FEASIBILITY STUDY
OF
RESERVED BUS–CAR POOL LANES
FOR JEFFRIES FREEWAY (I-96)

SEMTA

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RESERVED BUS–CAR POOL LANES

FOR JEFFRIES FREEWAY (I-96)

JUNE, 1975

MICHIGAN STATE HIGHWAY COMMISSION

SOUTHEASTERN MICHIGAN TRANSPORTATION AUTHORITY

CITY OF DETROIT, DEPARTMENT OF TRANSPORTATION

SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS

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SUMMARY OF FINDINGS, AND RECOMMENDATIONS

On the basis of data derived from analysis of potential and existing transit service areas, plus projected ridership estimates for new and modified routes, it is recommended that eleven routes have the reserved lane incorporated into their route structure.

	No. of buses Using RBL		No. of new buses required to maintain	Capital	Express Route	Annual Operating Subsidy for new
	AM	PM	recommended headways	Costs*	Revenue	Service
Grand River	23	20	--	$ ---	$ ---	$ ---
Imperial	25	24	--	---	---	---
Joy Road	15	12	--	---	---	---
Evergreen	6	6	5	350,000	71,145	72,953
Tireman	5	5	0	---	43,605	43,926
Greenfield	6	6	5	350,000	105,672	34,891
Livernois	5	5	3	210,000	68,850	11,965
Schaefer	5	5	3	210,000	84,226	12,863(+)
Southfield	5	5	4	280,000	44,982	36,833
Schoolcraft	5	5	4	280,000	23,409	61,186
Telegraph	6	6	6	420,000	75,097	104,356
TOTAL	106	99	30	$2,100,000	516,986	352,247

*Capital acquisition assumes a 1976 cost of $70,000 per bus.
(+) Revenue

NOTE: The Grand River, Imperial and Joy Road routes will incorporate the reserved lane into existing express schedules. No new equipment will be immediately required. The remaining eight routes will be adding new express service. The Tireman, Schoolcraft, and Southfield and Livernois routes will continue to operate into current service areas. Evergreen, Greenfield and Schaefer will offer extended service into new service areas. The Telegraph route will be an entirely new service. A detailed description, including travel time and CBD terminus is given for each route in Chapter VI.

The new service will require 30 highway coaches in order to operate the 43 scheduled peak hour runs. All but the Telegraph route will be scheduled to allow the first bus to make two trips. For shorter routes, i.e., Livernois and Schaefer, there is sufficient time for two coaches to make a second run.

The Tireman route is of limited length, and highway style coaches will not be required until possible extention into the western suburbs warrants their use.

Capital Cost for new buses has been estimated at $2,100,000. The thirty buses required to operate new peak hour service at 15 minute headways are part of SEMTA's '76 Capital Grant Application to the Urban Mass Transportation Administration. The local match is being provided from the State of Michigan General Transportation Fund.

Some operating subsidies for the new service may be available from Section 5 funds of the Urban Mass Transportation Act of 1964 as amended, though alternative funding may also be available from State General Transportation Fund sources. In addition to the $2,452,247 cost of operating susbsidy and capital acquisition, $100,000 is required for freeway signing and lane markings (see Chapter VIII) and $267,400 is required to adequately educate the public as to the lane's function, restrictions and most beneficial use (see Chapter IX).

The signing cost of $100,000 is expected to be met through use of State Highway Funds. The public information program is recommended to be developed with Urban Systems Funds. The thirty percent local match should be generated by local municipalities in the Jeffries service area.

Park and ride sites detailed in Chapter VII are recommended for each route. These sites will utilize the existing church and shopping center facilities in the service area. Maintenance, i.e. snow removal, will be performed by the transit agency. The total start up cost, i.e. capital acquisition, freeway signing, and public information program is estimated at $2,467,400. The operating subsidy required for the new service would increase total first year costs to $2,819,647.

Implementation of routes recommended for the first section of the Jeffries reserved lane project will be staged to reflect the availability of equipment and the need to provide service to areas currently without service. The eleven routes will be implemented in three phases:

(1) Routes not requiring new equipment will receive priority in the implementation program. These are Grand River, Imperial, Joy Road and Tireman.

(2) Routes in new service areas are second priority and will be implemented as equipment is made available under FY 76 Capital Grants.

(3) Routes in existing service areas requiring new equipment will be implemented last, or possibly will be implemented with existing equipment and reduced headways.

All routes will utilize the reserved lane to the maximum extent possible except in those instances where use of the lane is detrimental to existing riders, or causes delays greater than those currently experienced in surface routes.

It is recommended that physical improvements to the I-75/I-96 interchange as detailed in Chapter VIII be implemented to allow for routing of the reserved lane directly into the CBD.

The staged implementation program would be:

Phase I	Grand River	September 1, 1975
	Imperial	September 1, 1975
	Joy Road	September 1, 1975
	Tireman	September 1, 1975
Phase II	Telegraph*	September 1, 1975
	Evergreen*	September 1, 1975
	Greenfield*	September 1, 1975
Phase III	Livernois	January - 1976
	Schaefer	January - 1976
	Southfield	January - 1976
	Schoolcraft	January - 1976

*SEMTA operated routes

The Michigan Department of State Highways and Transportation estimates that the next section of I-96 to be opened to the public will be that portion from Schaefer, the current terminus, west to the Southfield Freeway (M-39). Completion date is projected to be September, 1976. At this time a number of routes, i.e., Greenfield, Southfield, Evergreen and Telegraph will be rerouted to take advantage of the larger segment of the Reserved Lane. Likewise, routes into western Wayne County, i.e., Fenkell, Second, and Plymouth and a north western extention of Grand River to Halsted Road, which currently have a lower priority will also be implemented. (see Chapter VI for a detailed description of proposed Western Wayne County routes.) In addition, routes on arteries perpendicular to the Jeffries will be investigated as to their potential to serve CBD commuters.

The entire length of the I-96 when extended to I-275, is scheduled for completion by Fall of 1977. An extension of the reserved lane restriction beyond M-39 will depend on the degree of traffic congestion; commuter response to new bus service, and; the use by car pools of the existing reserved lane.

I - INTRODUCTION

A. BACKGROUND OF STUDY

The 1990 Transportation Plan for the Southeast Michigan Region, prepared by the Southeast Michigan Council of Governments (SEMCOG), stresses the need for a greatly improved high and intermediate level public transportation network for 1990. In outlining the transportation needs of the region, SEMCOG's Transportation Goal Statement calls for a balanced system of public and private transportation as follows:

"To achieve a functionally related system of the various modes of transportation at a capacity to handle trips generated by land use, on behalf of the people of the Region and their economic and social interests."

"Such a related system must include highways, public transit, air, rail, and water carriers. For the people, this involves both highway and public transit facilities within the Region, providing services from home to major employment centers and sub-centers, to shopping places, to recreational areas, to educational and cultural institutions, etc. For economic enterprises, such a system needs to be geared to the effective and economical movement of goods and materials within the Region and into and out of the Region. In both cases, attendant terminal and parking facilities of an appropriate character and scale are essential."

"The public transit system is essential in order to relieve traffic congestion on streets and highways and to accommodate the needs of people. It should be of the character and extent required to:

(1) Encourage the use of public transit by providing riders with convenience, comfort, and speed, thus offering a choice of mode of transportation for people who would use public transit rather than motor cars.

(2) Provide mobility for those for whom public transportation is a necessity.

(3) Aid in shaping the regional pattern of growth and development."

"The achievement of a regional transportation system must be viewed costwise in the light of technical alternatives and both obvious and hidden social costs to the governmental and private sectors. The establishment of a regional system of transportation as a set of service facilities to support not only land uses and other facilities, but also the overall goals of the people of the Region is of vital significance. In the long run, all public facilities are paid by the people by means of one or another form of taxation. Public highways have reached their high level of use and social value with the substantial benefits of gasoline and weight taxes. Public transit also will need to be supported by governmental funds - local, state and federal."

"Further, the regional transportation system - in all its modes should seek to provide the highest degree of safety for the people who use it and for the safe delivery of the goods and materials carried upon it. Likewise, the total system should be so planned and constructed that the minimum practical negative environmental impact is made by any of its functional elements."

While stated explicitly in 1974, an understanding of the need for quick action resulted in the initiation of discussions by several levels of government in 1971 concerning actions that might be taken towards freeway express bus service. At that time, the widely publicized I-495 "Contra-flow" bus lanes in New Jersey had been in operation for one year, and the technique of reserving freeway lanes for peak hour use by buses (or other high capacity vehicles) had successfully moved from theory to practice.

Also of importance at that time was the imminent opening of a portion of the I-96 "Jeffries Freeway" within the City of Detroit, which, when timed with the I-495 project in New Jersey, raised questions at both the technical and policy level as to whether such a program could be utilized to improve both transit service and freeway performance in Detroit. This was especially important given the relatively long lead time projected for implementation of a rapid transit system within the Grand River Corridor.

During 1972 an informal Jeffries Freeway Committee was formed, comprising representatives from the Federal Highway Administration (FHA); Michigan Department of State Highways (MDSH)[1] Detroit Department of Street Railways (DSR)[2]; Detroit Department of Streets and Traffic (DDST); Southeastern Michigan Council of Governments (SEMCOG) and the Southeastern Michigan Transportation Authority (SEMTA). The committee met several times during the year, but no firm action was taken until February, 1973, at which time a comprehensive study was proposed by SEMTA, with funding promised by the Federal Highway Administration and the State Highway Department. A work program and contract were finalized during 1973, and initial work was formally authorized to begin as of December 20, 1973.

[1]The title of Michigan Department of State Highways has since been changed to the Michigan Department of State Highways and Transportation

[2]As of July 1, 1974 the Detroit Department of Street Railways and the Department of Streets and Traffic were merged into the Detroit Department of Transportation.

B. OBJECTIVES OF STUDY

The basic objective of the Study was to determine the technical and economic feasibility of implementing a reserved bus and car pool lane on a segment of the Detroit freeway network. Of particular importance was the need to identify the specialized requirements of a reserved lane which was not "contra-flow", but rather, operated in the same direction as the adjacent traffic lanes. (See description of Reserved Lane Concepts, Chapter IV).

In reviewing the Study requirements in detail, it became clear that a comprehensive "systems" approach would be required for the transit study. Specifically, the ability of the bus lane to attract passengers would depend upon availability of parking spaces located along major bus routes; service frequency as well as speed; Central Business District (CBD) distribution; program image and publicity techniques and enforcement of reserved lane vehicle prohibitions.

It was also essential that an inventory of existing bus system and freeway characteristics be developed prior to projecting future use of the reserved lane.

A further objective was to understand the impact of a reserved lane upon existing transit service. It would be wrong to develop a freeway express bus system to serve Detroit's outer areas and suburbs at the expense of inner-city transit users. To insure that all segments of ridership were given representative input into a system emanating from an exclusive lane concept, a survey was designed which inventoried user characteristics of existing riders in the Jeffries service area.

Finally, a full operating and capital cost breakdown would be required to assess the financial feasibility of the program.

It was understood that techniques to be developed through this Study would serve as a pilot for further implementation programs along the freeway network in Southeastern Michigan.

C. STUDY ORGANIZATION

The work program was divided into 10 subtasks:

Task 1. Study Definition

This task provided for identification of the service area most likely to benefit from implementation of Jeffries Freeway reserved bus-car pool lane operation.

Task 2. Transit Survey

This task was designed to meet two objectives: (1) provide a basic data base for existing transit services and user characteristics, against which future service changes would be measured, and; (2) generate information as to the transit service available to inner city residents so as to prevent the rerouting of heavily used local service onto the freeway. (A full description of work accomplished under Task 2 is presented in Appendix A.)

Task 3. Freeway Traffic Analysis

Vehicle counts, vehicle occupancy surveys and installation of a permanent traffic recorder (PTR) were carried out under this work element. Also, the Michigan Department of State Highways and Transportation conducted travel time studies along the Jeffries, and parallel Grand River Avenue, to provide basic data required for bus route revisions, and "before-after" analysis.

Task 4. Traffic Control and Geometrics Study

Analysis of the Jeffries Freeway's traffic patterns, entrances and exits, and signing was conducted under this task. New signing policies which might be required to maintain the special status of the reserved bus and car pool lanes were also determined.

Task 5. Transit CBD Routing

A review of alternative downtown Detroit bus routings, restrictions and employee distribution patterns was made under this work element.

Task 6. Definition of Potential Transit Market

This element provided for the calculation of the potential ridership which would utilize a high quality express bus service, operating in-part over reserved freeway lanes. Results from the survey conducted in subtask 2, and data from the 1970 census were utilized. Time, data and funding limitations precluded making any serious attempt at estimating the number of new car pools which would be formed as a result of the Jeffries Reserved Bus and Car pool lane.

Task 7. Identification of Added and Changed Bus Service

This element allowed for the calculation of estimated gross operating costs and subsidies required for proposed new bus services.

Task 8. Potential for Park and Ride

Maximum potential bus patronage requires use of park and ride lots at outlying and intermediate stages of proposed express bus routes. The function of this task was to inventory existing and potential park and ride sites.

Task 9. Develop Criteria for Public Information Program

This element allowed for a detailed public information study which would educate the public as to operating restrictions of the reserved lane as well as inform them of alterations to existing routes and additions of new service and park and ride sites.

Task 10. Conclusions, Recommendations and Draft Report

This element allowed for the documentation of all relevant data, analyses, and recommendations into a draft final report for review by all parties to the Study contract.

D. STUDY PROCEDURES

The Study was funded by the Federal Highway Administration, and the Michigan Department of State Highways and Transportation, through the Michigan Highway Commission, with the Southeastern Michigan Transportation Authority (SEMTA) responsible for project administration and technical direction. The work program

was divided into 10 subtasks with part or all of each subtask assigned to SEMTA; the Michigan Department of State Highways and Transportation (MDSH&T); SEMCOG; and D-DOT.

While not directly involved in the work program, under terms of the contract, the FHA was appointed as an ex officio member of the Advisory Committee which was created to review work progress and policy matters arising in conjunction with the Study.

A technical committee was also formed, comprised of members of each above-named agencies, as well as representation from the Detroit Police Department, Detroit Department of Economic and Community Development. Meetings of both committees were held monthly, or more frequently, if necessary, to review work output and overall Study progress.

The Study was authorized to start on December 20, 1973, and extend for one year. A two month extension authorized late in 1974 carried the work program through to February, 1975.

E. RELATIONSHIP OF THE STUDY TO OTHER PLANNING EFFORTS

A CBD orientated exclusive bus lane for the Jeffries Freeway (I-96) is included in the SEMCOG 1990 Regional Transportation Plan. The plan recommends a network of intermediate level busways which will feed and supplement the proposed High Level rapid transit system, as well as provide for non-radial high speed trips. Grand River Avenue is one of the corridors selected for a High Level system. Prior to construction of such a system the busway system would carry commuters into the CBD. In addition to facilitating commuter trips to the CBD, the Jeffries busway is also viewed as a prototype for other area freeways which are similarly CBD orientated and likewise experiencing congestion.

Members of the Jeffries Technical Advisory Committee represent a broad spectrum of transit expertise. Aside from developing a specific Jeffries exclusive lane project, they, in their capacities as representatives of federal, state, local and regional agencies, will be monitoring and evaluating the performance of the lane with the possibility of recommending the exclusive lane concept for other freeway rights-or-way.

II. JEFFRIES FREEWAY

A. PHYSICAL CHARACTERISTICS

The Jeffries Freeway is a high speed-limited access highway which when completed will facilitate movement of cross regional traffic and provide direct access from the northwest area of Wayne County and Detroit, as well as from Southwest Oakland County, to Detroit's Central Business District. Construction of the freeway began in February, 1968. Since then, three linear segments, totaling 6.4 miles in length, have been completed and opened to the public. (See map II-A-1) The first segment was opened in July, 1971; it extends from a turning roadway configuration which funnels traffic to and from the Fisher and Lodge Freeways, northward to Wreford Avenue, a distance of 1.7 miles. This freeway segment is basically four lanes wide in each direction, and includes an exit at Warren Avenue and the interchange with the Ford Freeway (I-94).

The second segment to Elmhurst is 2.9 miles long and has four lanes in each direction. Ingress and egress to this segment is possible at West Grand Boulevard/Tireman and Livernois/Grand River. This section of the Jeffries was opened to the public in December, 1972.

