

A STUDY OF SCHOOL PLANT NEEDS  
AND A NEW HIGH SCHOOL FOR  
REVERE, MASSACHUSETTS

A Thesis

Presented to

the Faculty of the Department of Architecture  
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Lawrence B. Anderson  
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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Architecture

by

Thorkel Myron W. Haaland

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Abstract of Thesis

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Submitted in partial fulfillment of the requirements for the Degree Master of Architecture to the Faculty of the Department of Architecture, Massachusetts Institute of Technology, September 1954.

The purpose of this thesis was to study the needs of the contemporary public schools with particular emphasis on two phases: (1) the need for planning at all levels, and (2) the specific needs of the secondary school.

Recognition of the need for adequate planning for any school plant project, regardless of size, has been gaining momentum; but it was felt that there is a definite need for more emphasis in this regard. Therefore, it was believed that further investigation, with a view to submitting recommendations for a planning approach and a program plan for an existing school system, would be greatly beneficial.

The secondary school problem has become more imminent with the approaching increase of high school-age students resulting from World War II births. In addition to the need for more school space, there also exists a deplorable condition of inadequacy in many of the existing secondary schools to cope with up-to-date teaching methods. In this regard,

the planning and designing of a secondary school for an existing community was executed. In the planning of this school, the problem was approached from the study and evaluation of these basic considerations: (1) the role this school is to have in the city, (2) the philosophy upon which this school is predicated, and (3) the resulting educational program to be offered. In formulating the design, consideration was given to integrating the space requirements to the physical characteristics of the site, relating the project to the environment, and to producing a final solution that would be efficient, pleasant, and economical.

Fortunately, the City of Revere, Massachusetts, which was selected for this study, offered an opportunity to study both the planning problem at the school system level and the plan and design of a secondary school.

Therefore, in presenting the facts, recommendations, and conclusions concerning this study, the subject matter has been divided in the following manner: Part 1, "A Program for Planning for School Needs;" Part 2, "A Program for the Revere School System;" and Part 3, "The Program and Design of a New High School for Revere."

Thesis Supervisor: Lawrence B. Anderson

Title: Professor of Architecture and in charge  
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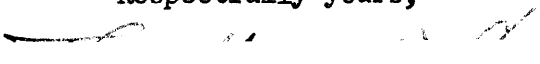
19 Irving Street  
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Professor Pietro Belluschi, Dean  
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Dear Dean Belluschi:

In partial fulfillment of the requirements for the Degree  
Master of Architecture, I hereby submit this thesis, "A Study of  
School Plant Needs and a New High School for Revere, Massachusetts."

Respectfully yours,

  
Thorke Myron W. Haaland



## ACKNOWLEDGMENTS

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PART 1

A PROGRAM FOR PLANNING

FOR SCHOOL NEEDS



## CHAPTER I

### A PROGRAM FOR PLANNING

Because of the vital role that our schools play in our present-day society, it becomes a matter of utmost importance that the facilities for teaching keep pace with the demands of that society. This means that every effort should be made at the city or community level to insure that the school building program produces school plants that will give its citizens, children and adults alike, complete and adequate service based on its own needs. To realize the many problems that must be solved before a new school building is ready to open its doors is to realize the great importance of a thorough and systematic school planning program. It was because of this strong conviction of the need for adequate planning that a part of this study was devoted to recommending the type of program and organization that would have been used by the author, had it been possible, in the pursuit of his objective--that of establishing a master plan for the Revere School System and subsequently a program and design for a New High School for Revere. The material presented in this chapter will deal with the planning organization, its function, and its responsibilities, with emphasis leading to programs for the Revere School System and the Revere High School Project.

#### I. THE MASTER PLAN FOR THE CITY

Most cities these days have a planning commission and a master plan. The school committee, the educators, and the representative of the citizens of a neighborhood or community interested in a building project

should be aware of the existence of such a plan and thoroughly familiar with all aspects of the plan as it pertains to the school problem.

Basically, a master plan is a general plan providing for the future development of the community or area involved. Its purpose is to help create a more convenient, efficient, healthful, and attractive environment in which the people may live. It must be broad and comprehensive, and it should include proposals for long-range development as well as plans for immediate projects. It should also be scheduled on a basis flexible enough to permit changes when warranted.

Generally, a master plan is administered by a planning commission whose authority may vary from one of merely advisory capacity to one which may be very strong and can only be overruled by a majority vote of the city governing body. State constitutional provisions, state enabling legislation, or local charter provisions usually provide the legal authorization for such regulation.

In the preparation of the master plan, the following considerations are included:

1. Recognition and evaluation of needs in area served. In most cases this will probably include a study of the school situation.
2. Examination into existing and proposed land uses. This study could well include existing and proposed school sites and an evaluation of existing school plants based on the above studies.
3. Analysis of the economic base and forecast of future trends in economic, social, and population growth.
4. Development of a long-range financial plan and project schedule. This includes both immediate and long-range plans established on 5-, 10-, 15-, and 20-year intervals. These plans should include

the complete financial breakdown from the source of funds through to the execution of the project.<sup>1</sup>

The City of Revere does have a master plan administered by a planning commission known as the Revere Planning Board that is responsible to the Revere City Council through its City Manager.

## II. THE MASTER PLAN OF THE SCHOOL SYSTEM

It has not been accepted as a required practice yet for school systems to establish and maintain a master plan, but recognition of its value has gained considerable momentum in recent years to the point where many systems do have them now. Such a plan, of course, must conform to any official master plan of the city or county within which the school system functions.

The master plan for the school system is a comprehensive plan which should cover all its various needs, so formed as to operate in a flexible manner. It should also be formulated in such a way that the needs will be cared for, from immediate to long-range, on a schedule basis for a period of up to twenty or thirty years. Once the plan has been adopted, it becomes an instrument of policy to guide the future of the school program. As a public document, the master plan should be retained in the office of the school system.

The major considerations in the formulation of a master plan for the school system are:

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<sup>1</sup>Thomas L. Hansen, Harry W. Berry, and Thorkel M. Haaland, Guide for Planning Elementary Schools in the State of Washington, ed. Jack C. Dixon (Washington State Institute of Technology Bulletin No. 217. Pullman, Washington: State College of Washington, 1953), p. 1.

1. Recognition and continuous evaluation of the school system's needs.
2. Declaration of the philosophy and the resulting educational policy for the school system.
3. Provision for a long-range financial plan to carry out the school system's program.

It can also be said that the considerations and methods used to formulate a program, as it is discussed here, could well apply to whatever level the master plan is to be worked out for, whether it is for one individual school project, a school system, or a city or county plan.

Upon investigation, it was learned that in Revere the School Committee is responsible for the operation and maintenance of its school system and works with the City Manager in matters of finance. With regard to new construction, however, the execution of a building project is the responsibility of the City Manager, based upon recommendations made by the School Committee.

### III. THE MASTER PLAN FOR THE LOCAL PROGRAM

The material discussed in this section is presented in a manner as it would apply to a building program for an individual project. The same type of organization guided by the same type of principles, but with a much wider scope, would also apply to a building program of more than one school or system.

Once the building project has been authorized, then the approach to the problem is to establish policy and determine requirements of the local program to be followed. The School Committee and the Superintendent

of the School System should meet to accomplish this. There are several accepted basic methods of organization used to carry out the work necessary, such as (1) the use of local committees to aid in the preparation of the program, (2) the employment of specialists to prepare the survey and make the recommendations, and (3) the use of a combination plan--local committees' survey checked by a specialist.

Whatever the method of organization selected, the aims are the same: namely, to establish the needs of the community, to establish the educational program, and to cooperate with the city's governing body in matters of finance and the city's master plan. They all require ample time in which to function.

It has been found by experience, however, that the adoption of a school building project is more readily accepted by a community when its citizens are permitted active participation in the program. In addition to this psychological aspect, which becomes very important when the citizens are asked to approve the project on election day, there may be other advantages to citizen participation. Providing, of course, that the planning for the program is sound and all-inclusive and that the leadership is intelligent and firm, some of the advantages could be (1) easier accessibility of the necessary basic data, (2) a more thorough diagnosis of the basic data, and (3) a more economical method to make use of the basic data.

This is not to say that the other methods mentioned are not good or may not assure a successful conclusion to the building program. The choice of methods should be dependent strictly on the local situation. One of the most important factors to consider in making a choice would

be the availability of capable personnel in the community, both educational and lay. Another important factor is whether or not the available personnel have sufficient time to give to this project in addition to maintaining their regular positions. In actual practice, it has been found that the services of a school specialist in an advisory capacity can be exceedingly helpful, so that perhaps the combination plan could be considered a good choice from a general point of view. However, on the basis of the advantages mentioned, this study selected the method in which the citizens participate as the best one to recommend for the Revere school problem. Accordingly, it will develop a plan for the organization of this method, and outline certain suggested fields for study.

#### IV. USE OF LOCAL COMMITTEES TO AID IN PREPARATION OF THE PROGRAM

The organization of the necessary committees to do the work is the responsibility of the School Committee and the School Administrator. However, the policy for administration and strategy to be used by the committees should be left to their own discretion. Guidance, rather than interference, should be the policy of relationship between the School Committee and the working committees. The policy, from the beginning of any such project as this, should require an excellent and aggressive plan of public relations. The succeeding sections will discuss briefly the substance of the planning organization. (Also, see Figure 1.)

##### Central Planning Committee

In the organizational plan, this committee is the core. It

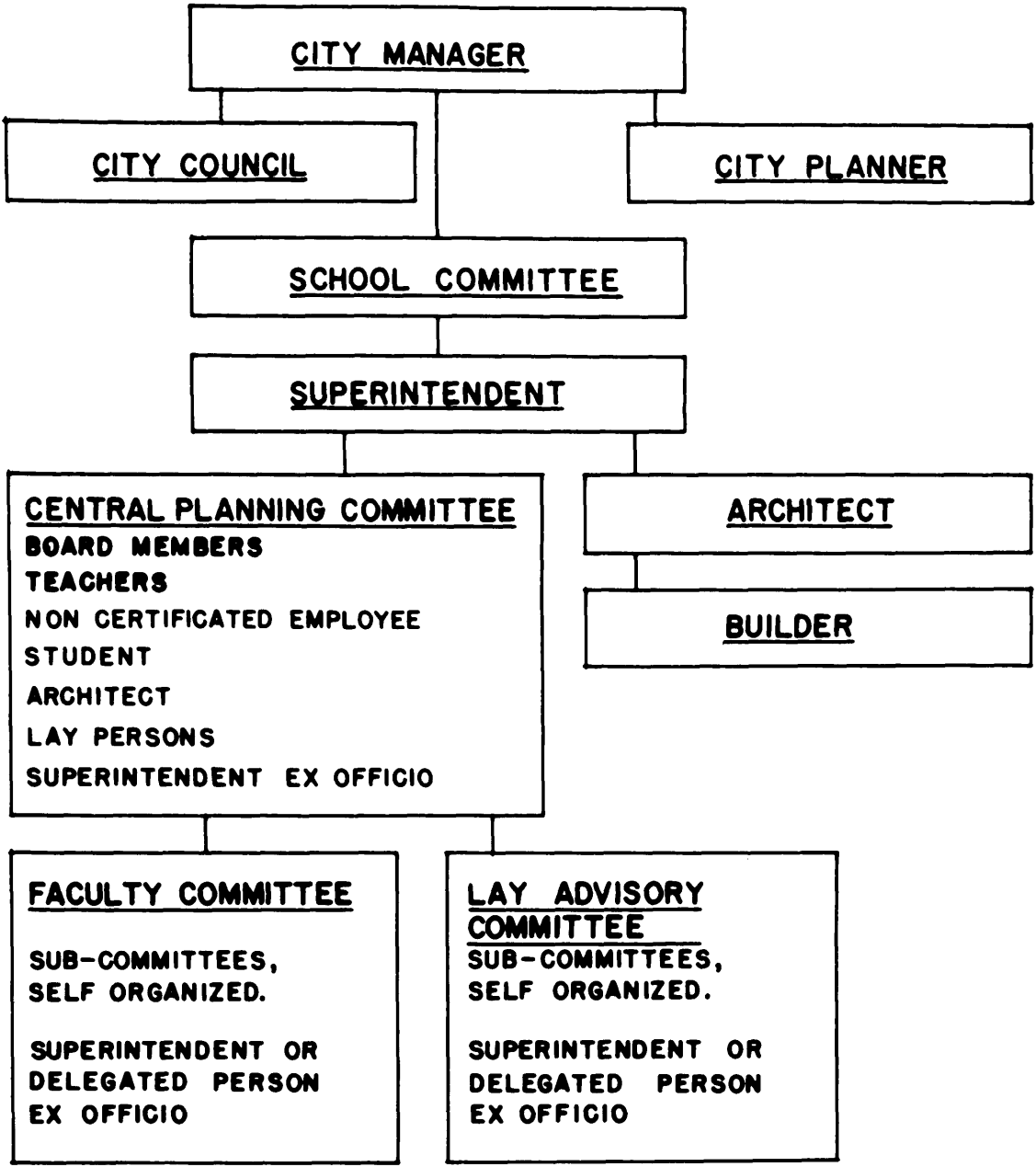


Figure 1. Planning organization recommended for Revere school rehabilitation.

coordinates the work of the many subcommittees and individuals, and it makes recommendations to the School Committee. Suggestions for the personnel who compose this committee are:

1. Representatives from the School Committee.
2. At least two members of the teaching staff from different levels of instruction who are selected by the teachers.
3. A student, chosen in consultation with the student leaders.
4. An educational consultant or an architect hired as a consultant or commissioned for the building project.
5. Several laymen selected by the School Committee based on social status and geographical representation.
6. The superintendent of the school system as an ex-officio member.
7. The janitor, for conference purposes, though he need not necessarily be an official member of the committee.<sup>2</sup>

#### Lay Committee

This committee should furnish personnel for subcommittees to study school plant needs, particularly beyond the educational scope of the school services, and acts as a liaison body between the School Committee and the community. Its size can be flexible depending upon the amount of work that needs to be done. Selection of citizens to serve on this committee should be based on qualities of leadership, records of accomplishment, and geographical distribution. It is also important to select only people with a vital interest in school development.

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<sup>2</sup>Ibid., p. 5.



### Faculty Committee

This committee should furnish personnel for subcommittees whose particular interests are on the nature and scope of school services and on community facilities of the area. The size of this committee can also be flexible dependent upon the amount of work that needs to be done.

### Coordinator

The key person in an organization such as this is the Coordinator. He must have leadership qualities as well as an understanding of the problems involved. He must serve as a liaison between the City Manager's Office, the School Committee, and the various committees working on the program. The logical man for this important role is probably the Superintendent of Schools. Some of the functions of the Coordinator or the Administrator, as he may be called, are listed below:

1. He should establish the policy for the relationships that will be followed by the various personnel who compose the planning group and also the policy that is to exist between it, the community, and the State Department of Education.
2. He should assist the School Committee in establishing standards and qualifications to be used as a guide in the selection of personnel hired by this Committee.
3. He should act as a guide in policy making upon which the School Committee will make decisions concerning the school plant planning.
4. He should be responsible for instituting a system for maintaining a record of all transactions, decisions, and proceedings

from the inception of the planning project to the completion of the school plant.

5. He should assist the School Committee in organizing a plan to be followed in the building program.
6. He should be responsible for conducting and directing research and investigations and for interpreting and presenting this information to the School Committee and necessary committees.
7. He should take the initiative in keeping the public informed and in stimulating public participation.
8. He should be represented at all council and committee meetings.
9. He should be the representative of the School Committee in all official dealings with the architect.
10. He should be responsible for delivering a complete set of educational specifications to the architect and informing the latter fully of all necessary policy.

#### Architect

The Architect, recommended as a member of the Central Planning Committee, may be the same person as the one commissioned for the building program; however, as a member of the Planning Committee, he is expected to be an unbiased consultant for the early stages of the planning who is hired particularly for his planning knowledge. There are architects available for consultant work. This section, however, deals specifically with the architect commissioned for the building project and attempts to outline the scope of professional service available. The basic functions of the Architect are:

1. He prepares preliminary drawings, working drawings, and specifications for the complete project in collaboration with the administrator or official representative of the School Committee.
2. He transforms the educational program into form, shape, and function of buildings; and he is responsible for conformity to local codes and regulations.
3. He correlates the work of other professional men required in designing work for the project and supervises the work involved in construction.
4. He is, by training, familiar with the physical characteristics of building sites; hence his opinion may be quite valuable in site selection.

#### Basic Data

Prior to the time that the organization starts operation--for example, gathering facts, analyzing, and so forth--a definite program should be set up to cover all aspects as nearly as possible. As far as Revere is concerned, where the entire system is in need of study and possible changes and improvements, much of the work can be coordinated so as to avoid duplication and overlapping. This foresight will definitely expedite the problem of gathering the needed basic data. A list of suggested fields for study that may be incorporated in this program for the City of Revere is the following:

#### Analysis of financial status

1. Background of the City's financial status.

2. Taxable assessed valuation and tax rate.
3. Ways of strengthening real estate tax base.
4. Sources of possible aid.

Future school enrollments and population trends

1. A projection of enrollment for a ten- to fifteen-year period based upon local census figures, birth to eighteen years, and sex composition.
2. A study map indicating existing school population and age groups.
3. Attendance charts for the local schools during the past ten-year period.
4. A study of birth rates, both local and national.
5. A survey of local industries to determine possible future plans.
6. A land-use map showing land available for home development and specific use.

Present needs of the school system

1. Present building facilities and capacities.
2. Present census and enrollments.

Building requirements based on philosophy and objectives of school system as related to:

1. Learning facilities.
2. Health facilities.
3. Social facilities.

Community analysis

1. Character and standards.
2. Age composition of local population.
3. Number of people to be served.
4. Educational services to be provided.

Community facilities

1. Community desire for participation.
2. Existing community and recreational facilities.
3. Number of people to be served.

Only after the necessary basic data have been compiled is it possible to make decisions supported by fact or predictions based upon justifiable assumptions.

There has been a good deal of information already gathered pertaining to the Revere School System, but it was safe to say that there was a considerable amount yet needed before a sound building program or a master plan could be formulated. Therefore, it was the combination of this available information with further facts gathered and certain additional justifiable assumptions made by the author which formed the bases for the remaining principal two parts of this study: namely, (1) "A Program for the Revere School System," and (2) "The Program and Design of a New High School for Revere."

PART 2

A PROGRAM FOR THE REVERE

SCHOOL SYSTEM

## CHAPTER II

### THE CITY OF REVERE

To develop a program for the school system of Revere, a plan of approach was established. In brief, it consisted of studying the City's background, investigating the present school facilities, and analyzing the school system's needs. This chapter will concern itself with the background of the City of Revere.

#### I. HISTORICAL BACKGROUND

Revere, it was found, is a city with a rich past. It has developed from a somewhat aristocratic beginning in the seventeenth century to the present thriving democratic city. Its progress, however, has not been without its share of difficult times. When Revere was first settled, a great portion of it, including most of its beautiful beach, was owned by several wealthy gentlemen, and very little development took place for many years. Now this beach, which is considered the largest and the best in New England, is crowded from the Fourth of July until Labor Day, and its many amusement places are a large source of income to the City.

Originally, what is now Revere was known as North Chelsea, an area that seemed to have lost out in the race with other communities about Boston. While Chelsea developed rapidly, North Chelsea remained another dormant small neighborhood community. It was given rebirth, however, when it was renamed Revere and became an incorporated town in 1871.

The population at the present time is a comparatively stable 36,000 people.<sup>1</sup> A map of the City of Revere is shown in Figure 2.

## II. DEVELOPMENT AND FINANCIAL BACKGROUND

The City of Revere is primarily residential; it is a dormitory city for many who work in Boston and surrounding areas. The largest part of Revere's commercial development is related to the seasonal use of the beach front. As a consequence of this unique situation, there is a heavy demand for municipal service; while the tax revenue brought in is limited. Revere, therefore, has had a difficult problem to set aside sufficient finances to promote an adequate maintenance and rehabilitation program for its school system, to say nothing of providing any new schools.

With regard to its financial background, the Revere Study Group had this to say in comparing Revere to other Massachusetts Cities, using 1951 figures:

In assessed valuation per public school pupil Revere ranked 32 among the 39 cities, having a relatively low valuation of only \$9,895. In expenditures per pupil paid for out of tax revenues Revere again had a low position, ranking 31st in its expenditure of \$156.89. However, in its tax rate it ranked 11th, having one of the highest tax rates of \$53.50. Thirty per cent of its tax rate went for schools, whereas the largest proportion was 46%, the lowest, 23%, and the median, 31%.<sup>2</sup>

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<sup>1</sup>Federal Writers' Project of the Works Progress Administration for Massachusetts (comp.), Massachusetts--A Guide to its Places and People (Boston: Houghton Mifflin Company, 1937).

<sup>2</sup>Revere School Study Group-1954, Better Schools for Revere (Cambridge, Massachusetts: Cambridge Research and Service Associates, 1954), p. 56.



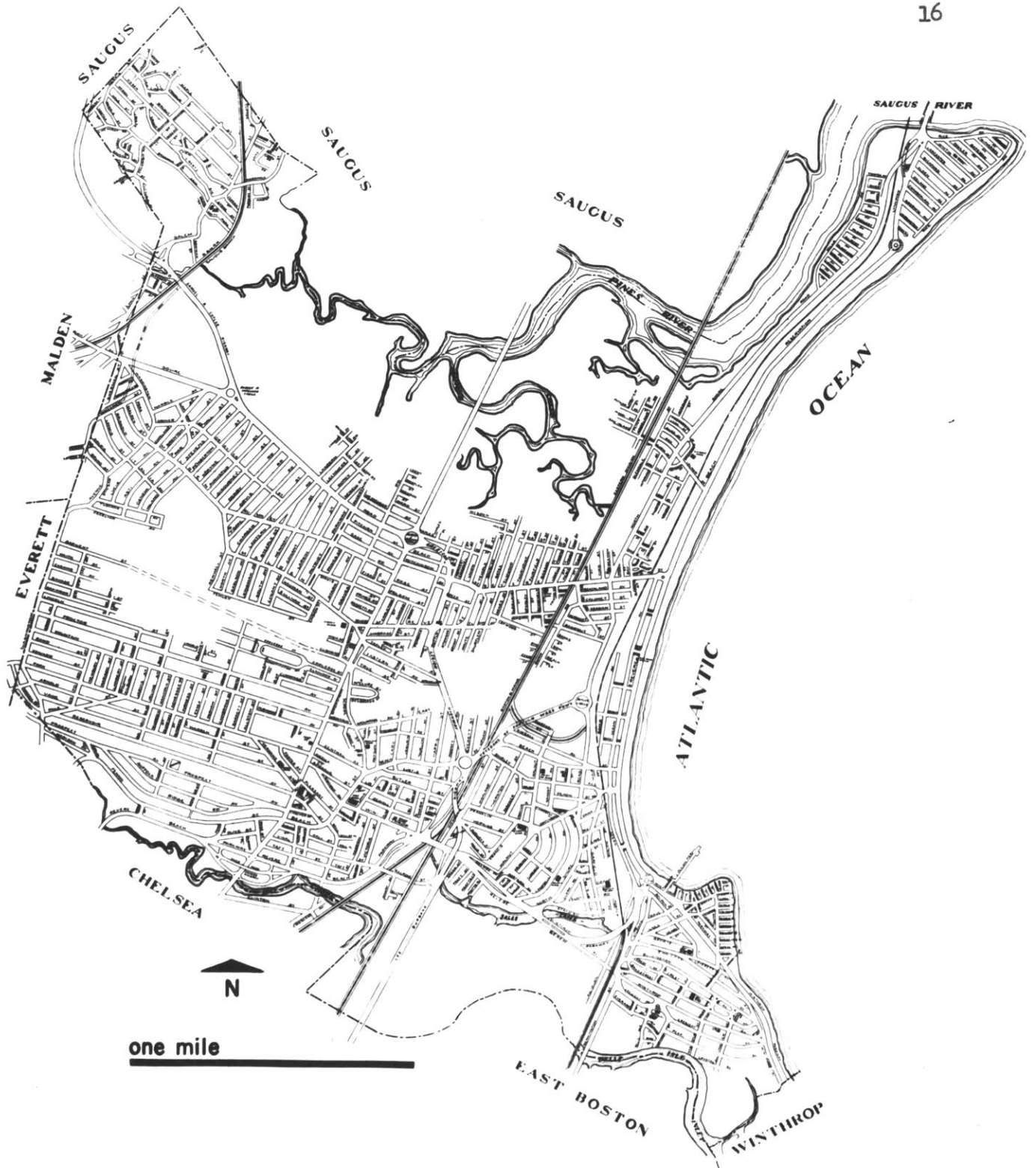


Figure 2. Map of the City of Revere.

This reveals the handicap under which the City has been forced to operate. Consequently, the situation is not an encouraging one when faced with the major building and renovating program needed to bring Revere's schools up to an adequate level acceptable for a modern school plant.

## CHAPTER III

### THE REVERE SCHOOLS TODAY

Upon investigation, the existing problems with the Revere School System were found to be not unlike the situation in many New England towns and cities, or for that matter, in many communities throughout the nation. These problems are (1) a sudden increase in the numbers of students in the lower grades, (2) the inability of maintaining an effective school maintenance and new construction program, and (3) the difficulty of attaining necessary finances. About the only creditable statement that can be made concerning the capacity of the system is that its schools, with one exception, are capable of housing the enrollment at present without causing overcrowded conditions. The one exception is the McKinley Grade School. In addition to the fact that this ability to house is possible only for the present, the buildings themselves rate poorly in comparison to contemporary school building requirements.

As can be seen in Figure 3, there are sixteen public schools in the Revere System, the oldest of which still has a portion of the original building dating from the early 1800's. The newest complete structure was erected in 1925; while the median age of all of the buildings is about forty-five years. For the most part, the buildings are old and run-down; and, in some instances, they are unsafe and unhealthy. In the past, insufficient funds have been set aside for routine repairs and upkeep; hence the problem of deterioration is now one of major proportions.

Facts have been compiled giving the condition of the buildings as they are at present. (See Tables I and II in Appendix A.) It has been



Figure 3. Present Revere School System.

found that none of them measures up to standards for modern fire-safe construction. Except for one building, all have brick-bearing walls and wooden floors and partitions. The one is completely of wood; and all are more than one story. Several schools have been termed completely unsafe as far as fire danger is concerned.

The heating and ventilating in some of the schools were found to be faulty and obsolete. The plumbing in many buildings is not in best repair or up to present-day sanitary requirements. Many classrooms are still equipped with lighting fixtures that are at present known to be contributors to poor eyesight.

In most of the buildings, there is a dire need for up-to-date equipment and teaching facilities. There is a lack of adequate school health facilities, administrative facilities, and teachers' rooms.

In general, it has been found that the sizes of the present school sites are inadequate for the proper development of physical education and recreation programs. There is little possibility of any outdoor education, either to deal with nature or just to enjoy nature. None of the sites is large enough to permit any extensive additions to be added to present structures with the possible exception of the Mabie Grade School.

In favor of the Revere School System is the fact that most of the schools have been well-placed in relation to residential neighborhoods. Many of these schools can be repaired and modernized in order that they will be able to give many years of useful service. In some cases, if additional land could be acquired next to the present site, a great improvement could be made in the health and recreation program.

Conclusive statements regarding the needs of the Revere schools will be taken up in Chapter V, "A Master Plan for the Revere School System."

## CHAPTER IV

### A PROGRAM FOR THE REVERE SCHOOL SYSTEM

The process leading up to the establishment of a definite school program requires the gathering and analysis of a great amount of data. This includes the study of the financial problem, the school population distribution, future school enrollment predictions, and the physical requirements of the school system.

#### I. FINANCING PROJECT

The background of Revere's present financial status has been discussed previously. The problem of financing a school building program is perhaps the most difficult hurdle to be crossed by the average community or city. For the most part, the average citizen will recognize the need for building schools or making major repairs to the existing buildings and is willing to lend his support, providing the cost is not going to be excessive. Unfortunately, to support the type of building and renovating program necessary to give Revere a modern and adequate school plant, the financial demand is going to be excessive with the income to the City as it exists at present.

It is necessary, therefore, for Revere to explore every feasible means of strengthening its real estate tax base and to study every potential source of financial aid that can be made available. Because of the scope and complexity of this problem, it was felt that this study should not attempt to go into a detailed analysis, but rather to confine itself to a discussion of some of the possibilities. With reference to

approaches open to the City regarding ways of strengthening the real estate tax base, the Revere School Study Group-1954 listed the following excellent suggestions:

1) Establishment of a Development Commission: This commission would investigate the most suitable types of industry for Revere and promote their development.

2) Study of the new expressway for the most advantageous industrial and commercial development. In view of the shortage of good buildable land in Revere this study might include consideration of rezoning good buildable land adjacent to the expressway for industrial or commercial use.

3) Concentration on urban redevelopment projects that will not only clear up blighted conditions but will also lead to new private development that will bring in high tax returns.

