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**A City Plan for**  
**Worcester**  
**Mass.**

# A City Plan for Worcester, Mass.

SUBMITTED BY THE PLANNING BOARD TO THE MAYOR  
AND CITY COUNCIL AS THEIR ANNUAL  
REPORT FOR THE YEAR ENDING  
NOVEMBER 30, 1924



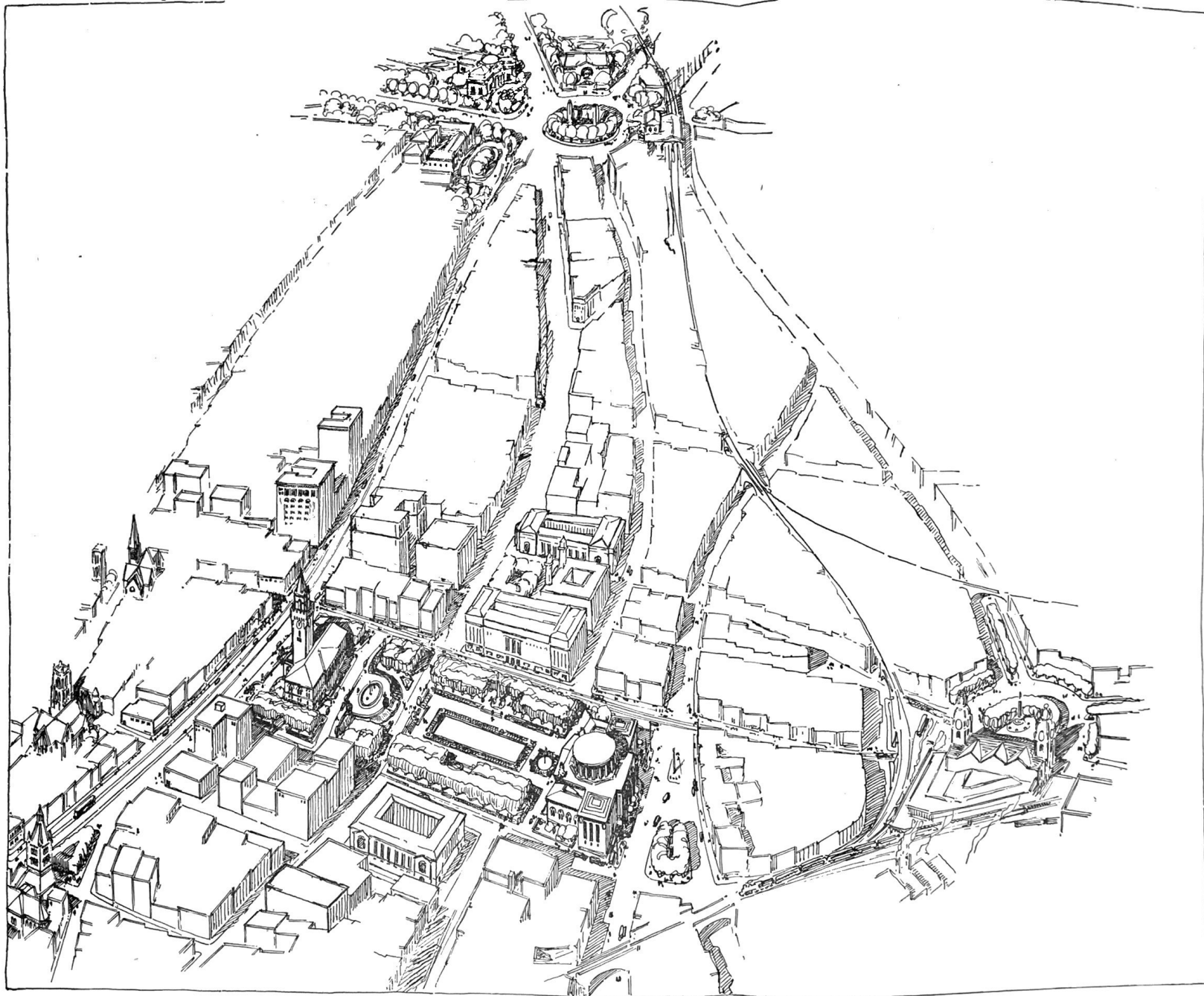
TECHNICAL ADVISORY CORPORATION  
*Consulting Engineers*



THE HEART OF WORCESTER



THE FUTURE CIVIC, ART AND BUSINESS CENTER OF THE CITY.



• CITY PLANNING BOARD TECHNICAL ADVISORY CORPORATION CONSULTING ENGINEERS •

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## Letter of Transmittal

January 11, 1924.

We have the honor to transmit to you as our Annual Report for the two years ending November 30, 1924, this Comprehensive City Plan Report. It embodies all of our recommendations with regard to each and every phase of the complete city plan. It includes all of the data, studies, maps and charts prepared for us by the Technical Advisory Corporation in accordance with our contracts with them of July 22, 1922 and March 21, 1923.

We are presenting in this report a program of work which should extend over a period of at least 50 years. The execution of its recommendations should not materially increase the tax rate for it should not demand the expenditure in any one year of a larger amount than is now being spent currently for public improvements in many cities of about the size of Worcester.

In other words, in this report we have attempted to foresee all of the physical improvements that Worcester is going to need during the next 50 years to take proper care of its growth and then we have arranged these improvements in the order of the relative urgency of their execution.

This program includes the control, in the common interest, of the character and intensity of use of private as well as public property, it includes all acquisition of land, buildings or other structures for any public use as well as all construction of new public buildings or works, and it also includes a study of the administration and financing of these matters.

The program is presented as a unit in which all parts are interdependent, yet it is so divided into chapters that each can be considered by itself with its accompanying maps, charts and data. "Zoning" which is one of these chapters, has already been presented and considered by itself at public hearings, yet it is an integral part of this comprehensive city plan. The enactment of Zoning is only one step in the execution of the complete plan.

The subjects treated have been grouped in chapters to correspond with the functions of the various standing committees of the City Council or of the various city departments or boards, with the expectation that the appropriate chapter would be transmitted to each of these groups to serve as a guide in relating their projects

to the rest of the city plan and in determining the order in which the project should be undertaken.

It is intended that this "Letter of Transmittal" and the chapter of this report entitled "Emergency Program to Meet Deficiencies" should be printed immediately, together with a general map and a large scale downtown map showing only the emergency recommendations needed to catch up on the deficiencies of recent years. However, these emergency recommendations are only a small part of the complete fifty-year program covered by the complete report. It is believed that this "Emergency Program" could well serve the present City Council as a basis for their improvement program.

Every attempt has been made to make these studies thorough, to exhaust the possibilities of all contributory factors and, by a gradual elimination of all solutions that do not work, to come down to the one that will best stand the test of time.

To this end a vast amount of data has been collected and innumerable studies have been made, only the essence of which can be presented in this report and its accompanying maps. The other documents are available at any time on the demand of the Mayor and the City Council or their representatives.

The conduct of these studies has been greatly facilitated by the exceptionally co-operative spirit we have encountered in every city office and the cordial helpfulness of every city official and citizen group with which we or our consultants have come in contact.

It is sincerely hoped that this report will not be tabled, but rather that it will be currently used, as it is intended to be, by the committees or departments interested. It is hoped also that it may be published in book form so that all may use it and so that it may become in fact, the Citizens' City Plan.

Respectfully submitted,

MARK N. SKERRETT, *Chairman,*  
DANIEL J. MARSHALL, *Secretary,*  
LUCIUS W. BRIGGS, *Member,*  
ZEPH LAGASSE, *Member,*  
SAMUEL H. PITCHER, *Member,*  
Planning Board.

## CHAPTER I.

### GENERAL CONDITIONS AFFECTING WORCESTER'S DEVELOPMENT

#### *Worcester's Growth and Trend:*

Worcester is growing more rapidly than most New England cities. The growth is healthy and permanent. Will it continue at the same or at an increasing rate? Is it desirable that it should continue to so increase? Is the character of growth likely to change and if so in what direction? What are the underlying causes of Worcester's growth? Can they be controlled? If they can, in what sense should they be directed? In general what is the normal and what the desirable future of Worcester?

One city grows more than another because it offers greater attractions than another. Worcester attracts because of its excellent opportunities for earning a livelihood, for enjoying its higher educational facilities and for living under pleasant conditions. Its chief means of livelihood are its factories. It offers four colleges. Its homelife is charming. The growth of Worcester depends on all three. If that growth would continue all three must be protected and fostered. Industrial expansion must be encouraged and Worcester must be featured as an educational center and as a city of homes.

In order to thoroughly understand the problem it is well to review briefly the contributory conditions and tendencies and analyze their effect on Worcester's growth.

#### *Population:*

According to the Federal census in 1920, the population of Worcester was 179,754. Comparing this with the population curve shown in the report of the Commission on Relief of Street Congestion, published in 1911, we find that Worcester has been growing rapidly during the last thirty years from a population of 143,986 in 1910 and 116,421 in 1900, and 84,655 in 1890. By a careful study of the laws of the growth of cities, it has been possible to continue this population curve for 25 or 50 years to come so as to make a reasonably safe approximation of what population would have to be taken care of at each decade in the future. Thus in 50

years, under normal conditions, the population should be about 300,000. It is found in practice that zoning, together with other features of the city plan, control the growth and spread of population along rather definite lines, so that a distribution of future population at any period can be made fairly definitely.

The other cities and towns in Worcester County within 15 or 20 miles of Worcester are all small. Most of these towns average nearly as large in area as Worcester itself. All of these outlying communities are independent, and most of them entirely rural. Neither they nor the City of Worcester have much to gain by annexation. On the other hand there is a rapidly growing inter-communication between Worcester and the surrounding communities. This means the development of the thoroughfares, railroads and traction lines as a part of the city plan so they will more effectively link the satellite communities with Worcester.

There are about 140 people per acre in the built-up parts of the city or about 85 people per acre in its total area. Compared with most cities, the average density is quite low, which means on the one hand healthier living conditions and better recreation facilities with less immediate need for parks and playgrounds on outlying sections, but on the other hand it means considerable difficulty and extra expense in supplying the scattered outlying centers with proper circulation, public services and public buildings. That is one purpose of the city plan; to find a way of providing better services for less cost, to serve adequately all parts of the city.

In 1920 the population was, in addition to the native Americans, 18,000 French, mostly Canadian French; 12,000 Jews; 8,000 Lithuanians; 7,000 Italians, and 3,000 or 4,000 each of six other nationalities. They represent a good class of industrial labor, which fact, combined with others which will follow, would tend to prove that the study of the city plan should revolve primarily around the question of providing for an adequate development of industrial facilities.

#### *Health and Welfare:*

The death rate of Worcester in 1922 was 12.30. It was 17 in 1900. Infant mortality is decreasing. Both are low. Tubercu-



losis death rate is below the average. Deaths from tuberculosis are more frequent per family in the more congested parts of the city than they are in the less congested parts. This same fact has been noted in various other cities, all of which proves that open, one or two-family houses are healthier than the more crowded living conditions which must exist in the tenement districts, all of this despite the fact that Worcester is freer from dark rooms than most cities of its size.

To alleviate this a city plan provides for open spaces in the more congested areas, and for the development of a practical thoroughfare, traction and bus system to make it easier to decentralize the growth of the city. It also plans for the development of local centers so that those living in the outlying communities would be more easily induced to forego the attractions of the crowded center of the city.

The seven hospitals and five dispensaries are well distributed, but unfortunately several of them are located on main thoroughfares where they are and will be increasingly troubled by noises, vibration, dust and odors. The location of hospitals can be controlled by zoning so that they will be placed where they will do the least harm to the surrounding residential districts, and, at the same time, where they will be protected against adjoining or neighboring buildings that would harm them. The same is true of other charitable or welfare institutions for defectives, delinquents, neglected children, indigents and the needy and helpless in general.

#### *Living Conditions:*

There are about 33,000 homes in Worcester. The five savings banks are loaning nearly 60 per cent of their assets on mortgages, mostly on homes.

The Massachusetts laws allow them to thus loan 70 per cent. The amount which these banks can loan now on mortgages is relatively small as they are so near the limit allowed them by law.

In 1920 there were four co-operative banks and seven credit unions lending all of their money on mortgages.



These correspond to the Building and Loan Associations in other cities. They have in the aggregate about 10,000 members and have placed loans to the extent of about five and one-half millions. The average rate of interest is about six per cent.

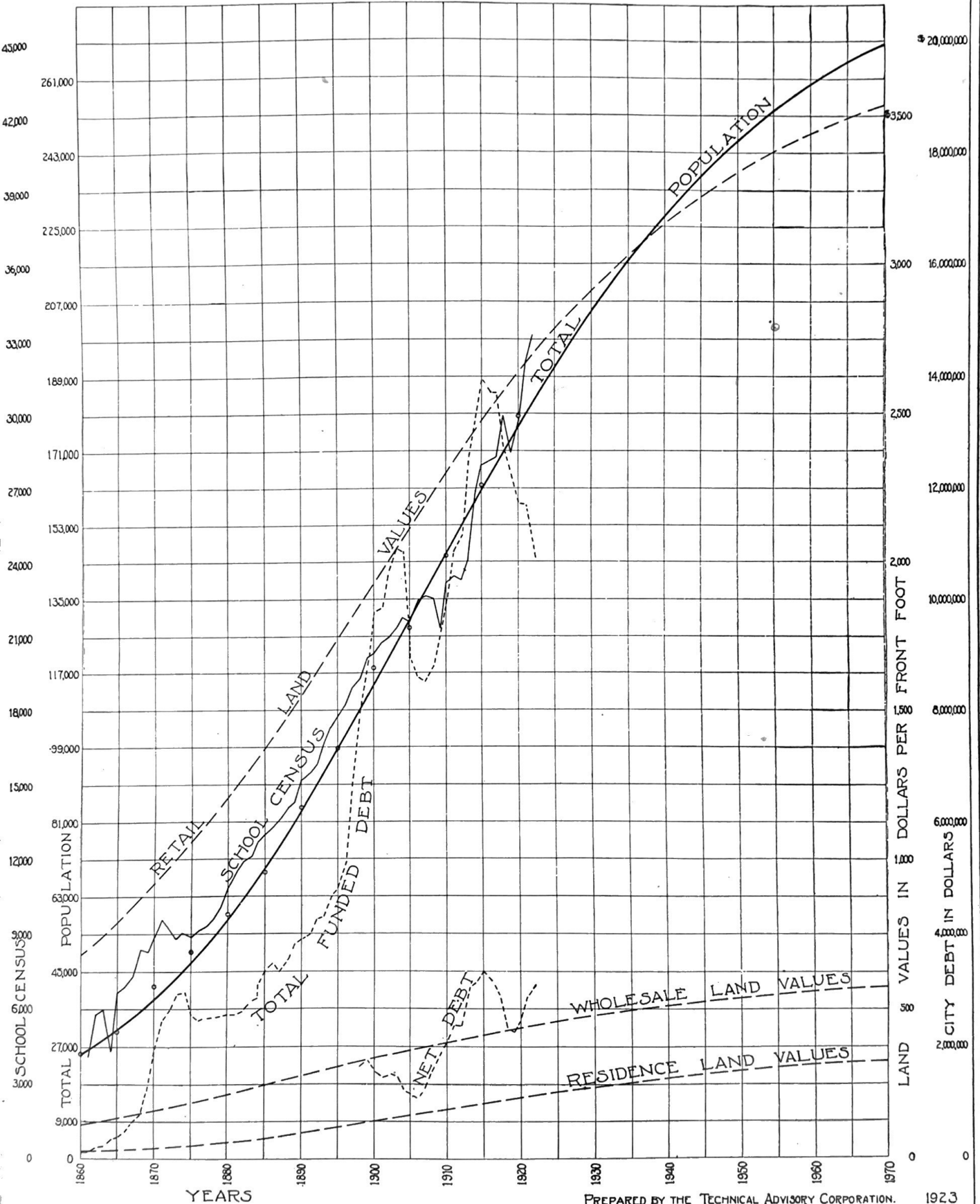
In practice, zoning and city planning protect the investment in real estate so that the mortgagor is more likely to lend freely.

One-half of the population of Worcester live within a short walking distance of the business center of Worcester. They live there on account of cheap rents, approach to factories and places of business, for the saving of carfare, on account of the desire to be in the center of city life, also for political reasons and on account of church affiliations. Fortunately very few of the tenements in this area are over three stories high. However, the prevailing type of home and the one strongly preferred, is the one or two-family house, situated well back from the street line, well clear of both side lot lines and not over two and one-half stories high. From the standpoint of health and of giving children a chance to have a place to play, or for a garden, the one or at most two-family house can well be encouraged. Experience shows that a wise layout of thoroughfares and subdivisions with appropriate zoning encourages the erection of homes rather than tenements.

In 1921 only 28 apartment houses were built as against 55 two-family houses and 476 one-family houses. This is most encouraging for it shows the tendency, as compared with 1915 for example, when 150 tenement houses were built as against 45 two-family houses and 347 one-family houses. This can be carried still further by encouraging the development of local business and amusement centers and by appropriate revision of the building code.

Setback front yards are not as deep in Worcester as in many cities, yet the average depth of lots presents no obstacle to deeper front yards. It is feasible as a part of zoning Ordinance to impose adequate setbacks. This is a wise procedure for health, for safety and for aesthetic reasons, and is also desirable in connection with the layout of a thoroughfare system. Thus eventual street widenings would involve the minimum expropriation of structures on abutting property and many more broad streets could serve as parts of the parkway system.

# WORCESTER - MASS.



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A survey in 1918 showed that there were between 2,000 and 3,000 families in Worcester in excess of the supply of homes. To meet the housing situation fifteen manufacturers organized the Worcester Housing Corporation. On investigation they found that at that time the three-family wooden house, two and one-half stories high was the quickest solution of the housing problem. They put fifty of them under contract at once. This example so encouraged others that the total number of the building permits granted for such buildings in 1919 rose to 741 as against 146 in 1918.

Various manufacturers have found that it is to their interest to house their employees near their outlying factories. The most notable example of such housing is that of the Norton Company.

They set aside a 16-acre tract adjacent to their plant on which in 1915 and 1916 they built 58 one-family houses, averaging six rooms each. They have since built on another tract 100 houses more.

They found that the double houses and those in rows were not popular, that the industrial employee vastly prefers the completely isolated one-family house with plenty of open space around it. The lots are therefore about 60 feet wide and contain about 5,000 square feet. They also created several dead-end streets in the hearts of deep blocks, and, to their surprise, houses on these dead-end streets were the first to sell. The wage earner evidently prefers getting off of the thoroughfare and getting on a quiet side street where there is no traffic, dust or danger to his children.

One of the most encouraging facts is the increase of home ownership in Worcester during the last ten years.

According to the 1910 U. S. census, 24.4 per cent of homes were owned by those who live in them, while in 1920, 27.7 per cent were owned. In 1920 the percentage of home ownership in Springfield was 27.9 per cent; in Boston 18.5 per cent; and the average throughout the United States was 28.2 per cent.

It becomes an important part of the city plan to meet and encourage home owning by proper zoning, the provision of adequate parks, parkways and playgrounds, the development of practical thoroughfares, the control of subdivisions, and the improvement of transit facilities to the more remote sections.

*Recreation and Education:*

The 83 pool and billiard parlors and the 15 bowling alleys are better distributed than any of the other recreation facilities, but fully two-thirds of them are in the central business area. The 25 dance halls, and the 19 theatres and motion picture houses are almost all concentrated in the central area. The 33 clubs, which include six boat clubs and four country clubs, are concentrated in the central area except for the latter, which are used only about one-third of the year. The same is true of the 16 picnic grounds, ten of which are in the public parks; the baseball park on Shrewsbury Street; the four amusement parks in nearby towns and the two in Worcester; the five campgrounds in nearby towns and the one in Worcester at Quinsigamond; the Worcester Agricultural Park; the private playground of the American Steel and Wire Company at Quinsigamond, and the leased one on Park Avenue, all are used only a little over one-third of the year. In other words, during the winter months the only obvious form of recreation available to the public, outside of the central business area, consists of about 20 billiard or pool parlors or bowling alleys located along several of the main highways leading into the city.

Comparing the distribution of these facilities with that of the population, it is found that there are a number of home districts that have no local recreation facilities except for such public parks or playgrounds as are available during the summer months. These later provide no winter facilities except for seven skating areas, one toboggan slide and the use of 24 streets in 1922 for coasting under police protection. As zoning serves to concentrate scattered local business it can also serve to attract commercial recreation to more concentrated local business centers.

There are six boating clubs and several amusement parks and campgrounds that have boating facilities, while the city parks and playgrounds have only three bathing beaches and two bath-houses, mostly in the eastern part of the city. With all of the lakes and ponds in and near Worcester, the development of a city plan should obviously take account of the possible uses of this waterfront.

There is one commercial baseball park on Shrewsbury Street.

Each of the four colleges have baseball parks and there are a number of open baseball diamonds in the various playgrounds and public parks. However, there are still large sections of the population that have to go a long way to a ball park. The facilities for holding match games to which admission is charged are limited to baseball, football, soccer, tennis, basketball and track events. There is every reason why it is most desirable that Worcester should have an athletic field with grandstands and with a sufficient area for parking automobiles. The experience of other communities shows that the public school athletic field, now acquired, is quite the ideal solution of the problem. The location of such a field intimately affects the rest of the city plan.

There are four country clubs in Worcester and one municipal golf course. There are about 20 clubs or associations that have recreational facilities, all of which present problems of transportation and automobile parking which have had to be considered in working out the city plan. Golf courses, too, were studied as to their size and location when zoning residential areas, with the expectation that if the district is built up the golf course will eventually come into the market for residential use.

There are about 27 halls or auditoriums, all except three or four in the business district, each of which presents a growing problem of parking, of traction and of access on foot. All of this has been kept in mind in working on the city plan.

There are over 100 churches, or one to every 1500 to 2000 population. Fortunately most of these are not on principal thoroughfares and thus it is easier to protect them under a zoning Ordinance by properly relating them with the adjacent residential districts. This is also an advantage from the standpoint of parking facilities, as cars will not have to be concentrated on the main thoroughfares, which are so largely used for pleasure travel on Sundays.

Worcester has four colleges: Clark University with 278 students, Worcester Polytechnic Institute with 559, Holy Cross with 733, Worcester Academy with 279 students. There is also the State Normal School. There are over eighty grammar schools and four high schools, and nine portable schools, with a total enroll-



ment in 1920 of about 25,000 children. In addition there are eight special schools and eleven parochial schools. Each of these schools presents a problem of location, access, adjacent playground space, automobile parking and protection of its surroundings that relates intimately to the city plan.

The same is true of the public libraries, of which there are three branches in addition to the main library. There are also nine private libraries and three museums. The creation of concentrated local business centers will facilitate the location of easily accessible new branch libraries.

#### *Industry, Trade and Real Estate:*

Worcester is known as the Heart of the Commonwealth because it is at the center of gravity of the State of Massachusetts and in fact for the whole of New England. While the population of Worcester is 179,754, the buying population that uses Worcester's stores is nearly 450,000.

In 1922 there were 600 principal industries in Worcester, with a capital of \$203,000,000, and whose products are valued at \$255,000,000. These industries had 41,709 employees, of which 8,919 were women. In addition about 25,000 were engaged in retail stores and trade in general.

The chief industries are the metal working industries, especially the making of machinery, machine tools and wire goods. There are also large rolling mills, some textile industries, leather goods and shoes, paper goods, skates, grinding wheels and wearing apparel industries. Worcester is known as the city of diversified industries on account of their great variety and the fact that no one kind predominate at the expense of the others.

As Worcester is so obviously an industrial city, anything that can be done in city planning to enhance its progress in this respect has been deemed worthy of serious study. This has meant a detailed consideration of the location of the railways, yards, terminals, and other facilities, scientific zoning, an economic building code, adequate control of subdivision layouts, and the development of the means of circulation so that the labor market will be easily available. More than this, it means that in making the city plan every possibility has been considered for the content-

ment of the employees so that the availability and steadiness of a satisfactory labor market will be assured. This in turn has entailed the study of the distribution of recreation facilities, schools, churches and other civic activities, so that all local neighborhoods will be effectively served.

A survey of the industries shows that many of them are spread out over the ground, requiring fairly large areas of relatively cheap land with rail sidings. The study of the railroad problem provides for assisting this tendency in a reasonable manner so as to further encourage industrial expansion, but at the same time so as to protect what should logically remain residential districts.

With its five colleges, and its many special schools, Worcester has an unusually high percentage of those professionally employed. This implies social maturity and poise, and helps to make Worcester a more desirable place of residence. The encouragement of educational and art centers, protected through zoning by residential districts, should tend to continue to attract desirable residents to the city.

The food supply problem of Worcester is not as severe as in many large cities because Worcester is surrounded by and even includes a great extent of excellent agricultural land. However, not enough market gardening is done in the immediate vicinity of Worcester to supply the demands, and consequently large quantities of produce are brought in by rail, even during the active local season.

Interviews with six wholesale grocers in Worcester showed that most of their goods come from Boston by motor trucks or from New York and the west by rail, and during the summer months from 10 to 50 per cent of the fruits and vegetables come by rail.

To meet this problem and to secure more advantage from surrounding farm land, investigations could well be made to determine what tracts could best be developed for food supply purposes.

There are many areas close to the central business district where land values are even today surprisingly low. This is particularly true to the west. Good land can be bought today within the city limits for only a little over \$200 per acre. On the other hand over a mile from the City Hall in the Salisbury Street dis-

trict, for example, there is land worth one dollar a square foot. Statistics show that real estate values have progressed proportionately with the increase of population. At present they are artificially stimulated in several sections, while other sections of the town, much more accessible as business and industrial centers, are seriously depressed. Thus, for a proper rounding out of the economic growth of the community and in order that Worcester may realize its further possibilities, a study has been made of the whole problem of real estate values, with a view to bringing up the depressed areas by furnishing them with more effective facilities in the way of transportation, thoroughfares, local centers, recreation and zoning protection.

The spread of population has followed the lines of least resistance topographically with the result that long feelers have spread up the valleys, and detached communities have sprung up in outlying sections only to be absorbed as the city grew out to meet them.

All of the railroads follow the valleys. Most industries and the storage yards find it to their advantage to be located along the railroads, or within a short, level haul of railroad freight yards. Conversely the hills are far better suited for residential use, while the main connecting streets are the logical places for local business.

The valleys that are not served by railroads, and the hilltops with the sharp ledges that often occur near them, lend themselves to effective use for parks, parkways and playgrounds.

#### *Natural Physical Conditions:*

Worcester is at a disadvantage compared with many other cities, such as Springfield, for example, in that a large part of the substructures must be laid through solid rock. It is a part of the city plan to direct the main growth of the city during the next ten or fifteen years, in those directions where the prevailing subsoil is a loose material, or at worst, soft rock.

Soil surveys indicating the relative fertility of the soil in and near Worcester show that the unimproved land within the city limits is capable of earning a fair revenue until such time as it is



brought into the market for building development. Worcester is thus better off than many cities. This makes it practicable to determine building zones even into the most outlying areas, as the farming land can feasibly be held out of the market for building purposes until the time has arrived for its development in a way that could best round out the city plan.

The winter climate of Worcester is severe, with extreme temperatures, quick changes and often a considerable fall of snow. Frost lasts at least four months. Farming and building construction have relatively short periods of activity. Thus, building construction is somewhat higher than in cities farther south. Out-of-door recreation is greatly curtailed during the winter months. These factors influence the development of the city.

Winds are often high, and, as may be seen from the data of the U. S. Weather Bureau, the prevailing winds are from the southwest and west. The colder winds in winter are from the northwest and north. These factors have an important influence in fixing the location of future residential districts, particularly with a view to preventing smoke from factories blowing across such areas. This affects the zoning of industrial districts.

While the rainfall is above the average, the flood problem is not severe, therefore it does not seriously effect the city plan.

#### *General Appearance of the City:*

Worcester is an interesting city to approach from the surrounding districts, spread out as it is in considerable variety up and down the length of its north and south valley and back over the hills and valleys to the east and west. The entrance to the city by railroad, through the modern railroad station, opening on the large plaza, is better than in many cities.

The city has a distinct personality which unfortunately is rapidly disappearing through the unwarranted diffusion of factories and the spread of the unattractive houses. In the creation of the city plan there is a real opportunity to save the city from itself by conserving good residential areas where they will count the most in assuring the appearance of the city and by keeping the factories along the valleys in the neighborhood of the railroads where they belong even in their own interest.

## CHAPTER II.

### BUILDING ZONES

#### *The Need:*

As was shown by the preliminary survey, at least 75 stores and public garages have sprung up in the heart of good dwelling and apartment districts, where they have a harmful effect on surrounding property.

At least 64 industrial plants have invaded home neighborhoods—yet most of these plants are located uneconomically for their own advantage. Each is tending to lower neighboring real estate values, with a corresponding loss to the city in ratables.

At least 23 apartment houses have invaded open, detached home districts. These do not include any three-deckers. Each invasion pays because it steals its light, air, privacy and outlook over the open lawns of neighboring residences.

About 275 buildings are blanketing their neighbors by projecting far in front of them. Each does so at the expense of his neighbor.

Similarly, other buildings are harming neighboring property by projecting far above them or by filling up the rear yards or by creating an unwarranted fire risk.

Private garages and billboards are located anywhere—regardless of their effect on neighboring property.

#### *The Problem:*

Worcester property owners need and want protection against the harmful use of neighboring property. At present, they have little, if any. The wealthy man buys up surrounding property to protect himself or he pays a fancy price for a plot in a highly restricted, private development. Only a limited few can afford to do this—yet every citizen has a right to protection. The harmonious character of districts is rapidly being broken down and the orderly development of property is gradually disappearing.

#### *Previous Solutions:*

Fortunately, the State Zoning Enabling Act, Chapter 40, Sections 25-30 of the General Laws, gives all Massachusetts cities

and towns the right to protect property against the harmful development of neighboring property and to control the use and bulk of buildings in the interest of the community as a whole. This is done under the "Police Power" of the State, as in the case of the building code, Board of Health rules and District Police regulations.

Zoning differs from these in that it extends the police power of the state to the regulation of the use of property; the height and setback of buildings; the width of side yards, rear yards and courts; and regulates them differently in different parts of the city. In other words, zoning controls the use, height and area of buildings and premises in each zone or district of the city so as to conserve all that is best in existing conditions and tendencies and so as to make each portion of the city grow in an orderly, logical manner.

The legislature and the courts say that zoning, to be recognized as a legitimate use of the police power, must be carried out "in such a manner as will best promote the health, safety, convenience and welfare of the inhabitants, will lessen the danger from fire and tend to improve and beautify the city, will harmonize with its natural development and will assist the carrying out of any scheme for municipal improvement put forth by the Municipal Planning Board, all with due regard to the character of the different parts of the city, and providing that the regulations shall be the same for zones, districts and streets having the same character."

This means that if a zoning ordinance and map is going to be accepted as reasonable by the Courts, guess work must be eliminated and it must be based on a thorough knowledge of the facts for every property throughout the city in so far as the facts may affect zoning.

Obviously, this means the collection of a large amount of pertinent data and its thorough analysis with a view to being sure that the best interests of the city in the future, as well as in the present, are being protected. The proper growth of industry, business and multiple dwellings must not be stifled just because there is a popular prejudice against them.

It must also be evident that zoning cannot be studied effectively, apart from the rest of the city plan, for all parts are interdependent. Thoroughfares determine the location of future business, industrial or apartment house districts. The trolley and bus lines, present and proposed, influence the location of business and apartment houses. The type of sub-division layout controls types of residence. Parkways attract apartment houses, especially in the center of the city. Schools and playgrounds should be surrounded by residence districts, and obviously they should be nearer together or larger in apartment house districts than in one-family house zones. In general, unless the zoning plan is studied jointly with the rest of the city plan, it is apt to be just a good guess and a freezing of existing conditions, rather than an inevitable creative force for the logical, orderly development of the future city.

However, it was felt that there was such an urgent need of property protection that it would not be safe to wait until a carefully worked-out, comprehensive zoning ordinance could be prepared for passage and therefore, at the request of the City Council, a "temporary" or "interim" zoning ordinance was prepared as a makeshift to prevent some of the more flagrant abuses until such time as the complete zoning ordinance could be prepared. The interim zoning ordinance was introduced in the City Council in December, 1922 and passed on March 12, 1923, and went into effect on the following day. This ordinance is as follows:

AN ORDINANCE TO AMEND AN ORDINANCE ENTITLED, "AN ORDINANCE ESTABLISHING CERTAIN BUILDING DISTRICTS FOR THE CITY OF WORCESTER."

*Be it ordained by the City Council of the City of Worcester as follows:*

SECTION 1. Section 1 of an ordinance establishing certain building districts for the City of Worcester be and is hereby amended by striking out the whole of said section and substituting therefor the following:

The City of Worcester is hereby divided into zones or districts to be known respectively as Residential Districts, Non-Residential Districts and Commercial Districts as follows:

Commercial Districts shall comprise all premises which at the time this ordinance goes into effect are used for any business or industry other than farming, truck gardening, the growing of trees, shrubs, vines or

plants, the raising of animals, professional or other customary home occupations conducted by a family within its residence and the conduct of a boarding or licensed lodging house not primarily for transient guests, and all premises located and fronting upon any section of any street which lies between two successive intersecting streets and in which section at least twenty per cent of the lot frontage on the same side of the street of any section of any street which lies between two successive intersecting streets and also of all lands fronting upon the other side of the street and directly opposite said lot frontages is at said time devoted to business or industry or is manifestly intended to be so used.

Where a corner lot abuts on a street in a commercial district and on a street in either of the other districts such lot shall be considered as wholly within the commercial district.

Non-residential Districts shall comprise all areas not included in Commercial Districts and where not less than twenty per cent of the lot frontage on the same side of the street of any section of any street which lies between two successive intersecting streets and also of all lands fronting upon the other side of the street and directly opposite said lot frontages is at said time used for buildings each housing three or more families or housekeeping units with independent kitchens, such percentage to include any business or industry existing within said area.

Residential Districts shall comprise all areas not included in non-residential or Commercial Districts.

The words "intersecting streets" as used in this ordinance shall mean any street or way which joins another at an angle whether or not it crosses the other.