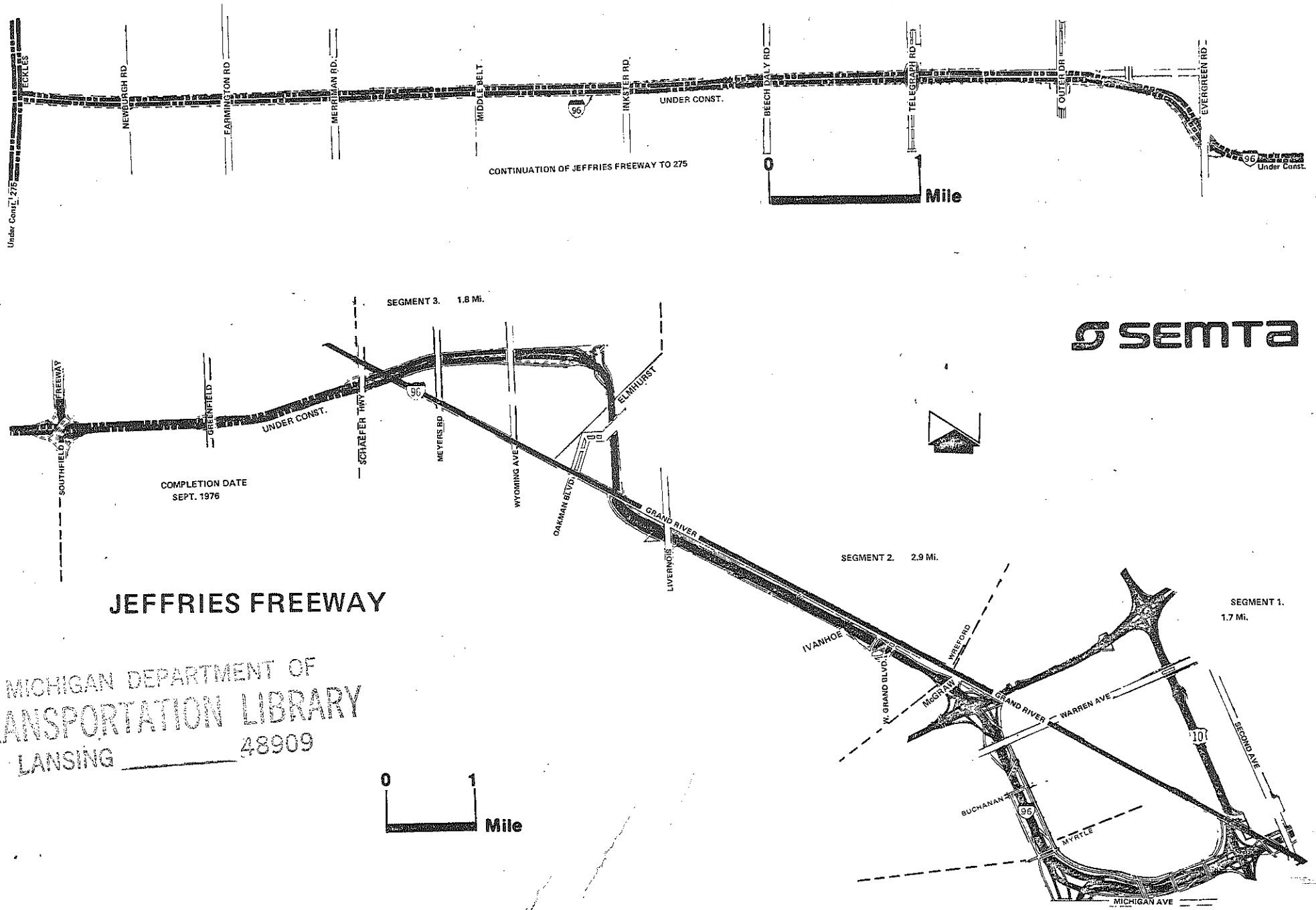
The third section of 1.8 miles was opened in September, 1974 and extends from Elmhurst to Schaefer. There are 4 lanes in each direction from Elmhurst to a point approximately .6 miles westerly. At that point a "dual-dual" portion begins. This "dual-dual" roadway will be approximately 5.7 miles long and will consist of 4 three lane roadways. In the interim, until more of the "dual-dual" section is completed, traffic is required to use only the outer 3 lane roadways to the temporary freeway ending at Schaefer. The remaining 10 miles of I-96 will be an 8 lane divided freeway with the final sections to be completed by the fall of 1977.

B. TRAFFIC AND TRAVEL CHARACTERISTICS

1. Vehicle Occupancy Rate

During January and February, 1974, the Michigan Department of State Highways and Transportation conducted vehicle occupancy counts during the morning and afernoon peak traffic periods on the Jeffries freeway in the vicinity of Ivanhoe Avenue. (See Map II-A-1) Counts were also taken on the Ford and Lodge Freeways at Brush Street and Milwaukee Avenue, respectively. The Jeffries occupancy rates were computed prior to opening of the third segment.

The data gathered from these counts indicated that over 65 percent of all person trips made during the peak periods were in single occupant vehicles and only nine percent of the trips were in vehicles with three or more persons. (The figures are the averages of occupancy rates found on the three



SEMTA

JEFFRIES FREEWAY

MAP II – A – 1

TABLE II-B-1

PERCENT OF PEAK HOUR* PERSON TRIPS

BY OCCUPANCY CLASS

Number of Occupants

	1	2	3	4	5	6	TOTAL
JEFFRIES (I-96)**							
Person trips	14,861	8,556	1,611	916	315	120	26,379
Percentage	56.34	32.43	6.12	3.47	1.19	0.45	100.00
LODGE (US-10)							
Person trips	28,500	11,600	1,791	912	300	174	43,277
Percentage	65.85	26.80	4.14	2.12	0.69	0.40	100.00
FORD (I-94)							
Person trips	27,630	8,558	1,470	728	225	90	38,701
Percentage	71.40	22.11	3.80	1.88	0.58	0.23	100.00

TABLE II-B-2

PERCENT OF PERSON TRIPS BY OCCUPANCY

JEFFRIES (I-96)**							
Northbound	72.86	21.96	3.46	1.26	0.32	0.14	100.00
Southbound	75.81	20.87	1.92	1.03	0.31	0.06	100.00
TOTAL	74.33	21.41	2.69	1.15	0.32	0.10	100.00
LODGE (US-10)							
Northbound	82.66	14.81	1.67	0.66	0.14	0.06	100.00
Southbound	79.42	17.93	1.72	0.64	0.20	0.09	100.00
TOTAL	81.04	16.37	1.69	0.65	0.17	0.07	100.00
FORD (I-94)							
Northbound	83.47	13.82	1.78	0.68	0.18	0.07	100.00
Southbound	86.64	11.91	1.03	0.35	0.06	0.01	100.00
TOTAL	85.05	12.87	1.41	0.52	0.12	0.04	100.00

* 6-9AM, 3-6PM

** January & February 1974 Counts
Ivanhoe Avenue/I-96

freeways.) Figures dealing specifically with the Jeffries Freeway illustrate higher rates of vehicle occupancy: 56 percent of autos with single occupant, 32 percent of autos with two occupants; 11 percent with three or more occupants. Table II-B-1 illustrates the variations in freeway vehicle occupancy rates, which ranged from a high of 71 percent single on the Ford to the low of 56 single on the Jeffries. (All during peak periods)

Transforming this data into vehicle trips, over 80 percent of all peak hour vehicle trips on the three freeways were with a single occupant while 17 percent carried two persons and only 2.8 percent of the vehicle trips had three or more occupants. The Jeffries percentage (Table II-B-2) of vehicles by occupancy is of course higher; 74% single occupant, 21% carried two persons, and, 4.2% carried 3 or more persons.

Average vehicle occupancy for the three freeways is 1.23 persons per vehicle. The Jeffries exhibited the highest occupancy rate of 1.32 persons per vehicle, the Ford had the lowest, at 1.19 persons per vehicle, and the rate on the Lodge was found to be 1.23 persons per vehicle. These figures are somewhat higher than the average for all SMSA's in the United States, which is 1.17, and are also higher than the full Detroit rate of 1.16 persons per vehicle.

2. Travel Time

Travel time and delay studies by the Highway Department were conducted along the Jeffries corridor between Schoolcraft Avenue and Howard Street during the morning and afternoon peak traffic periods in March, 1974.

Two routes, one surface and the other partially utilizing the Jeffries route, were used to compare total travel and delay time. The surface route consisted of Grand River Avenue (I-96 BS) from Schoolcraft to Cass Avenue, and Cass Avenue to Howard Street. The partial freeway route consisted of: Grand River Avenue from Schoolcraft to the Jeffries (I-96) Freeway; Grand River to Cass; and Cass to Howard Street. The surface route was 7.9 miles in length while the partial freeway route was 8.6 miles long. Runs were made for both in-bound and out-bound trips.

Table II-B-3 illustrates the results of the study which show driving speed on the Jeffries (I-96) route. Overall speed increased from 19.2 mph on the surface route to 29.5 mph on the partial freeway route. Travel time decreased on the freeway route by almost 30 percent from 25'17" to 17'45", for a time savings of 7'32". Travel time delay time showed a significant decrease of 68.5 percent from an average delay time of 7'43" on the surface route to 2'26" on the freeway route. Total stop time decreased 72 percent on the freeway route to an average of 1'35" per trip.

The major travel and delay time savings on the freeway route stems from the avoidance of traffic signals, surface railroad crossings and the queuing of vehicles at these locations on surface streets. Even though the freeway route is 0.7 mile longer, MDSHT found that it offered an opportunity for sizeable savings in travel and delay time, resulting in higher average speeds, and more reliable service.

[1]Source: Urban Transportation Fact Book, Part 1, Motor Vehicle Manufacturers Association of the U.S., Inc.

TABLE II-B-3

MDSHT TRAVEL TIME AND DELAY STUDY

SCHOOLCRAFT TO HOWARD STREET

IN-BOUND	Running Speed	Overall Speed	Total Travel Time	Total Delay Time	Total Stop Time
Surface	24.4 MPH	20.5 MPH	23'51"	6'27"	4'35"
Partial-Fwy	32.1 MPH	31.7 MPH	16'23"	1'25"	0'57"
Change	+8.7 MPH	+11.2 MPH	-7'28"	-5'02"	-3'38"
% Change	+35.7%	+54.6%	-31.3%	-78.0%	-79.3%
OUT-BOUND					
Surface	23.8 MPH	18.1 MPH	26'04"	8'25"	6'17"
Partial-Fwy	31.3 MPH	27.2 MPH	18'48"	3'27"	2'12"
Change	+7.3 MPH	+9.1 MPH	-7'16"	-4'58"	-4'05"
% Change	+31.5%	+50.3%	-27.9%	-59.0%	-65.0%
TOTAL					
Surface In-bound/out-bound	24.0 MPH	19.2 MPH	25'17"	7'43"	5'39"
Partial-Fwy In-bound/out-bound	32.2 MPH	29.5 MPH	17'45"	2'26"	1'35"
Change	+8.2 MPH	+10.3 MPH	-7'32"	-5'17"	-4'04"
% Change	+34.2%	+53.6%	-29.8%	-68.5%	-72.0%

Source: Michigan Department of State Highways and Transportation, March, 1974-Time & Delay Study.

The use of the curb lane on Grand River for the time and delay study offered some question as to the relevancy of data to actual day to day operation of transit vehicles. Buses are not restricted to the curb lane. During times of traffic congestion bus drivers do in fact operate in other lanes to avoid queuing of vehicles. By eliminating the stipulation that vehicles operate only in curb lane, the Street and Traffic Division of D-DOT arrived at the following time and delays for the corridor alternatives:

TABLE II-B-4

D-DOT IN-BOUND TRAVEL TIME AND DELAY STUDY - MARCH, 1975

SCHOOLCRAFT TO HOWARD STREET

Time of Study	Route		
	1. Grand River/Schaefer to Grand Blvd. via Jeffries	2. Grand River & Schaefer to Grand Blvd. via Grand River	3. Grand Blvd to Third and Fort Street via Jeffries, then Grand River
0730	6'15"	8'55"	8'15"
0745	8'25"	8'53"	8'07"
0800	7'31"	8'53"	8'07"

The D-DOT maintains that with the current rate of traffic on surface and freeway routes, routing of buses on the freeway does not offer an applicable savings in time for transit commuters. A basic problem in the reserved lane designation on the Jeffreis Freeway is its termination at the I-75/I-96 interchange. The funnelling of CBD bound vehicles into two lanes creates a bottleneck which causes substantial delays for commuters. Preferential bus treatment at this point would greatly enhance the attractiveness of the freeway route over the current (and temporary) faster surface route.

3. Traffic Volume

Traffic volume over the freeway has been steadily increasing since the opening of the first segment of I-96. Though the Michigan Department of State Highways and Transportation (MDSH&T) estimates that the Jeffries will not attain level D conditions (1,800 vehicles per hour per lane) until 1990, all day (24 hour) counts taken at Ivanhoe Street indicate that conditions currently exist for peak hour congestion. Tables II-B-5, II-B-6 and II-B-7 list 24 hour counts taken at Station 9920 (Ivanhoe) during November, 1974. Maximum daily volume for the month was attained on Thursday, November 14, when 90,759 vehicles passed the count point. Maximum one hour volume was established for inbound traffic between 0700 and 0800 on November 20, with 6,701 vehicles passing, and for outbound traffic with 5,782 vehicles passing the count point on November 13, between 1600 and 1700.

MICHIGAN STATE HIGHWAY DEPARTMENT

Table II-B-5
I-96 Detroit
North Bound Volume At Ivanhoe

STATION	YEAR	MONTH
9910	74	11

		1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	12PM	TOTAL
1	6	1124	654	590	261	217	368	893	1357	1362	1089	1178	1452	1595	1602	2001	3269	4142	3842	1999	1514	1279	1186	1247	1480	35701
2	7	1456	1091	923	532	357	304	555	763	890	877	1004	1315	1539	1607	1673	2272	1975	1759	1602	1338	1227	1009	1213	1332	28613
3	1	1266	799	836	519	330	294	322	395	498	530	739	839	951	1276	1418	1508	1898	1178	1258	1194	1017	938	962	884	21709
4	2	598	323	281	159	157	315	852	1240	1377	1010	1116	1371	1432	1556	1900	3298	4164	3814	1848	1229	1120	976	839	1005	31980
5	3	1036	654	430	197	165	296	763	1268	1361	968	920	1239	1371	1511	1954	3331	3839	3449	1720	1270	1036	1092	1019	1100	31989
6	4	1054	608	514	217	203	331	841	1345	1349	1007	1098	1237	1422	1490	1921	3350	4636	3860	1850	1248	1199	1232	1238	1180	34430
7	5	951	626	587	235	187	300	893	1331	1332	1013	1025	1310	1451	1562	1997	3308	4453	3843	2089	1396	1256	1166	1076	1205	34592
8	6	1150	712	583	255	209	347	860	1364	1349	1121	1227	1435	1636	1591	2098	3358	4582	3881	2076	1576	1285	1168	1247	1456	36556
9	7	1407	992	881	488	314	325	552	702	820	907	1002	1172	1524	1639	1626	1975	1967	1865	1644	1427	1274	1070	1145	1247	27965
10	1	1077	789	855	543	332	228	290	413	418	571	741	835	1023	1357	1487	1643	1484	1381	1386	1343	1215	1121	1004	1001	22537
11	2	640	342	314	211	160	308	723	1114	1285	1015	1007	1507	1484	1390	1756	2924	3564	3204	1672	1222	1128	977	814	951	29712
12	3	1055	666	439	200	166	298	774	1291	1386	984	932	1261	1397	1538	1991	3393	3909	3515	1754	1293	1055	1110	1035	1120	32562
13	4	1269	734	622	257	236	393	1011	1630	1698	1204	1316	1501	1722	1801	2352	4144	5782	4815	2292	1515	1458	1514	1499	1443	42138
14	5	1402	868	705	388	560	1560	3029	4316	4212	2642	2251	2812	2913	901	558	1013	1321	4056	3288	2249	1888	2001	1756	1944	48653
15	6	1349	816	680	292	236	394	987	1596	1566	1294	1412	1663	1900	1839	2488	4117	5781	4817	2495	1842	1478	1348	1447	1714	43551
16	7	1615	1114	1003	546	345	357	619	781	913	1004	1117	1312	1717	1851	1843	2261	2235	2120	1871	1603	1433	1204	1290	1415	31562
17	1	1066	774	842	534	325	292	281	402	404	555	723	817	1004	1335	1467	1629	1466	1367	1375	1328	1203	1108	996	990	22213
18	2	617	332	302	201	155	296	700	1078	1240	981	973	1459	1433	1341	1697	2813	3420	3077	1612	1184	1093	944	789	917	28654
19	3	1029	648	424	192	160	292	757	1261	1351	962	917	1233	1360	1503	1943	3318	3825	3430	1706	1259	1028	1087	1013	1091	31789
20	4	1065	610	516	217	201	330	846	1362	1363	1016	1106	1246	1436	1503	1952	3452	4815	3995	1884	1262	1210	1248	1251	1195	35081
21	5	1103	699	554	298	427	1168	2312	3285	3215	2038	1750	2218	2290	709	457	866	1155	3202	2562	1748	1479	1563	1378	1525	38021
22	6	1197	741	606	264	215	360	898	1424	1408	1167	1280	1499	1707	1661	2192	3502	4767	4045	2165	1645	1341	1219	1300	1518	38121
23	7	1478	1017	912	498	315	326	561	719	839	920	1024	1204	1561	1691	1681	2072	2039	1929	1705	1456	1299	1097	1177	1287	28807
24	1	1162	848	921	585	355	242	309	443	447	612	798	899	1103	1465	1606	1773	1602	1490	1498	1449	1312	1211	1084	1080	24294
25	2	660	352	322	216	162	318	744	1153	1331	1050	1042	1561	1537	1441	1812	3002	3653	3287	1727	1263	1166	1011	838	984	30632
26	3	1070	674	441	198	165	300	784	1319	1406	997	946	1278	1417	1562	2023	3451	3976	3575	1779	1312	1067	1127	1051	1135	33044
27	4	1168	667	565	236	218	359	926	1497	1496	1112	1209	1365	1577	1648	2148	3827	5354	4439	2078	1386	1329	1373	1375	1315	38667
28	5	1752	1185	923	559	438	563	1079	1470	1687	1605	1523	2428	2134	1964	2174	2791	2913	2824	2358	2381	1954	1845	1906	1870	42326
29	6	1182	727	596	258	210	353	883	1405	1388	1153	1264	1476	1685	1637	2162	3474	4757	4018	2141	1621	1318	1199	1282	1500	37689
30	7	1548	1086	969	533	341	353	605	765	895	990	1097	1282	1674	1802	1788	2176	2167	2049	1808	1562	1397	1175	1258	1370	30690

	AVE. NO. SUN	NO. SUN	AVE. WEEK	NO. WKDAYS	AVE. SAT.	NO. SAT.	ADT	NO. DAYS	TOTAL TRAFFIC	PCT. GAIN	PCT. LOSS
74	22688	4	35995	21	29527	5	33170	30	994288		