4) Study of possibility of increasing other sources of income in order to augment tax revenue. Parking meter receipts and license fees are among such income sources which are used to defray the cost of administrative departments, leaving as much tax revenue as possible for schools.

5) Cooperation in any metropolitan programs to reduce State charges on municipalities or to provide new sources of municipal income.

6) Consideration of revision of real estate assessed valuations in the light of today's conditions. It would be valuable to know whether seasonal properties connected with the beach bring in a proper share of revenue to the City. While assessed values have already been increased about 20% over pre-war figures, as previously pointed out, assessed valuations have not kept pace with the general inflationary increase in prices.<sup>1</sup>

Among other financial considerations that could lend positive aid to the building program are these:

1. A municipality's legal debt limit has been established by the law of the Commonwealth of Massachusetts, Chapter 44,

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<sup>1</sup>Revere School Study Group-1954, Better Schools for Revere (Cambridge, Massachusetts: Cambridge Research and Service Associates, 1954), pp. 56-57.



Section 10, and as amended in Chapter 56 of the Acts of 1952. This law, as amended, provides that the debt limit be 5 per cent of the city's assessed valuation based on the valuations of taxable property for three preceding years, including motor vehicles, but less abatements, providing the State Emergency Finance Board approves. Revere's request has been approved so that its present debt limit is \$2,893,000. Since the existing debt within the limit amounts to \$1,321,000, it still has an available debt capacity of \$1,572,000. It is possible, however, to receive financial aid for school buildings beyond the debt limit through the Emergency Finance Board of the State in accordance with Chapter 645 of the Acts of 1948.

2. Bond issues for school buildings are authorized by Chapter 44, Section 7, of the State Law. This law sets the maximum period of issue at twenty years and provides that it may cover not only new buildings and land, but additions.
3. State aid for school buildings is available through the Massachusetts State School Building Assistance Commission, which is set up under Chapter 645 of the Acts of 1948, as amended. This commission is authorized to pay part of the cost of new schools by application of a formula based on the net average membership in the public school system and the equalized valuation per pupil. Therefore, it varies from municipality to municipality. In the case of Revere, it amounts to 37 per cent.
4. A Stabilization Fund may be set up by a municipality for the

purpose of meeting anticipated costs of capital improvements and other outlays under the authority of Chapter 40, Section 5B, of the State Law. The City is able to save money through annual appropriations limited to 5 per cent of the amount raised from real estate and personal property taxes in the year preceding the first appropriation. The maximum amount in the Fund is set at 40 per cent of taxable values in the year preceding the first appropriation. This fund may be invested and the interest accrues to it.<sup>2</sup>

It is interesting to note the comparison of financing future school construction through a Stabilization Fund with that of financing through bond issues as described by the Revere School Study Group-1954:

A hypothetical example shows that Revere could save considerably by financing future school construction through a Stabilization Fund rather than through bond issues. Assuming that about \$300,000 is required in five years time, five annual appropriations of \$60,000 each would be in order. Invested at 3% annually the accrued interest at the time of the fifth payment would amount to \$18,000.

If, on the other hand, the City should issue bonds for the amount only as needed, and these bonds should mature in equal annual amounts for twenty years at an interest rate of 3%, the total interest charges would amount to \$94,500. In addition there would be a bonding fee of about \$5,000. Taking into account the \$18,000 interest from the Stabilization Fund, the long-term savings to the City in using Stabilization Fund financing instead of a bond issue amounts to \$117,500, almost 40% of the cost of the school.<sup>3</sup>

Once the financial plan for the building program has been decided upon, it is of utmost importance that the citizens of Revere be fully informed. An active and sincere program of public relations and

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<sup>2</sup>Ibid., p. 57

<sup>3</sup>Ibid.

publicity will be a great factor in gaining the confidence and support of the people for promoting the project.

## II. FUTURE SCHOOL ENROLLMENTS

The characteristics and problems of a school system's master plan have been discussed in a general manner previously in this study. In determining a specific plan for the City of Revere, it was found that the considerations mentioned formed an important basic approach.

The most important single factor, however, that had to be determined as nearly accurate as possible was, of course, the future school enrollments. There are different methods in use by which population predictions are made; but to be sound predictions, they must all be based on an analysis of past trends and justifiable assumptions regarding future ones.

Since a comprehensive analysis has already been made of the future school enrollments of Revere by the Revere School Study Group-1954, the formulation of this study's Master Plan for the Revere School System, insofar as enrollments affect it, was based on this group's set of population and enrollment figures. The master plan recommended by this study will be discussed in succeeding chapters. The estimate by this existing analysis was limited to the period through 1965. Basis for this analysis may best be explained by the following summary of facts:

The numbers of children born in recent years and still unborn are the fundamental basis for future school enrollments. Past births are known, but it is necessary to estimate future births. This involves analysis of various population factors that have an effect on the number of families in Revere, the number of child-bearing females, and the number of children born. These include

consideration of the following:

- 1) Migration
- 2) History of Home Building Activity
- 3) Future Level of Home Building Activity
- 4) Future Number of Child-Bearing Females
- 5) Birth Rates<sup>4</sup>

A summary of the past and predicted future enrollments are represented in Table III. A map showing the study areas used, Figure 4, and a breakdown of population figures, Tables IV, V, and VI, are to be found in Appendix B.

### III. SCHOOL POPULATION DISTRIBUTION

Since school enrollments and population distribution are such closely related factors, it must be pointed out, before proceeding further, that any prediction involving the two is susceptible to failure or partial failure because of the many variables and assumptions involved. It would be impossible, for instance, to predict for certain the trend of new home-building developments for the next five to twenty years without definitely knowing certain factors. Primarily, these are: (1) the exact location of the new proposed expressway, (2) the desire and ability of Revere to attract new industry, and (3) how much new industry will ultimately be established in the area bordering the proposed expressway. The expressway will be built, but its location is tentative and has been changed once already. It is a known and necessary fact that Revere will attempt to attract new industry to build up its real estate tax base and that this industry will probably be located on vacant land in Northern

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<sup>4</sup>Ibid., p. 58.

and Western Revere in study areas 7, 8, 9, 47, 55, and 58. (See Figure 4, Appendix B.) It is expected that the greatest new home-building development will probably take place in Western Revere, also, as this part of the City offers the greatest amount of available vacant land.

TABLE III  
REVERE PUBLIC SCHOOL ENROLLMENTS FROM 1945 THROUGH 1953  
WITH PREDICTIONS THROUGH 1965

	Enroll- ment Year	Grades 1-3	Grades 4-6	Special Classes	Grades 7-9	Grades 10-12	Total Grades 1-12
	1945	1,448	1,302	164	1,437	1,087	5,439
	1946	1,506	1,262	137	1,347	1,116	5,369
	1947	1,591	1,282	143	1,285	1,092	5,393
	1948	1,818	1,269	114	1,253	1,030	5,484
	1949	1,905	1,312	113	1,210	998	5,538
	1950	1,914	1,416	123	1,201	970	5,624
	1951	1,806	1,584	129	1,200	942	5,661
Past Experience	1952	1,990	1,685	105	1,222	943	5,945
	1953	2,179	1,675	98	1,352	965	6,269
Future Predic- tion	1954	2,197	1,558	100	1,489	959	6,285
	1955	2,122	1,747	100	1,582	977	6,528
	1956	2,082	1,931	100	1,573	1,078	6,764
	1957	2,089	1,949	100	1,465	1,181	6,784
	1958	2,056	1,874	100	1,639	1,255	6,924
	1959	1,947	1,834	100	1,809	1,248	6,938
	1960	1,810	1,841	100	1,825	1,163	6,739
	1961	1,698	1,808	100	1,756	1,299	6,661
	1962	1,628	1,699	100	1,719	1,433	6,579
	1963	1,592	1,562	100	1,726	1,446	6,426
	1964	1,571	1,450	100	1,695	1,391	6,207
	1965	1,549	1,380	100	1,595	1,362	5,986

(From Revere School Study Group-1954, Better Schools for Revere.)

The predicted population for 1965 is approximately 42,600, or an increase of about 6,000 above the 1950 Federal Census.<sup>5</sup> It must be noted, however, for the sake of accuracy, that the Revere Study Group's prediction did not consider the possibility of zoning any land to industry in study areas 47 and 55. Even though this industrial development will permit less land for home building in these areas, nevertheless, it is expected that the total increase in predicted building and population will remain approximately the same. The difference will be taken up in more concentrated housing in the form of garden apartments near the perimeter of the new industrial zones and a possible increase in other areas above the predicted. Figure 5 shows by chart the past and predicted future level of home building in Revere.

In view of these facts, the formulation of the school system's master plan relative to future school enrollments and population distribution was based on these justifiable assumptions. Due to the variable factors involved, however, it was necessary that this master plan be flexible enough to allow for possible future changes and anticipate needs before they arise. With the system of keeping an up-to-date analysis of various factors influencing the size and distribution of school population by study areas, these necessary adjustments could be made with comparative ease.

#### IV. PHYSICAL NEEDS OF THE SCHOOL SYSTEM

The condition of the Revere School System as it exists today has

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<sup>5</sup>Ibid., p. 61.

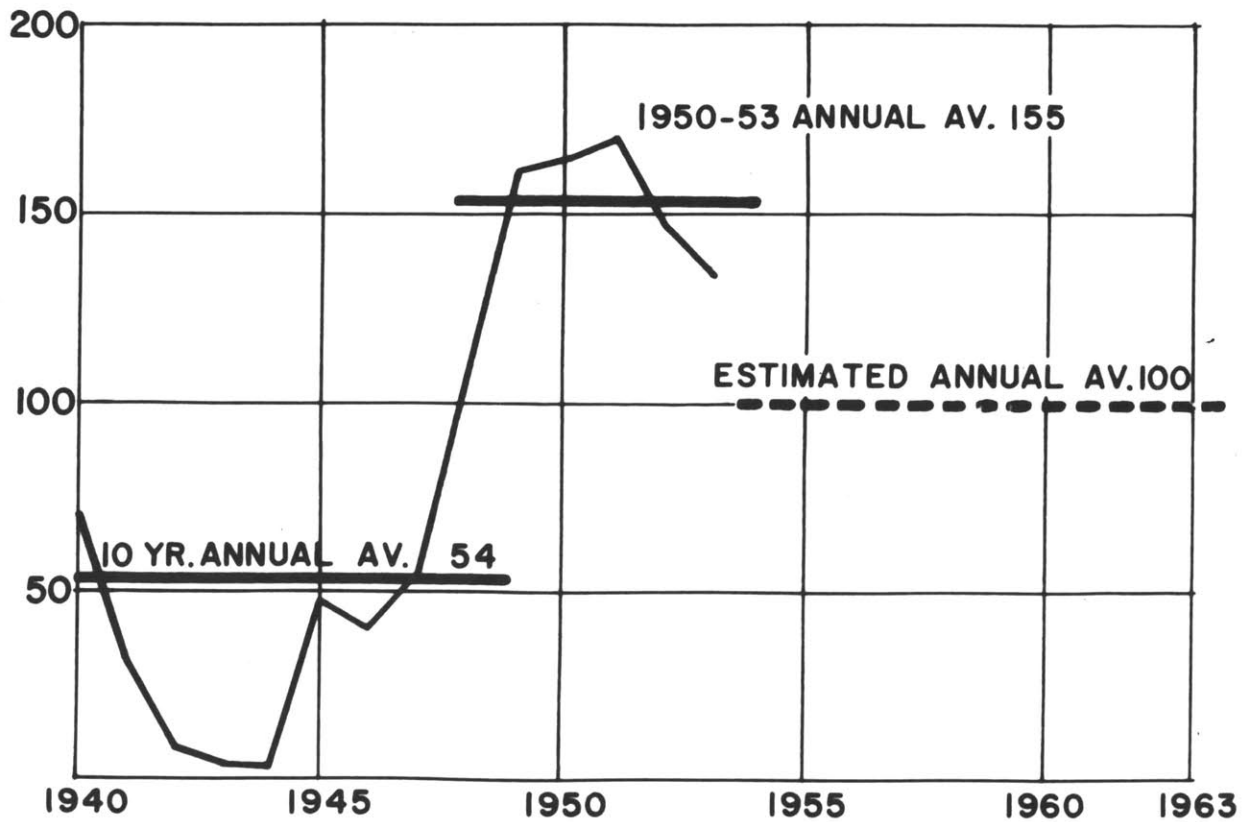


Figure 5. Levels of private homebuilding in Revere from 1940 through 1953 with predictions through 1963. (Excludes public housing.) (From Revere School Study Group-1954, Better Schools for Revere.)

been discussed in a general manner previously. Further detailed information concerning the system will be found in Appendix A. The decisions made regarding existing school plants and the details concerning the recommendations of proposed new school plants will be taken up individually in the master plan.

Since the purpose of this study was to establish a school system master plan and solve the secondary school problem for Revere, an evaluation of the secondary school problem at greater length was essential as the next logical step. This necessitated a detailed study of the present high school.

#### V. THE PRESENT HIGH SCHOOL

With regard to the present high school, the original building was erected in 1908; and the addition was built in 1924. (See Figure 6.) It contains thirty-two regular classrooms, fifteen special classrooms, an auditorium, two gymnasiums, cafeteria, service facilities, and offices. The exterior walls are brick, while the interior construction is wood except for the stairways, which are reinforced concrete. Upon investigation, the following conditions were found:

##### Classrooms

The classrooms in general are adequate of size; but they lack good lighting conditions and are mostly equipped with non-movable furniture.

##### Auditorium

The auditorium, which is on the second floor, is not readily





Figure 6. The present Revere High School.

accessible to either students or public and seats a maximum of only 400 people. It lacks necessary facilities for storage, dressing purposes, and public toilets. It is entirely inadequate for the size of the school in the light of contemporary concepts.

#### Cafeteria

The cafeteria is located in the sub-basement, is unattractive, and is poorly lighted. In the planning for location, little consideration seems to have been given to the need of accessibility for the users.

#### Home Economics

The home economics section is limited and is not adequate for high school teaching.

#### Vocational Shops

The vocational shops are located in a separate wood structure a block away, and they are limited in space and equipment. Because of this condition, a modern well-rounded vocational program is lacking.

#### Library

The library occupies a single classroom with seating for thirty-two students. There is only limited space for books, while the lighting is poor.

#### Physical Education

The physical education and health facilities are exceptionally limited for a high school. The gymnasiums are small, poorly located, poorly lighted, and poorly ventilated. The health unit is inadequate.

No outdoor program can be conducted because of the limited size of the site and the distant location of the playfield, which is several blocks away.

#### Other Facilities

The teachers' rooms are not of acceptable present-day standards. The room reserved for the band is inadequate, and it lacks storage space. The science laboratories are dated, and they are in need of rehabilitation.

#### Conclusion

Based on contemporary high school standards, the present school does not provide the proper facilities; and the problem of correcting these inadequacies would be unrealistic. It is, therefore, recommended that this building be modernized to be a junior high school of grades seven through nine and that additional land be purchased adjacent to the present site to permit adequate outdoor education and recreation. It is further recommended that a new high school be constructed on a new site to provide adequate facilities for grades ten through twelve.

### VI. PROGRAM FOR THE MASTER PLAN

From the basic data discussed, a program was formulated upon which the master plan was based. This program was founded upon the following major recommendations:

1. The lower grades are to be organized in a manner that will ultimately result in up-to-date elementary schools of kindergarten through six grades and located within easy walking

distance of the children.

2. The grades seven through nine are to be organized and confined to two well-equipped modernized school plants of the junior high school type. These two schools are to be located to give a good radius of coverage for the children of this age group.
3. The grades ten through twelve are to be housed in a new, contemporary senior high school which will offer a complete academic and vocational program in keeping with the needs of Revere. This new senior high school is to be located on a site that will offer a good radius of coverage for both students and adults and fulfill other requirements consistent with good site selection.

## CHAPTER V

### A MASTER PLAN FOR THE REVERE SCHOOL SYSTEM

This study recognized the need of being realistic in forming a master plan based upon the program stated in Chapter IV and the many assumptions in determining criteria previously discussed. Therefore, it is important to realize that a plan which seems to provide for problems predicted to arise ten to twenty years hence may be a poor answer when that time actually arrives. Furthermore, because of the difficulties involved, it was not within the scope of this study to include all problems in detail concerning a master plan. Consequently, Master Plans A and B will be presented in partial outline form with the intention of covering only the principal problems as related to the building program of the school system. The two plans are alike, however, in the provisions made for the immediate future.

#### I. MASTER PLAN A

This plan is predicated to an educational program which desires to approach and attain a 6-3-3 system within the bounds of economic considerations. It recommends the following:

##### A New Senior High School

This school is to be designed for grades ten through twelve for a capacity of 1,300 students. It will offer a complete academic and vocational program in keeping with the philosophy and needs of Revere and will be designed to permit community use. The new school will replace

the present high school, which will be retained in the school system as a junior high school. The site for the new high school should be a minimum of thirty acres and centrally located for accessibility. This project should start immediately.

#### Renovation Of Present High School To Become A Junior High School

This school is to be modernized to care for grades seven through nine with adequate facilities to offer a good junior high school curriculum. The Center School, which now houses the vocational shops, is to be abandoned. Additional land adjacent to the present high school should be purchased to permit better recreational facilities. Outdoor league ball games, however, could be scheduled for the present high school field. This project should be started in time to be prepared for the change when the new high school is completed.

#### Renovation Of The Lincoln School To Become A Junior High School

This school is to be modernized to care for grades seven through nine in its territory. However, because of its surplus capacity, it should care for the sixth-grade students in its immediate locale for economic reasons. This project should be started in conjunction with the present high school to be prepared for the change in program when the new high school is completed.

#### A New Elementary School In Beachmont

This school is to be a twelve-classroom building designed for kindergarten through six grades. This school would replace the Ronan and Howe, both of which are obsolete and should be abandoned. This project

should have a priority following the senior and junior high school projects.

A New Elementary School In Western Revere

This school is to be a twelve-classroom building designed for kindergarten through five grades. The sixth-grade students will attend the Lincoln. The new school will help relieve the pressure on the McKinley, Barrows, and Achenbach Schools. This project should have a priority following the senior and junior high school projects.

A New Elementary School In Northwestern Revere

This school is to be a ten-classroom building designed for kindergarten through five grades. The sixth-grade students, for the time being, will attend the Lincoln. This school would be erected to care for the new school population resulting from the expansion to this section of Revere. Because of the element of speculation involved here, it is recommended that this project be started only after there is a definite indication that the predictions will materialize.

A New Elementary School In The Shurtleff School Area

This school is to be a twelve-classroom building designed for kindergarten through six grades and is to replace the obsolete Shurtleff School in the vicinity of its present site. Additional land should be purchased to make possible an adequate outdoor recreational program. This project should have a priority following the senior and junior high school projects; but, if there is a financial problem, it could be given a lower priority.

#### An Addition To The Achenbach School

Additional land should be purchased adjacent to the present site to permit an addition of four more rooms to care for kindergarten through six grades and also to provide adequate playground area. This project could be given a lower priority dependent upon financial availability and upon the definite decision concerning the proposed expressway. It would not be good policy to redevelop this school should the expressway be moved adjacent to it.

#### Renovation Of The McKinley School

Additional land should be purchased between Foster and Yeaman Streets to permit remodeling building and to allow adequate playground facilities. The old section of the building, built in 1904, is to be removed, and a new addition is to be erected to result in a fourteen-classroom building designed for kindergarten through six grades. This need is an important one, but it could be given a lower priority dependent upon financial availability.

#### An Addition To The Mabie School

Three classrooms are to be added to the existing building to make it capable of caring for grades kindergarten through six. The site for this school is good, and it is one of the very few large enough to be comparatively adequate as it is. This project could be given a lower priority dependent upon financial availability.

#### Disposition Of The Pasteur School

The Pasteur School building is small, and the site it occupies



does not permit any additions to be made. Therefore, it is recommended that this school be replaced on an adequate site at some future date; but, for the present, it will care for grades one through five. The kindergarten and sixth-grade students are to attend the new school in the Beachmont area.

#### Schools To Be Abandoned

In this plan, the obsolete schools--Wolcott, Ronan, and Howe--are to be abandoned.

#### Disposition Of The Remaining Schools

The remaining schools are to be repaired and improved in order that they may serve as adequate and modern elementary schools capable of caring for kindergarten through six grades.

Tables VII and VIII and Figures 7, 8, and 9 assist in showing how this program works.

TABLE VII

SCHOOL CAPACITIES AND PREDICTED ENROLLMENTS  
FOR REVERE SCHOOLS - HIGH SCHOOL LEVEL  
PLAN A

School	Grades	Approximate Capacity 30/Cl. Rm.	Predicted 1959 Enrollment	Study Areas
<u>Senior High School</u>				
<u>New Senior High</u>	10-12	1,300	1,248	All of Revere
<u>Junior High Schools</u>				
Present High	7- 9	1,360	1,169	1-42, 44, 49, 50
Lincoln	7- 9	850	640	43, 45-48, 51-60
Total	7- 9	2,210	1,809	
Lincoln	6		136	43, 46-48, 52-59
Total	6- 9		1,945	

TABLE VIII  
SCHOOL CAPACITIES AND PREDICTED ENROLLMENTS  
FOR REVERE SCHOOLS - ELEMENTARY LEVEL  
PLAN A

School	Grades	Approximate Capacity 30/Cl. Rm.	Predicted 1959 Enrollment	Study Areas
Liberty	K-6	480	471	16-20, 24
Revere	K-6	685	691	6-14, 57, 51*
New Shurtleff	K-6	360	356	34, 35, 38, 49-50, 51*
Waitt	K-6	240	124	60
Garfield	K-6	600	520	15, 21-23, 25, 26*, 27
Roosevelt	K-6	240	183	1, 2
Mabie (remodeled)	K-6	210	137	3, 4, 5
<u>Beachmont Area**</u>			452	26, 28-33
Pasteur***	1-5	150		
New School	K-6	300		
<u>West Revere Area**</u>			1,593	
McKinley (remodeled)	K-6	420		36, 37, 39-42
Achenbach	K-6	240		44-46
Barrows***	K-5	240		43, 48
New School****	K-5	360		52-54, 56, 58
New School****	K-5	300		47, 55, 59
Total		<u>4,825</u>	<u>4,527</u>	
From Lincoln	6	136	136	
Total	K-6	<u>4,961</u>	<u>4,663</u>	

\*Study areas 51 and 26 are divided between schools.

\*\*Separate enrollments are not shown for schools as study areas and school districts are not exactly the same.

\*\*\*Kindergarten and grade 6 to the New School in Beachmont Area.

\*\*\*\*Grade 6 to Lincoln.

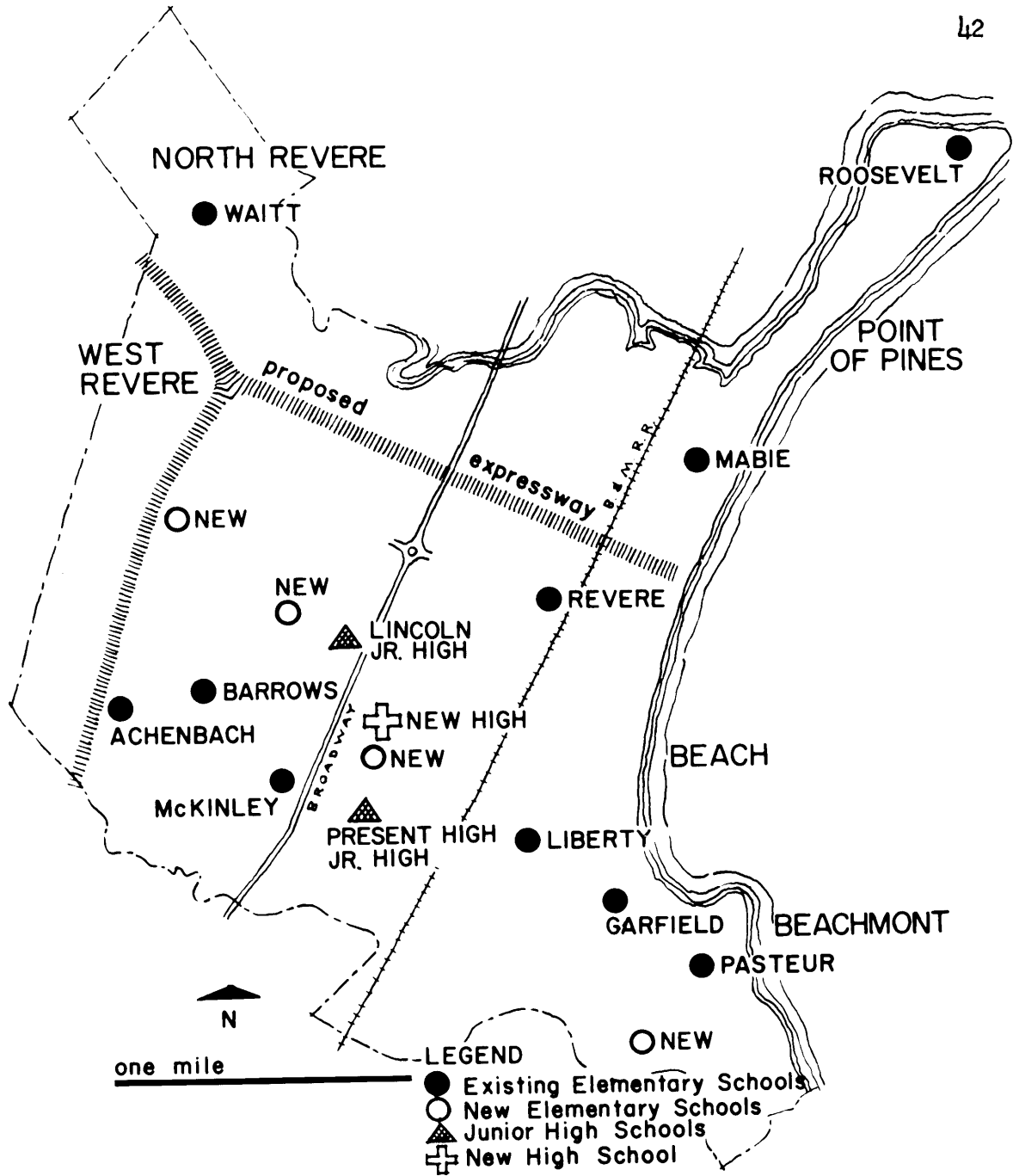


Figure 7. Master Plan A--Revere School System. (Source of information for proposed expressway: Department of Public Works, The Commonwealth of Massachusetts.)

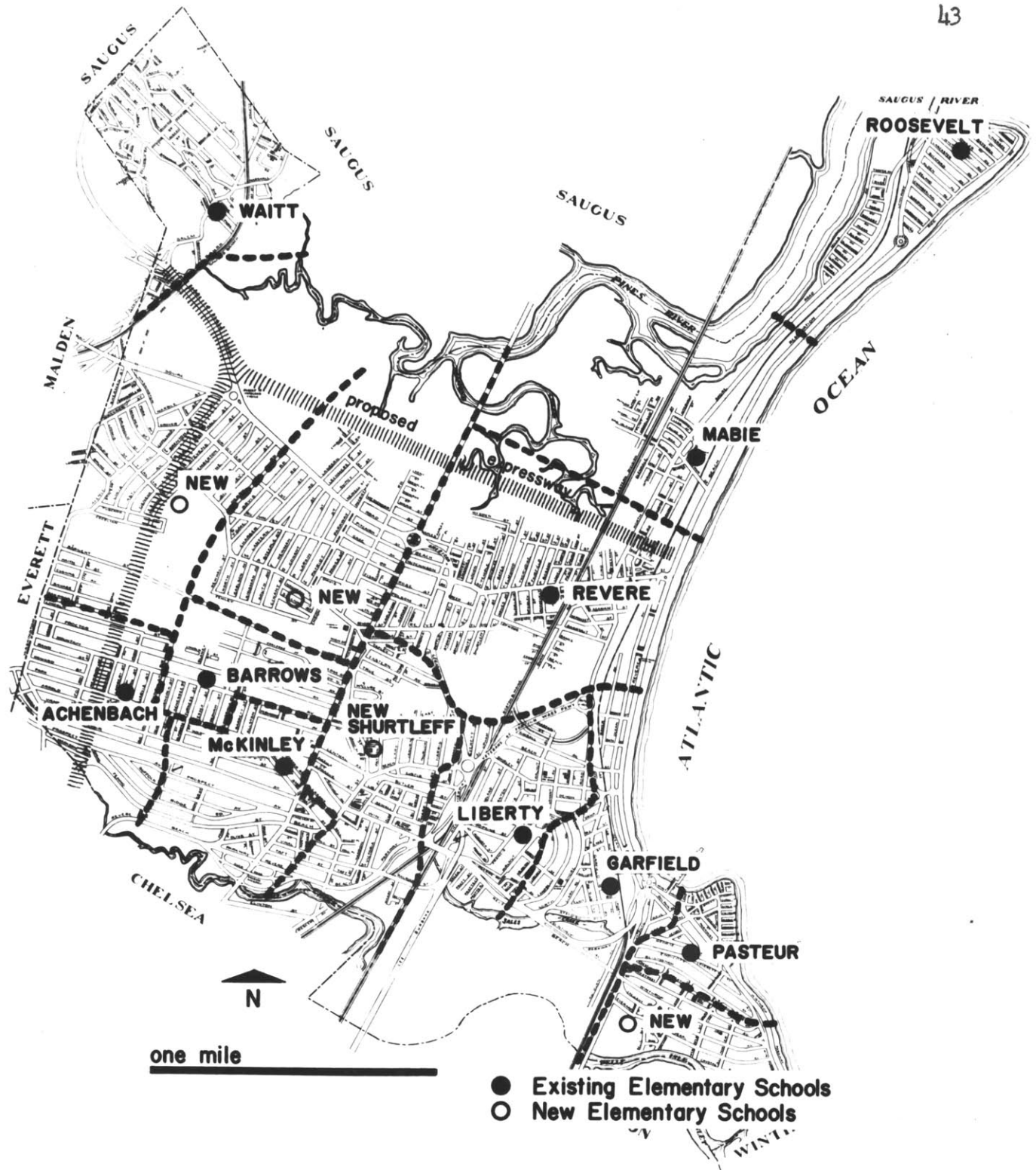


Figure 8. Master Plan A--Revere School System. Districts for the elementary schools. (Source of information for proposed expressway: Department of Public Works, The Commonwealth of Massachusetts.)