SECTION 2. Section 4 of an ordinance establishing certain building districts for the City of Worcester be and is hereby amended by striking out the whole of said section and substituting therefor the following:

A permit may be issued for the erection in a Residential District of a building for the purposes of any business or industry, or for the erection of a house for three families or more or for the erection in a Non-Residential District of a building for the purposes of any business or industry or for the alteration or conversion of a building in such districts for or to such purposes provided that there be filed with the application for such permit written consents thereto signed and acknowledged by the owners or legal representatives of the owners of not less than a majority by frontage of all lands used for other than the above prohibited purposes, which front on the same side of the street and which lie between the two intersecting streets nearest to and on either side of the land in question or within four hundred feet on either side thereof in case the nearest intersecting street is more than that distance therefrom. In the case of a corner plot consents shall be required from one street frontage only, such

street frontage to be the same as that on which the principal entrance of the proposed building will face.

SECTION 3. This ordinance shall take effect upon its passage.  
In Common Council, March 12, 1923.

Passed to be ordained. WILLIAM A. BENNETT, *President*.  
In Board of Aldermen, March 12, 1923.

Passed to be ordained. EDWARD E. STONE, *President*.  
Approved, March 13, 1923. PETER F. SULLIVAN, *Mayor*.

A COPY.

ATTEST:

*City Clerk.*

This interim zoning ordinance, obviously, cannot take the place of the comprehensive building zone ordinance because: its range is very limited; it is obviously difficult of administration, and is bound to become increasingly so; and at best, it is bound to be discriminatory and to hold back the proper development of the city. In other words, it is based, and necessarily so, on a crystallizing of existing conditions and does not, and cannot, help the growth of the city along proper lines.

#### *The Preparation of the Building Zone Ordinance and Maps:*

In the preparation of the building zone ordinance and maps, the following items are typical of the character and thoroughness of the study involved. It is difficult to differentiate the zoning study from that on the rest of the city plan, but the following studies were probably used more directly in zoning than in any other way.

1. Every possible fact with regard to the use or development of every existing property in Worcester that might in any way affect the drafting of a zoning ordinance or map was noted in the field or from other available sources and indicated on the various maps, especially on the "Property Data Map," at the scale of 400 feet to the inch. This data included the use of each part of each building, its height, setback building line, yard and court dimensions, the lot lines, all private restrictions, and all topographical or other physical conditions that might affect zoning. The study also included a detailed analysis of recent building tendencies as shown by an examination of several thousand recent building permits.

2. A preliminary draft was made of a building zone ordinance and map especially designed to meet Worcester conditions and tendencies and based in detail on the data gathered.



# USE OF PROPERTY

Present

Proposed

Undeveloped

18,134 acres 73.8%

Water

925 " 3.8 "

Parks

1,032 " 4.2 "

Cemeteries

375 " 1.5 "

Institutions

869 " 3.5 "

Other Dwellings

1,409 " 5.7 "

Tenements

690 " 2.8 "

Business

348 " 1.4 "

Industries

800 " 3.3 "

Total 24,582 acres 100%

Residence "A"

541 acres 2.20%

Residence "B"

14,860 " 60.45 "

Parks

2,974 " 12.10 "

Residence "C"

2,323 " 9.45 "

Business "A & B"

565 " 2.30 "

Industry "A, B, & C"

3,319 " 13.50 "

Total 24,900 acres 100%

3. The future growth of the city was calculated from many angles with due regard to its character, intensity, rate and direction of growth. Each zone was particularly studied with a view to taking care, effectively, of all reasonable growth demands for 50 or more years to come.

4. These studies were carefully checked in the field and by numerous conferences, to be sure that no contributory factor had been overlooked or misjudged—this resulting in many amendments to the preliminary draft.

5. At every stage, the zoning map was compared in general and in detail with the studies going on simultaneously on the other features of the city plan, so as to avoid “surprises” and the necessity of undoing the zoning plan later to conform with the rest of the city plan as and when carried out.

#### *The Recommended Solution:*

The comprehensive zoning ordinance and map presented to the City Council by the Planning Board was printed in brochure form by the City Council in October, 1923.

The City Council is now earnestly requesting all property owners and others interested to submit criticisms and suggestions to the Ordinance Committee, so that the latter body may amend the zoning ordinance and map in any way that may be desirable in the community interest before the final submission of the ordinance for passage.

It has been checked with existing conditions, and the provision which it makes for the future growth of each type of use is shown graphically in an accompanying table. From this table, it is readily seen that allowance has been made for 3.37 times as many apartments and tenements as exist today and for nearly four times as much business and industry as exist today. Even after counting vacant land now owned by existing factories, and land which is topographically or otherwise unsuitable for industrial growth, the available industrial area (according to the zoning map) is two and one-half to three times that which is so used today. With regard to the expansion of housing in general, the table shows that over three-fourths of the area of the city is as yet undeveloped.

A check was made of the relation of heights of buildings (in



the downtown district) to the widths of streets, and it was found that, owing to the narrowness of the streets in the downtown district, if the streets were used to capacity by automobiles, street cars and pedestrians, from five to six o'clock at night by workers coming out of adjacent offices, stores and factory lofts, bordering these streets, that the streets would reach saturation if the whole downtown area were built up solidly to a height of over three stories. This fact, together with the difficulty of fighting fire in tall buildings and particularly the fact that tall buildings seriously decrease the available sunlight, light and air in the lower floors of neighboring buildings—with a corresponding decrease in lower floor rentals—has indicated the necessity in Worcester of a different height regulation on narrower streets than that provided by the uniform 125-foot limit imposed by the Massachusetts state law.

The solution proposed is one of stepping back from the street front wall, when that wall reaches a height above the ground of one and one-half times its distance from the opposite side of the street. The building can go higher, provided that the upper stories are terraced back from the street front wall line. This principle, which has been in active use for eight years in other cities, not only brings far more sunlight and air down into the street, but proves to be entirely practical from a construction and renting standpoint.

As the State Legislature in 1924 sanctioned "Home Rule" in the control of billboards, partial control over them is provided for in the building Zone Ordinance by their elimination in residence districts.

The State Zoning Enabling Act provides a method whereby the zoning ordinance or map can be amended at any time. Therefore, whenever any of its provisions appear too unreasonable, they can be modified; or if conditions change, the zoning ordinance can be modified to correspond.

Every attempt has been made to harmonize the proposed zoning ordinance with other existing rules and regulations of the State Board of Health, the Worcester Board of Health and the Building Ordinance.

*Building Ordinance Amendments:*

In order to correlate the Building Ordinance with the zoning ordinance it is recommended that the City Council make certain amendments:

On Page 66 of said Ordinance, under caption "Court," omit the following words: "An Inner Court is one not extending to a street, alley, right of way, open passageway or yard on the same lot. An Outer Court is a court extending to a street, alley, passageway or yard on the same lot."

On Page 78, end of Part I (just preceding Part II), omit reference "Zoning Districts, Definition of, Page 219."

On Page 87, Part IV, omit Section 2.

On Page 203, Part XIX, Section 1, at end of third line from bottom, omit figures "2, 3, 6, 7." Omit Section 2 following. Omit following page (204) and to Section 11 on Page 205.

On Page 208, Section 28, seventh line, omit words "hereinbefore," and following "specified" (in eighth line) insert the words "in the Building Zone Ordinance."

On Page 213, omit Section 3.

On Page 219, and complete to end, omit all matter under heading, "AN ORDINANCE ESTABLISHING CERTAIN BUILDING DISTRICTS FOR THE CITY OF WORCESTER."

*In General:*

It is strongly recommended that the zoning ordinance and map, with accompanying amendments to the building ordinance, should be adopted at an early date. There is no one thing that the city can do that will be more beneficial to the city in preserving its orderly and effective development than the passage of a suitable building zone ordinance, for it will confine nuisances to the part of the city where they will do the least harm, it will preserve farm belts where they will be most useful and it will conserve and encourage the development of unimproved land for the use that will best serve the interest of the whole community.

In determining the limits of the various proposed districts on the building zone map, attention was given first to the indus-

trial districts because it was realized that if Worcester was going to grow, it would have to grow by industrial expansion; and unless zoning encouraged that expansion, it would not be of benefit to the city. Therefore, along all railways where there would seem to be a possibility of locating sidings and in all relatively level areas near existing or possible future freight stations or yards, districts were first set aside for industrial growth—even though some of these districts are now tending to residential occupation. Calling a given area an industrial district does not prevent the erection of homes.

All existing business centers, wherever appropriately placed, were given a chance to expand by extending the business districts in the direction in which such centers should expand in the interest of the surrounding residential neighborhood. No resident should be required to walk more than a quarter or half a mile from his home to a local store center. To that end, even in the outlying districts where there are no buildings today, local business districts were indicated on the building zone map to take care of future growth. These were located on important thoroughfares, present or proposed, preferably at the junction of two or more such thoroughfares; and other things being equal, on transit lines. In every case, the size of the business district was calculated to provide amply for all probable demand for at least 50 years to come, and enough extra space was provided in each case so that no individuals could monopolize possible sites.

Ample expansion was provided for apartment house and tenement house districts near the center of the city, within easy walking distance of centers of work and along transit lines. Other things being equal, districts where land values that were getting too high for home building, or that were in a state of transition from an older type of residence to some more intensive use, were set aside as tenement or apartment districts.

The more restricted one and two-family house districts were located only in the Bancroft Heights District, and to the north and west of it. This region is almost exclusively devoted to this type of residence at the present time.

The sizes of yards and courts, as provided in the Ordinance, are based on good modern practice in Worcester and similar cities.

A number of comparisons made with conditions in existing buildings show that these open space requirements should rarely work any hardship.

The setback building lines apply to all residence districts and to the smaller, local business districts. Wherever possible, they conserve existing setback building lines and try to make new ones correspond.

The height regulations are also based on existing conditions, and there are almost no existing buildings that exceed the proposed limits.

## CHAPTER III.

### FIRE DISTRICTS

#### *Fire Districts:*

A map indicating the distribution of fire losses shows that there are areas, especially to the southwest of the center of the city, that might be included within the Fire District, while there were certain other areas, especially to the northwest, within the existing fire districts, that have such a low risk and so few fires that they might be excluded from the fire limits.

In a report made in March, 1923, the Committee on Fire Prevention and Engineering Standards of the National Board of Fire Underwriters stated that they found that the fire limits of Worcester were sufficiently extensive. They also stated that general structural conditions were also somewhat improved since 1912, but still weak.

On the other hand, the encouragement given by the proposed building zone ordinance for business and industry to expand in certain definite directions, suggests the desirability of slightly extending the limits of the present fire districts along certain streets.

#### *The Recommended Extensions to the Fire Districts:*

The following are the proposed extensions to the fire districts. In each case, the proposed districts would extend to 150 feet in depth on each of the streets mentioned.

1. Along Lincoln Street from Garden and Catharine to Gilman Street and Duxbury Road.
2. Along Belmont Street from Clayton and Converse Streets to Merrifield and Rodney Streets.
3. Along Grafton Street from its junction with Providence Street to Orient Street and Grafton Place.
4. Along Vernon Street from Ward Street and Jefferson Street to Suffield Street and its junction with Winthrop Street.
5. Along Main Street from Webster Square to Gardner Square.

6. Along Chandler Street from Newbury Street to Queen Street.

7. Along Pleasant Street from Newbury Street to Park Avenue.

It is recommended that the same provisions as to construction apply within these proposed fire districts as now apply within the existing fire districts and according to the Building Ordinance as amended to date.

It is strongly recommended that these limits should be changed concurrently with the enactment of the Building Zone Ordinance.



## CHAPTER IV.

### SUB-DIVISION PLATS

#### *The Problem:*

As was shown in the Preliminary Survey, 141 sub-division plats were recorded at the County Registry of Deeds from January, 1912 to January, 1922. Many more were laid down without being recorded. The map made for the preliminary survey shows that in many instances the streets of one sub-division have been purposely laid down so as not to connect with those in other surrounding developments. This presents a complicated series of problems that are likely to lead eventually to enforced rectification of street intersections many of which are as bad as those at Harrington Corner.

In these sub-division plats, the average lot dimensions are 50 x 100 to 125 feet. The widths vary from 25 to 200 feet, nearly 20 per cent having lots averaging 25 to 30 feet wide. Fifty per cent have almost all of their lots 50 feet wide. The depths vary from 60 feet to 225 feet or more. Over 20 per cent of the sub-divisions have lots less than 100 feet deep, while in 50 per cent of the divisions, the lots average 100 feet deep. Experience throughout the country shows that present day demands for good residence plottage vary from 60 x 125 to 75 x 150 feet.

Many Worcester sub-divisions have blocks 1,200, 1,500 and even 2,000 feet in length, while one sub-division in Worcester can be entered only up a 22 per cent grade, while grades from 10 to 20 per cent are not unusual. Over one-half of the existing streets throughout Worcester, including almost all of the sub-divisions, are private streets in which the sub-divider and all of the abutting property owners retain the fee. This failure to dedicate makes it difficult for the city to control the development of the streets in the interest of the property owners.

Another map indicates that there are in Worcester about 650 dead-end streets over 16 feet wide. It also shows that there are literally hundreds of streets in Worcester less than 50 feet wide, and therefore impossible of any future use as thoroughfares.

The "jog" map shows how few streets carry through on the same alignment across an intersecting thoroughfare.

All of these conditions mean waste and the eventual expenditure on the part of the city of large sums of money to rectify their lack of foresight in controlling the layout of sub-divisions as first laid down.

Relatively few sub-division plans establish setback building lines, and among those that are laid down, only a few conform to the development of surrounding properties. This leads to a very ragged appearance of the streets and to the extensive establishment of building lines by the city to make up for this initial lack.

In general, the laying out of the future City of Worcester, which is being carried on almost exclusively by the sub-dividers, is barely controlled by the city.

According to Section 51 of Charter Acts of 1893, Chapter 444, "No street or way shall hereafter be opened over any private land by owners, lessees or occupants thereof and attached to or removed by the public until the width, location and grade of the same shall have been approved by the Mayor and the Board of Aldermen." In practice, the law in this form has proved so difficult of practical enforcement that of late years, nearly all of the plats presented for record have been accepted without question by the Board of Aldermen. The fee to almost all of these streets has remained with the owners so that the city has had no real control over them and yet, on the other hand, the city has been forced by public pressure to provide sewers, water and other facilities for property owners on these streets.

#### *How to Solve the Problem:*

Most fortunately, the State Legislature has recently provided a method of solving this problem and of controlling sub-division plats through a Board of Survey whose creation, powers and duties are described in Sections 73 to 81 inclusive, of Chapter 41 of the General Laws. This gives such a Board, acting in collaboration with a Planning Board, and the Board of Public Works, (if such exists), and directly in conjunction with the City Council, the power to refuse any plat or to require the modification of any plat



layout which is not to the best interests of the city. The city is authorized to refuse water, sewer and other utilities until the plat shall be made to conform to the Board's requirements. At the request of the Planning Board, a general thoroughfare map must be made to which all sub-division layouts would have to conform. The Board of Survey has the further right to establish setback building lines which must also be conformed to. In view of the enormous importance of this control and the great sums that wise direction of this sort can eventually save the city, it is of the greatest importance that such a Board of Survey should be appointed immediately to prevent private developers from jeopardizing the eventual City Plan and wasting the taxpayers' money.

The operation of a Board of Survey will bring out strikingly the need for a comprehensive plan to work to, for the Board will find it increasingly hard to avoid the charge of being discriminatory in passing upon each case as presented unless they can show a general plan by means of which they can preserve a consistent policy. This means that, as a part of the city plan, a thoroughfare system, a traction and transportation system, the location of local business, administration and educational centers, the location of parks, parkways and playgrounds and a zoning policy should be worked out as soon as possible.

Furthermore, individual owners of private property each have their own ideas with regard to the length and depth of blocks, the width and depth of lots, the widths of streets and roadways and setback building lines. Without a City Plan, it is impossible to lay down any practicable rules for these matters, but in connection with the development of the thoroughfare system an intimate study of topography, land values, housing requirements and of zoning will make it possible to determine for any particular location almost scientifically which type of plan layout would be most practical and effective, both now and in the future.

These matters can be worked out by conference and co-operation between the City Planning Board or Board of Survey and the real estate sub-dividers. Their interests are mutual. What is best for the city is best for the sub-divider. It would, in

general, be difficult to dispose of lots in a sub-division that is not acceptable to the city authorities. Almost universally, realtors understand the benefits which may be derived from the best type of city planning.

Private restrictions are of all sorts and kinds, some better and some worse. Without a City Plan and a consistent policy of growth, it is impossible for a City Planning Board to pass wisely upon the advantages or disadvantages of the individual private restrictions as presented.

All of these considerations lead to the desirability of establishing a set of standards which can be published in the form of rules and regulations by the Board of Survey; thus it would be possible for the sub-divider from the inception of his study to base the use and layout of his property on these standards.

At the same time that the Planning Board and the Board of Survey are controlling the layout of sub-divisions, they should likewise control the extension and location of cemeteries and large institutional, club or public utilities tracts. From the standpoint of a City Plan, it is important that no such tracts should be laid out or extended where they will choke or interfere with the logical growth of the community.

#### *The Recommended Creation of a Board of Survey:*

In view of these facts, it is of vital importance that, according to the State Act, the Mayor should appoint, not later than the month of January, 1925, a Board of Survey consisting, preferably, of three members especially competent by training and experience to pass upon the actual layout of each sub-division plat presented for record. It is desirable that one member of this Board should be a realtor and another a civil engineer. This Board should be invested by the City Council with the full powers ascribed to it by the Enabling Act.

This Board should insist on the adoption, by the City Council, of a thoroughfare and parkway plan which can serve as a framework for the future development of the whole city. The Board of Survey should insist that each sub-division plat as filed should conform with this thoroughfare and parkway plan. The Board of Survey should also see that each plat, as filed, conforms to the

building zone and to the park, playground and other public properties plans.

*Rules and Regulations Recommended for Adoption by the Board of Survey:*

For the guidance of sub-dividers, the Board of Survey should from the beginning adopt rules and regulations concerning the platting of sub-divisions. The following rules are based on the best experience throughout the country in the control of plats, with a special adaptation to Worcester conditions.

RULES AND REGULATIONS GOVERNING THE PLATTING OF SUB-DIVISIONS

*Applications:*

Applications for approval of plats must be made on forms to be obtained at the office of the Clerk of the Board.

*Preliminary Plans:*

To dedicate streets, alleys or other lands for public use and to sub-divide land into building lots, the owner shall submit three copies of a preliminary or final plan to the Board of Survey for approval prior to the submission of the final plan.

The scale of the preliminary plan is optional, but shall be at least 100 feet to the inch.

The preliminary plan shall show:

- (a) Direction of north, scale and date.
- (b) Contour intervals of not less than five feet and city bench mark used.
- (c) Location of boundary lines of property and existing principal buildings and other prominent features within the property, including all water courses; also bearings and distance to the nearest established street monument.
- (d) Location of all principal buildings and other principal physical features on abutting property that exist within 50 feet of the boundary line and the ownership of all such abutting property.
- (e) Location of existing immediately adjoining streets in surrounding territory. Where no streets exist within a reasonable radius, there shall be prepared a vicinity plat, a sample of which may be procured from the Board of Survey.
- (f) Proposed location of streets and names and widths thereof and the approximate lot layout with proposed lot widths and depths indicated.

- (g) A notation stating the name of the sub-division, the acreage of the entire plat, the name and address of the allotter or agent, and of the engineer and surveyor.
- (h) Proposed connection to main sewer and disposal of surface water.
- (i) All private setback building lines and boundaries of private restrictions as to use.  
The approval of the preliminary plan does not constitute an acceptance of the sub-division.  
The allotter may waive the submission of the preliminary plan if he conforms with the requirements of the final plans.

*Final Plan:*

Final plats shall be submitted in triplicate, one tracing (cloth) and two blue prints therefrom.  
Plan shall be drawn with waterproof drawing ink.  
Grade lines and figures showing elevations of proposed grades shall be shown in red ink.  
Unless otherwise permitted, the final plan shall be at a scale not larger than 100 feet to the inch, the horizontal scale of all profiles 50 feet to the inch, and the vertical scale 20 feet to the inch.

The final plan shall show:

Every item demanded above in the preliminary plan and also the following:

- (a) All parcels of land intended to be dedicated for the public use.
- (b) Strips of land to be used for easements for public services.
- (c) The length of every line expressed in feet and decimal parts thereof.
- (d) The direction of all street lines and boundary lines shall be referenced to a dedicated street line or a city base line, and indicated by bearings. (The relative error of closure must not exceed one in five thousand):
- (e) The degree and length of all lot line curves with chord bearings and radius for both sides and curvilinear streets, tangent and radii of curvature of corners.
- (f) The names of proposed streets as approved by the Clerk of the Board.
- (g) The index number of each lot.
- (h) The location and description of city or other official bench mark or line used.
- (i) A profile of each street.

*General Requirements:*

- (a) Permanent monuments shall be of such type, and set and established at such points as shall be decided upon by the Clerk of the Board of Survey.

- (b) The location of monuments shall be indicated on the final plat.
- (c) Fire plugs shall be established at intersecting streets and in any case at intervals not greater than 600 feet apart.
- (d) No block shall exceed 800 feet in length between center lines of intersecting streets, and no dead-end street shall exceed 400 feet in length, except where the Board determines that conditions make intersecting streets difficult or unnecessary.
- (e) No building shall set back less than 30 feet from the center line of each abutting street, except where the Board of Survey finds that the topography prohibits.
- (f) One copy of all private restrictions embodied in each deed of sale shall be submitted at the same time as the final plat.
- (g) Certificate or other evidence satisfactory to the Board showing clear title to the property to be allotted must be furnished by the applicant before the approval of the Board will be indorsed on the plans.

*Street Platting Rules:*

The following table gives the general rules to be observed in the laying out and grading of streets:

TABULATION OF STREET PLATTING RULES

	Main Thoroughfares	Secondary Thoroughfares	Minor Streets	Local Service Streets
Grades (max.)	7%	7%	14%	14%
Vertical Curve (min.)	Parabolic Curve 10'/degrees difference		5'/degrees difference	
Curvature Radius (min.)	300'	200'	100'	50'
Street Width (min.)	86'	66'	50'	40'
Roadway Width (min.)	56'	36'	26'	18'
Pavement Type (min.)	Granite Block Wood Block Concrete	Asphalt Brick	Macadam Tar-Asphalt Topeka Mix	Macadam water bound

*Grade Changes:*

The profile of grades only of minor streets or local service streets, except at their intersection with streets having an accepted grade, may be changed by the allotter on the ground, within 4 per cent, without the approval of the Board of Survey, and without the submission of new profiles and cross-sections, but solely on the approval of the Clerk of the Board on the ground after inspection, provided that as soon as the construction is completed, the allotter shall submit in triplicate, as required for final plans, drawings showing all modifications from the final plan.

*Private, Undedicated Streets:*

All streets or parts of streets shown as main or secondary thoroughfares or parkways on the "Thoroughfare and Parkway Map" approved by the City Planning Board shall be dedicated to public use and the fee in the street shall pertain to the city.

Minor or local service streets may be private and undedicated.

Private and undedicated streets shall conform to all of these rules for dedicated streets.

*Procedure:*

Upon the receipt of plans with a petition for this approval accompanied by releases from all abutting owners relieving the City of Worcester from all damages which may be caused by changes in line or grade, the Board will give a public hearing thereon after giving notice of the same by publication of the order of the hearing once in each of two successive weeks in a newspaper published in the City of Worcester—the last publication to be at least two days before said day of hearing. Said advertisement will be inserted by the Board of Survey and paid for by the applicant.

Adopted by the Board of Survey.

In general, sub-divisions should be provided with lots ranging in size in various parts of the city from 75 x 150 down to a rare minimum of perhaps 25 x 80 feet. However, as there is little in Worcester conditions to warrant creating lots in newer regions less than 50 feet wide, that width is recommended as a minimum—for with a lesser width, it is almost impossible to secure adequate sunlight, privacy and fire protection between the houses.



Also, in general, lots should be 100 to 125 feet in depth, making blocks 200 to 250 feet deep. Shallower lots give inadequate rear yards especially if the building sets back reasonably. Deeper lots encourage the use of rear yards for public garages or rear dwellings which soon degenerate into slums.

Blocks longer than 800 feet could be allowed under certain circumstances in Worcester, owing to its peculiar topography, but where allowed, there should be at least a pathway or footway laid out across the middle of it.

Special hillside sub-divisions should be given careful study, as Worcester presents many unusual problems in this regard. The most interesting hillside layout in Worcester, and in many ways the most practical, is the one laid down for the first Indian Hill development for the Norton Company employees. There the principal street winds gradually up the hillside, and the minor streets intersect it at easy grades.

In general, the streets should be no wider, and in particular, the roadways should be no wider than are actually needed to adequately handle present and future local traffic. Thus, according to the rules and regulations recommended above, strictly local minor streets do not need to be more than 50 feet wide with roadways 26 feet wide, while a street grade of 12 to 14 per cent while steep, is not impracticable.

This does not mean that the fronts of houses shall be only 50 feet apart across streets. Nothing could be more harmful to good residential development than streets of this sort, but it does mean that the actual street to be dedicated to the city need be only 50 feet wide, depending upon its use, while the actual clear space between opposite fronts of houses should be not less than 80 or preferably 100 feet. In other words, a setback building line at least 15 to 25 feet deep should be established on each side of each local street. These should be insisted upon in the examination of all sub-division plats.

## CHAPTER V.

### TRAFFIC REGULATION

#### *The Traffic Problem:*

Nearly half of the streets in Worcester, public and private, are less than 50 feet wide. Very few cities in the United States are today accepting any streets less than 50 feet wide, and many cities are accepting no street less than 60 feet wide. Current practice proves that four traffic lanes, that is, two in each direction in a roadway, cannot circulate freely in less than 36 feet of roadway width, and if there are street car tracks in the street, this should be increased to 38 or 40 feet. On a 50-foot street this leaves only 5 to 8 feet of width for each sidewalk, and allowing 2 feet for poles, hydrants, letter boxes, building projections and other street fittings, we have a net sidewalk width of from 3 to 6 feet. Allowing 2 feet of width per pedestrian unit, we can thus accommodate only one or one and one-half persons in each direction along such a sidewalk. With vehicles standing or parked along each curb, only one line of vehicles in each direction can pass through the center of the street, and these vehicles can move only as fast as the slowest one. If the sidewalks are as wide as they often should be on a retail store street, only one moving vehicular lane is possible for traffic both ways. As traffic increases on such a street, traffic congestion is bound to occur as it does frequently at the present time on Worcester's downtown streets.

On streets less than 50 feet wide (and over half of the streets in the central business district are from 30 to 48 feet wide) traffic is bound to be still more congested. Many Worcester downtown streets are only three traffic lanes wide, and some only two, including the lanes parked along the curb.

With the rapidly increasing use of automobiles, and already with one to every ten inhabitants of the country, (California has one car to every three inhabitants), vehicular traffic has been increasing of late, in larger cities at the rate of about 20 per cent per year, and the limit is not nearly reached.

In 1915, 317 vehicles per hour were counted in Main Street in

front of the City Hall. 164, or 51 per cent of these were horse-drawn. In February, 1922, 446 vehicles per average hour were counted, of which 25 were horse-drawn, or only  $5\frac{1}{2}$  per cent. The total increase in vehicles of all sorts is almost 50 per cent in seven years, while the increase in automobiles is nearly 300 per cent.

On Main Street, Front Street and Pleasant Street, the 28 street car lines that pass the junction of these three streets severely tax the street capacity and it is a fact that can be noted almost any day that the slowing up of one trolley car will often back up other trolley cars for a quarter of a mile along each street. On some lines, the trolley cars are often behind their schedules, and people are forced to stand for long periods along the none too wide sidewalks waiting for cars. This tends to block pedestrian traffic. Vehicles can rarely get ahead of a trolley car, and each car stops at practically every corner. In consequence, the average vehicular speed is slow.

The street accident maps for October, 1921 and for December, 1921, show that most of the street accidents are concentrated at the principal street intersections, especially in the central business district, and that in general the greatest number of accidents occur where two street car lines intersect or join. In December there were very few accidents outside of the central district, but in October with touring at its height, street accidents were scattered all along the main thoroughfares leading into Worcester, especially at the street intersections.

One of the most serious problems in Worcester is that of snow removal; as a total of 70 to 80 inches of snow is liable to fall in any winter. Fortunately the city has recently purchased a modern snow removal equipment, which should help materially in keeping the official thoroughfares open to traffic. At best, however, the effect of the snow storms is to reduce, often by half, the number of available traffic lanes even on the principal thoroughfares, and often to do away entirely with available parking space along the curb. This is only in part compensated for by the natural disappearance of all except the strictly necessary vehicular circulation.

Street cleaning and watering is now well taken care of, with

a special concentration on the thoroughfares. The determination of thoroughfare streets as a part of the city plan will make it easier to concentrate street watering where most needed.

With regard to street repairs, whenever the Street Commissioner is about to lay a new pavement or surface in a street, he notifies the Water Department and all other public utilities to relay or increase their mains wherever they are going to need changes before the new pavement is laid. In the case of granite block, they are to look 50 years ahead and in the case of macadam 20 years. This is a highly commendable policy.

Long distance motor truck routes for handling freight were operated in 1921 to six large cities. One great advantage of such a system is that it provides in large measure for store door delivery. However, were this form of transportation to increase to any extent, and were terminal freight stations to be located downtown in the business district where much of the tonnage would doubtless originate, a serious condition of street congestion would occur, especially near the terminals. The location of such terminals should be watched to avoid such congestion.

#### *Traffic Rules and Regulations Now in Effect:*

The Department of Public Works of the State of Massachusetts has in effect a number of rules and regulations affecting traffic. Only a very few of these, however, actually affect the city plan. For example, these rules state that the maximum size of any vehicle shall be 8 ft. x 28 ft. No vehicle shall exceed 15 miles per hour in the built-up portions of cities and towns. Every moving automobile shall keep at least 8 feet away from a trolley car that has stopped to let off or take on passengers. A driver approaching a street intersection shall give the right of way to a car coming from the right.

Control of traffic within the City of Worcester is entirely in the hands of the Police Department. The Chief of Police has made a number of experiments with the handling of traffic in Worcester and has made a thorough study of traffic handling in other cities in America and abroad, with the result that he has worked out for Worcester what has been recognized throughout the country

to be one of the best sets of traffic rules and regulations that has yet been devised. So excellent is this plan that little, if anything, can be suggested in the way of improvement.

The traffic rules and regulations as amended by the Board of Aldermen on June 4, 1923, and which went into effect on June 18, 1923, provide for seven different types of parking prohibition, from complete prohibition throughout the business day, and in some cases throughout the evening as well, up to 15-minute, 30-minute and one hour parking prohibition on certain streets during business hours.

On many streets no parking is allowed within 20 feet of any curb corner, nor within 10 feet of any hydrant anywhere. Also, on certain streets, no delivery of heavy merchandise and no garbage collection is allowed during certain hours.

Only four streets have been limited to one-way travel during business hours. Of these four, all are relatively unimportant.

Special traffic rules are in effect to handle the difficult situations in Lincoln Square, and in Washington Square. Other rules have been recently proposed for Newton Square and Kelley Square.

#### *Recommendations With Regard to Existing Traffic Rules:*

With regard to the traffic rules now in effect in Lincoln Square, no change can be recommended as long as the street car tracks remain where they are, except possibly the following:

- (1) Bend to the south the east-bound traffic lanes entering Belmont Street from Lincoln Square, so as to cross the street car tracks turning from Summer Street into Belmont Street more nearly at a right angle.

- (2) Consider the possibility of making the upper service road in front of the Court House a one-way street, with southbound traffic only.

- (3) Mark off the four dead spaces in Lincoln Square with police traffic posts, so that all traffic will be definitely excluded from them, and so that they will be effectively free for auto parking.

With regard to Washington Square, the traffic regulations now in effect are simple and straightforward. The only recommendations for improvement are the following:



(1) Bend to the northwest the southbound traffic lane from Summer Street across the Plaza into Grafton Street, so as to avoid crossing the car tracks, where they turn from Summer Street into Shrewsbury Street. This will also serve to increase the proposed parking space in the center of the Square.

(2) Definitely mark off the whole large central triangular space so that it can be used exclusively for auto parking.

(3) Insist emphatically that the Union Station authorities shall widen immediately the private ramp and unloading roadway in front of the station, as it is ridiculously inadequate for present use.

With regard to Newton Square, little improvement need be made, in the general scheme as proposed by the Chief of Police. However, the following changes are recommended :

(1) That the proposed light pole should be moved 5 feet or 10 feet to the southeast in a direction parallel with the tracks.

(2) That the traffic lanes leading from June Street into Highland Street and vice-versa, should be bent about 10 feet to the north on the northeast side of the trolley tracks.

(3) That the present triangular island may be moved at just about its present size, to within 28 feet of the Elm Park curve.

(4) That the curb on the flattened-out curve between Newton Square and Highland Street and between June Street and Pleasant Street, be extended out into the right of way 20 or 30 feet in a gentle curve, so as to reduce the right of way and increase the sidewalk space.

(5) That these two latter sidewalk additions and the triangular island, be planted with lawns and flowers.

With regard to Kelley Square there is no question but that the solution proposed by the Chief of Police is simple and straightforward. The only recommendations are the following :

(1) The police light pole opposite Millbury Street be moved about 10 feet to the south and that the traffic from Millbury Street into Water Street and back again, be bent around it in an easy curve, so as to avoid crossing the street railway tracks, where they turn from Millbury Street into Green Street at such an acute angle.

(2) The southbound traffic lanes on Green Street should be bent to the west at Millbury Street, for the same reason, which would make it possible to create an island trolley loading platform in Vernon Street, just to the south of the proposed police light pole.



(3) The watering trough at the foot of Water Street would then come on the edge of an unused triangular space which could be surrounded by police standards and kept available for parking.

(4) A triangular island of safety could be inserted at the foot of Harding Street where the street turns into Green Street.

#### *Automobile Parking:*

One thousand parked vehicles occupy over 100,000 square feet of street space which was not originally designed for such use. The advisability and even the legality of permitting long parking to the detriment of traffic is a grave question. The supplying of parking space for taxicabs which are under municipal control, and which are recognized as common carriers, may be considered a municipal function. In other cities, some theatres, department stores, clubs and business buildings are providing parking space for patrons upon private property.

#### *Storage Buildings:*

Were large storage buildings to be provided in lieu of street parking spaces, they should be so arranged and located as to prevent accidents to pedestrians and to vehicles moving along the streets on which the buildings front.

