COMPREHENSIVE CITY PLAN FOR DES MOINES

CITY PLAN & ZONING COMMISSION
DES MOINES IOWA

BARTHOLOMEW & ASSOCIATES
SAINT LOUIS MISSOURI
COMPREHENSIVE CITY PLAN
DOS EQUIS, LOMA

CITY PLAN AND ZONING
COMMISSION
1928

HARLAND BARTHOLOMEW AND ASSOCIATES

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In many respects Des Moines is an unusual city. Its population is not large but its area is greater than that of Buffalo, Pittsburgh or San Francisco. It is a capital city and unlike many others possesses a certain dignity of appearance which gives it distinction. The grounds about the state capital are extensive and well improved; the business district is impressive and the civic center on the river is a notable achievement. Moreover, Des Moines has industries and encourages their development, yet thus far, fortunately has escaped the inevitable blight of ugliness and squalor that usually follows industrial growth in American cities.

There is evidence everywhere too that the people who live in Des Moines have more than a casual interest in its well-being. They have purchased houses in such numbers that the Federal census gives Des Moines first place in home ownership. This accounts in large measure for the well-kept residential districts, the absence of tenements, and the widespread appreciation of trees, hills, ravines, rivers, and other natural endowments of the city.
2.

Afterthought rather than forethought, however, is largely responsible for whatever merit is found in the general make-up of Des Moines today. The capital surroundings were reclaimed by the state. The civic center represents a recovery of once abused river front property. In the opening and improving of streets Des Moines has been put to great expense. It has borne these added financial burdens with extraordinary good-will however, and has accomplished more in civic development than scores of larger cities. And it has done this without a comprehensive city plan.

The fact remains, however, that much of the cost of making Des Moines a first-class city is chargeable to lack of foresight. Correcting mistakes has become an absorbing interest; prevention is scarcely considered. Meanwhile things are being done every day that will require more costly corrective action in a few years.

Yet the prevention of mistakes is the primary function of a city plan. Because prevention is not as spectacular as tearing down buildings and opening new streets through improved property, the value of this phase of the city planning program is often overlooked. Des Moines has done little to direct its growth and expansion. It has been handicapped by limited legal power and authority.
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Organization of Planning Commission.

The original Zoning Commission was appointed in August, 1923 in accordance with the state Zoning Enabling act, granting permission to cities and towns to create such commissions. The members composing this commission were:

L.A. Jester, Chairman
Paul Beier
Geo. W. Koester
J. Paul Neal
L. C. Franke

This commission realizing that it would be unwise to attempt the zoning of the city without studying the many collateral matters relating to the present conditions and future growth of Des Moines, secured the appropriation of sufficient funds from the City Council to contract for the preparation of a comprehensive city plan. On May 8th, 1924 a contract was entered into between the city of Des Moines and the office of Harland Bartholomew, City Plan Engineers for the preparation of a complete plan including zoning. Preliminary work was begun immediately and individual reports were submitted on each of the various phases of the plan within two and one-half (21/2) years after the studies were inaugurated.

In 1926, the Legislature of the State of Iowa passed a law authorizing the appointment of a Planning Commission and in August of that year the Mayor and Council created the
present commission consisting of the following members:

City Planning and Zoning Commission.

L.A. Jester, Chairman

Paul Beer
E. Brown
J.E. Darling
Mrs. Emily English
Ellis Englebeck
J.G. Green
J.P. Hovitt

Mrs. Bart McKeen
L.O. Pouchot
Mrs. Meyer Rosenfield
Ralph Sawyer
J.R. Weaver
Chas. S. Veach
Rev. F. Wyrock

This Commission has taken over the unfinished work of the Zoning Commission, which was automatically disbanded, and is now engaged in the execution of the city plan.
INTRODUCTION
Plate Number One

Topographic Characteristics
of the Site.

(Insert Plate No. 7, included in
printed Major Street Report, page 12.)
Plate Number Two

Boundary Changes.

(Insert Plate No. 2 included in printed Major Street Report, page 14.)
3.

The state of Iowa has not provided its cities and towns with an adequate measure of control over their own physical development. In the matter of regulating the opening of new streets, for instance, Des Moines is practically helpless. Only recently has it received power to differentiate between residential, industrial and commercial districts and this newly acquired authority is only a part of that which is needed to enable the city to plan its future growth with foresight and intelligence. Des Moines, therefore, must have at the earliest possible moment the full statutory powers commonly granted to cities in other states for city planning purposes. The need of new laws is paramount. The preventive values of a city plan cannot be fully realized without them. State granted city planning authority will make possible without burdensome expense the creation of a more attractive and praiseworthy city.

The influence of past growth on the present city is interesting to note.

Early Des Moines

Plate Number shows clearly the topographic characteristics of the original site of the city. It also shows a number of peculiarities in the original street system which are of interest today. Cherry, Mulberry and Walnut Streets ran west until they met a small water course known as Spring Brook. Locust Street
throughout its entire length was occupied by a railroad and was stopped west of Twelfth Street by a reservation of several blocks for a railroad depot, Sycamore Street, which is now Grand Avenue, was the north limits of the community. Beyond that were open fields, the upland areas being covered with trees. As shown in this early plan, the elevated ground north of the city took the form of high plateaus, cut here and there by deep ravines. The valley through which Keosauqua Way runs is plainly shown, as is also another valley approximately on the line of Seventh Street.

One is led to wonder what sort of a city Des Moines might be today if this early layout of streets had been extended according to the principles of modern city planning. The steep slopes would have been avoided in such cases, as they were eventually on Keosauqua Way. Main arteries would have radiated from the level original town like the spokes of a wheel. Around this central nucleus, probably at the foot of the slopes, would have run a wide circumferential traffic way. This commodious street would completely surround what is now the business district. Southward toward the river there would have been thoroughfares laid out primarily for industrial use. The low swampy character of the land would have suggested such future use.
It is futile at this time, however, to dwell at length on what might have been. Des Moines has grown up in a different way. Yet today, as far as further growth is concerned, Des Moines is but slightly different from what it was in 1857. It is growing more rapidly and is expanding over a greater area. Moreover, it is spreading over a terrain in many respects more unfavorable than that which was encountered in 1857. In essential respects, however, the problems of deciding as to the best future use of property, how and where to run the lines of new streets and the like are the same as in the days of the city’s youth. From the standpoint of making Des Moines a more orderly city and one arranged in such a way as to offer the largest advantage to those who live in it, the present opportunities surpass those of the past. It is a mistake to view the city as a finished creation. Growth is certain to continue and the problems attendant upon this growth will multiply. It is highly necessary now that the city itself anticipate these problems and plan its growth as if it were at the beginning of its career.
Boundary Changes

Plate Number 2 illustrates the successive changes that have been made in the boundary of Des Moines. The city has always favored a large corporate area. In 1867 when the population of the city was between three and four thousand, the city limits were extended to include eight and three-fourths square miles. Outside the boundaries thus established, several small incorporated communities in time developed.

Sevastopol—incorporated in 1877.  
City of North Des Moines—incorporated in 1880.  
Greenwood Park—incorporated in 1881.  
Gilbert—incorporated in 1882.  
University Place—incorporated in 1883.  
Capitol Park—incorporated in 1884.  
Eston Place—incorporated in 1889.

In 1890 Des Moines annexed all these villages and extended its boundaries to the present lines. This gave the city a corporate area of fifty-five and one-tenth square miles and at the time made the city one of the largest in per capita area in the United States. Even now, Des Moines covers more territory than many cities of greater population. How it compares with some may be seen below:

<table>
<thead>
<tr>
<th>City</th>
<th>1920 Area in acres</th>
<th>Population 1920 Census</th>
<th>Population per acre</th>
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<tr>
<td>New York City</td>
<td>191,360</td>
<td>5,620,046</td>
<td>29.3</td>
</tr>
<tr>
<td>Boston</td>
<td>27,970</td>
<td>748,060</td>
<td>26.8</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>25,517.2</td>
<td>588,343</td>
<td>22.5</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>31,920</td>
<td>1,323,779</td>
<td>22.2</td>
</tr>
<tr>
<td>Cleveland</td>
<td>36,089</td>
<td>796,841</td>
<td>22.1</td>
</tr>
<tr>
<td>Chicago</td>
<td>123,382.9</td>
<td>2,701,705</td>
<td>21.9</td>
</tr>
<tr>
<td>Buffalo</td>
<td>24,894.3</td>
<td>506,775</td>
<td>20.3</td>
</tr>
<tr>
<td>St. Louis</td>
<td>39,040</td>
<td>772,897</td>
<td>19.8</td>
</tr>
<tr>
<td>San Francisco</td>
<td>26,280</td>
<td>506,676</td>
<td>18.8</td>
</tr>
</tbody>
</table>
Baltimore....30,560  733,326  14.5  
Washington....32,408-4  437,571  11.4  
Indianapolis..27,893-9  314,195  11.2  
Des Moines....35,884  125,468  3.6  
Duluth.......39,680  98,917  2.4  

The possession of a large incorporated area, from a city planning standpoint, is generally considered advantageous. The advantage usually appears in the ability of the city to control its physical development. It appears that Des Moines, however, has failed to prevent a haphazard, sprawling development over its vast domain. It has all the disadvantages accompanying the management of an enormous urban area without corresponding advantages. There has been no restraint upon the platting of land. There has been no regulation of the planning of new streets. The population has become scattered. Demands for sewer and water facilities and transportation service are often extremely unreasonable.

Yet it should be possible for the city to retain its large area, to keep the population which really belongs to Des Moines within the boundaries of the city and still organize its growth and development along more logical lines. The problem is difficult but calls loudly for solution. One measure that might be tried in an endeavor to keep development within reasonable limits would be to require all subdividers to grade and pave streets and install sewer and water facilities before placing property upon the market. Another device which might be used to accomplish practically the same purpose would be the adoption of a new assessment schedule imposing heavier
Plate Number Three

Population Growth

(Inset Plate No. 3 included in printed Major Street Report page 16.)
3.
taxes upon subdivided but unimproved property, thus
lightening the burden upon acreage within the city limits.
Supplementing these, there should also be ordinances
requiring the submission of all subdivision plans to a
City Planning Commission.