MAXIMUM DAY			MAXIMUM HOUR			
VOLUME	DAY	DATE	VOLUME	HOUR	DAY	DATE
48653	THUR	14	5782	5PM	WED	13

Table II-B-6
I-96 Detroit
South Bound Volume At Ivanhoe

MICHIGAN STATE HIGHWAY DEPARTMENT

STATION 9920 YEAR 74 MONTH 11

		1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	12PM	TOTAL
1	6	559	343	298	183	377	1222	2524	5309	4477	1964	1632	1635	1666	1887	2207	2355	2156	1861	1746	1674	1280	1235	1167	1129	40[illegible]6
2	7	857	684	634	419	345	650	1094	1376	1278	1379	1522	1616	1678	1805	1974	2159	1669	1563	1595	1554	1293	1068	1166	1159	30[illegible]7
3	1	760	641	736	498	303	242	526	593	519	848	1308	1472	1689	1309	1363	1389	1268	1336	1314	1102	765	877	913	790	22[illegible]1
4	2	376	272	223	160	296	1196	2467	5288	4444	1974	1493	1550	1577	1745	2028	2331	2073	1739	1386	1116	773	856	874	711	36[illegible]0
5	3	501	270	200	155	314	1135	2131	4320	3619	1949	1408	1502	1533	1645	2138	2255	2031	1774	1562	1223	828	923	872	757	35[illegible]5
6	4	479	289	207	160	310	1135	2441	5242	4429	1932	1436	1512	1593	1673	2095	2157	2029	1794	1709	1382	891	858	925	785	37[illegible]3
7	5	548	321	255	155	296	1137	2394	5129	4674	2064	1525	1446	1525	1695	2119	2240	2046	1868	1676	1289	950	1026	994	881	38[illegible]3
8	6	549	371	279	165	306	1187	2414	5216	4739	2083	1589	1590	1712	1874	2207	2306	2101	1853	1746	1612	1280	1173	1120	1110	40[illegible]2
9	7	779	574	597	358	367	458	1061	1283	1250	1440	1538	1525	1654	1679	1887	1869	1767	1651	1638	1566	1241	1160	1120	1089	29[illegible]1
10	1	830	609	672	458	313	282	549	627	492	898	1322	1243	1135	1363	1619	1645	1436	1545	1574	1335	1035	941	889	846	21[illegible]3
11	2	650	290	255	150	268	1040	2091	4249	3610	1820	1405	1475	1526	1677	1972	2113	1906	1573	1368	1094	822	784	800	723	33[illegible]1
12	3	473	253	187	145	295	1074	2016	4086	3422	1843	1333	1421	1449	1556	2023	2134	1921	1678	1478	1157	782	873	825	716	31[illegible]0
13	4	514	310	224	172	336	1208	2559	5452	4624	2045	1534	1617	1705	1792	2237	2294	2164	1930	1841	1484	960	915	990	843	39[illegible]0
14	5	589	361	318	225	413	1522	2920	5441	5100	2364	1722	1761	2005	1210	2165	2266	1794	2035	1970	1571	1055	1211	1082	1006	42[illegible]8
15	6	620	417	312	185	344	1333	2695	5771	5237	2331	1788	1789	1929	2107	2476	2587	2359	2083	1967	1814	1441	1322	1263	1250	49[illegible]0
16	7	900	662	691	411	424	522	1216	1473	1440	1662	1780	1764	1918	1944	2184	2164	2053	1918	1898	1808	1429	1338	1294	1253	34[illegible]6
17	1	871	637	702	480	326	293	576	659	513	942	1392	1309	1190	1431	1699	1730	1508	1628	1662	1401	1086	987	934	892	28[illegible]8
18	2	463	295	254	152	272	1081	2239	4608	3925	1922	1465	1529	1583	1745	2073	2210	1998	1634	1406	1123	837	805	832	741	35[illegible]2
19	3	649	403	291	179	400	1432	2975	6399	5351	2575	1910	1950	2075	2247	2639	3073	3011	2391	1977	1618	1071	1170	1092	1060	47[illegible]8
20	4	629	391	294	192	393	1434	2944	6701	5695	2506	1842	1960	2061	2220	2708	2898	2725	2194	2064	1647	1090	1105	1175	1027	47[illegible]3
21	5	721	385	337	196	410	1410	2924	6343	5937	2552	1850	1882	2004	2087	2655	3100	2791	2364	2101	1661	1240	1240	1262	1075	48[illegible]7
22	6	574	376	283	165	311	1170	2470	5955	5232	2197	1714	1704	1805	1947	2306	2608	2514	2047	1797	1745	1373	1225	1168	1138	43[illegible]4
23	7	872	902	830	530	420	792	1382	1614	1651	1788	1996	2073	2173	2080	2428	2520	2332	2220	2129	2088	[illegible]01	1570	1558	1422	[illegible]07[illegible]
24	1	1213	941	1022	632	468	397	770	832	659	1164	1849	1975	2012	1945	2177	2301	2076	2135	2242	1703	1345	1297	[illegible]71	[illegible]214	31[illegible]0
25	2	462	296	257	151	272	1073	2190	4493	3825	1904	1463	1529	1585	1742	2054	2201	1993	1637	1414	1132	847	809	831	749	34[illegible]9
26	3	433	264	189	114	265	1009	2153	4802	3975	1846	1320	1344	1431	1552	1872	2194	2142	1681	1350	1116	732	812	746	726	34[illegible]8
27	4	633	398	287	220	405	1435	2976	6542	5711	2607	1952	2108	2173	2399	2788	3013	2713	2228	1983	1702	1246	1251	1252	1094	49[illegible]6
28	5	1014	612	563	402	279	489	1276	2603	2841	1745	1283	1796	1840	1779	2154	2212	2108	1787	1778	1821	1380	1349	1405	1214	35[illegible]0
29	6	593	340	269	167	314	1172	2524	6046	5258	2265	1716	1737	1802	1894	2266	2691	2572	2020	1763	1849	1496	1268	1188	1101	44[illegible]1
30	7	761	779	718	456	364	690	1229	1441	1463	1579	1754	1815	1905	1826	2136	2218	2046	1952	1880	1838	1482	1376	1364	1250	34322

	AVE. NO. SUN	NO. SUN	AVE. WEEK	NO. WKDAYS	AVE. SAT.	NO. SAT.	ADT	NO. DAYS	TOTAL TRAFFIC	PCT. GAIN	PCT. LOSS
74	26159	4	40218	21	33595	5	37253	30	1116848		

MAXIMUM DAY VOLUME	DAY	DATE	MAXIMUM HOUR VOLUME	HOUR	DAY	DATE
49116	WED	27	6701	8AM	WED	20

MICHIGAN STATE HIGHWAY DEPARTMENT

Table II-B-7
I-96 Detroit
N-S Bd. Total Volume At Ivanhoe

STATION 9929 YEAR 74 MONTH 11

		1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	12PM	TOTAL
1	6	1683	997	888	444	594	1590	3417	6666	5839	3053	2810	3087	3261	3489	4208	5624	6298	5703	3745	3188	2559	2421	2414	2609	76587
2	7	2313	1775	1557	951	702	954	1649	2139	2168	2256	2526	2931	3217	3412	3647	4431	3644	3322	3197	2892	2520	2077	2379	2491	59150
3	1	2026	1440	1572	947	633	466	848	988	947	1378	2047	2311	2640	2585	2781	2897	3166	2514	2572	2296	1782	1815	1875	1674	44200
4	2	974	595	504	319	453	1511	3319	6528	5821	2994	2609	2921	3009	3301	3928	5629	6237	5553	3234	2345	1893	1832	1713	1716	68928
5	3	1537	924	630	352	479	1431	2894	5588	4980	2917	2328	2741	2904	3156	4092	5586	5870	5223	3282	2493	1864	2015	1891	1857	67034
6	4	1533	897	721	377	513	1466	3282	6587	5778	2939	2534	2749	3015	3163	4016	5507	6665	5654	3559	2630	2090	2090	2163	1965	71893
7	5	1499	947	842	390	483	1437	3287	6460	6006	3077	2550	2756	2976	3257	4116	5548	6499	5711	3765	2685	2206	2192	2070	2086	72845
8	6	1699	1083	862	420	515	1534	3274	6580	6088	3204	2816	3025	3348	3465	4305	5664	6683	5734	3822	3188	2565	2341	2367	2566	77148
9	7	2186	1556	1478	846	681	783	1613	1985	2070	2347	2540	2697	3178	3318	3513	3844	3734	3516	3282	2993	2515	2230	2265	2336	57516
10	1	1907	1398	1527	1001	645	510	839	1040	910	1469	2063	2078	2158	2720	3106	3288	2920	2926	2960	2678	2250	2062	1893	1847	46195
11	2	1090	632	569	361	428	1348	2814	5363	4895	2835	2412	2982	3010	3067	3728	5037	5470	4777	3040	2316	1950	1761	1614	1674	63173
12	3	1528	919	626	345	461	1372	2790	5377	4808	2827	2265	2682	2846	3094	4014	5527	5830	5193	3232	2450	1837	1983	1860	1836	65702
13	4	1783	1044	846	429	572	1601	3570	7082	6252	3249	2850	3118	3427	3593	4589	6438	7946	6745	4133	2999	2418	2429	2489	2286	81888
14	5	1991	1249	1023	613	973	3082	5949	9757	9312	5006	3973	4573	4918	2111	2723	3279	3115	6091	5258	3820	2943	3212	2838	2950	90759
15	6	1969	1233	992	477	580	1727	3682	7367	6803	3625	3200	3452	3829	3946	4964	6704	8140	6900	4462	3656	2919	2670	2710	2964	88971
16	7	2515	1776	1694	957	769	879	1828	2254	2353	2666	2897	3076	3635	3795	4027	4425	4288	4038	3769	3411	2862	2542	2584	2668	65708
17	1	1937	1411	1544	1014	651	515	857	1061	917	1497	2115	2126	2194	2766	3166	3359	2974	2995	3037	2729	2289	2095	1930	1882	47061
18	2	1080	627	556	353	427	1377	2939	5686	5165	2903	2438	2988	3016	3086	3770	5023	5418	4711	3018	2307	1930	1749	1621	1658	63846
19	3	1678	1051	715	371	560	1724	3732	7660	6702	3537	2827	3183	3435	3750	4582	6391	6836	5821	3683	2877	2099	2257	2105	2151	79727
20	4	1694	1001	810	409	594	1764	3790	8063	7058	3522	2948	3206	3497	3723	4660	6350	7540	6189	3948	2909	2300	2353	2426	2222	82996
21	5	1824	1084	891	494	837	2598	5236	9628	9152	4590	3600	4100	4294	2796	3112	3966	3946	5566	4663	3409	2719	2803	2640	2600	86548
22	6	1771	1117	889	429	526	1530	3368	7379	6640	3364	2994	3203	3512	3608	4498	6110	7281	6092	3962	3390	2714	2444	2468	2656	81945
23	7	2350	1919	1742	1028	735	1118	1943	2333	2490	2708	3020	3277	3734	3771	4109	4592	4371	4149	3834	3544	3000	2667	2735	2709	67878
24	1	2375	1789	1943	1217	823	639	1079	1275	1106	1776	2647	2874	3115	3410	[illegible]	4074	3173	3625	2740	3152	2657	2508	2355	2294	57934
25	2	1122	648	579	367	434	1391	2934	5646	5156	2954	2505	3090	3122	3183	3866	5203	5646	4924	3141	2395	2013	1820	1669	1733	65541
26	3	1503	938	630	312	430	1309	2937	6112	5381	2843	2266	2622	2848	3114	3895	5645	6118	5256	3129	2428	1799	1939	1797	1861	67112
27	4	1801	1065	852	456	623	1794	3902	8039	7207	3719	3161	3473	3750	4047	4936	6840	8067	6667	4061	3088	2575	2624	2627	2409	87783
28	5	2766	1797	1486	961	717	1652	2355	4073	4528	3350	2806	4224	3974	3743	4328	5003	5021	4611	4136	4202	3334	3194	3311	3084	78056
29	6	1775	1067	865	425	524	1525	3407	7451	6646	3418	2980	3213	3487	3531	4428	6165	7329	6038	3904	3470	2814	2467	2470	2601	82000
30	7	2309	1865	1687	989	705	1043	1834	2206	2358	2569	2851	3097	3579	3628	3924	4394	4213	4001	3688	3400	2879	2551	2422	2620	65012

	AVE. SUN.	NO. SUN	AVE. WEEK	NO. WKDAYS	AVE. SAT.	NO. SAT.	ADT	NO. DAYS	TOTAL TRAFFIC	PCT. GAIN	PCT. LOSS
74	48847	4	76213	21	63052	5	70423	30	2111136		

MAXIMUM DAY VOLUME	DAY	DATE	MAXIMUM HOUR VOLUME	HOUR	DAY	DATE
90759	THUR	14	9757	8AM	THUR	14

The opening of the next segment, scheduled for the fall of 1976, which will extend I-96 to the Southfield Freeway (M-39), will assure an increasing growth in vehicular traffic on the Jeffries.

C. FREEWAY CONSTRUCTION SCHEDULE

The Michigan Department of State Highways and Transportation estimates that the next extension of I-96 to be opened to the public will be the portion from Schaefer, west to Southfield (M-39), projected for September, 1976.

Remaining segments are not scheduled to be completed in sequential order. However the final section, which will allow direct access from I-275 to the Detroit CBD, is scheduled for completion in the Fall of 1977. This segment is the portion of I-96 extending west from Southfield (M-39) to Evergreen Road.

A complete construction schedule for the Jeffries Freeway Project is included in Appendix D.

III - CHARACTERISTICS OF TRANSIT SYSTEM AND SERVICE AREA

A. GEOGRAPHIC AND SOCIAL DESCRIPTION OF THE SERVICE AREA

Detroit is the economic and geographical center of the seven county southeast Michigan region. As a result of being a port as well as a gateway to Canada, a substantial international movement of freight and passengers is funnelled into and through the Southeast Michigan region.

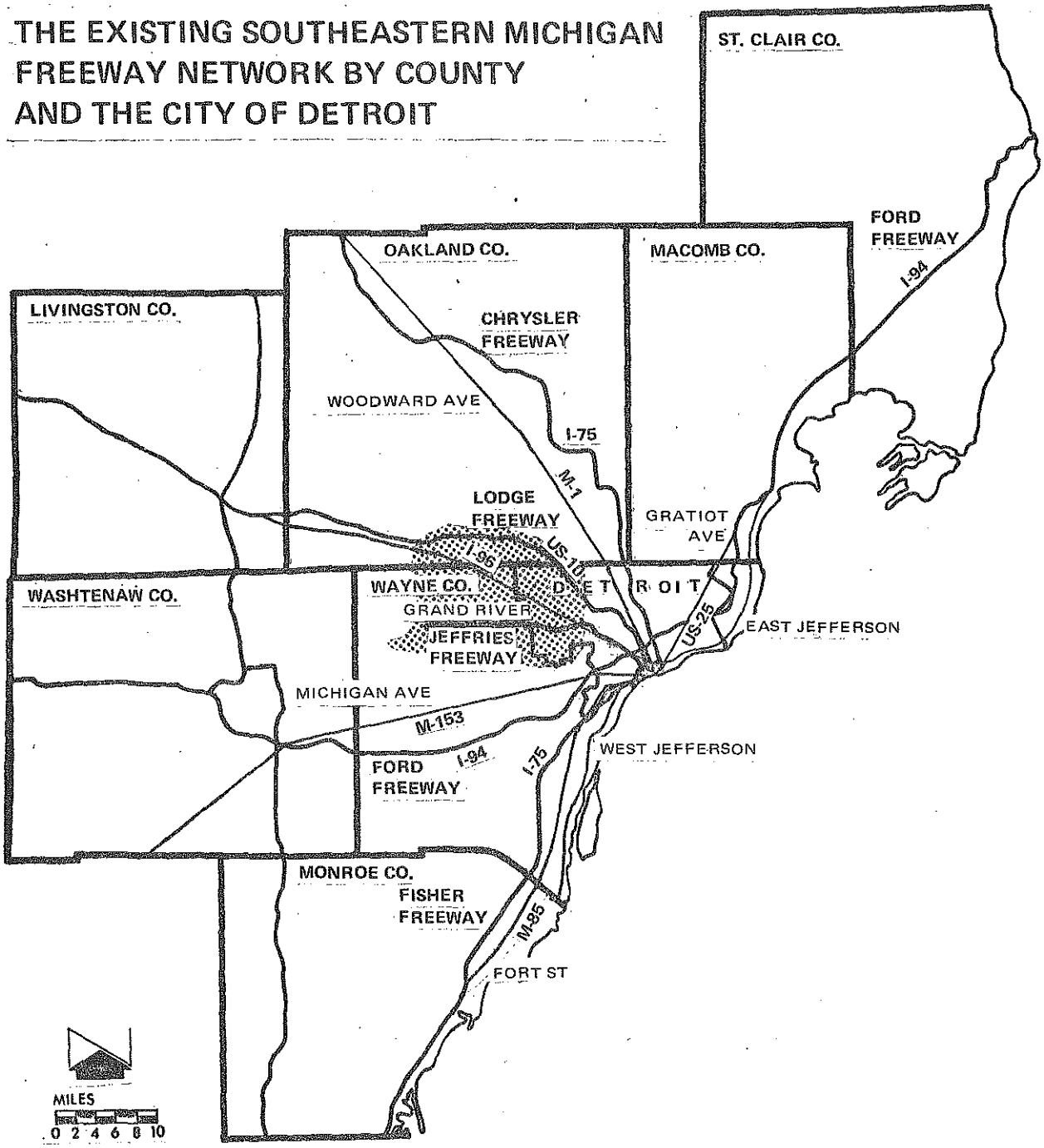
The existing transportation systems (transit and highway) are a product of regional growth and the international trade centered in the city and its CBD. The primary freeways in the metropolitan Detroit area are: The Ford Freeway (I-94), which extends through Detroit in a northeast to southwest crosstown direction; the Lodge Freeway (US-10) which extends from the northwest suburbs to Detroit's CBD; and I-75, which extends down the Ohio border in Monroe County through Detroit and continues northward to the northern boundary of Oakland County. (The portion of I-75 from the northeast corner of the CBD to the southern border of Wayne County is called the Fisher Freeway, while the portion extending northward from the CBD through Detroit and Oakland County is referred to as the Chrysler Freeway. The Chrysler Freeway also includes I-375, a one mile link which forms the eastern border of the CBD and terminates at Jefferson Avenue).

The freeway network is supported by a standard mile grid arterial road system superimposed upon the seven major arterial streets which radiate outward from the CBD. The major arterials are: East Jefferson, radiating eastward, parallel to the Detroit River shoreline; Gratiot (US-25) radiating in a northeasterly direction; Woodward, (M-1) bisecting the Detroit metropolitan area; Grand River (I-96 BS) radiating in a northwesterly direction; Michigan Avenue (US-12), radiating westward from the Detroit CBD; Fort Street (M-85), heading in a south-southwest direction; and West Jefferson, radiating southward, parallel to the Detroit River shoreline.

This extensive roadway system is being extended by the Jeffries Freeway. The Jeffries extends from just west of the Detroit CBD (at the foot of the Ambassador Bridge, and the juncture of I-75) northward to Grand River Avenue, then parallel to Grand River until Livernois Avenue, where it will ultimately extend west, beyond the Detroit City Limits, ultimately intersecting I-275 (See Map III-A-1).

The primary service area for the express buses which will use this facility is also indicated on Map III-A-1. Its approximate description is the area bounded by Livernois on the east, Tireman Road on the south, Haggerty Road on the west and I-96 to the north. Additional park and ride transit riders are anticipated from areas external to the primary service area, especially the areas to the west and north where transit service is presently not available.