#### *Pedestrians:*

While pedestrians usually feel that they should be given the right of way and certain court decisions have granted them special consideration in this regard, yet, in all fairness they should submit themselves to some regulation so long as they demand stringent regulation of vehicles. Pedestrians who cross roadways at points other than those specifically designated either at street intersections or in the middle of blocks, when the latter are specifically indicated as crossing points, should be adjudged outside the realm of the law when they appeal to the court for damages in case of accident. At points where traffic officers are on duty, pedestrian travel should be subject to police regulation to exactly the same extent as is vehicular traffic. Some education will doubtless be required and in all probability this can best be secured by the temporarily stationing additional police officers at main intersections charged solely with the regulation of pedestrian traffic.

*One-Way Streets:*

One-way streets are now common. Boston has many of them. They undoubtedly relieve traffic congestion, where there are a number of narrow streets close together, with only a few, or no wide streets.

While the imposing of one-way traffic rules is not highly important in Worcester today, yet at the rate the traffic is growing, such regulations will have to be imposed within a very few years unless steps are taken to widen or by-pass certain thoroughfares leading from the center of the city.

Streets with two lines of car tracks on them should rarely be made one-way streets. Streets that are wide enough for four ample moving traffic lanes need rarely be made one-way streets. Merchants are accustomed to object to the creation of one-way streets, claiming that it harms their business, but any merchant or property owner who feels that way, if he will take the trouble to examine impartially the effect of one-way traffic regulations on streets where they have been in existence for a few years, will find that almost without exception, one-way traffic regulations do not harm business in a street, but on the other hand, they very often help it by making it easier for patrons to approach the places of business bordering the street.

With regard to snow removal, the only recommendation that can be made is that the city plan thoroughfare map be used as a guide in snow removal, and that the relative order of clearing the streets and the relative number of traffic lanes that are open, be proportioned to the traffic demands of the various streets. It is further suggested that snow be gathered in piles along the curb, so as to permit intermittent parking between the piles.

In general, Worcester is remarkably fortunate in its traffic regulations, far more so than most cities.

The matter is in excellent hands and almost everything that can be done to relieve the situation without the expenditure of money for public improvements, is now being done.

## CHAPTER VI.

### THOROUGHFARES

#### *The Thoroughfare Problem:*

A comparison of the topographical map of Worcester with the existing thoroughfare map prepared for the preliminary survey shows how strongly topography has influenced the street system. The location of nearly every one of the thoroughfares has been imposed by the fact that it could not follow any other line without having to go over hills with correspondingly steep grades. As the city has not been laid out by design, but merely as it happened to grow, it is full of inconsistencies and there are many portions of the community that are not easily reached. Thus the Hancock Hill area, the area back of Coes Reservoir, and other smaller outlying sections can be reached only by circuitous routes.

Furthermore, the various outlying developments such as Greendale, Bloomingdale, Quinsigamond, Jamesville, Valley Falls, Salisbury Street district and Tatnuck are connected with each other only through the center of the city. A great deal of time is wasted in getting from one to the other. With the growth of the city this will become increasingly important. There is a distinct lack of what are known as circuit thoroughfares.

In 1921 there were eight Massachusetts state highways leading into Worcester. The state also built parts of three other highways in North Worcester. In 1922 there were 224.6 miles of public streets within the city of which 30 miles were paved and 91 miles macadamized. This is a small amount as compared with what exists in many cities of the size of Worcester. There are at least an equal number of miles of private streets in Worcester, including a surprising number which lie within the central built-up parts of the city. Few of the private streets are even macadamized.

Fortunately almost all of the streets that serve as thoroughfares are over 50 feet wide, although there are many streets that will have to serve as supplementary or cross-connecting thoroughfares in the future that are now less than 50 feet wide. These will have to be widened at some time in the future to take care of the eventual traffic.

*The Downtown Thoroughfare Problem:*

In connection with the preliminary report on city planning prepared for the Citizens' City Plan Committee a partial investigation was made of the street traffic situation in the so-called downtown district.

This section is roughly limited by Lincoln Square, the Union Station Plaza and the intersection of Main and Madison Streets. Through it 12,000 vehicles passed daily in 1922, while street cars operating over 28 routes pass daily the intersection of Main and Pleasant Streets. During some periods excessive street congestion exists to such an extent that an estimated amount of over \$6,500 a day could be saved the community were modifications to be made in the regulation of traffic, in the routing of street cars, in improvements in paving, in the widening of roadways and in street extensions and widenings, the interest on the cost of which would not equal the annual losses involved through wasted time, street accidents, extra distance travelled, wear and tear on tires and vehicles, and extra cost of gasoline and supplies. In addition, increases would be made in the valuation of real estate through the creation of new corners and frontages and improved street conditions, all of which would be reflected in increased tax returns.

*Previous Investigation of Problem:*

The forerunner of the City Planning Board was the Commission on Relief of Street Congestion, Professor Arthur W. French, Chairman, and C. W. Fisher, Secretary, appointed by the Mayor and Council on July 15, 1907. It was the duty of this commission fully to investigate the subject of street congestion in the city and to formulate a plan of relief to cover future and present needs; also to make estimates of cost and advise as to ways of meeting the cost, and to designate those streets which should be kept free from surface or overhead railways; and to determine how best to make restrictions that would be proof against repeal or suspension.

The commission presented a printed report in 1911 in which they made the following recommendations:

- (1) Creation of a diagonal street from Canal and Front Streets to Madison Street.
- (2) Widening of Madison Street from Southbridge to Main Street. (Since executed.)
- (3) Widening the west end of Foster Street. (Since executed.)
- (4) Extension of Canal Street from Front to Foster Street.
- (5) Widening of Mechanic Street from Norwich to Main Street.
- (6) Improvement of Union Street from Mechanic to Exchange Street.
- (7) Widening of Franklin Street from Salem to Main Street.
- (8) Widening of Chandler Street. (Under consideration.)
- (9) Widening of Pleasant Street.
- (10) Widening of Southbridge Street.
- (11) Widening and extension of Salem Street.
- (12) Widening of School Street from Union to Main Street.
- (13) Extension of Norwich Street from Mechanic to Front Street.
- (14) Beautifying of Washington Square. (Partially executed.)
- (15) Creation of a civic centre at Salem Square.

It is interesting to note that only one of these recommendations has been actually carried out; that is, the widening of Madison Street, although several others, such as the widening of Chandler Street, are now under active consideration by the City Council.

All of these recommendations were given thorough consideration in the study of the city plan and as will be found most of them have been retained among the city plan recommendations.

#### *Methods of Studying the Thoroughfare Problem:*

In planning any complete thoroughfare system, the main traffic ways should be so spaced near the center of the city as not to be much more than one-quarter of a mile apart. In other words, people should not be obliged to walk much more than 700 or 800 feet from a home to the nearest thoroughfare or trolley line. In more outlying districts this distance apart can be increased. Each new thoroughfare and each existing street that might serve as a thoroughfare was studied with reference to the following:

(1) The probable traffic it would be likely to carry in the immediate and in the more distant future. These estimates combined probable through traffic with that derived from the residential, commercial, and industrial districts traversed.

(2) The appropriate limit on the use of property as fixed by Zoning. These uses as limited determine not only the character of traffic, but the amount which would originate in each district.

(3) The laws of average haul and of traffic density around centers of communities. These disclose the relative amount of travel to be expected at any point along a street.

(4) The street and roadway widths needed to accommodate any given amount of traffic.

The reactive effect of various possible locations for each new thoroughfare can be studied in its relation to its probable effect on the property values of each unimproved or improved parcel abutting on the improvement. Such studies disclose fairly definitely whether one proposed improvement as compared with another will be more or less profitable on account of the new values created by it. They show in dollars and cents what proportion of the cost of expropriation and improvement the city can assess on abutters, and what the city can expect in the way of increased revenue from new tax values created.

Generally speaking, it is found that local traffic decreases with the distance from any center of activity. Through traffic is often surprisingly uniform over considerable distances. Twelve miles from the center of Rochester 13,000 vehicles were counted on one day on a main thoroughfare, and 18,000 a day on the same thoroughfare five miles distant. Thus thoroughfares carrying heavy through traffic should be designed practically uniform in width, but secondary thoroughfares can be made narrower the greater the distance from centers.

In general, the following procedure was used in studying the traffic problem in Worcester:

- (1) A general traffic census of the city.
- (2) A comparison of the results of this census with those taken in previous years.
- (3) Comparisons of the number of vehicles which emanate from each typical district with the population in such district.
- (4) Future population estimates and distribution.
- (5) Comparisons of the number of vehicles which emanate from each typical district with the future population distribution.
- (6) Determination of the number of vehicles originating at freight stations and other similar points.



- (7) Estimates of the probable vehicular flow on main and secondary thoroughfares in the near future.
- (8) Determination of points of origin of suburban travel entering and leaving the city.
- (9) Probable future growth of such travel based on state highway observations.
- (10) Determination of zones of street activity.
- (11) Laying down on a series of maps systems of radials from the center of each such zone.
- (12) The correlation of these theoretical radials with the present street system.
- (13) The approximate location of existing gaps in the system of radials and circuit roads.
- (14) The study of the system with relation to the topography, present building improvements, real estate values, lot units, and other factors.
- (15) The determination of the necessary widths of the streets so established on the basis of probable future needs.
- (16) The correlation of the street studies with the zoning map.
- (17) The introduction of additional secondary thoroughfares to facilitate access to areas aggregating more than one-quarter square mile near the center and one-half square mile farther out.
- (18) The determination of those streets that could best be used for trolley lines, bus routes, freight motor truck routes, or exclusive private passenger vehicular use.
- (19) The determination of points where streets could be straightened and jogs removed, grades improved, cut-offs made, grade crossings eliminated, and other minor changes made to good advantage.
- (20) The determination of the desirability in each case of the laying down of building lines in advance of the actual taking of property by the city.
- (21) The determination of the date at which it would be most economical for the city to impose a building line in order to prevent the erection of prohibitively costly buildings along the street to be widened.
- (22) The determination of the date at which it would be necessary for the city to actually acquire the building line strip so as to execute the physical widening or extension of the street or the date of undertaking the new thoroughfare.

Comparisons between past and present street use and the known use of streets in other cities larger than Worcester, of the amount of traffic that originates in districts of various types,

together with a study of the future population distribution as controlled by zoning, gives a basis for estimating fairly accurately future street requirements. The enactment of a zoning ordinance further establishes types and controls the amount of probable use. A comparison of the traffic counts with the costs of street widening indicate such streets as should be one-way, and the best routes to segregate for heavy motor trucks and trolley lines.

The number of traffic lanes that should be provided upon each street was determined from a knowledge of the width of vehicles and a calculation of vehicular speed under present and proposed methods of regulation. Assigning ten feet for each trolley car lane, nine to ten feet for each heavy traffic lane, nine feet for each pleasure car vehicle lane, and eight and one-half to nine feet for each line of parked vehicles, a knowledge of the number of such lanes required, as determined by the traffic studies, indicated which existing roadways should be widened and to what extent.

Pedestrian traffic counts and a study of the size of existing buildings and probable future buildings, especially those used for business or offices or as gathering places, similarly helped to determine the sidewalk widths according to the needs, based on a unit two feet wide per person.

After roadway and sidewalk widths had been estimated, the problem became one of determining the costs of continued congestion as compared with the costs of widening roadways and sidewalks perhaps by the taking of private property. Often roadways can be widened at the expense of sidewalks without setting back building fronts, and often the converse is true.

Sometimes sidewalks can be widened by the removal of encroachments as was done on such a large scale in New York City. These include stoops, steps, outward swinging doors, signs, show cases, bulkheads, areaways, and other similar features. These are all controlled by the License Board and permission to make such projections can be revoked at will without compensation. However, Worcester is exceptionally free from such projections.

In many instances, roadways can be widened to all intents

and purposes by prohibiting parking and limiting stopping as is now being done on certain streets by the Police Department. This has been done in many cities. Not alone does a prohibition of parking serve to expedite street travel, but it tends also to indirectly benefit trolley traffic by increasing the number of riders who otherwise would use automobiles.

Traffic may also be expedited by the enlargement of street intersections as is being done currently by the City Engineer. Each point must be the subject of special study along lines which can be determined by him only after detailed analysis of the specific factors involved.

*Analysis of the Downtown Thoroughfare Problem:*

The whole question of downtown congestion is involved with the limitation of the height and use of downtown buildings; the spread of factories and the intrusion into the commercial district of industrial traffic; the re-routing of transit lines; the creation of new streets in the outlying sections as well as in the downtown district; the creation of a civic center and an art center and of the traffic which would be produced by them; the creation of local business centers; and other factors.

The street accident map indicates clearly points of exceptional congestion and of the worst difficulty. Similar points of congestion and of traffic delay are indicated by the diagrams prepared so that one could visualize the average speed of typical vehicles which traverse the main downtown streets.

Rigid traffic regulation and the use of a synchronized system of control under which each vehicle which enters the controlled district could move continuously except at right angle turns, would produce an appreciable acceleration in travel. However, the amount of the capitalized salaries of the many necessary traffic policemen and the limit so nearly reached upon the amount of traffic which the principal streets can carry, show conclusively the need of creating relieving thoroughfares.

The creation of additional local business centers, well distributed throughout the community, would probably also relieve downtown traffic to a certain extent through the opportunity

which would thus be afforded to shoppers of making purchases without having to travel to the center of the city. Such local centers are usually started by the establishment of branches of the downtown stores. By this means the downtown merchants who establish such branches would gain much more than they lose through a diversion of downtown traffic.

In connection with each study for the relief of downtown conditions the time was computed which would be saved by vehicles traversing the substitute route in comparison with the time which they now occupy going through the main downtown streets as observed in this investigation. In many cases the traversing of an extra distance consumes less time because of a saving of delays. These questions were analyzed in each case and very rough estimates made of the cost of acquisition of the real estate needed for the new streets including the cost of their improvement.

The value of land depends largely upon the character of its use; the latter depends to a considerable extent upon accessibility. Deep properties, almost invariably, average less in value per square foot than do those with the same frontage with less depth. Improving accessibility to rear lots by the introduction of new streets, consequently, almost always enhances property value. This has been demonstrated repeatedly in almost every city in the country.

Increased accessibility is also secured when streets are widened, up to certain rather large limits. This effect depends to a certain extent upon the use to which the adjacent property is to be put, resident districts not being affected to anything like the extent that business and industrial sections are.

New York City assesses locally the cost of the improvement for all widenings up to 60 feet. It assesses locally 89 per cent of the cost of providing a street 70 feet wide; 81 per cent for a street 80 feet wide; 75 per cent for a street 90 feet wide; 70 per cent for a street 100 feet wide, with proportionately reduced percentages for streets of increased width down to 40 per cent for a street 200 feet wide.

Corner properties are generally considered of higher value than are interior lots in all business and industrial districts, and even in some classes of residence districts. These values accrue

because of increased light, air and access. The creation of new corners generally enhances tax values.

The taking of land for street purposes obviously reduces tax values to a certain extent, as far as they have to do with the taxes formerly assessed upon the land taken. It sometimes happens that the values created because of the several elements discussed above are no more than sufficient to offset the loss of taxes formerly secured from the land converted to street use. This is not usually the case, however. In every street extension or widening problem, the whole question of land values must receive careful and detailed investigation.

The width of a street is equal to the sum of the widths of the roadway and the sidewalks and also of the grass borders if such exist. In determining the width of a street it is first necessary to fix upon the right roadway and sidewalk widths to satisfy present demands and then to calculate how much should be added to each to take care of eventual needs when the population of the city is two or three times what it is today.

The width of a roadway is made up of a series of parallel traffic lanes or units and, to a considerably lesser extent, sidewalks are made up of a series of pedestrian lanes or units. Roadway widths in excess of a multiple of unit lane widths are wasteful because they add little to the ease or speed of conducting travel in the streets. It is cheaper and more attractive to put this extra space into the sidewalk or the grass border.

Experience shows that an easily moving lane of vehicles with adequate clearance on either side is nine to ten feet wide. Nine is adequate, 10 is preferable for safety and speed. A standing line of parked vehicles along the curb with clearances and projections takes up eight and one-half to nine feet of width. Eight is the minimum, nine or at most 10 feet is rarely exceeded. Each street car lane, including clearance and standing space for the occasional loading of passengers, takes up from 10 to 12 feet of width. Ten or at most 11 is adequate, especially where traffic regulation safeguards the loading and unloading of passengers.

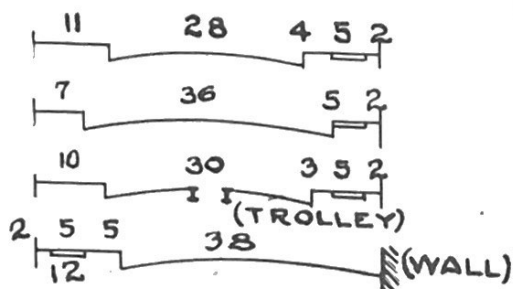
Other things being equal, every street should provide for the same number of traffic lanes in the two opposite directions. In

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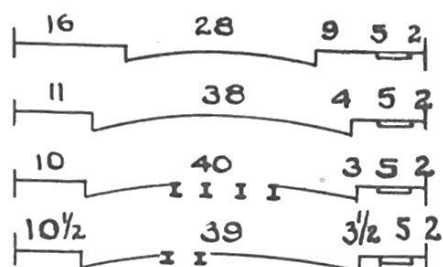
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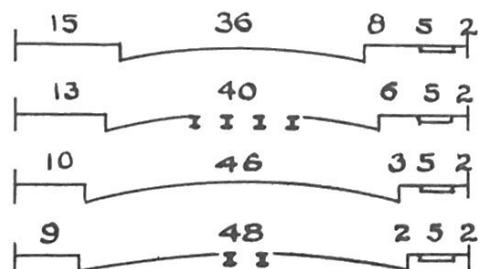
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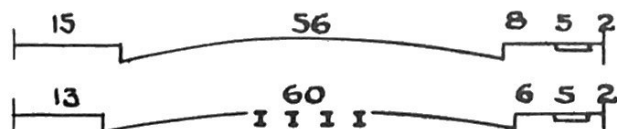
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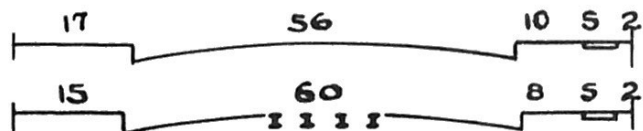
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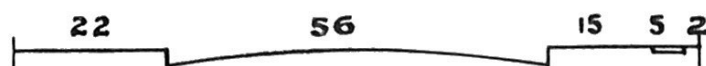
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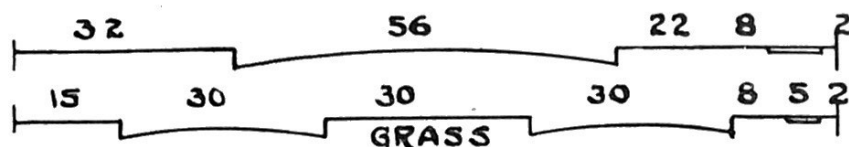
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other words, the total number of lanes in a roadway should be a multiple of two. Where a thoroughfare needs more than six lanes, that is, four moving lanes, it is usually more practicable to provide a new relieving street rather than to continue increasing the roadway width of the first street. This also makes possible a segregation of truck and trolley traffic from automobile traffic.

In general, it should be assumed that parking is going to be allowed on both sides of every street regardless of its importance or location except where one side or both sides of the street lie along public parks, railway embankments, cemeteries, public properties, institutional properties or other such tracts where there is no real need of the parking privilege on the part of the abutting owner. It is obvious that no roadway should be used, even as a secondary thoroughfare unless it is at least four traffic lanes in width for this means only one moving traffic lane in each direction.

All thoroughfare roadway widths recommended for Worcester are four, five or six traffic lanes in width; that is, two, three or four moving lanes wide. These roadways have thus been taken at 36 to 40 feet in width for four lanes, 46 to 48 feet in width for five lanes and 56 to 60 feet in width for six lanes. In each case the greater width is assigned where there are street car lines.

The sidewalks in each case are assumed to be a minimum of 10 feet in width. This would provide for at least two moving pedestrian lanes in each direction with a two-foot allowance for projections, posts, street fittings, etc. On streets where there is much business, sidewalks are fixed at a minimum of 12 to 16 feet in width and this is increased to 20 or 22 feet in one or two cases of exceptional congestion. In a few cases a sidewalk is made wider on one side of the street than on the other as, for example, on Main Street opposite the City Hall where it is recommended that the sidewalk on the northwest side should be increased to 24 feet in width. The same is true on Front Street opposite the Common. This is done because a majority of people prefer to walk on the side of the street where they can look in the shop windows.

The addition of these roadway and sidewalk widths gives a total of 86 to 90 feet for the over-all street width of the wider streets; 66 to 80 feet for the five traffic lane streets and 56 to 66

feet for the four traffic lane streets. In each case the greater width has been used where future sidewalk congestion will demand greater sidewalk width.

In radiating from the center to the outlying farm land the street widths have been kept virtually uniform throughout, partly to make due allowance for possible outlying growth but more particularly because the relative cheapness of the outlying land encourages the acquisition of more street width than may be necessary for a long time to come so that there may be attractive tree and grass borders between the roadway and the sidewalks.

Except in the case of parkways almost no street widths greater than 90 feet have been recommended because the extra space in the sidewalks or roadways beyond those above mentioned is wasted and, therefore, it is not fair to the taxpayers to ask them to pay for such excess width. The same is true for excess widths over 80 feet or 66 feet as the case may be for secondary thoroughfares.

In most cities the flow of traffic through the more congested streets has been considerably relieved by the simple and inexpensive expedient of widening the roadways at the expense of the sidewalks. In Worcester, however, there is little opportunity to do this, especially in the downtown district as the existing roadways have already been increased to the full limit that the narrowed sidewalks can stand.

Furthermore, in Worcester, no advantage can be taken of the possibility of sidewalk widening by the removal of the encroachment of existing buildings over the public sidewalk space. Worcester is singularly free from this pest of other cities.

There is, however, one method of street widening of which Worcester has taken no advantage as yet but which would enable the city to widen streets at relatively small cost and that is by the fixing of building lines. In Chapter XXI entitled "Financing Improvements" this principle which has been used so successfully in other Massachusetts cities is described in detail. Most emphatically it should be applied in Worcester on most streets, that must eventually be widened especially where there is any possibility that prohibitively costly buildings may be erected within the strip

that must eventually be taken by the city for the street widening. However, where a street is already lined with substantial buildings erected on or near the property line the taking of a building line easement may be fully as costly as the more usual method of direct expropriation.

A minor improvement already effectively practiced by the city engineer but which is capable of much wider extension is the enlargement of the radii of curb corners at street intersections. The turning of a vehicle from one street into another is always responsible for an appreciable slowing down of the travel along each street. The speed with which a turn can be made obviously increases with the radius of the turn. Sidewalk intersections should, therefore, be reconstructed as rapidly as possible and with as large radii as possible up to the width of the sidewalk. Ten or twelve feet radius should be considered a minimum.

With regard to the gradients of thoroughfares, experience shows that five per cent has almost no effect in slowing down traffic largely motorized as it now is. On the other hand, 10 per cent does tend to slow it down. In general, seven per cent appears to be the maximum gradient that permits a free flow of heavy as well as light vehicular travel. Experience also shows that rarely do stores locate on a gradient of over seven per cent.

No recommendations are made with regard to paving or the type of pavement used, for the City of Worcester has an excellent reputation for its paving specifications and principles and, therefore, no further suggestions would seem to be needed except to recommend a continuance of the present policies. The same applies to sidewalk paving. All of the recommendations of the street commissioner, in the annual city report for 1922 and 1923, are in the line of progress and should be undertaken by the city in the relatively near future.

However, the paving program is very closely linked up with the thoroughfare and the traffic programs. Obviously each street that is widened or cut through in accordance with the thoroughfare program should receive immediate attention from the standpoint of paving.

It is also true that a certain amount of immediate relief can

be given to downtown street congestion by so paving certain streets, now little used, that they will attract traffic and thereby serve to relieve existing overcrowded streets.

Therefore, from one or the other of these two points of view it is recommended that the following streets, from the city's program of street paving, should receive prior attention approximately in order named:

- (1) Central Street from Main to Shrewsbury.
- (2) Chandler Street from Main to Park Avenue when widened.
- (3) Foster Street.
- (4) Southbridge Street from Madison Square to Cambridge.

*Specific Thoroughfare Recommendations:*

All detailed recommendations with regard to street or roadway widenings or extensions are included in the accompanying table of streets to be widened or constructed. For each street, and for each stretch of each street where different, the table shows the existing and proposed street width and roadway width. It also gives the date at which the building line should be imposed and the date at which the street should be physically widened. These dates are, of course, approximate and subject to modification but they are intended to show the relative urgency of each project and they tend to classify the various projects into equal groups so as not to overburden the city at any one period.

It should be recognized that a faster or slower growth on the part of the city than that prognosticated in Chapter I on "General Conditions" would warrant a speeding up or a retarding of the dates given in this table.

In any case, all immediately urgent improvements are listed in detail in Chapter XXIII of this report entitled "Emergency Program to Meet Deficiencies."

WORCESTER - MASS.

JANUARY 1924

## CHAPTER VII

### PARKWAYS

#### *The Parkway Problem:*

Worcester has no parkways today. That is to say it has no parklike thoroughfares under the control of the Parks and Recreation Commissioners. On the other hand, Park Avenue, Shrewsbury Street and the eastern end of Belmont Street are wide enough to serve as parkways, and with proper planting might serve as parts of a parkway system.

The problem of parkways is two fold: First to provide a means of going from the outlying residential parts of the city to the business center along a pleasing, broad, smoothly paved thoroughfare instead of having to go down a rather tawdry semi-business street. Parkway also serve to connect parks and reservations so that one can drive, bicycle or walk from one green spot to another, without having to traverse sordid streets.

In general the parkways radiate from the center out, or alternate with general traffic streets, and in the same way the circuit parkways connecting the outlying parks and reservations should concentrically parallel existing or proposed general traffic ways.

Other things being equal, parkways will be wider than traffic ways, that is, they should be not less than 100 feet wide and wherever possible, even 120 or 150, or 200 feet wide. This extra width allows for ample grass and tree borders. The beneficial effect of the attractive verdure of parkways on abutting and nearby properties, far outweighs the cost of the additional width except near the center of the city where land values are exceptionally high.

#### *The Recommended Parkway System:*

After a thorough study in the field of the parkway needs of Worcester, the following are recommended:



PARKWAY TABLE

Name	Location	Miles in Length	Proposed Width	Date of Undertak.
Parkway between Harding and Waterbury Streets	Ledge Street to Posner Square	0.9	200 ft.	1960
Parkway parallel to Chandler Street	West from Chandler and May Streets	0.4	150 ft. and Various	1940
Salisbury Street Parkway	Salisbury Street at Lincoln Square to Indian Lake	1.9	130 ft.	1950
Beaver Brook Parkway	From Beechmont and Salisbury Streets to Mill Street	2.8	Various	1930
Valley Circuit Parkway	Encircles whole city	23.8	Various	1970
Hillside Circuit Parkway	Encircles the city	16.5	120 ft.	1990
20-ft Driveway across Common	Franklin to Front Streets	0.1	20 ft. Roadway	1925 (Now owned)

It is understood that none of these parkways have to be realized immediately. It is also understood that the beds of existing streets will be used as far as practicable in the creation of these parkways.

In general the following radiating thoroughfares should be bordered with trees and grass strips, so as to make them attractive ways of entering and leaving the heart of the city.

Salisbury Street, Shrewsbury Street, Grafton Street, Chandler Street, Harding and Water Streets and possibly South Main Street. It would probably be impracticable to exclude trucking from any of these streets, except possibly Salisbury Street. These thoroughfares will be more attractive as parkways, if the trolley tracks could be excluded from them, but that also is obviously impracticable on all of them.

Beaver Brook Parkway presents a unique opportunity. There is nowhere else near the center of the city where there is anything

like the possibility of creating an attractive parkway, as there is along Beaver Brook. It would be one of the greatest losses from the standpoint of enjoyment that the city has had for a long time, if it should fail to take advantage of this possibility while it lasts, and it will not last long, because the district is rapidly being built up. Therefore action will have to be taken soon or the cost will be prohibitive.

The outlying Valley Circuit Parkway and Hillside Circuit Parkway present wonderful possibilities for the future. They should be borne constantly in mind, and everything possible should be done to induce sub-dividers to incorporate in their subdivision plats any section of these parkways which traverse their properties. Before it is too late the city should proceed to acquire the right of way that will be needed, although it is to be expected that a number of modifications will be made in the plan when detailed studies are made.

*Right of Way Across Common:*

The only other parkway matter which immediately affects and Parks and Recreation Commissioners is the question of a street crossing the Common. Most emphatically Portland and Commercial Streets should not be connected with a "street" across the Common. The Worcester Common is unique, and it cannot be duplicated or replaced. It is a feature of Worcester that all her citizens love, and which strikingly impresses the visitor. It must be preserved inviolate at all costs.

On the other hand, Worcester is a rapidly growing city of 200,000 inhabitants and yet it is still a one-street village. It outgrew its single street years ago, and yet it is still struggling to keep within it. Each year that it continues the struggle is going to make traffic conditions worse. It is obvious to anyone that either Main Street must be considerably widened, or else a parallel relieving street must be created. Any material widening of Main Street is manifestly prohibitive, and as a matter of fact, any considerable widening would be impracticable as a relief to the traffic situation, as more than the six existing traffic lanes would not be proportionately effective in relieving congestion.

With regard to relieving streets, several suggest themselves, and all are considered in Chapter VI on thoroughfares. They are:

- (1) The High, Chestnut and Harvard Street combination.
- (2) Portland and Commercial Streets.
- (3) Salem, Church and Union Streets.
- (4) A new diagonal street from Madison Square and Trumbull Square connecting with Summer Street.

The first and fourth are too far from the business center to help the business situation, or to help in spreading business out, although both the first and fourth suggestions will have to be executed sooner or later, in order to fully relieve the whole downtown traffic situation.

Obviously the immediate problem lies in a choice between the Portland and Commercial Street scheme and the Salem, Church and Union Street scheme. Of the two the former is far more practicable for the following reasons:

(1) Salem, Church and Union Streets are much too far away from Main Street to attract good business over the relatively dead intervening spaces. On the other hand, Portland and Commercial Streets are just about the right distance away to attract business, and thereby create a supplemental business thoroughfare, which would gradually fill up the intervening space between it and Main Street.

(2) Portland and Commercial Streets can be, and are, used today for effective business use without increasing their width, now 50 feet, while Salem, Church and Union Streets which range from 35 to 40 feet wide, are entirely too small for effective business use today.

(3) The latter streets could only be widened at considerable cost.

(4) The grade on Salem Street makes it difficult of development, even as a thoroughfare, regardless of business use.

(5) The grade separation at the corner of Union and Foster Streets, presents a very difficult problem in case Union Street is developed as a thoroughfare.

(6) Salem Street does not land anywhere at its southwestern end, while Portland Street, on the other hand, lands in the heart of the radiating thoroughfare center.

(7) If there is no relieving way for traffic between Main Street and Salem Square, traffic is bound to continue to congest Main Street, rather than detour so far away. There should be no question in the minds of any practical man that a driveway connection between Portland Street and Commercial Street should be executed immediately.

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On the other hand, no lover of Worcester wants to see a street crossing the Common, and such a street should certainly be prohibited at all hazards.

No parking should be allowed within the Common under any circumstances. Certainly none in addition to that which now gives such a tawdry appearance to the splendid rear facade of Worcester City Hall. No vehicle should be allowed to stand anywhere between the rear of the City Hall and Salem Square.

In Portland and Commercial Streets today, there are at best only two moving traffic lanes, that is, one in each direction.

This means, therefore, that all that is actually needed across the Common, is one driveway—two traffic lanes or 20 feet wide—enough for one moving vehicular lane in each direction. This would mean a paved way only four feet wider than that now leading from the rear door of the City Hall to the Monument.

This 20-foot driveway without sidewalks should not go straight across the Common, but continue from Franklin Street half-way across the Common in a direct line with the axis of Portland Street, and then should bend in a sweeping S curve, so as to fully avoid all excepting one shattered elm, to come out on Front Street, opposite the center of Commercial Street. Such a driveway would appear no different in its effect on the Common than any of the wider walks now laid down.

Only one walk would be needed connecting Portland and Commercial Streets, and that could follow approximately the line of the present walk and certainly needs to be no wider than the present walk. It would, however, be bowed to one side, so as to provide for ample lawns and planting between the driveway and the walk.

While this is being done fully one-third of the paved area of Salem Square should be added to the planted area of the Common. This area is not needed for traffic purposes in Salem Square, while it would add materially to the effect of the Park, if added to it. The total result would be a considerably increased net green carpet in the Common.

This is probably the most important single step that Worcester has on its emergency city planning program. It should be carried out immediately and without fail.

## CHAPTER VIII.

### STREET CARS AND BUSES

#### *The Street Traction Problem:*

The chief traction difficulty in Worcester lies in the fact that 28 out of the 35 trolley lines pass the junction of Main, Front and Pleasant Streets. An accident or a delay to one car will sometimes hold up cars for a quarter of a mile back on each of these streets.

Several of the routes run on one hour schedules, particularly the long distance interurban lines. Their waiting at or near the Common blocks traffic. The double circuit of the Common by the extra long Boston cars interfered exceptionally with Main Street traffic until recently stopped.

There is a general complaint on the part of the local Improvement Societies that the lines serving the outlying sections of the city run on too infrequent schedules and the cars, when they do run are greatly overcrowded. Also the present transfer arrangements occasion a much longer trip from various outlying sections to the center than would reasonably be necessary.

#### *Parking:*

Tallies of the number of automobiles standing in the downtown section indicate the possibility of some reduction in street railroad business already caused by the increasing use of privately owned automobiles (some 700 of them) assuming one person in each vehicle who would otherwise have used a street car, makes it possible to figure crudely the total daily loss to the street car company from the use of passenger automobiles. At twenty cents for the round trip, the total loss to the company would be about \$140 a day or, roughly, \$55,000 a year. This is a material consideration. It is chiefly through improved service on the part of the street railway company that this competition can be reduced. Its reduction would greatly improve the downtown street traffic conditions.

