets

Access on streets should be well treated to handle the heavy, over-the-road truck trailers and freight cars switched on flush rails. Low maintenance might require concrete surfaces where a large amount of turning and backing is done in and around the dealer's stores. Black top on hot days is shredded rapidly by heavy duty truck tires grinding on pivot circles. These in turn cause many potholes to form, leaving puddles. Where prolonged starting and stopping points are maintained this also holds true. Asphalt or black top would serve best for other running surfaces.

Width of streets between stores should be at least 140 feet across to allow parking of buyers trucks in the center or 120 feet minimum for center two lane traffic. Traffic and turning lanes should be held to at least 60 to 75 feet wide.
I. Fences and Gates

The entire market tracts should be enclosed by fencing, walls or other means. All entrances should be provided with gates and watchman stations. This is mainly needed to enforce regulations within the market in order to limit buying and selling hours, and to give accurate information on arrivals and departures of trucks shipping produce. An advantage is gained in reduced policing against theft.

J. Spaces for Related Facilities

Area must be considered to include a number of related services. These might include service stations, public garage for maintenance of trucks, a public refrigerated warehouse with cooler and freezer space, so planned in with other facilities as to afford their maximum use.

1. Service Stations - Two service stations are considered to be placed adjacent to central entrances and exits. Both stations should have easy access from without the market and within. This is to maintain trade not only while the market is functioning but also when it closes down. In the scheme as shown a main entrance on Southampton Street is developed with adjacent station. The principal exit is serviced by the other station which also trades with traffic coming off the main arterial highway.

Both stations should have limited facilities for truck repair and automobile work. Rest rooms and office space should be included. These stations would be leased from the Market Authority by private enterprise.

2. Space for Public Garage - A public garage in the market area would be desirable unless there were ample garage space in the vicinity. The advisability of constructing a public garage on the market would depend on:

(1) The adequacy of existing space in nearby garages
(2) The volume of business in the market area

(3) The availability of a responsible firm to construct, operate and own such a facility.

An inspection of the area immediately adjoining South Bay has proved the existence of a small number of gas stations along Dorchester Avenue and on Southampton Street but none of the scope to handle heavy trailer trucks.

There are a number of garages in around the Faneuil Hall Market and some are taken for razing to make way for the present highway program. These operators would be interested no doubt in facilities elsewhere.

For design purposes a garage is considered having two decks, the upper for parking trucks for service, and the lower containing the service area consisting of space for ten hydraulic lifts and work floor. Access between decks is by main entrance ramp. Toilets, office space, and locker facilities are located on the top deck while storage and additional offices and lavatories are included below.

The restaurant structure would share a portion of the top deck and use a portion of the parking in future development. The garage would also maintain the service station by the ramp entrance. Both of these enterprises could possibly be sublet by the operators of the public garage.

3. Space for Public Refrigerated Warehouse — Because of the perishable nature of most commodities handled in a wholesale produce market, it is necessary to consider the availability of public refrigeration. This is especially true where Boston is at a great distance from primary producing centers, and after produce is harvested or meat is slaughtered, it is held in refrigeration for considerable time en route for distribution. Although
freezer and cooler space will be maintained in the stores, many dealers in poultry and eggs, dairy products and some fruit and vegetable dealers will desire long term storage either cooler or freezer in a public refrigerated warehouse.

The heavy per capita consumption of perishable foods and rising trend of the frozen foods industry make it desirable to assure ample space accessible to their stores. Provision must be made in allocation of space for the warehouse although it might not be built until specific needs are determined.

Boston has a considerable volume of cold storage space in present public and private refrigerated warehouses. The fish industry uses a large part of it and can be expected to do so in the future. Brine lines from Quincy Cold Storage, a public warehouse, pipe refrigerant to a large number of stores and to the Quincy Market. The new highway will eliminate this in part and decrease its refrigerant use. It is doubtful if the brine lines would be extended the 1 1/2 miles to the new site. In order to continue this practice another source has shown its need.