THE EXISTING SOUTHEASTERN MICHIGAN FREEWAY NETWORK BY COUNTY AND THE CITY OF DETROIT



JEFFRIES PRIMARY SERVICE AREA

SEMTA

MAP III–A-1

The Jeffries' service area includes the northwest portion of Detroit, the north central portion of outer Wayne County (essentially the municipalities of Livonia, Redford, and Redford Township) and the south central portion of Oakland County (including portions of the cities of Farmington, Farmington Hills, Oak Park, and Southfield). The 1970 census population of the primary service area is presented by county and band area in Table III-A-1.

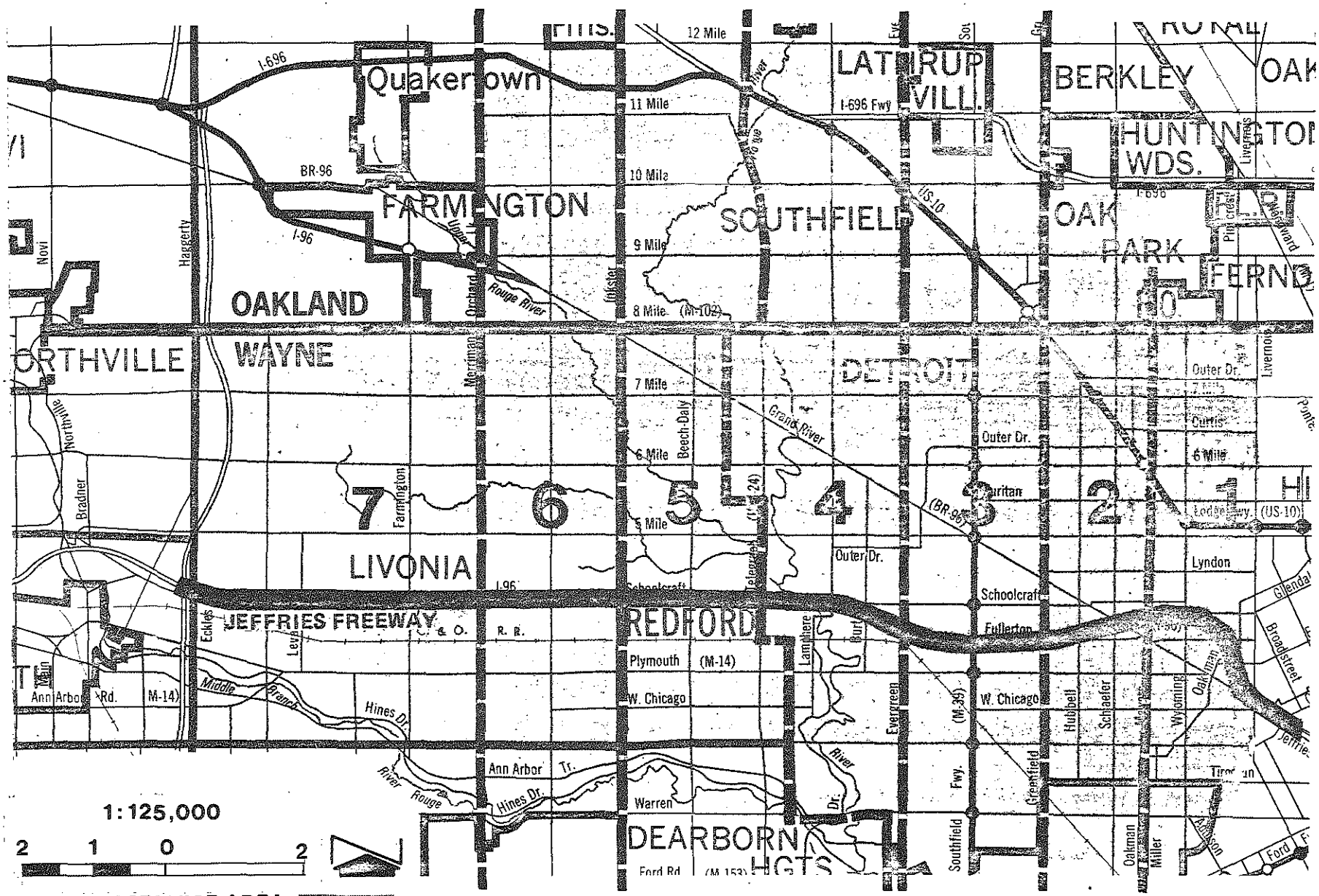
To relate socio-economic characteristics of the area population by a more discrete delineation, north-south bands approximately two to three miles wide were established. (see Map III-A-2). The north and central Detroit portions are primarily medium density residential with heavy strip commercial land use on the property adjacent to the mile grid road network. The southern third of the entire service area has a relatively greater reliance on industrial land uses. The outer Wayne County area is primarily medium to low density single family residential, with moderate strip commercial land usage on the mile grid roads. There are also pockets of industrial usage scattered in this area. It is in this area westward of the city limits that the transition from urban to suburban to semi-rural is found. This is the only portion of the Jeffries service area with large tracts of land presently unused.

Oakland County lies north of both Detroit and the western section of Wayne County. The county consists primarily of low density residential dwellings, with only slight industrial land usage. However, there has been increasing development of both high and low rise office buildings and consequently land in this area now ranks among the most valuable in the region. Further to the north, in Oakland County finds a greater incidence of strip commercial land use and shopping centers. Northland (located in Southfield and at one time the world's largest mall) and the Livonia Mall (located in outer Wayne County) are examples of major shopping centers within the Jeffries service area; many smaller centers exist, too.

The service area is populated by families with above average incomes. Four to six census tracts were selected from each band in such a way as to insure that all areas within the subdivision were adequately represented. This analysis indicated that the 1970 mean average family income was in excess of fifteen thousand dollars ($15,000), with higher family incomes found in the northern and western suburban areas, and lower incomes found within the City of Detroit.

The average Oakland County service area family earned in excess of twenty-one thousand dollars ($21,000) in 1970. It was found that for the Wayne County portion (including Detroit), family incomes increased from a low of less than twelve thousand dollars ($12,000) to high of nearly eighteen thousand dollars ($18,000).

JEFFRIES FREEWAY SERVICE AREA BY BAND AREA AND MUNICIPALITY



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PRIMARY SERVICE AREA

BAND AREA NO – 1 – 7

MAP III–A-2

SEMTA

TABLE III-A-1

1970 CENSUS POPULATION WITHIN THE JEFFRIES FREEWAY SERVICE AREA

BY

BAND AND JURISDICTION

Band Number	Oakland County	Wayne (exclusive of Detroit)	Detroit	Total
1 (Livernois Avenue-Meyers Rd)	-	3,604	113,311	116,915
2 (Meyers Rd-Greenfield Rd)	12,532	13,128	92,140	117,800
3 (Greenfield Rd-Evergreen Rd)	18,630	--	145,161	163,791
4 (Evergreen Rd-City Limits)	10,706	4,925	100,682	116,313
5 (City Limits-Inkster Rd)	9,552	82,820	---	92,372
6 (Inkster Rd-Merriman Rd)	21,996	61,604	---	83,600
7 (Merriman Rd-Haggerty Rd)	23,644	77,576	---	101,220
TOTAL	97,060	243,657	451,294	792,011

By band width the Wayne County mean family incomes were:

band 1	$11,977
band 2	12,257
band 3	13,003
band 4	12,694
band 5	14,938
band 6	15,807
band 7	17,671

This clearly establishes a trend of increasing family income directly proportional to the westward distance from the central city. Within the City of Detroit it was noted that the southern and northern portions of the service area were wealthier than the central section. No discernable pattern was detectable in the outer Wayne County suburbs.

B. EXISTING TRANSIT SYSTEM

Included within the Jeffries Study was an analysis of existing peak hour Detroit CBD oriented bus service within the study area geographical boundaries. (Peak hour was defined as weekday 07:30 to 09:00 arrivals in the Detroit CBD). SEMTA does not currently provide service in the Jeffries corridor so the routes identified refer only to the Detroit Department of Transportation (formerly the D.S.R.) service. Survey results are included in Appendix A. A generalized peak hour service description, as of April 1974, follows (details in Table III-B-1). The CBD routing and the terminus for the routes in the study are noted on Map III-B-1.

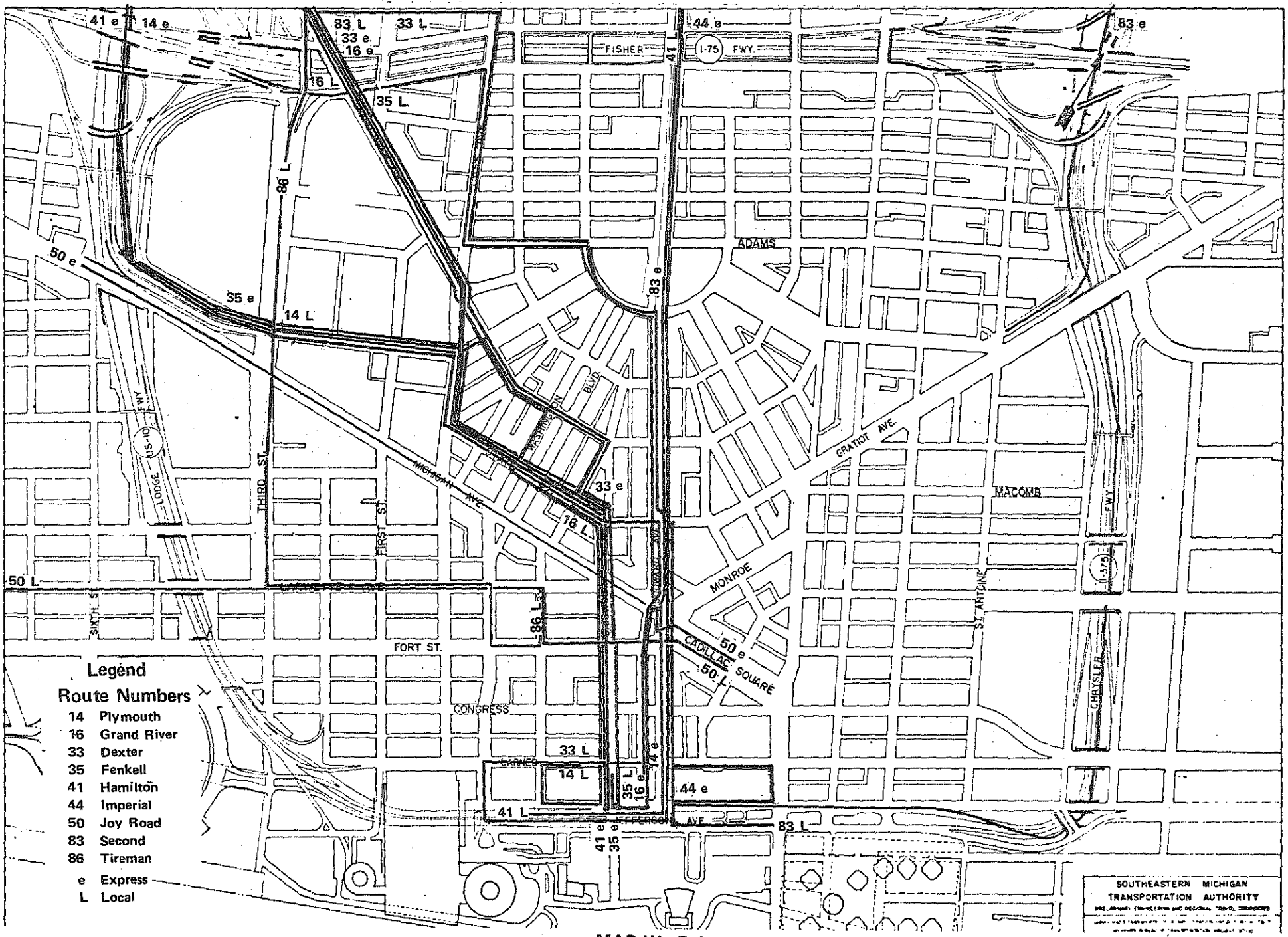
Joy Road Service (Route #50)

Joy Road bus service includes both express and local service from as far west as Farmington Road, although most peak hour service starts at Telegraph Road. A total of nineteen peak hour bus runs (11 express via Wyoming and Michigan and 8 local) are made to the Detroit CBD. The remainder of the route structure is illustrated on Map IV-B-1.

Plymouth Road Service (Route #14)

Peak hour service along Plymouth Road operates from Ann Arbor Trail and South Main Street in Plymouth and includes both express and local service. Twelve (12) peak hour runs (6 local and 6 express-via Grand River) are made daily to Downtown Detroit (Griswold and Larned).

CBD ROUTING OF SURVEYED BUS LINES



MAP III–B-1

Fenkell Road Service (Route #35)

The most morning peak hour service along Fenkell is from Dale Road and Fenkell (Detroit City Limits), although there is some service from Middlebelt Road. There are twenty-three peak hour runs to Griswold and Jefferson (10 express via the Lodge Freeway and 13 local runs).

Second Avenue Service (Route #83)

Second Avenue bus service along McNichols (6 Mile Road) starts at Middlebelt Road although most of the service originates at Rockdale and McNichols (just within the west boundary of the City of Detroit). Morning peak hour bus service totals fifteen trips to downtown Detroit (11 local and 4 express, via the Chrysler Freeway).

Dexter Avenue Service (Route #33)

Twenty-seven morning peak hour bus trips to the Detroit CBD (Shelby and Jefferson) are operated daily as part of the Dexter Avenue service. The outer most terminal point is at Providence Hospital, 9 Mile Road and Providence Drive in Southfield) with intermediate stops at Southfield and Outer Drive, Greenfield and Outer Drive, Schaefer and Outer Drive, and Fenkell and Dexter. Five peak hour express runs, via Grand River Avenue, originate from Schaefer and Outer Drive.

Imperial Express Service (Route #44)

All Imperial Express service operates along the John Lodge Freeway to downtown Detroit (Larned and Randolph). Twenty peak hour trips are made, beginning at Lahser and McNichols, with intermediate origin points at 7-Mile and Grand River, and 7-Mile and Southfield.

Tireman Avenue Service (Route #86)

This route operates five bus trips (no express service) from Spinoza and Tireman to Fort and Shelby during the morning peak hour period.

Hamilton Avenue Service (Route #41)

Hamilton Avenue buses operate twenty-two morning peak hour runs to downtown Detroit (Cobo Hall). This service includes both express (5 runs via the Lodge Freeway) as well as surface street local service. Redford Road and Grand River Avenue is the outermost point of origin for this service.

Grand River Avenue Service (Route #16)

A total of thirty-seven peak hour bus trips to the Detroit CBD make up the Grand River Avenue service. There are sixteen peak hour express runs (operating in mixed traffic via the Jeffries Freeway) and twenty-one local runs operating via Grand River Avenue.

Schoolcraft Avenue Service (Route #82)

Schoolcraft Avenue Service provides peak hour employment service; however, not to the Detroit CBD but rather to the Sears Complex (in Highland Park). Four trips, originating as far west as Middlebelt Road and Schoolcraft Avenue, comprise the peak hour Schoolcraft service (no express service).

TABLE III-B-1

D-DOT AM PEAK HOUR SERVICE DESCRIPTION DURING SURVEY PERIOD*

)ute ıme	Route Number	Termini (Outer)	(Inner)	A.M. Peak Hour** Service Total	Express	Local	(express service)
)y Road	#50	Farmington Rd. Joy Rd.	Cadillac Square	7	4	3	(express service operates vi Wyoming & Michigan Avenue)
		Telegraph & Joy Rd.	Cadillac Square	12	7	5	
				19			
lymouth Rd	#14	Ann Arbor Trail and South Main	Griswold & Larned	1		1	(express service operates vi Grand River to Larned and Griswold)
		Farmington Rd. and Plymouth Rd.	Griswold & Larned	1	1		
		Telegraph & Plymouth	Griswold & Larned	2		2	
		Wonderland Mall	Griswold & Larned	6	5	1	
		G.M. Deisel	Griswold & Larned	2		2	
				12			
Fenkell	#35	Middlebelt & Fenkell	Griswold & Jefferson	2	1	1	(express service operates vi the Lodge Freeway)
		Dale & Fenkell	Griswold & Jefferson	18	8	10	
		Southfield & Fenkell	Griswold & Jefferson	3	1	2	
				23			

* April 24, 1974

**Arrival in Detroit CBD between 7:30 a.m. - 9:00 a.m. (weekdays)

Source: City of Detroit, Department of Transportation Service Run Guides

Route Name	Service Number	Termini (Outer)	Termini (Inner)	A.M. Peak Hour* Service Total	Express	Local	(express service)
Second	#83	McNichols & Middlebelt	Larned & Randolph	3		3	(express service operates via the Chrysler Freeway)
		Beech & McNichols	Larned & Randolph	4		4	
		Southfield & McNichols	Larned & Randolph	2		2	
		Rockdale & McNichols	Grand Circus Park	6	4	2	
				15			
Dexter	#33	Providence Hosp. (9 Mile & Providence Drive)	Shelby & Jefferson	6		6	(express service operates via Grand River Avenue)
		Southfield & Outer Drive	Shelby & Jefferson	4		4	
		Outer Drive & Greenfield	Shelby & Jefferson	5		5	
		Outer Drive & Schaefer	Shelby & Jefferson	5	5		
		Dexter & Fenkell	Shelby & Jefferson	7		7	
				27			
Imperial Express	#44	Lahser & McNichols	Larned & Randolph	2	2		(all runs are express via the Lodge Freeway)
		7 Mile & Grand River	Larned & Randolph	14	14		
		7 Mile & Southfield	Larned & Randolph	4	4		
				20			

* Arrival in Detroit CBD between 7:30 a.m. - 9:00 a.m. (weekdays)

Source: City of Detroit, Department of Transportation Service Run Guides

Route Name	Route Number	Termini (Outer)	Termini (Inner)	A.M. Peak Hour* Service Total	Express	Local	(express service)
Tireman	#86	Spinoza & Tireman	Fort & Shelby	5		5	(no express service)
Hamilton	#41	Redford & Grand River	Cobo Hall	8		8	(express service operates via the Lodge Freeway)
		7 Mile & Southfield	Cobo Hall	3		3	
		Northland	Cobo Hall	3		3	
		7 Mile & James Couzens	Cobo Hall	8	5	3	
				22			
Grand River	#16	Oakland & Grand River	Capitol Park	19	8	11	(express service operates via the Jeffries Freeway)
		Southfield & Grand River	Capitol Park	12	6	6	
		Schaefer & Grand River	Capitol Park	6	2	4	
				37			
Schoolcraft	#82	Middlebelt & Schoolcraft	Woodward Loop**	3		3	(no express service)
		Inkster & Schoolcraft	Woodward Loop**	1		1	
				4			

* Arrival in Detroit CBD between 7:30 a.m. - 9:00 a.m. (weekdays
**Schoolcraft (#82) does not go to Detroit CBD; Services the Highland Park Sears (Woodward Loop)

Source: City of Detroit, Department of Transportation Service Run Guides

IV. RESERVED BUS/CAR POOL FACILITY

A. RESERVED LANE CONCEPTS

Federal Transportation programs over the past 14 years have brought about many improvements to urban public transportation systems. By far the best known, and also the most expensive, have been the re-equipping and/or expansion of urban commuter rail and rapid transit systems. During the late 1960's and continuing into the 1970's, federal programs for urban mass transit, though expanding in scope, were found to be inadequate for the even greater expansion of grant requests which streamed into the U. S. Department of Transportation's Urban Mass Transit Administration (UMTA). To cope with the public transit needs of the cities, yet do so within UMTA's budgetary constraints, a greater attempt was made to utilize low cost capital intensive projects.

