

The City Traffic Engineer's Role in Transit Improvement

JOHN H. BUNCH
Traffic Engineer
Madison, Wisconsin

MADISON CITY

In Madison, transportation planning has long been important but, as a rule, it has been sporadic, design dominated, and done by several different political jurisdictions and agencies working independently. Today there is a coordinated transportation study underway by all of the local political jurisdictions working in cooperation with the Wisconsin State Highway Commission and the Federal Bureau of Public Roads.

The Madison Area Transportation Study is not considered to be a panacea for the area's traffic ills; instead, it is an orderly procedure whereby, through coordination and cooperation, the transportation problems and needs may be met within the limit of the community's ability to pay.

Madison, the capital City of Wisconsin, is located in the south central part of the state and its population, according to a special census in 1964, was 157,844 people. This represents an increase of 31,138 people (24.6 percent) since 1960, and 61,688 people (64.3 percent) since the census of 1950.

The total area of the city is 64.8 square miles. However, with all or parts of three lakes being included within the city limits, the actual land area is 44.4 square miles. The central business district of the city is located on a narrow isthmus which separates the two major lakes and, at the narrowest point, this land strip is only six tenths of a mile wide. The central business district, well within the limits of the isthmus, occupies sixty-five hundredths square miles or 416 acres of area, with twenty-five hundredths square miles or 160 acres of this area being used for public purposes (Fig. 1). These purposes include the state capitol building and surrounding park, a state office building, city-county office building, post office, public parking lots and ramps and 16.4 miles of paved streets. Besides the attraction of the other public buildings, the state capitol building is renowned for its archi-



Fig. 1. The Madison Area Transportation Study includes the area within the dashed lines.

tectural beauty and thousands visit the city each year for this purpose alone.

Geographically, most of the city's industry is located on the east side, whereas the University of Wisconsin and a new state office building are located on the west side of the central business district. Thus, the isthmus is not only the destination of thousands of people each day, but it is a corridor through which many more thousands of people must pass. Even in 1949 approximately 83,000 vehicles made this trip each day according to the findings of an origin-destination study of Madison made in that year.

TRAFFIC ENGINEERING DEPARTMENT ESTABLISHED

A traffic engineering department was established in Madison in 1954. According to ordinance, the traffic engineer was directly responsible to the mayor and common council and, along with other duties, he was ". . . to plan the operation of traffic on the streets of Madi-

son." The city's registration of motor vehicles in 1954 was 37,488 units of various types (Fig. 2).