With 11 million cubic feet of space provided by the 6 public and 5 private cold storage warehouses it is difficult to estimate the volume needed for the new market. A figure of 1 million cubic feet seems to be a reasonable first guess. The space allocation would provide for a multi-story structure with conveyors and elevators to transfer produce between floors. For a floor area of 100 feet by 200 feet and using a 10 foot floor-to-floor spacing, this cubage would require 8 levels.

Siting factors to be considered are proximity to rail freight unloading and ample tail gate space for trucks. Location equally near to both fruit
and vegetable dealers and meat and allied products dealers' stores is
desired to eliminate unnecessary length of brine lines piped to the stores.
Closeness to the auction building is stressed, enabling transfer of unsold
produce to the warehouse by hand trucks or towed, small four-wheel trucks.
Pallet trucks in this respect are thought to be undesirable for most produce
in that large lots are uncommon and container shapes too varied to handle
in this way. Most fruits and vegetables are sold off as fast as they are
received rather than stored in order to raise the price. Central location
is further modified by circulation of truck traffic through the market.

Cooler coils location would be on the top two floors with an air space
for intake and exhaust. Freezer space would then occupy the floors being
closest to the cold source and cooler space takes up the remaining four
floors with varying temperatures. Thick layers of sheet cork or foam glass
would be mandatory between floors and in wall sections to maintain tem-
perature and humidity conditions. Reinforced concrete and steel construction
is the most desirable.

Overhead tracks for some meat or banana conveyors would have to be
installed. Heavy capacity floor scales should be considered at various
points for speedy checking in and out of all products handled by weight.

4. Public Heating - A thought of including a central public heating
source has been considered. The necessity of this is somewhat doubtful
because of lack of space to be heated. With the exception of such spaces
as the offices and produce auction, it would not find much outlet. Unit
heaters or space heaters would be more economical giving a fast positive
heat which would not necessarily heat up the spaces too much to counteract
refrigeration. It should be considered that in many cases a temperature
requiring some overall heating is required to keep commodities from freezing during winter months.

The temperature level is kept 15° to 20° above freezing in this case. The average worker wears heavy but unrestricted clothes during the winter which readily absorb perspiration. The type of work requires much movement and energy expenditure so that any greater heating would cause discomfort and susceptibility to colds. Stevedores in the present auction building wear only undershirts during winter months because of the strenuous exercise. Because of the outside air space between building and freight car they are forced to move through cold air blasts. Many have contracted pulmonary diseases from exposure.

6. Space for Expansion — In planning wholesale markets for any city, it is important to provide space into which all types of business originally occupying it may expand as normal growth takes place. As volume of the market increases, it also must allow area for additional dealers and new allied agencies to carry on operations. As the highway program is carried out, many dealers in other than produce will be dislodged. If careful thought is given to future development, many of these businesses can move to the new commercial site unimpeded. A close association with the many wholesale grocery and grocery specialty concerns, coffee and spice merchants and the like would be very beneficial to the market and would insure a much greater success.
## K. Immediate Facilities Needed

<table>
<thead>
<tr>
<th>Facility</th>
<th>Size of Unit Feet</th>
<th>Capacity of Facility Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stores with Basements</td>
<td>22-1/2 x 60</td>
<td>202</td>
</tr>
<tr>
<td>Stores without Basements</td>
<td>22-1/2 x 60</td>
<td>25</td>
</tr>
<tr>
<td>Stores without Basements but with second floor</td>
<td>22-1/2 x 70</td>
<td>94</td>
</tr>
<tr>
<td>Stores with Basement and first floor</td>
<td>22-1/2 x 70</td>
<td>20</td>
</tr>
<tr>
<td>Stores with Basement, first and second floors</td>
<td>22-1/2 x 70</td>
<td>12</td>
</tr>
<tr>
<td>Produce Auction</td>
<td>100 x 450</td>
<td>1</td>
</tr>
<tr>
<td>Second Floor Space</td>
<td>100 x 72</td>
<td>1</td>
</tr>
<tr>
<td>Second Floor Office Space over stores</td>
<td>22-1/2 x 60</td>
<td>10</td>
</tr>
<tr>
<td>Stalls with Platform and Roof</td>
<td>12 x 10</td>
<td>100</td>
</tr>
<tr>
<td>House Tracks</td>
<td></td>
<td>525 cars</td>
</tr>
<tr>
<td>Team Tracks</td>
<td></td>
<td>450 cars</td>
</tr>
<tr>
<td>Special Parking Areas for Cars and Trucks</td>
<td></td>
<td>770 cars</td>
</tr>
<tr>
<td>Parking Spaces at Stores</td>
<td></td>
<td>1,025 cars</td>
</tr>
<tr>
<td>Parking Spaces at Sheds</td>
<td></td>
<td>100 cars</td>
</tr>
<tr>
<td>Parking Spaces at Street Center</td>
<td></td>
<td>515 cars</td>
</tr>
<tr>
<td>Parking Spaces at Auction</td>
<td></td>
<td>100 cars</td>
</tr>
</tbody>
</table>
III. SELECTION AND DESIGNATION OF MARKET SITE