Records compiled by the American Transit Association during the post World War II years, to the present, have indicated that surface systems (bus and streetcar combined) lost almost two-thirds of their 1947 ridership, while rapid rail systems retained two-thirds of their ridership base. Though the forces acting upon both modes were complex, and often opposite in their effect, one underlying factor emerged to explain the disparite ridership trends: namely, that rail rapid transit systems operated over their own rights of way, and thus experienced stable, or even increasing commercial schedule speeds during the post-war years, whereas increasing congestion resulted in lower commercial speeds for local bus routes.

It has become clear that major improvements to the nation's public transit networks can be made by improving bus service, primarily through provision of faster service. The lowest costs, particularly within the urbanized parts of the nation's metropolitan regions would, of course, be for service schemes not requiring construction of new facilities. One obvious solution was to operate buses along urban freeways during peak hours, thereby by-passing congested surface streets. Unfortunately, the freeways during peak hours were often congested, providing little relief from slow bus schedules.

Research had shown that three alternative freeway treatments could be used to operate express bus service through peak hour congestion:

(1) Build new bus lanes, either in the median or alongside the freeway, as was constructed along Los Angeles' San Bernardino Freeway;

(2) Utilize capacity within special purpose lanes, such as might be built for reversible traffic peaks. The successful Shirley Busway, over I-95 between Washington, D.C. and its Virginia suburbs, is an example of use of such lane capacity.

(3) Reserve existing freeway lanes for buses, and possibly for other high capacity vehicles, such as car pools, either in the prevailing direction, or by use of reverse, or "contra-flow" lanes, such as has been operating since 1970 over the I-495 Lincoln Tunnel connector in New Jersey.

These techniques by no means exhaust the possibilities for enhanced freeway or arterial flow. Additional procedures include use of metered ramps; reserved entrances and exits for buses only, bypass lanes at toll booths; etc..

While allowing for enhanced bus operation, it should be noted that caution must be exercised to insure that persons enjoying the benefit of the special lanes aren't outnumbered by persons who may suffer a degradation of service on adjacent lanes due to capacity restraints. The total person-delay with the inclusion of a reserved lane must be equal or less than total person-delay without the lane.

B. REASONS FOR SELECTING JEFFRIES FREEWAY

In reviewing service concepts for bus use of Detroit area freeways, the original task force arrived at a consensus that the then under construction Jeffries Freeway (I-96) would be the most logical starting point for implementation of a reserved bus and car pool lane. The primary reason for this consensus was the belief that the freeway should serve as a test bed for future expansion to other area freeways, and that the proposed lane had a greater chance of public acceptance by being placed on a freeway that had not yet reached peak hour capacity.

By operating prior to full extension of I-96 into western Wayne County, the exclusive lane would exist prior to any large increase of Jeffries traffic, and hopefully would not be viewed as taking away "vested" automobile capacity rights.

Further, even though capacity traffic loads had not been attained on the Jeffries, the experience in signing, policing, and car pooling that would be gained was considered essential prior to introduction of reserved lanes on the more heavily used freeways, such as I-75 or U.S.-10.

The committee elected to study a "normal flow" lane instead of "contra-flow" lanes. This was due to the area freeway's failure to meet two* basic requirements of contra-flow use:

(1) All freeway traffic in the reverse direction can be accomodated in the remaining lanes at level of service D or better, and;

(2) All normal freeway entrances and exits are to the right of the through traffic lanes.

Even though portions of I-96 met these requirements, the Jeffries reserved lane concept was part of a demonstration proposal and therefore was to be a prototype for implementation on other area freeways which unfortunately fail to meet these two standards of acceptability. In addition, vehicles traveling in a non segregated contra flow lane would pose a safety hazard to oncoming vehicular traffic. Whereas buses are highly visable to uncoming traffic, the

*Levinson, H, et al. Reserved Bus Lanes on Urban Freeways: A Macromodel, Transportation Research Record, #513.

number of buses projected for the lane is too few to create a continous or solid line of traffic. Private vehicles which are expected to constitute the bulk of lane traffic, are less visable to upcoming traffic and more apt to be a safety hazard. Likewise, bus drivers are professionals and would be expected to react more judiciously than average commuters in an emergency situation.

In conjunction with the decision to study a "normal flow" lane, the committee decided that there would be no physical barrier segregating the lane from non exclusive lanes. This decision would keep capital expenditures to a minimum. Likewise daily use of cones or other dividers were not considered as this would incur a continuing operating cost for the lane itself.

The committee further decided to consider a 24 hour restriction on the lane. If this proved to be too stringent or difficult to enforce, gradations were devised which would reduce the reserved use designation to weekdays and if necessary to peak hour only. The 24 hour restriction was felt to induce greater acceptance by the public.

From the beginning, the Jeffries technical committee considered the lane to be one important element in a systems approach to improved transit service. Provision of the lane, with no other improvements, would not appreciably attract new transit ridership. To bring about a total improvement in service, use of park and ride lots, new routes, revised CBD distribution, and an agressive public information program were proposed, and incorporated into the Study.

B. LIMITS AND CHARACTERISTICS OF JEFFRIES RESERVED LANE SERVICE

(1) Downtown Distribution

The degree to which traffic flow on I-96 will be expedited by installation of an exclusive bus-car pool lane is directly related to the disposition of emerging traffic patterns at the origin and terminus of the designated lane.

The exclusive lane is currently planned to terminate in the vicinity Seldon. Beyond this point four lanes of I-96 are funneled into a turning roadway configuration. Vehicles are either directed into a dual lane approach to the Lodge Freeway (US-10) or the Fisher Freeway (I-75). The reduction in the number of lanes and the tendency of drivers to reduce speed at points of increased lane changing leads to peak hour congestion at the Jeffries-Fisher interchange.

The initial recommendation of both the Jeffries Technical and Advisory Committees was to terminate the exclusive lane prior to the turning roadway and encourage buses and carpools to utilize the Michigan Myrtle exit. In utilizing this exit, buses and carpool vehicles would leave the freeway prior to reaching the congested area. Egress of a substantial number of vehicles would facilitate traffic flow on unrestricted lanes since there would be an overall reduction in the number of vehicles converging at the turning roadway. However, exiting at Michigan/Myrtle was found to include considerable lane weaving as vehicles would have to cross to the left to reach the turning roadway (either US-10 or I-75) or cross right to exit at Myrtle. Because of the congestion at the turning roadway

and in anticipation of extensive weaving, MDSHT has proposed an exclusive exit ramp to Michigan (alternative one) to be constructed if initial results of Jeffries reserved lane service are successful. Geometrics of the ramp at the southern terminus of the Jeffries are discussed in Chapter VI, and are included in Appendix "C".

A second alternative would be to terminate the service at some point closer to the Detroit CBD than Buchanan Avenue. After a thorough review of the existing freeway network it was found that a logical termination would be at a ramp to Third Avenue, which then utilized Grand River as the means of entering and leaving the CBD, a distance of approximately two blocks. To extend the exclusive lane to Third Avenue would require some additional construction which is detailed in Chapter VI.

It is estimated that construction costs for alternative two, exclusive of engineering and administration, would be 2.7 million dollars.

(2) Grand River Distribution

At the northern terminus, exiting the exclusive lane and egressing the freeway poses a similar, though simpler problem. Traffic signal progression, the influx of new riders since the second freeway segment opened, plus the novelty of line haul buses operating on the freeway has created peak hour congestion where freeway traffic leaves the Jeffries, at Grand River and Schaefer. This congestion should dissipate with the opening of the next segment, in September, 1976. For the interim, MDSHT proposes a slip ramp to route reserved lane users onto Grand River (see Chapter VIII and Appendix "B").

Limits on use of the lane itself includes under or over utilization of it. Tables III-C-1 and III-C-2 illustrate the average lane volumes which will develop if the exclusive lane is restricted to vehicles with either 3 or more occupants, or 2 or more occupants.

The morning and afternoon peak hour counts listed in the tables are for the month of November, 1974. These counts were used as they represent the hours of maximum daily use for inbound and outbound traffic.

Based on MDSHT data, 2.8 percent of the vehicles on Detroit area freeways carry 3 or more occupants, while 17 percent carry 2 occupants. (Table II-B-2) Using just the volume from the 7-8 AM and 4-5 PM traffic counts (the maximum use hour) it is possible to compute the car pool volume for the exclusive lane. Tables IV-C-1 and IV-C-2 illustrate that the reserved lane, if used for vehicles with 3 or more people, appears to be under utilized, while the traffic in the remaining lanes becomes heavy. The highest hourly volume for November was 6701 vehicles. Under the three or more occupant restriction, 187 vehicles could be allowed in the exclusive lane while each remaining lane would be assigned 2171 vehicles.

MDSHT reports that the lane design capacity of a freeway is approximately 1800 vehicles per hour. However, the practical lane volume is 1,500 vehicles per hour. Using the three or more occupancy requirement, the anticipated lane assignments exceed both the design and the practical capacity.

Use of a two person minimum (19.8 percent of area vehicles) increases vehicle volume in the exclusive lane to a point where flow is not appreciably better than the remaining three lanes. With a total one-direction traffic flow of 6,701 vehicles, the two person or more minimum would allow 1,326 vehicles into the exclusive lane and 1,791 into each remaining lane, per hour.

Though vehicles with three or more persons are now few, the lane will also accomodate 63 scheduled D-DOT buses (Grand River, Imperial, Joy Road) in the peak hour, as well as buses generated by eight new routes recommended by SEMTA and D-DOT. Assuming 15 minute headways on these new routes, they would add an additional 40-43 buses per peak hour, for a peak hour total of 103-106 buses. Although fewer vehicles would be operating in the exclusive lane, more individual person trips would be completed.

At the maximum recorded peak hour volume of 6,701 vehicles, 187 vehicles with three or more occupants would carry a minimum of approximately 560 passengers in autos, in the reserved lane, plus the 103-106 buses, for an additional 4,635 to 4,770 passengers. (The assumption that buses would be operating at full seating capacity (45 passengers per coach) reflects the market estimates developed in Chapter V, and the transit occupancy rate found on peak hour Grand River buses). In the remaining three lanes, a total of 5,374 people would be driving alone, while 1,139 would be in cars carrying two persons. A full comparison of person trips per lane, per hours, has the exclusive bus lane carrying between 4,800 to 5,000 people, while each remaining lane would carry 2,550 persons.

It has been assumed there will be an overall shift from two person occupancy to three person vehicle occupancy, which will reduce congestion in the remaining lanes, but is not expected to be beyond the capacity of the exclusive lane.

The figures in Table IV-C-1 and IV-C-2 reflect area wide vehicle occupancy rates. The actual rates for the Jeffries freeway are higher. For morning trips, 3.32 percent of the inbound vehicles carry three or more persons; 20.87 percent have at least two occupants. For afternoon outbound trips 5.18 percent of the vehicles have three or more occupants and 21.96 percent have at least two occupants. For comparison, the area wide occupancy rates were used since it is assumed that as additional segments of the Jeffries are opened to the public and the number of CBD orientated trips increase, occupancy rates will decrease to conform to the area norm.

If the higher Jeffries occupancy rates noted above were used to compute lane assignments for the maximum volume of 6,701 vehicles, higher volumes would develop in the exclusive lane with 222 vehicles at the three or more restriction, as compared to 187 vehicles for the same time period if area wide occupancy routes were used in projecting lane assignments. Table IV-C-3 illustrates possible lane distribution for inbound and outbound traffic using Jeffries data for:

(1) An average daily peak hour count (includes Saturdays and Sundays)

(2) An average weekday peak hour count,

(3) For the maximum hourly volume recorded.

TABLE IV-C-2

EFFECTS OF DIVERTING VEHICLES WITH 2 AND/OR 3+ OCCUPANTS TO EXCLUSIVE LANE*

Day	PM Peak Hour Traffic Count (for hour ending) 4	5	6	Vehicles in** RBL at 3+ Restriction	Average # of**** vehicle/non exclusive lane	Vehicles in*** RBL at 2+ Restriction	Average # of**** vehicle/non exclusive lane
F	3269	4142	3842	116	1342	820	1107
Sat.	2272	1975	1759	55	640	391	527
S	1508	1898	1178	53	615	375	537
M	3298	4164	3814	116	1349	824	1113
T	3331	3839	3449	107	1243	760	1026
W	3350	4636	3860	129	1502	917	1239
Thurs.	3308	4453	3843	124	1442	881	1190
F	3358	4582	3881	128	1484	907	1224
Sat.	1975	1967	1865	55	637	389	525
S	1643	1484	1381	41	480	293	396
M	2924	3564	3204	99	1154	705	953
T	3393	3909	3515	109	1266	773	1043
W	4144	5782	4815	161	1873	1144	1545
Thurs.	1013	1321	4056	36	428	261	353
F	4117	5781	4817	161	1873	1144	1545
Sat.	2261	2235	2120	62	724	442	597
S	1629	1466	1367	41	474	290	391
M	2813	3420	3077	95	1108	677	914
T	3318	3825	3430	107	1239	757	1022
W	3452	4815	3995	134	1560	953	1287
Thurs.	866	1155	3202	32	374	228	308
F	3502	4767	4045	133	1544	943	1274
Sat.	2072	2039	1929	57	650	403	545
S	1773	1602	1490	44	519	317	428
M	3002	3653	3287	102	1183	723	976
T	3451	3976	3575	111	1288	787	1062
W	3827	5354	4435	149	1734	1060	353
Thurs.	2791	2913	2824	81	943	576	778
F	3474	4757	4018	133	1541	941	1271
Sat.	2176	2167	2049	60	702	429	579

Source: Michigan Department of State Highways and Transportation
24 hour counts - I-96 Northbound volume at Ivanhoe, November, 1974

* 4-5 p.m. traffic counts used to maximize effects.

** Area freeway peak hour average of 2.8% vehicles with 3+ occupancy rate

*** Area freeway peak hour average of 17% vehicles with 2 person occupancy plus additional 2.8% for 2+ occupancy

****Average number of vehicles in each of the 3 remaining lanes, after car poolers have been assigned to the exclusive lane

TABLE IV-C-3

EFFECTS OF DIVERTING VEHICLES WITH 2 AND/OR 3 OR MORE OCCUPANTS TO THE EXCLUSIVE LANE[1]

AM-Inbound (7-9)	Exclusive* Lane Volume at 3+ Restriction	Average Volume in each non Exclusive lane	Exclusive** Lane Volume at 2+ Restriction	Average Volume in each non Exclusive lane
Average daily peak period count 3754	125	1209	908	948
Average weekday peak period count 4907	163	1581	1187	1240
Maximum hour count 6701	222	2159	1620	1693
PM-Outbound (4-6)				
Average dilay peak period count 3212	166	1015	871	780
Average weekday peak period count 3828	198	1210	1038	930
Maximum hour count 5782	299	1872	1569	1404

[1]Based on Jeffries Freeway Vehicle Occupancy.

* Inbound 3+ Occupants 3.32%
Outbound 3+ Occupants 5.18%

**Inbound 2+ Occupants 24.19
Outbound 2+ Occupants 27.14

V. POTENTIAL TRANSIT MARKET

A. PROCEDURE

A market analysis of the Jeffries Corridor was undertaken to determine the extent to which both reduced trip time and new services offered through use of the exclusive bus-car pool lane would affect transit ridership. The analysis was concerned with ridership potential of routes presently within the corridor and for proposed routes in areas not currently served by transit.

The deficiencies of 1970 census data in an area which has experienced marked population changes was determined, and led to the use of a non-elaborate model. The model incorporated the April 27, 1974 Jeffries survey data as well as a minimum of census information, in order to produce an accurate market estimate. The model utilized factored survey responses and 1970 census information, such as local CBD employment, to simulate the current modal split for the Jeffries Corridor. Auto-bus travel time ratios were developed for CBD oriented trips. These ratios were changed to reflect the proposed transit (bus) times possible, by route, if the Jeffries (I-96) exclusive bus and car pool lane were to be used. Coupled with census data as to the extent of CBD employment in specific study areas, the reduction in absolute travel time became a significant factor in projecting ridership estimates.

B. METHODOLOGY

1) Riders of 10 existing Detroit DOT routes which displayed potential for incorporation into the Jeffries exclusive bus lane project were surveyed. Respondents were asked to supply their home address. A total of 2,340 respondents provided this information which was then compiled in a computer printout according to census tract and block number. Analyses of the survey design, administration, and results are documented in Appendix A.