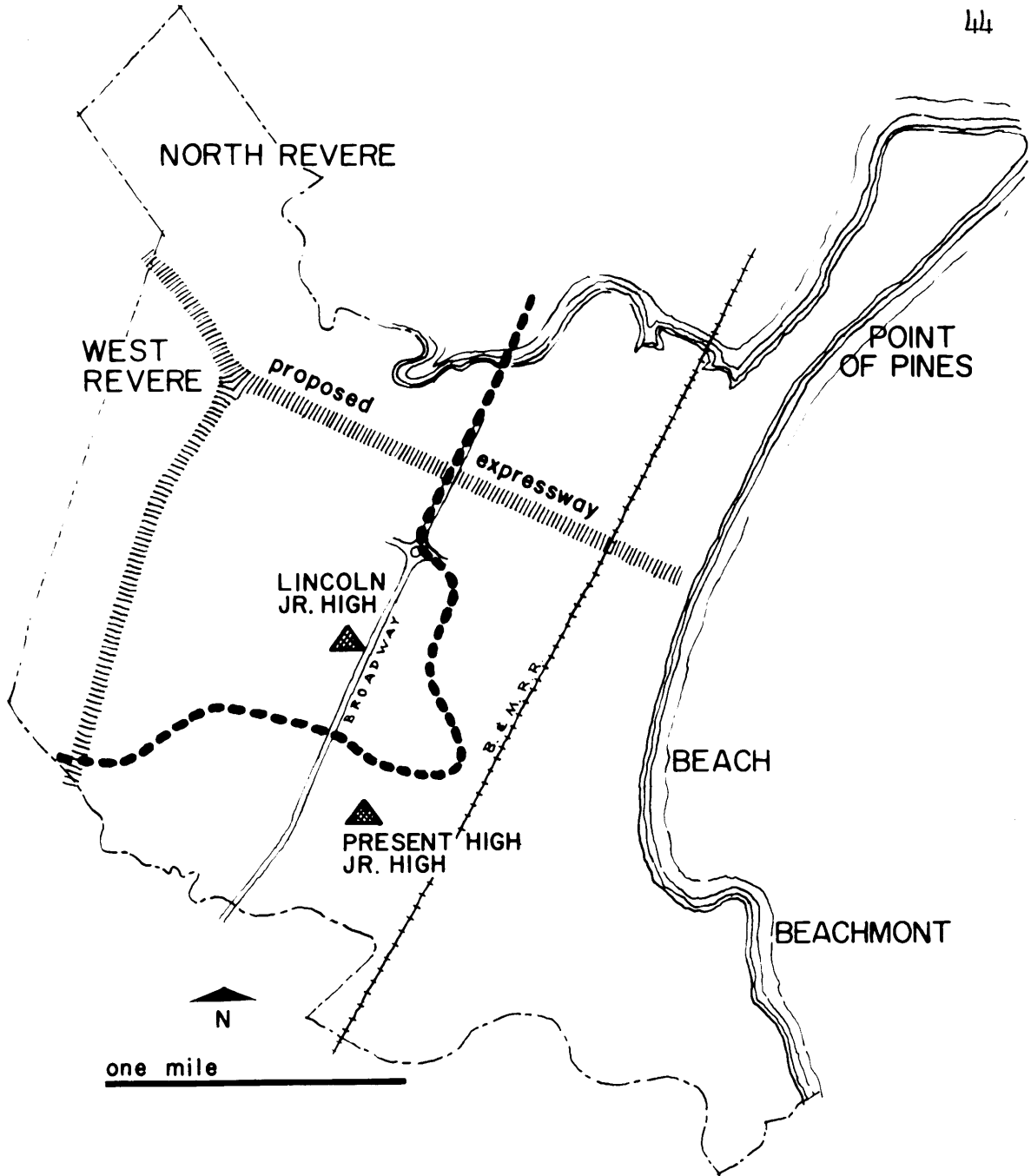


Figure 9. Master Plan A--Revere School System. Districts for the junior high schools. (Source of information for proposed expressway: Department of Public Works, The Commonwealth of Massachusetts.)

Comments Regarding Plan A

There are two major difficulties regarding this plan: namely, (1) the size of the present and predicted enrollments of grades seven through nine, and (2) the capacity of the combined Lincoln and present high for junior high school purposes. When the two schools are combined, there is more capacity than this age group requires unless the sixth graders in the vicinity of the Lincoln are included with that school. However, it is felt that the size and facilities of the Lincoln are such that it would be a better junior high school than an elementary school. Further, it is felt that the location of these two schools gives a little better radius of coverage than a combination of the present high and the Garfield. The Garfield, under the present system, is a junior high school.

## II. MASTER PLAN B

This plan is predicated to an educational program that desires to maintain a 6-3-3 system. It recommends the following:

A New Senior High School

The recommendations for this school are the same as stated in Plan A.

Renovation Of Present High School To Become A Junior High School

The recommendations for this school are the same as stated in Plan A.

Improvement Of The Garfield Junior High School To Be Retained In That Capacity

This school is already designed and is operating in the capacity of a school for seven through nine grades. It should not take a great deal of repair and improvement to make this a first-rate school, and it should require no change in policy at the time the new senior high school is completed.

A New Elementary School In Beachmont

The recommendations for this school are the same as stated in Plan A.

A New Elementary School In The Wolcott School Area

Because of the obsolete condition of the Wolcott building and the poor physical characteristics of the present site, a new site should be purchased between North Shore and Clark Road large enough to accommodate a new twelve-classroom building and permit adequate grounds for an outdoor recreational program. This school is to be designed for kindergarten through six grades. The old school is to be abandoned. This project could be placed at a lower priority than those previously mentioned.

A New Elementary School In The Shurtleff School Area

This school is to be a ten-classroom building designed for kindergarten through six grades and is to replace the obsolete Shurtleff in the vicinity of its present site. Additional land should be purchased to make possible an adequate outdoor recreational program. This project should have a priority following the senior and junior high school

projects, but it could be placed at a lower priority should there be a financial problem.

A New Elementary School In Northwestern Revere

The recommendations for this school are the same as stated in Plan A.

An Addition To The Achenbach School

Additional land should be purchased adjacent to the present site to permit an addition of three more rooms to care for kindergarten through six grades and also to provide adequate playground area. This project could be detained and carried out at the same time as the renovation and reduction of the McKinley School capacity.

Renovation Of The McKinley School

The old section of the building, erected in 1904, should be removed, leaving an eight-classroom building to care for kindergarten through six grades. The remaining building is to be repaired and improved. This project could be detained and carried out at the same time as the addition is built to the Achenbach School, dependent upon the financial availability.

An Addition To The Mabie School

The recommendations for this school are the same as stated in Plan A.

Disposition Of The Pasteur School

The recommendations for the Pasteur School are the same as stated



in Plan A.

Schools To Be Abandoned

In this plan, the obsolete schools--Wolcott, Ronan, and Howe--are to be abandoned.

Disposition Of The Remaining Schools

The remaining schools are to be repaired and improved, so that they may serve as adequate and modern elementary schools to care for kindergarten through six grades.

Tables IX and X and Figures 10, 11, and 12 assist in showing how this program would operate.

TABLE IX

SCHOOL CAPACITIES AND PREDICTED ENROLLMENTS  
FOR REVERE SCHOOLS - HIGH SCHOOL LEVEL  
PLAN B

School	Grades	Approximate Capacity 30/Cl. Rm.	Predicted 1959 Enrollment	Study Areas
<u>Senior High School</u>				
<u>New Senior High</u>	10-12	1,300	1,248	All of Revere
<u>Junior High Schools</u>				
Present High	7- 9	1,360	1,347	1-9,11-14,16-20,24, 34-60
Garfield (remodeled)	7- 9	460	462	10,15,21-23,25-33
Total	7- 9	1,820	1,809	

TABLE X  
 SCHOOL CAPACITIES AND PREDICTED ENROLLMENTS  
 FOR REVERE SCHOOLS - ELEMENTARY LEVEL  
 PLAN B

School	Grades	Approximate Capacity 30/Cl. Rm.	Predicted 1959 Enrollment	Study Areas
Liberty	K-6	480	481	16-20, 24
New Wolcott	K-6	360	360	21-23, 25
Mable (remodeled)	K-6	210	137	3, 4, 5
Revere	K-6	685	681	6-15, 57
Roosevelt	K-6	240	183	1, 2
New Shurtleff	K-6	300	313	34, 35, 38, 49-51
Waite	K-6	240	124	60
<u>Beachmont Area*</u>			549	26-33
Pasteur**	1-5	150		
New School	K-6	360		
<u>West Revere Area*</u>			1,831	36, 37, 39-48, 52-56, 58, 59
McKinley	K-6	300		
Barrows	K-6	240		
Achenbach (remodeled)	K-6	210		
Lincoln	K-6	960		
New School	K-6	300		
Total	K-6	<u>5,035</u>	<u>4,659</u>	

\*Separate enrollments are not shown for schools as study areas and school districts are not exactly the same.

\*\*Kindergarten and grade 6 to the New School in Beachmont Area.

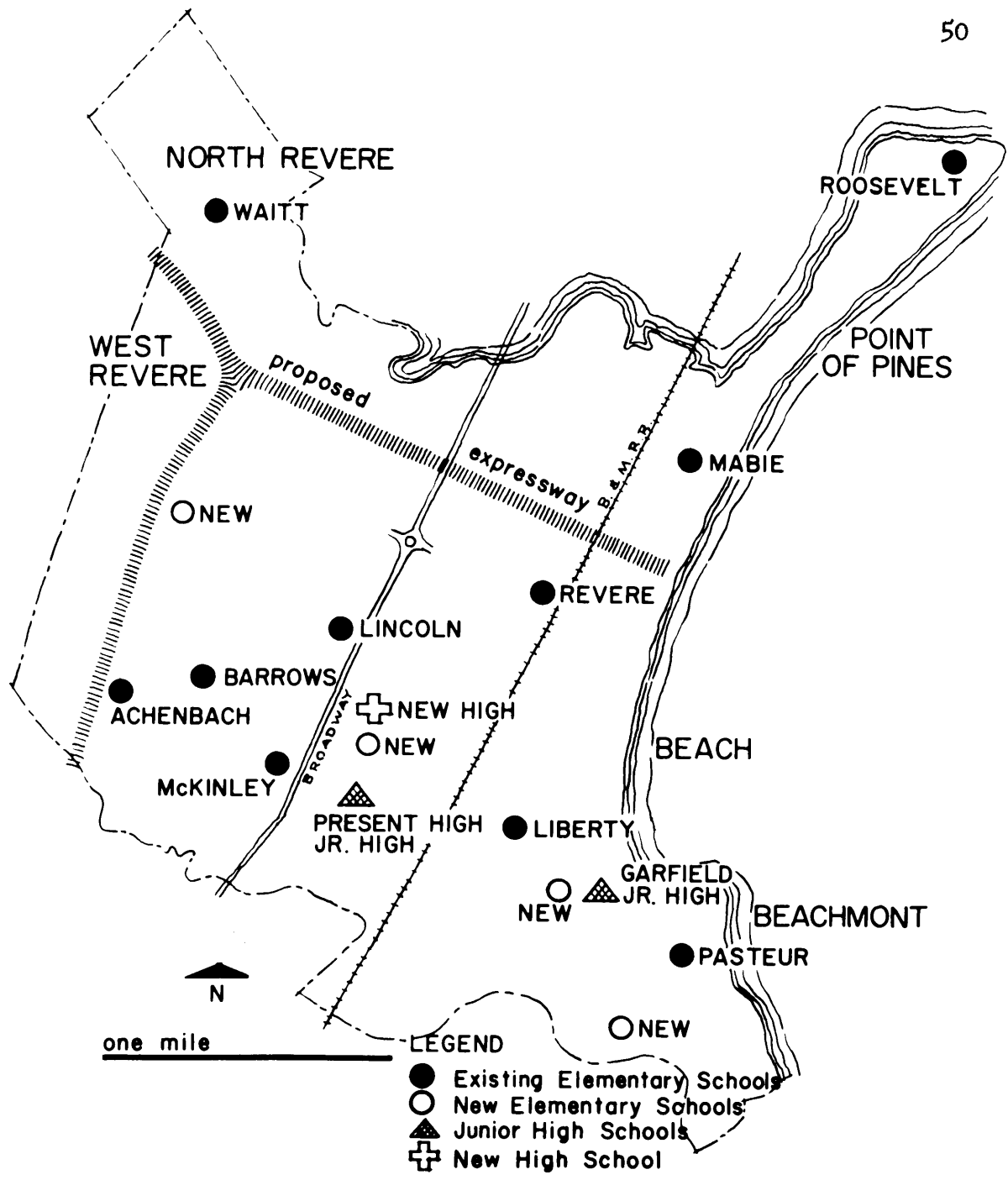


Figure 10. Master Plan B--Revere School System. (Source of information for proposed expressway: Department of Public Works, The Commonwealth of Massachusetts.)

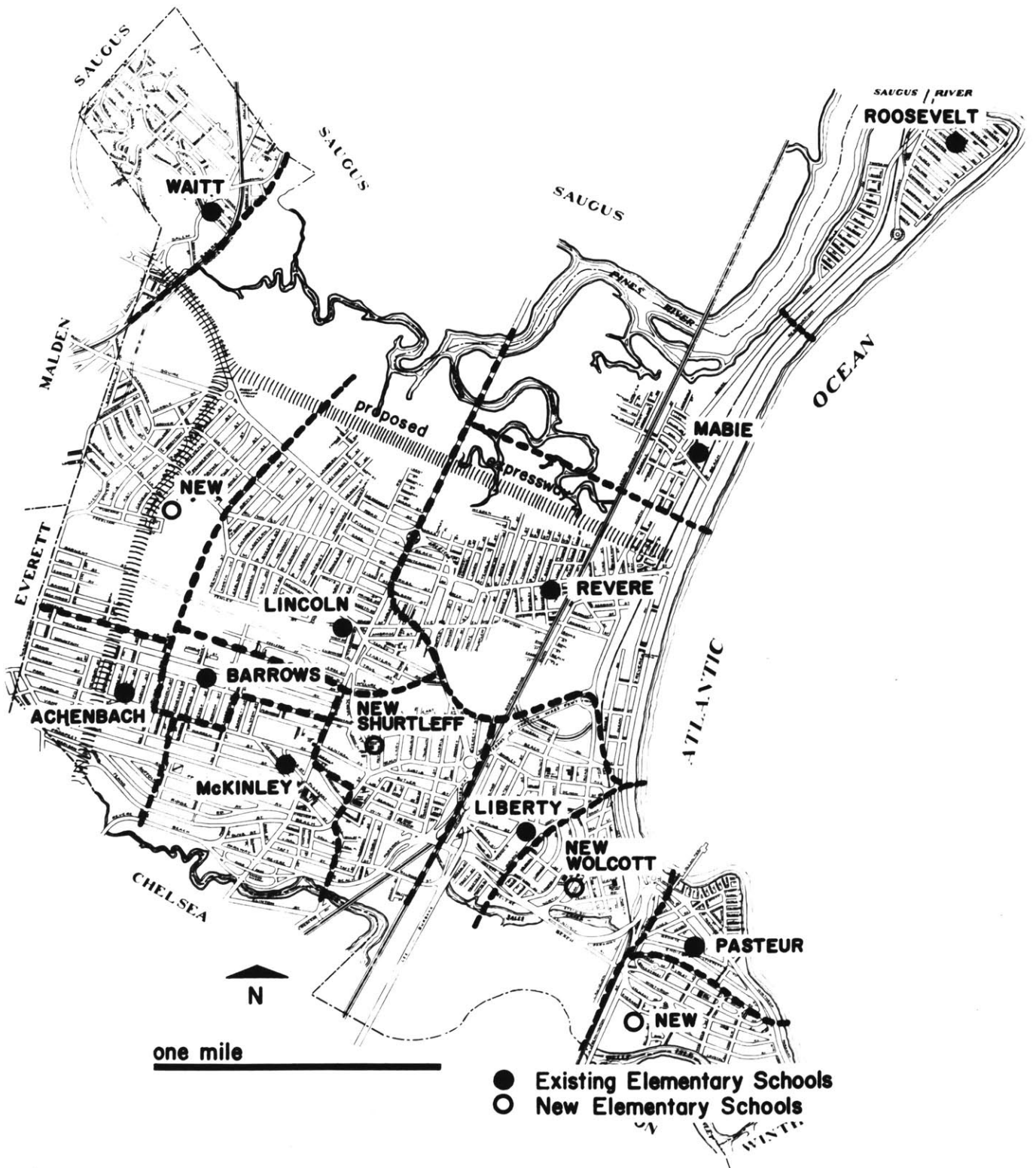


Figure 11. Master Plan B--Revere School System. Districts for the elementary schools. (Source of information for proposed expressway: Department of Public Works, The Commonwealth of Massachusetts.)

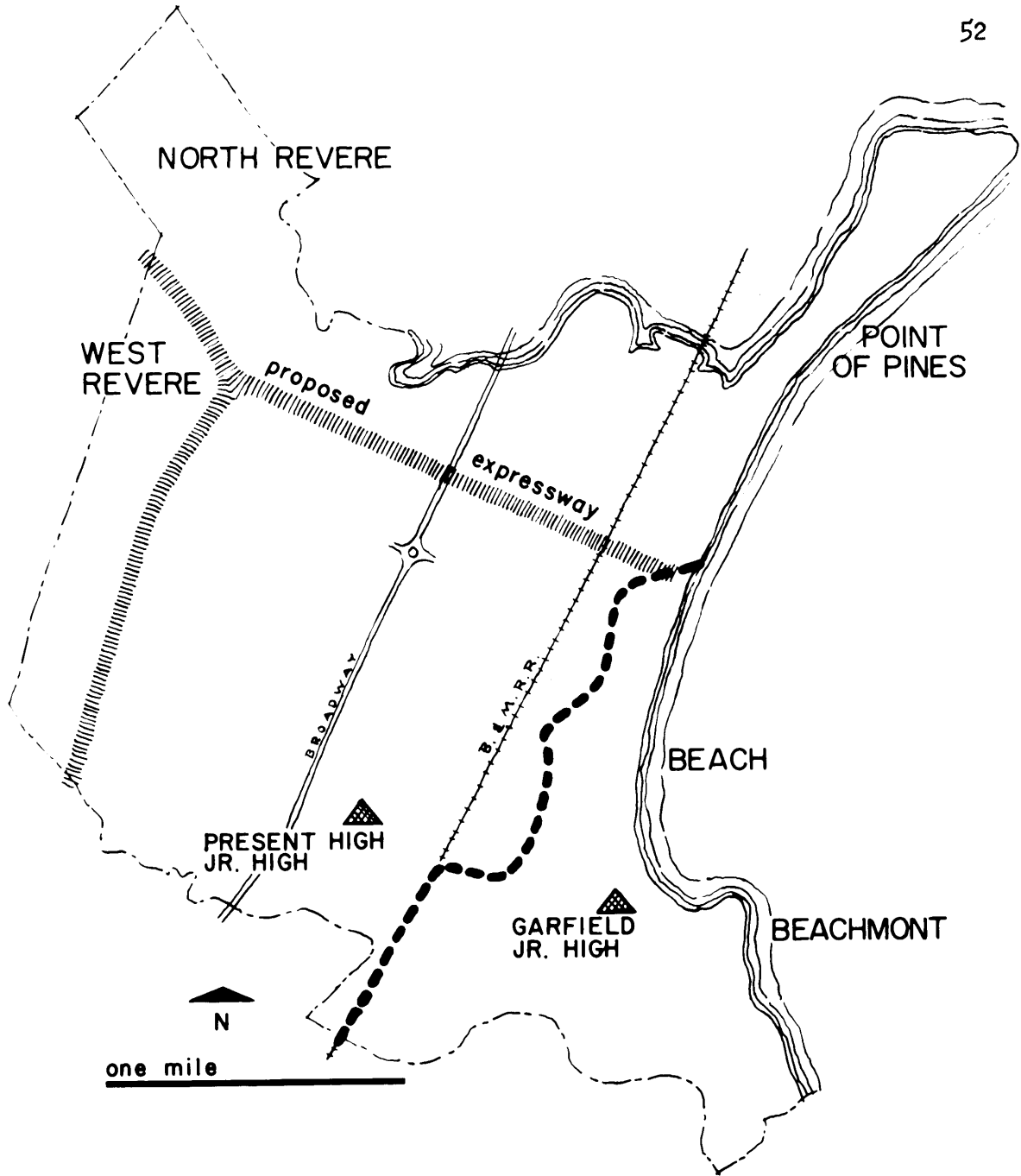


Figure 12. Master Plan B--Revere School System. Districts for the junior high schools. (Source of information for proposed expressway: Department of Public Works, The Commonwealth of Massachusetts.)

Comments Regarding Plan B

One of the difficulties regarding this plan is the location of the two junior high schools with respect to the coverage of Revere. However, since the capacity of the Garfield School is approximately right for the smaller district, it would serve with easy accessibility; and since the combined capacities of the two junior high schools are right for this age group, it seems to be a justifiable choice. Another difficulty with this plan is in the use of the Lincoln School as an elementary school. The size is larger than desirable. However, for economic reasons, it must be retained; and it is felt that it could serve adequately. Definitely in its favor is the fact that this plan permits a clean-cut 6-3-3 system to operate adequately and efficiently.

PART 3

THE PROGRAM AND DESIGN OF A NEW

HIGH SCHOOL FOR REVERE

## CHAPTER VI

### THE PROGRAM FOR A NEW HIGH SCHOOL FOR REVERE

In a school rehabilitation program as extensive as the City of Revere's, there will necessarily be a considerable amount of basic data gathered for the school system master plan that will pertain directly to the building program for any individual school within the system. This was found particularly true of the project selected as a part of this study--that is, the planning and preliminary designing of a New Senior High School for Revere. Because of the material and spiritual value derived from community and faculty participation, the same type of planning organization is recommended to participate in the high school building program as was recommended for the school system master plan described previously in this study.

#### I. THE BUILDING PROGRAM

Master Plans A and B, both of which are the same as far as the senior high school is concerned, have already established the enrollment for which the school is to be designed and made certain recommendations concerning the site. The actual selection and purchase of the site should be made at the earliest possible time and should be a function of the administrator of the school system master plan. The site, however, cannot be properly selected until the requirements are known. Therefore, because of its important relationship to this phase of the study, the site will be discussed as part of the high school building program.

Before the architect can commence his work on the preliminary



drawings, as one of the last important steps towards actual construction, there are a number of other considerations that must be solved. The most important of these basic considerations are listed below and will be discussed individually in detail immediately following:

1. What is to be the role of this school in the City of Revere?
2. What is the educational philosophy of the Revere schools?
3. What is to be the educational program of the Revere Senior High School?
4. What will be the resultant space requirements necessary?
5. What is to be the site selected?

Complete answers to these questions will provide the architect with a set of educational specifications without which it would be impossible to produce a school plant that will function in the manner expected and function well. The formulation of the educational specifications should be the responsibility of the School Committee with the help of its planning organization. It must be noted that the answers given in this study were not arrived at with the benefit of the many valuable discussions resulting from an organized study group; but, nevertheless, it was felt that the sources utilized provided a justifiable approach to the solution.

## II. THE ROLE OF THE REVERE SENIOR HIGH SCHOOL

The New Revere High School should be designed as a community-type school. A good definition for this type of school was given by Wilfred F. Clapp, Assistant Superintendent for School Organization and Plant, Michigan Department of Public Instruction, when he said:

The role of the community school may be partially defined in the following terms:

(a) The community school serves a de facto community that came into existence to meet biological needs, such as food, shelter, clothing and security.

(b) The community school is concerned with basic biological needs and also with such secondary needs as growth, cultural stability and cultural improvement.

(c) The community school stands ready to serve all learning needs of the people of the community except those who are socially or constitutionally incompatible with its function.<sup>1</sup>

In terms of Revere, it is the hope of the School Committee to establish the new high school as a center for all age groups, but particularly for the high school level and older.

Upon investigation, it was found that the present outdoor health and physical education program extends beyond the school period to the hours of darkness. However, the present facilities are so limited that only a select few are able to participate, and those few must do so under severe handicap. This inadequacy must be remedied. It is further desired that indoor and outdoor education and recreation be developed into an all-season program to provide a healthier and happier atmosphere for the teen-age group the year around. These aims will require a large well-equipped gymnasium and an outdoor area extensive enough to provide space for a large number of boys and girls to participate in several

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<sup>1</sup>School of Architecture and Planning, Massachusetts Institute of Technology, "Proceedings of the Conference on Schools and Community Planning," ed. William Lipman (Paper presented by Wilfred F. Clapp, "What Questions Does A School Administrator Believe the Community Should Answer in Determining School Size, Site and Location?" Cambridge, Massachusetts: School of Architecture and Planning, Massachusetts Institute of Technology, 1953), p. 6.

organized activities simultaneously.

Another important aim of a new school plant should be to provide for the needs and interests of the young men and women in the late teens and early twenties who have finished their formal education and who are attempting to make their start as citizens in the community. It is recognized that there exists a definite need for a readjustment period for this group of young people to allow them to adapt themselves more easily to the workaday life, and thus to make possible a more compatible relationship between the young people and the older people of the community. This aim would require facilities for them to meet for recreation, the development of hobbies and/or the further pursuit of cultural study and specialized instruction.

These same provisions would be welcome to older people as well. It would give them an opportunity to pursue some of the interests that may have been denied them earlier in life. It would also give them an opportunity to make new acquaintances, to become more aware of the city's problems, and perhaps, in the end, evoke a more active and understanding interest in the community affairs.

Another aim should be the provision of a place for organized citizen groups to meet for business, cultural, or recreational purposes. At this time, there is not an auditorium or civic hall in Revere adequate for large group gatherings. Nor is there an adequate gymnasium in Revere at the present time that can provide space for both spectators and participants.

With these aims in mind, it is hoped that the new senior high school will become a center for the citizens of Revere, a center that

will strengthen the democratic objectives of our country as well as of the City itself. The role of the new school should be twofold. It should be aimed at providing opportunities for the individual and to make certain the possibility of congenial, happy, and constructive lives for the many.

### III. PHILOSOPHY OF THE NEW REVERE SCHOOLS

The philosophy presented here pertains directly to the Senior High School Program for Revere; however, it is basic for the entire system.

Upon investigation, it was found that the City of Revere believes schools, as an instrument of society, are charged with the responsibility of adequately educating the younger citizens in the light of increasing complexities in the local, national, and international scene. Because of these rapidly changing conditions, the City feels recognition must be given to the fact that teaching philosophies and methods must change also; and therefore the environment in which the teaching and learning occur must change or be capable of readjustment within reason.

The educational program, as offered in the Revere schools, is based on the recognition of certain basic philosophies that take into account the integration of contemporary teaching methods aimed at producing a happy, well-adjusted citizen. Such a citizen should be capable of taking his place in the community upon graduation or of pursuing his education at higher levels on an even basis with the best students from other sections of the country. The following factors are the bases for the educational program:

1. Recognition of the conditions for child growth and development.

It is felt that the mental growth of children takes place best when the interests and understandings of the learner are related, when possible, to practical experience and actual situations. This further introduces a closer relationship with the community.

2. Recognition of the differences among pupils. Children, as they grow, develop at different rates in all phases. It is recognized that each child differs from another whether he is a slow learner or a superior learner and that environmental conditions must be provided to develop each type of child to the best of his ability.
3. Recognition of the importance of practiced democracy. Because all different social and economic groups are represented in the Revere secondary schools, it is important to instill the practice of democratic principles. The participation of each member of the student body in student government, social life, and school clubs, as well as academic pursuits, is encouraged. This should develop a better understanding of the problems of our society; and, in the end, such participation is likely to produce a better-adjusted citizen to take his place in the community.
4. Recognition of the importance of student guidance. The value and necessity of this task is considered one of major importance.
5. Concern for the healthy development of mind, body, and character. It is considered extremely important to the

well-rounded development of the student that he participate to the extent of his ability and interest in athletics, school clubs, dramatics, music, school social life, and so forth.