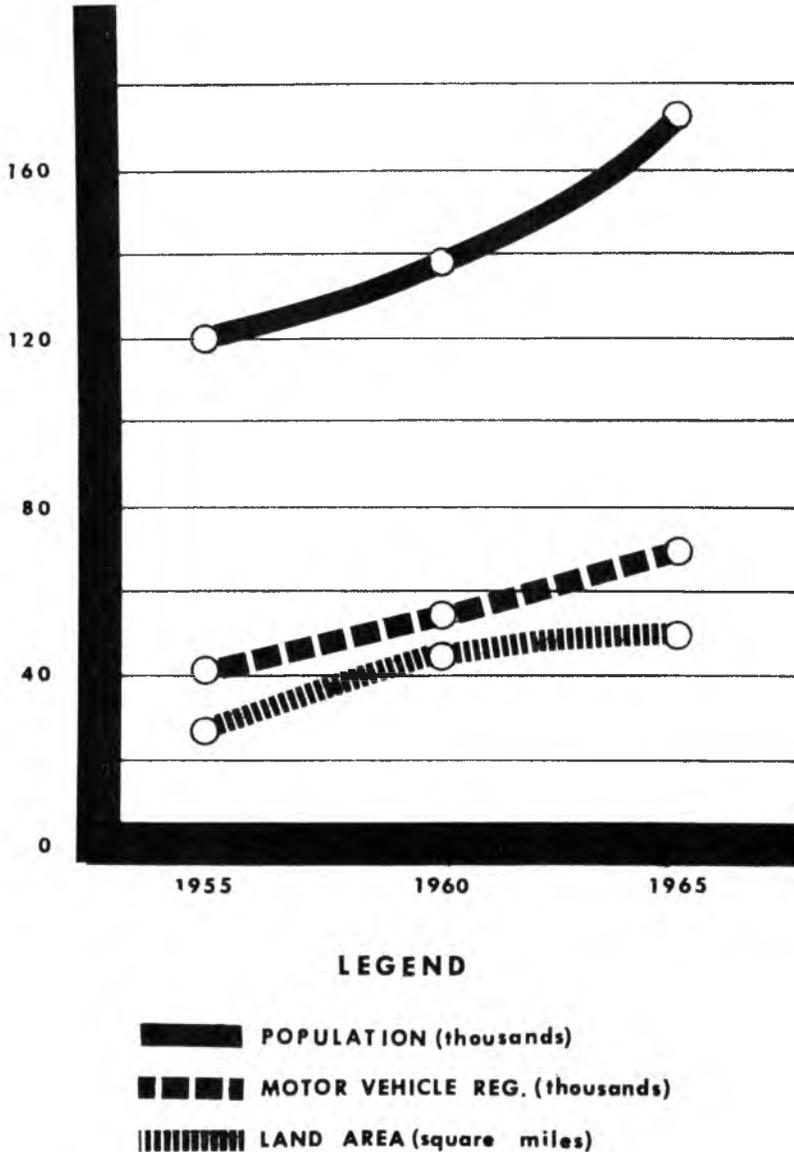


Fig. 2. Population, land use and motor vehicle registration for the incorporated urban area for 1955 to 1965.

Prior to 1954, the few traffic engineering activities attempted in the city were handled by the police traffic captain, and planning for street improvements was accomplished jointly by the city plan director and city engineer. With this unusual opportunity, the traffic engineer immediately started to work using the techniques and procedures so many other traffic engineers have followed when *making better use of existing facilities*. Even today, this activity continues to be a primary tool of all practicing traffic engineers.

Central Business District Parking Study

A major traffic engineering assignment of 1954 was a comprehensive parking study of the central business district, and the findings of this study pointed up a need to build parking ramps in two locations in the area. The sites selected were each one block from a corner of the capitol square, a ring of streets which surround the state capitol building. The parking study report, with the parking ramp recommendations, was accepted by the Madison Parking Utility Commission.

The report also served to focus attention on parking problems in other areas of the city and, by request, an overall parking program was then developed with the major recommendations of the original report included. For the central business district the original parking plan was expanded to include four parking ramps, one to serve each corner of the capitol square, and general obligation bonds were proposed to finance, in part, this program. The voters, by referendum, approved the overall parking program.

Parking Utility Commission

The parking facilities of Madison are managed by a parking utility commission and the traffic engineer is secretary thereof. The parking utility commission is authorized to enact such rules as may be necessary and proper to insure and promote the safe, efficient and proper operation of such parking lots as may be owned and operated by the city, and it may also establish parking rates and fees as are reasonable.

When approving the construction of Madison's first parking ramp, the parking utility commission decided that the primary use of this ramp would be to serve shopper type parking and that long-term parking could be permitted only until the space was needed for this primary purpose. This statement of intent and purpose was also approved by the Common Council.

Master Plan of Highways Published

In 1955, a *Master Plan of Highways for Madison* was published. This plan included the best proposals of previous master plans, propos-

als compatible with apparent existing and long-range needs, and recommendations for accommodating the anticipated future traffic volumes as projected from the 1949 origin-destination study. Whereas the recommendations for outlying areas appeared to be practical of attainment, the high type expressways outlined for the central business district were estimated to cost more than \$15,000,000 and to require approximately 32 acres of costly, well-developed land for street purposes (Fig. 3).

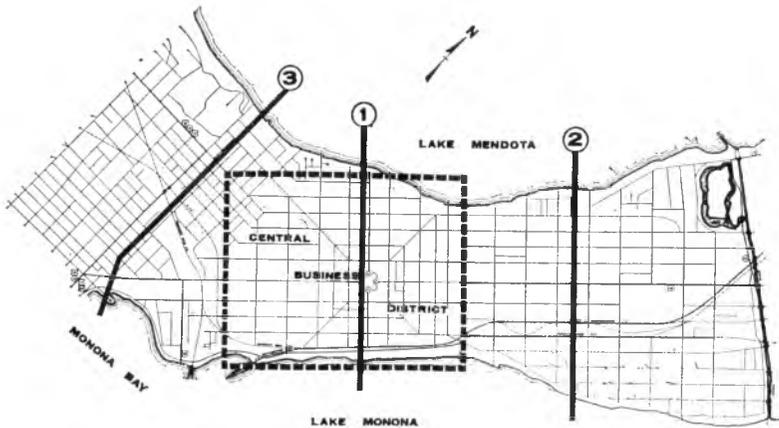


Fig. 3. Map of the central study area.

Better Use of Existing Facilities

While still trying in 1957 and 1958 to further increase the efficiency of Madison's existing street system, it became increasingly apparent that the *making better use of existing facilities* project would be decreasingly effective. There are more techniques, procedures and devices available for this type project than there were opportunities to apply them on Madison's streets. Consequently, when looking beyond the limitations of this project for answers to the transportation problem, repeated consideration of the recommendations of the 1955 master plan of highways progressively increased the uncertainty that the community could afford the construction and land costs of these proposed solutions. Further, the previous decision by the parking utility commission and the common council that the city should not provide parking for the long-term parker brought into focus, for the traffic engineer, these facts of life:

- 1) The capacity of the existing street system in the central area is limited.