2) Total number of riders by specific bus route was tabulated and factored. (See Table 19, Appendix A). It was anticipated that the rate of questionnaire return would vary for bus riders having different socio-economic characteristics. To help correct this, separate expansion factors were developed for the express and local bus runs on each bus line. This approach was based on suggested procedures described in the report, Urban Mass Transportation Travel Surveys.*

* Urban Mass Transportation Travel Surveys, Urban Trans System Association for U.S., - DOT (Washington, D.C., 1972), P. 31

TABLE V-B-1
Expansion Factors

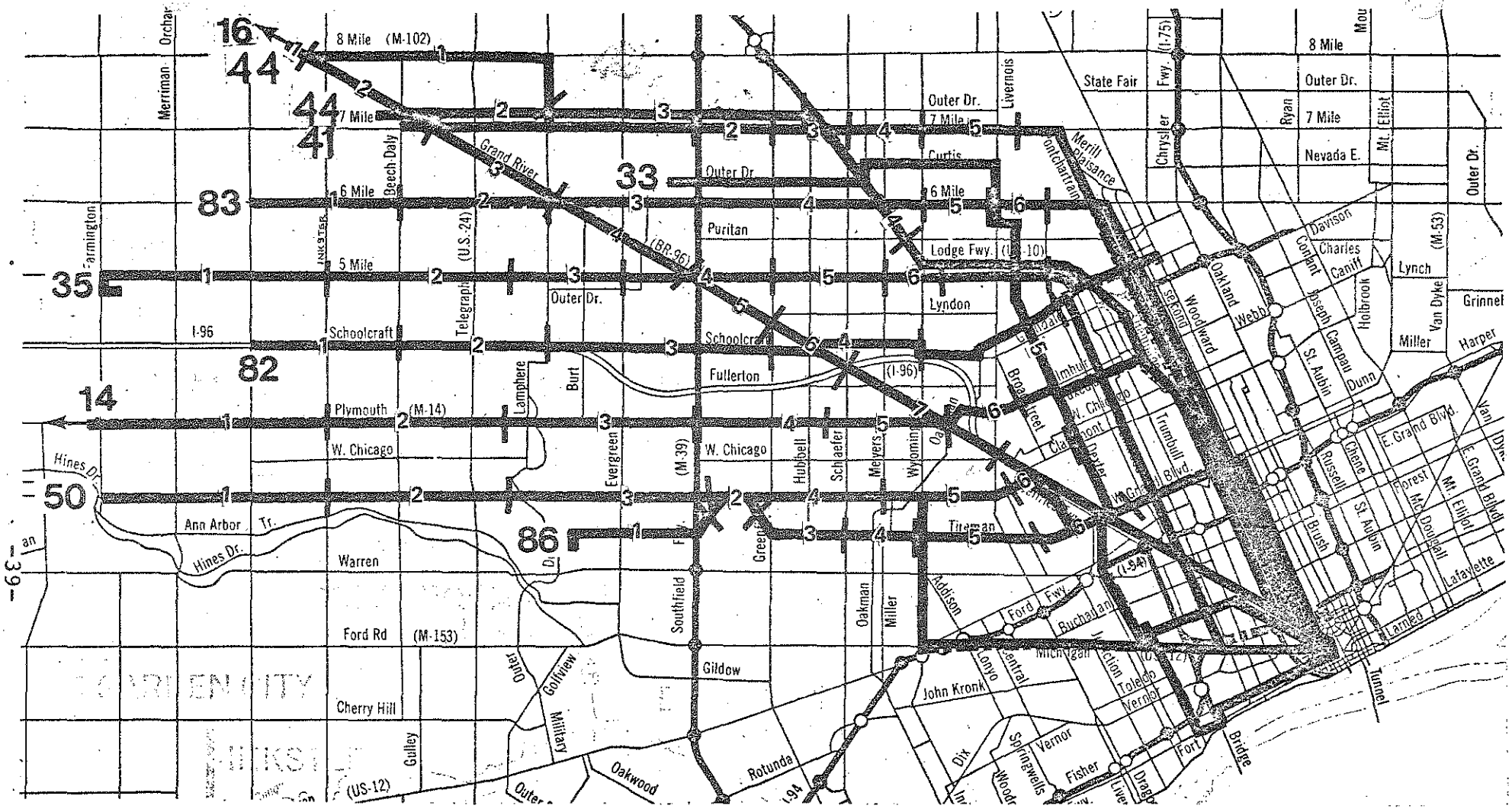
Run	Express	Local
Hamilton	3.15	4.57
Grand River	3.83	7.48
Tireman	-	4.58
Joy Road	2.58	6.13
Second	2.72	4.04
Plymouth	2.88	5.81
Fenkell	3.51	6.82
Imperial Express	3.14	-
Dexter	4.24	6.09
Schoolcraft	-	5.16

3) The routes were plotted on a census tract map, (see Appendix A), and divided. Depending on the length of the route, the absolute bus travel time, and the number of points at which a rider could disembark, or transfer, routes were divided into 4 to 6 segments (see Map V-B-1). This was necessary to determine CBD trip time from various points along the route and to determine how the modal split for each route segment would be affected by an alternation in the transit trip time to the CBD.

4) In addition (and prior) to dividing the routes, the census tracts for western Wayne County and southern Oakland County were divided into sub-tracts. Based on response from existing riders and service request data, this area was designated as the Jeffries' market. Tracts were subdivided since they vary in size and are either bordered or bisected by major thorough-fares. Since the surveyed bus routes followed major arterials (Grand River, Fenkell, Second, Joy, etc.), arbitrarily assigning the socio-economic characteristics of a tract to the routes which traversed it was not feasible, as this would have resulted in assigning the projected transit ridership of one tract to two or even three routes, and ultimately would lead to an inflated market estimate.

In most cases, tracts were halved. Since bus patrons traditionally travel to the bus route nearest their home, If a tract has a major CBD oriented route at both the north and south border, dividing it at the center should assign area transit users to the route they would most logically choose.

If a number of routes passed through a market area, thereby offering more alternatives, or a greater option for transfering between routes, the tract was quartered. Obstacles to easy access to a route, such as parks, drainage ditches or large undeveloped areas, resulted in the land area being assigned to the tract segment which was most accessible to the route even if the result was unequal zonal segmentation. Innercity tracts, which tend to be smaller, were either not segmented, or were halved. Suburban tracts, being much larger, were divided to conform to the normally accepted



BUS LINES SURVEYED

16 – Grand River	14 – Plymouth
50 – Joy	33 – Dexter
86 – Tireman	83 – Second
82 – Schoolcraft	35 – Fenkell
41 – Hamilton	44 – Imperial Express

Bus Line 16 (Grand River) runs to Farmington Road.

Bus Line 14 (Plymouth) runs to Ann Arbor Trail.

MAP V–B-1

TABLE V-B-2

OFF LINE MODAL SPLIT BY DISTANCE FROM ROUTE

Route Segment	1/4 mile Local	1/4 mile Express	1/2-3/4 miles Local	1/2-3/4 miles Express	1-1 3/4 miles Local	1-1 3/4 miles Express	2-2 3/4 miles Local	2-2 3/4 miles Express	3+ miles Local	3+ miles Express
Tireman										
1	.17									
2										
3										
4			.05							
5			.05							
6			.08							
Fenkell										
1			.76							
2	--	--		--						
3					.13	.13			.08	
4			.08	.14	.09		.17		.08	
5										.06
6			.38	.16						
7				.88	.15		.08			
Schoolcraft										
1			.32		.86					
2			.08							
3			.25							
4			--							
5			.40							
6										
Second										
1			.50				.16		.15	
2			.06	.04					.05	
3			.08							
4			.07		.11	.05	.08		.06	
5										
6			.07	.03						
Joy										
1				.17				.06		.07
2			.31	.18		.11				
3				.15	.04	.16			.07	
4			.13		.05	.03	.17		.07	
5			.20			.23				.05
6	--		--			--		--		

Route Segment	1/4 mile Local	1/4 mile Express	1/2-3/4 miles Local	1/2-3/4 miles Express	1-1 3/4 miles Local	1-1 3/4 miles Express	2-2 3/4 miles Local	2-2 3/4 miles Express	3+ miles Local	3+ miles Express
Hamilton										
1			.05		.08		.40		.16	
2			.37		.12					
3			.27		.11	.03	.18			.08
4					.15	.11				
5			.02	.02	.35	.14	.06		.04	
6				--						
Plymouth										
1	.22				115	.15		.12		.21
2			.14	.17						
3				.44	.18	.10				
4							.10			
5			100		.02					
6			.14		.13					
7	---			---		---		---		---
Imperial Exp.										
1				.22		.22		.12		..13
2						.11				
3		100		.20		.11				.24
4		.26		.07		.07		.07		.03
Grand River										
1						.37		.15		.20
2		.10				100		.17		
3	.14	.13		.23	.39	.35			.31	.40
4			.68	.12	.16	.11	.47	.14		
5				.15	.13	.13	.60			
6		.14	.23	.11	.10	6	.42	.19		
7		.14	.88	.36	.70		.09	.05	.11	.07

TABLE V-B-3

ON LINE MODAL SPLIT AND TRANSIT-AUTO TRAVEL TIME RATIO BY ROUTE SEGMENT

Route Segment[1]		# of Riders[2]		Factored Ridership[3]		CBD Employment[4]	Modal Split[5]		Time to CBD (minute)		
		Local	Express	Local	Express		Local	Express	Transit	Auto	Ratio
Tireman	#1	15		69		455	15		60	21.7	2.76
	2	5		23		155	14		52	18.4	2.82
	3	6		27		193	14		45	15.9	2.83
	4	15		69		480	15		41	14.4	2.22
	5	18		82		208	40		36	12.9	2.79
	6	10		45		321	14				
TOTAL		69		315		1812	17				
Fenkell	#1	1		6		53	13		80	31.4	2.54
	2	3	4	20	14	279	07	05	58	25.9	2.23
	3	4	11	27	38	330	08	12	50	21.5	2.32
	4	4	9	27	31	570	04	05	43	19.9	2.16
	5	20	27	136	97	609	22	16	35	18.6	1.88
	6	7	8	47	28	221	22	13	28	16.7	1.67
	7	2	4	13	14	159	9	9	22	15.	1.46
TOTAL		41	63	276	222	2221	12	10			
Schoolcraft											
	#1	4		20		91	23		*	30.6	
	2	8		41		347	12			25.4	
	3	20		103		497	21			19.4	
	4	10		51		391	18			15.6	
	5	7		36		171	21			12.5	
TOTAL		49		251		1497	17				
Second	#1	2		8		114	07		81	28.8	2.81
	2	9		36		242	15		55	24.8	2.21
	3	12	16	48	43	555	09	08	48	21.8	2.19
	4	38	11	153	29	733	21	04	40	18.7	2.13
	5	17	11	68	29	494	14	06	35	15.3	2.28
	6	12	3	48	8	382	13	02	30	13.7	2.17
TOTAL		90	41	261	109	2520	14	04			

TABLE V-B-3

ON LINE MODAL SPLIT AND TRANSIT-AUTO TRAVEL TIME RATIO BY ROUTE SEGMENT

Route Segment[1]		# of Riders[2]		Factored Ridership[3]		CBD Employment[4]	Modal Split[5]		Time to CBD (minute)		
		Local	Express	Local	Express		Local	Express	Transit	Auto	Ratio
oy	#1	1	18	6	46	484	1	10	74	31.5	2.34
	2		28		72	373		19	66	26.4	2.50
	3	5	23	30	59	437	7	14	57	21.4	2.66
	4	13	23	79	59	455	18	13	47	16.2	2.90
	5	24	10	147	25	644	23	04	41	13.4	3.05
	6	18		110		244	45			10.2	
TOTAL		61	82	372	241	2637	14	09			
amilton	#1	18		72		764	10		67	25.9	2.58
	2	10		40		366	11		58	23.2	2.49
	3	8	3	32	9	299	11	03	38	20.2	1.88
	4	18	15	72	47	332	22	14	34	19	1.77
	5	36	23	145	72	411	35	18	32	17.9	1.78
TOTAL		90	41	361	128	2172	17	06			
lymouth	#1		11		31	175		18	57	30.8	1.85
	2	5	12	29	34	213	14	16	50	26.4	1.89
	3	3	25	17	72	661	03	11	41	22.1	1.85
	4	11	20	63	57	502	13	11	32	17.5	1.82
	5	11	19	63	54	489	13	11	25	14.4	1.73
	6	12		69		306	23		22	11.4	1.91
	7	5		29		191	15			13.4	
TOTAL		47	97	270	248	2537	11	10			
mperial	#1		21		65	505		13	51	25.4	2.0
	2		13		40	410		09	44	23.3	1.88
	3		71		222	1051		21	37	19.9	1.85
	4		30		94	526		18	31	17.2	1.80
TOTAL			145		421	2492		17			

TABLE V-B-3

ON LINE MODAL SPLIT AND TRANSIT-AUTO TRAVEL TIME RATIO BY ROUTE SEGMENT

Route Segment[1]	# of Riders[2]		Factored Ridership[3]		CBD Employment[4]	Modal Split[5]		Time to CBD (minute)		
	Local	Express	Local	Express		Local	Express	Transit	Auto	Ratio
Grand River										
#1		12		45	122		38	60	32.6	1.83
2		4		15	163		09	52	26.7	1.94
3	6	11	44	42	412	11	10	46	23.5	1.95
4	2	24	14	91	495	03	19	39	21.8	1.78
5	8	22	59	84	321	19	26	32	18.2	1.75
6	10	13	49	74	265	28	19	27	16.2	1.66
7	35	15	26	57	728	36	08	20	13.6	1.47
TOTAL	61	101	192	408	2506	07	16			

NOTE: Total route modal splits reflect an assumption that either local or express service originates at the same point and operates over the entire route.

[1]Segments boundaries are shown on map IV-B-1

[2]Number of surveyed riders who provided addresses

[3]Specific factors for each route are listed in Table IV-B-1

[4]The number of residents in a census tract who list their place of employment as the Detroit CBD

*Inbound Schoolcraft local coaches terminate at Sears Avenue in Highland Park - CBD bound riders transfer to other buses or more direct routes either at the terminus or enroute. It is not feasible to compute the auto transit ratio for this route.

[5]Mode split is route specific.

1/4 to 1/2 miles maximum walk to a bus that most persons will take. Since assigning demographic characteristics of an entire tract to one or more routes results in an inflated market estimate, and assigning only those segments which bordered a route results in a more conservative estimate of market potential.

Those riders who travelled a particular route, but who did not live in a tract segment abutting the route were totaled similarily (Table V-B-2), but separately from the on-line modal split (Table V-B-3).

After the individual tracts were subdivided, they were clustered into a larger unit based on the probability of a resident using a particular bus route.

5) After census tracts were divided, block statistics for each segment were recorded. The household population for each tract segment was totaled and the percentage of households for each segment represented of the total tract was computed, and applied to the number of CBD employees for the tract. This was done to approximate the number of individuals with CBD employment for a particular tract segment. The number of CBD work trips was computed from 1970 census data. Addresses of survey respondents were also assigned to tract segment on the basis of census block number.

6) The existing modal split for each route segment was found by multiplying the on line ridership in each route segment by the appropriate expansion factor (Table V-B-1) and dividing by the total number of CBD employees assigned to the segment (Table V-B-3). Table V-B-4 illustrates the procedure for one route segment.

TABLE V-B-4
Second Avenue -
Route Segment #4

Tract Segments	Riders Local	Riders Express	Expansion Factor Local (4.04)	Expansion Factor Express (2.72)	CBD Employment
451.01 B	3	1	12.12	2.72	63
451.01 A	1		4.04		54
409.02 B	2	1	8.08	2.72	80
409.02 A	3	2	12.12	5.44	82
303.02 B	1		4.04		29
303.02 A	4	1	16.16	2.72	70
258.02 B	8	2	32.32	5.44	70
258.02 A	3	1	24.24	2.72	32
259.01	9	2	36.36	5.44	153
302.03	4	1	16.16	2.72	82
262.01 B	-	-			18
	38	11	153.52	29.92	733

Modal Split - Local 153.52 ÷ 733 = 21%
Modal Split - Express 29.92 ÷ 733 = 4%

7) For each route segment, the current transit-auto travel time ratio was also established. Transit time points equated to the center of each segment were supplied by the Detroit-DOT. 1975 auto travel time was derived from SEMCOG's 1975 Highway Network SKIM THREE, tape #S449.

It was found that the greater the distance to the CBD (as equated to higher transit time), the higher the transit-auto ratio. It was also found, however, that the modal split was also higher at longer distances, indicating a propensity by some riders to forego the time savings of a private vehicle for the convenience of transit when long distances are involved. Analyses of survey results (Appendix A) indicates that express bus riders were concerned at high CBD parking costs, which was another factor in their choosing transit.

As distance to the CBD descreased, and the travel time ratio declined, the modal split also decreased. It is this mid-point where the trip is not sufficiently arduous but when the transit to auto time ratio is still substantial, that the modal split appears to be lowest. Closer to the CBD, the transit auto ratio is quite small and the transit modal split again increases. At this distance, the time saving of a private vehicle over a bus is minor and is most likely offset by the high cost and access time from the parking site. Survey data indicates that many inner-city residents are also transit "captives".

Table V-B-3 lists the on-line specific modal split and auto transit ratio of the surveyed* routes by segment. Utilizing information as to travel time savings possible through use of express bus service, preferably on an exclusive right-of-way, it was possible to determine the shift in the auto-transit travel time ratio. This resulted in a ridership projection reflecting the modal split of the route segment closest to the CBD, i.e., the highest modal split, for each existing route. Like ratios were also computed for areas currently without service, or with no express service.

In addition, segment attributes which were considered to affect the ultimate modal split projection were factored by a judgemental basis. These included density; level of existing transit services; and proximity to the CBD. For routes offering only local service, such as Tireman, the addition of express service necessitated stronger weighting to the level of service factor.

Results:

Projections of potential ridership were developed for existing route, which would not be altered, other than to incorporate the exclusive bus lane

*After reviewing the route structure of Dexter Avenue runs, with its high degree of local ridership, it was determined that it would be unfeasible to reroute any segment of it into the Jeffries freeway. Therefore, Dexter was excluded from the modal split process.

into their route structure, such as Tireman and Joy Road. These two routes bisect an area which would not appreciably benefit from extended service.

Routes which are recommended to be extended (lengthened) on the basis of ridership projections include Fenkell, Plymouth, Second, and Grand River. Analysis also indicates a ridership potential sufficient to warrant a number of new express routes, including Livernois, Shaefer, Greenfield, Evergreen Southfield, Telegraph and Lahser. These routes are shown in Map V-B-2.

Detailed projections of new ridership potential by route segment are included in Table V-B-5. The projections are based on:

1) Speedy ingress and egress to and from the exclusive bus lane.
2) Buses capable of comfortable express service.
3) Limited stop express service.
4) No major alteration in fare structure.
5) An extensive public information campaign to acquaint existing and potential riders with the service.
6) Headways
7) Improved transit/auto ratio.