Population Growth

Unlike many cities, the population of Des Moines
is practically all within its own boundaries. Its
growth since 1890, therefore, represents the normal
yearly increase unaffected by annexation of neighboring
communities. Considered in this light, the rate of
population growth in Des Moines has been truly remark-
able. The city grew 39% between 1900 and 1910 and 46%
in the last decade.

If this rate of growth continues, and there is no
reason to doubt that it will, Des Moines will have a
population of over 250,000 in 1940. This is the pop-
ulation prediction upon which future school needs are
being determined. The reasonableness of this forecast
may be judged to a certain degree by an examination of
the population records of four cities that in 1900
had a population approximating that of Des Moines in
1920. The curves on Plate 3 show that in the twenty
years which followed 1900, these cities grew at about
the rate which has characterized the growth of Des Moines
in the past twenty years.
Population prediction, however, is more or less meaningless unless it is translated in terms of physical urban development. Des Moines may expect a population approximating 175,000 in 1930. This represents an increase of 50,000 over the population of 1920.

Expressed in a different way, it means a new city practically the size of Cedar Rapids or Davenport built on the outskirts of Des Moines today. It means, perhaps, the platting of five square miles of new territory, the opening of one hundred miles of new streets, the expansion of several street car lines, the erection of five or six new elementary schools.

It means, also, the further extension of all public utilities, electric light, telephone and water service. Those who are responsible for the management of these interests as a matter of policy make frequent studies of population trends and try to be prepared at all times for the inevitable growth and increased demand which they know will arise in one place or another. The sort of anticipatory planning which is being done by the engineers of the telephone company, the water company and the electric company should be duplicated and carried even further by the Municipality itself. New streets, new parks, new transit lines, new industrial districts, all matters of this sort should be constantly under study.
These studies and others make up the comprehensive city plan and the results of several years investigation and suggestions for solutions of the various problems existing in Des Moines are as set forth in the ensuing pages of this report.
MAJOR STREETS.
II.

What major streets are and why they are needed in Des Moines.

Major streets have an interest for the entire community. They are the arteries of the urban body. If they are inadequate in size and improperly arranged, circulation is affected. The strength of the community and the vigor of its economic and social life depend upon the manner in which its major streets have been developed.

Des Moines in years past has not differentiated these most important streets from the great number of correlated minor ones. All streets have been viewed alike and as a consequence faults have developed in the street system. Some short local byways are wide when they might be narrow; other long, straight, heavily-used arteries are narrow when they should be wide. Abrupt endings and sharp turns abound. Approach to certain districts is difficult because of the haphazardness of street arrangement. And in addition to these specific shortcomings it is found that a rigid adherence to the rectangular method of platting has produced many unnecessarily steep grades and has thrown upon the city severe and unwarranted grading expenses.
Corrective Street Work

of Fact

Des Moines has begun to feel the handicaps of a
heaphazard street arrangement. Within the last few years
the city has undertaken an enormous amount of remedial
street work. These are all corrections—mostly changes
of existing conditions. They impose upon the city a
heavy financial burden which might have been avoided by
forethought. A complete statement of street changes
made in recent years is included here to show what it
has cost Des Moines to grow without a city plan. It
should be remembered that these corrections are only
those made in streets. The full charge against the city
for its lack of foresight in all matters, such as park
development, purchase of school and public building sites,
and the like cannot be computed.

Eliminating grading charges, bridge costs and
assessments for paving it is found that the seven year
record of street changes has involved an expenditure of
$1,992,595, all of which has fallen upon the property
owners and taxpayers of Des Moines. This financial
statement alone should be sufficient to enlist hearty
support for a program that will effectively reduce the
number of improproprieties and mistakes committed in the
laying out of streets. Such is the purpose of this phase
of the city plan.

Since 1916 the city of Des Moines has carried out a
long list of street improvements, all of which involved
changes in the original layout of streets. The complete list of these changes is found on the following pages.
Plate Number Four

Street Widths Jogs and Dead Ends.

(Inset Plate No. 10 included in printed Major Street Report page 30.)
Defects of Street System.

In the days of horse-drawn vehicles it did not greatly matter if streets were narrow and improperly connected. Today, however, every street that is narrow where it should be wide is both a source of economic waste and a traffic hazard. This is true also of jogs and dead ends in streets. They all hinder the free movement of vehicles. They cause a loss of time. In a word, they interfere with the circulation of the urban body.

Too few wide streets, an unsystematic distribution and placement of those that are wide, offsets and abrupt street endings are faults discovered in the traffic-ways serving Des Moines today. Plate Number 1/2 shows some of these shortcomings. They have developed because the city, heretofore, has not had much to say about how streets were laid out. Real estate promoters and developers since the earliest days have been free to lay out streets and lots according to their own ideas, as if the community at large had no interest in what they were doing.

Altogether the subdividers of land have thus far platted approximately 1100 "additions" in Des Moines. These operations in actuality are city planning. When the owner of an acreage tract cuts it up into lots and streets he is engaged in a small way in the highly important work of fixing the ultimate character of the city. What he does may be
Plate Number Five

Undeveloped Areas.

(Insert Plate No. 5 included in printed Major Street Report, page 20.)
either an advantage or a disadvantage in later years. Under such circumstances it is entirely reasonable to urge that his activities be brought within the purview of municipal authorities. If Des Moines some time ago had appreciated the full significance of the operations of land subdividers it might have reduced the 1460 jogs and dead ends which appear in its streets and might also have made their widths more nearly proportionate to their importance.

The lack of a measure of control over city development has tended to introduce peculiarities into the growth of the city. See Plate Number 6. Note the shape of the built-up districts, the tendency to form a cross. Note also the "blockades" east and west in the form of parks, Fair Grounds and cemeteries and how the city has grown toward the northern city line. The absence of diagonal streets has held back growth northeast and southwest. The new avenue Frederick Hubbell, however, has already begun to influence growth northeast, but the southwest still misses such a short-cut artery.

Southeast there is a conflict with railroads and low areas along the River. The building up of this section depends considerably upon the opening of new trafficways. The southwest undeveloped river bottom areas are perhaps the least favorable of all for city use. They will always be difficult to reach, not suitable for residence because of the river, and of limited value for industry because of the requirements of the municipal water department.
Plate Number Six

Existing Diagonal Streets.

(Insert Plate No. 9 included in printed Major Street Report page 28)
The new Keosauqua Way will have an obvious influence upon the northwest section, but this district badly needs an extension of Beaver Avenue for its proper development. The manner in which a diagonal artery stimulates property use may easily be seen at a glance at the development along Indianola Avenue. It will only be a matter of a few years until the influence of Avenue Frederick Hubbell will begin to show.

The method of land surveying which is followed in this country induces the platting of rectangular streets. The greater portion of the streets of Des Moines have been laid out in this manner, following lines dictated by property boundaries rather than natural grades or the requirements of circulation. The effect of this predominately rectangular street system upon the development of the city may be studied in Plate Number 6. The districts which have built up most rapidly are those along streets which lead directly to the business center. The northeast, southeast, southwest and northwest quarters until recently have had no direct arterial connections with the center of the city and as a consequence remain largely undeveloped.

The opening of diagonal streets into these quarters is the most effective way of encouraging their development. Keosauqua Way and Avenues Frederick Hubbell will render this service. Indianola Avenue has a similar function. These
thoroughfares all deserve more than ordinary attention. The service they render increases rapidly as the city expands. Because of the value of traffic which they attract, the maximum frontage upon them must be made available, cross streets reduced to the minimum and intersections studied as a special problem. Diagonal streets are featured in the major street plan and an effort is made to show how they may be properly coordinated with the rectangular system of central thoroughfares and minor streets tributary to them.

Des Moines will find it difficult to realize the full value of its existing diagonal streets because the numerous intersecting streets reduce and spoil the frontage upon them. There is scarcely a lot to be found upon the new Des Moines Way that is shaped properly for business purposes. This has resulted obviously from the late introduction of such a street into a rectangular street system. If the city had possessed the power of excess condemnation, it might have reduced the cost of this project materially and left the frontage in better condition for business purposes. The most satisfactory and economical way is to have them platted where needed in new subdivisions. There is no particular objection to diagonal streets from the standpoint of real estate sales provided the subdivider knows how to introduce them successfully into the general scheme of other streets.
Plate Number Seven

Major Street Plan.

(Insert Plate No. 12 included in printed Major Street Report, page 35)
Proposed Major Street System.

This is a systematized arrangement of the streets having a city-wide or community importance. These are the thoroughfares which should and will if properly developed carry the major portion of the traffic flow in and through Des Moines.

As will be noted, existing streets form the basis of the major street system. To make these established trafficways more useful in carrying the increasing vehicular flow, it is recommended that some of them be widened and that certain short connections be opened here and there to tie them together as a system.

On the outskirts of the city, many extensions or existing streets are proposed. This phase of the major street plan calls for preventive or directive rather than remedial action. These new streets are to be secured by control of future land platting within and beyond the present city limits. Des Moines at present has adequate statutory authority to inaugurate street openings and widenings and has already had considerable experience in such operations. But it lacks the power to plan new growth and carry out such plans. This power must be secured from the state at the earliest opportunity.

The Des Moines major street plan will be of little value unless the municipality has a means of requiring observance of this and similar plans by land subdividers. In general form of the necessary legislation will be found in
Appendices and The actual street improvements proposed in the major street plan are too numerous to be reviewed fully here. (See appendix.) The more important needs, however, may be summarized as follows:

The completion of the Keosauqua Way is a primary need, to be accomplished by connecting Keosauqua Way with Twentieth north of Sycamore Avenue. Keosauqua Way if left in its present state is unfinished. It will cost an insignificant sum now to make it a continuous artery of great usefulness to Des Moines. Provision should be made also for the future widening of Twentieth Street. Keosauqua Way should be extended to Second Street downtown and a cut-off introduced which will carry Keosauqua Way traffic directly on to the Grand Avenue viaduct.

Cottage Grove and Beaver Avenue should also be developed as a continuous thoroughfare, a first class radial highway running miles into the northwest quarter of the city, as Avenue Frederick Hubble does in the northeast. No time should be lost in extending Beaver Avenue into Urbandale. Delays will make the extension more costly and more difficult. The need for such a street meanwhile will increase rapidly. An opportunity exists now to make a connection between Twenty-eighth and Thirtieth between Forest and University, which will serve to carry Beaver Avenue traffic more directly into Cottage Grove.