*One Man Cars:*

The increasing use of one man cars has raised considerable opposition on the part of the public for various reasons. In practice in other cities it has been found that one man cars do not materially retard traffic, especially if they are operated "pay enter" inbound and "pay leave" outbound. On the less congested lines the replacing of two-man cars by one-man cars could often double the frequency of service, except possibly during rush hours.

*A Subway Not Needed:*

In connection with the study of the transit problem, the question came up as to the desirability of a subway under or near Main Street to relieve the central traffic congestion. Various problems are entailed:

- (1) The relative charge on the various lines for their use of a subway.
- (2) The varying widths and speeds of the different lines of cars.
- (3) The disadvantage of operating in relative darkness as compared with movement through the open air.
- (4) The grave question of cost especially as a large part of such a subway would have to be cut through solid rock.

In view of these considerations especially the last, the possibilities of a subway paying even 50 years hence are remote. At best it would be a waste of money for many years to come.

*Trackless Trolleys or Busses:*

If the community is to grow properly, street transit must be adequate in character and extent. It is generally felt by transportation experts that where a frequency of service of not less than 30 minutes is all that is necessary, then the motor bus furnishes naturally call for a frequency between 10 and 30 minutes, it is solution. This device makes use of roadway pavements as they exist, and the only equipment required is a double overhead system of trolley wires. Its practicalness has not yet been fully tested. Where cars would be required in numbers which would provide a headway between 10 and 3 minutes, the ordinary street car of large size is generally recommended, and for headways on



each line of less than 3 minutes, rapid transit of the subway or elevated types becomes feasible.

Calculations show that no line demands anything like the frequency of service that would make a subway pay.

There are at present several bus lines, two to Rutland, one to Sunderland Road, one to Paxton, one to Millbury, one to Boston, one to Providence, one to Springfield and one to Fitchburg.

*Interurban Street Railways:*

Eleven interurban lines serve Worcester as follows:

- (1) Holden
- (2) Leominster and Fitchburg
- (3) Clinton and Lancaster
- (4) Hudson
- (5) Northboro and Marlboro
- (6) Westboro and Southboro
- (7) Grafton
- (8) Millbury, Uxbridge and Providence
- (9) Oxford and Webster
- (10) Southbridge and Springfield
- (11) Leicester and Spencer

All of these lines have through cars for considerable distances, and there are limited through cars to the principle cities. These interurban lines fan out uniformly in all directions from Worcester so that there is no community of any size that is not served by them. All of these lines come to the Common. Several encircle it.

*Steam Railroad Commuters:*

Competition for interurban service exists to some degree with the steam railroads, but generally speaking, the steam railroads do not find commuter service profitable unless some scheme can be worked out for making it fairly comparable with the interurban electric service and unless it can be operated almost independently of the through steam trains.

*Waiting Stations:*

In the planning of any comprehensive street railroad system for the future city waiting stations at transfer points, especially

between the local trolley cars and the interurban cars, should be given careful consideration. This problem involves the study of street widths with a view to the possibility of locating these shelters where they will not interfere with traffic, as in Salem Square for example.

*Trolley Freight:*

Various of the interurban lines, especially those to Boston and Providence, carry freight and express. The advent and improvement of the motor truck, however, is already serving to reduce the revenue from this service just as the automobile has reduced passenger revenues. The future of this variety of interurban transportation is not very bright. By special study on the part of the Traction Company of service requirements, the evolution of new types of light cars, the use of automobile sub-stations, and other means, certain lines can doubtless continue to live and make money. If they are to live and thrive, adequate street and terminal arrangements must be made. If they are to be superseded, then equivalent terminal, garage and traffic arrangements must be made for the substitute agency.

*Recommended Extensions to the Trolley System:*

Street railroad experts have evolved certain unit figures to measure the adequacy of trolley and bus transportation routes in any community. A figure of 150 acres per mile of route is considered standard for a community of average density. A further condition is that no large body of citizens should be required to walk more than one-half mile to reach a transit line. The following investigation compares the present conditions in Worcester with those which are considered as satisfactory standards.

The city's area comprises 23,659 acres of land and 924 acres of water. There are in Worcester 60.12 miles of street railroad trackage over which in part several routes are operated. The total route mileage is 150.87 for trolleys. In addition 27.17 route miles of busses are operated. From these figures it is easy to compute that there are now only 133 acres per route mile. Much of the outlying area of Worcester is uninhabited so that it may be

considered improper to use the full area in such a computation. The easiest method of adjusting the figures is by averaging densities of population. Of all cities in the country between one hundred and three hundred thousand inhabitants, the average density is 8.8 while of all cities of over one hundred thousand the average density is 13.2 people per acre. Computing the ratios which the present density of Worcester (7.6) bears to these average densities it is found that the number of acres per route mile is reduced to 115 and to 76 respectively. These only indicate the fact that Worcester has now a system of trolleys and busses with a mileage more than adequate for her needs, not only for the present, but for some time to come.

In studying the conditions in reference to the application of the second principle, it was found that a total of approximately 14,000 persons of the eventual population of the city (for the year 1970) would have to walk more than a half mile. In order to provide for these citizens the following bus and trolley extensions would be necessary:

PROPOSED TROLLEY AND BUS LINES

Salisbury St.	Bus Line	Extension	1.4 Miles,	5,150 people served
June St.	Car Line	Extension	1.15 Miles	2,425 people served
Wildwood	Bus Line	Connection	1.11 Miles,	1,275 people served
Franklin St.	Car Line	Extension	0.48 Miles,	None additional
New Plantation	Bus Line		1.98 Miles,	1,175 people served
Bond Stores	Ararat Bus Line		1.48 Miles,	1,575
Burncoat St.	Car Line	Extension	0.73 Miles,	1,575
Lake to Auburn	Bus Line	Relocation	1.48 Miles,	None additional

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9.81 Miles, 13,175

None of these will be required for a number of years to come, but streets should be planned so as to provide adequately for such facilities when they are necessary. That they will then adequately serve the city is seen from the fact that of the above 14,000 people, 13,175 will then be within one-half mile of a transit line. That such extensions will not be unnecessarily costly in operation is seen from the fact that the 13,175 will be at the rate of 1343 persons per new route mile. This figure is to be compared with

1440 which is the estimated population per route mile in 1970, on the present system, while with the present routes and the present population there are only 1017 persons per route mile.

The major difficulty with reference to the trolley system in Worcester is as to its plan and operation. Public demand has heretofore indicated that practically every route should pass the intersection of Front and Main Streets. This is the cause of acute congestion in the vicinity of that corner. Such congestion creates an excessive number of accidents and a very large loss of time to the community. Rerouting of many car lines is entirely feasible on the reasonable assumption that no individual should have to walk more than two blocks to reach any other trolley line or major store, office, hotel, theatre or passenger station.

Several schemes of rerouting have been studied in their application to Worcester's conditions. A loop might be provided around the hub of the shopping district. Rerouting in this manner would correspond with the conditions which exist in Chicago and would certainly tend eventually to produce the same kind of congestion as is found in the Chicago "loop" district. It also would involve the street railway company in extra mileage of operation.

A second alternative scheme is more loops such as the one now consisting of Southbridge, Main, Franklin and Portland Streets. Additional loops might be made to consist of Franklin, Salem Square, Front and Trumbull Streets or of Front, Commercial and Foster. The extreme of such loop operation is found in Cleveland where practically every line runs to the Square and all passengers desirous of riding from one side of the city to another must alight and use at least one transfer.

#### *Trolley and Bus Extensions:*

Wherever practicable a trolley route should be continued across the downtown district and out on the other side. This can be done wherever the desirable number of cars per hour and the class of people is virtually the same in both parts of the town served by the common route. A study of the map shows that there are three or four such possible through routes now available.

Therefore in working out a system of loops and through routes in the downtown district, the principle used was to provide as many through routes as possible and make all of the other routes loop tangentially with the Common or within one block of it.

Maps accompanying this report have indicated upon them the recommended re-routings. It is estimated that they will save many hundreds of car miles of operation per day. This saving will benefit both the railroad company and its patrons. The company will save in car operation and can afford to give more rapid and more adequate service on certain lines.

Certain merchants may object to the removal of present routes from the streets on which they do business and certain patrons may object because they want to be set down within a few feet of some certain store. It must be obvious, however, that the greater good of the greater number should dictate under such conditions and experience elsewhere has shown that the merchant almost always benefits although he often fears to the contrary in such cases.

#### *Trolleys:*

Experience in other cities has demonstrated conclusively that there is generally no depreciating influence upon abutting property when a few car lines are removed from a congested main street. Occasionally sentimental depreciation has appeared but conditions have always returned to the old status or better within a short time.

In Newark when the re-routing was promulgated which displaced some of the lines from Broad Street to Mulberry Street no effect was apparent on Broad Street values. On the other hand, Mulberry Street values advanced considerably. In Springfield when some of the car lines were removed from Main Street to Dwight Street no reduction in property values was reported. In Cincinnati the removal of all of the Kentucky lines from Fifth and Fourth Streets has had, if anything, a beneficial effect on business and real estate values on those streets.

The claim that the removal of some of the cars in Worcester from Main and Front Streets would depreciate property values on those thoroughfares is almost certainly visionary.



# TROLLEY REROUTING MAP FOR THE CITY OF WORCESTER MASS.

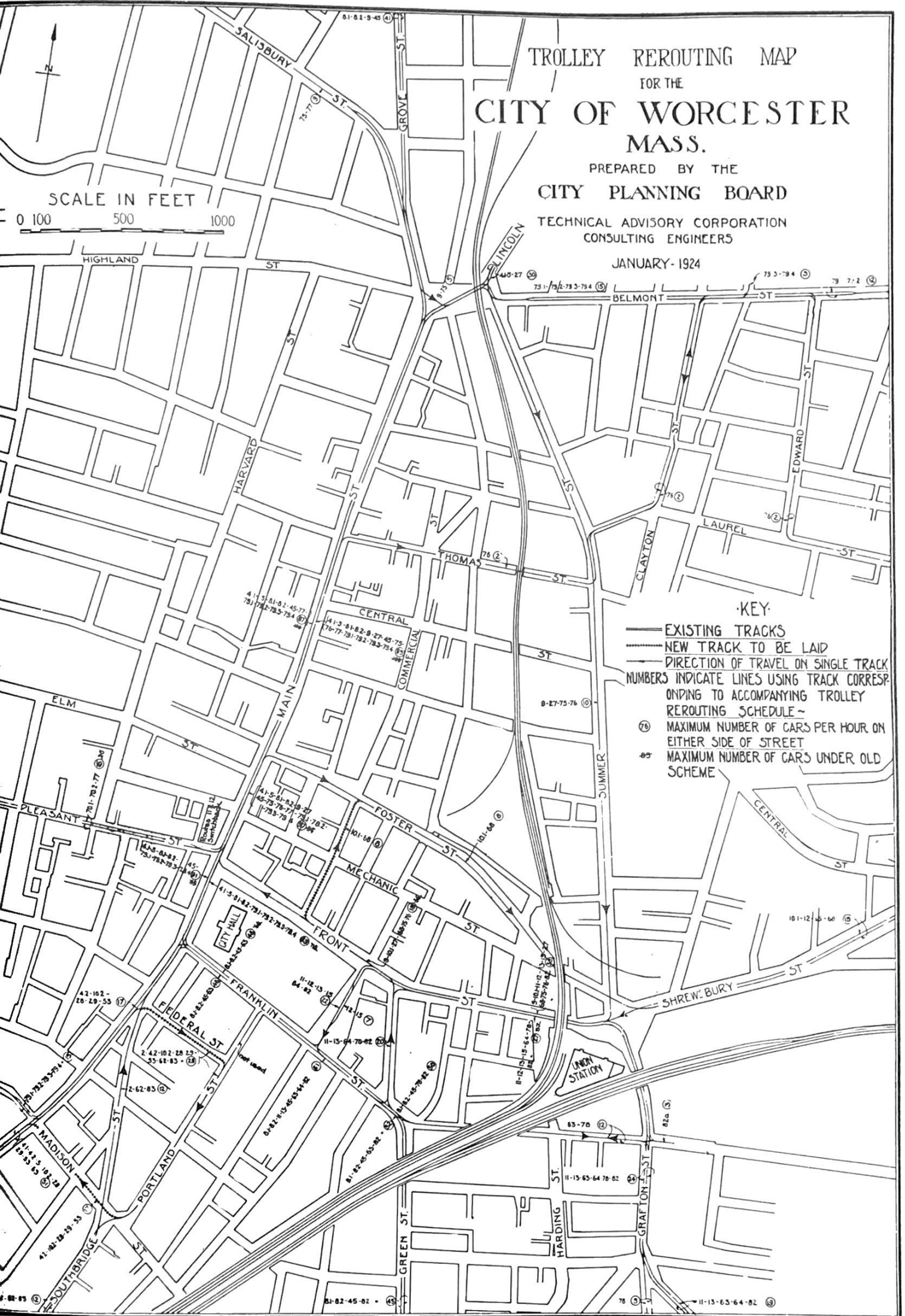
PREPARED BY THE  
CITY PLANNING BOARD

TECHNICAL ADVISORY CORPORATION  
CONSULTING ENGINEERS

JANUARY - 1924

SCALE IN FEET

0 100 500 1000





A surprising fact exists with reference to the number of rides which the average Worcester citizen takes per year. In Worcester it is only 161 while in practically all cities of her size it runs well over 200. This fact of a relatively lower number of rides per capita is fundamentally the cause of the Company's demands for higher carfares. With better service on improved routes more rides per capita per annum are to be expected. With additional rides of this kind the railway company can afford to give better and cheaper service. A radical re-routing thus seems to be advantageous from many points of view.

*Specific Downtown Recommendations:*

The accompanying table shows specific recommendations including those for the downtown district. As will be seen from a study of the routing map for street cars in the downtown district, every attempt has been made to distribute the street cars, as they traverse or loop in the downtown district, so as to spread the traffic out uniformly over a number of different streets, and so as to avoid all exceptional congestion at specific points, such as Harrington Corner. An attempt has been made to avoid having more than 75 cars per hour during the maximum rush hour on any stretch of any street. The diagrams show that with a certain light increase in the existing trackage downtown this principle can be successfully adhered to so that even on Main Street not more than 62 cars per hour will have to be provided for.

As a program of action, it is recommended that the following be adopted to:

- (1) Lay one track immediately on Madison Street from Main Street to Portland Street and loop routes 3-C, 22, 23, 30, 31 and 32 with a total of 21 cars during the maximum rush hour around Main, Franklin, Portland and Madison Streets, in the direction indicated.
- (2) Within five years lay one track in Commercial Street from Front to Foster and loop routes 1, 2, 26 and 35 with a total of 12 cars during the maximum rush hour, up Front Street, through Commercial Street and down Foster Street.
- (3) Within five to ten years, preferably within five years, lay a single track in Federal Street, with a direct separate connection with the northbound track in Southbridge Street and loop routes 3-A, 3-C, 4 and 29, with a total of 22 cars in the maximum rush hour, through Southbridge, Federal and Portland Streets in the sense indicated.

The only other trackage changes that are needed for many years to come, are turnings from Front to Trumbull and Trumbull to Franklin Streets. One cross-over is also needed at Washington Square between the Foster Street line and the Grafton Street line.

The rest of the downtown re-routings are shown on the detailed re-routing map of the downtown district. It is believed that this re-routing will serve to expedite the traffic and prove a real convenience to virtually all patrons, and at the same time save money. There is every reason to believe that it will not only not harm business on any streets, but that it will materially help business throughout the district by avoiding the existing delays.

## CHAPTER IX.

### RAILWAYS AND GRADE CROSSINGS

#### *Relocation of Rights of Way:*

Three railroads enter the center of Worcester. It is a terminal point for Boston & Maine trains coming from the north and for New York, New Haven and Hartford trains coming from the south. It is a through railroad for the Boston & Albany. The four lines radiate from the center to the four quarters of the compass. The Boston & Albany makes a large detour to pass through the center of the city.

It is conceivable that, with the growth of the city, one or more of these rights of way might have to be relocated to provide sufficient capacity or to prevent strangulation in the center.

The relocation of the Boston & Maine, or of the New York, New Haven and Hartford, is virtually out of the question, as each road now follows the only course that the topography will permit. Furthermore, the borders of both these railroads are so built up with industry that the loss in changing their location would be prohibitive.

However, with regard to the Boston & Albany, a study was made of a possible cut-off so as to by-pass through freight around Worcester instead of through the heart of the city. A careful study of the topography, south of Worcester, shows that the most feasible location for a cut-off would leave the main line of the Boston & Albany just west of Groll Hill, about a mile east of Rochdale, and then after crossing the Webster branch would follow the valley of Park Brook across a saddle and then down the brook which feeds into Dunn's Pond. After crossing the pond, it would follow a saddle now traversed by a highway north of Pond Hill, across the Providence and Worcester division of the New York, New Haven and Hartford, just north of Millbury. It would then use the saddle between Park Hill and Pond Hill, north of Millbury, and descend to meet the Millbury branch of the Boston & Albany where the latter crosses Dorothy Pond. This would save about three and one-half miles over the present loop through the center of Worcester.

It would be possible to effect a further saving of distance by

continuing in nearly a straight line to connect with the present main line between Lake Quinsigamond and Flint's Pond.

It was found, however, on taking up this possible relocation with the Boston & Albany Railroad that virtually all freight trains passing through Worcester drop and pick up cars near the center of the city; therefore, no existing trackage through the center could be abandoned and few, if any, freight trains could be diverted—while the cut-off would have to be maintained in full working condition in addition to all present facilities. Therefore, until such time (probably a great many years hence) when the congestion in the center of the city demands, no relocation is recommended.

#### *New Railroads:*

A glance at the map of Worcester County shows that the railroads radiating from Worcester, with their connections, serve all of the larger towns and most of the smaller ones within a wide radius. The only possible exceptions are Shrewsbury and Paxton, the former with 4,000 inhabitants and the latter with 500. Both of these are well served by highways and by trolleys or busses. These services can be extended easily and cheaply. The handling of freight by trolley and by truck, and the ready extension of this service should take care of all freight needs for many years to come. Therefore, there seems to be little likelihood of any real economic need for new steam railways radiating from Worcester to either of these towns.

#### *Passenger Station Facilities:*

On the three railroads, there are each day 40 through trains, 49 inbound trains and 47 outbound, or a total of 136 trains. There are less than one-half of this number on Sunday. This means one train to every 1400 inhabitants. This figure is lower than in most of the larger western cities. In general, terminal trains increase with the growth of population, while through trains tend to increase in a somewhat lesser ratio.

Fortunately, Worcester has a new Union passenger station planned to take adequate care of Worcester's passenger needs for many years to come. In a station of the type which exists in

Worcester, experience shows that it is safe to count on an average handling of four terminal trains or six through trains per hour per track. On this basis, the present passenger service would just absorb the total possible use of one track for 24 hours, and the through service would absorb the use of one track for eight hours.

There are three through Boston & Albany tracks that stop at passenger platforms and two Boston & Main and New York, New Haven and Hartford platform tracks. Therefore, it is obvious that from two to three times as many trains can actually use the existing trackage and platforms before they are crowded to capacity. As it is hardly conceivable that the population of Worcester will double during the next 50 years, it is evident that no extensions to the passenger station facilities are likely to be required within the period allowed for the execution of the city plan.

There is a possible question of the need of suburban or commuting stations on one or more of the railroads to take care of the growing, outlying populations, but with the increasing use of street transit and of automobiles and with the continued decentralization of industry, it is improbable that any commuting demand will call for the creation of new suburban passenger stations for many decades to come. Therefore, none are recommended in this plan.

#### *Freight Handling Facilities:*

The following table gives the freight car capacity of each railroad for loading and unloading purposes:

FREIGHT CAR CAPACITY—1921

	Private Sidings	Storehouses	Stations	Team Tracks
B. & A. . . . .	211	28	75	279*
B. & M. . . . .	424	—	95	176
N. Y., N. H. & H. . . . .	339	—	67	60**
	<u>974</u>	<u>28</u>	<u>237</u>	<u>515</u>
	1002			
	<u>Total</u>		1724	

\* With space available for expansion.

\*\* Paved roadway for above. Roadway will be extended when needed.

That present facilities will be adequate for a number of years to come is evident from the following analysis. Assuming that three days are permitted to load and to unload and to switch cars, that each car is loaded to an average of 20 tons, that freight is moved 300 days per year, it is easily computed that the present trackage would afford facilities for a movement of 3,510,000 tons. Analysis of freight movement in many cities show that six to seven tons per capita may be assumed as the average annual freight tonnage inbound and outbound for such a community as Worcester.

Assuming that the population is 181,000, it is then evident Worcester now has a freight car track capacity three times that required for the present population, or, assuming a factor of safety of two to provide against local congestion, embargoes and other dislocating factors, the present capacity is one and one-half times that required at the moment.

Reference to the population curve shows that in the year 1971, it is to be expected that Worcester will have grown to be one and one-half times her present size. There is, then, evidently a margin of approximately 48 years according to this line of investigation. Inquiry of several railroads and of the Chamber of Commerce have yielded the collaborating testimony that major extension would not be required inside of 50 years. It was also stated that the various roads now provide facilities which were used to only 50 to 60 per cent of their maximum capacity.

As noted in connection with the tabulation, several of the roads have already prepared plans for future extensions to be made when conditions warrant. It is therefore to be concluded that Worcester's freight railroad handling capacity is ample for many years to come.

In extending the existing freight yards or stations, and in providing new sidings, great care should be taken that it is done in such a way so as not to block the growth of the city. The present railroad underpasses near the center of the city are already fully as tunnel-like as it is pleasant to pass through. Any increase in the length of these tunnels will tend to isolate from each other the two parts of the town served by them. Therefore, everything



that can be done to extend existing yards by lengthening them, rather than by increasing their width, will help the growth of the city.

From the standpoint of zoning and the determination of industrial districts, it appears that existing freight stations, team tracks and warehouse facilities are well located in relation to their uses and that they will continue to take adequate care of the industrial and commercial needs of the future.

#### *Station Approaches and Parking:*

The trucking approaches to each of the freight stations and team tracks are reasonably adequate, and no new facilities are likely to be needed for some time to come.

At the Union Passenger Station, however, the approach for taxicabs and automobiles is crowded and sometimes dangerous, and parking facilities are altogether inadequate. The difficulty lies in the design of the approaching ramp, which seems to have been designed more from an aesthetic standpoint than a practical one. In connection with the downtown street studies, this whole matter of approach to the Union Station has been considered in detail; the plaza has been changed, rotary traffic has been installed and ample opportunity provided for the enlargement of the present station approach and its parking facilities.

#### *Grade Crossings:*

On the Boston & Albany, all of the grade crossings except one minor one have already been eliminated in a most substantial and satisfactory manner. On the New York, New Haven and Hartford, seven have been eliminated and only two or three of importance remain.

On the Boston & Maine Railroad, five have been eliminated and four or five important ones remain, including the bad grade crossings at Lincoln Square and Barber's Crossing.

According to a special table showing the distribution of grade crossing accidents during the last three years, the greatest number of accidents has been at Lincoln Square, with an average of 11 per year. The next is at Garden Street, where there have

been about five per year, and then follow Barber's Crossing and School Street, each with four per year. On the New York, New Haven and Hartford, no crossing has averaged even one per year.

From the standpoint of traffic delay, it is obvious at a glance that the worst grade crossing is that at Lincoln Square. At that crossing, traffic counts were made by the Police Department on September 20 and 23, 1923, which indicate that during the 12 daylight hours, the gates are down so that traffic is held up for a total of one hour and 12 minutes. This means that the gates are closed about 10 per cent of the time. The longest period that the gates were down at any one time was two minutes and 35 seconds, although there were eight periods at which the gates were down at an average of over a minute and a half. In general, this means that anywhere from 200 to 500 vehicles were delayed an average of nearly a minute by this one grade crossing. The inconvenience and the danger is fairly serious now, and it is rapidly becoming increasingly so. It is only a question of time when this crossing must be removed.

The most dangerous crossing is Barber's Crossing, and it is obviously the first one that should be eliminated. While Lincoln Square and the crossings on either side should follow within a comparatively few years after.

*Program of Grade Crossing Elimination:*

As a program of grade crossing elimination, the following is recommended, with the hope that if there is any practicable way of executing it faster, such action should be encouraged by every possible means.

(1) By 1930, eliminate Barber's Crossing, probably by raising the tracks.

(2) By 1935, eliminate Lincoln Square crossing by raising the tracks. This grade separation will carry with it the separation of grades also at Garden Street, Market Street, School Street, Central Street and Exchange Street.

(3) By 1935, eliminate the grade crossing at Millbury Street, probably by raising the tracks.

(4) By 1940, eliminate the grade crossing at Hope Avenue.

- (5) By 1940, eliminate the grade crossing at Burncoat Street at Summit.
- (6) By 1940, eliminate the grade crossing at Holden Street.
- (7) By 1945, eliminate the grade crossing at Jackson Street.
- (8) By 1945, eliminate the grade crossing at Quinsigamond.

If the change of grade of the railroad tracks for any one of these grade separations makes it easier to eliminate several crossings at one time, it would be highly desirable to encourage the speeding up of this program.

In any case, and immediately, the very bad highway bridges over the railroad tracks at the Summit over the Boston & Maine tracks and at Cambridge Street over the Boston & Albany tracks should be straightened out and widened.

## CHAPTER X.

### STREET FIXTURES AND ART

#### *Street Art:*

Worcester's many monuments include the following:

- The General Devens Statue by the Court House.
- The Spanish War Veterans Monument at Wheaton Square.
- The Spanish War Cannon near the Armory.
- The Senator Hoar Statue at City Hall.
- The Soldiers' Monument on the Common.
- The Burnside Memorial Fountain on the Common.
- The Louisa Chamberlain Fisherboy Fountain in Washington Square.
- The Edward Winslow Lincoln Memorial Gates to Elm Park.
- The Lions at the entrance to East Park.
- The Bancroft Tower.
- The replica of the Rhode Island Mill in Salisbury Park.
- The Old Mill in Lincoln Park.
- The Bigelow Monument on the Common.

Worcester is rich in history and subjects for monuments and fountains. In fact, there are about 27 sites of real historic interest. Fourteen of these are marked by tablets or monuments, the other 13 and those that are now marked only by a tablet should be borne in mind in locating the junctions of thoroughfares, or in the location of parks, parkways, playgrounds and public buildings with a view to incorporating some of them within public property where they can be properly commemorated. Public squares or sites on the axes of principal thoroughfares are ideally suited for treatment with commemorative structures.

#### *Street Views:*

There are in Worcester a number of interesting street views of which the following are typical:

- Park Avenue, corner of Highland.
- Park Avenue, corner of Salisbury.
- Randolph Road, near Odd Fellows' Home.
- Forest Street.
- Salisbury Street.
- Main Street, near Montague.

Burncoat Street, near Adams Square.  
Lovell Street.  
Elm Street, near Chestnut.  
Oak Street.  
May, near Main.  
Providence Street, near Crompton Estate, No. 121.  
Chamberlain Parkway, central parking strip.  
Massachusetts Avenue, central parking strip.

Views of this sort feature Worcester and anything that can be done to preserve them and encourage the creation of new ones will make Worcester a more attractive and therefore a more desirable place to live in. Interest in such street views should be kept alive in the newspapers and appropriate clubs or societies should become sponsors and protagonists for them.

#### *Poles and Wires:*

Worcester is more fortunate than many cities in the burying of wires with the result that the downtown streets are today remarkably free from poles and wires. The breaking down of wires during the frequent ice storms encourages the utility companies to push their program of wire burying faster than they might otherwise do. The only possible recommendation would be that the streets shown as thoroughfares and parkways on the City Plan Map should receive prior attention.

#### *Street Lighting:*

Worcester is changing from gas lamps to the best types of electric lamps as fast as funds will permit. From a technical standpoint there is nothing to be recommended, but from the artistic standpoint some of the newer types of lighting fixtures are not as attractive as they should be. This criticism does not apply to the boulevard lamps in the downtown district which are of the most efficient and best looking type now on the market, but in the outlying regions some of the crude electric lamp brackets attached to the side of wooden poles or placed on top of them and the curious cantilever brackets one and all detract rather than add to the appearance of the street. There are many attractive as well as

efficient types of street lamp fixtures now on the market, and it is strongly urged that greater care be taken in selecting those to be used in the future. The designs chosen for street lighting fixtures as well as other stock street fittings should be submitted to an art commission, if such exists, or if it does not exist to the Planning Board for approval.

*Street Furniture:*

Hydrants, letter-boxes, fire alarm boxes, police call boxes and tree guards are no better or no worse than they are in most other large cities, but there are no particularly attractive types now in use in the city, despite the fact that the catalogues of the supply houses often show better designed types of street fittings that cost no more than those now in use in the city. Therefore, it is recommended when purchasing new standard fittings that the approval of an art commission or the Planning Board should be secured.

*Street Name Signs:*

Street name signs are now lacking at many street corners but the usual type is antiquated and often crude and unattractive. On most signs the letters are too small to be read by motorists passing at a normal rate of speed.

The Street Commissioner has recently tried experiments with various types of signs in an endeavor to fix a uniform type that can be used throughout the city. He should be aided in his attempt by every possible means, while from the artistic standpoint, it is most desirable that the types under consideration should be passed upon by an art commission or the Planning Board.

*Public Convenience Stations:*

There are no public convenience stations in Worcester in the public streets, but there is one in the Common and a few incidental ones in various parks and playgrounds. Others should be provided from time to time as the occasion demands in or near principal squares or centers of population. Again their artistic character should be controlled by an art commission or the Planning Board.



*Street Railway Shelters:*

The only street railway shelter of any importance is the one on Salem Square on the side of the Common. Others are needed in various parts of the town, but instead of being the plain wooden shelter usually found, their design should be approved by an art commission.

*Street Planting:*

From a standpoint of landscape architecture in the streets, Worcester is fortunate in having had a Shade Tree Commission ever since 1862. In 1885 it was merged with the then created Parks Commission. The City Forester is now planting or encouraging the planting and caring for many hundred new trees each year.

Furthermore, some new sub-divisions are making a feature of grass borders or central grass strips and the planting of trees, but unfortunately these cases are rare, and many newer streets are growing up without the charming setting of trees that has made the older streets of Worcester so famous. Over one-third of the streets of Worcester are less than 50 feet wide, which means that it is nearly impossible to have large trees upon them. Therefore, it is most important in studying the thoroughfare system, and more particularly in determining the cross sections of the secondary streets and in the approval of sub-divisions, that tree planting and the provision of grass strips should be borne constantly in mind.

*Billboards:*

Billboards are eliminated in residence districts by the Building Zone Ordinance. It remains to control their more objectionable features in Business Districts and along highways.

Every advantage should be taken of the new state law permitting the regulation of Billboards.

*Street Facades:*

No attempt has been made on any Worcester business street to preserve conformity of architectural treatment on the part of

the abutting buildings and yet the attractiveness of many of the best business streets in the world is due to harmonious treatment. This does not necessarily mean a uniform sky line. It is true that zoning with its limitation of building heights and uses tends to harmonize building street frontages, but it needs a conscious effort on the part of the property owners to effect real harmony of scale, material, color and style. Furthermore, the possibilities of a general rather than a haphazard scheme of night illuminations and provision for temporary decorations for parades, etc., should not be left entirely to individual initiative.

Therefore, it is recommended that serious thought should be given to the creation of street associations composed of those who own the various properties along the street and that these associations by persuasion or otherwise should induce each property owner to gradually conform his buildings to a harmonious scheme. Merchants' associations can aid by planning their merchandise displays in concert and erecting well designed cabinet work in their show windows.

#### *An Art Commission:*

The location and design of such works of public art is largely a matter of taste, and as Worcester is well favored by having a number of competent artists, architects and others, undoubtedly the best results could be secured by the collaboration of an art board or committee with those who are working out the more technical features of the City Plan. In any case, there is a distinct need for an art commission or art board to whom power could be delegated by the city to decide on the location and design of all public art, and who should control the artistic appearance of all public buildings or structures.

#### *Specific Decorative Treatment of Streets:*

Among the interesting plans that have been presented for the improvement of the streets and open spaces is that made in 1911 for the improvement of Washington Square by Frederick Law Olmsted. A part of this scheme has already been carried out in the park in front of the Norman Tower and in the installation

of the Fisherboy Fountain. Studies have also been made recently to do away with the ramp leading up to the new Union Station so as to provide more adequate circulation for automobiles approaching and leaving the station.

*Conclusion:*

Worcester's streets are not as attractive as they might well be. On the other hand, with the expenditure of only a little more money, it is possible to install street fittings and street decorative schemes that will be permanently attractive. It should be the objective of the local merchants' and improvement associations and every general organization interested in the community as a whole, to assure itself that every fixture that was put into the streets by the city should be just as attractive as it is possible for good taste to make it.

## CHAPTER XI.

### PUBLIC BUILDINGS

#### *The Problem:*

In proportion to its size, Worcester is not as well favored by public buildings as most cities. To be sure, it has an exceptionally attractive City Hall—in fact, one of the best in the country, while the Court House is certainly much better than the average. Otherwise, except for certain school buildings, and possibly the Art Museum, the public buildings of Worcester and most of the semi-public buildings are distinctly below standard.

On the other hand, Worcester has many sites which should prove excellent settings for public or semi-public buildings. Furthermore, the history of Worcester is full of interesting events which deserve commemoration. In fact, there are many historic sites in Worcester that are unknown, except by a tablet or marker of the Historical Society.

In general, there are various important public and semi-public buildings which are either inadequate for present and growing needs or are lacking entirely. It is worth while to discuss each in turn.

The postoffice, located at the corner of Main and Southbridge Streets, was an attractive, well arranged and adequate building at the time it was erected, but Worcester has long ago outgrown it; and with the enormous business now conducted in this building, it is obvious that a new plant will have to be erected in the very near future. It is evident too that the present site is too small for an adequate new building; especially as the necessary widenings of Main Street and of Southbridge Street must still further reduce the size of the plot. Therefore, it will be necessary to seek a new site. The present site is also a long distance from the railroad station or from siding possibilities and therefore uneconomic.