In determining the type of service alterations best suited to an area, the following items were reviewed:

1) Census data. Population and the number of residents employed in the CBD.
2) Survey responses. The number of survey respondents who lived in the area, who currently had to travel to ride one of the surveyed route, but who would commuter via a closer, faster service.
3) Accessability to existing service. Proximity of a market segment to existing, though non-express, non-direct transit service.

RECOMMENDED JEFFRIES ROUTE ADDITIONS & ALTERATIONS

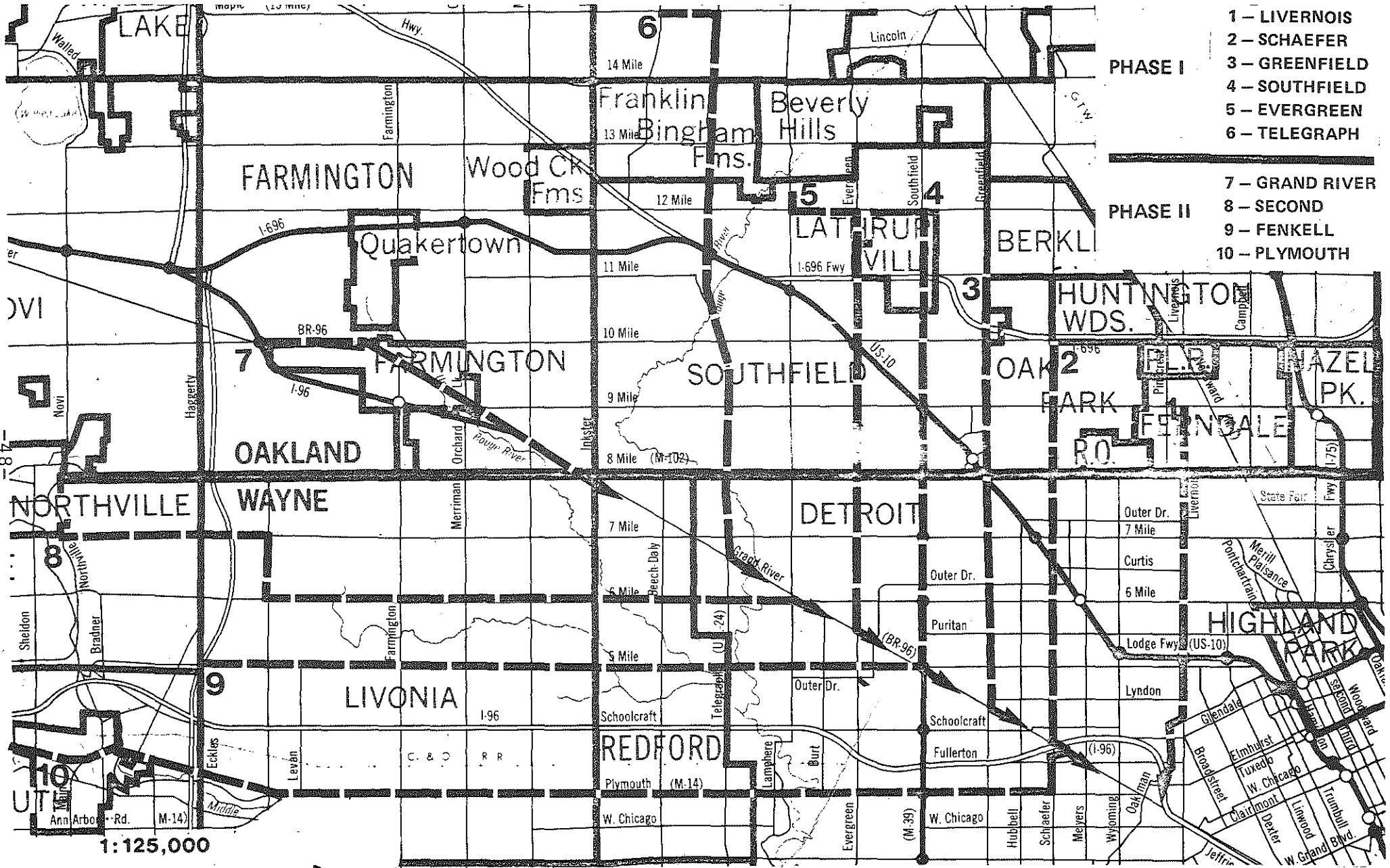


TABLE V-B-5

ESTIMATES OF POTENTIAL RIDERSHIP FOR JEFFRIES BUS ROUTES

Route	CBD[1] Employment	Number[2] Diverted	Estimated[3] new Riders	Total Riders	Number[4] not Diverted	Total[5] Sum
New Service						
Livernois						
non-service area*	595	2	107	109	7	116
D-DOT service area**	1591	42	149	191	49	240
Total	2186	44	256	300	56	356
Schaeffer						
non-service area	439	2	92	95	0	95
D-DOT service area	1526	139	133	272	61	333
Total	1965	142	225	367	61	428
Greenfield						
Non-service area	466	3	87	90	0	90
D-DOT service area	1102	92	77	169	197	366
Total	1568	95	164	259	197	456
Southfield						
D-DOT service area	989	145	51	196	86	282
Evergreen						
Non-service area	243	3	52	55	1	56
D-DOT service area	714	46	54	100	91	191
Total	957	49	106	155	92	247
Lasher						
Non-service area	186	17	37	54	0	54
D-DOT service area	609	93	61	154	11	165
Total	795	110	98	208	11	219
Telegraph						
Non-service area	792	71	74	155	25	180
Sub Total	9252	656	984	1640	528	2168
Extended Service						
Grand River	665	168	68	236	0	236
Second	362	43	47	90	5	95
Plymouth	350	32	60	92	0	92
Fenkell	312	24	90	114	2	116
Sub Total	1689	267	265	532	7	539
Express Service						
Tireman	1812		190			
Joy	4207		148			
Sub Total	6019		338			
TOTAL	16,960	923	1,587	2,172	535	2,707

[1] Number of people living within 1/2 mile of the route who according to the 1970 census claim employment in the Detroit CBD

[2] Number of riders who currently use D-DOT service but who would divert to the new service

[3] Number of new riders estimated to use service

[4] Number of people who currently use D-DOT service and would continue to use the same service and would not divert to a new route. These riders are shown as they are included in total zonal modal split calculations

[5] Sum total of transit users for the area

* Areas not included in current D-DOT service area

** Area currently served by D-DOT

VI. JEFFRIES TRANSIT SERVICE: ALTERNATIVES AND COSTS

A. CORRIDOR TRANSIT SERVICE

Three forms of Jeffries bus service were studied:

(a) Existing DOT service, rerouted via the Jeffries;
(b) New express service over DOT routes, via the Jeffries;
(c) New service beyond Detroit, to be operated by SEMTA;

B. ALTERNATIVES TO EXISTING ROUTE

Three existing routes were found to have potential for use over the Jeffries reserved lanes. The heaviest route, Grand River, currently operates a high density local and express peak hour service. The Detroit DOT recommended that the three existing routes be diverted to Jeffries service as follows:

1) Grand River

The Detroit Department of Transportation proposed to operate 23 Grand River Expresses via the Jeffries route during the morning peak hours of 0645 to 0910 and 20 coaches during the 1610 to 1820 peak period. These coaches are, in fact, currently using the Jeffries Freeway in mixed traffic service and are known as the Grand River "Red" Expresses. However, under the reserved lane program, the "Red" expresses would proceed local via Grand River to Schaefer and then use the Jeffries only between Schaefer and Scotten, where the coaches would leave the freeway in the morning to serve the busy Grand Boulevard stop. Afternoon service would be the reverse of this routing (See Map VI-B-1).

The DOT currently operates another express service on Grand River, known as the "Blue" line, which stops only at express stops between Schaefer and the CBD via Grand River.

No. of buses Using RBL		No. of new buses required to maintain recommended headways	Capital Costs	Revenue	Annual Operating Subsidy for New Service	Implementation Date
AM	PM					
23	20	-	$ --	$ --	$ --	September 1975

2) Seven Mile Road Imperial Express

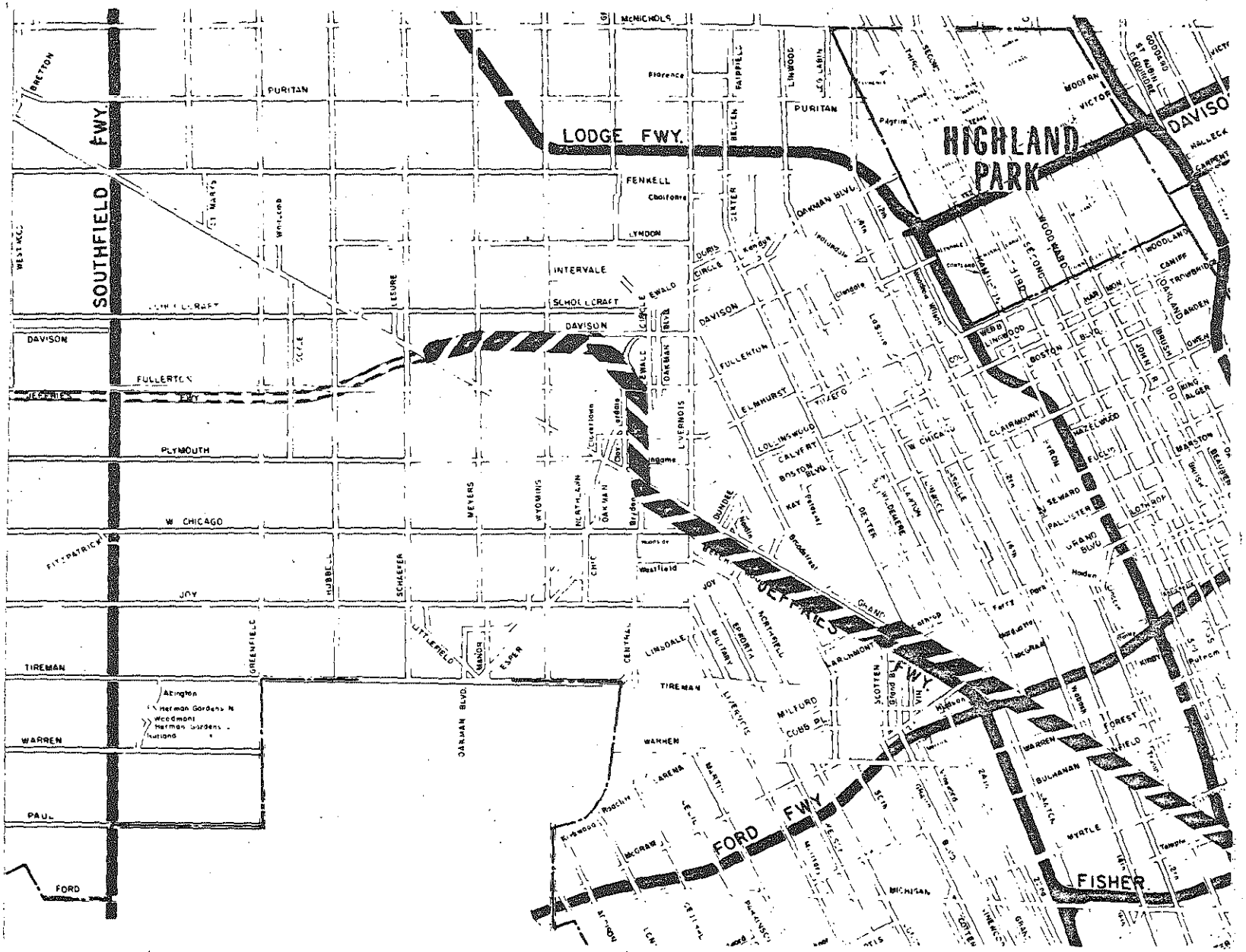
The Seven Mile Road Imperial Express bus service presently operates along 7 Mile Road to Wyoming, then via Wyoming to the Lodge Freeway. Coaches leave the freeway, at the Temple "off" ramp at Grand River.

Three alternative routings of the Imperial Express for Jeffries service were studied, as follows (see Map VI B):

1. Exit onto the eastbound Ford Freeway to the Lodge Freeway to the Temple/Grand River exit.

2. Exit at the Warren Avenue ramp; eastbound onto Warren to Grand River, then to the northbound Lodge service drive to Temple.

GRAND RIVER EXPRESS ROUTE ALTERNATIVE



1" = 1 MILE

MAP VI–B-1

3. Exit at the Myrtle Avenue ramp, eastbound on Myrtle to Grand River, then to the northbound Lodge service drive to Temple.

Travel time and delay runs were conducted for the three route alternatives from the Wyoming Lodge Freeway interchange to the Temple Lodge northbound service road intersection. Speed runs were also made along the present Lodge routing of the Imperial Express between these two points. The following chart summarizes the average of the various runs made on each of these routes:

TABLE VI-B-1

Travel Times for Imperial Express Route Alternatives
(Lodge-Wyoming to Temple at Lodge Freeway)

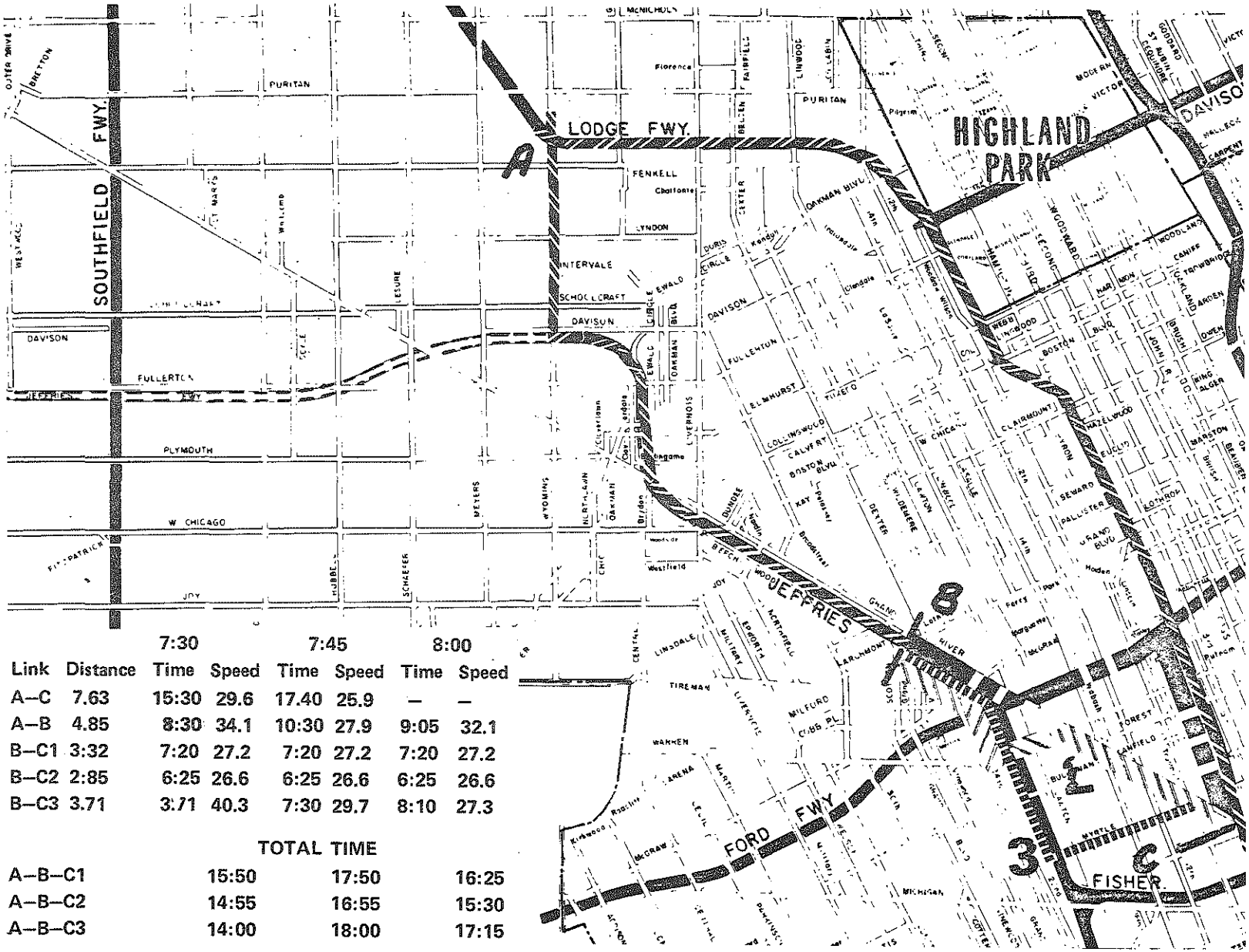
Route	Travel Times		
Time of Run Period:	7:30 AM	7:45 AM	8:00 AM
John Lodge	15' 30"	17' 40"	NA
Wyoming-Jeffries-Ford-Lodge	14' 00"	18' 00"	16' 25"
Wyoming-Jeffries-Warren-Grand River	14' 55"	16' 55"	15' 38"
Wyoming-Jeffries-Myrtle-Grand River	14' 00"	18' 00"	17' 15"

Results of the travel time runs, field checks of each route alternative, and D-DOT observations as to transit vehicle maneuverability over each route indicate that the most desirable alternative would incoporate a Warren Avenue exit. This is identified as Route 2 on Map IV-C-2.

Preliminary planning indicates that this line could proceed south on Wyoming until it reaches the Jeffries Freeway, where it would proceed inbound to the Warren "off" ramp. On Warren it would proceed to Grand River where it will travel to the northbound Lodge service drive at which point it would turn left to first drop-off point at Temple. This routing assumes that Grand River will have a 24-hour left turn lane, or that some provision will be made to allow buses to make left turn movements from Grand River, which are currently illegal. The Imperial bus would then proceed along its existing route into the CBD.