In the course of a survey conducted by the federal government, consideration was given to a new market site because of the lack of possibility to develop the present Faneuil Hall Market. The report stated that the main reason is the new elevated highway structure which would bisect the site. This seems wrong for what is pointed out also but secondary is the fact that in order to combine all present facilities on the present site, coverage would be impossible. The area excluding the street area only totals 28.5 acres between present boundaries of State, North, Parmenter and Hanover Streets and Atlantic Avenue to Dock Square. It would be further complicated by the fact that the dealers would have no place to go while the market would be constructed and also if placed, a return to the market would be doubtful.

A. Factors Considered in Selecting a Market Site

Persons concerned with selecting a new site are not only the groups going into the site to operate but also the consumer to whom the produce ultimately is intended. Longrun economy of shipment is necessary. The City of Boston has a definite interest due to its regulatory and maintenance service on the streets. There are six principal factors to consider in this or any other market.

1. Convenience to Local Buyers - The ideal position would be where the Massachusetts Institute of Technology now stands. Local buyers consist of about 5,500 grocery stores, 1,775 meat stores, 900 frozen food stores, and 2,250 restaurants, hotels and institutions.

2. Convenience for Out-of-Town Buyers - This point would be north and slightly west of Boston. Exact volume and miles movement of produce could not be determined and a fixed point was unable to be picked.
3. Convenience for Rail Unloading and Receipts — With three rail lines operating in Boston it was impossible within 20 miles to find a point where all three meet. At a point near Kneeland Street and Atlantic Avenue, the Union Freight Railroad does tie in the New York, New Haven and Hartford with the Boston and Albany. These two railroads also interchange at South Station for passengers and at Framingham for produce. In addition, the Union Freight Railroad has connections to the Boston and Maine east of North Station near Warren Bridge.

4. Convenience for Motor Truck Receipts — These would be coming from both nearby and distant producing areas. It has been estimated that 24 percent of receipts from areas came from the north and northeast, 37 percent from the west, and 37 percent from the south and southeast. This indicates a point west and slightly south of the center of Metropolitan Boston.

5. Separation of Traffic Type — Location should avoid intensification of existing traffic problems involving other industry.

6. Availability of Land at Reasonable Cost — A minimum of 125 acres for present facilities plus 45 acres for expansion is needed.

B. Future Street and Highway Plans

A consideration of the Highway Report for 1948 of the joint board is necessary. In planning the market it is absolutely positive that these recommendations be taken into consideration if it takes even 20 years or more for development. The market, if built, will be in operation much longer.

The present program calls for an elevated highway starting near to Southampton Street and traversing the downtown area connecting to certain radial arterials in the northeast in Charlestown and with new additions
to help feed to main routes leading southeast and west. A main interchange
of the express highway for all directions is the southwest interchange at
Massachusetts Avenue and the Southampton Street vicinity.

C. The Recommended Market Site

Of 13 sites inspected by the survey, a selection fell to the South Bay.
This site containing in excess of 170 acres, is between one to two miles
from downtown Boston. It lies between Southampton and Dover Streets, the
main line tracks of the New York, New Haven and Hartford Railroad, Albany
Street, and the South Bay or Fort Point Channel.