The public library building is not a credit to the city today. The Fire Chief and the Superintendent of Public Buildings have declared that the present building is not fireproof. There is a

# FUTURE DOWN-TOWN PLAN FOR THE CITY OF WORCESTER MASS.

PREPARED BY THE  
CITY PLANNING BOARD

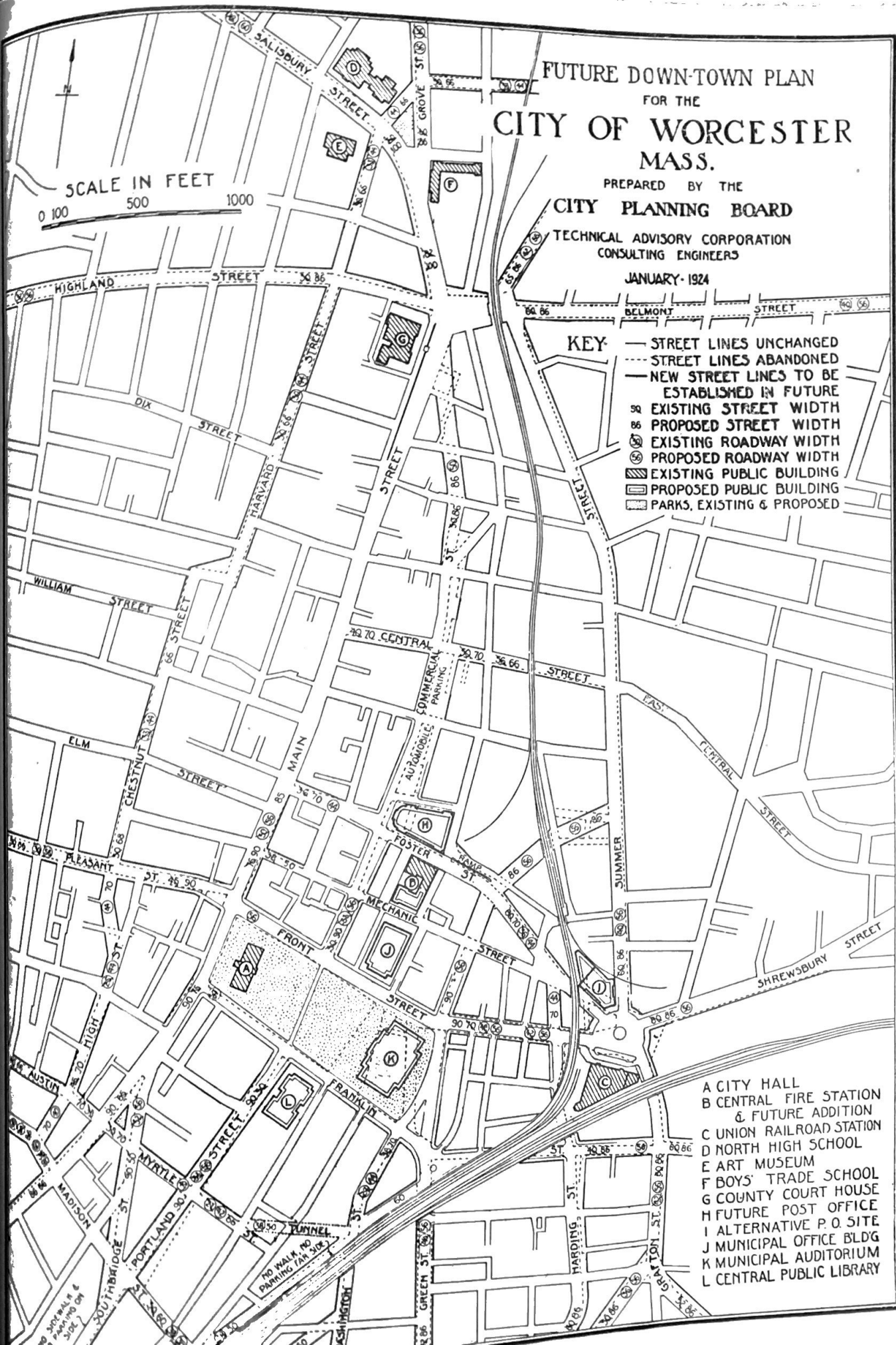
TECHNICAL ADVISORY CORPORATION  
CONSULTING ENGINEERS

JANUARY, 1924

## KEY

- STREET LINES UNCHANGED
- - - STREET LINES ABANDONED
- - - NEW STREET LINES TO BE ESTABLISHED IN FUTURE
- 30 EXISTING STREET WIDTH
- 66 PROPOSED STREET WIDTH
- 30 EXISTING ROADWAY WIDTH
- 66 PROPOSED ROADWAY WIDTH
- EXISTING PUBLIC BUILDING
- PROPOSED PUBLIC BUILDING
- PARKS, EXISTING & PROPOSED

- A CITY HALL
- B CENTRAL FIRE STATION  
& FUTURE ADDITION
- C UNION RAILROAD STATION
- D NORTH HIGH SCHOOL
- E ART MUSEUM
- F BOYS' TRADE SCHOOL
- G COUNTY COURT HOUSE
- H FUTURE POST OFFICE
- I ALTERNATIVE P.O. SITE
- J MUNICIPAL OFFICE BLD'G
- K MUNICIPAL AUDITORIUM
- L CENTRAL PUBLIC LIBRARY





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serious lack of space. Only 5,000 books can be displayed, and yet, despite these handicaps, nearly a million volumes are circulated during the year with nearly 40,000 users and a daily circulation of over 2,500. There is a strong and urgent need of a new, adequate and well located, public library. Librarians agree that a library should be in the heart of the office and shopping district.

There are three branch libraries; one in Greendale, one in South Worcester and one in Quinsigamond Village. These are adequate for the present, but new branches will have to be provided for in the near future, preferably in connection with outlying junior or senior high school buildings.

Worcester now has only one auditorium of any size, and that is the old Mechanics Hall. It is not large enough to meet the current demands of the present city—to say nothing of the future, nor is it any longer a credit, architecturally, to the city. Furthermore, it is impossible to find adequate parking facilities about it. There is urgent need of a large, modern auditorium with several smaller meeting and exhibition rooms with adequate approaches and parking spaces, and yet so near the center of the city that it can readily be reached by trolley from all parts of Worcester city and county. Such an auditorium should contain from 6,000 to 10,000 seats—certainly not less than 6,000. The hall should be arranged so that it can be used for opera; concerts; theatrical productions; conventions, large and small; motion pictures; public meetings; rallies; memorial services; banquets; and in fact, entertainments and gatherings of all sorts. It should also be arranged so that it can be used for exhibitions of various sorts and so that exhibits can be shown in connection with conventions or other meetings. It is also important that there should be parking space within easy walking distance for at least 500 vehicles, in addition to those that are normally parked in the neighborhood. It is desirable that noise and dust should be reduced to a minimum.

The present City Hall, attractive and well planned as it is, is becoming more cramped every year. There has been considerable talk of an extension to the existing building which, if extended at all, would have to extend back into the park. Obviously, such an extension would not only encroach seriously on the park, thereby

destroying its usefulness and charm, but it would be impossible to so design and attach the addition that it would not spoil the beautiful park facade of the present building. Therefore, most emphatically, some other solution of the overcrowding must be found.

There has been a great deal of talk about a new memorial building. The interest in a memorial building has often been concentrated on an auditorium building or a new public library, or a combination of the two. In choosing a site for either of these two buildings, the possibility of one or both of them being considered as a War memorial and thereby being given a worthy setting, should be kept in mind.

The hospitals of Worcester are better off than in many cities. The present Worcester City Hospital, together with St. Vincent's Hospital, the Worcester Hahnemann Hospital, the Memorial Hospital and the new Fairlawn Hospital are together adequate to meet the needs of Worcester for many years to come. Furthermore, the Worcester City Hospital now owns sufficient land to take care of any extension that may be needed during the next 25 years or more. Certain parts of the Worcester City Hospital need modernizing or expanding, but this would not affect the city plan.

The existing public recreation buildings, under the Parks and Recreation Commission, are adequate for present needs, and a credit to the city. First, there is the municipal club house "Mansion House" in Green Hill Park which, in addition to dance halls, has a well attended museum. The community house in Beaver Brook playground has well attended halls for parties. A new community house has been built in Vernon Hill playground. At the municipal golf links, there is a shelter building with refectory, golf supplies and locker rooms. In addition, there are five bath houses owned and operated by the Parks and Recreation Commission, which during 1922 had a total attendance of nearly 215,000 people. These facilities are well distributed so that one or the other can be reached fairly easily from almost every part of the city; and for a certain number of years to come, at least, they should prove adequate for their demands. However, these community houses cost very little, relatively, and as they are so well

used and appreciated by their neighborhoods, there should undoubtedly be more of them. There is also a distinct demand for a bath house at Coe's Pond.

The three downtown open spaces of Worcester are distinctly unworthy of the city. The Common, the Railroad Station Plaza and Lincoln Square are all three unattractive in their layout and setting; yet in all three of these centers, Worcester has an almost unique opportunity to create centers that people will come miles to see.

#### *Solving the Problem:*

Worcester's public buildings and its semi-public buildings, too, should not be located hurriedly nor by hazard—nor is it fair to locate any one building without making a general plan for the location of all needed public and semi-public buildings, so that each may fit into its most effective place in the general plan. Furthermore, it is ridiculous to try to locate public buildings without considering their relationship to the thoroughfare and transit system, and the effect which zoning will have on them and they will have on zoning. Therefore, the location and size of the various needed public buildings has been studied concurrently with the rest of the city plan, so that all would fit together as a unit. Furthermore, in locating each public building, the various possible sites for each have been considered and relative advantages and disadvantages weighed, and by a process of elimination, the one most appropriate site has been fixed.

It is also to be borne in mind that few, if any, of the proposed public buildings will be erected immediately—in other words, that a public building plan must be executed over a long period of years. However, as certain buildings are more urgent than others, a program of urgency has been worked out.

#### *Public Buildings Recommended:*

A new, central, public library for Worcester should obviously be readily accessible to older people and school children coming on foot, by trolley or automobile from all parts of the city and surroundings. It should be located where there will be as little fire

risk as possible and, at the same time, it should be within easy reach during the lunch hour or at morning and at night to those working in downtown buildings. It should also be readily accessible to shoppers. It would be a pity to erect a public library on a location where it would not count as part of a civic center group.

The first location that comes to mind for a public library is Lincoln Square, where there is plenty of vacant land, but such a location is not central enough for the greater usefulness of a modern library plant, nor is it readily accessible enough by trolley from all parts of the city. There is no other place that a library could count as part of a civic center grouping except facing the Common. It has been suggested that it be combined with an auditorium at the east end of the Common or on the east side of Salem Square, but it will readily be seen that if that site is going to be used for an eventual auditorium, it would be barely adequate for the latter purpose without library features. The north side of the Common, along Front Street, must obviously remain open for business. Therefore, the south side of the Common along Franklin Street is the only place left for a public library. Owing to the location of the Hotel Bancroft at the corner of Portland Street, there is obviously no adequate location or setting for a public library between Portland and Main Streets; therefore, the only desirable site left for a public library is that on the southwest corner of Portland and Franklin Streets, opposite the Hotel. From almost every point of view, this would be a most practical and attractive site. It would be possible to erect on this property, running through from Portland to Salem Street, a building which would add distinctly to the ensemble effect of buildings that would be eventually grouped around at least three sides of the Common. As the need of this building is great, and as there is danger that this site may be sold for an expensive building within a few years, it is strongly recommended that the city take an option on this site immediately and proceed to its acquisition within the next few years.

Sooner or later, possibly as a commercial venture, possibly as a War memorial, Worcester is going to erect a new auditorium. Such an auditorium must have at least 6,000 seats and preferably

nearer 10,000. The location of such an auditorium seriously affects the city plan and is as seriously affected by it. Regardless of when it is going to be built, it should be located now, and a certain site definitely fixed in the minds of the public as the eventual auditorium site. Street and trolley improvements should be adapted to the auditorium needs.

As in the case of the public library or City Hall, an auditorium must be centrally located and readily accessible to those arriving on foot or by trolley or automobile from every part of the town. Furthermore, there must be a large parking space available about it. It should be well set and contribute to a civic center grouping. There are only three locations near the center of Worcester that might provide adequate parking space. One is around Lincoln Square; one is around Washington Square and the third, around the Common. The first two are not as readily accessible as the Common. Washington Square is bound to be noisy on account of the trains and it is impossible to find near it a desirable tract of land and it is also impossible to locate a building there that would really contribute effectively to the station plaza group. It is of course somewhat noisy on account of the many passing trains. Lincoln Square is better than Washington Square from the standpoint of architectural effect and practicable sites, but it is too far from the center of the city for effective use.

Thus, by a process of elimination, the Common becomes the preferred location for an auditorium, even though land would cost more there than at either of the other centers. Facing on the Common, it would be possible to erect an auditorium building with 10,000 seats which everyone could reach by trolley without having to walk more than a square; where at least 1,000 vehicles could be parked within easy walking distance; where it would be readily accessible to those coming from the public schools, the hotels, the railway stations, the City Hall, the stores and factories; and yet, at the same time, an auditorium facing the Common could be so arranged as to be relatively quiet and free from dust.

The size of the Common must not be reduced; if anything, it should be increased in size. Therefore, most emphatically, an



auditorium should not be built on any part of the present Common. More than that, it is most desirable that the whole area of Salem Square should be added to the Common.

The only plottage that remains that is large enough and cheap enough for an auditorium for 10,000 seats is the block between Salem Square and Trumbull Street, including the relocation of Trumbull Street, about 100 feet southeast of its present location. An auditorium built on this site would add not only Salem Square to the Common, but considerable area to the southeast of Salem Square as well, and it would be entirely possible and desirable to develop an unbroken formal park from the relocated Trumbull Street to Main Street, terminated at the two ends by the City Hall and the auditorium.

This auditorium should contain small meeting rooms as well as the large auditorium, also exhibition halls of various sorts; it should provide for a certain amount of parking space for loading and unloading facilities at the basement level and could provide space for certain overflow departments or boards from the City Hall. The auditorium itself should face on the Common, so that the windows can be opened directly on the park, away from the noise and dust of Franklin, Trumbull and Front Streets. It should be possible to step out directly from the auditorium into the park without having to dodge automobiles. The architectural design of the auditorium should harmonize with the City Hall, the library and, as far as possible, with the Hotel Bancroft. When the auditorium should be built, is a question of popular demand. It can wait until the demand becomes insistent but, without question, the site should be fixed and the erection of expensive buildings on it should be forestalled.

A new postoffice should also be centrally located and readily accessible to all means of transportation, but it is questionable whether it needs to have rail sidings for, at most, it would be a long time before more than one or two carloads of mail matter would be delivered in one day. At the same time, the postoffice should be within a thousand feet or so from the station for cheapness and speed of the delivery of mail bags from the current passing trains. As the present site is out of the question, three pos-



sible sites suggest themselves: first, the site just to the southwest of the present site, across Myrtle Street, between Main Street and Southbridge Street; second, a site on Foster Street between Commercial and Union Streets, which at present has rail siding facilities, adequate in site on the north side of the Common along Front Street between Commercial Street widened and Church Street.

The site at the corner of Main and Myrtle Streets is attractive, adequate in size and would provide a good setting for a public building, especially if the present site in front be used as a public park; but this land is very expensive and needed for business use. It is also quite a distance from the station and incapable of having any rail sidings.

From the standpoint of nearness to the station and effective contribution to a civic center group, the site on Front Street (between Commercial and Church Streets) would be ideal, but its cost and the value of the buildings that would have to be taken down may prove prohibitive. Therefore, as an alternative, a site is recommended two blocks north along Commercial Street and extending back along Foster Street, on premises now occupied by a series of relatively low and inexpensive industrial buildings. This latter site is adequate in size; it does have rail connections; it is opposite the fire headquarters, with which it could be grouped; and a building on this site could be so located and designed as to be seen strikingly—looking down Foster Street from Main Street, looking up the widened Commercial Street from the Common and looking up Foster Street, widened, from the station plaza.

Every endeavor should be made to induce the U. S. Postoffice Department to purchase, as soon as possible, the proposed site facing on Front Street, or, if that is out of the question on account of its cost, the proposed site on Foster Street.

In either case, with the removal of the postoffice from its present site, that site should be reserved as a public park and every inducement given to the erection of a monumental type of building across Myrtle Street to the southwest.

The station plaza at Washington Square should be enlarged from its present, cramped character before any new costly struc-

tures are built on the trapezoidal square facing it, and the semi-circular plaza should be developed with five intersecting thoroughfares, as shown on the plan. The only urgency in this problem is the obvious need of forestalling the erection of costly buildings where they would make the execution of the plaza prohibitive; therefore, it is recommended that the city should take steps to acquire the necessary land in the near future, or at least as soon as the property owners show signs of erecting expensive buildings.

Lincoln Square is a problem in itself. Its development is controlled by the elimination of the grade crossing, and the construction of the new overhead station, preferably in the middle of the east side of the square. A single broad roadway would pass directly east and west through the center of the widened square and under the station, and the latter would be approached by stairs or ramps leading up to it from the island platforms on either side of the center roadway.

The charming old Colonial house on the north side of Lincoln Square, between Prescott and Salisbury Streets, should be preserved. It would seem feasible to convert this building into a museum by the erection in the rear of a fireproof gallery and exhibition building—for its architectural charm, so rare in Worcester, should be preserved at all hazards.

The site to the west, at the corner of Highland and Salisbury Streets, should be used for a dignified public or semi-public building, harmonious in character with the court house. As there is a rapidly growing need for an art school, it is recommended that this site be reserved for that purpose with a view to creating between Lincoln Square and the art museum an art and educational center, to which the art museum, the North High School and the Trade School are important contributions. The connection of Tuckerman Street with Lexington Street, as provided in the Thoroughfare Plan, and the widening of Salisbury Street, will eventually mean the removal of the Armory and of the Women's Club building. At that time, it will be possible to create, from Lincoln Square to the art museum, a picturesque grouping of art and educational buildings about a common, irregular plaza.

None of these matters demand immediate attention, but it is highly desirable that any action should be forestalled that would tend to do away with the Prescott house or make it impossible to erect a dignified building on the Salisbury tract.

With regard to local centers, little can be recommended at this time. Nevertheless, the various public school buildings, fire engine houses, police stations, branch libraries and the semi-public buildings such as churches and clubs, should all profit by any advantage that may come in the grouping of buildings locally. It is strongly recommended that this fact should be kept in mind and, as the occasion arises, public and semi-public buildings should be grouped, rather than scattered in such centers as Summit, Tatnuck, New Worcester, Quinsigamond, Brittan Square and Newton Square. No new public or semi-public building should be located in any one of these centers without first asking the advice of the Planning Board.

With its colleges, Holy Cross, Worcester Polytechnic Institute, Clark, Assumption, and its four museums, Worcester is well recognized throughout the country as an educational city. This reputation is a great asset for Worcester, and is distinctly worth fostering. Education and art should be featured by the city and not taken for granted. As most people receive their strongest impressions through the eye, education and art should be featured by giving them visual expression. Therefore, anything that can be done to make educational and art buildings count is bound to be distinctly to the advantage of the city. Such buildings can be made to count in proportion as they are appropriately grouped; therefore, it is strongly recommended that everything possible should be done to encourage the creation of an art and educational center from Lincoln Square north, and that wherever possible, other college buildings, museums or senior or junior high schools should be grouped with each other or with public libraries, churches and other public or semi-public buildings.

## CHAPTER XII.

### FIRE STATIONS

#### *The Problem:*

The Worcester Fire Department is completely motorized, and according to the March, 1923 report of the Committee on Fire Prevention and Engineering Standards of the National Board of Fire Underwriters, the apparatus is generally well distributed and reasonably adequate. The two most urgent needs are a safe location for and the installation of a fire alarm central; and there is also need, in the very near future, of a fire station at Tatnuck. Both of these matters have been strongly urged by the Fire Department for several years.

The fire station map shows the area adequately served by the existing engine and hose companies within the half mile radius allowed by the National Board of Fire Underwriters and also the area included within the two-mile ladder company radius. This shows at a glance that the only large section of the community that is not served by either is the Tatnuck district. There is also a fringe of unserved, but unimproved, territory in the southeastern corner of the city and another in the northeastern, beyond Summit, and also a small section in the extreme western end of the city.

#### *Locating New Stations:*

By comparing the present and future population spot map and the zoning map with the service limits of the existing engine, hose and ladder companies, it is possible to determine rather easily what added areas should be better served and where and when new engine, hose or ladder stations should be located. Obviously, they should be placed near the junction of principal thoroughfares where grades are not too steep and where the streets have plenty of width and where the apparatus can reach the whole surrounding district at all times of the year with the least loss of time. Other things being equal, new stations should be located in business districts, as indicated on the zoning map, and near centers of population.

*New Fire Stations Recommended:*

There is need immediately of a station for an engine and ladder company at Tatnuck. This should be located, preferably, on Pleasant Street, on the site of the old school building, a little to the east of Tatnuck Square. It would take care of almost all of the northwestern section of the city now unserved.

The rapidly growing southeastern part of the city is at present poorly served by the fire department, as most of the district is inaccessible except by a long trip over one or more hills. Therefore, it is recommended that within five years a station for an engine company be located, preferably, at the junction of Massasoit and Sunderland Roads.

Within the next ten or fifteen years, there will be need of a station for a hose company at Summit, preferably near the junction of Burncoat Street and Mountain Street. In fact, the present abandoned school house site would be quite practicable for this purpose. This station would serve the remaining unserved part of Worcester to the northeast of Summit.

There remains the desirability of locating a station for a hose company in the Bancroft and Hancock Hill districts, preferably on Salisbury Street, near the corner of Beechmont Street. At present, this rapidly growing high-class residential area is accessible only over long hills. However, the location of this building could wait ten or fifteen years.

The land owned by the Fire Department at Chadwick Square should be developed with a building in the relatively near future.

On account of the inadequate ladder facilities in the southern and eastern parts of the city, it would be strongly advisable to add a ladder apparatus to the existing station equipment on Millbury Street at Falmouth Street and on Plantation Street at Brown Square.

## CHAPTER XIII.

### SCHOOLS AND SCHOOL PLAYGROUNDS

#### *The Problem:*

There is no question but that the provision of more school rooms is the most urgent matter before the city today. For the last ten years, Worcester has grown at the rate of about 3,500 people per year. The total enrollment of the schools is about 15 per cent of the total population—thus about 525 new students have to be taken care of each year. At 36 to 40 children per room, a total of 13 to 15 new rooms are needed each year. For a number of years past, less than one-half this number of new rooms have been provided.

During last year, the Worcester schools actually gained 1,584 pupils—much the largest gain in the history of Worcester. During this same period, only 440 new seats were added. This gain calls for an addition of nearly 30 rooms in one year.

There are from 4,000 to 6,000 pupils in double sessions. Statistics for the last year show that nearly twice as large a percentage of children in double sessions fail of promotion as of those in single sessions. Obviously, more space must be provided.

On the accompanying map, the comparison of the present school districts with the population spots shows that there are various sections of the city where the population is rapidly outgrowing the present school facilities. The School Department is well aware of this fact and has presented a specific program to meet it. For example, there is obvious need of new school rooms at Burncoat Street, Ward Street, Andover Street, Boston Avenue, Wilson Avenue, May Street and Granite Street.

On the other hand, the erection of the first junior high school on Grafton Street near Rice Square, with its 32 rooms, will tend to relieve the pressure on the grammar schools. However, before proceeding with the erection of other junior high schools, it is the intent of the school department to give the junior high school, that is now built, a fair trial.

With the means of foreseeing growth that have been avail-



able, Worcester has undoubtedly been meeting the problem fully as well as any other city of its size. At best, however, there is a great deal of guess work, and already some of the older schools are being hemmed in by factories and business buildings in a way that seriously depreciates their use and value. Nearly half of the schools in Worcester are located on thoroughfares that are becoming busier daily, where the increasing noise, dust and traffic danger harms the school as an effective plant.

Furthermore, modern educational methods demand school yard play space in connection with each school as a desirable or even necessary supplement to intellectual work. The average grammar school now takes care of 500 to 700 pupils. Standard modern playground practice demands one acre of playground to not over 500 grammar pupils. In other words, there should be at least 1 to 1½ acres of net playground space attached to each new grammar school building. Recent purchases have been approximating this standard, but there are not more than five or six in all that reach it, while 85 per cent of the schools in Worcester are built on sites containing less than one acre of ground. This is barely sufficient for the building and its approaches, without making any allowance for playground space. Where there are playgrounds under the Parks and Recreation Commissioners adjacent to schools, obviously these playground requirements can be materially reduced or eliminated; but a comparison of the School Districts with the Parks and Playfields Map reveals the fact that such is rarely the case.

*Method of Solving the Problem:*

Eighty-three per cent of the children using the Crompton Playground live within a quarter of a mile of it, and only a fraction of one per cent of the children live over one-half mile from the playground. As this fact has been corroborated in many other cities, it is evident that adequate playground facilities should be provided within half a mile of each other—otherwise there will be large areas in the city which will not be served by the existing playgrounds. To that end, serious study can well be given as a part of the city plan to the co-ordination of the playground devel-

opment of the School Department with that of the Parks and Recreation Commissioners on the principle that if the schools are going to need recreational space anyway as a part of their present day program, a great deal of duplication of effort will be saved and extra site acquisition, playground fitting, playground administration and overhead will be avoided if future school play facilities were to be so distributed that they would care for all local needs of the younger children. Then the Parks and Recreation Commissioners would be free to concentrate their endeavor on the provision for the older boys and girls of playfields of considerably larger area than the school playgrounds.

Realizing what an important place the determination of the location and size of school sites occupies in the city plan, a request has been made in several cities for the development of a detailed program of site acquisition for 25 or 50 years into the future. To meet this demand, a method has been worked out of effectively arriving at a logical program of purchase. This scientific method consists in a thorough analysis of all phases of the development of the city and in particular a determination of the probable distribution of population 25 and 50 years hence as controlled by zoning and thoroughfare and traction development. Comparing this data with detailed studies of the probable distribution of property values and with the distribution of unimproved property, it is proving possible to establish with a fair degree of definiteness the approximate and often the actual location of each school building that should be needed for the next 25 or even 50 years. More than this, this same data should show approximately the size of plot that would be needed in each case, and the desirable date of acquisition of the property as corrected by the probable demand for the erection of prohibitively costly improvements on the site in question.

As this program is necessarily closely linked up with the program of school playground site, location and acquisition—to avoid duplication of work, both programs should be studied side by side using much the same methods in both cases.

From the standpoint of the rest of the city plan, the location of schools and school playgrounds is most important, because the

re-active effect of the schools on all means of circulation and on most uses of property helps to determine their relative importance and character of growth. Therefore, a city plan that did not consider the location of schools would be one-sided and incomplete.

*School Recommendations:*

The school recommendations for the next 25 to 50 years are grouped on the accompanying school map and school and school playground tables. In these tables, it is assumed that there are about 40 pupils to each class-room in the grammar schools; 36 in the junior high schools; and 32 in the senior high schools. The present enrollment and the present number of students in each district is based on the figures for the year 1920 so as to correspond with the latest figures of the Federal Census, which is for 1920. The additional students in each district in 1970 are based on the future population spots distributed according to calculations as to the general future population distribution for the whole city. The school districts referred to are the revised districts which are recommended to take care of the future distribution of population, so that there will not be more than about 720 potential grammar school pupils to each eventual school district. That would mean a typical 18-room school. The dates at which the new buildings would be built, or additions made to present buildings, are based on the adequacy of existing accommodations to take care of the growing population—if redistributed according to the proposed districts and with the assumption that the existing accommodations will all continue in use until such time as the recommended new buildings or additions are built. The calculations are also based on the assumption that the proposed junior high school buildings will be erected within the next ten or fifteen years, so that only children of the first six grades will continue to use the grammar school buildings.

For the junior and senior high schools, it is assumed that no building shall be erected to contain seats for less than 1,200 students, and that a good working average is 1,500 to 2,000, with a possible maximum of 3,000 seatings. It is also assumed that no child should be obliged to walk over one-quarter to one-half mile

to a grammar school building; one mile to two miles to a junior high school building and a maximum of two to three miles to a senior high school building. In any case, all junior or senior high school buildings should be so located that they are only a step from one or more of the street car lines serving their district.

With regard to the Grammar School Playground Table, it is assumed that all of the area of the lot of each school building not now actually occupied by the buildings themselves is available for play use. In calculating additional play area needed, it is assumed that there should be at least 100 square feet per child. The date of acquisition of grammar school playground space should correspond to the date of acquisition of the site for the school building itself, so that play areas will be immediately available on the erection of the building.

With regard to the junior high schools and their playground facilities, an attempt has been made to economize by using as far as possible playfields already owned by the city. Thus, a junior high school located adjacent to Beaver Brook Park could readily use the large playfield already existing there.

In 1920, 3.1 per cent of the total population of the city was enrolled in the three grades of the existing grammar and high schools that correspond to the present junior high school grades. Thus, in 1920, there were 5,232 eligible junior high school pupils. The percentage of the total population appears to be gradually increasing, but will probably never exceed 3.5 per cent of the total population. On that basis, two additional, somewhat larger junior high schools would take care of the possible junior high enrollment for five or ten years to come, and then the addition of more rooms to these three units or the sub-division of the districts and the erection of additional buildings would become necessary. Present experience would seem to prove that larger single units, up to a maximum of 3,000 pupils is the more desirable.

With regard to senior high schools, the four existing plants, with the help of the two trade schools, would seem to be sufficient to take care of the demand for a number of years to come—especially if the proposed addition to the Walnut Street building to take the place of the burned part, be erected in the near future.

## GRAMMAR SCHOOL AND PLAYGROUND DATA

WORCESTER, MASS.

DISTRICT NO.	NAME OR LOCATION	DATE OF CONSTRUCTION OR RECONSTRUCTION	CONDITION OF BUILDING	SITTINGS @ 40 PER ROOM 1920	PRESENT DISTRICT ENROLLMENT 1920	ESTIMATED PUPILS IN PROPOSED DISTRICT AS OF 1920	ADDITIONAL PUPILS IN DISTRICT IN 1970	NO OF ROOMS TO BE ADDED	AREA OF PROPERTY INCLUDING BUILDINGS SQ. FT.	APPROX OF BUILDINGS SQ. FT. EXISTING	GROUND AREA SQ. FT. PROPOSED	NET PLAY AREA SQ. FT.	ADDITIONAL PLAY AREA TO SATISFY PRESENT NEEDS SQ. FT.	TOTAL PLAY AREA TO SATISFY 1970 NEEDS @ 100 SQ. FT. PUPIL SQ. FT.	DATE OF PROPOSED IMPROVEMENT	REMARKS	DISTRICT NO.
1	Melrose and Academy Streets	1885	New	158	112	272	460	1/2	27,000	10,000				73,200			1
2	Lee Street	1870-1907	Good	510	458	315	25	None	28,131	3,724		24,361	3,724	38,800		Vacate	2
3	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800		Industrial Zone	3
4	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			4
5	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			5
6	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			6
7	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			7
8	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			8
9	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			9
10	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			10
11	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			11
12	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			12
13	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			13
14	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			14
15	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			15
16	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			16
17	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			17
18	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			18
19	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			19
20	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			20
21	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			21
22	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			22
23	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			23
24	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			24
25	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			25
26	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			26
27	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			27
28	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			28
29	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			29
30	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			30
31	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			31
32	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			32
33	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			33
34	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			34
35	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			35
36	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			36
37	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			37
38	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			38
39	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			39
40	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			40
41	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			41
42	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			42
43	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			43
44	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			44
45	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			45
46	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			46
47	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			47
48	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			48
49	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			49
50	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			50
51	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			51
52	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			52
53	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			53
54	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			54
55	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			55
56	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			56
57	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			57
58	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			58
59	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			59
60	Edgworth Street	1877-1914	Good	408	385	454	245	4	30,761	3,724		24,361	3,724	38,800			60



As fast as the junior high school buildings are erected, the present first year senior high school students will be transferred to the junior high schools, thereby relieving the senior high schools fully as fast as the latter will be likely to increase in enrollment. Therefore, no new senior high schools will be needed for a good many years to come.

In making these plans for the future, it has been assumed that the various private, special and parochial schools do not seriously influence the providing of adequate space in the public schools, despite the fact that they will undoubtedly continue to grow with the city. Their number and attendance is variable. In case any one of them is given up, or is burned, or cuts down its operation, the public schools must be ready to take up the slack. In any case, the parents of children in other schools are paying city taxes and, therefore, are paying for the building and operation of the public schools, and expect service from them at a moment's notice.

All detailed recommendations with regard to school playgrounds are given in the School and School Playground Table and Map.



## CHAPTER XIV.

### PARKS AND PLAYFIELDS

#### *The Problem:*

In 1922, Worcester had nineteen parks with a total of 1,093.38 acres. This magnificent system started with the purchase of Elm Park in 1854—the first tract to be purchased by a city for park purposes in the United States. Worcester has more park area than any other city in New England except Boston, or one acre of park approximately for every 165 inhabitants. These parks vary in size from Indian Lake bathing beach, containing 1.14 acres, to Green Hill Park containing over 500 acres. In general, these parks are well distributed throughout the city area so as to be within relatively easy walking distance from all parts of the community.

However, a comparison of the accompanying Park Map with the population spots shows that in the neighborhood of Coe's reservoir, near Tatnuck, around Indian Lake, Greendale and Summit, in Bloomingdale, on Oak Hill, on Union Hill, out Massasoit Road, off of Grafton Street and in Quinsigamond, there are still large areas from which the existing parks are relatively inaccessible.

It is also true, as will be seen by a comparison of land values with the topographic map, that there are tracts in each of these neighborhoods and in various other parts of the city that are readily accessible, but which are now held at a very low price in comparison with the surrounding areas because of the fact that they are swampy or composed of bare ledge rock or steep hillsides which would preclude their use economically for building purposes. Certain of these tracts could be procured in the near future at a ridiculously low price. Ten or twelve years from now they would prove exceedingly welcome additions to the park system.

Little attempt has been made to connect the splendid parks which Worcester now has with one another or with the center of the city by means of parkways, esplanades, boulevards or malls. The experience of the Metropolitan Park Board of Boston, of New

York City, of New Haven and of many of the western cities has been that the development of a connecting parkway system doubles the usefulness and the attractiveness of the parks. Salisbury Street, Belmont Street and Park Avenue with their ample widths suggest possibilities in this direction.

However, realizing the small amount of money available to the Parks and Recreation Commission for the purchase and development of new parks and parkways, it is of the greatest importance that every cent that may be available over a period of years should be spent where it would count the most.