6. Recognition of the importance of mastering the basic skills. It is felt that it is vitally important to teach the skills in relation to their uses and not depend altogether on textbook learning.
7. Concern for harmful competition. Competition is validly accepted, but not in situations where an individual who does not have a chance of success can gain nothing but harmful frustration.
8. Concern for discipline. It is felt that this problem is most harmoniously carried out by student-teacher cooperation based on promotion of school citizenship and good sportsmanship.

#### IV. THE EDUCATIONAL PROGRAM OF THE REVERE SENIOR HIGH SCHOOL

The philosophy set forth in the preceding section gives the basic aims upon which the educational program is predicated. Further, it promulgates the manner in which the instruction will be executed. Upon this ideology then, the Revere Senior High School has developed its curriculum, which becomes the instrument through which the transformation to practicality is anticipated. It must be borne in mind, however, that changes in the curriculum will occur through the demand of changing times. Slight changes will probably occur from one school year to the next.

According to information obtained from the Principal's Office of the Revere High School, the following subjects were the ones scheduled

for grades ten through twelve at the Present Revere High School for the school year, 1953-54. They are the anticipated subjects that should be planned for in the curriculum of the New Revere Senior High School.

English: Sophomore English, Junior English, Senior English.

Foreign Languages: French 1, French 2, French 3, French 4, Latin I, Latin II, Italian 1, Italian 2, Italian 3, Italian 4, German 1, German 2, German 3, Spanish 1, Spanish 2, Spanish 3, Spanish 4.

Mathematics: Algebra I, Algebra II, Algebra IIS, Trigonometry, Plane Geometry, Solid Geometry, Revolutionary Geometry.

Social Studies: Problems of Democracy, Economics, Civics, U.S. History, Ancient History, Modern European History, World History.

Science: General Physics, College Physics, Chemistry, Biology, Aeronautics.

Commercial: Bookkeeping 1, Bookkeeping 2, Bookkeeping 3, Office Practice, Commercial Typewriting, Personal Typewriting, Typewriting 2, Typewriting 3, Spelling, Stenography I, Stenography II, Commercial Correspondence, Commercial Law, Commercial Geography.

Art: Freehand Drawing.

Homemaking: Clothing Ib, Clothing Ia, Clothing 2, Clothing 3, Foods Ib, Foods Ia, Foods II.

Music: Vocal, Harmony, Music Appreciation.

Vocational: Mechanical Drawing 2, Mechanical Drawing 3, Mechanical Drawing 4, Manual Training II, Manual Training III.

Special: Driving.

Physical Education: Boys' Gym, Girls' Gym.

In addition to the subjects included in the 1953-54 curriculum,

the following changes and additions should be planned for in the New Senior High School:

1. The revitalization of interest in the art field has been spurred on by the need and use of new art forms and expression in nearly every phase of society. It is now recognized that a great many students receive some value and pleasure from participation in the arts or crafts regardless of talent. This has been realized in Revere; hence it is now anticipated that a large number of students will take at least one art course, and perhaps more, during his school career. For these reasons then, it is felt that this department should be enlarged in size and scope.
2. The music department should be enlarged to facilitate better accommodations for band, orchestral, and allied music instruction. Music instruction, whether it poses as training for musical careers for the few or permits better understanding and enjoyment for the many, is considered a highly valuable department of the curriculum. The trend in Revere, as well as throughout the country, is for more emphasis on the fields of art and music to provide the opportunity for a more-balanced education and, in the end, a better-balanced citizen to cope with the many problems of the accelerated living conditions of the present day. Music courses are popular with the students of Revere, and it is felt that the increased space requirements are definitely justifiable.
3. The vocational program should be revised and enlarged to



include full courses of instruction in mechanical drawing, wood shop, sheet metal shop, electric shop, and auto shop. It is recognized that sound vocational training is becoming more important to the average student today. It is more than just "trade training"; it relates and gives meaning to other subjects in the curriculum. It gives the student an opportunity to enjoy the satisfaction of accomplishment and serves to sustain and promote interest. The practical value of shop work may be summarized briefly in these categories: citizenship training or the ability to make, repair, and operate equipment contacted in everyday life; guidance or the opportunity to explore the nature and possibilities of various industrial vocations; and trade training or the opportunity to receive instruction in a selected vocation.

4. To promote a program of full development for the student, provision should be made for extra-curricular student activities. In particular, it should require a space reserved for such activities as student government, school club meetings, and small gatherings. This space may be referred to as the Student Activities Room.
5. To cope with the enlarged health and recreation program that is anticipated for both student and community participation, adequate indoor and outdoor space and facilities must be provided to care for the following activities: Indoor--court games for both boys and girls such as basketball, volleyball, badminton, and so forth; group activities such as folk dancing,

gymnastics, and so forth; miscellaneous activities such as tumbling and wrestling; and remedial gym activities for both boys and girls. Outdoor--boys' activities such as football, track, baseball, softball, touch football, field hockey, volleyball, badminton, basketball, and so forth; girls' activities, separated from the boys', such as softball, field hockey, speedball, volleyball, badminton, and so forth; and tennis courts that may be used by either girls or boys.

6. To provide for the after-school-hour functions for the adults of the community, the school plant should be planned for their participation in the following activities: health and recreation program, music, dramatics, lectures; instructional courses in hobbies, vocational subjects, and certain academic courses; and school committee and club work as would be encountered in the Parents-Teachers Association.

## V. SCHOOL SPACE REQUIREMENTS

Following the statements of objectives and policy presented in the preceding sections, the next step in this study was to formulate a list of the space requirements to plan for in the new senior high school. If this information were the result of the recommended planning organization, it would be the responsibility of the school administrator to formulate it. Since it would be used by the architect, it should be made as simple and straightforward as possible. There are generally two ways in which these requirements may be given: one, by dimension and area; the other, by function and capacity. In order that the architect may be

given the greatest amount of freedom to exercise his imagination and ingenuity to enable him to produce more distinctive results, it is recommended that this list be given in terms of function and capacity. In this study, the latter method was utilized.

The data shown in Table XI segregates the various types of instructional spaces required and states the number of spaces needed based on information listed under the headings of subject periods per day, proposed class size, and teaching stations needed. Table XII shows the number of special spaces and facilities based upon capacity, and Table XIII shows a summary of the space requirements for the school plant project.

In order that this list of space requirements could be completed, it was necessary to make enrollment predictions for the various subjects and activities to be offered based upon certain facts and justifiable assumptions. To establish a definite figure of total spaces needed for the required functions, the total number of classes in all subjects taught to students in grades ten through twelve in the 1953-54 school year was used as a point of departure. Table XIV, in Appendix C, supplies this information. In this study, these classes were referred to as teaching stations. Taking the difference of enrollment between the number of students in grades ten through twelve enrolled in the 1953-54 school year, which was 956, and the proposed design enrollment for the new senior high school, which was established at 1,300, a percentage-factor-of-increase of approximately 35 per cent was determined. This percentage-factor-of-increase was applied to the number of teaching stations required for the 1953-54 school year. The resulting number of teaching stations needed for the new school were considered to be as accurate as it was possible

TABLE XI

INSTRUCTIONAL SPACE REQUIREMENTS FOR THE NEW REVERE HIGH SCHOOL  
 BASED ON GRADES TEN THROUGH TWELVE  
 MAXIMUM ENROLLMENT 1,300

Room Types	Subject Periods Per Day	Proposed Class Size	Teaching Stations Needed	Total Spaces Needed
<b>Regular Classrooms</b>				
English	6	30	44	7
Foreign languages	6	30	33	6
Mathematics	6	30	29.8	5
Social studies	6	30	33	6
Total				<u>24</u>
<b>Commercial</b>				
Bookkeeping	6	30	9.6	2
Business machine	6	30	5	1
Mimeograph (small separate room)	---	---	---	1
Shorthand	6	35	9.3	2
Typewriting	6	35	15	3
Total				<u>9</u>
<b>Science</b>				
Biology (lab.)	6	25	14.7	3
Physics (lab.)	6	25	5	1
Chemistry (lab.)	6	25	4	1
Total				<u>5</u>
<b>Art</b>				
Art (studio)	6	25	6	1
Crafts (studio)	6	25	---	1
Total				<u>2</u>
<b>Homemaking</b>				
Clothing (lab.)	6	25	9.3	2
Cooking or foods (lab.)	6	25	8.0	2
Homemaking plus nursery unit	---	---	---	1
Total				<u>5</u>
<b>Music</b>				
Vocal and appreciation	6	25	12	2
Band and orchestra	6	25	---	1
Total				<u>3</u>

TABLE XI (continued)

Room Types	Subject Periods Per Day	Proposed Class Size	Teaching Stations Needed	Total Spaces Needed
Vocational				
Wood shop	6	20	6.6	2
Sheet metal	6	20	5.3	1
Electric shop	6	20	4	1
Auto shop	6	20	---	1
Mechanical drawing	6	25	8	2
Total				<u>7</u>
Driver Training				
Classroom	6	25	4	1
Two-car garage	---	---	---	<u>1</u>
Total				<u>2</u>

to obtain based upon the assumptions which necessarily had to be made.

## VI. THE SITE

It is obvious, from many points of view, that the acquisition of the school site should be made as early as it is possible for the school administrator and the city planning commission to predict the need. This practice would mean that the property should be selected and purchased a matter of years before the new school plant is needed. An excellent reason concerning this matter has been put forth by Frederick Gutheim, Director of the University of Michigan Memorial Phenix School Study Project:

TABLE XII

SPECIAL SPACE REQUIREMENTS FOR THE NEW REVERE HIGH SCHOOL  
 BASED ON GRADES TEN THROUGH TWELVE  
 MAXIMUM ENROLLMENT 1,300

Room Types	Capacity	Total Spaces Needed
<b>Auditorium</b>		
Seating area . . . . .	800	1
Stage . . . . .		1
Dressing rooms . . . . .		2
Property room . . . . .		1
Projector space . . . . .		1
Sound-system booth . . . . .		1
Lobby . . . . .		1
Public toilets (one for each sex) . . . . .		2
Ticket booth . . . . .		1
Orchestra space . . . . .		1
Stage-craft shop (in conjunction with other shops) . . . . .		1
<b>Library (prefer small one)</b>		
Reading room with stacks . . . . .	50	1
Work room . . . . .		1
Librarian's office . . . . .		1
Conference room . . . . .		1
Audio-visual materials center . . . . .		1
Listening booths . . . . .		2
Storage space . . . . .		1
<b>Cafeteria</b>		
Main dining room . . . . .	650	1
Cafeteria kitchen . . . . .		1
Serving counter . . . . .		1
Storeroom . . . . .		1
Dietitian's office . . . . .		1
Dishwashing unit . . . . .		1
Refuse and can washing room . . . . .		1
Help's toilets and lockers . . . . .		1
Teachers' cafeteria . . . . .	35	1
<b>Gymnasium</b>		
Main gym (spectator capacity) . . . . .	1,200	1
Girls' gym (as part of main gym) . . . . .		1
Boys' gym (as part of main gym) . . . . .		1
Office (one for each sex) . . . . .		2
Small game room (boxing, wrestling, etc.) . . . . .		1
Locker room (one for each sex) . . . . .		2
Shower room (one for each sex) . . . . .		2

TABLE XII (continued)

Room Types	Capacity	Total Spaces Needed
Gym toilets (one for each sex) . . . . .		2
Storeroom . . . . .		2
Visiting team room . . . . .		1
<b>Administrative and Staff Facilities</b>		
General office . . . . .		1
Superintendent's office . . . . .		1
Principal's office . . . . .		1
Assistant principal's office . . . . .		1
Record file room . . . . .		1
Record vault . . . . .		1
Guidance space . . . . .		1
Medical and dental room . . . . .		1
Mimeograph room (or use commercial class setup) . .		1
Community and faculty conference room . . . . .	60	1
Sound-control room . . . . .		1
Teachers' service rooms . . . . .		2
<b>Student Activities</b>		
Student council and activities room . . . . .	50	1
<b>Plant Service</b>		
Boiler room . . . . .		1
Fuel storage . . . . .		1
Incinerator . . . . .		1
Meter room . . . . .		1
Switchboard room . . . . .		1
Furniture storage room . . . . .		1
Janitors' supply storeroom . . . . .		1
Garden tool storage . . . . .		1
Custodian's work shop . . . . .		1
Help's locker room . . . . .		1
Receiving and shipping area . . . . .		1
Eraser room . . . . .		1
Key panel . . . . .		1
Janitors' sink closets (conveniently located throughout school plant) . . . . .		---
<b>Personal Service</b>		
Toilet facilities (conveniently located) . . . . .		---
Washing facilities (as required at special points) .		---
Drinking facilities . . . . .		---
Locker facilities in halls . . . . .		---

TABLE XIII

## SUMMARY OF SPACE REQUIREMENTS FOR THE SCHOOL PLANT PROJECT

Type of Space or Activity	Number Needed
<u>Indoor Requirements</u>	
Teaching Spaces	
Regular classrooms . . . . .	24
Commercial rooms . . . . .	9
Science . . . . .	5
Art . . . . .	2
Homemaking . . . . .	5
Music . . . . .	3
Vocational . . . . .	7
Driver training . . . . .	2
Total . . . . .	<u>57</u>
Special Spaces	
Auditorium . . . . .	1
Library . . . . .	1
Cafeteria . . . . .	1
Gymnasium . . . . .	1
Student activities room . . . . .	1
Administrative facilities . . . . .	1
Plant services . . . . .	1
<u>Outdoor Requirements</u>	
Stadium, football and track . . . . .	1
Baseball diamond . . . . .	1
Softball diamond, boys' . . . . .	1
Softball diamond, girls' . . . . .	1
Practice field, boys' . . . . .	1
Field games area, girls' . . . . .	1
Volleyball courts, boys' . . . . .	2
Volleyball courts, girls' . . . . .	2
Tennis courts . . . . .	4-6



Sites acquired at the right time, before land has been inflated with speculative values, are probably the largest single economy to be gained in a well-planned school building program. In addition, they affect the size of site, since high land costs prejudice not only the size of the site but the design of the building as well. "It is axiomatic that expensive land requires relatively more expensive buildings."<sup>2</sup>

Unfortunately, it is not always possible to attain this idyllic situation as far as the master plan is concerned due chiefly to the financial problem of the city.

### Principal Considerations

The principal considerations of the site are location, size, and physical characteristics.

Proper location of the school is a major step towards assuring its success as an institution of the community. To simplify the study of the location, it can be broken down in terms of accessibility and environment. With regard to accessibility, the site needs to be considered in terms of the following items:

1. It should have a balanced location with respect to population distribution, considering both present demands and future needs.
2. It should consider ease of accessibility for the students and for the citizens of the community.
3. It should consider a location as free from traffic hazards

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<sup>2</sup>School of Architecture and Planning, Massachusetts Institute of Technology, "Proceedings of the Conference on Schools and Community Planning," ed. William Lipman (Paper presented by Frederick Gutheim, "Planning our Schools More Comprehensively." Cambridge, Massachusetts: School of Architecture and Planning, Massachusetts Institute of Technology, 1953), p. 18.

as possible.

4. If possible, it should be a location where the cost of bringing in city services will not be prohibitive.
5. It should be a location that will be beneficial to good city planning; and consequently it will be more apt to receive wholehearted support.

Environment conducive to healthy study and school activities is another asset that must be sought in the selection of the site. Factors here that deserve consideration are:

1. If at all possible, it should not be close to any concentration of industry or commerce.
2. It should be as free as possible from harmful smoke, dirt, and odors. These items also can affect maintenance costs.
3. It should be located in as quiet a zone as possible. Good instructional and study environment requires good acoustical conditions, and the most inexpensive acoustical treatment is a quiet site.
4. It should have available good, unobstructed natural light.

The optimum size of a site necessary for a sound educational program is, and has been, a much-debated subject for which there is no specific answer to cover schools generally. Some of the most important considerations that must be satisfied are:

1. It must be large enough to permit the fulfillment not only of present requirements but also future expansion at low cost.
2. It must be of sufficient size to assure community advantages and to promote a high caliber program not limited by acreage.

3. Economy should not be obscured by false economy. It is generally much less expensive to purchase more land than is required rather than be forced to purchase additional land when the need occurs and the price of adjacent land has increased in value due to the presence of the school.

The physical characteristics of the site are an important factor to the success of the school and community programs and to the economy of construction and maintenance of the school plant. It should be studied in view of the following characteristics:

1. If at all possible, it should have good soil conditions to permit economical foundation work.
2. The shape or contours should not be of such nature to limit the size and type of construction of the initial plant or prevent future expansion.
3. It should not have contours that would require extensive earth moving to provide for play areas and landscaping.
4. It must be drainable land.

#### Selection Of Revere High School Site

In an established city of long standing, it is usually difficult to acquire new sites of ideal qualifications. As a matter of fact, in these older cities, there seldom can be found open land large enough to be utilized; and consequently it becomes necessary to purchase occupied land at exorbitant prices and raze the buildings or to select sites on the perimeter at the expense of accessibility. However, it was revealed that the City of Revere is in a more fortunate position in this respect,

as it does have at least two areas within its limits that offer acceptable possibilities. One of these areas is the open farm land in West Revere. The other area is the comparatively open land near the geographical center of the City bounded by Mountain Avenue East on the south, by School Street on the west, by a line generally running from the proximity of McClure Street through Putnam Street and Pomona Street to Revere Street on the north, and by the American Legion Highway on the east.

The study of a possible site to be located in the farm land area in West Revere disclosed the following advantages and disadvantages:

#### Advantages

1. It offers a location that is free from traffic hazards as far as the surrounding community is concerned.
2. It offers good, unobstructed natural light.
3. The land is used for farming and should be comparatively reasonable in cost.
4. The site can be as large as required within the bounds of judgment and economy.
5. The soil conditions here should be conducive to economical construction, dependent upon test borings, of course.
6. The ground contours are gentle and should not require extensive earth moving for construction, landscaping, and drainage.

#### Disadvantages

1. It cannot be considered the most accessible location for the greatest number of students and community users, as it is near the western boundary of the City.

2. It would not fit in with the best interests of the City plan, which at present intends to introduce new industry in the same vicinity near the proposed expressway.
3. With the presence of new industry in the vicinity, the atmosphere and environment would not be as healthy or conducive to a good school plant as it is now; and additional new residential concentration would not be as extensive as it otherwise might be.
4. Information from investigations made by the City Manager's Office indicate that the cost of bringing necessary city services to the site would be extremely costly.

The study of a possible site to be located in the vicinity of the open land between School Street and the American Legion Highway disclosed the following advantages and disadvantages:

#### Advantages

1. It offers a site that is nearly in the geographical center of the City, as well as the population distribution, so that it becomes more ideally located both as a high school and as a community center.
2. It is readily accessible by established forms of transportation.
3. It offers a location that is comparatively free from traffic hazards, as it is located in a residential area one street removed from Broadway on the west and protected by the embankment of the American Legion Highway on the east.

4. Approximately thirty acres is open land, parts of which could not be considered as offering good building sites for inexpensive construction; therefore, it is generally felt that this land could be purchased at a reasonable rate. There are only a few residences on the fringe area that would need to be purchased to permit a desirable boundary and increase the size slightly.
5. There are large portions of the site that appear to offer good soil conditions conducive to economical construction. Test borings and further investigation of drainage conditions would have to be made.
6. The site is not overly large; yet it is capable of housing the present program with allowance for building expansion and off-street parking.
7. There is no industrial concentration in the area to obstruct the atmosphere; while the commercial concentration is masked by a distance that is short, yet convenient.

#### Disadvantages

1. To remain economical in the purchase of the site would require only limited encroachment on the residential area; therefore, the most available land will constitute an awkward shape, a condition which would render the designing of the plant more difficult.
2. There is a claypit present on the site which covers approximately seven acres, is approximately seventy-five feet deep

at the deepest point, and is filled with water. However, information available from the City Manager's Office claims that this could be filled with reasonable cost.

3. In the marshy area in the vicinity of the claypit, considerable fill and grading would be required.
4. Although the land is close to sea level, there is no danger from flood; nevertheless, because of its relationship to surrounding higher ground, good drainage would have to be engineered.

In view of a careful analysis of the summaries of advantages and disadvantages of each of the site possibilities described in the foregoing paragraphs, it was decided to select the site bounded by Mountain Avenue East, School Street, a new street running through Putnam Street to Pamona, and the American Legion Highway. Figures 13 through 18 show views of the selected site from various points of observation. (Also, refer to aerial photograph included with final presentation drawings appearing at the end of this study.)

It was felt that, although more open land was available for purchase at a probable reasonable price and that building conditions would be more favorable on the farm land area, there were definitely more good reasons for choosing the site east of Broadway. It was believed that the combined attributes of the selected site--namely, its central location, its accessibility, its proximity to other public facilities, its favorable distance from industry, and its sympathetic relationship to the present City plans--were sufficient to qualify it as the more favorable site of the two. These qualities should contribute greatly towards the



Figure 13. View of portion of selected site from its southwest corner where trucking firm is located.



Figure 14. View of brick kilns from south side of selected site.





Figure 15. View of brick kilns from south side of selected site.



Figure 16. View of claypit pond and American Legion Highway from southeast corner of selected site.



Figure 17. View of portion of selected site from its northeast corner.



Figure 18. View of portion of selected site from the east side.

requirements of a combined high school and community center. With careful planning and good design, it was reasonable to assume that upon this site an outstanding feature could be added which would be capable of offering positive opportunities for intellectual, spiritual, physical, and all-around growth for the City of Revere.

## CHAPTER VII

### DESIGN CRITERIA

In recent years, there has been a definite change in the trends of school design and in the evaluation of needs for the contemporary school at all levels. Perhaps no other type of public building has undergone such a thorough study with such excellent results for the betterment of our educational systems. Scientific analyses, such as time and motion studies, have been made to determine more useful space, more efficient equipment, and more useful and comfortable school furniture. Proper lighting and good acoustics are now established necessities for good study and recreational environment. Larger spaces which are built with the possibility for multiple use are an economical and common-sense adjunct to school design.

#### I. SPACE REQUIREMENTS

To establish a definite set of building requirements for the New Revere High School demanded a thorough analysis of recent developments in school design as they apply to the educational specifications, which are set forth in the statements of the preceding chapters. Of necessity, this thinking had to start with the individual spaces and lead to the whole as a climax.

This chapter, therefore, is devoted to the establishment of the design criteria, which was used in the final solution of the New Revere High School project as this study saw it. In the process of determining the final decisions, the total background of the project was kept in mind

in terms of function, circulation, multiple use, zoning, and aesthetics. The ultimate establishment of the principles into the project, however, could not be completely realized until the assorted factors were interwoven into the final scheme on the drawing board.

With this reasoning in mind then, each different type of space will be analyzed separately, concluding with a list of facts and figures and a partial summary of space requirements pertinent to the preliminary drawings, which were used in the design of the entire project. These requirements are substantially complete; but it was not within the scope of this study to include all details. The final proposed design will be discussed in Chapter VIII as a conclusion to the design criteria for all phases of the building program.

Although there are variations in the requirements among the different types of instructional spaces and similar rooms that compose the school plant, those listed below are common considerations to all:

1. Provide non-bearing-type partitions where possible to facilitate changes in room dimensions.
2. Provide good seeing conditions considering both natural and artificial light.
3. Provide the best orientation possible with respect to daylight consistent with good over-all planning. For instructional spaces, including regular classrooms, commercial, science, music, and homemaking rooms, it has been found that east or north is desirable for single-loaded corridor plans; while east-west is desirable for double-loaded corridor plans. North is also considered acceptable for laboratory work. For

the arts and crafts unit, the vocational shops, and drawing rooms, north is considered preferable.

4. Provide required slate chalkboards and tackboards. The latter normally should be located near the entrance.
5. Provide ceiling finish of plaster on metal lath except as otherwise required.
6. Provide wall finish of plaster except as otherwise required for acoustical or aesthetic treatment.

### Classrooms

The vital role played by the classroom in the success of the educational program of the contemporary high school is a recognized fact. The trend now is away from straight "book learning" as was the practice in the classroom of the past. Good instruction now requires the possibilities of using a great variety of teaching aids, such as lantern slides, motion pictures, radio, recordings, and the showing of exhibits of current classroom projects, and so forth. In addition to the required use of these new and important teaching aids, the students themselves take a far more active role in the class work. This philosophy in teaching will make it necessary to plan the classroom to accommodate the new devices and to make it large enough and flexible enough to permit the increased practice of study by active participation to take place easily.

Because of the fact that the educational program of the present demands different facilities and different space requirements than the educational programs of the past, a continuing change in program and resultant requirements can be expected. For this reason, it becomes

necessary to plan for the utmost freedom in the ability to make changes in dimension and facility of the classroom.

The following is a list of requirements to be considered in the design of the classroom:

1. Provide a floor area per student of 20 to 25 feet, exclusive of storage, or 750 square feet total minimum.
2. Provide a floor surface of asphalt tile.
3. Provide for good hearing conditions: namely, control of reverberation time, noise level, and noise transmission. This will require partition walls to be thick and dense and finished in a hard smooth material except where acoustically treated. Acoustic treatment is to be acoustic tile applied only to the upper walls at the perimeter of the ceiling and on the rear wall to the extent that excessive reverberation be eliminated. Special acoustic problems will be discussed as they apply to the space concerned.
4. Provide a number of well-distributed electrical outlets for the use of teaching aids, as well as normal servicing. Three-way light switches should be provided in the front and rear of the room to be used for lantern lectures, motion pictures, and so forth.
5. Provide opaque top and bottom track-operated shades for the windows for black-out purposes.
6. Provide for movable furniture.
7. Provide ample storage for all possible needs to include a partial library in keeping with the school policy.

### Commercial Rooms

The emphasis placed upon the value of a knowledge of business training is reflected in the trend of high school students in Revere, as well as elsewhere, to take at least one or more commercial subjects during their high school career. Because of the changing demand on the part of the students, space in this department must be planned flexible enough that a change from one function to another may be accomplished readily.

Rapid changes are taking place in the requirements for good instruction in business courses. There is a continuous flow of new and greatly improved office machinery and equipment made available for use from the nation's manufacturers. Demands in the field of business require greater skill and proficiency in the use of this equipment and in the knowledge of better business methods. To meet these educational demands requires that the educational instruction space be planned to provide for the instructional equipment needed and to make provision for new demands and changes. Although there are some variations in the requirements among the different instructional spaces, those listed below are common to all:

1. Provide a floor surface of asphalt tile.
2. Provide for good hearing conditions. Refer to number 3 under "Classrooms."
3. Provide a number of well-distributed electrical outlets.
4. Provide ample storage space. Special requirements will be given under each specific room type.

Requirements for specific rooms are as follows:



### Bookkeeping

1. Provide a floor area per student of 30 to 35 square feet, exclusive of storage, or 900 square feet minimum.
2. Provide for a storage space adjacent to bookkeeping rooms.
3. Provide for individual portable bookkeeping tables with storage space for student.
4. Provide additional electrical outlets to accommodate calculators.
5. Provide space for a small library and magazine section.

Business machines room. Provide the same facilities as required for bookkeeping room with additional emphasis to the provision of electrical outlets to handle bookkeeping machines and other mechanical devices.

### Typewriting room

1. Provide a floor area per student of 25 to 30 square feet, exclusive of storage, or 900 square feet minimum.
2. Provide space for individual typewriting desks.
3. Provide additional electrical outlets for electric typewriters in both beginners and advanced rooms to permit flexibility of use.
4. Provide a lavatory in each room for washing hands.
5. Provide for charts and chart cases.
6. Provide space for a small library and magazine section.

### Shorthand room

1. Provide a floor area per student of 25 to 30 square feet,

exclusive of storage, or 900 square feet minimum.

2. Provide for additional electrical outlets that may be used for a change in function of the room.
3. Provide chalkboard on three sides of room, a portion of which is to be permanently ruled similar to a stenographer's notebook.
4. Provide storage space for such items as disconnected telephone instruments, speech recording mechanisms, and dictating machines used in allied courses such as Business English.
5. Balance of room should be treated as an ordinary classroom.

#### Mimeograph room

1. Provide an area of 350 to 400 square feet.
2. Provide electrical outlets for mimeograph machines.
3. Provide storage for supplies and equipment.

#### Science Rooms

Because of the tremendous influence science has had on our present way of living and is predicted to have on our future, design requirements for this department must consider possible expansion and/or interchanging functions of spaces allocated to the present science education program. Consideration must also be given to the difficulties encountered in predicting which field may prove more attractive to the Revere students in the future. This possibility requires that the science suite be grouped together in such a manner that changes may be made with the least amount of effort and expense.

The planning of these rooms should provide space for such teaching

aids as slide projectors, motion pictures, and recordings. Within reason, the planning should also consider the probability of new equipment and techniques that may need to be provided for in the future program.