- 2) The cost of providing increased right-of-way for the projected future traffic would be prohibitive in light of available resources.
- 3) The cost and resultant traffic effect of providing unlimited parking in the central business district could easily be the beginning of decay for this area.

Acknowledgment of these facts of life did not, however, alter actual traffic conditions on the street. It only pointed up the need to search for other solutions to the problem. Consequently, when notice was received that the public administration service had a guide for "Better Transportation For Your City", a guide and a set of procedure manuals (one was for transit services and facilities) were quickly ordered in January, 1958.

BUS SYSTEM CONSIDERED

One year before the master plan of highways was published, the common council adopted a resolution to determine:

1. The advisability and feasibility of operating a municipally owned bus system in Madison for the purpose of better service to the public.
2. The manner by which Madison may establish a municipally owned bus system in Madison if it is deemed advisable and feasible to operate a municipally owned bus system.

A committee of nine members was appointed to make the study. Subsequently they, in turn, decided to make a detailed study of existing bus service, and a passenger origin-destination study was conducted during the same month the Master Plan of Highways was published, namely, March 1955.

After numerous meetings, the committee appointed to make the study of the bus system was divided in its opinions and both a majority and minority report were issued in 1959-1960. The report of the majority recommended municipal ownership and a combined parking-transportation utility for administration of the two functions.

Private Bus Company Recommended

The minority report, prepared by the traffic engineer and the secretary-treasurer of Madison Bus Company, recommended continued private ownership and positive assistance to the bus company for making its street operation as efficient as possible. The common council accepted the minority report and requested suggestions for implement-

ing the recommendations. Accordingly, the following resolution was prepared and presented to the common council:

“By Committee of the Whole (Request of Traffic Engineer)

RESOLVED, That the City of Madison embark on a four-step program to improve the local transit system and make it an integral and permanent part of a comprehensive transportation plan for the city. The four steps would be:

1. That the common council encourage greater use of the transit system as it exists today by taking those actions which are now available to improve traffic conditions through the activities of the traffic engineering, police, engineering and street departments.

2. That the traffic engineering department cooperate with and assist the Madison Bus Company in making comprehensive studies of routes and coverage, route inventory, passenger load data, service frequency and regularity, transit running time, transit speed and delays, general operating data and passenger riding habits to determine the need for further improvements according to recommended standards, warrants and objectives for transit services and facilities. Procedures used successfully in other cities should be made a part of these studies.

3. That the ordinances be amended to effect a reorganization of the traffic commission and assign to it the additional responsibility of reviewing the plans for traffic, transit and parking activities and facilities for the purpose of advising the common council on the overall transportation policy.

4. That the traffic engineer and plan director develop and submit to the traffic commission, plan commission and to the common council for consideration a comprehensive transportation plan for the city with the improved transit system being integrated and made a permanent part of this overall plan.”

IMPROVING EXISTING BUS-STREET OPERATION

It will be noted that item one provided for immediate assistance for improving the existing bus-street operation; item two specified that studies according to the transit procedure manual be used for long range planning; item three included a reorganization of the Madison Traffic Commission for overall transportation planning coordination and, item four assigned the comprehensive planning responsibility to the traffic engineer and plan director.

When considering the resolution and the many types of studies required for the comprehensive transportation plan, there was some un-

certainty as to the exact assignment of the work. However, the then newly published joint statement of the Institute of Traffic Engineers and American Institute of Planners, which recommended particular responsibilities, was accepted by the two principals involved and the proposed study was given wholehearted approval. The common council adopted the resolution on May 5, 1960.

At the same time that the resolution was presented to the common council, work was started to carry out the directive of item one to improve traffic conditions on the streets traversed by bus routes. The first step was a scheduled meeting with the bus drivers for the specific purpose of determining the location and type of interference they were encountering on their many routes. The meeting was well attended and a total of 38 items were received.

Bus Drivers Suggest Traffic Improvement

Some typical suggestions received, and answers, were:

1. Problem: Left turns were difficult at University and Mills Streets.
Answer: A special left turn signal interval was added.
2. Problem: A large tree limb overhangs the bus stop on Lakeside Street.
Answer: The limb was removed.
3. Problem: Buses turning left on South Park Street have to stop in a moving traffic lane.
Answer: A left turn slot was constructed.
4. Problem: Right turns from Park Street to University Avenue are difficult.
Answer: Curb radius was reconstructed.
5. Problem: Drivers stopping to unload passengers at Regent and Allen Streets miss the actuated signal.
Answer: A special push button was installed.
6. Problem: Rush hour parking restrictions were needed on Regent Street.
Answer: Such restrictions were put into effect.
7. Problem: Buses were being delayed by vehicles being parked on State Street.
Answer: Parking stalls were lengthened to reduce such interference.

8. **Problem:** Continuous traffic on Park Street during rush hours delayed left turning vehicles.

Answer: Gaps in rush hour traffic were created by revised signal timing.