A new artery is seriously needed to the west. The failure of subdividers to provide for the proper continuation of Loversell Avenue was a mistake from a community standpoint. The city will have to do what should have been done and once could have been done inexpensively and the cost of this action will have to be borne by property owners. Every residential district no matter how restricted and high-class it is requires for its successful development certain arteries of approach. These arteries must have first consideration in subdivision plans. They cannot be obliterated or turned aside at will, as if their usefulness were ended once a certain restricted neighborhood is reached. These are community streets and it is not at all unreasonable to require that they be continued along proper lines wherever subdivisions are being laid out to make use of them.
The growth of population west of the city makes the widening and extension of Center Street highly desirable, if not a positive necessity. This street should be projected diagonally in a southeast direction from Twenty-eighth Street to Woodland at Twenty-fourth. This improvement would tend materially to reduce the steadily increasing volume of traffic now thrown upon Grand and Ingersoll. Center Street should also be extended across the river to connect with Des Moines.

It would be advantageous also if a new continuous east and west route could be found through the residential districts south of Grand. A restricted pleasure drive, however, would draw a portion of the traffic from the major thoroughfares. The topography favors a pleasure drive and the service it would render in traffic relief is an additional argument in favor of its immediate development. The Town Planning Committee has long advocated such a project and a detailed study of circulation problems has proved its necessity.

South and west of the business district is a great area much in need of better thoroughfares. A new river crossing at Eighteenth Street will improve access to this section. This project is discussed in detail later. A new radial artery corresponding to Indiana Avenue is recommended to run southwest from Mocks Park along the C., B. & Q. R.R.

From South Fort Des Moines it is also proposed that new arteries be developed affording direct approach to Valley Junction and Clover Hills on the west and the Fairgrounds and the district beyond on the east. A similar arrangement of such counter-radials is contemplated north of the city. These would function as a circumferential trafficway providing overland trucks and similar traffic not concerned with Des Moines, a means of going around the city.

Southeast there is need of a new radial street parallel to the C., B. & Q. R.R. Such a street would serve as a collector and a short-cut for traffic originating in that part of the city.
Directly east of the city the Four Mile Creek complicates the problem of street planning. Major streets should border this and similar streams, being located so as to favor the plating of lots fronting upon a meandering parkway in the valley.

Northeast of the city the extension of Avenue Frederick Hubbell is proposed. This street should be widened to 100 feet or 120 feet and should be extended on into the county. It is too valuable a street to have only a 70-foot width and ends short of Altoona. The county should open the road to Bondurant at least.

North of the city there should be new streets laid out parallel to the river, those on the north side carrying traffic to such arteries as Ninth and Fourteenth and those on the south side connecting with the proposed Kossauka Bay extensions.

Such are the broader features of the Major Street Plan. The detailed recommendations for short connections and widenings will be discussed later. Some of the improvements proposed, such as the extension of Thirteenth Street northward across the river and Twenty-eighth Street south of Grand across the Rock Island and C., M. & St. P. tracks may seem at this time too difficult of accomplishment to warrant the expense. It is realized that such projects involve engineering difficulties, but it is believed that the need of these streets will in time become so pressing that these difficulties will be surmounted.
Plate Number Eight

Present and Proposed Capacity of Major Streets.

(Insert Plate No. 13 included in printed
Major Street Report, page 36.)
Present and Proposed Capacity of Major Streets.

In the plate showing major streets attention was directed to the general problem of arranging certain existing streets to form a system of heavy traffic thoroughfares. This major street plan, however, did not tell a complete story about existing streets. It failed to show how unsystematic in width they are.

The width of a street used by modern traffic means little if it is expressed only in fact. This is especially true of major streets. Their importance to the community is determined largely by the number of lines of vehicles they will carry. When analyzed in such terms, it is found that numerous changes will have to be made in the widths of old streets to give them a systematized traffic carrying ability.

In Section A of plate number 8, the present capacities of streets designated to form the major street system are shown. In Section B, the capacities required for proper service in the system are shown. The complete record of widths and capacities of these streets, both existing and proposed, and the various connections needed to tie them together as a system will be found in the Appendix.

Briefly the more immediate needs are for the widening of the following streets.
## Existing and Proposed Traffic Capacities

<table>
<thead>
<tr>
<th>Street</th>
<th>Present Capacity</th>
<th>Proposed Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kossauqua Way</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chestnut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Fifth to Second</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Woodland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Tenth to Twenty-ninth</td>
<td>3 and 4</td>
<td>6</td>
</tr>
<tr>
<td>Grand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Forty-second to city limits</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Southwest Twenty-first</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From River south</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Southwest Binth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Cherry to river</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Southwest Seventh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Cherry to river</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>North Fifth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From School to College</td>
<td>3 and 4</td>
<td>6</td>
</tr>
<tr>
<td>North Sixth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From School to river</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>From River north</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>North Seventh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Kossauqua to Prospect Blvd</td>
<td>3 and 4</td>
<td>6</td>
</tr>
<tr>
<td>Crocker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Kossauqua to Cottage Grove</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Cottage Grove</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Crocker to Twenty-eighth</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Forest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Twentieth to Thirtieth</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>From Thirtieth to Beaver</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Twentieth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Carpenter to Clark</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>From Clark north</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Indianaia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Hillside south</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Street</td>
<td>Present Capacity</td>
<td>Proposed Capacity</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Throughout</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Fifth to Thirty-first</td>
<td>3 and 4</td>
<td>6</td>
</tr>
<tr>
<td>From York east</td>
<td>4 and 6</td>
<td>6</td>
</tr>
<tr>
<td>East Fourteenth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Throughout</td>
<td>5, 4, and 6</td>
<td>6</td>
</tr>
</tbody>
</table>

On many of these streets it may be possible to secure voluntary dedication of the width needed. On others it will be advisable to establish new street lines, the city taking title to the land needed and assessing the cost against property benefited.

It must be understood that an immediate undertaking of all this work is not contemplated. Des Moines in later years will need many miles of wider streets, however, and it will be economy for the city to anticipate these needs by reservation in the most effective manner of the right of way required for greater street capacity. The streets listed above are those which should have prompt attention. The others not listed but shown on the plan to need future widening are but slightly less important.
Composition of the Major Street System.

The streets of the modern city carry an increasing volume of traffic. Bicycles, street cars, buses, fast and slow and standing vehicles, pleasure cars, trucks with light and heavy loads, all are often found using the same street at once. Some of these are on local errands, some are traveling across town and others are merely passing through the city on tour. It is the complexity of the daily traffic flow and its economic significance that contribute to the seriousness of street planning problems. Conditions have developed that require a more systematic and orderly classification and arrangement of city streets.

It is obvious to any one who uses the streets of Des Moines or observes the daily movement of vehicles upon them, that some are more useful and important than others from a community standpoint. The streets that might be said to belong to the city at large are the major streets. The streets that serve only local needs are minor streets. So far as traffic circulation is concerned, the problems of the minor street are relatively few. The major streets however, because they attract the larger, more vital share of the vehicular flow, present problems of width, arrangement, surface improvement, lighting, traffic regulation and general management. Des Moines has not heretofore undertaken to make a special study of these major street problems.
Plate Number Nine.

Diagram Illustrating the Composition of a Major Street System.

(Insert Plate No. 8 included in printed Major Street Report, page 26.)
As a first step in making major streets more efficient as community traffic carriers, it is necessary to classify them as

1. Principal radial thoroughfares—the streets which lead directly to important centers.

2. Crosstown thoroughfares—the streets which provide for direct movement east and west, and north and south.

3. By-pass streets—routes around congested areas.

Streets of all the types noted above should be so arranged as to form a system. The principal radial thoroughfares should afford easy access to the central business district, to industrial sections and to smaller surrounding communities. The crosstown thoroughfares should form a fairly regular rectangular pattern over the area of the city. Generally these streets should be spaced about one-half mile apart. By-pass streets should be connected with the principal radials that traffic which has no business in a district of congestion or confusion may find an easy route around it. Plate Number 7 illustrates the theoretical composition of such a scheme of streets.
(Insert detail of Cherry-Walnut-Grand Ave Improvement included in printed Major Street Report, page 37)
Details of Proposed Connections

Plan showing proposed
Cherry-Walnut and Grand
Avenue Improvement and
new Bridge Connection.

The short connections which are proposed in the major street plan are not all of equal importance. Some should be considered immediately and others may wait until an opportunity comes for the favorable purchase of necessary property. The present requirements of circulation are such as to warrant undertaking the following projects:

a--Reconstruction of Eighteenth Street viaduct and development of new approaches to it. This project involves a general reconstruction of the trafficways at the west end of the business district. At present the street system here bears little relationship to topography, railroads, river crossing or traffic movement. A new street parallel to the railroads would enable traffic approaching the business district via Seventeenth Street to turn east upon Locust, Walnut and Mulberry as well as upon Grand. The ingress and egress avenues flow from the west would be distributed in the same manner. A new viaduct is proposed to spring from Walnut Street and Sixteenth. Between the railroad and the river a new street serving the industrial district south of the tracks would be developed. This street would be an extension of Tuttle. The plate shows fully the opportunities for improved circulation which would result from this general re-arrangement of streets. A filling in of all low areas between the proposed new streets would greatly enhance property values in this section. Earth for all necessary filling exists along Fifth Street.

The whole western end of the business district, streets and private property, instead of descending to the level of railroad, should be kept at the higher grades of Locust Street, Walnut and Mulberry.
Plate Number Eleven

(b) Correction of Jogs in University Avenue

Plate Number Twelve

(c) Plan for the Development of University Avenue East Side.

Plate Number Thirteen

(d) Plan for Connecting 41st and 42nd Sts.

Plate Number Fourteen

(e) Plan for Connection of Ingersoll and High Street.

Plate Number Fifteen

(f) Plan for the Extension of Keosauqua Way.