The planning for these spaces should provide adequate storage space for equipment and material to include both those of a delicate and dangerous nature for each laboratory.

Specific requirements for particular room types will be given later; requirements common to all types are listed below:

1. Provide a floor area per student of 30 to 35 square feet, exclusive of storage, or 1,000 square feet total minimum.
2. Provide space for movable chairs in discussion section of room.
3. Provide a floor surface of maple.
4. Provide good hearing conditions. The room should provide for good lecture conditions, as well as quiet working environment; therefore, the treatment recommended for classrooms applies here also.
5. Provide a number of well-distributed electrical outlets for the use of normal laboratory work, demonstrations, visual-aid equipment, and normal room servicing.
6. Provide gas and gas outlets for all laboratories.
7. Provide opaque top and bottom track-operated shades for the windows for black-out purposes.
8. Provide demonstration tables, each complete with acid-resisting top, sink, gas, electrical outlets, and control switches for the general lighting system.

9. Provide storage space for all types of equipment and supplies as a part of or adjacent to each laboratory.
10. Provide space for a small library and magazine section.

Requirements for specific rooms to accommodate the science subjects are listed below:

#### Biology

1. Provide space for movable laboratory tables, each 5 feet long by 28 inches wide with acid-resistant top and storage space for student's equipment.
2. Provide six sinks of chemical stoneware.
3. Provide facilities for an aquarium.
4. Provide space for both indoor and outdoor growing beds.
5. Provide space for small animal housing.
6. Provide space for cases for display and specimen storage.

#### Physics

1. Provide for same type tables and sink facilities as indicated for Biology.
2. Provide electric control boards and transformers to furnish both alternating and direct current.
3. Provide a rack over the demonstration table that will permit the suspension of apparatus.
4. Provide space for display case.

#### Chemistry

1. Provide for desk-type tables, each 5 feet long by 28 inches

wide, attached to floor, complete with acid-resistant top, sink, gas and electrical outlets, and storage for student's equipment.

2. Provide fume hood equipped with manually controlled exhaust fan.
3. Provide space for display case.

### Arts And Crafts Studio

The increased importance of arts and crafts in the Revere curriculum, paralleling a nation-wide interest in the arts, requires careful consideration in planning the new unit to provide ample and well-conceived space for the present program. Further, it is difficult to predict what future increase in enrollment may result from the impetus of this new interest; so the fine arts unit should be placed in the plan in a manner that will permit future expansion with a minimum of effort and expense.

This unit is to be planned as a suite to provide separate studios for arts and crafts. The outdoor art area to be included should relate conveniently to the art studio.

Because of its potential contribution to auditorium activities, it should be placed close to the stage in the over-all scheme. If it is possible, it should also be related to the shops. Accessibility to this unit should be considered for adult education.

Further requirements common to the art department are:

1. Provide a floor area per student of 30 to 35 square feet, exclusive of storage, or a minimum floor area of 1,800 square

feet for the combined arts and crafts studios.

2. Provide a floor covering of maple.
3. Provide for good hearing conditions.
4. Provide a number of well-distributed electrical outlets.
5. Provide locker facilities for students' equipment.
6. Provide office space for instructor.
7. Provide for a small library with magazine section.

Requirements pertaining to specific spaces for the art department are as follows:

#### Arts studio

1. Provide usable space for several long tables, small tables, model stands, and a number of movable easels.
2. Provide additional electrical outlets for the use of floodlights and spotlights.
3. Provide sinks and drainboards with splash-protected shelving above.
4. Provide well-planned storage--shelves, drawers, and vertical racks--for housing large uncompleted pictures.

#### Crafts studio

1. Provide space for metal craft, ceramics, sculpturing, and textiles.
2. Provide sinks with drainboards adjacent.
3. Provide solid, well-constructed work benches equipped with gas and electric outlets.
4. Provide storage, such as shelves and drawers of various sizes

to accommodate both large and small equipment and supplies.

### Homemaking Rooms

Emphasis on the value of the contribution to home living has made the homemaking department of the educational program an increasingly popular one and, consequently, a growing one. Boys, too, and not just the occasional hotel-management-career students, are now interested in courses in foods. In addition to and as a result of this increased activity, the field is developing rapidly into broader areas, a fact which may mean new courses and even greater student interest. These important considerations will require adequate planning for the present and careful placement and planning in anticipation for the future in order that changes to existing installations may be made easily at a minimum cost.

These courses are constantly replacing or adding new equipment; therefore, the plan for these spaces should permit maximum flexibility and easy movement of bulky items.

Placement of the homemaking group in the over-all plan should consider a relationship to the cafeteria where some class work may take place. Accessibility for adult use will indicate a first-floor location. Because the activity in this department is considered moderately noisy, it should be zoned to avoid interference with quiet areas.

Further requirements that are common to all homemaking rooms are:

1. Provide a floor area per student of 30 square feet, exclusive of storage and equipment. The floor area is stated with each specific room type.
2. Provide floor covering of grease-resistant asphalt tile.

3. Provide acoustical treatment to control noise level, yet permit good hearing for lectures. See treatment for classrooms.
4. Provide good seeing conditions. Make special provision for additional lighting for work areas.
5. Provide a number of well-distributed electrical outlets.

Additional requirements for specific room types are the following:

#### Clothing laboratories

1. Provide a total minimum floor area of 1,500 square feet.
2. Provide space for the designing and making of clothes, planning of clothing expenditures, selection of materials, and care and repair of clothing. This will require space for cutting tables, sewing tables, drawing tables, and sewing machines.
3. Provide opaque top and bottom track-operated shades for the windows for black-out purposes to permit the use of visual-aid instruction.
4. Provide space for filing patterns, and so forth.
5. Provide storage for work in process.
6. Provide space for a small library with magazine section.
7. Provide a separate space of approximately 150 square feet for laundry purposes. This will require several built-in tubs and provision for washing machines, drier, ironing machine, and several service tables. Provide storage for supplies and ironing equipment.
8. Provide small dressing room space.



### Foods laboratories

1. Provide a total minimum floor area of 1,200 square feet.
2. Provide separate spaces for the preparation of food, serving and eating of food, deep freeze preparation of food, and class demonstration and discussion.
3. Provide sufficient space for several U-shaped kitchen units in the food-preparation area. This will require space for one refrigerator for every two units.
4. Provide storage space for foods and allied supplies.
5. Provide space for a small library with magazine section in discussion area.

### Living unit

1. Provide a total minimum floor area of 500 square feet.
2. Provide home unit to include a large living room and kitchen, a bedroom, and bathroom. This unit is to function for home practice, nursery training, home decorating, and extra-curricular social events. This unit should be located next to the foods laboratories.
3. Provide plumbing and electrical service required for kitchen and bath. The portable furnishings and decorating will be cared for by the home economics department.
4. Provide movable panels at strategic points to expose important installations of plumbing and electrical wiring and to show structural features.

### Music Rooms

Courses in music, particularly voice in the form of group singing, have been very popular at Revere High School. It is anticipated that this interest will remain high in the future. With this in mind then, every provision should be made in the planning of the music department in the new school to maintain and enhance this demand by providing ample, efficient, and attractive space.

In addition to voice and the study of theory, it is the desire of the school to further develop the interest in instrumental music, both band and orchestral. This will require planning a space for practice purposes large enough to accommodate a group of forty to fifty musicians. In addition, adequate space for storage and dressing must be provided.

The location of the music suite within the total plan is dependent primarily on three basic factors: (1) Characteristically, it is a noisy activity; and, consequently, it should be isolated from quiet activities to minimize the possibility of disturbing the smooth operation of the school. (2) The very nature of music relates it directly to the auditorium and the stage and thus dictates a location in close proximity. This relationship is very helpful to many types of stage activity, serving in the capacity of dressing rooms, rehearsal rooms, and so forth. (3) Accessibility to these rooms for adult use indicates a convenient location on the first floor grouped with other community-type facilities.

Further requirements common to all music rooms are:

1. Provide a floor area per student of 20 to 25 square feet, exclusive of storage. The floor area is stated with each specific room type.

2. Provide a floor covering of maple.
3. Provide acoustical treatment to control noise level and reverberation time. To control noise level, absorptive material should be applied to the side and rear walls opposite the playing or singing area. The walls may need to be splayed for proper diffusion of sound. Provide soundproof doors.
4. Provide a number of well-distributed electrical outlets.

Requirements for specific music rooms are listed below:

#### Vocal

1. Provide a total minimum floor area of 750 square feet.
2. Provide three-way switches at both front and rear of room for control of general lighting.
3. Provide opaque top and bottom track-operated shades for the windows for black-out purposes.
4. Provide space for small stage.
5. Provide space for instructor, including storage and a small library.

#### Band and orchestra room

1. Provide a total minimum floor area of 1,500 square feet.
2. Provide storage space for music and teaching aids.
3. Provide separate space to be used for student lockers, dressing purposes, and storage of large instruments.
4. Provide space for instructor, including storage and a small library.

### Vocational Shops

As has been stated in the educational program, the vocational program is to be emphasized in the new high school. The program calls for the continuation of present courses, revamped and re-equipped to comply with present demands. In addition, it will offer instruction in auto shop. To fulfill this new policy will require planning facilities commensurate with the highest standards acceptable to vocational training in contemporary secondary schools.

Since the vocational facilities in the present high school are not good, it is predicted that new facilities can expect to result in greater enrollment. Present building requirements are cognizant of this fact; however, the plans should nevertheless anticipate a possible future expansion. This requires planning to permit changes or additions to be made with the least effort and expense.

In locating the shop unit within the over-all scheme, there are several factors that must be considered and solved: (1) Shop activities are inherently noisy; so they should be isolated. (2) They should be located away from playing fields. (3) They should be accessible for adult use.

Further requirements common to all shops are listed below:

1. Provide good seeing conditions, but not at the expense of wall space.
2. Provide a central source of compressed air.
3. Provide a number of well-distributed electrical outlets.
4. Provide a space for instructor, including storage and a small library.

Requirements for specific shops are listed below:

Wood shop

1. Provide a floor area per student of 80 to 100 square feet, or a minimum shop area of 1,600 square feet.
2. Provide a grade entrance for passage of supplies and equipment.
3. Provide a floor surface of maple.
4. Provide a slop sink for washing facilities.
5. Provide exhaust system for removal of dust over power equipment.
6. Provide a small section each of chalkboard and tackboard.
7. Provide storage for lumber supply, tools, and student work.

Sheet metal shop

1. Provide a floor area per student of 80 square feet or a minimum shop area of 1,600 square feet.
2. Provide a floor surface of laminated edge grain plank.
3. Provide acoustical treatment of perforated metal-covered acoustical panels for control of noise level. Apply to ceiling and walls consistent with good over-all planning.
4. Provide a large wash tray to facilitate several students.
5. Provide independent exhaust system for ventilation.
6. Provide service for gas.
7. Provide a small section each of chalkboard and tackboard.
8. Provide storage space for supplies, tools, and student work.

Electric shop

1. Provide a floor area per student of 80 square feet or a minimum shop area of 1,600 square feet.
2. Provide a floor surface of laminated edge grain plank.
3. Provide noise-level control through application of perforated metal-covered acoustical panels.
4. Provide additional electrical outlets for student work stations.
5. Provide a large wash tray to accommodate several students.
6. Provide service for gas.
7. Provide chalkboard and tackboard.
8. Provide space for tool and supply storage.

Auto shop

1. Provide a floor area per student of 100 square feet or a minimum shop area of 2,000 square feet.
2. Provide grade entrances equipped with overhead doors for vehicles.
3. Provide a floor surface of hard smooth concrete with facilities for drainage.
4. Provide a large wash tray to accommodate several students.
5. Provide a general exhaust system for the removal of exhaust fumes. In addition, provide several independent exhaust outlets.
6. Provide service for gas and compressed air.
7. Provide for the installation of a hydraulic hoist.

8. Provide for the installation of an overhead track and chain.
9. Provide a small section each of chalkboard and tackboard.
10. Provide storage space for tools and parts.
11. Provide space for dressing room.

#### Mechanical drawing room

1. Provide a floor area per student of 40 to 50 square feet, exclusive of storage, or a minimum floor area of 1,000 square feet.
2. Provide a floor surface of asphalt tile.
3. Provide a small section each of chalkboard and tackboard.
4. Provide storage for teaching aids and supplies.

#### Driver Training Space

The driver training program necessitates instructional space for lectures and a combined instructional-garage space. Access from the lecture room to the garage is very desirable. The lecture room may also be used by the shop classes occasionally. The practical location of this unit, therefore, seems to be in or adjacent to the shops unit.

Design requirements for the lecture room are the same as for a regular classroom. Design requirements for the garage are:

1. Provide space for two cars with additional space to accommodate an assembled class or a minimum area of 800 square feet.
2. Provide a floor surface of hard smooth concrete with facilities for drainage.
3. Provide for an exhaust system for exhaust fumes.
4. Provide grade entrance equipped with overhead doors.

### Auditorium

The auditorium is a hub of school activities, and it should be closely related to its many parts. It is one of three spaces that contributes to the entire student body continuously throughout school life. It is also one of the central meeting places for the community in keeping with the intended program for the school. These factors require that the auditorium be located in a manner that will permit students to circulate to it easily and directly from all sections of the school. It further requires planning that will permit easy accessibility for the community without opening the rest of the building to needless circulation and excessive maintenance.

It is essential to provide access to the auditorium for delivery and pickup of necessary equipment. Close relationship to the crafts room and shops would also be desirable.

Good hearing conditions are imperative for this installation. It will require curving and splaying side walls and ceiling for good diffusion of sound. Absorptive treatment should be engineered carefully to control reverberation time. The rear wall will definitely need treatment. The floor of the seating area should be sloped to provide for good hearing and good seeing conditions. The stage must also be carefully engineered to permit efficient sending of sound.

Further requirements for the auditorium are listed below:

1. Provide a floor area per seat of 7 square feet, exclusive of stage and allied facilities, or a seating floor area of 6,000 square feet. This includes space for an orchestra.
2. Provide a floor surface of linoleum in the area under the



seats and cork carpet in the aisles. (This is to be checked by acoustical calculations.)

3. Provide well-distributed electrical outlets for maintenance, motion pictures, and projectors.
4. Provide electrical control board for stage and general lighting.
5. Provide space for projection room.
6. Provide for black-out conditions for film and stage presentation.
7. Provide a secondary lobby to act as a sound lock. It is to be finished with acoustical tile panels on walls and ceiling and rubber matting on the floor.
8. Provide a stage area which will permit the storage of scenery by divided-wagon method and allow ample acting space. The apron is to project approximately 10 feet in front of the proscenium.
9. Provide dressing-room space at or near the stage.
10. Provide storage space for property.
11. Provide a lobby and public toilets.

### Library

The school library is another facility used by many students for reference work, study, and audio-visual service. However, since it will not be used as a regular study hall in view of the fact that the school policy is to maintain a small library service in the instructional rooms, its size is to be limited to care for a maximum of fifty students.

Nevertheless, the placement of the library within the plan ought to be such that should expansion become desirable in the future, the change could be made readily. All facilities within the library should be accessible to the student with a minimum of supervision by the librarian.

The location of the library should be central for use by students; yet it should be isolated from noisy activities. It is helpful for certain student activities, such as student publications, historical clubs, literary clubs, and so forth, to be close to the library. Its relationship to the administrative section should be considered. Its accessibility for use by the community should also be considered, although it is not intended to compete with the city public library service.

Further requirements for the library are:

1. Provide good orientation with regard to daylight consistent with good over-all planning. East and north are perhaps the most desirable, although south may be utilized with careful planning.
2. Provide a floor area per student of 30 to 35 square feet, exclusive of storage and service areas, or a total minimum area of 1,800 square feet.
3. Provide a floor surface of cork.
4. Provide noise-level control by application of acoustical tile to the ceiling and the installation of soundproof doors.
5. Provide good seeing conditions.
6. Provide a number of well-distributed electrical outlets.
7. Provide space for bookcases, magazine racks, and files.
8. Provide space for storage of visual aids and for previewing

filmstrips.

9. Provide a work area for the librarian.
10. Provide space for several small conference rooms.

### Cafeteria

Like the auditorium and the gymnasium, the cafeteria is a large unit that will be used by all the students and should also be a focal point for community activities. Its use will be manifold; besides serving regular meals, it will be used for banquets with speakers, as a snack bar for school dances, and other functions. It is to be large enough to handle one-half the estimated student population, which is 650.

Because of these demands, the cafeteria should be located for easy accessibility to both the students and the community. Since the functions of the cafeteria relate it to the auditorium and since both of these units require a lobby space, the two may well be in close proximity on the first floor by using the same lobby space. Relationship to the gymnasium also should be considered.

The activities of the cafeteria classify it as loud; so it should be isolated from quiet areas, a fact which again points to grouping it with other noisy student and community centers.

In addition to an attractive interior, a pleasant environment requires a nice view and possible access to the outdoors. This latter feature would furnish a useful and attractive meeting place for students and adults in the good-weather seasons.

Further requirements for the cafeteria are:

1. Provide good orientation with regard to daylight. South and

east are considered desirable.

2. Provide a floor area per student of 9 to 12 square feet, exclusive of food-preparation areas, or a minimum floor area of 6,500 square feet.
3. Provide a floor surface of grease-resistant asphalt tile.
4. Provide acoustical treatment to control noise level and to permit reasonably good hearing conditions for speeches, and so forth. This will require engineered design for best results. Sound absorptive treatment should be applied to the perimeter of the ceiling and to upper portions of the walls consistent with the design. Consideration will have to be given to control of kitchen noises.
5. Provide serving counter equipped with steam-table facilities.
6. Provide a kitchen space floor area of 1.5 to 2 square feet per person served or a minimum of 1,100 square feet. The walls should be finished in hard smooth plaster.
7. Provide good ventilation for both kitchen and dining area with additional separate exhaust outlets in the vicinity of ranges in the kitchen.
8. Provide kitchen storage space.
9. Provide loading platform with good access to service driveway.
10. Provide a dietitian's office.

### Gymnasium

The gymnasium is the third large unit that provides for great numbers of students and community users alike. It will be used for any

number of activities ranging from remedial gym and exercises to sports events and dances. It should furnish a complete set of facilities for both boys and girls.

The location of the gymnasium must be such that it will be conveniently accessible to students from the school building and from the playfields and also to the community. Physically, it is the hub of a wider radius of activities than any other unit of the school plant. It, too, is an area of noisy activity. All this may permit or require a separation from the main building; however, convenience to the main approaches of the school plant and to the school parking lot should be considered as important.

Further requirements common to all areas of the gymnasium are:

1. Provide good ventilation throughout by exhaust system.
2. Provide well-distributed electrical outlets. These should be weatherproof type in locker rooms.
3. Provide good seeing conditions throughout.

Further requirements of the gymnasium by specific area are:

#### Main gym

1. Provide a space of 90 feet wide, 140 feet long, and 24 feet clear height to accommodate a standard basketball court and roll-away bleachers to seat approximately 1,200 spectators. This space is to be equipped with power-operated folding doors to divide gym into separate boys' and girls' areas.
2. Provide a floor surface of maple.
3. Provide acoustical treatment for control of reverberation by

the application of perforated transite with mineral wool backing to the upper walls and most of the ceiling.

4. Provide a large quantity of ventilation.
5. Provide lower walls that will withstand wear of balls thrown or bounced against them.
6. Provide light which will be uniform, high level, glareless, and well-guarded.
7. Provide storage spaces for both in-season and out-of-season equipment.

#### Director's office

1. Provide one each for boys and girls. These should provide space for medical records and toilet facilities and should be located conveniently to the main gym. They should also be located adjacent to their respective remedial gyms.
2. Provide floor surface of maple.
3. Provide natural lighting.
4. Provide adjacent storage space for athletic equipment.

#### Remedial gym

1. Provide one each for boys and girls. These should have a floor area of 600 square feet minimum and should be located adjacent to the directors' offices.
2. Provide a floor surface of maple.
3. Provide natural lighting if possible.

#### Locker rooms

1. Provide one each for boys and girls. These should have a

minimum floor area of 1,400 square feet, based on 14 square feet per student for a maximum number of 60 users, plus 100 lockers.

2. Provide floor surface of terrazzo.
3. Provide moisture-proof and tamper-proof electrical lighting.
4. Provide a dry room for athletic equipment.

#### Shower rooms and toilets

1. Provide one each for boys and girls to be adjacent to the lockers.
2. Provide floor surface of terrazzo.
3. Provide moisture-proof and tamper-proof electrical lighting.
4. Provide plumbing fixtures: girls--16 shower heads, 4 water closets, 3 lavatories; boys--16 shower heads, 3 water closets, 4 urinals, 3 lavatories.

#### Visiting team room

1. Provide a minimum floor area of 500 square feet.
2. Provide a floor surface of terrazzo.
3. Provide shower room and toilet space.

#### Wrestling or game room

1. Provide a minimum floor space of 500 square feet.
2. Provide a floor surface of maple.

Outdoor athletic facilities. The outdoor activities that are listed in the requirements of the school program, shown in Table XIII, are to be planned in accordance with standards equal to official high

school dimensions. The girls' and boys' activities are to be separated, but they should be within an approximately equal radius from the gymnasium. The football and track stadium is to have a permanent bleacher section, which should be located with accessibility to the public in mind.

### Student Activities

Included in this space should be provisions for the functioning of student government, the meeting of student committees and clubs, and other student activities. Because of its interests, it should be centrally located with further consideration given to its relationship to the library and to the administrative group. Since at times it may be of use to the adults, it should also be accessible to them. It is a moderately quiet area during school hours, but may be noisy after hours; however it need not be considered a source of disturbance while school is in session.

Further requirements for the student activities room are:

1. Provide best orientation with respect to daylight consistent with good design--south, east, or north.
2. Provide space to accommodate a maximum of 50 students at 25 square feet per student, plus storage, or a minimum floor area of 1,500 square feet.
3. Provide an area separated by a folding door for special meeting purposes.
4. Provide space for a small library and magazine rack.
5. Provide floor covering of asphalt tile.
6. Provide acoustical treatment to control noise level and permit



good hearing conditions.

7. Provide a number of well-distributed electrical outlets.
8. Provide opaque top and bottom track-operated shades for the windows for black-out purposes.
9. Provide storage space for club equipment and so forth.

#### Administrative Facilities

The demands of an efficiently operated contemporary high school require more well-planned space for the administrative functions than was considered necessary a few generations ago. Provision must be made for daily administrative functions in the form of general office space, vault storage for records, and offices for the superintendent, principal, and vice-principal. In addition, there should be space for the health and guidance programs and a large room for teachers. These functions are closely related; and, therefore, they should be planned as a group with a minimum amount of circulation.

As the school plant headquarters for students, teachers, and adults alike, it should be accessible to all of them. For supervisory purposes, the principal and his assistant should be close to the center of the school plant and to units that handle large groups of students, such as the auditorium and cafeteria. The administrative office should be definable and accessible from the main approaches to the site, drive-ways, and parking lots. These many considerations definitely seem to place the general office near the main entrance, close to the auditorium, and close to the center of the plan.

Further requirements pertaining to the administrative group are:

1. Provide the best orientation consistent with good planning-- north is generally best, and south is least desirable.
2. Provide minimum floor areas as indicated for the following facilities:

<u>Facility</u>	<u>Area in Square Feet</u>
General office	800
Superintendent's and principal's offices	180 each
Vice-principal's office	150
Record vault	200
Sound-control room	100
Medical room	300
Teachers' conference and guidance room	1,500
Two teachers' rooms, second floor	400 each

3. Provide non-bearing-type walls where possible to permit changes in sizes of rooms.
4. Provide a floor surface of asphalt tile.
5. Provide a number of well-distributed electrical outlets.
6. Provide storage space for all offices.

#### Central Heat Plant And Services

The core of the school services is composed of the boiler room, repair shop, head custodian's office, and the central supply and storage rooms. This unit should be located so that it can furnish heat to the school plant efficiently. It also should be planned for easy approach from the street by truck. Relationship to the shop area is desirable.

Further requirements for the central heat plant are:

1. Provide a space of approximately 3,000 square feet to house facilities listed below:

<u>Facility</u>	<u>Area in Square Feet</u>
Boiler space	1,000
Incinerator	---
Fuel oil tank (outside)	---
Custodian's office	200
Custodian's workshop	300
Meter space	100
Switchboard room	300
Furniture storage	300
Janitors' supply room	300
Garden tools storage	100
Help's locker room	100
Eraser room	40
Key room	80

2. Provide heating plant with fire-resistive space. The heating apparatus should be separated from fuel storage. There should be adequate openings to permit removal of boiler sections. Provide access to pipe tunnels leading to building units. Adequate lighting to all parts of boiler space is a necessity.
3. Provide floor surface of hard smooth concrete throughout plant.
4. Provide for good functional plan--workshop adjacent to boiler room and meter and switchboard rooms near boiler room.

In addition to the central plant, small janitors' closets, each equipped with slop sink, are to be located conveniently on each floor

and spaced in corridors to eliminate great distances for the janitors to travel.

### General Sanitary Facilities

Toilet rooms should be located conveniently throughout the school plant to provide at least the minimum number of fixtures as required by code: namely, for boys--11 water closets, 13 lavatories, and 16 urinals; and for girls--17 water closets and 13 lavatories.

### Corridors

Because of the heavy and noisy usage that the average corridor receives, the selection of finish materials for this part of the school demands careful consideration. Essential requirements are:

1. Provide a ceiling of perforated steel panels backed with a rigid pad of rock wool. This installation furnishes sound-absorptive qualities together with incombustibility and durability.
2. Provide steel lockers in the corridors of the instructional elements. The wall sections above the lockers are to be finished with steel panels. The corridor walls of the administrative elements and similar special elements are to be finished in plaster. The corridor walls of the vocational elements are to remain unfinished concrete blocks.
3. Provide a finished floor surface of terrazzo.

Table XV shows a partial summary of space requirements pertinent to the preliminary drawings of the New Revere High School.

TABLE XV

 PARTIAL SUMMARY OF SPACE REQUIREMENTS  
 PERTINENT TO PRELIMINARY DRAWINGS

Space	No. of Rms.	Zone *	Max. No. of Students	Floor Area / Student Sq. Ft.	Min. Floor Area Sq. Ft. **	Ceiling Height in Ft.	Desirable Orientation ***
Regular Classroom	24	Q	30	20- 25	750	10	E-sl EW-dl
Commercial							
Bookkeeping	2	M	30	30- 35	900	10	E,N-sl EW-dl
Shorthand	2	M	35	28- 30	900	10	E,N-sl EW-dl
Business machines	1	M	30	30- 35	900	10	E,N-sl EW-dl
Typewriting	3	M	35	25- 30	900	10	E,N-sl EW-dl
Mimeograph	1	M	---	---	350	10	E,N-sl EW-dl
Science							
Biology (lab.)	3	M	25	30- 35	1,000	10	E,N-sl EW-dl
Physics (lab.)	1	M	25	30- 35	1,000	10	E,N-sl EW-dl
Chemistry (lab.)	1	M	25	30- 35	1,000	10	E,N-sl EW-dl
Arts and Crafts	1	M	25	30- 35	1,800	14	N
Homemaking							
Clothing (lab.)	2	M	25	30	1,500	10	E,N-sl EW-dl
Foods (lab.)	2	M	25	30	1,200	10	E,N-sl EW-dl
Living unit	1	M	---	---	500	10	E
Music							
Vocal	2	L	25	20- 25	750	10	E,N-sl EW-dl
Band and orchestra	1	L	50	20- 25	1,500	10	E,N-sl EW-dl
Vocational							
Wood shop	2	L	20	80-100	1,600	14	N-sl EW-dl

TABLE XV (continued)

Space	No. of Rms.	Zone *	Max. No. of Students	Floor Area / Student Sq. Ft.	Min. Floor Area Sq. Ft. **	Ceiling Height in Ft.	Desirable Orientation ***
Sheet metal shop	1	L	20	80-100	1,600	14	N-s1 EW-d1
Electric shop	1	L	20	80-100	1,600	14	N-s1 EW-d1
Auto	1	L	20	100	2,000	14	N-s1 EW-d1
Mechanical drawing	2	M	25	40- 50	1,000	14	N-s1 EW-d1
Driver Training							
Lecture room	1	Q	25	20- 25	750	10	E,W,N
Two-car garage	1	M	25	---	800	10	---
Auditorium	1	L	800	7	6,000	20	---
Library	1	Q	50	30- 35	1,800	10	E,S,N
Cafeteria	1	L	650	9- 12	6,500	12	S,E
Cafeteria kitchen	1	L	---	1.5-2	1,100	12	N,E,W
Gymnasium							
Main gym	1	L	1,200 *****	---	12,000	24	---
Directors' offices	2	Q	---	---	200	10	---
Remedial gym	2	L	---	---	600	10	---
Locker room	2	L	60	14	1,400	10	---
Shower room	2	L	---	---	800	10	---
Visiting team	1	L	---	---	500	10	---
Wrestling room	1	L	---	---	500	10	---
Student Activities	1	SQ	50	25	1,500	10	N,E,S
Administration							
General office	1	M	---	---	800	10	N
Supt.'s office	1	Q	---	---	180	10	N
Principal's office	1	Q	---	---	180	10	N
Vice-Prin.'s office	1	Q	---	---	150	10	N
Record vault	1	---	---	---	200	10	---
Sound-control room	1	Q	---	---	100	10	---
Medical room	1	SQ	---	---	300	10	N
Teachers' conference & guidance room	1	SQ	---	---	1,500	10	N,E,S

TABLE XV (continued)

Space	No. of Rms.	Zone *	Max. No. of Students	Floor Area / Student Sq. Ft.	Min. Floor Area Sq. Ft. **	Ceiling Height in Ft.	Desirable Orientation ***
Teachers' service room	2	SQ	---	---	400	10	N, E, S
Plant Services							
Boiler space	1	---	---	---	1,000	18	---
Fuel oil tank	1	---	---	---	*****	---	---
Custodian's office	1	---	---	---	200	10	N, E, W
Custodian's work-shop	1	L	---	---	300	14	N, E, W
Meter space	1	---	---	---	100	---	---
Switchboard room	1	---	---	---	300	---	---
Furniture storage	1	---	---	---	300	10-14	---
Janitors' supply room	1	---	---	---	300	10-14	---
Garden tools storage	1	---	---	---	100	10-14	---
Help's locker room	1	---	---	---	100	10-14	---
Eraser room	1	---	---	---	40	10	---
Key room	1	---	---	---	80	10	---

\*L, loud; M, moderate; Q, quiet; SQ, semi-quiet.