Bus stop signs for express service had the schedule included, while a special bus lane is being included in a reconstruction project for University Avenue. This lane now has the approval of the state highway commission and the bureau of public roads.

These suggestions were given by the bus drivers and received by the traffic engineer with a spirit of sincere cooperation wherein every detail was of sufficient importance to merit attention. It was recognized too that while some items did seriously interfere with traffic movements, others were more in the nature of irritants which adversely effected the drivers' morale. However, as good street operation and good driver morale are both important elements needed to improve a bus transit system, these and many other actions were taken on the drivers' suggestions.

Traffic Engineer Observes Bus Traffic Problems

A second meeting of the same type was held with the bus drivers after many of the suggested improvements had been completed. The improvements were evaluated and additional suggestions were received. In addition to the meetings, buses on many routes were ridden by the traffic engineer and other traffic difficulties were noted and improvements scheduled. In total, more than 80 items of obstruction or interference to bus movements were identified and most were eliminated or minimized in the effort to assist this form of public transportation. Consequently, with these and other improvements, buses in Madison still continue to operate on the same round trip schedules they used ten years ago (90 minutes round trip) in spite of a seventy percent (70 percent) increase in vehicle registration in the city.

Common Council and Street Department Help

Other city departments and the common council also took action. The street department gave extra attention to bus routes by giving these streets first priority when scheduling snow plowing, salting and sanding operations. The engineering department assisted in reconstructing curb radii and left turn storage lanes in medians where buses were having turning difficulty. The police department paid particular attention to bus stops, keeping them free of parked cars. The common council adopted rush hour parking restrictions along some

of the major streets. In one instance, the buses improved their rush hour running time by eight minutes after parking restrictions were applied on one eight-block length of street.

TRAFFIC DEPARTMENT AND BUS COMPANY COOPERATE

In accordance with item two of the resolution, studies of bus routes and coverage, route inventory, passenger load data, service frequency and regularity, and others were started. The "Procedure Manual for Transit Services" and facilities was used as a guide for this activity. The previously completed bus study committee report was also of value in furnishing much needed information.

New Bus Equipment

Officials of the bus company, assuming a responsible and positive attitude, took immediate steps to improve their equipment and operation as a part of the overall effort. A modern service facility was installed in 1958 to clean thoroughly and wash all buses before they were placed in service. Two new \$28,000 buses were purchased in 1960 and four more were added in 1961, four more in 1962, two more in 1964, and five more were delivered in 1965. A dynamometer was purchased and installed in 1962 for diesel motor analysis and fine adjustment, thereby reducing repairs and lay-ups of equipment, and \$38,000 was spent in 1964 for new and improved passenger fare boxes. In total, more than \$635,000 was spent in five years by the bus company management as their contribution toward a better bus service, and the results are quite revealing. For example, on March 10, 1955, there were 48 buses in regular service of which seven buses were of the 45 passenger size, while at the end of 1965 there were 60 buses in regular service of which 34 were of the 45 passenger size. In seats available this is an increase of from 1,463 to 2,258 seats; a total of 795 seats for an impressive 54 percent increase in passenger carrying capacity. This increase in seats available, plus a previously indicated increase of 18 percent in one-way bus trips between 1955 and 1965 indicates an increase of approximately 1,300 seats available, or 91 percent in the ten-year period, 1955-1965.

In comparison to the \$635,000 spent by Madison Bus Company to improve service in this City, since 1961 the federal government has contributed more than \$39,000,000 in loans, grants and projects to improve public transportation in 41 other communities, while these same communities, and other agencies, have furnished another \$23,000,000

for the same purpose. The efforts of the Madison community to solve its own transportation problems must be commended.

REORGANIZATION OF THE TRAFFIC COMMISSION

Item three provided for the reorganization of the traffic commission and added certain responsibilities. Accordingly, the commission membership was reduced from 21 to 12 members, the traffic engineer was appointed secretary, and the commission responsibilities were redefined by ordinance as follows:

“It shall be the duty of the traffic commission to review and coordinate plans for traffic, transit and parking activities and facilities for the purpose of advising the common council on an overall transportation policy; to recommend standards for street facilities and services, and recommend standards, warrants and objectives for transit services. The traffic commission shall also develop and present to the common council criteria for the establishment of speed zones, one-way streets, parking restrictions and limitations, heavy traffic routes, school crossing guards and other traffic regulations and shall, according to such criteria, recommend to the common council appropriate ordinances concerning such regulations. They may also receive complaints on traffic matters, hold public hearings, and recommend to the common council, the board of public works, the parking utility commission, the plan commission, the traffic engineer, the chief of police and other appropriate city officials ways and means for improving traffic conditions.”

COMPREHENSIVE TRANSPORTATION PLAN

Item four of the resolution directed - - - “that the traffic engineer and plan director develop - - - a comprehensive transportation plan for the city with the improved transit system being integrated and made a permanent part of this overall plan.” With the guide and procedure manuals at hand, preparations were made to get the study underway.