(Insert detail (b) Connection of Jogs in University Ave. 
(c) Plan for development of University Ave, East Side. 
(d) Plan for connecting 41st and 42nd Sts. 
included in printed Major Street Report, page 38 and 
also (f) Plan for the Extension of Keosauqua Way 
as shown on page 39 of the same report)

Note: These plates are not to occupy single pages. Sufficient space is to be left in the text and they are to be inserted in the proper place in the same manner as in the printed Major Street Report.
Correction of Jags in University Ave.

b--University Avenue connection between Sixth and Ninth. This project has been under consideration for some time and every year becomes more costly and difficult of accomplishment. There is no disagreement as to the necessity of making University Avenue a continuous thoroughfare by the elimination of all such faults as are involved here. The method only is in question. It appears now that the most practicable and inexpensive plan would be to extend this street practically straight through the property between Sixth and Ninth, as shown on the plan.

Plan for the Development of University Avenue -- East Side.

c--University Avenue on the east side also requires correction. The most feasible way of carrying this very useful thoroughfare continuously through the east side is to connect it with Fillmore Street. The detailed plan appears.

Plan for Connecting 41st. & 42nd. Sts.

d--Forty-first and forty-second streets, if connected through the block between Forest and University, would become a most important crescent thoroughfare. An opportunity exists now to make the necessary connection at little expense.

e--Connection of Ingersoll and High between Seventeenth and Fifteenth. This connection will give traffic from the west a direct route to north section of business district.

Plan for the Extension of Keosauqua Way.

f--Continuation of Keosauqua Way to Second Street. This project is an essential part of the original plan of Keosauqua Way and is largely a problem of economical street widening. The Brown Hotel and Y.M.C.A. prevent continuing the original 110-foot width, but these buildings are far enough apart to accommodate a 54-foot or six-line roadway. This width will be sufficient for some time to carry all the traffic likely to use the street here. There is no call for the
Plate Number Sixteen

(g) Proposed Connection of W. 30th St and W. 28th Sts.

(Insert (g) Detail of Proposed Connection of W.
30th and 3. 28th Sts included in printed Major
Street Report, page 39)

Note: This plate is not to occupy a single page.
Space should be left in the text where it
may be inserted in the same manner as in the
printed major street report.
g—Connection of Thirtieth Street and Twenty-eighth between Forest and University. This will make Beaver Avenue and Cottage Grove practically a continuous thoroughfare and Thirtieth and Twenty-eighth together a more serviceable cross street.

In addition to these recommended improvements are several others of almost equal importance. Consideration should be given.

h—The connection of South Union and Indianola.

i—Connecting Fifth and Sixth, south side.

j—Connection of Woodland and Pleasant.

k—Elimination of jogs on Dean and Court east of the capitol.

l—Connection of Prospect Road and Sixth to make Seventh Street more useful as a relief of Sixth.
Traffic Movement and Control in the Business District.

Downtown traffic problems which cause much concern elsewhere are not particularly serious in Des Moines. There are two reasons for this. In the first place, the Des Moines business district, where congestion tends to occur, is well arranged for traffic movement. The streets are all 66 feet wide, the blocks are square and approaches from all directions at present are adequate. Moreover, there is a proper proportion of roadway space to private property and few buildings of excessive height. How Des Moines compares with other cities may be seen below, giving the per cent of roadway space in business district.

<table>
<thead>
<tr>
<th>City</th>
<th>Roadway Space per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Des Moines</td>
<td>47.6</td>
</tr>
<tr>
<td>Washington</td>
<td>44</td>
</tr>
<tr>
<td>San Diego</td>
<td>41</td>
</tr>
<tr>
<td>Cleveland</td>
<td>39.5</td>
</tr>
<tr>
<td>Seattle</td>
<td>37.5</td>
</tr>
<tr>
<td>St. Louis</td>
<td>37</td>
</tr>
<tr>
<td>San Francisco</td>
<td>34.5</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>34.5</td>
</tr>
<tr>
<td>Portland, Ore.</td>
<td>33.5</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>30.5</td>
</tr>
<tr>
<td>Detroit</td>
<td>29.5</td>
</tr>
<tr>
<td>Chicago</td>
<td>29</td>
</tr>
<tr>
<td>Denver</td>
<td>27.5</td>
</tr>
<tr>
<td>Salt Lake City</td>
<td>25.5</td>
</tr>
<tr>
<td>Toledo</td>
<td>24</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>21.5</td>
</tr>
</tbody>
</table>

These conditions all operate to reduce congestion and simplify traffic control.
Another factor in the situation is the excellent work of traffic police. It is apparent that an honest effort is being made to enforce regulations. This daily effort to secure observance of the rules, especially in the matter of parking, is having effect. One could find convenient parking space in the business section of almost any city provided a reasonable parking time limit were enforced. Des Moines, by keeping vehicles moving, is simplifying the problem for those who wish to use street space in the business district merely for short periods. It is found by actual count, for instance, that there is space for 1372 vehicles within a five-minute walk of Seventh and Locust Streets and space for 2770 within a ten-minute zone.

The ultimate solution of the all-day parking problem, however, is in the private garage. It is not incumbent upon the city to widen streets and lay expensive pavements merely to enable a favored few to store automobiles on public property. Even in the days of horses, there were ordinances that aimed to preserve certain streets for the use of moving vehicles. In 1900 it was unlawful to hitch teams or allow carriages to stand on Court, Cherry, Mulberry, Walnut and Locust Streets downtown. Courts have long sustained laws, prohibiting the use of public highway space for private purposes. Yet the demands of motor vehicle owners for parking privileges differ but slightly from those which any store owner might make if he felt that it were his privilege to pile boxes and bales of goods upon the street.
Plate Number Seventeen.

Diagram Illustrating Flow Through Business District.

(Insert here the above plate included in preliminary Major Street report.)
The city has an undeniable obligation to prevent interference with circulation. The policy to be followed in this respect may be outlined as follows:

Indefinite parking privilege on the streets may be granted so long as there is no resulting inconvenience to the general public.

When inconvenience appears, regulation of parking becomes necessary and the simplest form of regulation is the imposition of a time limit. There may also be requirements as to the manner of parking.

If the parking privilege interferes with the movement of vehicles on certain streets the privilege should be withdrawn. It is not difficult to determine the principal lines of vehicular flow and to open such channels for movement as are most needed. Circulation in and through the business district is suggested in the plate opposite. The streets needed for movement are clearly indicated.

When it seems to be necessary to clear certain streets for traffic movement, the prohibition of parking for a limited period, during "rush hours," for instance, may suffice. This frequently accomplishes the result desired and is much less drastic than a blanket prohibition.

To supplement the prohibition of parking there may be adopted such devices as elimination of left hand turns, rerouting of street cars and prohibition of trucking during rush hours.

If the prohibition of parking on successive streets fails to stimulate circulation in the district, more expensive remedies must be found. These should follow in the order given:

1. Widening of the roadway so that a street may carry a greater number of lines of vehicles. This can often be done where sidewalk space is not in demand.

2. Opening connections to parallel inapplicable streets and putting them to use. This device is especially useful as a means of separating different kinds of traffic. Special track routes can be created and by-pass streets around congested centers opened.
38.

3. Widening the street by the removal of buildings or arcing.

4. Construction of elevated sidewalks or roadways.

5. Construction of subways or two-level streets.

It will be noted that all the above devices for traffic relief are arranged according to their cost. The purpose in presenting them thus is to indicate how extravagant it is for the city to spend money on expensive street widenings and openings before it has exhausted other, cheaper means of securing relief.

*Ordinance book, 1900, page 158.*
Plate Number Eighteen

Street Cross-Sections

(Insert Plate No. 17 included in printed Major Street report page 44.)
Plate Number 18 indicates the proper manner of classifying streets for modern traffic use. It answers essential questions regarding the capacity of streets of different width, the relation of roadway space to side-walks and the requirements of street railway and bus lines. This plate should be used as a guide in the platting of all new streets.

Des Moines has suffered from previous lack of standards in street development. In outlying, sparsely built up districts where land is plentiful, the tendency seems to be to make new streets narrower and less characteristic of a populous, growing city, the capital of a rich state. Forty-foot widths are frequently found on quite important streets. Occasionally one property owner will plat half a street, expecting his neighbor to do likewise; but the latter often has different ideas and the public thereafter must make whatever use it can of the half-street.

There are cases in which a forty or even thirty-foot street may be platted without serious consequences to the community or to purchasers of property on it. Such cases, however, are rare and should be made special exceptions to the general rule that no minor street should be less than
50 feet in width. This is a fairly satisfactory right-of-way for ordinary street purposes in a single-family residential district. The best interests of the city, however, would be served by a requirement that 60 feet be made the standard for minor streets. In all cases where such widths are used the provision of light and air in the district should be assured by the establishment of building lines at least 30 feet from the street line.

For major street purposes, a width of 80 feet should be considered the minimum in all new subdivisions. A right-of-way no wider will comfortably accommodate a six-line roadway and sidewalks of proper proportions. It must be remembered that the interest of the community is in the right-of-way rather than the pavement. It is not at all necessary that a wide, expensive roadway be constructed at the time the street is first laid out.

Wherever it appears that a major street in future years will have more than ordinary importance in the circulation scheme, its width should be 100 or 120 feet. A narrow roadway can be built upon a street of this width just as easily as it can upon a much narrower street. When the traffic volume increases in later years, however, the city will possess a street which can be improved to meet the changing demands without the necessity of costly widening.
Street Design.

Few cities correlate paving plans and traffic control. In engineering offices where pavements are designed it is customary to use long established formulas. A 50-foot street gets a 50-foot pavement, a 60-foot street calls for one 40 feet wide. If there is any question regarding the choice between a wider and a narrower roadway, the arguments of paving material salesmen in favor of the former are considered and property owners are asked for opinions. The police department is seldom consulted. The result is that little used streets frequently bear pavements wider than they need to be while some of the busiest thorough-fares are equipped with a roadway not designed for modern traffic uses.