\*\*This column gives minimum, not optimum, areas.

\*\*\*E, east; W, west; N, north; S, south; EW, east-west; sl, single-loaded corridors; dl, double-loaded corridors.

\*\*\*\*Spectators.

\*\*\*\*\*Located outside.

## CHAPTER VIII

### ARCHITECTURAL, STRUCTURAL, AND MECHANICAL CONSIDERATIONS OF THE DESIGN

The successful solution to an architectural problem is dependent on the skillful interpretation of a great number of varied factors. Basically, these are represented in the detailed criteria of the comprehensive building program and the character of the selected site. The building program states the administrative and economic considerations that govern the project as well as the detailed description of the function and space requirements of the project. The physical and environmental characteristics of the site pose problems that influence the decisions relative to the plan layout, the structural systems, and building materials selected. These decisions are aimed at creating the best possible solution in fulfillment of the program requirements in terms of function, aesthetics, and economics.

#### I. ARCHITECTURAL CONSIDERATIONS

##### Site Analysis

The design criteria upon which the proposed New Revere Senior High School was designed is related in detail in Chapter VII, and the background for the criteria is described in previous chapters. However, before it was possible to start any actual design probing on the drawing board, it was first necessary to establish the most logical location for the building on the site. To this end, a site analysis was made, which consisted of determining the best answers to the following vital



## questions:

1. What part of the site offers the most logical approach for students and public, both by foot and/or established transportation?
2. What part of the site offers the most favorable soil conditions for building construction?
3. What part of the site would offer the best location for the building in view of the most economical use of the odd-shaped plot consistent with good over-all planning?
4. What part of the site would offer the best safety conditions to the students and other users?
5. What part of the site would offer the best natural acoustical environment?
6. What part of the site would offer the most favorable design conditions relative to desirable natural light orientation for the various elements of the building?

A careful study of these considerations disclosed the fact that the western part of the site bounded by School Street on the west and McClure Street on the north offered the best all-around qualifications. The building site could extend as far south as Mountain Avenue East should that be necessary. (See Figure 2 and also the site sheet of the accompanying final presentation drawings appearing at the end of this study.) With the extension of the proposed new street joining McClure Street to Revere Street by passing through Putnam and Pomona Streets and with the extension of McClure Street through to Broadway, this location appeared to be the hub of the approaches from the main sections of Revere. In

addition to offering the most favorable conditions for construction, it is remote from the traffic hazard and noise of the American Legion Highway. In view of these affirmative qualifications, this part of the site was selected for the building location.

#### Relationship Of Space Of Building To Space Of Site

Good contemporary school design requires a plan that is functional and an environment that is pleasant and conducive to the fulfillment of its intended use. In an approach to accomplish this philosophy, the relationship of the space of the building to the space of the site was the next step analyzed. A brief summary of the design criteria as it applies to this relationship disclosed the following major facts. The gymnasium, auditorium, cafeteria, library, student activities room, and administrative unit should be readily accessible to the public. The outdoor activities should be accessible to the public and related to the gymnasium. Off-street parking should be located for convenience to all of these elements. The relationship of these larger elements of the building and the outdoor activities to the instructional spaces must be considered on a basis of proper zoning as well as accessibility. Figure 19 shows diagrammatically the relationship of the elements within the school to each other and to the site.

#### Relationship Of Space Within The Building

The same design principles, for example, consideration for function, circulation, zoning, and aesthetics, also apply to the relationships of the smaller units to each other and to the building as a whole. In this connection, a brief analysis of the design criteria in the

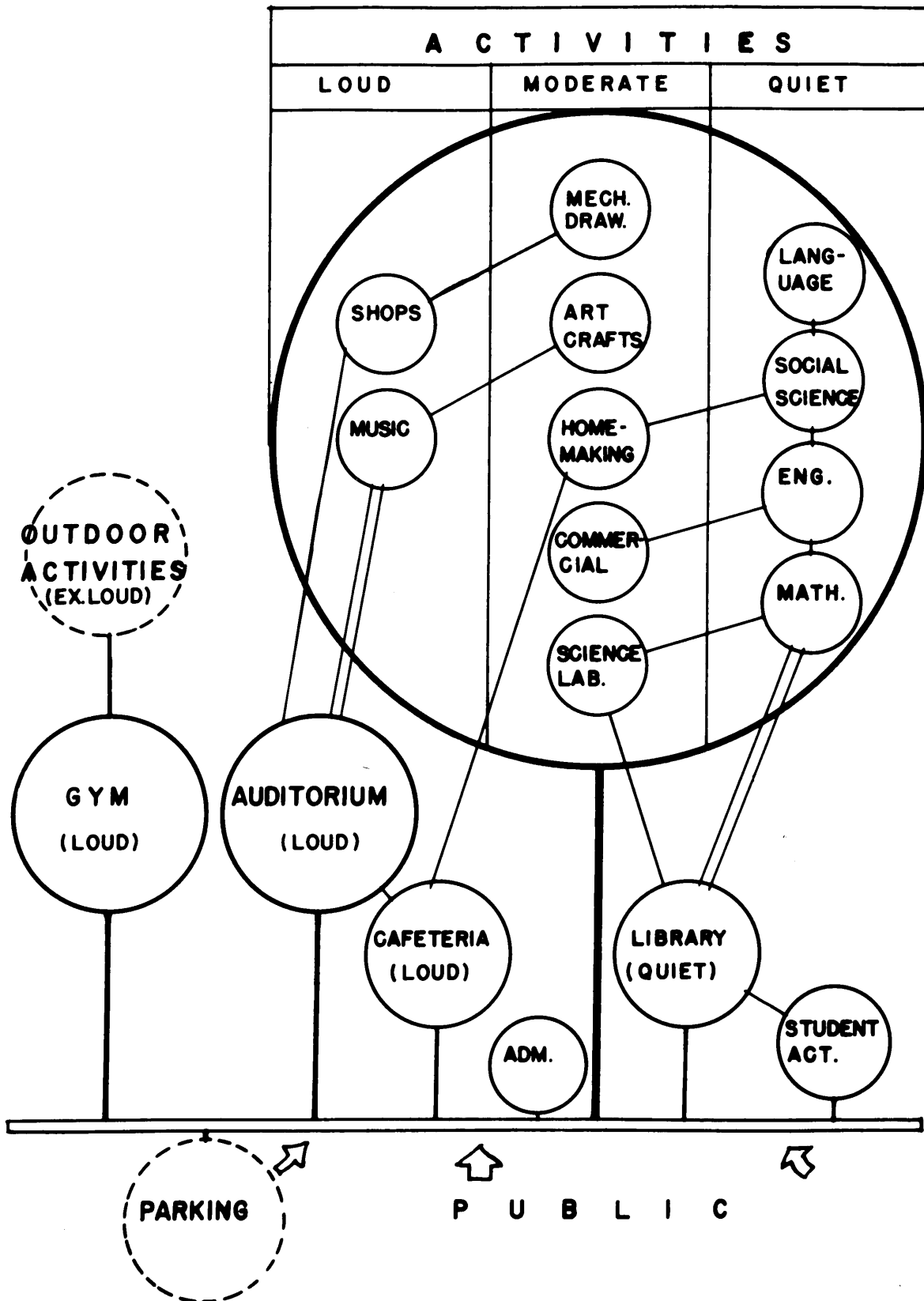


Figure 19. Relationship of the elements within the school to each other and to the site.

preceding chapter and of the space requirements listed in Table XV disclosed these principal facts. The gymnasium, auditorium, cafeteria, library, student activities room, and administrative unit should be readily accessible to the students from the instructional spaces within the building. The English, language, social science, and mathematics departments are grouped together by nature of activity. The music department and vocational shops should be isolated because of noise; however, they, together with the arts and crafts department, are related to the auditorium. There is a relationship between the home economics department, arts and crafts department, and the social sciences. The cafeteria should be in close proximity to the auditorium and possibly to the gymnasium, also. (See Figure 19.)

#### Development Of The Basic Plan

From the analysis of these important relationships of the elements of the school plant, the next step executed was to apply the resultant scheme to the selected site in a manner that would utilize the physical characteristics of the site to the best advantage. With regard to this matter, referring again to the design criteria and Table XV, the principal factors were the following:

1. Consideration was given to the placement of the various elements of the building to permit the best orientation for natural light.
2. Consideration was given in the placement of the elements of the building to permit the most economical use of the site for the remaining uses, including outdoor activities and

off-street parking, and to permit possible future expansion of instructional spaces.

3. Consideration was given to the placement of the various elements and to the establishment of the principal axes of the building scheme so that its form would relate intimately with the form of the site.
4. Consideration was given to the placement of the elements of the building in an effort to establish the most logical and pleasant approach for the public and the most efficient approach for required servicing.

Figure 20 shows diagrammatically the basic scheme of the relationship of the elements of the building to the elements and physical characteristics of the site.

### The Final Design

From the diagrammatic scheme, the final design of the school plant followed. It was found, upon attempting to incorporate all the indoor and outdoor space requirements into the scheme, that it was necessary to plan two-story elements with double-loaded corridors to house most of the instructional spaces. A finger-plan type of layout was utilized to permit good natural isolation of noisy spaces from quiet spaces. As can be noted from the scheme and from the accompanying final presentation drawings shown at the end of this study, a justifiable solution, incorporating the major requirements of the school program with the characteristics of the site, was made.

The gymnasium, auditorium, cafeteria, library, student activities

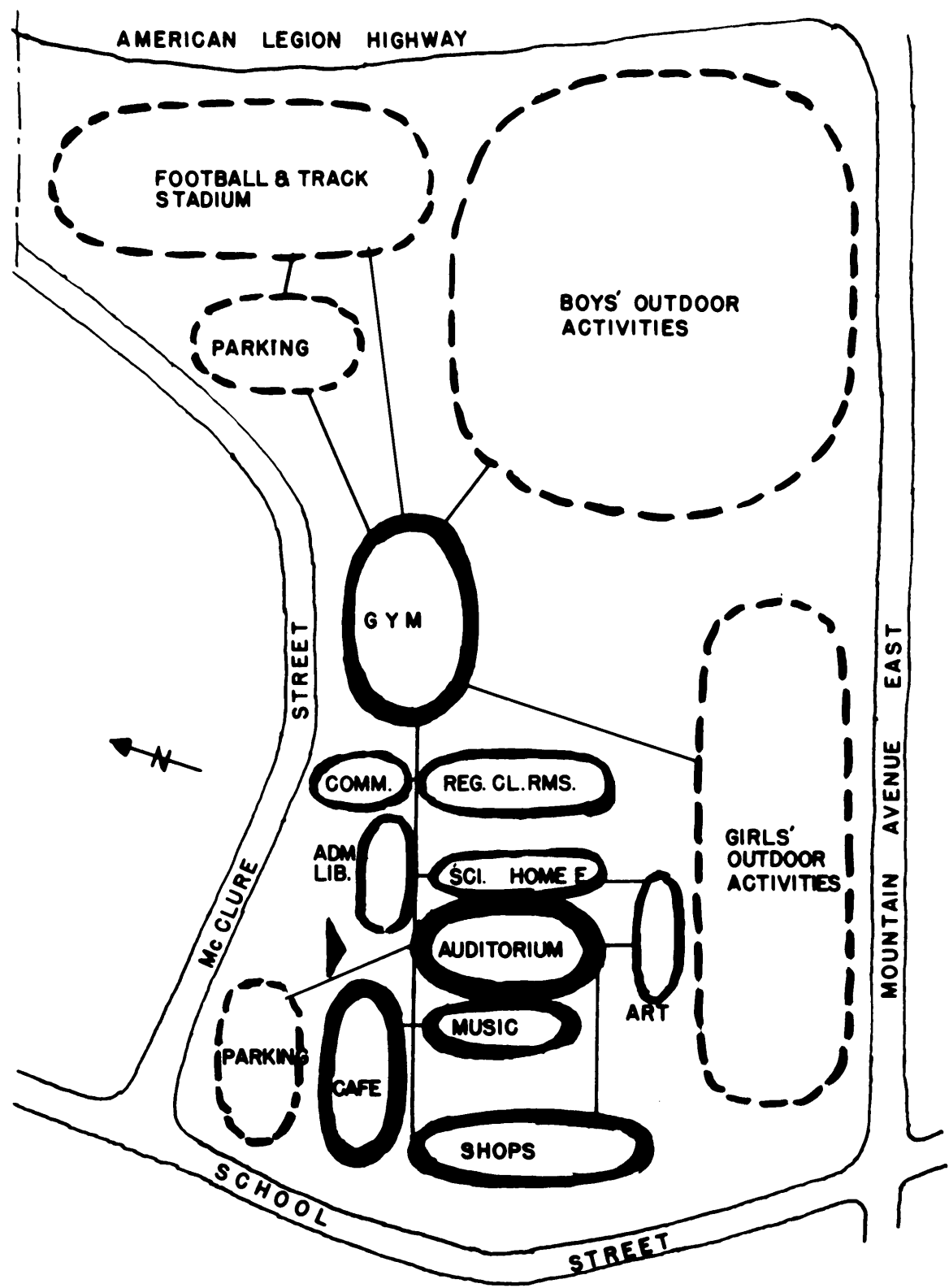


Figure 20. Relationship of elements of the building to elements and physical characteristics of the site.

room, and the administrative unit are located for easy accessibility to the public in a manner that presents a logical approach from the various means of established transportation. At the same time, the odd-shaped segment of the site at the northwest corner offers convenient parking facilities and permits a good view of the building and main entrance from the major approaches.

The gymnasium is isolated from the quieter activities of the building and directly related to the playfields and parking lots.

The auditorium is grouped with the home economics department and science laboratories on the east side and the music department on the west side. The latter is thus isolated from the quieter instructional elements, and yet it is directly related to the auditorium. The noisy vocational department and the arts and crafts are isolated by placement at the west and south extremities; however, they are related conveniently to the auditorium.

The cafeteria is located at the northwest extremity of the plan, thus isolating it from the quieter elements, yet making it readily accessible from all parts of the building. It is closely related to the auditorium for function and is connected to the main lobby by a smaller separate lobby. In this location, it is also directly connected to an outdoor court to the south permitting outdoor activities that will not be disturbing to the quieter elements of the building. The kitchen is easily served from School Street.

The English, social science, language, and mathematics departments in one group, together with the commercial department, comprising the greatest bulk of instructional space, are placed in a wing which affords

easy access to the gymnasium, auditorium, and cafeteria. Nevertheless, they are isolated from the noise of these areas. The commercial department is placed in the north extremity on the second floor and zoned to avoid disturbing the quieter lecture units in this wing.

The instructional elements are located in such a manner that future expansion could be made at a minimum cost by simply extending any particular wing to the south. The arts and crafts department may be expanded by double loading the present wing. The library also may be readily expanded by extending the second floor over the main entry lobby space.

In the orientation of the various elements to obtain the best natural light conditions, the recommendations shown in Table XV were followed. To obtain north light to the vocational shops, a saw-toothed roof with glazing to the north is used. Even though east-west orientation for double-loaded corridor lecture rooms is considered favorable, a sun-shade overhang is utilized in the design to provide protection against the direct sun for most of the morning and the early afternoon. Additional natural control is made use of by trees and landscaping.

The heat plant and building services department is placed next to the cafeteria adjacent to School Street where it can be serviced easily. This affords a location that does not interfere with normal school activities; yet it may service the building efficiently.

By this utilization of the site for the building, it permits laying out the balance of the site in a manner that affords allocation of the southwest portion to girls' activities, the southeast portion to boys' activities, and the northeast portion to a football and track stadium. In general, these areas are equidistant and related to the



gymnasium and permit the full attainment of the required outdoor program. In all the studies made, the football stadium fit into the outdoor scheme best in the location selected because of the amount of area it required, its accessibility to the public, and its role as a buffer between the American Legion Highway and the most frequently used play areas. For convenience to athletic squads, two small dressing rooms equipped with showers are made a part of the permanent grandstand on the west side of the field. A space for storage and garden equipment is also included under the grandstand.

The plan contains approximately 162,000 square feet of usable space. The approximate sizes of the various types of instructional spaces in this plan are: regular classrooms, 800 square feet; commercial rooms, 1,000 square feet; science laboratories, 1,200 square feet; arts and crafts studio, 2,300 square feet; clothing laboratories, 1,600 square feet; food laboratories, 1,300 square feet; vocal rooms, 800 square feet; band room, 1,600 square feet; wood shops, 1,800 square feet; sheet metal shop, 1,800 square feet; electric shop, 1,800 square feet; auto shop, 2,500 square feet; and mechanical drawing rooms, 1,200 square feet. Although these are above the minimum required sizes, it was felt that the increase makes for better teaching conditions and, at the same time, remains within the bounds of economical consideration.

## II. STRUCTURAL CONSIDERATIONS

Basically, the structural system or systems selected for a building project must satisfy three major principles: namely, function, aesthetics, and economics. Fundamentally, they compliment each other in

producing a successful solution, each having a vital role to perform that must be analyzed in relation to the total problem. Therefore, the interpretation of the program in terms of structure is dependent upon the conditions set forth governing the use of the building, the limitations of the financial budget, and the freedom or lack of freedom permitted the designer in his solution. This section will deal with the structural elements for the new school in partial outline form; however, it is not intended to be complete in detail. Since Chapter VII, "Design Criteria", includes a description of certain important finish materials used, this matter will not be covered here.

#### Classroom And Administrative Elements

Essentially, the structural systems that were selected for the New Revere High School are either the wall-bearing and truss-type or the column and truss-type. The final selection of the light steel truss and column-type for the one- and two-story classrooms and administrative elements was the result of a thorough study of several systems. This method was chosen because it permits one of the simplest means for possible future expansion, lends itself to rapid construction, allows a simple and attractive form to be designed, and is economical in cost. A brief summary of the details of this system are listed below:

The frame is of light steel construction using columns spaced at 16 feet center to center dimension along the exterior and interior wall lines with open steel trusses running perpendicular to the exterior wall. The columns are to be covered for two-hour fire rating.

The roof and second floor are composed of 2-inch poured concrete

on permanent corrugated light steel forms. The roof is to be covered with  $1\frac{1}{2}$ -inch rigid board insulation and 5-ply built-up roof.

The first-floor slab is to be of 6-inch reinforced concrete on 6-inch gravel fill, drained.

The ceiling is to be finished with metal lath and plaster to comply with one-hour fire rating.

The exterior walls are to be of brick and insulated steel panels.

The interior walls are to be of 8" x 8" x 16" concrete blocks except where otherwise specified as for the living unit suite in the home-making department.

(Also, see section of classroom wing in the accompanying final presentation drawings shown at the end of this study.)

#### Vocational Shops And Arts And Crafts Unit

These elements are one-story, and are handled in a manner similar to the classroom elements with the exception of the roof construction. To permit roof lighting from the north, light steel trusses forming a saw-toothed roof are used. No interior columns are required for this system.

#### Covered Concourses

The covered concourses serving as circulation from one element to another are essentially intended to remain open at the sides; however, facilities for installing removable curtain walls are included. The framework consists of steel columns and beams with light steel joists to support a steel-clad roof.

### Auditorium And Proscenium

For the purpose of fulfilling the requirements for fireproof construction, the proscenium wall is handled in the same manner as the auditorium walls. A brief summary of the details of this system are listed below:

The walls are to be of masonry.

The columns are to be of steel.

The roof is to be made up of steel Pratt (parallel chords) trusses, with steel purlins supporting pre-cast reinforced concrete roof deck panels. The roof is to be covered with  $1\frac{1}{2}$ -inch rigid board insulation and 5-ply built-up roof.

The floor is to be 6-inch reinforced concrete slab on 6-inch gravel fill, drained.

### Gymnasium

Structurally, the gymnasium is composed of two elements, the main gym and the low one-story periphery housing the necessary gymnasium service facilities. The main gym is handled in the same manner as the auditorium. The low one-story element is handled in the same manner as the main one- and two-story classroom elements.

### Cafeteria And Heat Plant And Building Services Unit

These facilities are housed in one unit and are handled to comply with proper fire-resistive measures.

The frame is of steel construction using columns spaced at 18 feet center to center dimension along the exterior wall line with Pratt (parallel chords) trusses. Columns are covered for two-hour fire rating.

The roof is of steel purlins supporting pre-cast reinforced concrete roof deck panels. The roof is covered with  $1\frac{1}{2}$ -inch rigid board insulation and 5-ply built-up roof.

The exterior walls for the cafeteria are insulated steel panels and brick. For the heat plant and building services unit, brick is used for exterior walls.

Interior walls for the cafeteria are concrete blocks except for minor partitions as occur in the help's toilet rooms and so forth. For the heat plant and services unit, fire-resistive brick walls, including the one between the cafeteria unit and for all storage and work spaces, are used.

The floor is 6-inch reinforced concrete slab on 6-inch gravel fill except as required for boiler installation.

### III. MECHANICAL CONSIDERATIONS

A shelter designed for human occupancy cannot be considered a successful contribution unless its mechanical services have been designed to supply the needs of that shelter in an efficient, adequate, and economical manner. To be considered adequate, the mechanical services must comply with the prevailing code requirements and also provide for any special installation or condition that may exist. This was the philosophy upon which the decisions were based in the selection of the mechanical services for the New Revere High School. This section will deal with the heating, ventilating, and plumbing elements for the new school in partial outline form; it is not intended to be complete in detail.

### Heating And Ventilating

After considerable investigation into the various types of heating and ventilating systems available for use in school buildings, a system was adopted depending upon unit ventilators, unit heaters, and roof-type ventilators to supply the general services to the major parts of the school plant. This system, including special situations, will be discussed in this section. The reason for the selection of this method was based upon the fact that it was capable of delivering a high standard of heating and ventilating; yet for over-all fulfillment of requirements, it was considered one of the most economical to install and operate.

The source of heat to the various heating units is to be steam conveyed from a central plant. The supply and return mains are to be installed in a crawl space located under the first floor corridors, which will be accessible from the heat plant and various other points located conveniently throughout the system.

Instructional, administrative, and similar types of spaces are to be heated by automatically controlled unit ventilators, which are located at floor level and equipped with draft-eliminating device. The general ventilation is to be provided by vent ducts equipped with regulating dampers and connected to roof-type ventilators. The intake registers are to be at floor level and located on interior walls where the plan permits.

The chemistry room is to be equipped with a fume cabinet for each demonstration table connected to a roof-type unit blower, which is manually controlled.

The vocational rooms are to be equipped with ceiling-type automatically controlled unit ventilators. With the exception of the mechanical

drawing rooms, the shops also are to be equipped with the same kind of fume cabinets that are in the chemistry room. These should be located in areas emitting excessive heat or fumes. The auto shop is to be additionally equipped with an exhaust system to provide for the removal of fumes from running gasoline engines.

The auditorium, gymnasium, and cafeteria are to be heated by adequately sized automatically operated auditorium-type unit ventilators. Ventilation is to be provided by automatically controlled roof-type ventilators. Heating and ventilating provisions for the smaller gymnasium service spaces are to be wall-type automatically controlled unit ventilators. The cafeteria kitchen is to be equipped with an additional exhaust hood located at the cooking unit and connected to a roof-type unit blower, manually controlled.

Toilet rooms are to be heated by automatically controlled unit heaters and ventilated by automatically regulated roof-type unit blowers. The ventilating systems for these rooms are not to be connected to any other type of space.

The corridors are to be heated by automatically controlled unit heaters.

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APPENDIXES

## APPENDIX A

### REVERE SCHOOLS TODAY

Revere's School System was analyzed and evaluated in 1953 by the Revere Study Group in terms of the McLeary Rating System.<sup>1</sup> At the present time, a committee working with the Revere Planning Board is in the process of making a similar analysis. The results of the latter group are not complete at this date; however, their findings so far indicate a probable similarity to the findings of the Revere Study Group.<sup>2</sup>

In the formulation of the master plan for the Revere School System as recommended in this study, the completed evaluation of the present school system in terms of the McLeary guide was recognized. This system evaluates a school plant based on scoring the following items: site, building design, and structure; service systems; all types of classrooms; and special rooms. Over one hundred items are considered in these various categories with a maximum score predetermined in each case. Where the standard is not met, a penalty is assessed. The highest score any building can receive is one thousand points. Table I shows the scores of Revere school buildings according to the McLeary Rating System. Table II shows a summary of facts on the Revere schools.

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<sup>1</sup>Ralph D. McLeary, Guide for Evaluating School Buildings (revised edition; New England School Development Council Publication, No. 14. Cambridge, Massachusetts: New England School Development Council, 1951).

<sup>2</sup>Revere School Study Group-1954, Better Schools for Revere (Cambridge, Massachusetts: Cambridge Research and Service Associates, 1954).

TABLE I

SCORES OF REVERE SCHOOL BUILDINGS ACCORDING  
TO THE McLEARY RATING SYSTEM

Revere school	Item scored								TOTAL SCORE
	SITE	BUILDING DESIGN & STRUCTURE	SERVICE SYSTEMS	REGULAR CLASSROOMS	SPECIAL CLASSROOMS	PUPIL ACTIVITIES	SERVICE	ADMINISTRATION	
ACHENBACH	22	76	61	134	0	0	10	14	317
BARROWS	36	82	114	126	0	0	20	16	394
GARFIELD	85	71	56	128	19	17	18	10	404
HOWE	16	20	44	95	0	11	13	0	199
LIBERTY	41	77	37	135	0	0	17	20	327
LINCOLN	52	79	102	144	0	35	11	6	429
MABIE	75	126	139	178	0	0	30	20	568
McKINLEY	37	66	32	109	1	0	12	0	257
PASTEUR	8	80	101	151	0	0	25	20	385
REVERE	18	79	30	122	11	5	19	0	284
RONAN	0	23	93	59	0	0	4	4	183
ROOSEVELT	44	138	74	179	0	16	16	2	489
SHURTLEFF	41	26	88	89	0	0	13	0	257
WAITT	36	48	28	156	9	0	17	8	302
WOLCOTT	22	41	12	90	0	0	4	4	173
JR.-SR. HIGH INC. CENTER SCHOOL	18	32	23	67	0	0	8	6	154
<b>MAX. POSSIBLE SCORE</b>	120	170	225	245	70	70	50	50	1,000

(From Revere School Study Group-1954, Better Schools  
for Revere.)

TABLE II  
SUMMARY FACTS ON REVERE SCHOOLS

SCHOOL	GRADES	DATE BUILT	ADDITION BUILT	TYPE	NO. FLOORS	REGULAR CLASSROOMS	SPECIAL CLASSROOMS	CAPACITY	1952 ENROLLMENT	1953 ENROLLMENT	MCLEARY RATING
ACHENBACH	1-4	1923	-	bk.ex. wd.in.	1½	4	1	120	109	132	317
BARROWS	1-6	1898	-	bk.ex. wd.in.	2½	8	1	240	212	295	394
GARFIELD	7-9	1925	1927	bk.ex. wd.in.	2½	12	-	460 <sup>aa</sup> Jr.H.	360	420	404
HOWE	1-6	18?	1920	wood	2½	10	-	300	229	235	199
LIBERTY	1-6	1918	-	bk.ex. wd.in.	3	16	-	480	403	429	327
LINCOLN	1-8	1911	1931	bk.ex. wd.in.	3½	29	-	960 <sup>aa</sup> 1-8 850 <sup>aa</sup> Jr.H.	661	875	429
MABIE	1-4	1923	-	bk.ex. wd.in.	2½	4	-	120	93	85	568
McKINLEY	1-8	1904	1927	bk.ex. wd.in.	3½	18	4	540 <sup>aa</sup> 1-8	581	653	257
PASTEUR	1-5	1925	-	bk.ex. wd.in.	1½	5	-	150	111	131	385
REVERE	1-9	18?	1904 1918 1934	bk.ex. wd.in.	2½	21	-	685 <sup>aa</sup> 1-9	618	655	284
ROMAN	1-5, 7-8	1896	1914	bk.ex. wd.in.	3½	12	-	360	313	364	183
ROOSEVELT	1-6	1924	1948	bk.ex. wd.in.	2½	8	-	240	146	156	489
SHURTLEFF	1-6	1892	-	bk.ex. wd.in.	3½	8	-	240	195	233	257
WAITT	1-8	1901	1927	bk.ex. wd.in.	2½	8	2	240	138	187	302
WOLCOTT	1-6	1896	-	bk.ex. wd.in.	3½	13	-	390	326	337	173
JR.-SR. HIGH INC. CENTER	9-12	1908	1924	bk.ex. wd.in.	5	32	-	15* 1,360	1,130	1,317	154

\* / 4 Center

(From Revere School Study Group-1954, Better Schools for Revere.)