Furthermore, recent experience has shown that a park system can, under proper conditions, be made to pay for itself. For example, in Kansas City the park system has grown as a result of popular demand on the part of citizens who have found that it is money in their pockets to purchase park lands and develop them at their own expense. In other words, parks and parkways properly located and designed can be paid for in full by local betterment assessments in such a way that they will prove distinctly profitable to the abutting property owners.

#### *Playgrounds:*

In 1905 the first playground, Greenwood Playground, was opened. The number has steadily increased since then so that today there are eight playgrounds containing in all 74.43 acres, and in addition, playground space is set aside in three of the city parks, and supervised playgrounds are run in connection with several of the schools. There are also six playgrounds under the Parks and Recreation Commissioners operated on leased ground. The playgrounds contain 25 tennis courts, 21 baseball diamonds, 15 picnic grounds, 4 toboggan slides, 1 municipal clubhouse, 2 bath-houses and 1 municipal golf course.

A map prepared for the Preliminary Survey shows the area served by Crompton Park playground. On it is indicated by hollow circles the location of cases of juvenile crime during the last five months of 1921. There are almost no such cases within three blocks of the playground, and less than 15 per cent of the cases within one-half mile of the playground actually occurred within

a quarter mile radius. In other words, the playgrounds do away with juvenile crime—a fact which has been strikingly corroborated in Chicago and other cities.

This fact is particularly true since the passage of the law on May 27, 1920, which permits Sunday out-of-door sports under the supervision of the Parks and Recreation Commission. It would probably be still more true if the playgrounds were open to the public a longer period of the year, and more hours a day.

A quarter-mile circle drawn around each of the playgrounds shows the area effectively served by each. A comparison of these circles with the population spot map shows that over one-half of the population of Worcester is still inadequately served with playgrounds. In other words, children are forced to play in the back yards or streets, through lack of other facilities.

The question of a public school athletic field has been solved for the time being, at least, by the purchase in 1922 of a large tract of land adjacent to the Beaver Brook Playground. This tract is large enough to serve not only as an athletic field, but as a play-field for the proposed junior high school to be erected on or adjacent to the Beaver Brook playground.

Worcester has not taken anything like full advantage of its unique water-front. Fortunately, Chapter 453 of the Acts of 1923, amending Chapter 91 of the General Laws, added Section 18 (a) this Spring—whereby any pond over 20 acres in extent, that is not used directly for water supply becomes available for swimming, boating and other water sports.

Worcester would profit greatly by having a zoological garden and a botanical garden, each of which could start in a small way and grow with the community.

Little, if any, attention has been given to pageants and open air theatrical productions and relatively little to water sports, all of which are decidedly possible. At least the small beginnings that have been made at Hadwen Park and the winter sports that have started in Green Hill Park should be encouraged.

There are no facilities for automobile camping in the public parks, but the example set by the Kiwanis automobile camping ground at Lake Quinsigamond could be followed to good advantage on certain areas of public property.

The municipal golf facilities are conducted on leased ground, although it is considered that the revenue which they bring in would make it profitable for the city to buy land for this purpose and lease it on a business basis.

The only street play that has been officially provided for by the city is the setting aside of streets for coasting for a limited period during the winter. Most of these have been well chosen so as to avoid interference with thoroughfare traffic. They can be readily changed from time to time as the thoroughfare needs develop.

*Method of Solving the Problem:*

The following procedure was used in developing a park system:

- (1) A study of the population spots shows the distribution of population 25 or even 50 years hence as encouraged by the City Plan.
- (2) A study of land values and their distribution, as corrected by the growth of property values curve, shows where the largest areas could be secured for the least cost when compared with the topography.
- (3) A study of the Zoning Map shows how the parkway system could be centralized in permanent residence districts.
- (4) A study of the thoroughfare, traction and transportation maps shows how to keep the park system from usurping key land essential to the proper economic development of circulation.
- (5) A study of the historic sites and of the present and eventual distribution of public buildings map makes it possible for the park system to set off public buildings and historic sites.

In particular, for each street chosen as a part of the park and parkway system, an economic study can be made with a view to showing how each portion of the system can largely pay for itself. This means a study of the exact location and limits of each tract to see how they can be shifted or adjusted so as to bring the maximum enhancement of value to surrounding properties or to new platings of surrounding properties which might be created by the park and parkway layout, all consistent with the most useful and attractive layout of the park property itself.

Obviously a playground program, if it is to be handled in a

business-like way, must look forward to the future. It is often vastly easier and cheaper to provide for expansion now than it will be later, even when all carrying charges are taken into account. In view of these facts, experience has shown that the most practical method of arriving at a scientific solution of the problem of the distribution of recreational facilities is as follows:

- (1) Compare the net, usable area of each existing playground, park play space and school playground with the population spots, and knowing the proportion of children under 12 years of age to the total population in each block front and knowing the amount of space needed per child in each playground for effective play, it is practicable to compute fairly accurately the area now well served by each playground.

- (2) Compare the areas not served by the existing playgrounds with the unimproved property and its land values, to show within each quarter-mile radius where there is the largest area of usable, unimproved land for the lowest price.

- (3) At the same time, study the thoroughfare map and the zoning map, so as to keep playgrounds off of the main thoroughfares and in residential districts where they will not be choked by stores or factories now or in the future.

- (4) Study the contours to see how to avoid sites which might prove too steep for practicable use.

- (5) Compare with the school map to see the possibilities of combining such playgrounds with existing or desirable school sites.

If it is impossible otherwise to find proper sites for new playgrounds or for the extension of existing ones, it may be desirable to search for deep blocks with a view to using the central relatively unimproved portions of some such blocks as neighborhood playgrounds like those provided in the Indian Hill development of the Norton Company.

The next question is the size of new playgrounds, and to that end the following method is desirable:

- (1) The population spots should be studied to see just how the population would be distributed 25 or even 50 years hence.

- (2) A similar study should be made of the distribution of growing real estate values.

- (3) These various studies should be compared with the school expansion program (outlined above) and with the parks, parkways

and zoning programs. This would show approximately how many children between the ages of five and twelve years would have to be taken care of by each program 25 or 50 years hence.

(4) Allowing about 500 children per acre between these ages as a limit for effective play, it would be practicable to determine with a fair degree of accuracy the acreage as well as the location of each playground needed for 50 years to come.

This same data also shows the approximate date at which each property should be acquired and put into use in order to keep up actively with the demand.

Virtually all of these playgrounds are provided for in connection with grammar schools.

*Park Recommendations:*

All of the recommendations for park acquisition and development are given on the accompanying table. Additions are recommended to four existing parks. They are: the Common, Hadwen Park, Salisbury Park and University Park.

During the next 50 to 100 years, it is recommended that 15 new parks be acquired and developed to round out the park system to provide adequate park space within easy walking distance of each section of the growing population. The size, location and date of acquisition of each of these parks is calculated on the population growth of each part of the town, and the population served is calculated on a basis of 150 people per acre of park land. Every attempt has been made to so distribute these parks that no one would be forced to walk more than a mile to reach one or another of them. On the other hand, it is expected that certain of the largest parks or reservations would be used as resorts by automobilists or by picnickers who come by trolley.

It is furthermore strongly recommended that every encouragement should be given to the creation and use of open-air theaters in parks, such as the one recently opened in Hadwen Park. Pageants should also be fostered, and the winter sports that recently started in Green Hill Park should be extended.

There is also the possibility of starting a botanical and zoological collection, which can be begun in a small way and gradu-



ally extended as funds and interest warrant. Part of Green Hill Park would seem to lend itself to this use.

*Playfield Recommendations:*

The recommendations for new playfields, other than those under the School Department, are also included in the accompanying table. Five playfields already exist in addition to the playgrounds and leased play areas under the Park Board and in addition to the public school athletic field at Beaver Brook. The new playfields for adults or older children can be in public parks or on separate properties. As far as possible, they should be located so that they can be used by the junior high schools.

The Parks and Recreation Commissioners have asked the City Council for the following:

- (1) An addition to the South Worcester playground.
- (2) A playground near Grafton Square.
- (3) A playground and bath house on Coe's Pond.
- (4) A new golf course at the Municipal Golf Links which would be self-supporting.
- (5) Improvement of Ramshorn Island at the Lake.
- (6) \$100,000 for urgent new facilities.
- (7) A playground at Norfolk Street.
- (8) A playground in the Dix Street School section.
- (9) A building at Crompton Park.

In addition to the above, the Commission asks for the following playground facilities:

- (1) An extension to the Cambridge Street playground.
- (2) A playground on South Main Street near Henshaw Street.
- (3) A playground on Pakachoag Hill.
- (4) A playground near the corner of Harrison Street and Water Street.
- (5) A playground near Rice Square.
- (6) A playground on Oak Hill.
- (7) A playground near the corner of Burncoat and Clark Streets.
- (8) An extension to the playground on Indian Lake.
- (9) An extension to the Tatnuck playground.
- (10) A playground near the City Hospital.

# PARK AND PLAYFIELD SCHEDULE

CITY PLANNING BOARD

WORCESTER - MASS.

Name and Location	Acreage now owned by city	Acreage to be added	Date of acquisition	Population served 1970	Remarks
<b>PARKS</b>					
Boynton Park	3.00			(@ 150 per Acre)	
Burncoat Park	41.51			16,950	Outside city limits
Brooks Street Land	1.75			6,226	
Chandler Hill Park	80.34				Adjoining Kendrick Field
Common	4.80	1.50		12,051	[Playground]
Crompton Park	15.25				
Dodge Park	13.00				Zoned for Industry
Elm Park	88.00			1,950	
Fairmount Park	.95			13,200	
Grant Square Park	1.55			142	
Green Hill Park	500.00			232	
Hadwen Park	50.00	48.80		75,000	
Institute Park	25.44			14,820	
Lake Park	110.00			3,816	
Middle River Park	8.10			16,500	
North Shore Reservation	5.95			1,215	
Ramshorn Island	1.50			892	
Salisbury Park	19.99	22.70		225	
University Park	14.00	2.50	1924	6,403	
Knowles Park	39.50			2,475	Secure Options
				5,925	Private Park
Amherst Park - on Pky from Newton Sq to Salisbury St		19.20	1930	2,880	
Bridge Plaza - at Lake Ave. & Nonquit St.		2.00			
Coe's Reservoir Park - from Gates La. & Mill St. to		327.00	1925-45	49,050	
East Mountain Park [Pleasant St.]		57.40	1975	8,610	
Gates Lane Park - from Mill St. to B. & A. R.R.		45.20	1930	6,780	
Granite St. Park		156.30	1970	23,445	
Hadwen Park Annex			1930-35		
Home Farm Park - at Lincoln St. [Indian L]		121.90	1925-on	18,285	
Indian Lake Park - from Chadwick St to North end		267.50	1935	40,125	
Jonas Rice Park - at Crompton Square					
Lower Quinsigamond		40.70	1935	6,105	
North Salisbury		107.00	1960-70	16,050	
Packachoag Park - at Auburn Line		65.00	1925-50	9,750	
Salisbury Park Annex		22.7	1925-40		
South Shore Reservation - at Lake		62.50	Legislative	9,375	
Summit Park [Quinsigamond]		50.60	1945-50	7,590	
Thayer Reservoir Park		273.40	Casualties - 1935 Balance - 1950	41,010	
University Park Annex		2.5	1940		
Upper Quinsigamond Park		43.80	1930-70	6,570	Partly owned

<b>PLAYFIELDS</b>					
		Building/ Playfield		(@ 500 per Acre)	
Beaver Brook Playground	15.49			7,745	
Greenwood Park Playground	15.20			7,600	
Junior High - present - Dorchester-Arthur-Acton-Houghton		2.80	1927	1,400	
Junior High - south - Perry Av. Harlem-Sterling-Seymour		126/3.20	1935	1,600	
Junior High - east - Catherine - Oak Av. Wendell-Lincoln		2.89/6.00	1945	3,000	to be held for School Board
Kendrick Field	14.87			7,435	
South Worcester Playground	4.54			2,270	
Tatnuck Playground	2.94			1,470	
Vernon Hill	16.43			8,215	

<b>NON-SCHOOL PLAYGROUNDS</b>					
				(@ 500 per Acre)	
Oak Hill - near Norfolk St.		7.50	1925	3,750	recommended in Doc 77 for 1923, pag 539

<b>SWIMMING BEACHES</b>					
Bell Pond	3.50	2.00	1924		recommended in Doc 77 for 1923, page 541
Coe's Pond	1.36				
Indian Lake					

<b>GOLF LINKS</b>					
				(@ 500 per Acre)	
Lincoln Street Golf Links		110.50	1923-30	16,575	Municipal Golf Links
Packachoag Hill in Auburn		100.00	1940	15,000	

It will be found on comparing these demands with the Parks and Playfields table and with the School Playground table that most of them are provided for.

*General:*

Realizing the rather harmful effect that schools often have on the value of surrounding private property, and appreciating that much of this harmful effect is due to the noise made and the depredations committed by the children on their way to and from school, especially where they are concentrated near the school, the problem presents itself of making a serious study of the possibility of placing certain schools in the middle of local parks so that the school building and the playground immediately adjacent to it may be as isolated as possible by a belt of park from surrounding residential areas. Thus the neighboring property would be benefited by the park more than it is harmed by the school.

In 1910, the "City Garden" on the island tract between Providence and Beacon Streets, containing about five acres, was developed to excellent advantage with 600 small allotment gardens for boys. It would be desirable to see if there are not vacant lots scattered throughout the community that might be similarly developed and used at nominal cost, especially as a comparison with the zoning map should show that such locations can be found in the heart of the denser residential zones.

The automobile camping park, just south of Lake Park, on the shores of Quinsigamond, has proved so successful under its operation by the Kiwanis Club that it is most desirable that this sort of thing should be extended into other parts of the Worcester district. It is quite feasible to establish such an automobile camping park in Boynton Park. It is strongly recommended that this should be undertaken.

Municipal golf has proved popular, and has paid. While there is still some question about the extent to which a city should provide space for this purpose, experience would indicate that the Worcester Park Commissioners should acquire a tract of land in the neighborhood of Green Hill Park or near Tatnuck, which they would develop with an eighteen hole golf course. Present indica-

tions would point to the fact that such a course ought to pay for itself.

In general more park area has been shown on the Park and Playfield Map than the city will need until it has a population of 500,000. The recommendations are purposely ample as much of the area indicated for park use will be built up and out of the market before the city can afford to acquire it. Furthermore, such a choice of desirable park land should serve to induce property owners to donate part of the "system" to the city.

## CHAPTER XV.

### AVIATION FIELDS

#### *The Problem:*

In the way of aviation fields in Worcester, two places may be mentioned as emergency landing places. One straddles the Leicester line on what is known as Battery "B" farm; the other is on the top of Holy Cross hill.

The Postoffice Department has no plans for aviation as far as Worcester is concerned, but it is gradually developing aviation commercially and there seems to be little doubt that within a limited number of years, aviation will have considerable extension on a commercial scale. That being the case, no consideration of a city plan would be complete that did not take into account the possibilities of certain appropriate sites being reserved as landing fields where they would be easily accessible by automobile or trolley from the center of the city. The plans being developed by the U. S. Air Service for the First Army Corps area contemplate the acquisition of land for landing fields on a route from Boston to the West, with Worcester as an intermediate stop of first importance.

#### *Recommended Aviation Fields:*

It is extremely difficult to find an area in or even near Worcester with a large enough level area to make it practicable for aeroplane landing use. It has been suggested that Eaton Farm at Auburn might be used for this purpose, and that the site of the public school athletic field at Beaver Brook or near there, be used for the purpose. It has also been suggested that a site be created at Green Hill Park. The last two, however, are much too small in area and the land is too costly and too useful for other purposes to warrant its being used for aviation use. The only practicable site is in Millbury to the south of Worcester and possibly to the north in Holden and beyond.

A practicable landing field should be rectangular, "T" shaped or "L" shaped, with preferably as much as 2,000 feet on a side. There is no immediate hurry about acquiring an aeroplane landing field, but if the only available tracts appear to be going to another type of improvement, every endeavor should be made to reserve them for aviation.

## CHAPTER XVI.

### SEMI-PUBLIC TRACTS AND CEMETERIES

#### *The Problem:*

In every city, and Worcester is no exception, there are large tracts, usually nearer the borders of the city, which are used by institutions of various sorts, country clubs, public utilities and so on. These tracts are usually located without control by the city—wherever the promoters can find the sort of land they want at a cheap price. These tracts may be used for cemeteries, hospitals, institutions for dependents or correctional purposes, or country clubs, exposition grounds, water supply reservations and myriad other uses. It often happens, as it is now happening in the southwestern and northeastern parts of Worcester, that these tracts, which have tended to group themselves together, form a large and formidable barrier to growth. Cemeteries and institutional tracts improperly located can do more to choke the normal growth of a city than almost any other factor.

On the other hand, all of these types of use—including also museums and parks, camps, racetracks, fire houses, baseball parks, colleges and private schools and high tension lines, are all essential to the growth of the community.

#### *Control of Large Tracts Recommended:*

So important is the location of these larger tracts in their effect on the growth of the city that it is highly desirable that the Planning Board should be consulted by the promoters of any new purchase of this type before action has gone too far, so that the Planning Board can advise whether or not the sites proposed will have a harmful effect on the development of the city. It is true that the Planning Board has no right to insist that the promoter must follow its advice. It is probable that in nine cases out of ten, the Planning Board would be able to convince the promoter that in his own interest, as well as that of the community, he would be better off to conform to the needs of the city plan.

Fortunately, the Board of Health does control the location



of cemeteries and the extension of existing ones, but to check up with the City Plan, it is decidedly to the advantage of the City that the Board of Health should consult with the Planning Board on each of these problems as they arise.

Furthermore, the question of city and town forests has assumed considerable prominence of late in Massachusetts. Already, eighteen cities and towns in the state have voted to establish town forests. Forty other towns have committees working on the proposition. The size of the existing town forests ranges from a few acres to about 300, with an average of over 100 acres. The Massachusetts Forestry Association offers trees to encourage this work.

It is strongly recommended that certain of the outlying territory in the northwestern part of Worcester or over the line in Paxton or Holden or Leicester be acquired by the City of Worcester for forestry purposes. This would also serve to protect the water supply.

In general, larger tracts of land should be so distributed and laid out that they will not interfere with the full development of the various arteries of travel, present and proposed, and so that these arteries will not have to traverse these large tracts for more than a quarter of a mile, without any opportunity to erect buildings on either side of the thoroughfare. In general, these tracts should be pie-shaped, radiating from the center of the city, so that they will offer the least resistance to the spread of the city.

## CHAPTER XVII.

### WATER SUPPLY

#### *The Problem:*

The watershed of the present Worcester water supply, or what is known technically as the "Catchment Area," is about 25 square miles. In general, throughout the country, it has been found that about 150 square miles of catchment area are required for a million users. On this basis, the Worcester water supply would normally provide for a population of about 170,000 people.

Assuming that the reservoir capacity is already sufficient to tide over the dry months of each year, but not to provide against dry years, it is evident that in any twelve months' period during which the rainfall is below average there is bound to be a shortage in the Worcester supply. With such a small catchment area, an exceptionally large reservoir capacity would be required to provide storage against a series of dry years. On the other hand, evaporation from the surface of the reservoir would empty it considerably. Thus, it is evident that a large catchment area would often be cheaper than a larger reservoir.

The location of catchment areas, reservoirs and aqueducts seriously affects the City Plan in the control that they must have over the development of surrounding parts of the community. The presence of a reservoir or an aqueduct implies the possibility of the creation of a park or reservation, of approaching parkways and of surrounding high-class residence districts—any of which might well be made a feature in planning such parts of the town.

From the standpoint of fire protection, Worcester is in a very fortunate position, because the National Board of Fire Underwriters have rated Worcester among the few cities in the highest class for water supply and fire protection. Therefore, no study would appear to be needed in this direction.

#### *Recommended Future Water Supply:*

An examination of the topographic maps shows that the Wachusett Reservoir System in Clinton and West Boylston can be

extended towards the east. The Ware River, with several ponds at good elevations, could be developed into a series of high level reservoirs. Towards the southwest are a series of ponds which have, however, been largely pre-empted by other municipalities.

In general, recent experience has shown that where there are a number of communities near together, it is far cheaper for them to combine in the development of a common water supply rather than for each to try to have their own.

The Boston-Metropolitan Water Commission has also pre-empted or reserved most of the best, larger sources of water throughout the state. If Worcester is going to continue to grow, it will be almost impossible for her to develop an adequate supply of her own if she is limited to other sources than those controlled by the Boston-Metropolitan Commission.

Therefore, it would seem highly desirable that Worcester should consolidate her interests with those of the Boston Commission.

The next step of the Boston Commission is the development of the Ware River, and when this takes place, it is strongly recommended that Worcester should co-operate in its development with the expectation of using this supply.

The immediate problem in Worcester is the tiding over of the drouth this Fall, which has been taken care of by a temporary connection of the Worcester mains with the Wachusett reservoir. This should always remain available for emergency use.

As an alternative, in case no additional water shed can be secured, it might be possible to use water from Lake Quinsigamond by purifying it and pumping it. Only after careful investigation could it be determined whether the annual costs of filtration and pumping from that source would be greater than or less than the annual cost of participation with the Boston-Metropolitan Water Supply Commission.

## CHAPTER XVIII.

### SEWAGE DISPOSAL

Sewage disposal compares most favorably with that of other cities and the built-up portions of Worcester are well served by sewers. The disposal plant is well located—in fact on the only site where a large level tract with a low enough grade could be found, with plenty of land is already owned by the city to take care of any possible expansion for many years to come, and there is always the possibility of expanding the tract to the south into Millbury.

The design of the sewer system has been already worked out in conjunction with the design of the street system, each being modified when necessary for adjustment with the other.

In the future, this can be continued by the Sewer Department working in co-operation with those who are studying the traffic needs, zoning and the general city plan. The sizes and distribution of sewers can be based on the eventual population as determined under the limitations imposed by the zoning ordinance.

The sewage disposal system, now in operation, appears to be so satisfactory that there is no question of contamination or pollution of the Blackstone River below Worcester.

The only remaining question is the adequacy of storm sewers and the control of freshets. Meadow land between Stafford and Main Streets in the vicinity of Henshaw Street is often inundated, and the area enclosed by Chandler, May and June Streets in the vicinity of Underwood Street often is troubled by the flooding of the cellars. Houses near the corner of Olean and Mower Streets are troubled by surface water. West Boylston Street is troubled by surface water coming down the hill from Burncoat Street and flooding the car tracks. Houses in the vicinity of the corner of Heywood Street and Massasoit Road are often troubled by surface water. All of these areas can be taken care of by the construction of proper sewers. However, the continually increasing amount of impervious areas that are being created in sidewalks, roadways and buildings, increases the run-off and therefore will

constantly bring up new flood problems. Beaver Brook was formerly troubled by freshets which caused much damage.

*Recommendations:*

It is recommended that the work already started of walling in and controlling Beaver Brook be continued so as to release the Beaver Brook valley of any inconvenience from freshets. It is recommended that in several other parts of the town where streets are now inundated that larger storm sewers be constructed whenever funds are available for the purpose.

## CHAPTER XIX.

### GARBAGE AND REFUSE DISPOSAL

#### *The Problem of Garbage Disposal:*

The Overseers of the Poor now collect garbage over about two-thirds of the built-up area of the city, while the balance of the city is largely taken care of by private contractors. The garbage is taken by the House Offal Department to the Poor Farm (at the northern end of Lake Quinsigamond) and fed to swine.

It is a fact that on hazy days in summer, when the wind is right, the odors from the city pig farm are somewhat troublesome to the nearby residential districts. Recently also, objection has been made by the nearby residents that scum from the piggery has floated down into Lake Quinsigamond.

Any difficulty about scum can be readily taken care of by careful operation. Odors can be largely suppressed by confining the pig farm to the portion of the Poor Farm which is farthest from the surrounding residential properties.

#### *Recommended Solution of the Garbage Problem:*

It is strongly recommended that no private garbage collectors should be permitted to operate unless they take all the garbage from their assigned district in all weathers, so that the city can be relieved of the responsibility of certain sections of the town.

Experience throughout the country shows that today, for cities the size of Worcester, feeding the garbage to hogs is the most economical way in which the city can dispose of it. Naturally, there is a certain sentiment against this method on the part of the surrounding property owners especially if, on certain days, they can smell the pigs. On the other hand, with care, this trouble can be largely avoided, and this is especially true if the pig farm is so located that the prevailing winds in summer will rarely blow the odors over the residential districts.

Fortunately, the location of the pig farm in Worcester has been extremely well chosen from this standpoint—on the extreme eastern edge of the city where few summer winds blow from the



east. Therefore, it is recommended that the present method of garbage disposal be continued, care being taken that any extension of the plant be made as far from the surrounding residential property as possible.

*The Problem of Refuse Disposal:*

Under the care of the Board of Health, the city now has five dumps for ashes, tin cans and other rubbish that should not be a menace to health. These dumps are located as follows:

Public dumps for ashes and rubbish are on Southbridge Street opposite the Malvern Road schoolhouse; Clark's dump at the rear of Newton Avenue, and Sawyer's dump, off Chalmers Road.

Private dumps, where ashes may be deposited are: The Worcester Athletic field, north of Chandler Street; Callahan's field, opposite the Rice Square school, Massasoit Road, and the Rockwood Sprinkler dump near Harlow Street.

The Webster Square dump is virtually filled up.

In order to obtain a permit to maintain a dump, the applicant must keep an attendant at the property who will see that all material is spread out, all combustible material burned and that no material that would be objectionable from a sanitary standpoint be deposited there. The dumps are, of course, inspected and regulated by the Board of Health.

The city also maintains a public incinerator at Albany Street, where any combustible rubbish may be burned, and is disposed of, free of charge. This incinerator is equipped with two furnaces, only one of which is usually in use at the present time. The average receipt is about 30 loads a day; the maximum about 50.

*Refuse Disposal Recommendations:*

There are several sections of Worcester where there is great need of fill. This is particularly true of Beaver Brook from Main Street up to the swamp northeast of Newton Square. The city already maintains two or three dumps in this region, but there is nothing that would so help the rounding out of the growth of the city and the development of its thoroughfare and parkway system

as a concentration on the reclamation of the low areas along Beaver Brook. It is recommended, therefore, that everything that can be done to force or encourage fill along Beaver Brook should be done. This would probably mean the opening of several new dumps and the diversion from the Albany Street incinerator of all rubbish good for fill and not injurious to health.

## CHAPTER XX.

### ADMINISTRATION

#### *Organization of the Municipal Government:*

Worcester is governed by a Mayor and City Council. The City Council is divided into two bodies; a Board of Aldermen consisting of one member from each of the ten wards and one member-at-large, and the Common Council consisting of three members from each of the ten wards. The City Council is the legislative body which controls all matters relating to the city plan, such as street widenings and extensions, the purchase of land for public use, the building and zoning ordinances, traffic regulation and similar matters.

The powers of the City Council, of the Mayor and of the various city departments are defined in the revised charter, Chapter 444 of the Laws of 1893. According to this charter, the school committee is the only local body independent of the Mayor and City Council.

#### *Administrative Problems Affecting the City Plan:*

Co-ordination of the departments under the Mayor can be secured by him. Co-ordination between the departments under the Mayor and those under the City Council can be secured only through action of the City Council. The latter body is divided into a large number of standing and special committees, each of which, on account of pressure of work, is forced to study independently those parts of the city development which are assigned to it.

Worcester shares the experience of most other cities in finding that there is much overlapping and waste due to a lack of effective co-ordination among the various controlling agencies.

The accompanying table shows the various council committees and the city departments, boards and officers affected by each part of the Comprehensive City Plan. (For each chapter, the uppermost corresponding body is the one most affected.)

This table shows strikingly the many ramifications of the various city bodies and offices and the number of different bodies affected by each part of the Plan.

## A CITY PLAN FOR WORCESTER

Official Body or Officer Affected by each Chapter of the Planning Board's Report for 1923.

CHAPTER NUMBER	SUBJECT OF CHAPTER OF CITY PLAN REPORT	JOINT STANDING COMMITTEE OF THE CITY COUNCIL	CHARTER BUREAUS OR OFFICES	CITY DEPARTMENT (Ordinance Nov. 27, 1916)	OTHER BOARDS CREATED BY ORDINANCE
	Letter of Transmittal	Committee of the Whole	Mayor	City Clerk: Clerk of Committees	Planning Board
I.	General Conditions	Committee of the Whole	Mayor	City Clerk: Clerk of Committees	Planning Board
II.	Building Zones	Ordinances	Mayor: City Solicitor: Supt. of Public Buildings	Law: Fire: Health: Inspection of Buildings	Planning Board
III.	Fire Districts	Ordinances: Fire Department	City Solicitor: Supt. of Public Buildings	Law: Fire: Inspection of Buildings	Board of Engineers Planning Board
IV.	Sub-division Plats	Ordinances: Mayor: Streets	Mayor: City Solicitor City Engineer	Street: Engineering: Law	Planning Board Board of Survey
V.	Traffic Regulation	Police: Street Railways	City Solicitor: Board of License Commissioners	Police Law	Planning Board
VI.	Thoroughfares	Streets: Street Railways	Mayor: City Engineer	Street Engineering	Planning Board: Board of Survey
VII.	Parkways	Streets	City Engineer	Street Engineering	Board of Park and Recreation Commissioners: Planning Board
VIII.	Street Cars and Busses	Street Railways: Streets	City Engineer	Street Engineering	Planning Board
IX.	Railway and Grade Crossings	Streets: Legislative Affairs	City Solicitor: City Engineer	Street Engineering: Law	Planning Board
X.	Street Fittings and Art	Streets: Lighting Streets	City Engineer Supervisor of Wires	Street Engineering Street Lighting	Planning Board: Supvr. of Wires Board of Parks and Recreation Com.
XI.	Public Buildings	Public Buildings	Supt. of Public Buildings	Inspection of Buildings Public Library	Directors of Public Library Planning Board
XII.	Fire Stations	Fire Dept.: Public Buildings	Supt. of Public Buildings	Fire Inspection of Buildings	Board of Engineers: Planning Board

## A CITY PLAN FOR WORCESTER—*Continued*

Official Body or Officer Affected by each Chapter of the Planning Board's Report for 1923.

CHAPTER NUMBER	SUBJECT OF CHAPTER OF CITY PLAN REPORT	JOINT STANDING COMMITTEE OF THE CITY COUNCIL	CHARTER BUREAUS OR OFFICES	CITY DEPARTMENT (Ordinance Nov. 27, 1916)	OTHER BOARDS CREATED BY ORDINANCE
XIII.	Schools and their Play- grounds	Education Public Buildings	School Committee: Supt of Schools: Supt. Public Buildings	Inspection of Buildings	Trustees of Independent Industrial School: Planning Board
XIV.	Parks and Playfields				Board of Parks and Recreation Commissioners: Planning Board
XV.	Aviation Fields	Public Buildings	Supt. of Public Buildings	Inspection of Buildings	Board of Parks and Recreation Commissioners: Planning Board
XVI.	Semi-Public Tracts and Cemeteries	Ordinances: Public Health: Charities	City Solicitor: Board of Overseers of Poor: Comm. Hope Cemetery		Board of Trustees of City Hospital: Planning Board
XVII.	Water Supply	Water: Legislative Affairs	Water Commissioner City Solicitor	Water: Law	Planning Board
XVIII.	Sewage Disposal	Sewers: Legislative Affairs	Supt. of Sewers: City Solicitor	Sewer: Law	Planning Board
XIX.	Garbage and Refuse Disposal	Public Health: Charities	Board of Overseers of Poor	Health	Planning Board
XX.	Administration	Mayor: Ordinances	Mayor: City Solicitor	Clerk of Committees: Law	Planning Board
XXI.	Financing Improvements	Finance: Ordinances: Legislative Affairs	Mayor: City Solicitor: City Engineer: Board License Comm.	Sinking Funds: Law: Clerk of Committees: Engineering	Planning Board
XXII.	Comprehensive Plan	Whole: Mayor: Finance	Mayor: City Engineer: City Solicitor	Clerk of Committees: Engineering	Planning Board
XXIII.	Emergency Program	Ordinances: Finance: Streets: Fire Department: Police: Education: Water: Street Railways: Public Buildings: Mayor: Health	Mayor: City Solicitor: City Engineer: School Committee: Water Commissioners: Supt. of Public Buildings	Clerk of Committees: Law: City Clerk: Street Engineering: Fire: Police: Water: Inspection of Buildings: Public Library	Board of Engineers: Directors of Public Library: Board of Parks and Recreation Commission- ers: Planning Board (Boards of Survey)
Appendix "B" County Planning		Legislative Affairs	Mayor: City Solicitor: City Engineer	Clerk of Committees: Law: Street: Water	Board of Parks and Recreation Commissioners: Planning Board

While the Planning Board has a broad scope under the Massachusetts Enabling Act, its powers are strictly advisory and therefore, its force is one of persuasion only—the assumption being that if it cannot make a convincing argument in favor of its recommendations, there is something wrong with the recommendations themselves.

Experience has shown that there is a distinct need of a body within the City Council itself that can act as a clearing house and co-ordinator when matters that have to do with the City Plan come up, and so it is strongly recommended that there should be created in the City Council a joint standing committee on the City Plan, and that that committee should have referred to it, collaterally with the special committee to which the matter is now referred, each item which in any way affects the City Plan. This committee on the City Plan would then check the given proposition with the Planning Board to see whether the project conformed to the City Plan or not, and if it did not, the committee should decide whether the given project should be adapted to conform or whether the City Plan should be modified to take in the new idea while, at the same time, preserving the continuity and spirit of the Plan itself.

In other words, the City Plan Committee would be an adjusting body that would preserve a sense of proportion and proper relationship among the various matters which currently arise, affecting the city's physical development.

#### *The City Planning Board:*

The powers of the Planning Board as defined in Sections 70 to 72 inclusive of Chapter 41 of the General Laws are as follows: "The Planning Board shall make careful studies of the resources, possibilities and needs of the city, particularly with respect to conditions injurious to the public health or otherwise in and about rented buildings, and shall make plans for the development of the municipality with special reference to proper housing of its inhabitants. The Planning Board shall make a report annually to the City Council giving information regarding the condition of the



city and any plans or proposals for its development and estimates of cost thereof."

According to Section 75 of Chapter 41 of the General Laws, the Planning Board and the City Council may order the Board of Survey from time to time to cause plans to be made of such territory or sections of land in the city as the Planning Board may deem necessary, showing thereon the location of such ways, whether already laid out or not, as the interest of the public may or will require in such territory, showing clearly the direction, width and grades of each way and of drainage.