There are two aspects of this subject of street design that deserve consideration here. One has reference to economics; the other to the aggravating problems of traffic movement and regulation. As has previously been stated, modern motor vehicles tend to move upon streets in straight lines. Experience has demonstrated that nine (9) feet of roadway space is sufficient to accommodate a single line of free moving vehicles upon the majority of streets. There are cases, however, where ten (10) feet are required for certain lines, notably where busses or street cars operate or where heavy backing occurs, but such streets require special study.
Plate Number Nineteen

Street Design

(Insert Plate No. 18 included in printed Major Street report, page 46)
Roadways should be designed with full regard for the number of lines of moving vehicles to be accommodated upon the street, and also for the parking needs of the district. The plate opposite illustrates the commonly accepted standards for efficient roadway design. A pavement to carry two moving lines of vehicles and two standing parallel to the curbs needs to be only 36 feet wide. Any extra width is an unnecessary and costly waste of material and a source of confusion and danger to traffic. Excess street surface above that required for an even number of lines of vehicles invites reckless driving. A 26-foot roadway will carry a four-line automobile flow with perfect efficiency. A 40-foot roadway will do no more. A 26-foot roadway will render similar service on a residential street; 30 feet of pavement merely carries three lines and four extra feet of surface. This waste of 4 feet on 26 and 40-foot roadways amounts to over 2300 yards in every mile. Property owners pay an amount approximating $7,000 at $3.00 per yard for something the community does not need.

In congested centers where parking space is demanded, the roadway width should be determined by the number of lines of moving vehicles, a consideration of their sizes and the manner of parking required by the traffic code. Illustrations
Plate Number Twenty

Subdivision Principles.

(Insert Plate No. 16 included in Major Street report, page 42.)
of the method of using unit roadway widths are shown opposite. It is desirable also, where conditions require such adjustment, to vary curb alignments to make space for vehicles passing street car loading platforms, for bus stops, for the line up of a greater number of cars at an intersection. These are merely suggestions of the need for greater elasticity in street design, a need introduced with the motor age.

Subdivision Principles.

Land subdivision practice in Des Moines in years past has been free from municipal direction or control. This may have been an advantage to subdividers, but it has not been altogether beneficial to the general public. The community has been required to accept and use numerous streets of an inferior sort which should not have been opened.

The development of a system of major streets according to a predetermined plan, however, calls for a measure of municipal guidance in future land platting in and around Des Moines. The city, in its own behalf, must make an effort to elevate subdivision standards and practices. Plate Number 20 shows certain general faults of old subdivisions and indicates diagrammatically the fundamental principles which should be followed in the design of new streets and lots.
From a community standpoint, as well as from the point of view of property owners, land will be improved for city use if it is subdivided with regard for the following principles:

1. Conformity to the major street plan in the matter of width and alignment. Those particular streets should be continuous, as direct as possible, of adequate width, and easy gradient.

2. Proper adjustment of streets to the contour of the ground. In general, streets of all types should run parallel to contours. The lots on the upper side of the street will rise at the rear; those on the lower side of the street will drop to the rear. It is found that lots sloping thus are much more easily sold and used for residential purposes than those along a street which runs straight up a hill.

3. Primary consideration should be given frontage on major streets and pleasure drives. It is ordinarily found that superior land values prevail on these important thoroughfares. It will be an advantage to the property owners and to the city at large because of increased tax revenues, if the maximum frontage is secured on these streets. The platting of streets and lots along diagonal thoroughfares deserves special attention. Pleasure drives, moreover, should be laid out so that full depth, desirable lots may be laid out on them.

4. Cross streets and those tributary to major streets and pleasure drives should be reduced to a minimum. Reduction of the number of intersections on a major street at once increases the salable frontage and reduces the traffic hazard. The same applies to pleasure drives.

5. The arrangement of minor streets should be such as to favor the general flow of traffic to the principal arteries. Home centers in the quiet residential districts should find it easy to reach a wide, well-improved major street which will take them directly to the business district or to any other important center.
6. Jogs and abrupt turns are especially to be avoided on major streets. On minor residential streets, however, such impediments to traffic tend to protect them from unsatisfactory circulation of heavy, through traffic.

7. Intersections on major streets deserve special study. The property frontage at such points often has a potential value for business purposes. The traffic problem where several important arteries intersect should also be anticipated and the intersection designed to reduce congestion and confusion to minimum. At such points the arrangement of lots should favor commercial rather than residential improvements.

8. As a general rule 10% of subdivisions over 20 acres in extent should be set aside for park and playground purposes. Suggest slopes, wooded tracts, water courses, lakes and commanding hill tops have a wide appeal. A farsighted subdivider can frequently use a small park or playground to increase the value and salability of property nearby. Dedication of park, parkway, boulevard or playground land can be turned to advantage if the subdivider devises his scheme of lots and streets properly.

9. School and church sites should be reserved at the time land is platted.

The above matters are illustrated in the plate opposite. The subdivider will find need also to consider the following points:

10. All side lot lines should be perpendicular to the street.

11. Alleys should be omitted, except in the rear of lots likely to be commercial.

12. Easements should be reserved on rear and side lot lines for utilities and no poles and wires should appear on the streets; trees should be planted at time every new subdivision is put upon the market.

Other matters, such as lot sizes, street improvements, building lines, easements for utilities, tree planting and the like, are also to be reviewed in the preparation of subdivision plans. The land subdivision rules proposed (Appendix F) cover these points.
Great advances have been made in the art of urban transportation since its inception less than a century ago. According to historical records, the first street railway in the world was operated in New York City in 1832. This was a horse-car line operated on Fourth Avenue and called the New York & Harlem line. Thirty-one years after the advent of the horse-car railway, the first urban rapid transit line, an underground street railway, was operated in London. Five years later New York City built an elevated railroad. The next mode of transportation was the cable car which was placed in service in San Francisco in 1873. The electric line had its beginning near Berlin in 1881 and the first one operated in this country was in Richmond, Virginia in 1889. Hence the transition from the first horse-car railway to the electric line in the United States took place in a little more than a half century. Electric lines have now been in operation in this country nearly forty years and many improvements have been made in this form of service for the comfort and convenience of the riding public. With the growing appreciation that the electric lines are an essential to the welfare and growth of the city as any of its other public utilities there is good cause to expect continued progress.

Footnote: Dates of development obtained from "The Fundamentals of Transit Planning for Cities" by E.I. Turner, M.I.
Transit as a Part of the City Plan.

There are many elements entering into the development of a comprehensive transit system. These include legal, financial and administrative matters as well as physical improvements. Since the city plan is concerned primarily with the physical growth of cities, the purpose of this study will be to analyze the present physical layout of the street railway system and make certain suggestions for its readjustment and extension in harmony with the broad scheme for future development embraced within the city plan.

Following is a series of studies showing existing transit facilities together with recommendations for future improvements and expansion.
Plate Number Twenty-one

Chart showing Consolidation of Railway Companies.

(Insert Plate included in preliminary transit report page 10.)
Existing Transit Facilities.

The local transit system in Des Moines is owned and operated by the Des Moines City Railway Company which is an outgrowth of the consolidation of several competing companies as shown on Plate Number 11 opposite. The present company operates under a modern "Service at Cost" franchise with a sliding scale of fares based upon cost of operation. The system comprises 94.74 miles of track on single track basis. Ten different lines are operated half of which loop in the central business district while the other half are through routes.

Lines Looping in Business District:

Route Numbers:

3 University
7 Jordanale
11 & 12 Highland Park Line
26 Scott
27 Crocker

Lines Routed Through Business District:

1 & 20 Valley Junction & Douglas
5 & 13 Clark & 5, 6th and 7th
10 & 17 7th and 8, 14th
14 & 24 Belt and Seashore

The rolling stock in the local system is in good condition. The company owns 187 passenger cars with seating capacities ranging from 45 to 53 passengers. Ten
of these cars are of the one-man, two-man type; four are designed for one-man operation and the balance are two-man cars. Ten of these cars were purchased in 1926; forty in 1928; fifteen in 1929; and thirty-two in 1931. Since January 1, 1928, trams and motors have been replaced under 104 cars so that of the total of 107 cars, 160 trams and 114 motors have been in service less than four years. During the winter months 125 to 150 cars are operated during the rush hours and approximately 35 during the non-rush periods. In the summer months the number of cars in service is reduced to approximately 125 and 76 respectively.

Two local bus lines are operated by the railway company. Both of these serve as feeders to electric lines; one known as the University Coach Line and the other as the Walker Coach Line. The Street Railway Franchise adopted by the Los Angeles City Council October 24, 1921 carries with it a definite provision pertaining to bus operation as quoted below:

Motor Bus Operation.

Immediately upon the acceptance of this ordinance by the Company, as herein provided, the City agrees that it will cancel and terminate all licenses issued for the operation of jitney busses or motor vehicles engaged in carrying passengers for hire on a plan similar to that followed by Street Railway Companies on that part of any street or avenue on which there is operated a street car line or lines under the terms of this franchise, and the City agrees that it will not permit or license
Plate Number Twenty-two

Present Car Lines, Areas Served and population.

(Insert Plate No. 1 included in preliminary transit report, page 13.)
any such jitney bus or motor vehicle
to operate on that part of any such
street or avenue on which there is
operated a street car line or lines
under this franchise; provided, how-
ever, that such jitney or motor bus
may be licensed to cross such streets
or avenues at right angles with said
street car line or lines, and in
addition thereto may travel over such
streets and avenues so far only as is
necessary to cross bridges, and pro-
vided further that said buses and
vehicles may have a terminus in the
business district of said city and for
the purpose of going to and from such
terminus said buses and vehicles may
travel over such portion only of said
prohibited streets and alleys as is
necessary to connect directly with the
licensed route of said buses and ve-
vehicles over the streets and alleys on
which there are no street car line or
lines."

While the franchise does not specifically pro-
hibit local bus operation on streets without car lines
it does in effect discourage competition. Fortunately
too, it has been the policy of the city to prevent any
unnecessary competitive service and as a result the
only buses in operation are those of the railway
company

Routing of Present Transit Lines.

Plate Number 22 shows the route of each local
line, electric and bus, together with the distribution
of population and the areas served. Areas within one-
quarter mile of a car line, or a five minute walk, are
considered to be adequately served. This is a general
standard for determining reasonable service and it will be seen from the accompanying plan that comparatively few persons live beyond the served areas. These districts within the city and without service are indicated by cross-hatching.

This study as well as others that follow, illustrates graphically the city's present development. Fully 80% or more of the population is located in the north half of the city and the greatest density occurs in the close-in areas surrounding the central business district as in usually the case in most cities. Des Moines however has had a very wholesome growth and is conspicuously free from concentration of population. The city's area of fifty-five (55) square miles affords ample room for expansion and if the transit facilities continue to keep pace with development there is no reason why there should be any great tendency toward congestion. The major street plan preceding this study and the zoning ordinance now in effect will also serve to perpetuate healthful living conditions by preventing the overcrowding of land.