## APPENDIX B

### FUTURE SCHOOL ENROLLMENTS AND POPULATION DISTRIBUTION

To assist in formulating the master plan for the Revere School System as recommended by this study, an analysis of the 1953 census of pre-school and in-school children was necessary as an initial starting point. Therefore, this study made use of the joint analysis which had already been conducted by the Revere Study Group, the Revere School Department, Parochial School Authorities, and interested citizens of Revere. Their system divided Revere into sixty areas as shown in Figure 4. The tabulated results by study areas are shown in Tables IV, V, and VI.

Although it has been found by comparison, using 1950 and 1953 figures, that there is a shifting of child population away from the beach area to the area west of Broadway and south of Squire Road, it was the belief of this study that this condition may cease. One reason for this possible stoppage of movement would be the drawing power of new and improved school facilities in the beach area. Another reason would be the fact that there would be a diminishing amount of residential area available with the advent of new industry in the open farm country bordering the proposed expressway, if the latter were constructed. If additional industry is brought into West Revere, it is predicted that the balance of open land west of Broadway will continue to be utilized for residential purposes, of course. It is felt, however, that this event would both decrease available residential land west of Broadway and increase total population for Revere. Therefore, the movement from the



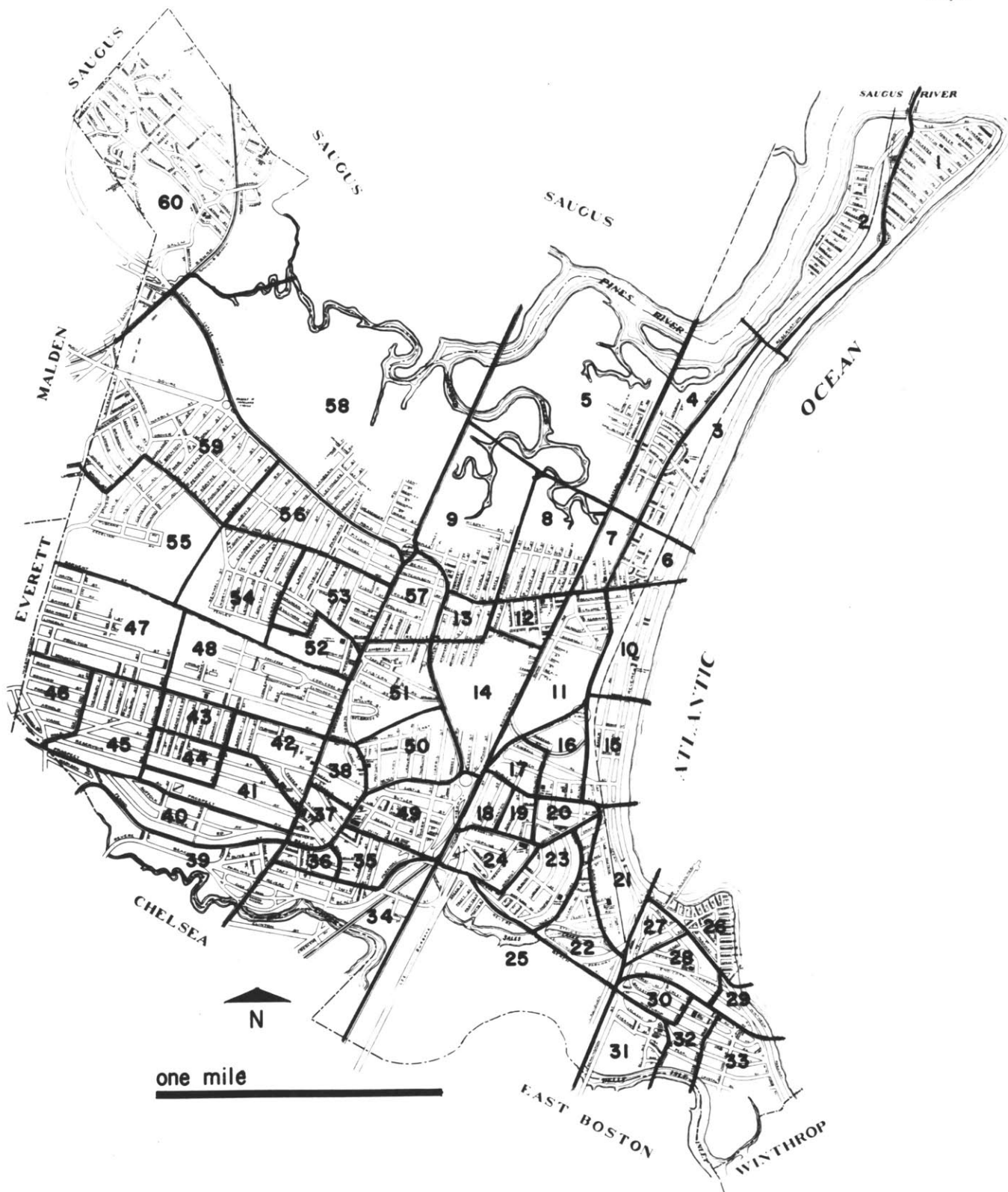


Figure 4. Study areas of Revere school population. (From Revere School Study Group-1954, Better Schools for Revere.)

LOCATION OF CHILDREN ENUMERATED IN PRE-SCHOOL  
AND IN-SCHOOL CENSUS: NOVEMBER, 1953

study area	pre-school children	public school children	parochial school children	total children enumerated
1	113	228	2	343
2	27	55	3	85
3	56	91	2	149
4	14	43	1	58
5	41	39	5	85
6	31	60	0	91
7	6	40	0	46
8	60	129	0	189
9	38	106	0	144
10	36	75	0	111
11	91	121	1	213
12	38	69	0	107
13	38	59	2	99
14	18	48	1	67
15	21	35	0	56
16	41	82	0	123
17	42	132	1	175
18	104	201	1	306
19	65	113	1	179
20	38	124	0	162
21	13	44	1	58
22	104	126	2	232
23	114	281	13	408
24	51	98	10	159
25	38	68	4	110
26	10	17	1	28
27	44	96	1	141
28	109	117	13	239
29	22	53	0	75
30	79	179	7	265
31	35	80	1	116
32	56	191	6	253
33	93	118	0	211
34	34	57	23	114
35	47	42	53	142
36	28	38	22	88
37	47	50	68	165
38	57	85	25	167
39	50	60	15	125
40	62	96	39	197
41	111	159	9	279
42	61	110	24	195
43	63	101	12	176
44	37	55	8	100
45	95	162	27	284
46	76	151	18	245
47	21	96	13	130
48	439	334	38	811
49	75	92	68	235
50	53	110	60	223
51	64	170	13	247
52	21	40	4	65
53	83	144	1	228
54	76	92	0	168
55	35	32	0	67
56	86	108	1	195
57	133	183	7	323
58	0	8	1	9
59	55	146	0	201
60	77	158	0	236
Other	0	5	42	47
TOTAL	3,669	6,203	670	10,542

(From Revere School Study Group-1954,  
Better Schools for Revere.)

TABLE V

## LOCATION OF PRE-SCHOOL CHILDREN: NOVEMBER, 1953

study area	age in years								total
	under 1	1	2	3	4	5	6	7	
1	18	23	19	16	19	18			113
2	3	5	3	8	5	3			27
3	11	10	11	8	7	6			56
4	2	4	3	1	3	1			14
5	8	7	5	7	10	4			41
6	4	2	9	6	3	7			31
7	0	1	0	0	4	1			6
8	7	8	14	13	10	8			60
9	5	13	5	4	7	4			38
10	4	6	2	7	11	6			36
11	15	12	20	17	13	13	1		91
12	7	7	7	6	2	9			38
13	7	5	7	8	9	2			38
14	7	5	2	2	0	1	1		18
15	3	3	3	7	3	2			21
16	11	8	5	3	7	6		1	41
17	7	5	11	6	8	5			42
18	19	23	15	16	18	12	1		104
19	12	13	11	9	8	6	6		65
20	2	5	10	6	6	8		1	38
21	1	3	2	4	0	3			13
22	15	24	22	22	11	10			104
23	12	23	20	18	21	20			114
24	11	12	9	4	10	5			51
25	4	6	10	6	6	4	1	1	38
26	1	2	3	3	0	1			10
27	12	6	6	5	4	10		1	44
28	22	17	19	19	19	13			109
29	2	2	3	4	5	6			22
30	9	19	13	10	17	10	1		79
31	4	6	12	7	3	3			35
32	11	12	7	16	3	7			56
33	18	12	13	16	19	13	1	1	93
34	6	8	8	2	4	6			34
35	6	9	11	8	10	3			47
36	2	4	7	7	6	2			28
37	9	4	10	8	8	8			47
38	11	5	15	13	11	2			57
39	6	10	7	11	11	5			50
40	12	13	7	10	13	7			62
41	23	22	17	17	15	16	1		111
42	9	6	10	12	14	10			61
43	9	10	12	8	15	9			63
44	8	5	7	4	5	8			37
45	26	1	15	19	23	11			95
46	10	13	15	10	16	12			76
47	7	5	3	4	1	1			21
48	66	63	87	75	86	61	1		439
49	12	8	16	14	13	12			75
50	9	12	12	10	4	6			53
51	12	13	10	13	9	7			64
52	3	3	4	6	2	3			21
53	18	15	15	12	17	6			83
54	14	12	18	14	15	3			76
55	7	7	3	8	4	6			35
56	14	14	15	17	12	14			86
57	9	23	27	27	26	20	1		133
58	0	0	0	0	0	0			0
59	9	9	12	13	4	8			55
60	11	12	17	16	7	14			77
TOTAL	602	615	681	642	622	487	15	5	3,669

(From Revere School Study Group-1954,  
Better Schools for Revere.)

TABLE VI

LOCATION OF CHILDREN IN REVERE PUBLIC SCHOOLS  
NOVEMBER, 1953

study area	e r a d e												special classes	total
	1	2	3	4	5	6	7	8	9	10	11	12		
1	24	27	25	19	16	30	17	15	15	13	13	13	1	228
2	7	6	6	7	7	6	4	1	4	2	5	0	0	55
3	14	9	8	7	7	14	8	6	2	7	6	3	0	91
4	8	8	3	4	2	1	6	3	1	4	2	0	1	43
5	5	3	4	12	2	0	6	1	2	1	0	2	1	39
6	7	8	4	3	6	4	7	8	3	4	1	4	1	60
7	9	4	3	2	4	5	3	1	1	1	5	2	0	40
8	23	11	9	10	12	15	9	4	11	6	10	4	5	129
9	12	13	10	10	10	7	17	11	4	3	2	4	3	106
10	16	7	8	3	7	7	10	3	4	3	1	2	4	75
11	8	12	14	15	11	12	14	10	11	9	1	4	0	121
12	9	11	6	7	3	5	7	4	5	4	4	4	0	69
13	9	5	1	5	7	6	4	5	3	11	1	2	0	59
14	6	2	6	7	2	3	1	5	4	0	6	5	1	48
15	6	7	1	3	1	3	4	4	5	1	0	0	0	35
16	12	11	5	3	5	9	8	7	11	4	4	2	1	82
17	19	15	5	11	8	10	14	9	7	11	14	8	1	132
18	22	14	17	25	22	16	17	16	15	11	9	13	4	201
19	15	12	12	6	9	11	14	10	4	7	8	5	0	113
20	11	16	15	11	10	13	5	6	5	6	14	11	1	124
21	5	5	4	3	3	3	4	5	5	3	1	0	0	44
22	16	17	4	14	10	11	5	16	13	7	9	3	1	126
23	37	18	30	27	26	24	29	31	22	15	9	11	2	281
24	14	13	19	10	7	5	6	8	3	5	3	3	2	98
25	12	13	10	4	4	7	8	4	2	0	1	1	2	68
26	4	2	0	1	1	1	1	1	1	1	2	2	0	17
27	10	12	12	9	8	12	9	10	5	0	5	3	1	96
28	12	13	10	9	11	12	5	8	9	10	7	9	2	117
29	9	1	9	6	3	5	12	3	2	1	2	0	0	53
30	19	18	16	17	18	18	12	13	22	4	20	2	0	179
31	10	9	6	3	4	7	8	4	10	10	6	3	0	80
32	21	19	16	21	24	24	22	14	8	6	5	7	4	191
33	17	21	7	10	9	18	8	10	4	4	5	3	2	118
34	4	6	3	3	6	6	8	7	4	3	4	3	0	57
35	9	2	4	2	2	2	4	1	3	7	3	3	0	42
36	0	3	6	3	4	8	1	0	3	4	5	1	0	38
37	2	4	5	6	10	3	7	1	5	4	1	2	0	50
38	9	10	6	9	8	8	10	5	7	4	3	6	0	85
39	12	4	7	8	8	4	3	4	6	0	2	1	1	60
40	15	6	12	5	7	8	9	4	9	8	5	8	0	96
41	28	18	21	23	16	23	8	7	6	1	4	4	0	159
42	11	10	11	9	9	12	13	11	5	4	9	5	1	110
43	12	13	6	7	14	6	8	8	5	9	8	5	0	101
44	11	6	8	1	3	7	7	3	3	4	0	2	0	55
45	16	20	15	8	15	17	10	14	10	14	8	15	0	162
46	27	16	13	10	7	11	18	10	12	6	9	12	0	151
47	11	8	7	7	2	7	11	4	11	10	10	8	0	96
48	89	64	37	33	40	23	10	14	8	5	5	4	2	334
49	17	10	6	7	11	5	2	8	10	7	2	6	1	92
50	15	13	14	9	6	18	9	6	4	5	7	2	2	110
51	30	22	20	6	20	19	11	7	5	11	8	6	5	170
52	5	7	7	1	7	2	2	0	3	2	3	1	0	40
53	18	19	14	10	8	16	14	8	10	8	11	5	3	144
54	13	7	12	7	7	4	7	5	9	11	5	3	2	92
55	6	3	2	2	1	4	2	4	0	5	1	1	1	32
56	19	8	10	15	11	12	12	7	6	3	3	1	1	108
57	28	24	16	23	10	21	13	8	12	9	5	9	5	183
58	0	2	1	2	0	0	0	1	1	0	0	0	11	8
59	13	18	22	11	8	11	21	15	7	8	4	5	3	146
60	25	22	21	20	11	15	10	11	8	7	4	4	0	158
Other							1						4	5
TOTAL	873	707	611	551	530	596	534	428	395	335	312	258	73	6,203

(From Revere School Study Group-1954,  
Better Schools for Revere.)

beach areas would not only cease, but a slight increase in population, including children, might be expected here also.

## APPENDIX C

### PROGRAM FOR THE NEW HIGH SCHOOL FOR REVERE

The list of subjects taught and teaching stations required to provide for the students of grades ten through twelve of the Revere High School for the school year 1953-54 is given in Table XIV. The source of this information is from the principal's office of the Revere High School.

This data was used as a basis to predict the future teaching stations required for the New Senior High School. Although this assumption was justifiable in the opinion of the author, there remains a possibility of slight differences occurring in teaching station requirements among the different subjects offered at the time the plant is ready for occupation. However, this is a normal problem, which should be capable of absorption through flexible planning of the school.

One source of reference material used in determining pupil capacity for instruction rooms and the recommended teacher-pupil ratio is Data Sheet RSA-6-C-54 from the Massachusetts Department of Education, which is reproduced in Table XVI.

TABLE XIV

SUBJECTS AND TEACHING STATIONS FOR THE SCHOOL YEAR 1953-54  
FOR GRADES TEN THROUGH TWELVE  
REVERE HIGH SCHOOL

Subject	Number of Teaching Stations
Sophomore English . . . . .	10
Junior English . . . . .	12
Senior English . . . . .	11
French 1 . . . . .	3
French 2 . . . . .	2
French 3 . . . . .	2
French 4 . . . . .	1
Latin I . . . . .	2
Latin II . . . . .	2
Italian 1 . . . . .	3
Italian 2 . . . . .	1
Italian 3 . . . . .	1
Italian 4 . . . . .	1
German 1 . . . . .	1
German 2 . . . . .	1
German 3 . . . . .	1
Spanish 1 . . . . .	3
Spanish 2 . . . . .	2
Spanish 3 and 4 . . . . .	1
Algebra I . . . . .	6
Algebra II . . . . .	4
Algebra IIS . . . . .	2
Trigonometry ( $\frac{1}{2}$ year) . . . . .	2
Plane Geometry . . . . .	5
Solid Geometry ( $\frac{1}{2}$ year) . . . . .	1
Revolutionary Geometry ( $\frac{1}{2}$ year) . . . . .	1
Problems of Democracy . . . . .	3
Economics ( $\frac{1}{2}$ year) . . . . .	2
Civics ( $\frac{1}{2}$ year) . . . . .	2
United States History . . . . .	9
Ancient History . . . . .	3
Modern European History . . . . .	2
World History . . . . .	4
General Physics . . . . .	2
College Physics . . . . .	1
Chemistry . . . . .	4
Biology . . . . .	11
Aeronautics (To be included in space for Physics) . . . . .	2
Bookkeeping 2 . . . . .	4
Bookkeeping 3 . . . . .	3

TABLE XIV (continued)

Subject	Number of Teaching Stations
Office Practice . . . . .	3
Commercial Typewriting ( $\frac{1}{2}$ year) . . . . .	2
Personal Typewriting . . . . .	1
Typewriting 2 . . . . .	4
Typewriting 3 . . . . .	4
Spelling ( $\frac{1}{2}$ year) . . . . .	2
Stenography I . . . . .	4
Stenography II . . . . .	3
Commercial Law ( $\frac{1}{2}$ year) . . . . .	2
Commercial Geography ( $\frac{1}{2}$ year) . . . . .	2
Commercial Correspondence ( $\frac{1}{2}$ year) . . . . .	2
Freehand Drawing . . . . .	6
Clothing Ia . . . . .	3
Clothing Ib . . . . .	3
Clothing 2 . . . . .	3
Clothing 3 . . . . .	1
Foods Ia . . . . .	2
Foods Ib . . . . .	3
Foods II . . . . .	1
Music (Vocal) . . . . .	10
Harmony . . . . .	1
Music Appreciation . . . . .	2
Electricity ( $\frac{1}{2}$ year) . . . . .	3
Machines ( $\frac{1}{2}$ year) . . . . .	3
Manual Training II . . . . .	3
Manual Training III . . . . .	1
Manual Training IV . . . . .	1
Sheet Metal . . . . .	4
Mechanical Drawing 2 . . . . .	4
Mechanical Drawing 3 . . . . .	1
Mechanical Drawing 4 . . . . .	1
Driving . . . . .	8
Boys' Gym . . . . .	23
Girls' Gym . . . . .	22

(From the office of the principal, Revere High School.)



TABLE XVI

## INSTRUCTION ROOMS AND THEIR PUPIL CAPACITY: TEACHER-PUPIL RATIO

Use Code	Designation	Desirable Floor Area Per Pupil in Sq. Ft.	Desirable Teacher-Pupil Ratio
11	Kindergarten or pre-primary	45	1:20
12	Classrooms, 1-3 elementary	30	1:30
13	Classrooms, 4-6 elementary	30	1:30
14	Classrooms, equipped for audio-visual use	30	1:30
19	Classrooms, elementary, unused	---	---
21	Classrooms, secondary, regular (9-12)	25	1:25
22	Library	35	---
23	Study hall	25	---
24	Library-study hall combination	30	---
25	Science laboratories	35	1:25
26	Industrial arts shops - general	60	1:20
27	Audio-visual	---	---
28	Classrooms, secondary, regular, unused	---	---
29	Classrooms, secondary, equipped for audio-visual aids	25	---
31	Airplane service	300	1:20
32	Auto body and auto repair	200	1:20
33	Baking	150	1:20
34	Boat building	175	1:20
35	Bookbinding and printing	125	1:20
36	Cabinet-making or carpentry	200	1:20
37	Commercial art or industrial design	80	1:20
38	Drafting	50	1:25
39	Electrical or plumbing	100	---
41	Machine or pattern-making	125	1:20
42	Metalsmith or sheet metal	100	1:20
43	Painting and decorating	100	1:20
44	Plastics	80	1:20
45	Power engines	150	1:20
46	Radio and/or television	100	1:20
47	Shoemaking	125	1:20
48	Upholstery	125	1:20
49	Watchmaking	80	1:20
51	Welding	100	1:20
52	General (metal or wood)	175	1:20
53	General (electricity)	100	1:20
54	Home economics, multiple purpose	85	1:24
55	Food laboratories	---	1:24
56	Clothing laboratories	---	1:24
57	Vocational related classrooms (all trades)	50	1:24

TABLE XVI (continued)

Use Code	Designation	Desirable Floor Area Per Pupil in Sq. Ft.	Desirable Teacher-Pupil Ratio
61	Music	---	---
62	Band	25	1:25
63	Choral	15	1:25
64	Art	35	1:25
65	Business education office practice suites	---	---
66	Typing rooms	30	1:35
67	Bookkeeping rooms	35	1:30
68	Special education	45	---
69	Misc. other special instruction rooms	---	---
		Overall:	
71	Gymnasium, separate boys'	60	1:40
72	Gymnasium, separate girls'	100	1:40
73	Gymnasium, divided	100	1:40
74	Auditorium, gymnasium combination	100	---
75	Auditorium	9	---
81	Lunchroom	12	---
82	Cafeteria	12	---
83	Cafeteria	12	---
91	Medical suites	*	---
92	Administrative offices	---	---
93	Multi-purpose rooms	35	---
94	Community rooms	---	---
95	Other general use rooms	---	---
96	Sub-standard instruction rooms	---	---

\*2 sq. ft. per total enrollment (minimum 400 sq. ft.)

(From Massachusetts Department of Education, School Facilities Survey, Data Sheet RSA-6-C-54.)