South Bay, formerly known as Gallows Bay, was and is today one of the
many basins connected with Boston Harbor by Fort Point Channel. It still
remains a natural drainage basin for surrounding areas and Dorchester and
Roxbury Brooks empty into it.

As trade and commerce of Boston increased and her population multiplied,
the town cribbed, combined and confined in the North End, sought expansion
and it became necessary to utilize the flats. There was a constant filling
in of these flats while the channels and shallows were made depositories for
sewage, drainage and waste. As population increased, the volume of pollution
increased and the rather languid currents of the channels being unable to
carry it to the sea, it remained to fester on the flats when receding tides
left them bare to the sun. This was as true of Back Bay, South Boston and
Dorchester Bay as of the South Bay.

The sanitary condition of South Bay has been a grievance for three quar-
ters of a century. It has been under many investigations since 1837 by
legislative bodies in an attempt to remedy it.
MARKET SITES
PRESENT PROPOSED

FANUL HALL MARKET AREA
SOUTH BOSTON MARKET TERMINAL

BUSINESS DISTRICT
CHARLES RIVER BASIN
BOSTON INNER HARBOR
OLD HARBOR
CARSON BEACH MARKET SITE
DORCHESTER BAY
OLD HARBOR RESERVATION
U.S. NAVAL RESERVATION
SEwerage disposal pumping sta
Commercial Park
Quartermaster Park
Commercal Pt
The problems of South Bay are sanitary, commercial, and economic in that order of importance. Many investigations of the past have advocated the complete elimination of South Bay and its Channels, believing that the delays to the city traffic and business caused by bridges and draws, now in existence, more than offset any advantages the waterways conferred. They held that the improvement of all three problems could be solved by the complete physical annexation of South Boston with Boston Proper. Actual studies have been made to measure the problem and in 1915 it was held that the intermittent filling process being done by the New York, New Haven and Hartford Railroad be continued but no definite legislative action was taken. In 1927 a proposal was presented to fill in up to a point where Dorchester Avenue crossed the channel. A conduit system connected in Roxbury Canal and South Bay in a northerly direction from Massachusetts Avenue, and in Fort Point Channel and South Bay in a southerly direction to a junction with the mouth of the Dorchester Brook estuary finally terminating in Dorchester Bay. A seawall would be built across a point on the northern side of Dorchester Avenue altering the present curve in that street. This was pigeonholed and nothing further was considered up to the present.

This area being relatively low would require an average of 7 feet of fill to permit use of basements. Recent test borings on present fill have shown water at 4 feet.

The major part of the area included in the site is owned by the New York, New Haven and Hartford Railroad, the Commonwealth of Massachusetts, and the City of Boston. Some private individuals own buildings on the land leased from the railroad but no obstacle is presented. An additional tract
south of Southampton Street contains about 100 acres which can include part of the site. The site can be readily served by the New York, New Haven and Hartford Railroad and the Boston and Albany Railroad by extending trackage from South Station. The Union Freight is within a few blocks and could also be extended.

Although there are in the neighborhood of 200 acres in the immediate area, not all of the site can be used for market purposes. On the northwest corner across from the City Hospital about 10 acres are earmarked for future expansion of that institution and an additional 16 acres will be needed for highway development.

At present no official site has been adopted by the Market Authority but the South Bay site is under quite serious scrutiny. Current schemes seem to favor using the 100 acres south of Southampton Street in conjunction with filled area adjacent to the South Bay. This has been explained as being more suitable than the filling in of the Bay due to the expense involved. For all purposes of positive action to get initial construction going this would seem to be the best program. The highway through the downtown area is moving at a good rate which will tend to squeeze the dealers in the market, many having received eviction notices. Eventually by slow but systematic filling, the South Bay could be reclaimed for additional area.