Origin-Destination Study

The Wisconsin State Highway Commission had made an origin-destination study of Madison in 1949. It having been ten years since the work was completed, the commission agreed, in October 1960, to conduct another study of the same type. In reviewing the requirements of the complete transportation study it was noted that an origin-destination study was a major part of the entire study procedure. Consequently, an amended agreement was executed in March 1961 to

encompass the entire study procedure as outlined in the "Guide for Better Transportation for Your City."

Personnel

There are located in Madison, the state and district offices of the Wisconsin State Highway Commission, the district office of the U. S. Bureau of Public Roads, office of the Dane County highway superintendent, professors of highway and traffic engineering at the University of Wisconsin, and well-staffed engineering and planning departments of the city. With this talent at hand, the cooperating agencies decided to dispense with consultants and conduct the study with the assistance available. Some of the benefits of such an arrangement are reduced costs; better trained personnel for continuing studies, and more personal attention to local needs. Leadership, a possible weakness of such an arrangement, was furnished by a very able coordinator.

The mayor of Madison then appointed a technical coordinating committee with the city traffic engineer as chairman. Other members were: city plan director; city engineer; city attorney; chief of urban planning and district engineer, state highway commission; division engineer, Bureau of Public Roads; Dane County highway engineer; trustee, Village of Maple Bluff; administrator, Village of McFarland; engineers, Villages of Middleton, Monona and Shorewood Hills; president, Madison Bus Company; and a professor of civil engineering from the University of Wisconsin. Subsequently, the city director of public works and the Dane County planning director were added to the committee. A technical staff of representatives from these various agencies and departments was also designated.

With such optimum conditions prevailing, the bureau of public roads designated the Madison area transportation study as a "pilot" study, thus giving more impetus to the planning effort.

Business District Parking

With the transportation study underway, the mayor, traffic engineer, plan director and city engineer had an informal discussion of the city's traffic needs and the physical and financial limitations in providing for these needs. There was general agreement among these officials that the city could not provide street and parking facilities in the central business district of the city for an unlimited increase in vehicular use. As the previous conclusions of the traffic engineer were concurred in, this philosophy was presented to the technical coordinating committee and to the traffic commission during the early stages of the transportation study.

Information Desired on Traffic, Parking and Bus Transit

Proceeding with the study according to the recommended outlines, certain information became more important than the values normally assigned to them. For example, these items were of particular concern:

A. Traffic—on Crosstown Streets

1. Existing average daily traffic (ADT) volumes on crosstown streets.
2. Existing practical capacity of crosstown streets.
3. Percent of this capacity now being used.
4. Projected 1985 traffic volumes by assignment.
5. Maximum practical capacity of crosstown streets.
6. Percent of 1985 volumes which can be accommodated on existing streets.

B. Parking

1. Existing parking supply, both on- and off-street, and both public and private in the central business district.
2. Existing parking volumes now being accommodated with existing regulations.
3. Amount of parking to be lost when streets are operating at their maximum practical capacity.
4. Maximum amount of parking available when all public off-street facilities are operated for the accommodation of the short-term parker.

C. Bus Transit

1. Incorporated area served, one-way route miles, bus miles operated, bus hours operated for 1949.
2. Area served, one-way route miles, bus miles operated and bus hours operated for 1955.
3. Area served, one-way route miles, bus miles operated, and bus hours operated for 1965.

BUS STUDIES OF 1955 AND 1965 COMPARED

In September of 1964, the technical coordinating committee approved, as a part of MATS, another bus study for 1965 similar to the one made in 1955. The field work for this study was completed March 11, 1965, and was accomplished during the same month of the year, same day of the week and exactly ten years and one day after the original study. To accent the amount of cooperation among the agencies participating in the Madison area transportation study, a total of 77 checkers were furnished by these various agencies to expedite the

bus study operations. Following is information obtained from the 1965 study compared to that of the 1955 study.

Comparison of Bus Operation (March, 1955-March, 1965)

	March 10, 1955	March 11, 1965	Change Percent
Incorporated Urban Area—square miles	26.4	50.1	+90
Population of Urban Area	120,171	175,000	+45
Vehicle Registration—area served	40,112	69,146	+72
Area Served by Bus—square miles	13.9	22.1	+59
Bus Trips—one way	806	947	+18
Bus Stops Served	596	749	+26
Bus Operating Hours	517	539	+4
Street Miles of Bus Routes	45.5	77.8	+71
Total Miles Traveled	5,892	6,317	+7
Average Bus Speed*—mph	11.5	11.6	—
Round Trip Schedule*—min	90	90	—

*Regular Routes

Bus Passenger Revenues

The bus company does not count the number of passengers who use the service, and this practice is common among all bus transit companies. However, monthly and annual passenger revenue totals are available and have been shown in the following table and Fig. 4.