According to Sections 26 and 27 of Chapter 40 of the General Laws, the City Council may ask the Planning Board to prepare for its approval a zoning ordinance and maps.

The powers of the Planning Board are purely advisory, but they are as broad as in most other states. In Massachusetts, however, the control of plats and sub-divisions is vested in a Board of Survey and the control of works of public art is vested in an Art Commission—both of which are described in this chapter. There is no overlapping with or infringement upon the existing powers and functions of the other city departments and commissions.

As outlined by the General Laws, the prime function of the Planning Board is to make a complete City Plan which it should determine only after becoming fully acquainted with the needs, desires and projects of every city department, or council committee, interested in any phase of the city's physical development. This City Plan, instead of being a patchwork adjustment of a number of independent ideas, should rather be an entity developed scientifically from the basic underlying facts as determined by a fresh and impartial investigation. Insofar as it is practicable to incorporate or adjust the individual ideas of the various departments and committees into the City Plan as integral parts of it, without material sacrifice in the other parts of the Plan, such adjustment should be made. Wherever such adjustment cannot logically be made, the contributory facts as brought out by the city planning investigations should, of themselves, convince the proponents that the best good of the community in the future demands a modification of their desires.

*Recommendations for the Planning Board:*

The Planning Board can fill a most useful and unique function by acting as a clearing house for all projects which affect the physical development of the city. At present, there is no one body, and no committee of the City Council, that acts as a co-ordinator of all projects for the city's development. Therefore, it is strongly recommended that, following the powers granted to it by the state laws, the Planning Board should pass upon every project which comes within its scope.

To this end, the complete City Plan and program, embodied in this report to the City Council, should be definitely before each council committee, city department, board or officer affected by it, as indicated in the accompanying table. This report should serve as a point of departure, and no project should be considered by any city body without studying its relationship to the rest of the City Plan.

In some cities, the City Plan (in whole or in part) is being officially adopted by city councils as the "City Plan Map." In some cities, no departure from the official map is allowed except in exceptional circumstances—but the more common practice is to recognize the City Plan Map as a guide and to require that each city body or officer shall consult with the City Planning Board before acting on any physical improvement not in accordance with it. More than this, the City Planning Board has the opportunity of appearing before the Council and showing why the proposed improvement should conform to the City Plan, or if conditions have changed, or if the original plan can in any way be improved, the Planning Board would be expected to modify or improve the Plan, always preserving its spirit and continuity.

In this way, the Planning Board would act as a watch-dog over the introduction of the City Plan and, at the same time, it would preserve the continuity of the principles and spirit which animated it.

*Board of Survey:*

According to Sections 73 to 81, inclusive, of Chapter 41 of the General Laws, every city and town has the right to create a Board

of Survey. To such a Board, once appointed by the Mayor, (in the month of January), the state laws delegate most important and useful powers. These powers include the following:

"No person shall open a private way for public use without first submitting to the Board of Survey suitable plans thereof in accordance with such rules and regulations as the Board may prescribe. The Board of Survey shall give a public hearing thereon, and after the hearing the Board may alter such plan and may determine where such ways may be located and the widths and grades thereof; and shall indicate any modifications on said plans. Once the approved plans are filed, no way in the territory to which the plans relate shall be laid out or constructed except in accordance therewith. If any person shall open for public travel any private way not previously approved by the Board of Survey, neither the city nor any other public authority shall place any public sewer, drain, water-pipe or light in, or do any public construction work of any kind, or make repairs on, such private way. No register of deeds shall record any plan showing thereon proposed ways in any city having a Board of Survey unless there is endorsed thereon a certificate of said board."

In addition, a Board of Survey, on the request of the Planning Board and the City Council, is obliged to locate streets even where none now exist in such territories as the Planning Board and Council may designate; and once this plan has been made and properly approved, the law stipulates that it shall be the plan governing the future development of the territory affected.

Also, the Board of Survey can impose and the City Council can adopt setback building lines and "thereafter no structure shall be erected or maintained between the exterior lines of the way so established, except that buildings or parts of buildings existing at the time of the establishment of said lines may remain and be maintained to such extent and under such conditions as may be prescribed by the Board of Survey."

Thus the powers of the Board of Survey, working in collaboration with the Planning Board, are broad and effective. Through this medium the city has at last the right to control, in the interest of the community as a whole, the numerous sub-

division plats that are filed each year, and to impose on them and on other streets adequate setback building lines.

More than this, the Planning Board and Board of Survey together can create a City Plan and actually lay down new thoroughfares and streets in the undeveloped parts of the city, and force each individual sub-divider to conform to this general plan: or, if he will not conform, can refuse to give him the city sewer, water, light, street and sidewalk service.

So important is this control to an orderly development of the city that it is vital that a Board of Survey should be appointed at the earliest moment—that is, in January, 1925.

The Board of Survey consists, usually, of from three to five members. The ideal Board consists of three members, of whom one is a civil engineer used to the laying out of sub-division plats, one a real estate man used to handling sub-division operations and the third may be a lawyer or some other citizen. The city engineer must, by law, be the secretary of the Board of Survey. In some towns, the Planning Board acts as a Board of Survey, and in most other states, the functions of the Board of Survey and of the Planning Board are combined in one body. In Worcester, it is optional which method is used, but the important matter is that a Board of Survey should be appointed and started operating in January, 1925.

#### *Art Commission:*

Sections 82 to 84, inclusive, of Chapter 41 of the General Laws, provide for the creation, where desired, of an Art Commission to consist of three members. The powers of an Art Commission are as follows:

“No municipal structure shall be erected and no work of art or ornament or object of utility, except authorized structures of public service corporations and public watering troughs or drinking fountains, not constituting works of art or ornament, shall be placed on any public ways or on any public lands other than cemeteries, and no work of art or object of decoration shall be placed in or upon any public or municipal building or be removed relocated or altered, unless the design thereof or the action to be

taken in connection therewith shall have been approved in writing by the Art Commission or unless said commission shall have failed to disapprove of same in writing within thirty days after its submission. Whoever violates the provision of this section shall be punished by fine of not more than two hundred dollars."

Thus an Art Commission has unique powers, granted to no other body, of controlling the aesthetic development of the city, at least in so far as it has to do with public property. In a city the size of Worcester, this is most important; for structures on public property are being erected currently and in considerable numbers, all without any sort of control of their aesthetic character or harmony.

In cities like New York and Philadelphia, where art boards have been in existence for a number of years, it has been found that for the greatest usefulness such a board should consist largely of architects, sculptors and painters, together with laymen who have been prominently identified with art movements and who are distinguished for their taste and appreciation of works of art. The approval of such works of art is too highly specialized and too responsible a matter in a larger city to leave exclusively to a general lay commission such as the Planning Board, whose members are chosen for their outstanding ability to handle effectively the economic rather than the aesthetic features of a city plan.

It is most desirable that an Art Commission should be appointed in the near future. In a city the size of Worcester it should consist of three members, chosen for their appreciation of what is worth while in civic art. One of the three should be a member of the Planning Board, preferably the architect.

## CHAPTER XXI.

### FINANCING IMPROVEMENTS

#### *The Problem of Financing Improvements:*

Public improvements are financed in Worcester by bond issues. The amount that the city can spend on public improvements is limited by an ordinance of February 19, 1915 which is in addition to Chapter 719 of the Acts of 1913 on Municipal Indebtedness, and by the famous "Coe Act," Chapter 211 of the Acts of 1916. "No indebtedness other than temporary loans in anticipation of revenue for the financial year in which they are incurred, in excess of the appropriation for sinking funds, except for the development of a water system, the construction of trunk sewers costing over \$5.00 per foot, for increasing the capacity of the sewage purification plant, for the erecting of high school buildings and for the abolition of grade crossings, and for emergencies, shall be incurred."

As a result of this Act, Worcester spends more than the average city of its size on some and much less on other permanent improvements. According to the U. S. department of Commerce Statistics for 1919, Worcester spent 20 to 25 per cent less for general administration than Providence, Springfield, New Haven or Bridgeport. For highway improvements, Worcester spent 11½ cents per capita as against 23 cents in Providence, 18 cents in New Haven, 26 cents in Bridgeport and 55 cents in Springfield. For parks and playgrounds, Worcester spent 55 cents per capita as against 64 cents in Providence, 73 cents in New Haven, 95 cents in Bridgeport and \$1.01 in Springfield. Since 1919, Worcester has spent 20 per cent less annually on interest charges than most other cities of its size. The natural result is that Worcester's credit is exceptionally high so that a bond issue was floated last year without difficulty at the remarkably low net interest rate of 3.98 per cent.

Expenditures are further controlled by the ordinance passed February 17, 1920 prescribing that the tax rate should not exceed



\$24 per thousand on the average valuations for the last three years.

According to the Massachusetts law, the Mayor prepares and submits to the City Council each year a budget of estimated income and expenses. The City Council can adopt the budget as submitted by the Mayor by a two-thirds vote, but it cannot increase the Mayor's budget.

According to the Auditor's statement, January 1, 1923, the taxable assessed valuations amounted to \$259,151,620. The average taxable assessed valuations for the previous three years amount to \$243,528,346. The debt limit was  $2\frac{1}{2}$  per cent of this amount or \$6,088,208.65. The total bonded debt was \$10,798,000, from which, subtracting the exempt debt, we find a net debt chargeable against the debt limit of \$3,119,414.79. Thus in 1922, the borrowing capacity inside the debt limit was \$2,968,793.86.

For the year ending November 30, 1922, the total budget appropriation was \$7,721,525.94. Other revenues brought the total amount appropriated up to \$12,922,490.70. The total amount expended during the fiscal year was \$11,105,490.20, with an unexpended balance available for 1922 of \$1,817,000.50.

In 1920, property taxes constituted about 72 per cent of the revenue of Worcester; the earnings of public service enterprises operated by the city represented 9.3 per cent of the total revenue for that year. The per capita tax levy was \$33.90, of which \$29.04 was for the city, \$2.77 for the state and \$2.09 for the county.

### *Serial Bonds:*

Since 1913, all bond issues have been serial bonds which are being reduced at the rate of about \$560,000 a year. From 1911 to 1913, all bond issues were for a maximum of ten years. From 1906 to 1911, bond issues were for a maximum of twenty years. From 1889 to 1906, bond issues were for a maximum of thirty years. Previous to 1889, bond issues were for a maximum of fifty years. A number of these latter are still on the books. The last of the funded loans matures in 1938. The average interest rate is about 4 per cent.

This is an exceptionally healthy financial condition, and the fact that most of the outstanding bonds expire within the next fifteen years or less is highly commendable, especially since long term bonds are in the long run much more costly to the city than are those with a short life. The fact that the city changed over ten years ago to serial bonds is producing a still further saving. On the other hand, there is such a thing as retarding the proper growth of the city and actually wasting money by pursuing a policy of patching instead of permanently renewing and constructing ahead according to a practical plan.

*"Pay-As-You-Go" Policy:*

One of the chief reasons why Worcester has such a remarkable reputation in the investment world is because it has thoroughly adopted the "pay-as-you-go" policy, for under the "Coe Act," almost all of the physical improvements of the city must be paid for out of the current city budget instead of spreading the cost over a long series of years. This has served as a very definite and effective check on unnecessary and unwise expenditure but, on the other hand, it has had decidedly bad effects which are already outweighing the good effects. Most fortunately the present administration realizes this and is beginning to correct it.

Worcester is growing rapidly, as cities grow. Its future is bright and it offers many inducements to the outsider to come and settle there, but its very prosperity and healthiness is a drawback when it comes to the question of saving the city's money. You cannot keep the rapidly growing boy in the same clothes he wore a year ago when he was three inches shorter. Worcester is decidedly in that predicament. It is rapidly outgrowing its improvements except those such as sewage disposal, water supply and high schools—which are exempt from the Coe Act.

If one must live entirely within one's income each year, it is human nature to patch and repair in a hand-to-mouth way, rather than to build permanently according to a long time program. Cities can be penny-wise and pound-foolish as well as individuals, and there is no question in the mind of the impartial outside observer that Worcester is wasting the taxpayers' money today

by too much patching and not enough permanent construction. It is cheaper in the long run to carry out a less number of improvements each year and to do them thoroughly and so that they will wear without constant repair, rather than to try to cover more ground with patching. Temporary schoolhouses and double sessions are some of the most wasteful investments a city can make. Where the patching process has been going on too long, as it has in the case of the grammar schools, there is only one possible course open to the city today and that is, frankly to admit its mistake and to secure immediately the authority and the funds necessary to build now the vitally needed schools. This same principle applies in a somewhat lesser degree to other urgently needed improvements—such as the paving and widening of certain thoroughfares, the creation of various new playgrounds, the assurance of an adequate water supply, etc.

More important still the "Pay-as-you-go" principle actually costs the taxpayer in the long run 15 to 25 per cent more than would Serial Bonds of a reasonable life. For the city can borrow money at 4 to 4½ per cent while the taxpayer has to pay 6 per cent. Therefore it is far cheaper for the taxpayer to carry city improvements on city credit than on his own.

#### *The Tax Valuation Equalization:*

In Worcester, as in most cities, a special investigation would undoubtedly reveal that there are many undertaxed parcels, some that are not taxed at all and, in general, a great many cases of inequitable distribution of tax valuations. In certain cities, this has led recently to a systematic equalization under expert guidance and has, in every case, led to an aggregate increase in ratables that has furnished considerable additional taxes to the city without causing unreasonable hardship to individual property owners. In other words, such a study equalizes upwards, bringing up the unnecessarily low valuations to a general, fair average. In 1923, the Worcester Board of Assessors visited various other cities to study this problem and on the strength of their observations recommended that a similar investigation be made for Worcester. It is greatly to be hoped that such an investiga-

tion, along thoroughly impartial lines, will be made in the near future.

*Betterment Assessments:*

The State legislature has enacted laws governing the purchase of property for public use, as in Chapter 40, Section 14, of the General Laws; and for the acquisition of parks and playgrounds according to Chapter 45, Sections 2-16 and under Public Domains according to Section 19 of the same chapter; and for the assessing of betterments, according to Chapter 80, sections 1-17 of the General Laws.

The power of assessing benefits upon abutting or neighboring properties is not as broad nor as useful in Massachusetts as in many other states. Elsewhere, often the whole cost of the land acquired, and of its improvement, can be assessed upon abutting or nearby properties.

It can often be shown in Worcester, as in other cities, that the properties affected are benefited more than the total cost of the land and the improvement. Obviously, it is only fair that the property owners who benefit most by the improvement should pay their share of its cost.

It is significant that during 1921, out of \$23,402.16 paid in land damages for street improvements plus \$108,651.80 spent in new street construction in Worcester, only \$18,591 was returned in betterment assessments. Out of \$123,000, approximately, spent on parks and playgrounds, only \$14,000 was returned. Out of \$25,648 spent on new sidewalks and repairs, only a little over one-half was assessed on abutters. Kansas City has found that one section of the city after another has petitioned the City Council to be allowed to pay the full cost of acquiring and developing local parks and parkways on account of the extremely beneficial effect that such improvements exert on neighboring private properties. In New York City, it is the custom to spread most of the cost of streets, thoroughfares, parks and parkways over the full local area benefited on a sliding scale, decreasing in proportion as properties are more distant from the improvement. A thorough study of all possibilities of this sort should be made for each local

improvement proposed as a part of the City Plan. It would undoubtedly reduce the burden on the general tax budget.

*Excess Condemnation:*

The Belmont Street widening cost the city \$50,212.30 for all of the land taken and \$152,614.84 for the improvements, a total of \$202,827.14. The city sold the excess land acquired to private property owners, mostly abutters, for the sum of \$18,735.50 or 9.23 per cent of the total cost of land and improvements. Thus the net cost to the city was \$184,091.64. The land which was resold actually cost the city, on a square feet basis, \$12,973.50. Thus the apparent net profit on this land to the city was \$5,762.00, or 44.4 per cent. Applying the "Cambridge Rule" for the proportionate value of the rear portion of a lot, the land sold actually cost the city about \$6,000. Thus the real gain to the city on the excess land was over 300 per cent. In view of the success of this undertaking, it is obvious that excess condemnation has a real use.

Massachusetts used to have an excess condemnation or remnant act Chapter 443 of the Acts of 1904. Unfortunately, this was repealed by Chapter 257 of Section 203 of the Acts of 1918. This repealing act did not go into effect until February 1, 1921. It permitted cities to take land in excess of that actually required for an improvement with the possibility of selling, after the improvement had been made, such remnants or extra properties as were not needed for the improvement itself. As the improvement created increased values on abutting properties, this should have proved a real advantage to the city as a means of making worth while improvements pay for themselves.

The only case where this principle was applied in Worcester was under a special act and that was in the case of the widening of Belmont Street in 1916.

While this principle should be used with discretion, nevertheless, experience in other cities has shown that there are various cases where it is of great value to the city to use excess condemnation. While cities may now secure this right by special legislation for each case, a study of the re-enactment of the former

law with possible modifications should be made as a part of the realization of the City Plan.

*Building Lines:*

Massachusetts cities have a unique and profitable method open to them of widening thoroughfares and parkways to take care of increasing traffic. According to Chapter 82, Section 37, of the General Laws:

"If a city by its city council or a town accepts this section or has accepted corresponding provisions of earlier laws, a building line not more than forty feet distant from the exterior line of a highway or town way may be established in the manner provided for laying out ways, and thereafter no structures shall be erected or maintained between such building line and such way, except steps, windows, porticos and other usual projections appurtenant to the front wall of a building, to the extent prescribed in the vote establishing such building line, and except that buildings or parts of buildings, embankments, steps, walls, fences and gates existing at the time of the establishment of the building line may be permitted to remain and to be maintained to such extent and under such conditions as may be prescribed in the vote establishing such building line. Whoever sustains damage thereby may recover the same under chapter seventy-nine. A building line established under this section may be discontinued in the manner provided for the discontinuance of a highway or town way. Whoever sustains damages by the discontinuance of a building line may recover the same under chapter seventy-nine."

This power, which has been and is effectively in use in Springfield and in various of other Massachusetts cities and towns, is proving a cheap way of widening thoroughfares. The process is this: Instead of widening a narrow street that is needed as a thoroughfare by purchasing outright a strip of land along one or both sides of the street (together with such parts of existing buildings as may overlap it), this building line power makes it possible for the city to merely acquire an easement over the needed strip of land, while the actual property owners retain the full use of their land and the buildings on it until such time as the city is ready to physically widen the street. This has several advantages over the direct purchase method. In the first place, the taking of the easement prevents the erection of often prohibitively



costly structures within the strip. Thus, eventually, when the city is ready to take over the strip by purchase, only the existing, depreciated and often obsolete buildings have to be acquired.

Again, a city often finds that the majority, if not most, of the abutting property owners are willing to waive damages on the imposing of the building line easement, so that the city actually secures a large portion of the easement for nothing.

Where damages are not waived, the adjusting is done by the Court, and where the disposition of certain property owners to waive their damages is taken as evidence that betterments may largely cancel damages, the result is that the actual damages paid for by the city are bound to be relatively small.

When it comes to the purchase of the strip and the carrying out of the street widening, the city has to pay only a very small amount for the buildings and plots that have to be acquired, for the benefits to the abutting property owners are so largely cancelled against the value of the property in the strips taken that the actual money paid by the city to the property owners is small.

In general, it can be said that in most cases the application of the principle of the imposing of building lines is much the cheapest way in which the city can provide ahead for its growing street traffic.

#### *Control of Building in Mapped Streets:*

The Massachusetts Federation of Planning Boards is presenting to the 1925 legislature a bill to control under "Eminent Domain" buildings within the bed of any mapped street once it is officially designated. Such a law could well be the means of saving the city large sums on eventual expropriation for street opening.

#### *Municipal Ownership:*

Municipal operation of public utilities often proves a source of revenue to the city. Worcester has tried it successfully in the case of its water supply, sewage disposal and garbage disposal. Whether this principle should be extended or not to other utilities is a question that might be studied to good advantage. As it is a

matter of finance and administration rather than a matter of city planning, it should not be dealt with further in this report.

*State and County Aid:*

Worcester receives and pays for a limited amount of state or county aid. There are several miles of "state aid" roads in the limits of Worcester. Considering the rural character of the outlying sections of Worcester, it is reasonable to demand that more mileage of the outlying thoroughfares should receive state aid.

Worcester enjoys the use of Wachusett Mountain Reservation and the Boston-Metropolitan water supply at Wachusett reservoir at Clinton and West Boylston. Worcester should make more use of the latter and should encourage the creation of new state reservations within motoring radius.

*Licenses and Fees:*

The License Board of Worcester now controls hawking and peddling, restaurants, wholesalers, coffee houses, the handling of liquors, and signs and encroachments over streets. Encroachments, billboards, sky signs, projecting signs, gas pumps and many such features are proper subjects for consideration as a part of the City Plan. It is worth while to study the possibilities of their effective control by means of sufficiently high license fees which would not only bring about a more orderly development of the streets, but which might at the same time provide a liberal income for the city.

*General Suggestions:*

The following list suggests some of the possibilities for financing public improvements which have been applied in certain other cities and which may well be carefully considered in Worcester with a view to facilitating the realization of the City Plan:

- (1) A searching study of real estate assessed valuations looking to a more perfect equalization.
- (2) Capitalizing by immediate increase of tax valuations the beneficial effects of city-wide real estate restrictions as imposed by zoning.

(3) Capitalizing by immediate increase of tax valuations the rejuvenating effects of zoning and city planning improvements especially in blighted districts.

(4) Taking every advantage of the possibilities of local assessment for benefits due to public improvements.

(5) Extending the area over which betterment assessments are levied.

(6) Securing the benefits of a re-enacted excess condemnation act.

(7) Securing the benefits of municipal ownership and operation for such facilities as can be carried on profitably.

(8) Imposing adequate franchise taxes on all new or renewed franchises.

(9) Imposing adequate license fees or special taxes on all services operated on public property or at public expense.

(10) Making sure that new streets and parks as provided to take care of population increases are so located and laid out as to bring the maximum returns to the city in the way of increased taxable values.

(11) Devising schemes for the more compact development of the city so as to make greater use of existing public improvements like sewers, water mains, parks, playgrounds and schools.

(12) Making increased use of state aid on outlying highways.

(13) Encouraging the creation of more state reservations readily accessible from Worcester

(14) Making use of the Boston-Metropolitan water supply system.

(15) Imposing building line easements for street widening purposes until such time as it is necessary to actually widen the street.

(16) Supporting ——— bill presented to the 1925 Legislature for the control of building within the bed of officially mapped streets.

## CHAPTER XXII.

### COMPREHENSIVE CITY PLAN

#### *The Need of a Comprehensive City Plan:*

The whole City Plan has been divided up into subjects with their corresponding chapters, for convenience of consideration. The matters as treated in the various chapters have not been studied separately. Each has been studied in connection with all of the others as a part of the common plan. All of the parts of this plan are interdependent and interrelated so that studying any one part separately is liable to give a false impression.

However, from the standpoint of presentation of the findings and the reason back of them, it is more convenient to divide the whole plan up into separate chapters.

Now it becomes important to see how they interweave and, to that end, a large general City Plan Map accompanies this chapter, and on this map are indicated all of the recommendations of the various chapters of the report, insofar as they can be indicated graphically. At the same time, the recommendations of the various chapters should be placed side by side for comparative study with a view to amalgamating them into a common program.

#### *Order of Urgency:*

The carrying out of a City Plan should not increase the annual expenditure of municipal funds. The yearly budget is more or less fixed and limited, whether the funds be derived from the tax levy or from bond issues.

The usual policy in Worcester, as in nearly every city, has been to struggle along from month to month patching up here and there and doing those things on which the taxpayers insist most strongly. It is customary for the strongest demand to secure the earliest satisfaction. In fact, it is difficult to do otherwise unless it is possible to show the public just where each particular demand fits into a general plan and program for a fully rounded out development of the community.

It should be of the greatest advantage to Worcester Councilmen and officials to be able to show to a petitioner the exact relation of his demand to the other parts of a complete program for the city's development and just when, logically, his demand should be taken up according to the program of relative urgency of the elements of the general plan. There is, therefore, the utmost need of such a scheduled program, extending over many years.

In each chapter of this report, the relative urgency of the recommendations has been indicated, and on the tables of schools, parks, playgrounds, thoroughfares, parkways and trolleys, the order of urgency has been worked out in great detail.

A study of these tables and recommendations shows, at a glance, that there are a certain limited number of items that call for immediate attention, and it is that immediate list which has been made the subject of the next chapter, Chapter 23, entitled "An Emergency Program to Meet Deficiencies."

The execution of the rest of the recommendations is spread over a period of 50 to 75 years. In general, the recommendations have been so spread out that there should be no undue burden on the taxpayer in any five year period, but rather so that the realization of the complete program would be spread uniformly over the next half century.

It would be expected that if Worcester failed to grow as prognostications seem to warrant, that the program of execution would be correspondingly retarded. On the other hand, if Worcester should have an unexpected boom, then the program could be accelerated. Of course, the exact time apportioned to any specific improvement is open to change. It is only the relative time of execution that can be planned for now.

In general, the recommendations can be divided into two main classes as follows:

- (1) Those matters which affect the control of the character and intensity of use of private property, all of which can be controlled by ordinance or law.
- (2) Those matters which have to do with the acquisition or improvement of property for public use, all of which involve more or less expense to the city.

All of the matters which affect the use of private property can be and should be taken care of immediately by the City Council, especially as they can all be handled without expense to the city or the taxpayers. These matters include the following:

- (1) Building Zone Ordinance.
- (2) Amendments to the Building Ordinance.
- (3) Fire Districts Amendments to conform with the Building Zone Ordinance.
- (4) Creation of a Board of Survey.
- (5) Adoption of rules and regulations controlling the layout of sub-division plats.
- (6) Revision of traffic regulation.
- (7) Billboard legislation.
- (8) The appointment of an Art Commission.
- (9) The adoption of a City Plan Map.

With regard to the improvements for which the city must pay, the immediate expenditure is limited unless the projects are exempt from the Coe Act. Among those which are thus exempt from the Coe Act, there is one that is being acted upon now and should be pushed to early completion without fail, and that is the physical connection of the Worcester water supply system with the Boston-Metropolitan system. Nothing should stand in the way of the consummation of this service.

The improvement of the grade crossing elimination at Summit and the carrying out of the grade separation at Lincoln Square and of the one on West Boylston Street should be pushed to completion in the near future.

Such reclamation work as the Sewer Department can perform along Beaver Brook, within the limits of its exemption from the Coe Act, should be continued and rapidly carried to completion.

The re-laying and re-routing of street cars and the addition of new bus lines, as recommended in this report, should be insisted upon continuously and unfalteringly. The execution of the program should cost the city very little, but whatever may be needed, from time to time, in the way of minor street improvements on the part of the city, should be carried out without hesitation, so that



it may never be the city's fault if improved street car service is not provided by the street railway company.

With regard to the rest of the recommendations as to thoroughfare widening and extension, parkways, street fittings, public buildings, schools, playgrounds and parks, everything possible should be done to live up to the program so that the city will never find itself anywhere stifled or throttled by inadequate public services. If it is impossible for Worcester to execute this program on schedule, and thereby keep abreast of its growth, then it will be obvious that the Coe Act is doing more harm than good and should be modified as far as may be necessary to meet the changing conditions.

*Mobility of the City Plan:*

Obviously, a city plan cannot be made once and for all. Conditions are constantly changing. It is impossible to foresee today just how conditions are going to develop 25 and sometimes even 10 years hence. Therefore, it should be understood that the City Plan as detailed in this report is not fixed and unchangeable, but rather that it is plastic and capable of change by the City Planning Board and the City Council, whenever changing conditions demand. However, a plan once made continues in spirit if not in detail. It becomes the duty of the City Planning Board with the backing of the Citizens' City Plan Committee to preserve that continuity of intent through the decades.

## CHAPTER XXIII.

### EMERGENCY PROGRAM TO MEET DEFICIENCIES

During the last decade or two the city has been rapidly outgrowing its public facilities. The most urgent matter before the city today is to catch up with its growth. The problem is to see how the City Council can provide the greatest amount of effective relief for the least expenditure of money.

In the complete City Plan program it is expected that the execution of most of the recommended improvements will be spread over a period of at least 50 years. However, a comparative study of the complete list shows that some are more urgent than others, while a sifting out of the more urgent shows that there are a certain limited few that should be undertaken immediately. It is this latter group only that is considered in this emergency program.

All of the various elements of the complete City Plan may for convenience be divided into two main classes.

- (1) Everything that has to do with the control by the city or state of the character and intensity of use of private property. This includes building and zoning ordinances, fire districts, sub-division control and traffic regulation.

- (2) Everything that has to do with the construction or physical development of public lands or structures such as streets, parks, playgrounds, public buildings, water supply, sewerage disposal, etc., and also including, insofar as they effect physical development of the city, many semi-public or public utilities properties.

The first class, which has to do with the control of the use of private property, can be dealt with simply by the passage of ordinances or regulations, usually under the police power, without compensation by the city to the owner, it being understood that the police power can be used only when necessary for the common good, and where it works no unreasonable hardship on the individual property owners.

Thus as there are various ways in which private property can and should be regulated immediately in the interest of the com-

mon welfare and as it can be done without expense to the city, it is of the utmost importance that the necessary steps should be taken right away to carry this part of the program into effect. The items in this class which should be put on the emergency program will be discussed in turn. The other matters will follow.

*Building Zones:*

Worcester property owners need and want protection against the harmful use of neighboring property. The State Legislature has provided a way of controlling the use of the property in the common interest by what is known as "zoning."

Most fortunately the Building Zone Ordinance and Map has been adopted by the City Council.

*Amendments to the Building Ordinance:*

There are a limited number of paragraphs in the Building Ordinance that should be amended to conform with the Zoning Ordinance. The amendment of these paragraphs will in no way harm the Building Ordinance. This will simply avoid confusion and overlapping.

As the Building Zone Ordinance is now passed the City Council should amend the Building Ordinance along the lines recommended in order to make the two ordinances conform.

*Fire Districts:*

Worcester has an excellent system of Fire Districts approved by the National Board of Fire Underwriters. However, with the passage of the Zoning Ordinance and with the changing conditions, it is obvious that for the sake of conformity the Fire Districts should be extended at several points.

The Building Ordinance should be amended so that the Fire Districts will be extended along five or six streets to conform with the Zoning Ordinance Districts.

*Sub-Division Plats:*

Some ten to twenty sub-division plats are filed each year at the County Registry of Deeds and while the City Council has

nominal control over them, its powers are so general that its control is necessarily limited. Nevertheless the city map of the future is being made by the individual sub-dividers and all of the costly mistakes of the older part of the city are being repeated in the outlying districts. Fortunately the State Legislature has provided a means of controlling this by delegating to a Board of Survey, when appointed, the power to effectively control all subdivision plats.

It is most emphatically urged that during the month of January, 1925, the Mayor should appoint a Board of Survey to control plats.

*Platting Rules and Regulations:*

A Board of Survey is obliged to standardize its methods otherwise its judgments are liable to be erratic and discriminatory. Therefore, the first duty of a Board of Survey is to draft rules and regulations for the control of plats and sub-divisions and to make these rules standards of good practice. A model for these rules is presented in the comprehensive report.

Immediately on appointment, the Board of Survey should draft platting rules and regulations suited to Worcester's conditions.

*Traffic Regulation:*

Worcester's traffic is being exceptionally well regulated today by the Police Department. In general, there is little that can be recommended in the way of improvement. However, there are certain details of traffic handling in public squares and elsewhere that could be improved and advantage should be taken of the rapid improvements in practice as they are appearing over the country.

The Planning Board shall co-operate with the Police Department to effect any possible improvements in traffic regulation.

\* *Art Commission:*

Historic sites should be attractively commemorated, all street monuments, statues and works of art should be worthy in design, all street fittings such as lighting fixtures, poles, letter

boxes, fire-alarm boxes, police call boxes, hydrants, street name signs, etc., should be attractive as well as useful, and the actual facades and appearance of public buildings and structures need attention in order that their design may be up to the highest possible standard. The state has provided a means of thus controlling public structures and works of art by the creation of an Art Commission.

It is desirable that an Art Commission should be appointed by the Mayor in the near future and that it should pass upon the appearance of every structure erected on public land.

*A Joint Standing Committee of the City Council on the City Plan:*

A consideration of the present relationship of the many existing standing committees of the City Council with the Planning Board in the carrying out of the City Plan points strongly to the desirability of finding a way of preventing duplication of effort. There is a strong need of a city planning clearing house and coordinating body in the City Council.

A joint committee of the City Council on the City Plan should be appointed right away to pass concurrently, with the individual committee interested, on any matter that effects the City Plan. The function of this committee, together with the Planning Board, would be to conserve the integrity of the City Plan.

*Equalization of Tax Valuations:*

There are many inconsistencies and inequalities in the distribution of assessed values in Worcester. The equalization of these inequalities has been under consideration by the Board of Assessors and they have been studying the methods used in other cities. This investigation implies that a complete re-study of the whole situation is most desirable and should prove a distinct money-maker for the city.

It is important that a scientific equitable reappraisal of all property throughout the city should be undertaken in the near future.

*Benefit Assessments:*

In the execution of public improvements in general, most of the cost—on an average fully 80 per cent—is borne by the tax-

payers as a whole, regardless of the fact that very often property near the improvement is financially benefited by the improvement to an extent much greater than its assessment for it.

The city should make wider use of the principle of benefit assessment, charging a larger proportion of local benefit to those especially benefited and extending the assessment area over a wider range.

#### *Building Lines:*

In various other Massachusetts cities extensive use is being made of a most effective method of street widening to meet traffic demands. It is by what is known as the establishment of building lines. In other words, instead of buying outright a strip of land needed for street widening, the city acquires for the time being, only an easement to it, thereby preventing the construction within the strip of any prohibitively costly buildings or alterations. Other cities are acquiring useful building line easements at little or no cost and the eventual taking of the property for actual widening costs far less than it does by the usual method employed in Worcester.

Worcester should make immediate use of the set-back building line easement principle in street widening with a view to more economical, eventual relief of traffic congestion.

#### *Needed Legislation:*

There is a distinct need of preventing the erection of buildings within the bed of streets as indicated by the city official thoroughfare or street map. The Massachusetts Federation of Planning Boards is presenting a bill to that effect to the 1925 Legislature.