Des Moines is somewhat peculiar for a city of its size in that most of its industries are situated near the central business district. As a result practically all street car traffic movement is to and from
the central area. It is true in all cities that the
majority of traffic moves in this direction but where
there are outlying industrial districts there will be
found more outward and crosstown movements.

At present there are no crosstown lines in the
city and all transferring is of necessity done in the
central area. As new industries develop in the outlying
distritcs and the city increases in population there
will eventually be need of crosstown service not only as a
matter of convenience to the public but to relieve con-
gestion in the downtown district. It is the purpose of
this study to recommend the location of these routes to-
gether with the future extension of other transit lines
in accordance with a predetermined scheme coordinated
with the other phases of the comprehensive city plan for
the physical improvement of the city.

Description of Present Car Routings.

1. Valley Junction.

From north city limits south along
private right of way and East 33rd to
University, to East 30th, to Walnut, to
East 16th, to Grand, to East 6th, to
Locust, to 4th, to Walnut, to 12th, to
Grand, to 17th, to Ingersoll, to 59th,
to Grand, to 4th, (Valley Junction) to
Vine, to 5th, to Railroad Street.


North on 5th Street (Valley Junction)
from Railroad Street to Vine, to 4th, to
Grand, to 59th, to Ingersoll, to 17th, to
Grand, to 2nd, to Locust, to E. 6th, to
Grand, to E. 14th, to Walnut, to 30th, to
University, to 33rd, thence North along
right of way to City Limits.
2 **Ingersoll**

West on N. Walnut from W. 39th, to W. 16th, to Grand, to E. 6th, to Locust, to 4th, to Walnut, to 18th, to Grand, to 17th, to Ingersoll, to 39th, to Grand.

22 **Fair Grounds**

North on 59th from Grand to Ingersoll, to 17th, to Grand, to 2nd, to Locust, to E. 6th, to Grand, to E. 14th, to Walnut, to E. 30th.

3 **University**

East on University from Waveland Park to 24th, to Cottage Grove, to 19th, to Woodland, to 15th, to High, to 12th, to Walnut, to 2nd, to Grand, to 12th, to High, to 14th, to Woodland, and return.

5 **Clark**

South on E. 9th from Hull to Lyon, to E. 6th, to Walnut, to 9th, to Keosauqua, to 12th, to School, to 13th, to Clark, to 34th, to Franklin, to Beaver.

(6) Trippe terminates at 34th.

13 **East 6th & 9th**

East on Franklin from Beaver to 34th, to Clark, to 13th, to School, to 12th, to Keosauqua, to 9th, to Grand, to 2nd, to Walnut, to E. 6th, to Lyon, to E. 9th, to Hull.

7 **Urbandale**

From loop in Urbandale east on Urbandale to 20th, to University, to 17th, to Center, to Keosauqua, to 9th, to Walnut, to 2nd, to Grand, to 9th, and return.

(9) Trippe terminates at Francis.

10 **West Ninth**

South on East 14th from Hull to Grand to E. 6th, to Walnut, to 6th, to School, to 9th, to Jefferson, to 13th.

17 **East 14th**

East on Jefferson from 13th to 9th, to
23 **Scott**

West on Maury from South East 26th, Street, to South east 30th, to Scott, to South East 4th, to Court, to East 5th, to Walnut, to 4th, to Court, to 5th, to Cherry, to 6th, to Walnut, and return.

27 **Cracker**

East on Chamberlain from Polk Boulevard to 43rd, to Cracker, to 38th, to Cracker, to 31st to Center, to 28th, to Ingersoll, to 17th, to Grand, to 4th, to Walnut, to 12th, to Grand and return.
Plate Number Twenty-three

Present Time Zones.

(Insert Plate No. 2 included in preliminary transit report, page 18.)
Present Time Zones.

The present time zone plan shows by five minute intervals the time required on existing lines to reach different parts of the city from the intersection of Sixth and Walnut, and Sixth and Grand. The distances reached in each zone as shown on Plate Number 4 were computed from the scheduled time of the railway company and walking time assumed at three miles per hour. For example the heavy shaded area in the center represents those points which can be reached within five minutes or less from Sixth Avenue at Walnut Street or Grand Avenue. Likewise, those areas within the other five minute zones can be reached from the above location in the respective times shown.

The extent of the areas that can be served in a given time depends upon the directness and speed of the car routings. This is well illustrated by a comparison of the 15 minute zone on the Ingersoll line with that on the Scott line. Some of the differences in the distance travelled in 15 minutes running time can be attributed partly to the scheduled speed, the running time being faster on Ingersoll than on Scott. The greatest difference, however, is due to the fact that the Ingersoll is a direct route while the Scott line is somewhat tortuous.
From this illustration together with the fact that the majority of people are not willing to spend more than thirty or thirty-five minutes in travelling between their homes and places of work, it is evident that city growth is limited not by distance but by the time required to travel between certain points. On surface cars of reasonably direct routes and average speed the thirty minute time zone extends about five miles beyond the central business district. Hence if the future extension of transit facilities in Los Angeles are made direct as possible a very considerable area can be brought within the thirty or thirty-five minute time zone.

From Plate Number____ it will be seen that the time zones on the existing lines are pretty well rounded out. It is also obvious from this study that there is a lack of service to the south. The proposed routing plan suggests direct routes for the entire city's area in coordination with the major street layout.
Plate Number Twenty-four

Car Flow on Existing Lines.

(Insert Plate No. 3, included in preliminary transit report, page 20.)
Car Flow on Existing Lines.

The relative amount of service provided on all existing lines is shown graphically on Plate Number 24. The number of cars operated on each car line street for a typical day is represented by width of line. The greatest amount of service naturally in near the central area where the various routes converge. The frequency of service in the close-in area, however, is desirable in that it encourages short haul traffic - the most profitable of all.

Attention is called to the rather uniform distribution of service in the northwest of the business district; the concentration to the east and the total lack of service to the southeast and southwest. The number of trips on the University and Walker Coach lines are also indicated.
Comprehensive Routing Plan.

Obviously any scheme for the betterment and future expansion of facilities must take into consideration the existing layout. This must necessarily form the foundation or nucleus of the ultimate plan. Further, there are two outstanding fundamentals essential to good transit planning, i.e., the plan must be systematic and practical.

A plan to be systematic requires that all lines bear a certain relation to one another and be so arranged that all areas will be within approximately one-quarter mile of a transit line and conversely duplication of service should be avoided as far as possible, particularly in the outlying districts.

A plan to be practical must take into account existing conditions and accept the present layout so far as it can be adjusted to fit in with a systematic arrangement for the future requirements of the city. In all transit systems, especially those which have resulted from the consolidation of several competing lines, there usually exists certain defects in car routings and in some instances there is unnecessary overlapping of service while other areas are inadequately served.
Plate Number Twenty-five

Comprehensive Routing Plan.

(Insert Plate No. 5 included in preliminary transit report, page 23)
These conditions should be rectified and supplementing the suggestions for their correction there should be a definite plan for extensions coordinated with the other plans for the city's orderly development.

Plate Number 25 shows the location of present and proposed transit routes. No attempt is here made to suggest the type of service to be used in future extensions; whether they are to be electric or bus lines is a matter that will have to be determined in each case as extensions are required.

In studying the existing lines with the intent of eliminating unnecessary duplication, considerable thought was given to the section northwest of the business district where the University, Urbandale, Clark and N. 9th lines converge. It was hoped that these lines might be brought together south of University Avenue in some systematic way without depriving any area of convenient service. Careful study disclosed however, that such was impracticable and also that Escaquaw Way did not lend itself as a satisfactory transit route. Along this diagonal therefore the grades on the intersecting streets are somewhat excessive for transit operations and further to reroute any of the existing lines over this artery would remove service from other areas that could not be taken care of except by additional lines.
Another plan was to extend the University line east on Crocker to a connection with the Urbandale line at 17th Street and operate both lines south on 17th Street to Grand Avenue thence east to the business district. Such an arrangement would have permitted the abandonment of track on Center from 17th to Keosauqua Way and on 19th from Crocker to Woodland and also that part of the line on Woodland and High. This would have been a very desirable arrangement but its practicability was questioned because of the heavy grade on 17th Street which is approximately ten per cent.

It is evident beyond doubt that the W. 9th Street line is a direct duplication of the service provided by the Clark Street line and those on 6th Avenue. The W. 9th Street line should be removed and the E. 14th Street line combined with the Urbandale as recommended in the Business District Plan.

Under the present routing plan no direct connection is afforded between the east and south sides of the city. Here again to move from one of these areas to the other it is necessary to pass through the central congested district. The street arrangement however lends itself very nicely for a good transit connection by the use of E. 6th Street. This would permit of direct communication between the industrial areas on the east side and the residential district to the south as well as
the diversion of traffic from the central area.

A plan for the improvement of traffic circulation in and near the east end of the business district, described elsewhere in this report involves the removal of track from Locust Street and locating it on Grand Avenue. In modern street design for congested areas it is desirable to have every alternate street free from car lines so as to expedite vehicular traffic movement. In Des Moines the relief of Locust Street not only accomplishes this purpose but also makes it possible to develop this thoroughfare as an attractive approach to the state capitol. The simplification of car movement and consequent alleviation of traffic interference that can be obtained by this adjustment is explained in detail under the Business District Plan.

It is quite important that Avenue Frederick Hubbell to the northeast and the proposed new diagonal to the northwest be used for transit facilities in order to round-out the city's growth. As previously stated, city development follows the lines of least resistance and Des Moines is no exception to this rule. On Chart Number will be seen the approximate extent of the city's present development. Note how it has expanded more or less in the form of a cross. In order that
the city may grow in a natural radial manner it is necessary that diagonals be developed and used for urban transportation. Further, attention should be given to increased transit facilities on the south side.

The lack of crosstown service has previously been pointed out and the routing plan here proposed suggests the ultimate development of five such lines to be located as follows: To the north, one along Douglas and Euclid, and another on University Avenue; to the south on Park Avenue; to the east on 30th and 33rd Streets and to the west along 41st, 42nd and Beaver Avenue. The completion of all these lines is admittedly somewhat remote but as future traffic justifies crosstown service, portions of these routes could be developed.