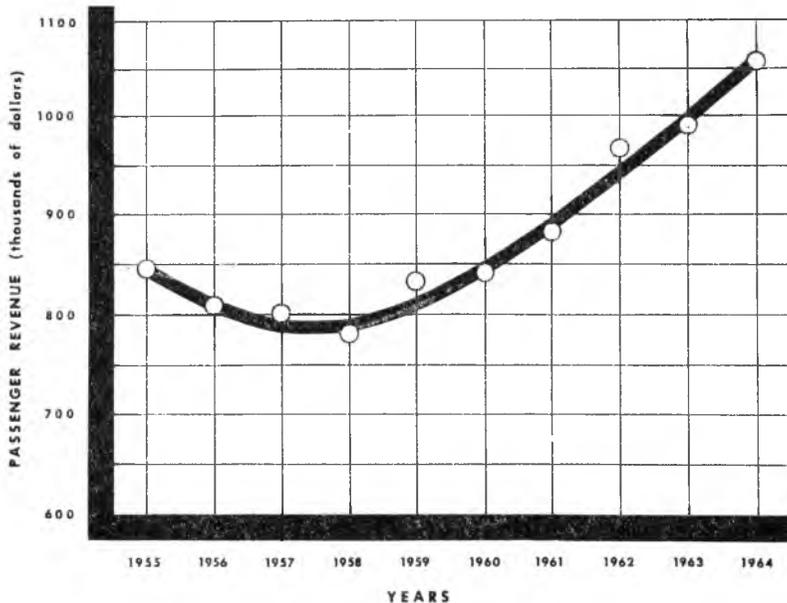


Fig. 4. Passenger revenue for the Madison Bus Company for the years 1955 to 1964.

Bus Passenger Revenues			
Year	March	Annual	Fare Increases
1949		\$853,790	January 1—(1)
1950		877,464	May 15—(2)
1951		981,534	February—(3)
1952		975,206	May 11—(4)
1953		927,889	September 13—(5)
1954		901,509	May 1—(6)
1955	\$79,553	840,103	
1956	76,125	810,065	
1957	73,137	802,329	
1958	71,475	783,988	
1959	78,613	833,826	July 20—(7)
1960	79,914	843,058	
1961	80,412	883,749	March 27 — August 7— (8), (9)
1962	88,460	969,657	April 2—(10)
1963	90,550	991,777	
1964	97,131	1,058,929	January 1—(11)
1965	106,642	?	

Bus Fare Increases

Bus fares before January 1, 1949 were five cents (5¢) for everyone.

- (1) Adults—5¢ zone fares.
- (2) Adults—10¢ cash, 7 tokens 50¢, no zone fares, children through high school—5¢
- (3) Adult—11 tokens 50¢—no zone fares.
- (4) Adult—outbound zone fare—5¢.
- (5) Adult—10¢ cash, no tokens, children to 12 years—5¢, through high school 10¢ or 3 tokens—25¢
- (6) Adult—15¢ cash, 2 tokens—25¢, children 12 years through high school—10¢, no tokens.
- (7) Children through high school—10¢
- (8) Adults—7 tokens—\$1.00
- (9) Adults—15¢ cash.
- (10) Adults—20¢ cash, 3 tokens—50¢.
- (11) Adults—20¢ cash, no tokens.

The month of March are shown because: 1) the bus studies were made in March and, 2) this gives the latest revenue figures.

Two Other Comparisons

Two other comparisons are pertinent:

- 1) Out of 78 cities in this country having populations of 100,000-250,000 people, 50 of these cities have bus fares higher than those in Madison, 5 have the same fare and 23 have lower fares.
- 2) For these same cities, their average passenger revenues dropped 7.75 percent between January 1964—January 1965.

After these comparisons, it is quite obvious that the downward trend of passenger revenues was halted and then reversed in 1959 and 1960 and now continues to rise. Without doubt, the cooperative effort of the city and the bus company management has played a major role in this most unusual accomplishment. Consequently, it appears that this form of transportation has not only been “saved” for the city but that it can be “. . . integrated and made a permanent part of a comprehensive transportation plan . . .” for the city.

A WORD OF CAUTION

What has been accomplished to date in Madison might well be accomplished in other cities. However, a word of caution might be in order if the effort is attempted by those having similar concern, for there are certain recognizable elements that must be in existence if the effort is to succeed: (1) agreement on intent and purpose; (2) a willingness to give attention to details (there are thousands); (3) an understanding that the job will take years—not days; and (4) a few dedicated people who feel the objectives are worthwhile.

The foregoing discussion has emphasized the history and procedures used to date in improving Madison’s local bus transportation. This has been done purposely since much has been said and written by others on the facility aspects, but little on the transit aspects of a comprehensively engineered transportation program.