The City of Worcester should officially back legislation being presented to the 1925 State Legislature for the control of building in officially mapped streets.

#### *Water Supply:*

Experience in the Fall of 1923, has proved that Worcester has reached the limit of its present water supply. Obviously, something has got to be done right away to prevent the recurrence



DOWN-TOWN EMERGENCY PLAN  
FOR THE  
**CITY OF WORCESTER**  
MASS.

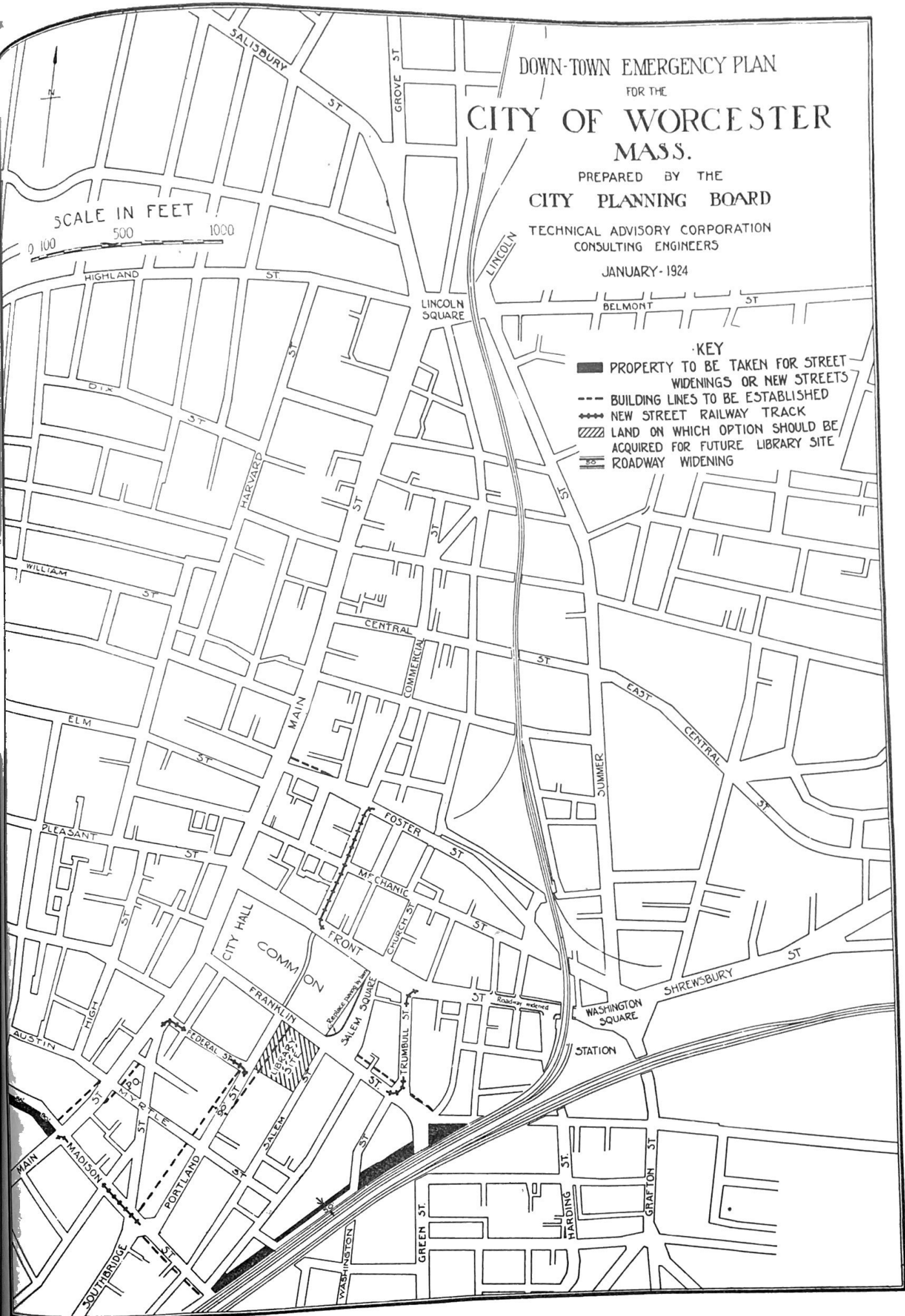
PREPARED BY THE  
**CITY PLANNING BOARD**

TECHNICAL ADVISORY CORPORATION  
CONSULTING ENGINEERS

JANUARY - 1924

SCALE IN FEET  
0 100 500 1000

- KEY**
- PROPERTY TO BE TAKEN FOR STREET  
WIDENINGS OR NEW STREETS
  - BUILDING LINES TO BE ESTABLISHED
  - NEW STREET RAILWAY TRACK
  - ▨ LAND ON WHICH OPTION SHOULD BE  
ACQUIRED FOR FUTURE LIBRARY SITE
  - == ROADWAY WIDENING



in the future of the dearth of water that occurred this Fall. The studies show that the best way to go about this is for Worcester to participate in the use and extension of the water supply system of the Boston Metropolitan District.

Worcester should continue actively its negotiations with the Boston Metropolitan Water Commission for the mutual use and extension of the metropolitan water supply system.

*Reclaiming Beaver Brook:*

The freshets of Beaver Brook are being controlled effectively by the Sewer Department but the work is far from completed and should be continued. Furthermore, the Health Department is looking for new sites for dumps of refuse matter. If both the Health Department and Sewer Department could concentrate on the Beaver Brook problem, it would be possible to hasten the rehabilitation of this most attractive valley so near the center of the city, thereby creating new taxable values and incidentally providing for a wonderful addition to Worcester's parkway system.

Refuse dumping shall be concentrated as far as practicable along Beaver Brook and the Sewer Department should push to completion the freshet control work now so well under way.

*Summit Bridge:*

The tortuous and narrow bridge by which the highway crosses the Boston and Maine Railroad tracks at Summit should be straightened and widened at the earliest opportunity.

Immediate attention should be given by the City Council to the straightening and widening of the highway bridge over the Boston and Maine Railroad tracks at the Summit.

*Barber's Crossing:*

The most dangerous railroad grade crossing in Worcester today is at Barber's Crossing. It is the only grade crossing at which a man was killed last year. The grades should be separated at the earliest possible moment by the elevation of the tracks.

The grade crossing at Barber's Crossing should be eliminated by the City Council in the near future.

*Bill Boards:*

Bill boards probably do more to harm the appearance of Worcester than any other one thing. It is possible to control their location so as to concentrate them where they will do the least harm, and also to limit their size. Already twenty Massachusetts cities have enacted bill board ordinances.

Worcester should pass a bill board ordinance similar to those recently enacted in other Massachusetts cities.

*Chandler Street Widening:*

Probably the most urgent thoroughfare need is the widening of Chandler Street, now one of the busiest and at the same time one of the narrowest main streets in the city. The whole rapidly growing northwestern third of the city is served by only four thoroughfares radiating from the downtown district. They are Highland, Pleasant, Austin and Chandler Streets. Highland Street is too far away. Pleasant Street is very costly to widen, Austin Street requires a costly connection to Park Avenue. Thus it would be both cheaper and more effective to widen Chandler Street than any of the others and it would serve to put off for many years the need of widening Pleasant Street.

Chandler Street should be widened immediately on the west side to a total width of ninety feet for the first square north from Main Street and it should be widened to a total of eighty-six feet for the next two squares and from there on to Park Avenue building lines should be imposed on each side eighty-six feet apart.

*Portland Street Building Line:*

Portland Street is only fifty feet wide and yet today it is the only practicable relieving street for Main Street west of the City Hall. It is a great pity that costly permanent buildings have been allowed on the present building line, but it is not yet too late. It is still possible to secure the necessary ninety feet of street width without disturbing any of the more expensive existing buildings such as the Hotel Bancroft and the Printers' Building. Unless a building line is established very soon, the inevitable eventual widening is liable to be prohibitively costly.

The City should immediately fix building lines on Portland Street from Franklin Street to Madison Street ninety feet apart according to the City Plan Map.

*Front Street Roadway Widening:*

The often congested roadway on Front Street as it approaches the Station narrows down from six ample traffic lanes to four. The width across the street between building fronts and the amount of travel on the sidewalks makes it practicable to widen the existing roadway to fifty feet at the expense of the sidewalks. This would increase the capacity of the roadway for handling moving traffic by 50 per cent while an eventual widening of the roadway to fifty-six feet would double the traffic capacity. The only alternative is the complete prohibition of parking and even of stopping on both sides of the street during rush hours.

The Front Street roadway should be widened throughout to a minimum of fifty feet and until that is done all parking and stopping should be prohibited wherever the roadway is less than fifty feet wide.

*Widening Foster Street at Main Street:*

Where Foster Street enters Main Street it is less than forty feet wide while below it is of ample width for the traffic it is called upon to bear. A bottle-neck is thus created at Main Street. It is most fortunate that the city has actually acquired the extra street width at the present time thus forestalling action in putting up a prohibitively costly building on the northeast corner of Foster and Main Street.

*Diagonal Street from the Union Station to Madison Street:*

A study of the various possibilities of creating the greatly needed traffic by-pass from the Union Station district west, indicates that the most economical plan and the most serviceable is to cut through a traffic street along and parallel to the north side of the Boston and Albany right-of-way. It is the only possible cross-connection today that would not call for costly building damage.

A new street should be cut from Franklin to Madison Street, fifty feet wide, parallel to and against the north side of the Boston and Albany tracks.

*A Driveway Across the Common:*

There is no need of a "street" across the Common. The Common is unique, it is justly the pride of Worcester. It should not be broken in two; if anything it should be increased in size. On the other hand an exhaustive study of the various possibilities of relieving the traffic congestion on Main Street, indicates conclusively that the only really effective route is along Portland and Commercial Streets. A detour around through Salem Street, street for Main Street. Furthermore Portland and Commercial Streets are the only parallels to Main Street that can be expected to develop as good business streets. The others are much too far away.

It is possible to connect the ends of Portland Street and Commercial Street, across the Common without impairing the appearance or the usefulness of the latter, and that is by means of a 20-foot driveway without sidewalks and with parking absolutely prohibited. Such a roadway could wind across from the axis of Portland Street at Franklin Street to the axis of Commercial Street at Front Street in such a way as to avoid all of the good elms. The one sidewalk connecting Portland and Commercial Streets would bow so far to the northwest and be separated from the driveway by such a wide patch of grass and flowers that the greensward would appear relatively unbroken. In the future with a possible re-routing of the trolleys and the widening of Trumbull Street; Salem Square should be added to the Common.

A winding 20-foot driveway should be constructed from Franklin Street opposite Portland Street to Front Street opposite Commercial Street, avoiding all good trees and a surface area at least as much as that used by the driveway should be added immediately in grass plots to the southeast end of the Common from the present paved and relatively useless surface of Salem Square.

*A Trolley Track on Madison Street:*

In order to relieve the trolley congestion in downtown Worcester, experience shows that much the most satisfactory solution is to loop most of the trolley lines tangentially with the Common. The most obvious first step in such a program is to loop all cars

that come into the center along South Main Street, around Franklin Street, Portland Street and Madison Street. This would mean the laying of a single track in Madison Street from Portland Street to Main Street.

The street railway company should lay a single track in Madison Street from Portland Street to Main Street right of way.

*Trolley Track in Commercial Street:*

The next most important loop to relieve Main Street traffic is to turn the local cars that come up Front Street north through Commercial Street and then back down Foster Street. This would mean the laying of a single track along two short squares of Commercial Street. It would relieve the two most congested squares of Main Street of at least twelve cars during the rush hour.

A single track should be laid in Commercial Street from Front Street to Foster Street.

*A Trolley Track in Federal Street:*

There is considerable congestion of trolley cars in Franklin Street between Portland and Main Streets. On account of the excessive width of Main Street between Southbridge Street and Federal Street it is possible to loop the cars entering Worcester by Southbridge Street down Federal Street and back through Portland Street by connecting directly the head of Southbridge Street with the head of Federal Street, entirely separate from the two existing Main Street car lines.

A single track be laid on Federal Street and it should be connected directly on Main Street with Southbridge Street.

*One-Man Cars:*

The trolley service to many of the outlying districts is unsatisfactory today, due to the long waits between cars. With the same cost to the company, these waits could be nearly cut in half by the greater use of one-man cars, nor will the use of one-man cars hold up traffic in the center of the city especially if made



“Pay enter” inbound and “Pay leave” outbound during the rush hours.

A much wider use of one-man cars should be made, especially on the lines which take care of outlying districts.

*Union Station Approach:*

The automobile approach to the Union Station is notoriously bad. It is almost always congested. It is too narrow. It lacks parking space. It is quite possible at relatively small expense to widen out the approaches.

The automobile approach to the Union Station should be widened immediately to about double its present width.

*Street Name Signs:*

Worcester street name signs are quite inadequate, most of them are too small to be read easily and they rarely add to the appearance of the street. Fortunately the Street Commissioner has been experimenting with new types. The Planning Board or an Art Commission could be of service in determining the most attractive type.

Every possible support should be given to the Street Commissioner in the installation of appropriate street name signs, especially along the thoroughfares.

*Street Lighting Fixtures:*

Worcester has a great variety of street lighting fixtures. Most of them are ugly except for the boulevard fixtures in the central business district. These latter are exceptionally good. The numerous supply houses present many attractive and at the same time, inexpensive types of fixtures.

The City should experiment with the better types of lighting fixtures with a view to adopting several appropriate standards.

*Library Site Option:*

The need of a worthy library in Worcester is rapidly growing. Within a relatively few years at latest Worcester must have a new public library. In accordance with the “pay as you go” policy the

cost will probably have to be spread over a number of years, therefore the purchase of the chosen site should be undertaken right away so that it may be fully acquired by the city by the time it is ready to start building. A comparative study of the various possible sites indicate conclusively that the one that would be most satisfactory in the long run, from all points of view, would be at the southwest corner of Franklin Street and Portland Street opposite the Hotel Bancroft. Fortunately even today there are no costly buildings on the site.

Steps should be taken immediately to option and start the acquisition of a site for a public library at the southwest corner of Franklin and Portland Streets.

*Fire Alarm Central:*

The National Board of Fire Underwriters reports that the Worcester fire alarm central is in a most hazardous location. Even a small fire could easily put it out of commission.

The City should install a modern fireproof fire alarm central in some isolated place such as Elm Park, in the immediate future.

*Tatnuck Fire Station:*

The only added fire station that is needed immediately is at Tatnuck. An abandoned school building is immediately available for remodeling for fire station use.

The abandoned Tatnuck school building should be remodeled right away as a fire station.

*Rebuilding Commercial High School Wing:*

Worcester high schools are barely adequate for the present. However the erection of a complete system of junior high schools would remove the first year from the senior high schools and relieve the pressure on them for many years to come. It will be a number of years at best before all of the junior high schools can be built and furthermore the percentage of children attending senior high schools is constantly increasing. Therefore the provision of additional space should be undertaken right away. In particular the lack of the wing of the commercial high school on

Walnut Street that was recently burned, seriously handicaps the usefulness of that school. Fortunately it is now being rebuilt.

*Completion of Schools on Upsala Street and at North Worcester and Blithewood:*

The city has fortunately started the construction of schools at Upsala Street, North Worcester and Blithewood.

*The Construction of Five New School Buildings:*

In the Grafton Street area the pressure on the grammar schools will soon be relieved by the operation of the new thirty-two room junior high school, however, as it is the policy of the School Committee not to erect any more junior high schools until they have given several years' trial to the Grafton Street building, it is absolutely necessary that new grammar school accommodations should be provided to take care of the nearly six thousand pupils now in double sessions and the fifteen to thirty rooms each year that must be provided to take care of the growing population. In general the program of the School Committee for immediate grammar school construction is in harmony with the twenty-five to fifty-year program of this report and, therefore, it is strongly urged that this program should be followed.

Construction should be started immediately on the following five buildings:

- (1) 8-room building at Boston Avenue near Middlesex Avenue, on city-owned land.
- (2) 16-room building near East Park, but not on the site the city now owns. Move southeast.
- (3) 6-room building on Main Street on city-owned land.
- (4) 8-room building on Granite Street where two acres must be bought.
- (5) 6-room building adjoining the Jamesville School.

*Additions to Three Grammar Schools:*

In addition to the above program of new schools, there are three existing grammar schools to which a limited number of rooms could be added to excellent advantage. As the recommendations of the School Committee, meet the requirements of the

long term program of the City Plan, it is desirable that the School Committee program be carried out right away.

Additions as follows should be made to three existing school buildings.

(1) 8-room addition to the Ward Street School by buying two more lots.

(2) 6-room addition to the Burncoat Street School on land now owned by the city.

(3) 4-room addition to the Andover Street School on land now owned by the city.

#### *Junior High School Playfields:*

The provision of a complete system of junior high schools to take care of the nearly six thousand pupils now eligible for the junior high schools, will call for the distribution of playfields in connection with each high school. In anticipation of the eventual erection of junior high school buildings, it would be well to acquire the sites that are going to be needed before they are too built up, with a special view to having the sites large enough to take care of the playfield needs. These playfields are essential today even if the junior high schools are never built.

The School Committee and the Parks and Recreation Commissioners should collaborate in determining sites for junior high schools and playfields preferably in accordance with recommendations of this report and steps should be taken immediately toward the acquisition of the necessary properties.

#### *Playgrounds Needed:*

The Parks and Recreation Commissioners have recommended the acquisition of additional playground facilities, to take care of the parts of the city which are now least well served. Their recommendations are in harmony with the twenty-five to fifty-year program of this report and, therefore, it is recommended that steps be taken towards the acquisition of the necessary properties.

The following properties should be acquired for playfield use in accordance with the recommendations of the Parks and Recreation Commissioners:

- (1) An addition to South Worcester playground.
- (2) A new playfield near Grafton Square.
- (3) A new playfield near Norfolk Street.
- (4) A new playfield near Dix Street School.

*Needed Recreation Buildings:*

The Parks and Recreation Commissioners have asked for a new recreation building in Crompton Park and a Bath House at Coe's Pond. Both are needed right away.

A recreation building should be erected immediately at Crompton Park and a Bath House at Coe's Pond.

*In General:*

While the above recommendations do not cover all the matters that are actually needed at the present time, they do cover the more urgent ones and in themselves present a program of physical improvements that are needed to meet current deficiencies.

Of course in addition to the specific items here presented there is the current work of the Sewer Department, the Water Department, the Street Department and of several other Departments and Boards which should be continued according to schedule.

All of these matters together give a complete program of work which should be undertaken as a unit if the city would round out its growth.

It cannot be urged too strongly that the city should undertake this program immediately.

## APPENDIX A

### PROGRAM FOR CITIZENS' CITY PLANNING COMMITTEE

With the preparation of the complete City Plan report, the work of the Citizens' City Planning Committee begins. Obviously all action that must be taken according to law by the official Planning Board, should be taken by it, but no plan on paper is effective until it becomes a citizens' plan; that means that somebody, or some group, must interest the citizens generally in the plan, secure their constructive criticism of it, and secure for it not only their backing, but their enthusiasm.

For this task the official Planning Board is not suited, because it must maintain a judicial impartiality. It is by function a creative, not a propagandist body.

On the other hand, the Citizens' Planning Committee is the ideal body to undertake this task. It is composed of members representing virtually all of the different points of view in the community, and at the same time its members have a standing in their respective groups that carries needed weight.

Most emphatically the Citizens' Committee should undertake right away a program somewhat as follows:

- (1) Study the emergency and complete City Plan reports.
- (2) Make constructive suggestions for their improvement to the Planning Board.
- (3) Interest their respective groups in studying the plan.
- (4) Induce the groups that they represent to make constructive suggestions for the improvement of the report.
- (5) Follow up the emergency program with the Planning Board, the City Council and the Mayor, to be sure that action is taken.
- (6) Appoint delegates to bring active support to each of the public hearings.
- (7) Follow up the individual members of the Council, to be sure that they understand the plan and program and individual measures as they are brought up.
- (8) Act as a watch dog on the plan and program to be sure that its integrity and continuity are preserved.



In order to get the plan before the public, the following methods are suggested:

1. Articles constantly in the newspapers.
2. Publication of leaflets.
3. Publication of pamphlet reports.
4. Lectures.
5. Lantern slides.
6. Motion pictures.
7. Photographic enlargements.
8. Attractive colored perspectives.
9. Cartoons.
10. Post cards
11. Posters.
12. Exhibitions.
13. Travelling exhibitions.
14. Pageants.
15. Floats.
16. Small scale models.
17. Animated models.
18. Competitions for photographs of the good or bad.
19. Competition by articles—perhaps held by the newspapers.
20. Competitions for ideas, with prizes.
21. Competitions among school children.
22. Competitions among various societies and clubs.
23. Prizes for the best looking street.
24. Prizes for the best looking business front.
25. Prizes for the best private yard layout.
26. Prizes for the best sub-division layout.

This will probably mean the appointment of several committees, one of which would handle publicity and publications, another to take care of lectures with lantern slides or motion pictures, and another to take care of exhibitions of various drawings, photographs and maps which have to do with city planning.

Another might take care of the offering of prizes for photographs and suggestions; while another might deal with the schools and feature the Worcester City Plan in the school civic courses.

Unless some such program as this is undertaken, there is always a danger that the City Plan will be laid away on a shelf and forgotten. It must become active, dynamic, and the keynote of this is co-operation, constant working together to a common end. It is the only means by which the citizens of Worcester can realize their Plan and make their city grow in an orderly way.

## APPENDIX B.

### COUNTY PLANNING

#### *The County Planning Problem:*

Because the City of Worcester is the only large municipal unit in Worcester County, its successes or failures, its progress or retreat in the industrial world and the health and happiness of its people, have a very strong influence over the other municipalities of the county, and particularly is this true of those municipalities immediately adjacent to the city.

Consequently, taking into consideration the future growth and development of the city, some considerable attention has been paid to the physical influence which such developments might have over nearby and adjoining towns.

No modern city constitutes within its corporate limits a complete self-sustaining unit, socially or economically. Leaving out of account its dependence on more remote places for food supply and industrial raw materials, there exists about every city a local tributary region which uses the city as a shopping and amusement center or a place of employment. In this region the city finds its supply of fresh foodstuffs and seeks the diversion of motoring, picnicking and country residence. The city boundaries are arbitrary political lines, with only a negligible effect as economic limits. And so, in dealing with the physical structure of a city which is laid out to serve its business and social life, the municipal boundaries cannot be used as limits without a serious sacrifice of ultimate utility. Planning must embrace in its scope the whole area which is intimately related, regardless of corporate limits. Such planning is called "regional" or "county planning."

Regional planning appears in many ways and under various names. The state highway system is, in one sense a product of regional planning, since it is the result of the co-operative effort of state and local authorities to secure a complete system of good roads connecting the important points within the state. The famous Metropolitan park system of Boston, is regional planning giving as it does to citizens of the metropolis and its environs a

series of connecting drives linking up the various communities with one another and with outlying areas of fine natural scenery preserved for all time in public reservations.

Worcester has not yet encountered the Metropolitan problems that are worrying such cities as Boston, Philadelphia and New York, and with many of these problems it is unlikely to come in contact for many years in the future, if at all. But it is nevertheless the center of a large tributary district, which must be taken into account in outlining Worcester's future growth. The circulation of Worcester's newspapers, carrying the advertisements of Worcester merchants and the employment offerings of Worcester industries is a good indication of the extent to which the city's economic influence is felt in its environs.

This is found to include 59 cities and towns of Worcester County, extending to the Rhode Island state line on the south, to New Hampshire on the north, across the breadth of the county east and west, into Middlesex as far as Marlboro and penetrating Hampden County as far as Palmer and Ware.

#### *Highways:*

Worcester is so related to its surroundings that it cannot ignore them in planning for its own development. In transportation this is especially true. Certain used highways carry a constant stream of commercial and pleasure travel between the city and the local centers about it. They serve their purpose because they ignore the city line as a barrier and continue on beyond. They have received for the most part the best preparation for traffic in paving, grades and alignment, both within the city and without. This is the result of co-operation between Worcester and the State or neighboring towns.

A road which runs well graded and well paved to the city line and there stops without reaching any destination of importance does not warrant the cost of construction. Motorists are only too familiar with highways that entice travel only to twine into country roads when they cross into the jurisdiction of another political authority.

Worcester is well enough provided with arterial streets,

which connect with the state highway system thereby giving good through routes to neighboring points, but as the city, and especially the surrounding territory, develops, the need for relieving thoroughfares will grow. It is useless for Worcester to plan where such routes will run and to provide adequate width and grading for their future development within her borders if the adjoining towns do not also take steps to open up the portions of those same routes which lie within their limits.

Even roads which do not lead directly from town to town have a regional significance in these days of heavy automobile pleasure travel. What the pleasure car driver seeks for an afternoon's run is not so much a destination as continuity of good roads by which he can make a circuit out of the city, through attractive country, and back in again, preferably by a different route. He is often glad to take a secondary road, even with second class paving in order to avoid the dense traffic of the main highways; but he does demand continuity of the route. Many existing roads can at very little expense, be made sufficiently attractive to pleasure travel to draw it from the crowded highways and thus also available as relieving routes immediately when needed.

The State Highway Department may safely be expected to plan ahead for the trunk line thoroughfares, but Worcester and its neighboring communities must take it upon themselves to see that the secondary network of roads which eventually will fill in the spaces between the arteries is also planned and executed so as to furnish the necessary links and crossroads without aggravating breaks and deadends at town boundaries.

#### *Interurban Trolleys:*

Closely related to the question of the county highway system is that of suburban residential development. This may be divided into two classes, that comprising the distinctly suburban towns which send commuters to the city for their daily work, and that consisting of the subdivision of land in surrounding townships immediately adjacent to the city boundaries. The former merely becomes a question of transit by railroad, interurban trolley or bus, and of a thoroughfare system capable of handling the increas-

ing amount of commuting by private automobile. It puts additional emphasis on the secondary highways which comb the territory surrounding the city without necessarily leading to outlying centers.

*Suburban Plats:*

The problem of properly directing the subdivision of land just beyond the city's boundaries, and hence normally beyond its control, becomes acute when that subdivision is practically a continuation of the city structure for which the city will probably at some time become liable through annexation. So great is the area as yet undeveloped, within Worcester proper, that the need of much subdividing outside will not be pressing for some time. However, the desirability of a subdivision depends upon its accessibility to the business or industrial portions of the city, and this, in turn, is often measured by transit facilities rather than distance. On that principle, property beyond the city line on interurban trolley or bus routes is already coming into the market ahead of less accessible property within the city. With various recent industrial areas, close to the city line, the movement for residential development just beyond, which is now showing itself, may be expected to develop in greater proportions, and must be taken into account.

Worcester is already appreciating the disadvantages of subdivision layouts whose streets do not connect or fit in with the logical thoroughfare system of the future city. With this problem solved within the corporate limits, is the city only to face the same thing again beyond, and outside of its jurisdiction? The subdivision of land is not merely a means of forming house sites, as many real estate operators apparently consider it, but it is, in fact, the laying down of a street system which can, thereafter, be changed only with great difficulty and expense. Whether the streets so laid out are to form parts of the future thoroughfare system or of the network of minor streets serving local traffic does not affect the necessity of such control over their layout as will make them rational parts of the whole scheme. This control need not be sought by the city itself if the proper kind of regional

co-operation in planning matters can be secured, and the towns in the Worcester region seek to carry out their development in accordance with some prearranged regional plan.

*Water Supply:*

Another matter in which the nearby communities are closely related is that of water supply. The City of Worcester not only must hold land for impounding reservoirs in neighboring towns and have rights of way through them for its pipe lines, but in the extension of its watershed, it is likely to secure the greater part of the available supply of the locality. Most of the towns in this region now have local supplies ample for their needs, but with growth, those supplies are likely to become inadequate and the problem of securing water from more distant sources will be one of joining Worcester in the use of its watershed. Boston and its surrounding towns have already found, the need of a Metropolitan Commission to develop their water supply. The Worcester district has not so many smaller places of importance, as has the Boston region, but it will very likely have to follow Boston's example eventually, or more probably join with Boston in developing the water resources of the entire eastern part of the state.

*Reservations:*

Water supply alone thus becomes a matter of regional concern, but if the full opportunities of such a project are utilized its significance is even greater. The impounding reservoirs and the forested reservations around them become places of great beauty, and if developed with automobile roads, as in the Croton watershed of New York, constitute valuable outer parks and scenic drives. Access to such areas from nearby cities and the connection of the various watershed districts by drives becomes a part of regional park planning. It is easy to visualize it as a first step in the creation of a County or State Park System which shall embrace, in addition to the publicly owned watershed property, any areas of particular popularity, such as picnic grounds or camping sites, regions of outstanding beauty, or points of historic interest, connecting them with parkways to form a system as com-



prehensive as that of the state highways. Essex County, New Jersey, has already established such a system and although Worcester County has as yet not the density of population to warrant a similar undertaking, a plan for something along the same line in the future would not be out of place and should serve as a guide in the acquisition of desirable areas from time to time.

*Power Production:*

The water supply question suggests also that of electric power production and distribution. Both in respect to the best sites for water power usage and the location of industries using the power produced, the problem is a regional one and is already under consideration on a more than state-wide basis. The development of Worcester and its surroundings demands a place in any comprehensive power system.

*Relation to Neighbors:*

Worcester is fortunately free from one hindrance to proper growth which has held back the development of some other cities of equal size, namely the existence of growing urban communities close to its border which, through a feeling of rivalry or political jealousy, refuse to co-operate in any matters of metropolitan planning, and even balk the efforts of one another in that direction. A glance at the accompanying map will show that the towns adjoining Worcester are all small and that their centers are not close to the city limits, so that the continual contacts which breed petty discord hardly exist. In fact, Worcester's trouble from a regional standpoint is more that the surrounding towns do not feel themselves a part of a common regional area, and hence do not see the importance of comprehensive planning which shall take them all into account. But it is while these towns are small and the greater part of their area is undeveloped that the lines of sound future structure can be most easily and most cheaply established. If this work is well done before developments take place and development is directed in accordance with the plan, there will be none of those acute problems in the future which are now commanding the attention of towns in larger metropolitan areas.

*Organization:*

As the need of regional planning becomes more widely recognized, there arises the question of how best it is to be secured. There are still many small cities which, because their expansion has not as yet caused any acute growing pains, are slow to realize the value of city planning as a preventive treatment. Such places are difficult to arouse and some organization is needed which can study conditions, present the facts and arouse public interest.

Various types of organization are taking up this question in different parts of the United States. Inspired generally by the largest city of a group, which through bitter experience has best learned the need of planning, the smaller communities nearby are brought to see how they are headed toward a repetition of the mistake from which the older city has suffered. The need of co-operation and the mutual profit to be gained from one another's experience leads to the formation of a commission on which the interested communities are represented, and which deals with the regional problems affecting them all. Such is the case around Boston, Buffalo and Cleveland.

Worcester County is fortunate in having an excellent type of organization already formed and readily available, the Massachusetts Federation of Planning Boards. Under the state law every city of 10,000 or over is required to have a city Planning Board and those under that figure may do so if they wish. Such of these boards as have already been appointed and are active, are organized in a state-wide federation and hold annual conferences for the discussion of matters of common interest.

In Worcester County, Webster is the only town which has failed to take the required action in appointing an active planning board. Six cities and towns, Clinton, Fitchburg, Gardner, Leominster, Southbridge and Worcester have active boards while Milford and Northbridge have the appointment under consideration. This is a fine showing for a county having but nine places of over 10,000 population.

It should be an easy matter to co-ordinate the activities of the boards in any matter demanding regional action, and through them to secure the co-operative action of authorities in the smaller

towns affected. The Worcester region, therefore, need initiate no new organization to handle its regional problems, but has only to concentrate already available forces on the questions affecting it. In this way the experience of the older boards can aid the younger in attacking common difficulties and a result can be expected in which the co-operative effort of all parties will secure results mutually satisfactory and beneficial.

*Farm Bureau:*

The County Commissioners have conducted of late years, a most successful Farm Bureau. It has served to propagandize farming methods, and in various ways has served to raise the standards of farming throughout the county. This may be suggested as a medium for spreading interest in town planning, or more especially county planning, throughout the cities and towns of the county.

*Annexation:*

From time to time questions have come up with regard to the annexation of the towns surrounding Worcester.

This movement has not been active except in the case of Auburn, which lies to the southwest of the City of Worcester. Geographically, Auburn is the only one of the surrounding towns that actually cut into the Worcester city territory.

In fact, Auburn approaches nearer to the center of Worcester than does any other of the surrounding towns. Furthermore, it has a larger population nearer the center of Worcester than any other town. A number of Worcester people live there and commute. Auburn is the only town toward which the City of Worcester is well built up, even close to its boundaries. Obviously if any one of the surrounding towns were to be added to the area of Worcester, it would seem to be Auburn.

On the other hand, Worcester has a large area in proportion to its population, and even today not much over one-third of the area of the City of Worcester is actually built up. The larger the city's area in proportion to its population, the greater the cost to the city for the development of the most of the public services

which the city must furnish its citizens; and the more the city develops within its area, the less the cost per capita for those services.

The undeveloped land still well within the boundaries of the City of Worcester is most of it as well suited to improvement as most of the land in Auburn. Furthermore, a study of the land value map shows that there are large undeveloped areas much nearer the center of Worcester than Auburn is, and where even today land is worth considerably less than it is in Auburn. This alone would seem to imply that it would be far more profitable for Worcester to round out the development of its own unimproved land bordering on the already built up portions of the city, before it should even consider the annexation of any territory outside of its present limits.

Furthermore, there is one almost insuperable objection to the annexation of Auburn, due to bad city planning in times past in Worcester, and that is the almost insurmountable barrier of cemeteries, colleges and ponds, just inside the Worcester limits along the Auburn boundary line. This barrage consists of four large cemeteries, two large parks and a number of ponds, to say nothing of the sewage disposal plant. Four thoroughfares cross this barrage into Auburn, but each of the four follows through these tracts a long corridor which cannot be developed for business or residence use.

Auburn is effectually isolated from Worcester. It should remain so, and the amount of money which the City of Worcester would have to spend in providing public services for Auburn, can be far more profitably spent in developing the nearer unimproved areas of the city itself.

The arguments which apply to the case of Auburn apply even more strongly to the annexation of other surrounding towns. Therefore, no annexation should be considered by Worcester for a great many years to come.