By adopting and adhering to a comprehensive routing plan it will be possible to make adjustments from time to time with reasonable assurance that each change or extension will be another step toward the consummation of a definite scheme. Suggested changes in routes are fully described under the Business District Plan.
Plate Number Twenty-six

Track Plan

(Insert Plate No. 4 included in preliminary transit report, page 21.)
Track Plan.

Existing single and double track used in the present scheme of operation are indicated on Plate Number____. The principal track changes involved in the new layout in order to conform with the comprehensive routing plan and proposed business district arrangement are as follows:

Business District - New Track Required.

1. Extension of double track west along Walnut Street from 12th to 14th Street, tenfoot north to High Street. At 14th Street and Grand Avenue one left turn for cars turning west into Grand Avenue; one right turn for cars turning north into 14th Street.

Note: The operation at 14th Street and Grand Avenue would be the same as that now at 12th Street and Grand Avenue.

2. One left turn at 9th Street and Grand Avenue for cars to turn south into 9th Street.

3. Double track on 6th Avenue from Locust to Mulberry Street.

4. Double track on Grand Avenue from West Second to E. 6th Street.

5. One right turn at Second Street and Grand Avenue for cars turning east into Grand Avenue.

Business District - Track Abandoned.

1. On Locust Street from W. 6th to E. 6th Street.

2. On W. 5th Street from Locust to Mulberry Street.

3. On 12th Street from High to Walnut Street.
4. On 4th Street from Walnut Street to Court Avenue and on Court Avenue from 4th to 5th Streets.

Note: There is some track in the business district not being used at the present time and in the recommendations for changes this track has not been considered.

Beyond Business District.

Proposed track abandonment within the city and beyond the business district is indicated on the Track Plan. It will be seen, however, that in some instances new track must be constructed before abandonment can take place. By making these adjustments the same areas could be served and the track mileage would be reduced by more than three and one-half (3½) miles. Approximately 56,300 linear feet of single track is to be abandoned and 37,300 feet of new construction would be required, reducing the total track by 19,000 feet or three and one-half (3½) miles.
Plate Number Twenty-seven

Present Arrangement and Possible Re-arrangement of Transit Lines and area served.

(Insert Plate No. 6, included in preliminary transit report, page 23)
Duplication of Service.

The duplication of service resulting from transit lines being less than one-half mile apart is shown on Plate Number_____. By comparing the present layout with the proposed rearrangement it will be seen that a fair amount of over-lapping of service has been removed, particularly in the vicinity of East Ninth Street. Where all the lines converge in or near the central business district, it is obviously impossible to avoid duplication. This latter concentration of service, however, is an advantage since it encourages the use of street cars for short rides.

By using the surplus track removed from those areas having a duplication of service the present system could be expanded in accordance with the comprehensive routing plan as shown on Plate Number_____. The new areas served would not involve any additional track mileage, the total being the same as at present.
Business District.

Routings and Car Flow.

Traffic congestion in the business districts of most cities, particularly the larger ones, has made it extremely difficult for railway companies to maintain street car schedules. In the outlying districts it is possible for cars to move at a rate of speed of from ten to twelve miles per hour; but in the central business districts where there is a concentration of street car, vehicular and pedestrian traffic the speed is usually reduced to five miles per hour or less. Therefore, the object of a transit study for the central congested area must be to simplify railway operation and relieve so far as possible the interference with vehicular traffic.

The chief criticism of operation in the central area in Des Moines is that all three principal east and west streets, Grand, Locust and Walnut, are occupied by street cars with numerous right and left-hand turns at the intersecting streets. Fortunately, however, the railway company has inaugurated the principle of through-routing on some of its lines. This method of operation, where practicable to obtain, is more satisfactory than the old practice of looping cars in the central district. It benefits both the city and the railway company in that
Plate Number Twenty-eight

Present & Proposed Routings -- Business District.

(Insert Plate No. 7, included in preliminary Transit Report, page 95.)
(Insert Plate No. 3, included in preliminary Transit Report, page 33.)
it reduces the time and travel of street cars in the business district and consequently reduces congestion on the streets.

The present routing of street cars in the business district illustrated on Plate Number. The number of cars operated over each street for a typical day is indicated by width of line on Plate Number. From both these plans it will be seen that there are numerous turns in and out of 6th Avenue and other busy street intersections. Along Locust Street there is considerable concentration, and interference due to car turns. All car turns, particularly those to the left, hinder the free circulation of traffic and should be reduced to a minimum.

The proposed routing plan for the business district contemplates the simplification of car movements by the elimination of as many turns as possible and the removal of the car line from Locust Street, which will greatly benefit vehicular traffic and will not in any way handicap street car movements. There are already street car lines on Grand Avenue from S. 6th to S. 16th Streets and from W. and to W. 17th Streets. That part of Grand Avenue between W. 2nd and S. 6th Streets could very well be devoted to street car operation which would permit of the removal of car tracks from Locust Street for its entire length. By freeing Locust Street of car tracks,
this will provide a good vehicular street between two heavily travelled car line streets, Grand and Walnut, and would also afford a suitable approach to the state capital.

Below is a list of turns by street cars, both right and left, as they now exist and also those which would occur under the proposed routing plan. This list is based upon track turns in use at each intersection but does not take into account the number of lines or cars operating over any particular turn. In other words, where track is provided for a turn and cars are operated over such a track, regardless of the number of lines or cars using it, it is counted as one turn.
## Car Turns in Business District
### Existing and Proposed

#### Existing

<table>
<thead>
<tr>
<th>Street Intersections</th>
<th>Left Turns</th>
<th>Right Turns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twelfth &amp; Grand</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Twelfth &amp; Walnut</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ninth &amp; Grand</td>
<td>1</td>
<td>1</td>
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**Total** | **13** | **17**

#### Proposed

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**Total** | **10** | **9**
71.

The proposed routing plan will reduce the present number of left hand turns by three, and eight right turns will be eliminated. Not only have the number of turns been reduced but those remaining have been removed from the most congested area between Fourth and Sixth streets.

All east and west traffic is shown routed over Grand Avenue and Walnut Street. From the car flow map, plate number______, it appears that there might be considerable concentration on Walnut from Second to Seventh Streets. This, however, is by comparison only for an actual analysis of car movements will show that during the peak hours there would be a maximum of 65 cars per hour. It is possible for street cars to operate in a congested district on a headway as low as 30 seconds which would permit of 120 cars per hour on a single track. This of course is practically the maximum capacity and where greater headways are permitted street car movement should naturally be accelerated. With an existing maximum of 65 cars per hour, however, there would still be sufficient opportunity for a greater volume of street car traffic in the proposed routing plan.
Consideration was given to the possibility of combining some of the existing loop routes. The volume and character of traffic on the University and Highland Park Lines would suggest their combination as a through route. Their entries into the business district, however, do not lend themselves very well for a combined line. Further it is necessary to provide adequate service to the railroad stations and in order to do this without creating too many turns or meandering routes, it was necessary to use the Highland Park Lines which intersect all other lines and make it possible to reach the stations from all directions by a single transfer. The proposed comprehensive routing plan shows the Scott Avenue line operating north on E. 6th Street to Grand Avenue and thence west on Grand Avenue to the business district. The purpose of extending the Scott Avenue street line north to Grand Avenue was to provide a transfer point with the Douglas and Bailey Street lines, on the east side. The new arrangement contemplates the intersection of all lines on the east side for the purpose of creating transfer points before they enter the central business district to the west. The suggested plan for the business district might be improved by sacrificing this advantage on the Scott Avenue line and to continue to
operate it west on Walnut Street as at present. This would reduce the eastbound car flow movement on Walnut Street and would change the turn at Ninth and Grand from a left to a right turn. The proposed plan, however, shows the Scott Street line operating west on Grand Avenue, and east on Walnut Street which provides the transfer point on the east side.

The major street plan contemplates the use of Twelfth Street as a major thoroughfare, and in order to increase its efficiency as a vehicular thoroughfare the transit plan proposes the removal of the car tracks from this street and placing them on Fourteenth Street. This change of course is contingent upon the opening of Fourteenth Street from Grand Avenue to Walnut Street.

Proposed Changes in Routings:

By comparing the plan showing present routes with that showing proposed routes, Plate Number it will be found that the suggested changes in routings are as follows:

1 - 20 Valley Junction - Douglas
2 - 22 Ingersoll & Fort Des Moines

Present Routing:

Enters business district from the west on Grand, thence to Second to Locust and leaves east on Locust Street.

Enters business district from the east on Locust thence to Fourth, to Walnut, to Twelfth, to Grand and leaves the business district west on Grand Avenue.
Proposed Routing:

To operate on Grand Avenue in both directions through the business district.

3 - University

Present Routing:

Enters business district from north on Twelfth, thence to Walnut, to Second, to Grand, to Twelfth and leaves the business district north on Twelfth Street.

Proposed Routing:

To enter business district from north on Fourteenth, thence to Walnut, to Second, to Grand to Fourteenth and leaves the business district north on Fourteenth Street.

5 - 6 $10 Clark & 3, Sixty and Nineth

Present Routing:

Enters business district from north on Ninth street thence to Grand, to Second, to Walnut and leaves business district east on Walnut Street.

Enters business district from east on Walnut, thence to Ninth and leaves business district north on Ninth Street.

Proposed Routing:

To enter business district from north on Ninth thence to Walnut, and to leave business district east on Walnut Street.

From the east this line to operate same as at present.

7 - 9 Uptandale - Center

Present Routing:

Enters business district from north on Ninth, thence to Walnut to Second to Grand, to Ninth and leaves business district north on Ninth Street.
Proposed routing: See Urbandale and E. Fourteenth.

10 - 17 - W. Ninth and E. Fourteenth.

Present Routing:

Enters business district from north on Sixth Avenue, thence to Locust and leaves business district east on Locust Street.

Enters business district from east on Walnut, thence to Sixth Avenue and leaves business district north on Sixth Street.

Proposed Routing:

It is proposed to abandon the West Ninth Street line and combine the Urbandale and E. Fourteenth Street.