For design purposes the complete filling of South Bay and Fort Point Channel has been taken, as recommended in the 1927 Special Commission Report on that area.
IV. MARKET DEVELOPMENT COSTS AND OPERATING EXPENSES

A. Estimated Total Investment in Land, Buildings and Other Developments

The total cost of the proposed site put in condition to build was estimated at $3,720,000 in June 1949. This covers the cost of filling in the South Bay and channel. Cost of filling might be reduced by free dumping or selective dumping by the city or other agencies. By using municipal or state owned equipment, grading costs could be lowered. If the streets and paved areas of the market were assumed a part of the state and city highway program, paving costs might be also cut. Many similar cost-cutting factors are possible in connection with the railroad and certain existing facilities.

A conservative figure of $10,233,738 was given as the cost of buildings and developments needed for immediate construction.

Estimated total cost including both site and building development came to $13,953,738.

B. Annual Operating Expenses

Capable management would be needed and provision would have to be made for the expenses of providing such management. Provision also must be made for funds to cover salaries of other employees and for upkeep of equipment and facilities.

Market supervision would include the following: 1 market manager, 1 assistant manager, 1 secretary-clerk, 6 market police, 4 truck drivers, 6 shovelers and sweepers, 2 janitors.

Estimated total salaries including per diem of board member is $79,000.
Expenses including utilities, depreciation of facilities, insurance, and other services and equipment would total $116,000 annually.

It is assumed taxes on the land would be paid — like any other corporation. With certain assumptions as to value of taxes on fill and other preconstruction cost on the land payment was figured at $544,680 annually.

Since the market is to be self-liquidating, the investment interest and principal must be amortized from annual market revenue. It is possible to figure only interest on the land since it does not depreciate in value. Amortization would be computed on facilities constructed. Land and facilities both could be amortized but over a longer period than in the first case. It has been assumed that the entire investment would be amortized over 30 years.

The estimated total investment of $13,953,738 for a 30 year amortization would have annual payment of $806,945, or $57.83 per $1,000 invested.

Total annual operating expenses would be $1,467,625.
V. MANAGING THE MARKET

Those groups who will have large investment and interest in the type of management placed in control of the wholesale produce market are many.

Included are wholesale dealers, growers, transportation services, retailers and other buyers, consumers and other related markets, all having a large stake in the management. Besides there is the City of Boston and the Commonwealth of Massachusetts and other agencies. Investors from another group whether public or private.

There are five types of ownership management: (1) private corporation for profit, (2) city, state or federal agency, (3) farmers cooperative association, (4) limited profit corporation, (5) public non-profit corporation.

The profit motive outweighs the needs of business as in the first case; city ownership seems to eliminate consideration of interests with no voice in the city government; farmers are almost a percent interest in this case by revenue; the remaining two groups seemingly best suited are limited profit corporations and public non-profit corporations.

A. Management

The market authority is the latter case, being set up by the Commonwealth of Massachusetts in 1950. It consists of seven members including the commissioner of agriculture and the director of markets, ex-officio. Four members are appointed by the governor, one being a farmer, and one member appointed by the mayor of the City of Boston.

The Authority is authorized to:
(a) prepare a master plan and cost studies for development, and to construct and maintain the market.
(b) to finance the project by revenue bonds.
(c) adopt necessary regulations for business conduct.
(d) to acquire real estate for corporate purposes.
(e) exercise eminent domain for land assembly.
(f) enter into contracts and agreements for performance of duties.
(g) may receive federal grants, loans or advances.
(h) determine financial responsibilities of lessees.
(i) negotiate for leasing space.
(j) to provide and approve plans and specifications.
(k) have perpetual existence.
(l) carry out all acts necessary except directly or indirectly engage in any business other than the operation of a landlord for the public market (8).

B. Regulations

The management of the wholesale produce market is a large job. The manager selected would be the individual responsible for making the market a success. Responsibilities greater than just rental collection and employee supervision would be to see that everyone doing business in the market would receive the fullest benefits of its operation. He could play an important part in bringing new business to the area by assisting producers in growing type and quality produce and working with retail outlets to move the large seasonal surpluses besides seeking sales outlets.

The liaison job between the market and other agencies for its improvement would be a constant one involving relations with the city, county,
state and federal government. The latest technical innovations should be adopted for improvement which needs a well informed manager to promote new marketing ideas and processes which would benefit the business.