AERIAL VIEW

SITE FOR A PROPOSED HIGH SCHOOL FOR REVERE, MASSACHUSETTS



VIEW FROM NORTHEAST CORNER

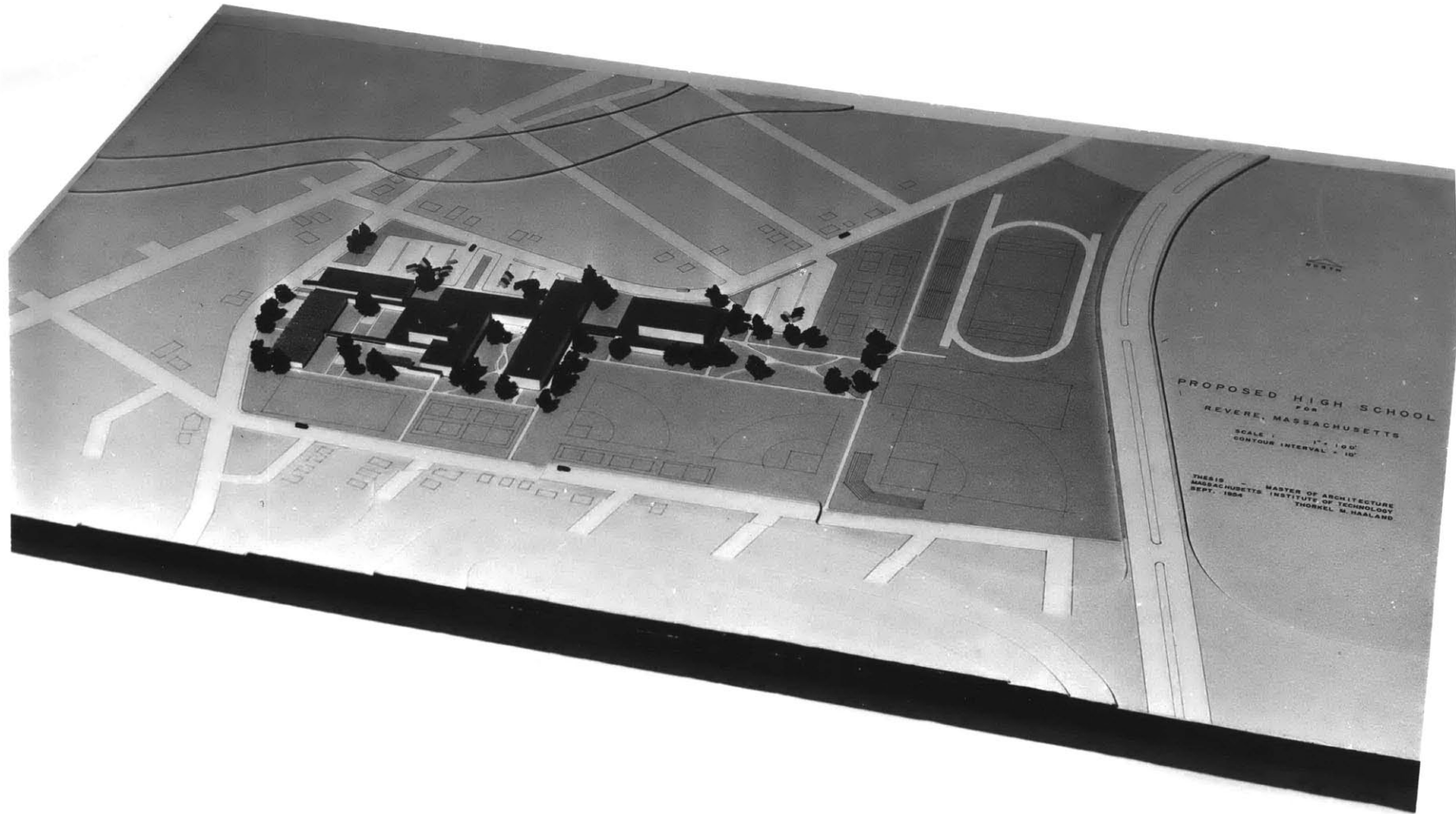


VIEW FROM SOUTHEAST CORNER



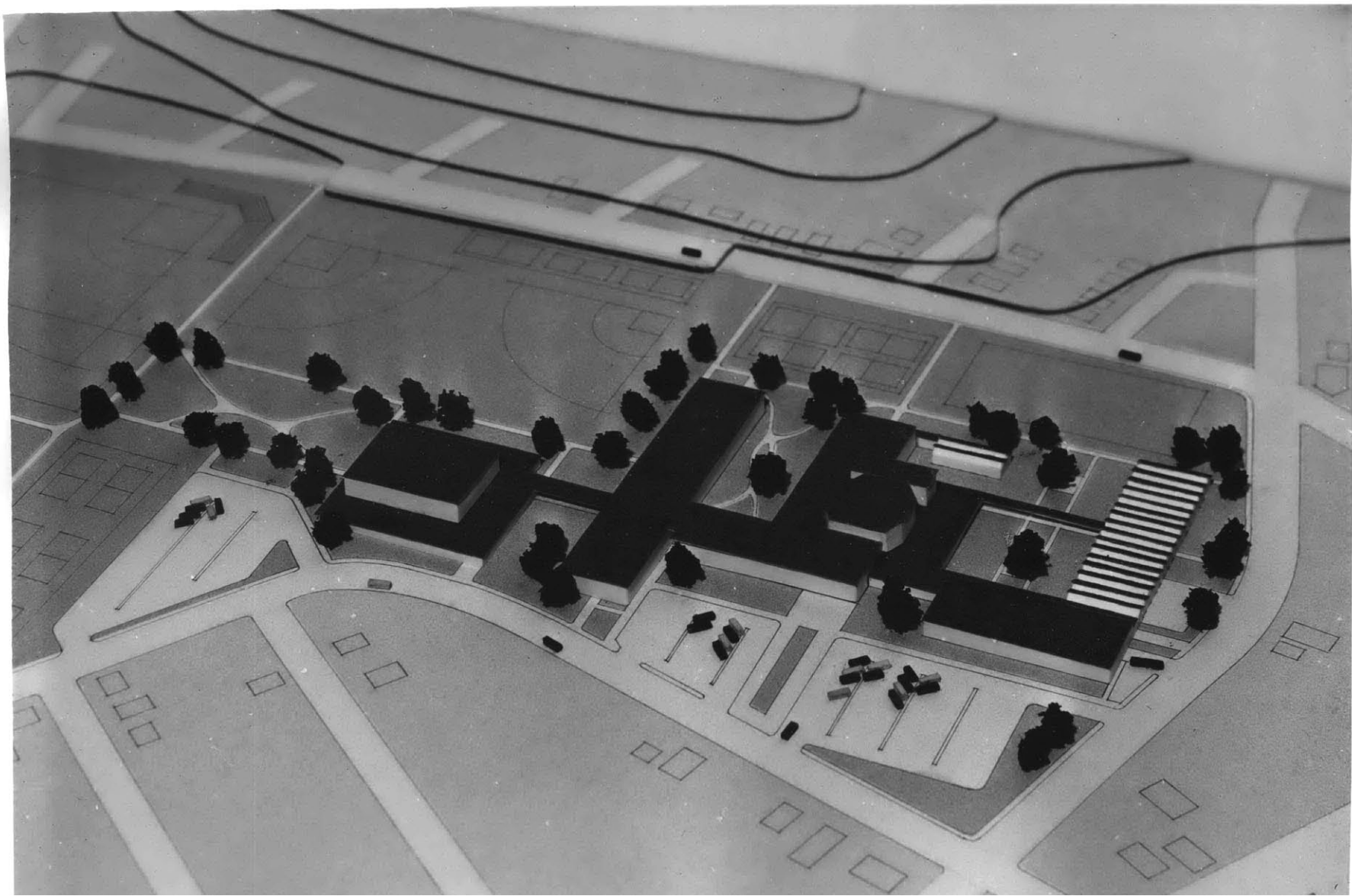
VIEW FROM SOUTHWEST CORNER

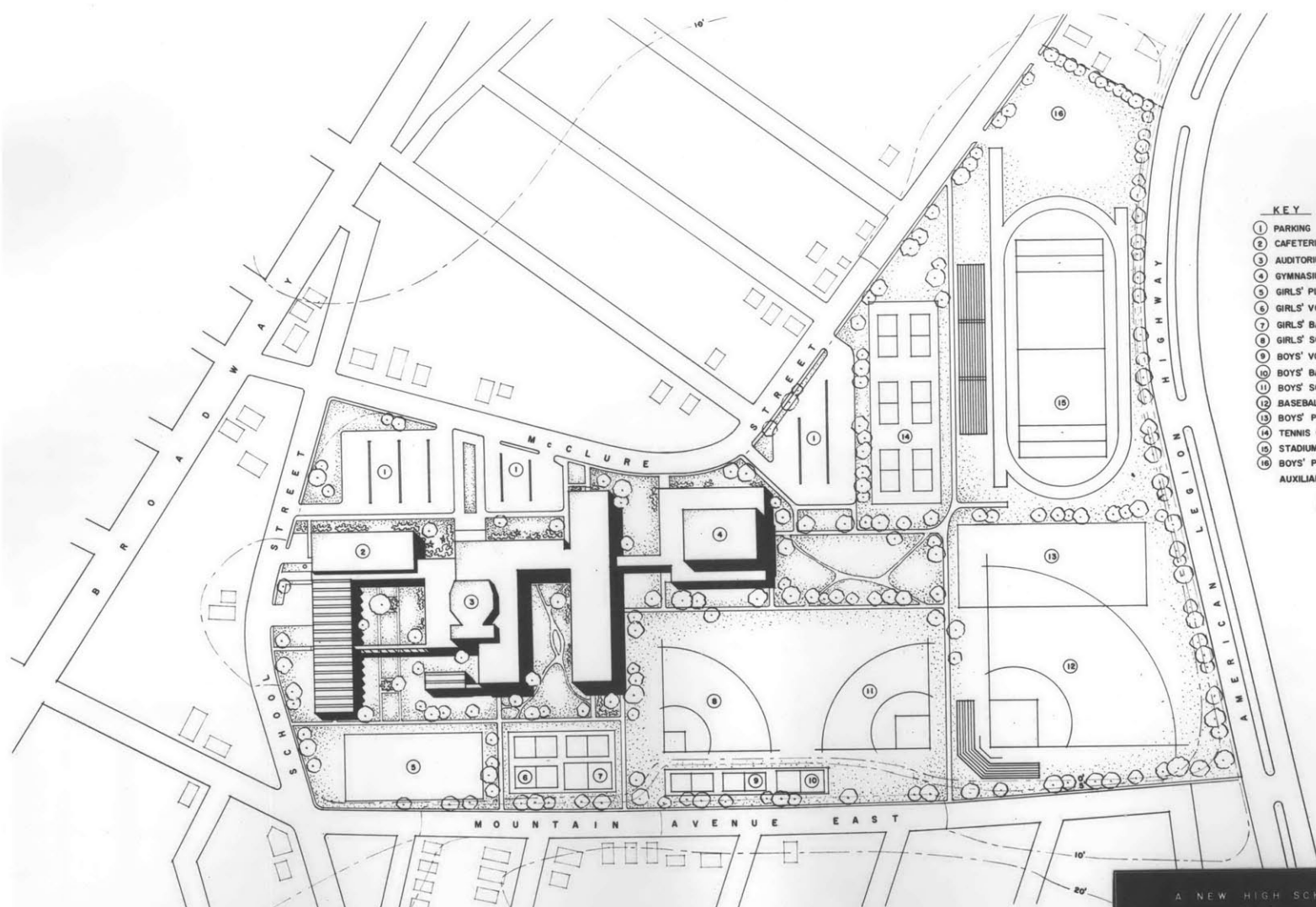
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PROPOSED HIGH SCHOOL  
7.5a  
REVERE, MASSACHUSETTS  
SCALE 1" = 100'  
CONTOUR INTERVAL = 10'

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SEPT. 1954  
THORNEIL W. HAALAND





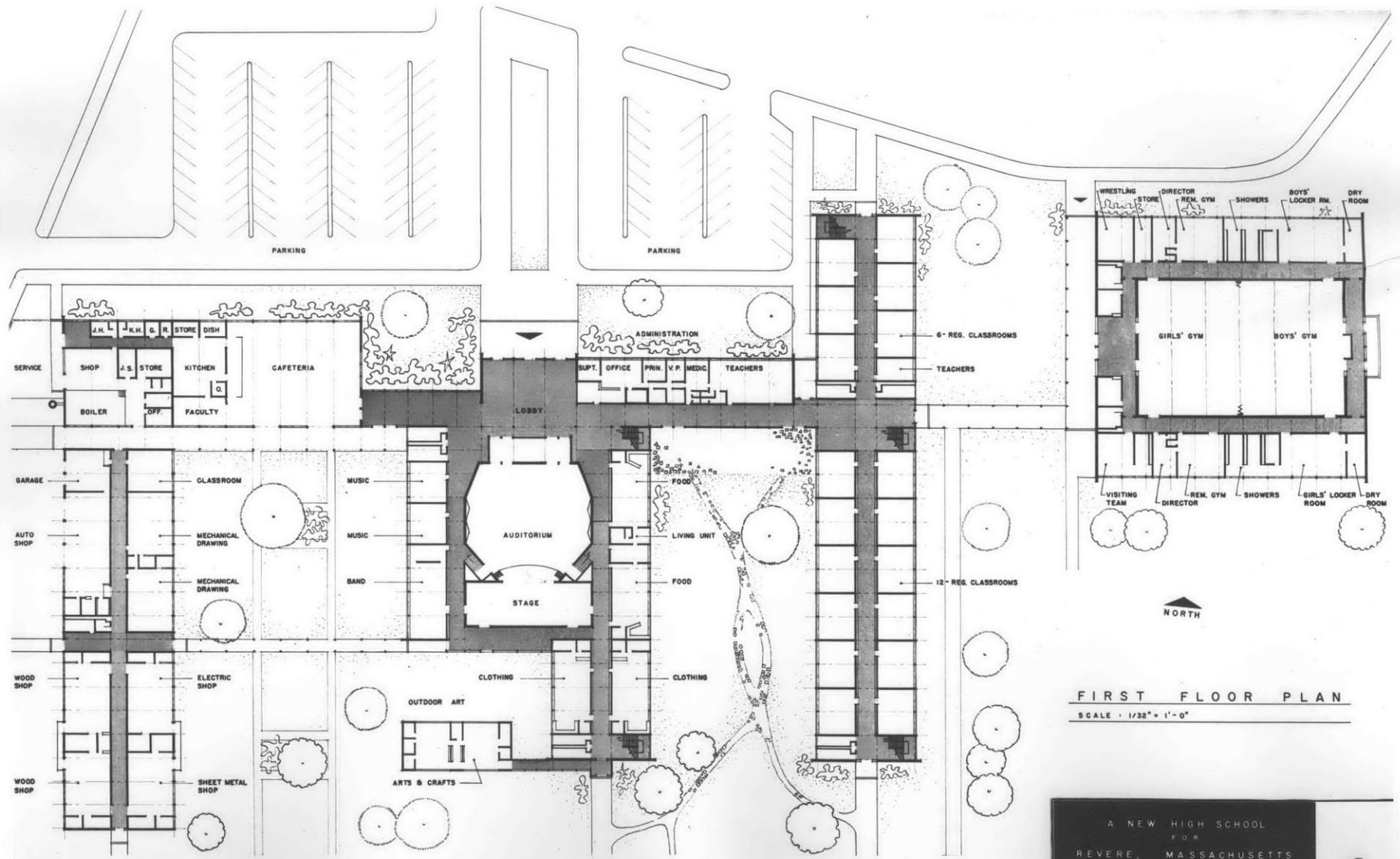
- KEY**
- 1 PARKING
  - 2 CAFETERIA
  - 3 AUDITORIUM
  - 4 GYMNASIUM
  - 5 GIRLS' PLAYFIELD
  - 6 GIRLS' VOLLEYBALL COURTS
  - 7 GIRLS' BASKETBALL COURT
  - 8 GIRLS' SOFTBALL FIELD
  - 9 BOYS' VOLLEYBALL COURTS
  - 10 BOYS' BASKETBALL COURT
  - 11 BOYS' SOFTBALL FIELD
  - 12 BASEBALL FIELD
  - 13 BOYS' PRACTICE FIELD
  - 14 TENNIS COURTS
  - 15 STADIUM - FOOTBALL, TRACK
  - 16 BOYS' PRACTICE AREA & AUXILIARY PARKING

**SITE PLAN**  
SCALE: 1" = 100'

A NEW HIGH SCHOOL  
FOR  
REVERE, MASSACHUSETTS

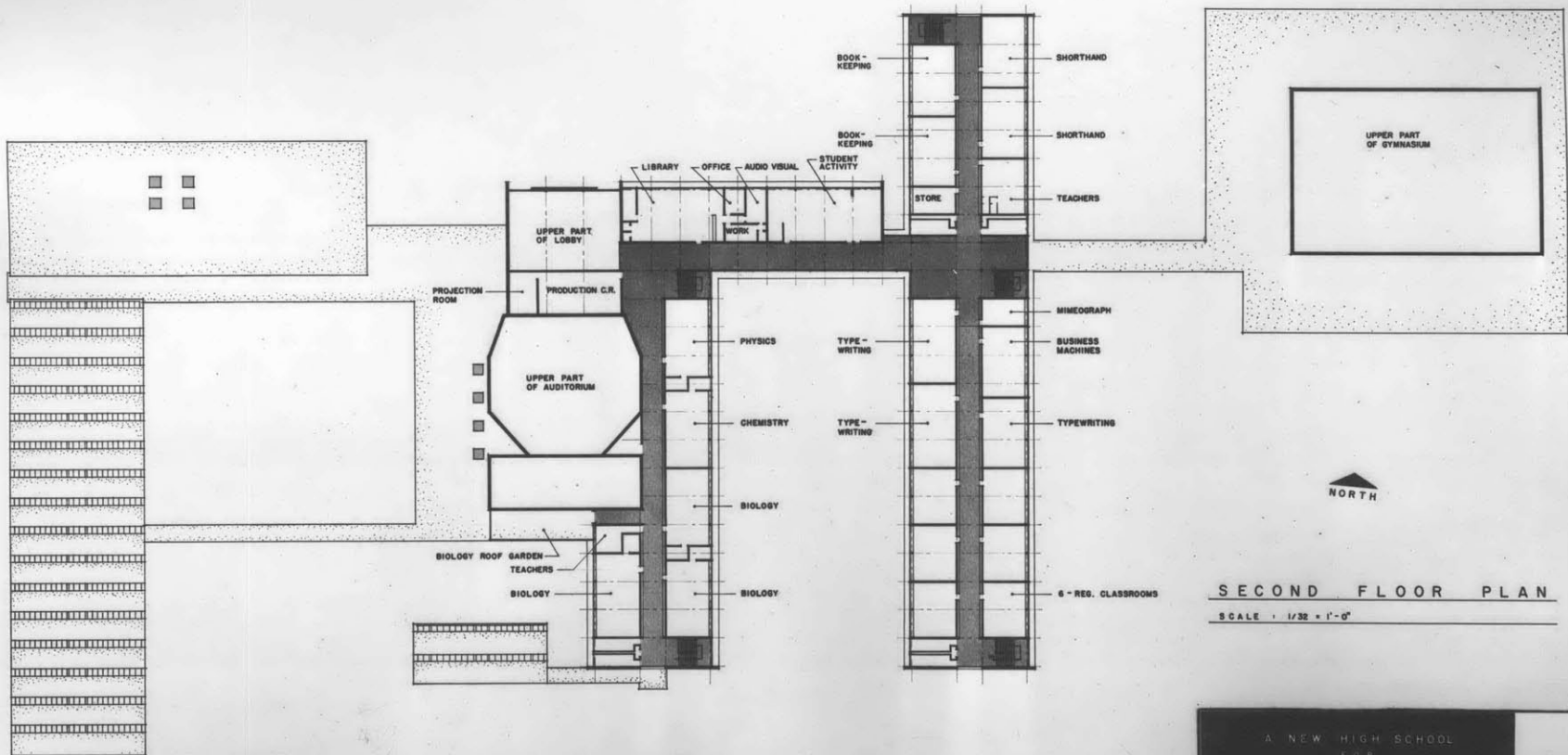
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FIRST FLOOR PLAN  
 SCALE 1/32" = 1'-0"



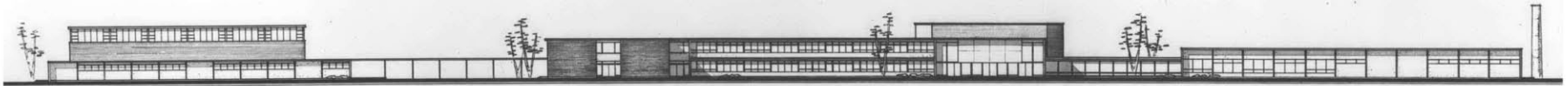


SECOND FLOOR PLAN

SCALE : 1/32" = 1'-0"

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NORTH ELEVATION



SOUTH ELEVATION



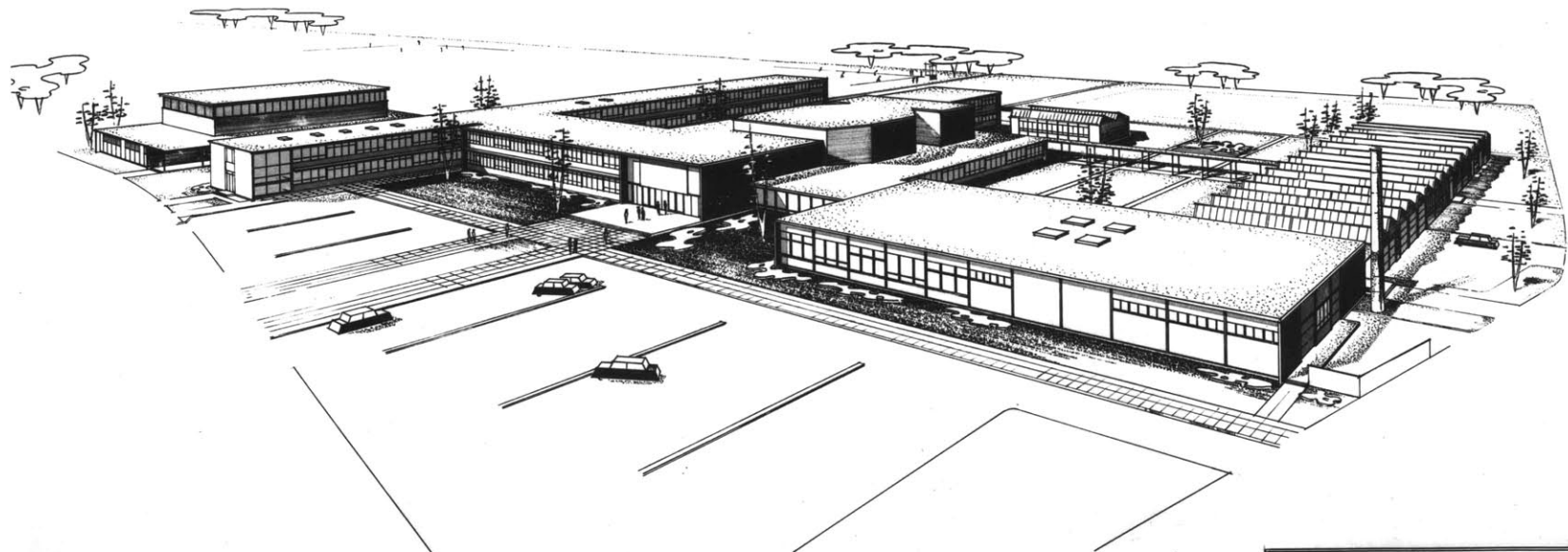
WEST ELEVATION  
SCALE • 1/32" = 1'-0"

EAST ELEVATION

A NEW HIGH SCHOOL  
FOR  
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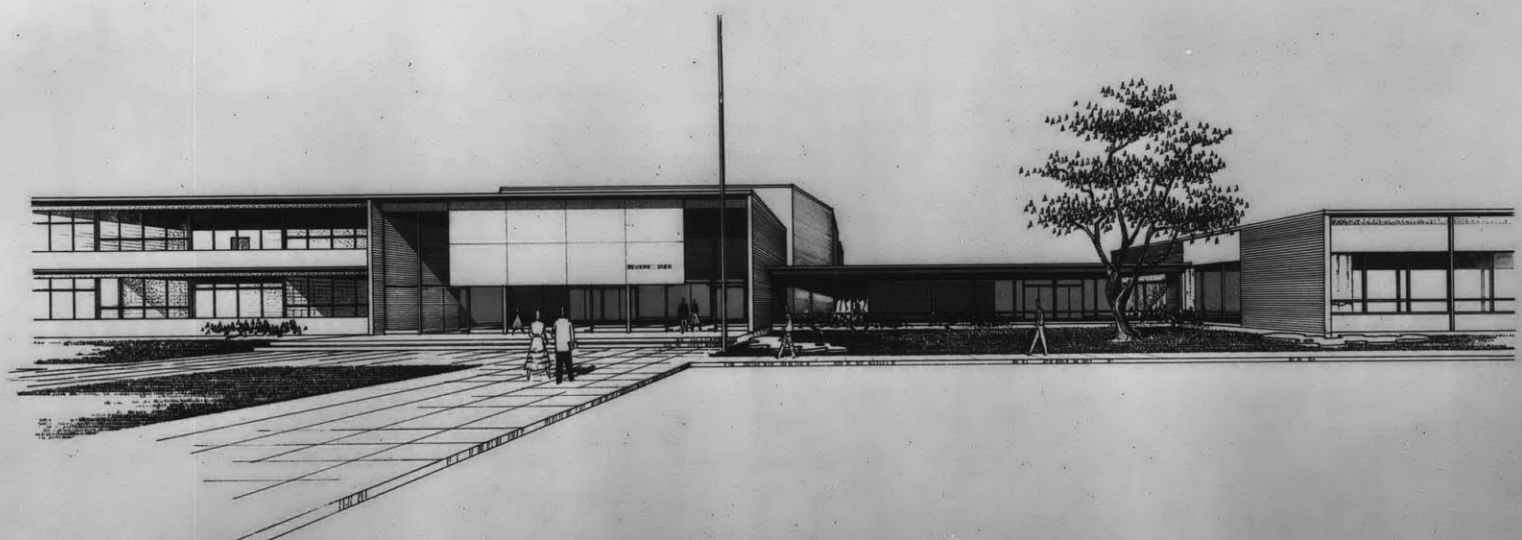
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VIEW FROM THE NORTHWEST

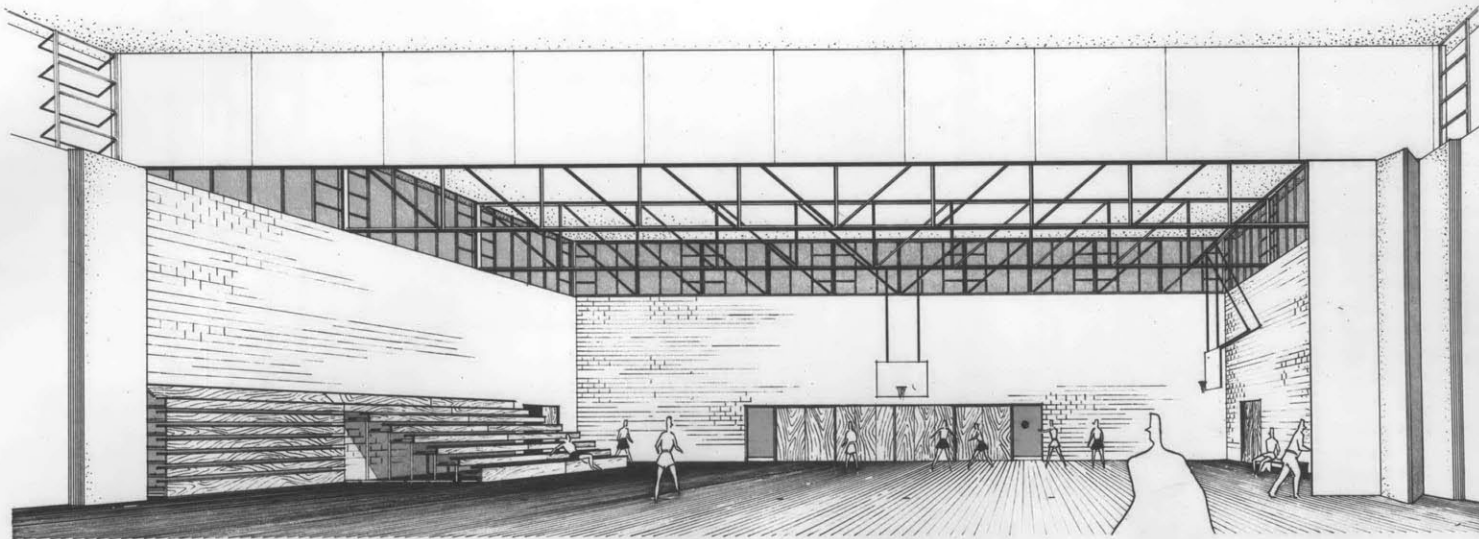
<p>A NEW HIGH SCHOOL FOR REVERE, MASSACHUSETTS</p> <p>THESIS - MASTER OF ARCHITECTURE MASSACHUSETTS INSTITUTE OF TECHNOLOGY SEPT. 3, 1966</p>	<p>7</p>
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VIEW OF MAIN ENTRANCE

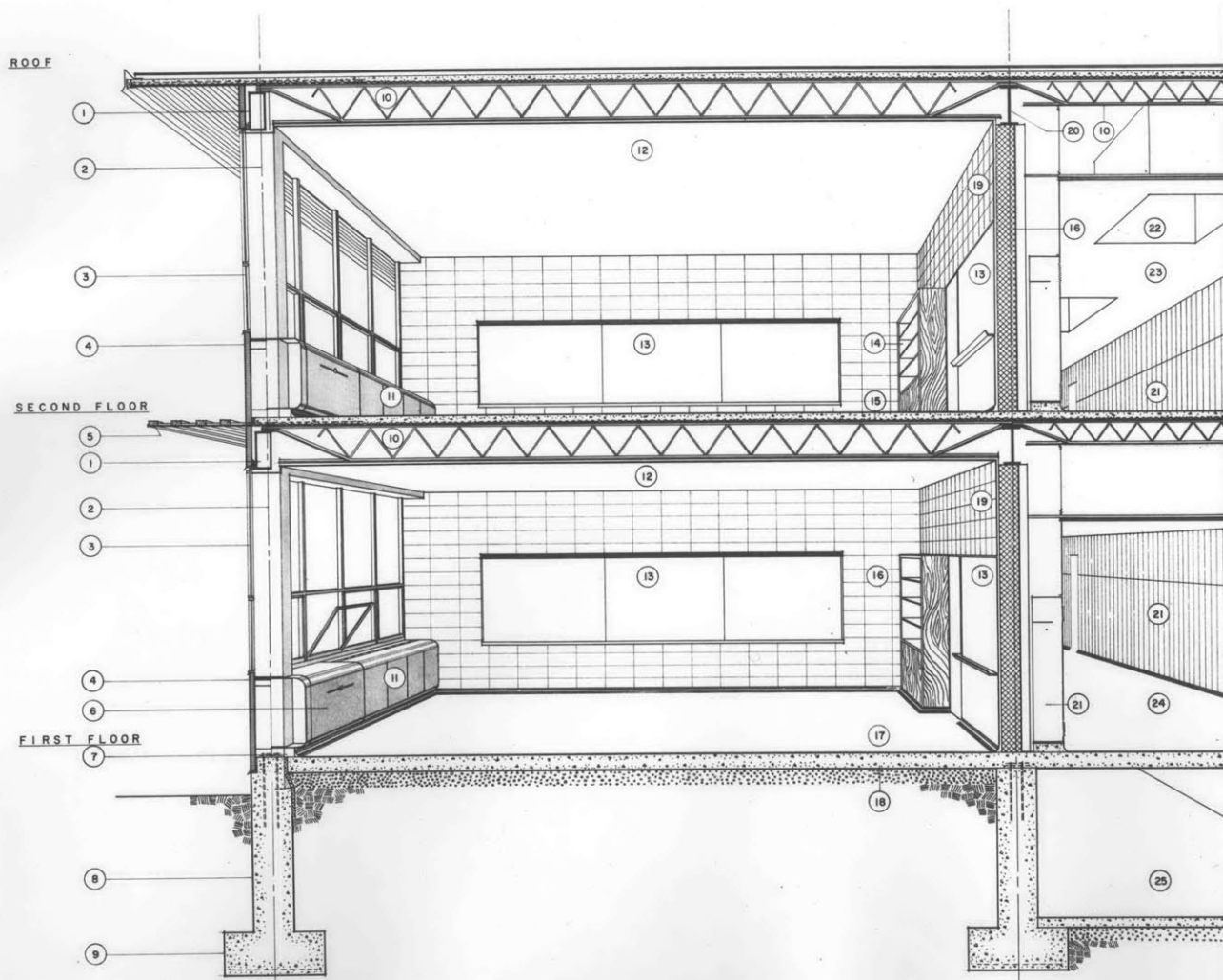
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INTERIOR VIEW OF MAIN GYMNASIUM

<p>A NEW HIGH SCHOOL FOR REVERE, MASSACHUSETTS</p> <p>THESIS - MASTER OF ARCHITECTURE MASSACHUSETTS INSTITUTE OF TECHNOLOGY SEPT. 3, 1924</p>	<p>9</p>
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KEY

- 1 BEAM - STEEL I ( FIREPROOFED)
- 2 COLUMN - WF STEEL ( FIREPROOFED)
- 3 WINDOWS - STEEL SASH - FIXED UPPER, INVENT LOWER
- 4 EXTERIOR WALL - STEEL PANELS - FIBER GLASS INSULATION
- 5 SUNSHIELD - 2"x4" REDWOOD - 10" O.C.
- 6 UNIT VENTILATOR - EQUIPPED WITH 'DRAFT STOP'
- 7 DUCT - FOR 'DRAFT STOP'
- 8 FOUNDATION WALL
- 9 FOOTING
- 10 JOIST - OPEN TRUSS STEEL
- 11 CABINET - METAL STORAGE
- 12 CEILING - 3/4" GYP. PLASTER ON GYP. LATH
- 13 CHALK BOARD - FRONT EQUIPPED WITH SPECIAL OVERHEAD LIGHTING
- 14 CABINET - LIBRARY & SUPPLIES
- 15 SECOND FLOOR & ROOF - 2" CONCRETE SLAB ON CORRUGATED STEEL FORM
- 16 NON-BEARING WALL - 8"x8"x16" CONC. BLOCKS
- 17 FLOOR SURFACE - ASPHALT TILE
- 18 FLOOR SLAB - 6" REINFORCED CONCRETE
- 19 SIDE & REAR WALLS ABOVE DOOR LINE - ACOUSTICAL TILE
- 20 BEAM - STEEL WF
- 21 STEEL LOCKERS - STEEL PANELS ABOVE SKYLIGHT
- 22 SKYLIGHT
- 23 CEILING - PERFORATED METAL ACOUSTICAL PANELS ON RIGID MINERAL FIBER PADS
- 24 FLOOR SURFACE - TERRAZZO
- 25 CRAWL SPACE

SECTION THRU CLASSROOM WING  
SCALE: 1/2" = 1'-0"

A NEW HIGH SCHOOL  
FOR  
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