7 - 17 Urbandale & E. Fourteenth.

Proposed Routing:

To enter business district from north on Ninth Avenue, thence Locust to Ninth, to Cherry, to Sixth and leaves business district east on Walnut Street.

To enter business district from east on Walnut, thence to Ninth and to leave business district north on Ninth Street.

11 - 12 - 15 - 19 Highland Park Lines.

Present Routing:

Enters business district from north on Sixth Avenue, thence Locust to Fifth, to Cherry, to Sixth and leaves business district north on Sixth Street.

Proposed Routing:

To enter business district from north on Sixth, to Cherry, to Fifth, to Mulberry, to Ninth and to leave business district north on Sixth Street.

14 - 24 Belt - Seavastopol.

Present Routing:

Enters business district from north on Second, thence to Grand, to Seventh and leaves business district south on Seventh Street.
Enters business district from south on Seventh, thence to Walnut, to Second and leaves business district north on Second Street.

Proposed Routing:
No change recommended.


Present Routing:
Enters business district from south on Seventh, thence to Walnut and leaves business district east on Walnut Street.

Enters business district from east on Locust, thence to Second, to Grand, to Seventh and leaves business district south on Seventh Street.

Proposed Routing:
To enter business district from south on Seventh, thence to Walnut, to Second, to Grand and to leave business district east on Grand Avenue.

From the east this line to operate same as at present.

23 - Scott.

Present Routing:
Enters business district from east on Walnut, thence to Fourth, to Court, to Fifth, to Cherry to Sixth, to Walnut and leaves business district east on Walnut Street.

Proposed Routing:
To enter business district from east on Grand, thence to Fith, to Walnut and to leave business district east on Walnut Street.

27 - Crocker.

Present Routing:
Enters business district from West on Grand, thence to Fourth, to Walnut, to Twelfth, to Grand and leaves business district west on Grand Avenue.
Proposed Routing:

To enter business district from west on Grand, thence to Fourth, to Walnut, to Fourteenth, to Grand and to leave business district west on Grand Avenue.
Automobile Parking in the Business District.

Since streets are provided primarily for the circulation of traffic and not for the storage of vehicles, cities should adopt every regulation that will serve to carry people in and out of the congested area with a maximum speed consistent with safety. The majority of people are dependent upon the electric lines as the chief means of communication between their homes and places of work and therefore to render the greatest good to the greatest number, street car service should be expedited to the fullest extent, especially during the peak hours. Much can be accomplished toward this end by the prohibition of parking during the rush hours on those streets carrying car lines.

The delay in street car movement caused by the continual backing in and out of vehicles attempting to park along congested streets during the busy hours, is too well appreciated to justify any lengthy discussion here. Many cities are coming to the regulation of prohibiting parking in the downtown areas between the hours of approximately from seven to nine in the morning and from four to six in the evening. If this regulation is not applied to the entire congested district it should at least be enforced on those streets carrying car lines and it is suggested that Des Moines adopt such a regulation.
Interurban Lines

Electric Lines.

Des Moines is served by two electric interurban railways. One, the Des Moines and Central Iowa which is controlled by the same holding company operating the local lines; and the Fort Dodge, Des Moines & Southern Railroad, and independent line.

The Des Moines and Central Iowa Railroad has two lines entering the city; one from Perry, 36.7 miles; the other from Colfax which is 23.6 miles from Des Moines.

The PERRY LINE enters the city from the northwest over its own track to its terminals at Second and Grand.

The COLFAX LINE parallels the north city limits from the east to the Des Moines River thence south parallel to and east of the River to a connection with the Perry Line, thence to its freight and passenger terminals over its own private right of way same as the Perry Line.

Freight and Passenger Terminals - Both the passenger and freight stations are located at Second Street and Grand Avenue. This company also has a freight yard located on its right of way to the north just east of the Des Moines
River at the junction of the Ferry and Collux lines. Freight operation on these lines is described in full in the Railroad Transportation Report. Recommendations pertaining to the passenger station are described herein under the interurban routings in the business district.

Fort Dodge, Des Moines & Southern Railroad

The Fort Dodge, Des Moines and Southern operates one line from Fort Dodge to Des Moines which also serves Ames. Fort Dodge and Ames are 63.6 and 36.86 miles respectively from Des Moines. This line enters the city from the north and parallels the Rock Island, or what is known as E. 50th Street, to Short Line Junction. From this point it follows along the base of Capitol Hill terminating at its freight station at Court Avenue and E. 7th Street. Within the city limits it occupies the right of way of the Des Moines and Western Railway, a non-operating company. From its terminus at Seventh and Court, passenger cars use the tracks of the local railway company to the interurban station of the Des Moines and Central Iowa Railroad, at Second Street and Grand Avenue.

The proposed change for freight operation, i.e., connecting the Fort Dodge, Des Moines and Southern with the Chicago, Northwestern Railway just south of Douglas Avenue, is described in the Railroad Transportation Report.
Plate Number Thirty-five

Existing Barge Parks and Pleasure Drives.

(Insert Plate No. 19 included in printed Recreation Report, page 36.)
Plate Number Thirty

Interurban Lines.

(Insert Plate No. 9 included in preliminary transit report, page 41.)
81.

In order to remove interurban traffic from the center of the business district and to simplify operation to and from the proposed new interurban terminal it is suggested that a connection be made between the Fort Dodge, Des Moines and Southern, and the Des Moines and Central Iowa just above the intersection of these two lines north of the city limits, at what is known as Highland Junction. The passenger cars of the Fort Dodge, Des Moines and Southern would then operate over the Colfax route of the Des Moines and Central Iowa to the proposed new interurban passenger station at Second Street and Mercuria Way.

Bus Routes.

There are nine different routes within the city used by interurban bus lines. These are shown on Plate Number... together with the interurban electric lines.

Three interurban bus stations are maintained in the central business district: the Union Bus Station on Sixth just north of Cherry; the Kirkwood Station on north Street just south of Walnut and therailway Station just south of Grand.

The recommendations for the rearrangement of routings in the central area are described under the interurban plan for the business district. The present routes, those to be abandoned and new routes proposed are indicated on Plate Number... The principal changes on the east side
of the river involve the rerouting of several lines over University Avenue. In the west the use of Kosauqua Way is suggested for the line entering from the northwest in lieu of its present route via Forest and Sixth Avenue.

See business district plan, Plate Number_____.
Plate Number Thirty-One

Present and Proposed Interurban Routes

Business District.

(Insert Plate No. 10 included in preliminary transit report, page 45.)
Business District Interurban Routes.

Present Electric Lines.

Both interurban electric companies, the Fort Dodge, Des Moines and Southern, and the Des Moines and Central Iowa, use the passenger terminal of the latter located at N. Second Street and Drake Avenue. The Des Moines & Central Iowa lines enter their station from the north over their own private right of way. The Fort Dodge, Des Moines & Southern enters the business district from the east via Valley Street and thence north on N. Second Street to the passenger terminal at Grand Avenue.

Recommendations.

The interurban routing plan, Plate Number, suggests that the Fort Dodge, Des Moines & Southern, be connected with the Des Moines and Central Iowa, just north of the city and operated over the latter's private right of way to the proposed new passenger terminal at Second Street and Des Moines Way. This change if made would eliminate operation on Valley and Second streets.

Present Bus Lines.

On Plate Number, showing interurban routes in business district, are indicated the locations of the three interurban bus stations. The Union Bus Station on Sixth Avenue north of Cherry Street, serves nine lines;
the Kirkwood Station on Fourth Street south of Walnut Street is used by three lines and the Wellington Station on Fifth Street south of Grand Avenue has but one line. The routes as shown to and from these stations in the central business district are in accordance with those as defined in the application of bus companies for licenses but are not always adhered to in actual operation.

Recommendations.

A new passenger terminal is proposed at Second Street and Keosauqua Way which would accommodate all interurban bus and electric lines. The advantages of the site selected are well illustrated on the proposed plan for bus routings. It would be possible to route all lines from the east, north and west to the new terminal without traversing the central congested area and at the same time keep the interurban service convenient to the business district. A comparison of the present and proposed routes will show the streets to be relieved of bus lines. See also Plates Number____and____, showing Interurban Lines and the proposed new layout for Interurban Station.
Plate Number Thirty-two

Suggested Layout for New Interurban Station.

(Insert Plate No. 11 included in preliminary transit report page 47.)
Suggested Layout for New Interurban Station.

The present operation of interurban, electric and bus routes are shown and described under plates__ and ___. There are at present three different passenger terminals for busses and one for electric lines. The busses use the city streets in the business district for parking, loading and discharging passengers. The electric lines have a rather extensive layout on their own property but use Grand Avenue for a short distance and make two bad turns, one at Second Street and Grand Avenue and another on Grand Avenue just east of Second Street. Operation of interurban cars on Grand Avenue seriously interferes with the circulation of traffic at this point.

Hence any plan for the betterment of traffic conditions in the congested area must necessarily recognize these conditions and suggest methods by which improvements can be obtained. The plan here proposed recommends the development of a joint terminal for both electric and bus lines. The site selected at Second Street and Keosauqua Way has many advantages among which might be mentioned:

1. Site well situated in relation to business district.

2. Accessibility very good and will be improved by the widening of Keosauqua Way.

3. There are no substantial improvements on the site proposed.
[4] Electric Railway layout can be easily adjusted to new plan without great cost - note new track arrangement, Plate Number ___.

[5] Station could serve both bus and electric lines with no interference between the two.

[6] Bus lines can be routed in business district to reduce travel to a minimum.

[7] The combination of passenger terminal facilities would make possible the erection of substantial building with some architectural merit.

[8] The joint station would be a great convenience to the public and would facilitate traffic interchange between the different interurban lines.

[9] All parking and trip lay-overs by buses and electric lines would take place on private property in lieu of city streets. The present objectionable operation of electric lines on Grand east of Second would be eliminated.

The arrangement of the passenger station layout is intended to be a suggestion only but it is believed that the site selected has considerable merit and that a combined terminal along the lines of the one here presented would be beneficial and economical both to the interurban companies and the city.

No change is suggested in the present freight terminal at Second and Grand other than that which will eventually be made necessary by the proposed street cut-off between Keesaqua Way and Grand Avenue as recommended in the Major Street Report.