In almost all large city markets there exists a very definite feeling on the part of trade that additional regulations are needed which have not been provided by any agency and which is unenforceable by the trade. Most common of these are the hours of selling. Another is the regulation of motor truck receipts in order to diminish uncertainty of volume available.

If a market is provided whose management can enforce desirable regulations, some of the problems that have been causing concern to the trade can be solved. This ability to have the market regulated in accordance with its peculiar needs would offer a flexible type of control which could be a valuable adjunct to its efficient operation(9).
VI. CONCLUSIONS

The market concept is one of the oldest in existence. It has evolved into highly specialized groups for the common purpose of food distribution. This is marked by phases of collection of commodities in order to operate in a more economical method.

The social concept of the public marketplace has undergone great change. Individual bargaining has been supplanted by statistical emphasis on price setting. This in turn has led to a conscious attempt to centralize all distribution facilities in a given area.

The problems are mainly coordination and integration of the new wholesale produce market. The market must be inextricably woven into the urban community to serve as many of the needs as possible. Yet, in order to best serve the needs, the community must sacrifice in order to meet the needs of regional and national scope. There is no one perfect solution to this because of rapid changes in agriculture, economics, transportation, materials handling. What might be economical practise today will not be tomorrow.

Expression of form in site pattern is that of an island with either fences or barriers on all sides to restrict entrance rather than invite. Buildings in satisfying the most ideal practise of food handling tend to grow extremely long with no variety in spacial arrangement and little opportunity to gain it by landscape. There can be no central or focal point until it is established by vehicular, rail and pedestrian circulation working together. Transportation storage methods will dictate the form more than any other factor.

Material storage and handling methods as related to the building form have resulted in very slight modular changes. In the design study submitted,
the focal points lie with the functions of the public cold storage
warehouse by way of height contrast, the centralized office space and
restaurants by means of elevated walks to and from the dealer stores,
and with the public garage and truckers sheds to gain ease of access
for motor trucks near access and egress points.

Building relationships were determined by commodity handled in an
attempt to set up a spacial separation of fruit and vegetable dealers
from the meat dealers and related products dealers. Spacial definition
was felt to be gained by combining green areas into central or edge malls
which by means of size would count in the tremendous scale to contrast
against the paved openness. By spotting trees at terminal points of team
tracks and in the marshalling yards this definition of space was carried
further.

An examination of building length and interval led to a selection
ranging from 750 feet for fruits and vegetable dealers to the 250 foot
length for poultry and egg dealers with office space above.

Truck entrances and exits were determined by such site factors as
the express way access and egress. It was felt that since the market was
to be subject to strict hours of selling and the early arrival of buyers
into the market for established selling periods, the main problem of the
highway relationship could be solved by giving only direct egress from
the market to it. Over the selling period potential traffic builds up
until the period ends whereupon it is for the most part released directly
to the highway with some local traffic leaving by the West Fourth Street
and Southampton Street.

Rail access is by a main switching track taken off existing lines
near the overpass junction of rails to South Station and to the South
Boston Market area. Spur tracks radiate inward to the market from three sides and are carried under the elevated highway to service existing building at the corner of Albany and Southampton Streets. At points where the entrances are proposed from Southampton Street and the West Fourth Street Bridge the roads are elevated to allow the tracks to pass under. The remaining part of Fort Point Channel filled in would be devoted to an extension of rail facilities at South Station and for those replacements necessary which were taken over for the market developments.

Pedestrian circulation is by elevated covered walkways originating at the second floor office and restaurant space and radiating off a main passageway aligned with the fruit and vegetable dealers stores to the meat and related products dealers.
APPENDIX


2. Massachusetts State Legislature, Ch. 748, Sec. 2, pp. 1.

3. Massachusetts State Legislature, Ch. 748, Sec. 4, pp. 3


8. Massachusetts State Legislature, Ch. 248, Sec. 244, pp. 1, 3, 4.

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A PROPOSED
CENTRAL WHOLESALE MARKET FOR BOSTON

AERIAL VIEW OF SOUTH BAY