SOME TRANSPORTATION STUDY RESULTS

Briefly, however, the Madison area has been moving forward in the physical aspects of transportation planning as well. Testing of the first of several proposed street networks has recently been completed. Data from this testing follows and relates to the information mentioned previously as being of special interest:

A. Traffic—On Crosstown Streets

- (1) The average weekday traffic on crosstown streets (screen line 2) in 1949 was 57,442 vehicles (Fig. 5).

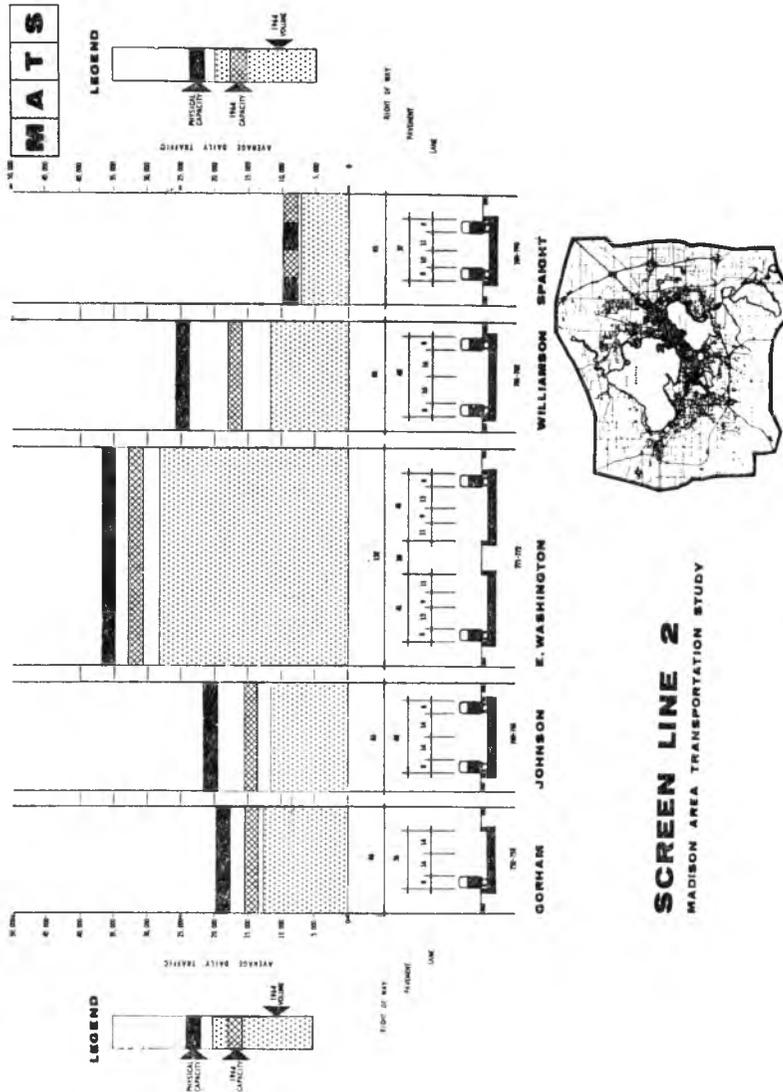


Fig. 5. Average weekday traffic on crosstown streets at screen line two. Location of screen line two shown in lower right.

- (2) Comparable traffic volumes for 1955 were 63,000 vehicles.
- (3) Figures for 1964 are 70,300 vehicles.
- (4) The 1964 practical capacity of these streets is 87,600 vehicles.
- (5) The percent of the 1964 capacity now being used is 83 percent.

- (6) The projected 1985 traffic volumes, by assignment, to these streets is 109,500 vehicles.
- (7) The maximum practical capacity of these streets is 109,700 vehicles.
- (8) The percent of 1985 traffic volumes, by assignment, which can be accommodated on these existing streets (summary-screen line 2) is 99.8 percent and there is little opportunity for widening.

B. Parking

- (1) The existing parking supply in the central business district is 13,173 spaces.
- (2) Parking now being accommodated with existing regulations is approximately 32,407 vehicles per day.
- (3) Amount of street parking to be lost if provision is made for the maximum practical capacity of the streets is 1460 spaces.
- (4) Maximum number of vehicles of *shopper-type parking* which can be accommodated with the reduced amount of street and other spaces is 31,272 vehicles per day.

C. Bus Transit

- (1) In 1949 buses served 12.5 square miles, had 57.3 one-way route miles, traveled 2,493,895 miles, and were in operation 214,357 bus hours.
- (2) For 1955, buses served 13.9 square miles, had 52.8 one-way route miles, traveled 1,833,970 miles and were in operation 160,035 bus hours.
- (3) In 1965 (January-February-March), buses were serving 22.1 square miles, had 87.1 one-way route miles, were traveling at the rate of 1,968,000 miles per year and would operate 170,000 hours.

In addition, for 1965, one express bus route was started in March which provided morning and afternoon rush hour, and noontime shopper, service for the east side of the city, while the same type of express bus service was started in September for the west side of the city and a third express bus route to the north side of the city was started in February of 1966. To date, the results have been most gratifying, and consideration is being given to the addition of a second bus for the east side express service.

Charts are included which show the transportation study results, to date, at three screen line stations on the city's isthmus (Fig. 6). Particular attention is directed to station number two, which appears to

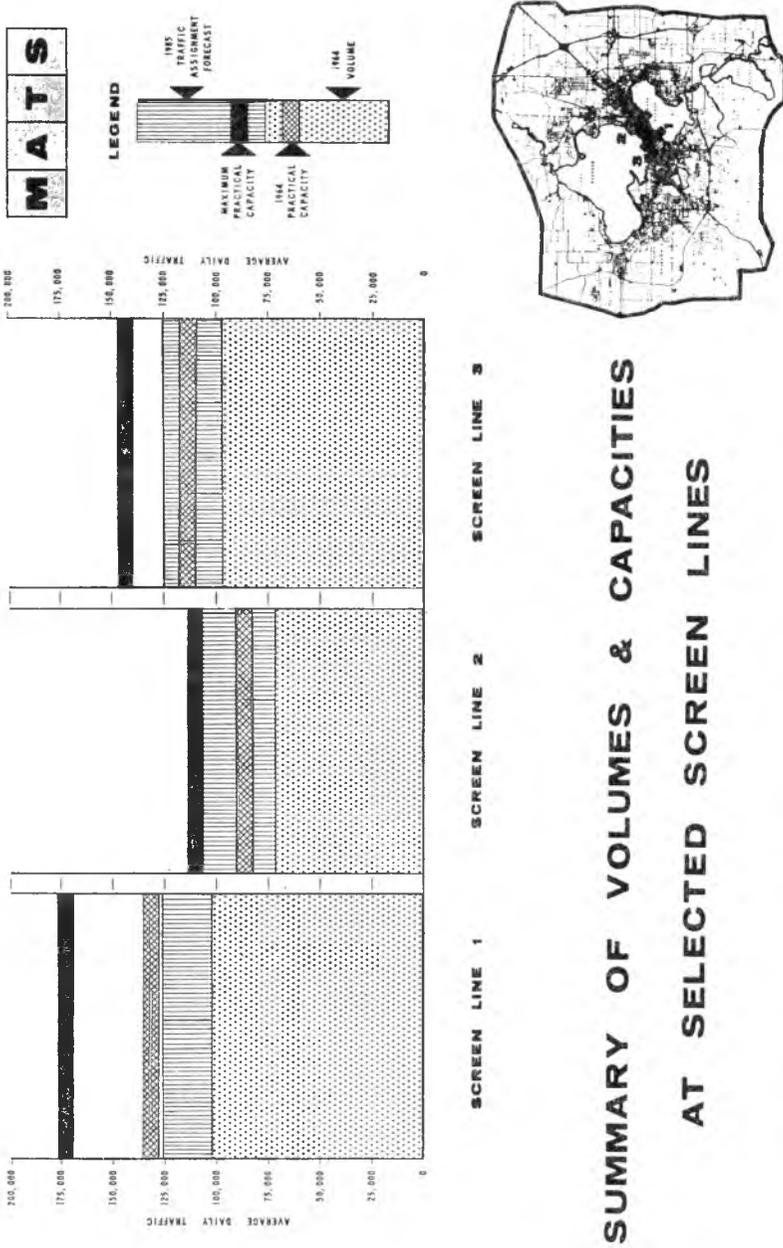


Fig. 6. Transportation study results, to date, at the three screen line stations on the city's isthmus.

be the major traffic obstruction in 1985. Station number one, through the center of the capitol square, indicates some excess capacity although this capacity only applies to the circulation system of the immediate area. Station number three shows the most excess capacity; also the highest projected volumes. The testing of other networks might show different results for station number three. But for number two, and especially number one, there are no physical alternates available which are attainable within presently available or 1985 projected local resources. If financial as well as available land for increased highway facilities limit the physical alternates, then Madison must, as it is doing, investigate alternates such as generative and terminal traffic limitations combined with actions to increase bus transit usage. These studies, including computer testing, are underway and will result in attainable transportation solutions.

CONCLUSION

Thus, work is proceeding on a transportation study directed toward a comprehensive plan and program for Madison and its urbanizing area in which transit is an equal and responsible component. Present and projected future traffic volumes are being determined; the capacity of the existing street system is being ascertained; the quantitative and qualitative extent of existing and future parking facilities is being weighed against the existing street capacity and that which is feasible of attainment; and adequate bus transit service can be provided as a necessary and vital element of a balanced transportation system. The major results so far attained, and anticipated in the immediate future, are byproducts of positive and coordinated efforts of public and private agencies working toward a common and mutually beneficial objective. And, when considering the results of the recent efforts directed toward bus transit, there is little question that the provisions of the original resolution of the common council will be fulfilled.