As with the Grand River Express coaches, the Imperial route would not utilize the reserved lane to the maximum extent. Time and delay studies indicate that for the present, leaving the freeway at an earlier point and traveling via a surface route is more expedient than remaining on the freeway and being delayed by traffic congestion at the junction with I-75. Until physical construction at the interchange eliminates the traffic delay, it is recommended that the Imperial Express coaches (like Grand River service) be routed in a manner which provides the best service for commuters. However, since 74.6 percent of the commuters who utilize the Imperial Express are CBD oriented, (see Table 32, p.52 Appendix A), they should derive the benefit accrued by direct access. After the construction of preferential

IMPERIAL EXPRESS ROUTE ALTERNATIVE



Link	Distance	7:30 Time	7:30 Speed	7:45 Time	7:45 Speed	8:00 Time	8:00 Speed
A–C	7.63	15:30	29.6	17.40	25.9	—	—
A–B	4.85	8:30	34.1	10:30	27.9	9:05	32.1
B–C1	3:32	7:20	27.2	7:20	27.2	7:20	27.2
B–C2	2:85	6:25	26.6	6:25	26.6	6:25	26.6
B–C3	3.71	3:71	40.3	7:30	29.7	8:10	27.3

	TOTAL TIME		
A–B–C1	15:50	17:50	16:25
A–B–C2	14:55	16:55	15:30
A–B–C3	14:00	18:00	17:15

1" = 1 MILE

MAP VI–B-2

treatment facilities for transit vehicles is completed, it is recommended that Imperial Coaches be routed directly via the reserved bus lane to the CBD. A continuation of the present route structure after interchange modification would not be justified, unless two routings and distribution patterns were instituted.

No. of buses Using RBL		No. of new buses required to maintain recommended headways	Capital Costs*	Revenue	Annual Operating Subsidy for New Service	Implementation Date
AM	PM					
25	24	--	$ --	$ --	$ --	September 1975

3) JOY ROAD EXPRESS

Two alternate routings were studied for the Joy Road Express which must continue down Michigan Avenue east of Trumbull:

1. Exit off of the Myrtle Avenue ramp, continue over the service road to Michigan, turn left and continue on Michigan inbound to Trumbull.
2. Stay on the exclusive bus lane to the interchange and then proceed on to the Jeffries-Fisher ramp that leads to the Fourteenth Street exit, and continue to Trumbull via the service road, south on Trumbull to Michigan and left onto Michigan.

Both of these routes are shown on Map VI-B-3. The comparable travel times and distances are shown below:

TABLE VI-B-2

TRAVEL TIME FOR JOY ROAD ROUTE ALTERNATIVE
(JEFFRIES FREEWAY-MYRTLE TO TRUMBULL-MICHIGAN)

Route	Distance	Travel Times		
Time of Run Period:		7:30 AM	7:45 AM	8:00 AM
Michigan	1.45	3'30"	3' 30"	3'30"
Fisher	1.30	3'10"	3' 50"	4'10"

The selected routing of the Joy Road Express is designated "1" on Map VI-B-3.

The Joy Road Express would operate along Joy Road until it reached the entrance to the Jeffries Freeway. At that point it would enter the freeway and continue past Myrtle, the ramp leading to the Twelfth-Fourteenth Street exit from the Fisher freeway. From there it would follow the service road to Trumbull where it would turn southward to Michigan, continuing as at present.

The primary consideration for this route was not the time difference, but rather the greater ease of operation of route "1", rather than the alternative of crossing three lanes of traffic to exit from the Myrtle ramp.

A total of 148 new riders were projected for this route, based on time savings estimated for the Jeffries routing.

The projected ridership estimates for all new bus routes was derived from the market analysis conducted in Chapter V, as summarized in Table V-B-5. It is important to note that the reference to higher express or Jeffries speeds includes total time savings for new express routes, not just the saving, if any, derived from the reserved lane.

No. of buses Using RBL		No. of new buses required to maintain recommended head	Capital Costs	Revenue	Annual Operating Subsidy for New Service	Implementation Date
AM	PM					
15	12	--	-	--	----	September '75

C. NEW EXPRESS SERVICE

The following are new express bus services that could be placed in service at short notice, given availability of new buses.

Livernois and Tireman Express

For each of these two new express bus lines, three routes were again studied, as shown on Map VI-C-1, and desribed as follows:

1. Exit from the Third Street ramp off the Fisher Freeway, travel southbound on Third to Fort.
2. Exit on the Fourteenth Street ramp from the Fisher Freeway to Trumbull, southbound to Fort, eastbound to Third.
3. Exit from the Myrtle ramp off the Jeffries freeway, southbound on the service road to Michigan, inbound to Trumbull, southbound to Fort and eastbound to Third.

Comparable travel times for the three alternatives routes are shown below:

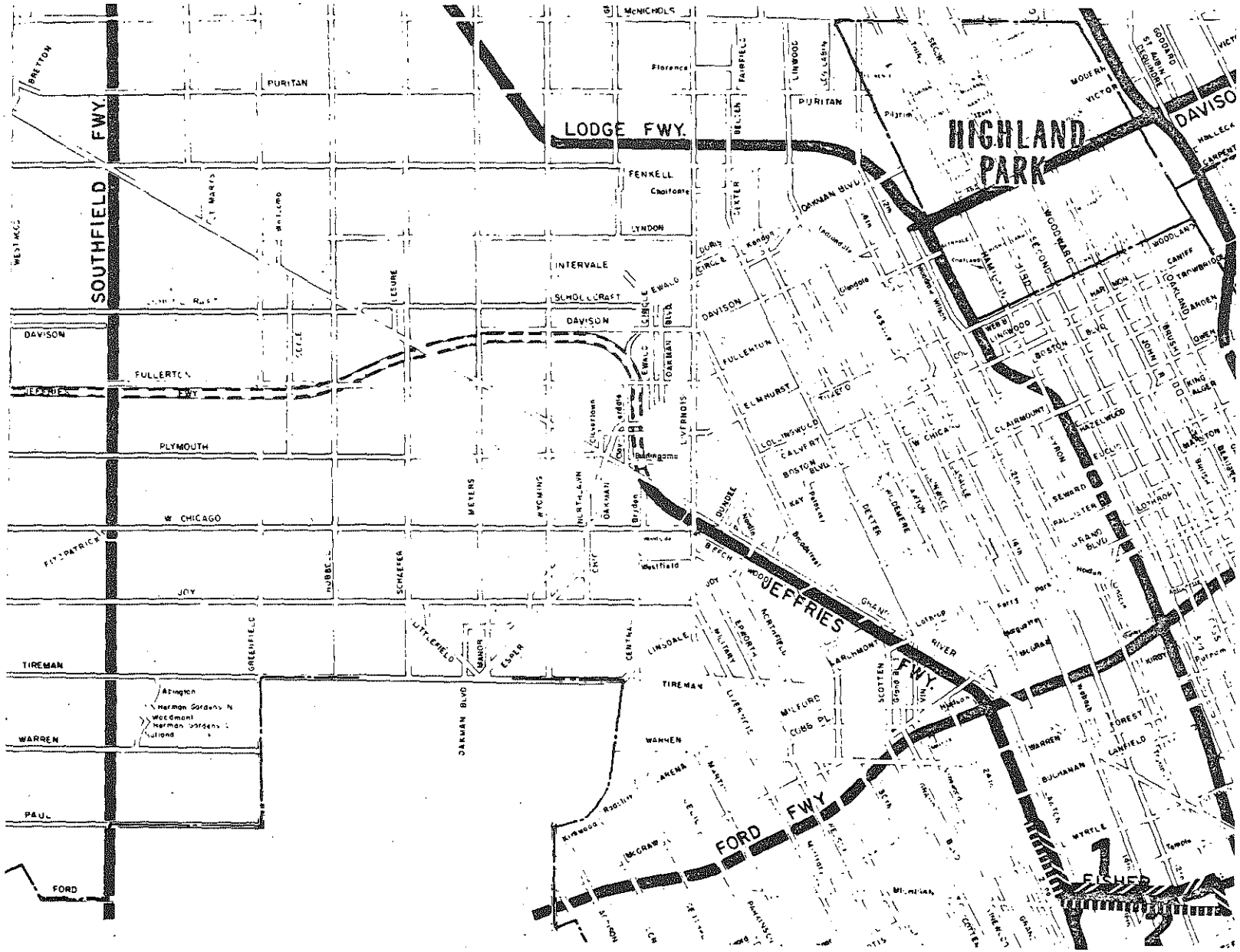
TABLE VI-C-1

LIVERNOIS AND TIREMAN ROUTE ALTERNATIVE TRAVEL TIMES
(GRAND RIVER-SCHAEFER TO FORT-THIRD)

Route	Travel Times		
Time of Run Period:	7:30 AM	7:45 AM	8:00 AM
Grand River-Third	16'30"	16'30"	16'30"
Jeffries-Michigan-Trumbull-Fort	15'35"	15'25"	14'50"
Jeffries-Fisher-Trumbull-Fort	15'15"	15'34"	15'30"
Jeffries-Fisher-Third	14'35"	15'15"	13'55"

The recommended alternative for the routes are as follows:

JOY ROAD EXPRESS ROUTE ALTERNATIVE



1" = 1 MILE

MAP VI–B-3

Livernois Express

The Livernois Express will operate from the vicinity of Eight Mile and Livernois south on Livernois to the Jeffries Freeway. Upon entering the freeway it will travel the full extent of the exclusive bus lane before continuing onto the Fisher Freeway inner roadway where it will then leave at the Third Street "off"ramp. The Livernois Express will continue south on Third to Fort Street, then east on Fort into the CBD. This is route "3" on Map VI-C-1.

The Livernois Express should generate 191 riders. (Table V-B-5)

No. of buses Using RBL AM	PM	No. of new buses required to maintain recommended headways	Capital Costs	Revenue	Annual Operating Subsidy for New Service	Implementation Date
5	5	-0-	$210,000	$68,850	$11,965	January 1976

Tireman Express

The Tireman Express will enter the Jeffries Freeway at the W. Grand Blvd. "on" ramp. From this point it will follow the same route as the Livernois Express.

The reverse routing of all these bus lines would also follow the same streets as used for the inbound direction wherever possible. Express service on Tireman is projected to add 190 daily inbound area residents to transit ridership.

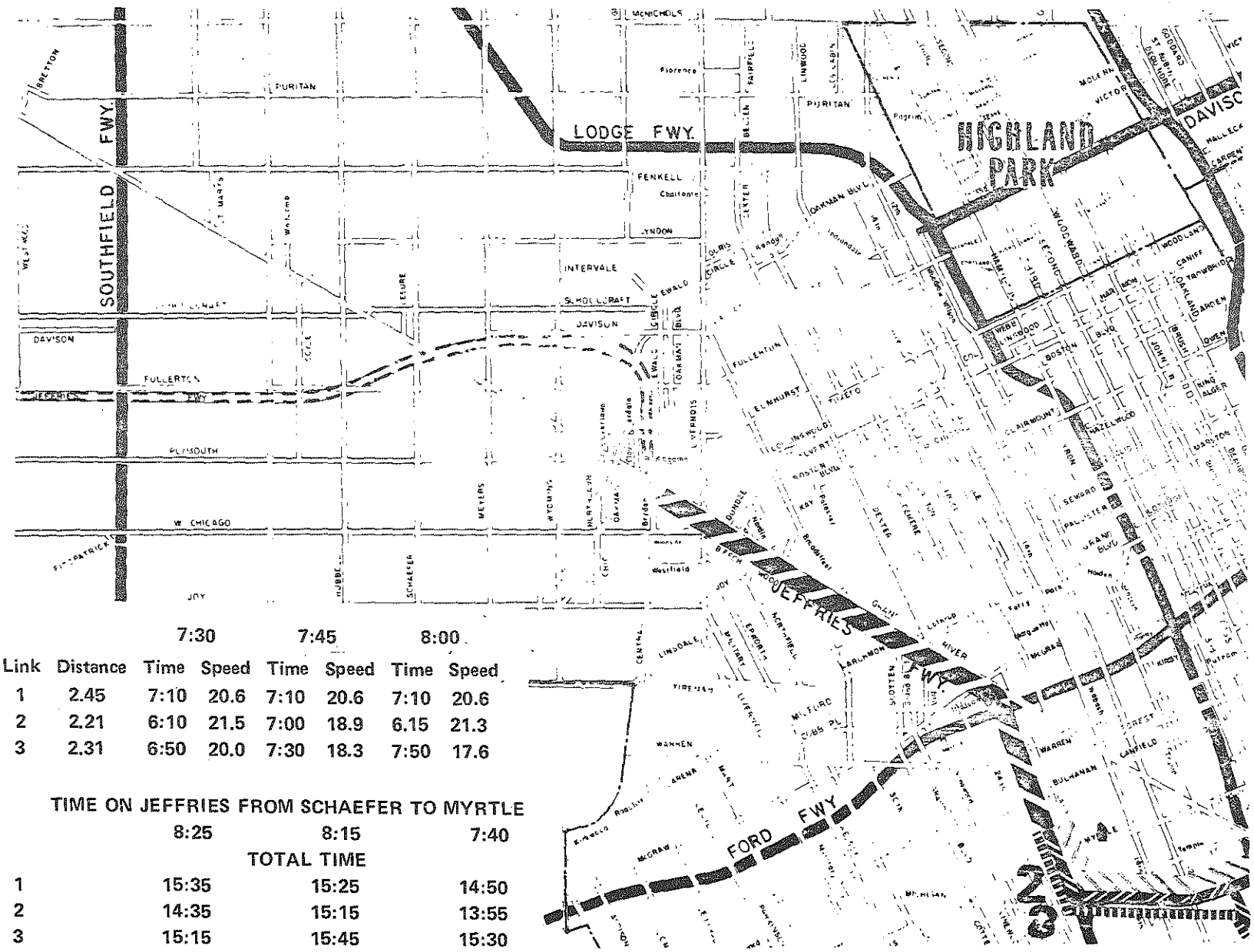
No. of buses Using RBL AM	PM	No. of new buses required to maintain recommended headways	Capital Costs	Revenue	Annual Operating Subsidy for New Service	Implementation Date
5	5	-0-	$ --	$ 43,605	$43,926	January 1976

Southfield Express

The Southfield Express will operate along Southfield from 8 Mile Road to Grand River, picking up and discharging passengers along both arterials. Coaches will enter the Jeffries Freeway east of Schaefer and use the exclusive bus lane to the greatest extent possible, prior to following the routing of the Grand River "Red" into the CBD.

The estimate of potential ridership calculated for the Southfield segment of the route is 196 daily inbound passengers.

LIVERNOIS–TIREMAN EXPRESS ROUTE ALTERNATIVE



Link	Distance	7:30 Time	7:30 Speed	7:45 Time	7:45 Speed	8:00 Time	8:00 Speed
1	2.45	7:10	20.6	7:10	20.6	7:10	20.6
2	2.21	6:10	21.5	7:00	18.9	6.15	21.3
3	2.31	6:50	20.0	7:30	18.3	7:50	17.6

TIME ON JEFFRIES FROM SCHAEFER TO MYRTLE

	8:25	8:15	7:40
	TOTAL TIME		
1	15:35	15:25	14:50
2	14:35	15:15	13:55
3	15:15	15:45	15:30

1" = 1 MILE

MAP VI–C-1

No. of buses Using RBL AM	PM	No. of new buses required to maintain recommended headways	Capital Costs	Revenue	Annual Operating Subsidy for New Service	Implementation Date
5	5	4	$ 280,000	$44,982	$36,833	Jan. 1976

D. EXPRESS ROUTES - OAKLAND COUNTY

In addition to the routes to be operated by D-DOT, SEMTA reviewed several new express bus routes to serve Oakland County residents (see Map V-B-2).

Schaefer

Originates at Schaefer and 10-Mile Road and follows Schaefer to Grand River, to the Jeffries Freeway, thence exiting at the Michigan/Myrtle exit the Jeffrie route would then follow Michigan Avenue into the CBD. The approximate time for a run has been estimated at 31 minutes.* Estimate of ridership potential for the route is 272 riders.

No. of buses Using RBL AM	PM	No. of new buses required to maintain recommended headways	Capital Cost	Revenue	Annual Operating Subsidy for New Service	Implementation Date
5	5	3	$210,100	$84,226	--	January 1976

Greenfield (17.5 miles)

Originate at 12 Mile and Greenfield, via Greenfield to Grand River; Grand River to Jeffries, to Michigan-Myrtle exit; Michigan to Cadillac Square terminal area. The route was estimated to generate 90 riders, while the portion in Detroit if utilized, will add 169 riders. Revenue is computed at an average fare of 85 cents. The running time for this route was estimated at 39 minutes.*

No. of buses Using RBL AM	PM	No. of new buses required to maintain recommended headways	Capital Costs*	Revenue	Annual Operating Subsidy for New Service	Implementation Date
6	6	5	$350,000	$105,672	$34,891	Sept. 1975

*Speed runs conducted November 22, 1974

Evergreen (20 Miles)

Originate St. Ives Church at 12 Mile and Lasher to Evergreen to Grand River; Grand River to Schaefer; via Jeffries to Michigan-Myrtle exit; Michigan to Cadillac Square terminal area. The approximate running time for this route was estimated at 44 minutes.* The suburban portion of this route is estimated to generate 55 riders; while the segment in Detroit, if utilized, will add an additional 100 riders. Revenue is computed at using average fare of 90 cents.

No. of buses Using RBL AM	PM	No. of new buses required to maintain recommended headways	Capital Cost	Revenue	Annual Operating Subsidy for New Service	Implementation Date
6	6	5	$350,000	$71,145	$72,953	Sept. 1975

Telegraph (26 miles)

Originate at Orchard Mall, then via Maple to Telegraph, to Grand River, Grand River to Schaefer, then via Jeffries to Michigan-Myrtle exit; Michigan to Cadillac Square terminal.

The ridership for the suburban portion of this route is estimated to be 155 passengers. Revenue is computed using an average fare of 95 cents.

No. of buses Using RBL AM	PM	No. of new buses required to maintain recommended headways	Capital Costs	Revenue	Annual Operating Subsidy for New Service	Implementation Date
6	6	6	$420,000	$75,097	$104,356	Sept. 1975

E. EXPRESS ROUTE EXTENSION - WAYNE COUNTY

In addition to the proposed new routes in Detroit and southern Oakland County, market estimates indicate that extensions are justified for four routes into Western Wayne County. These extensions are predicated on express service originating from park and ride sites with a minimum of 15 minute headways.

1. Grand River

The proposed terminus is in Oakland County, though most of the route is in Wayne County. It is proposed to extend the route from its current terminus at Grand River and Farmington Road to Grand River and Halsted Road. Approximate running time for express service would be 46 minutes to Detroit's CBD. Ridership potential for this route segment area is estimated at 236 one-way riders. Adequate park and ride facilities accessible to I-96 and I-696 might generate further ridership from Livingston County and Western Oakland County commuters.

2. Second

Extend the route beyond its current terminus at Middlebelt Road, to Seven Mile and Novi Road in Northville. The proposed route would be Seven Mile to Newberg Road; south on Newberg to McNichols, east on McNichols to Grand River, to the Jeffries, via Jeffries to the Michigan/Myrtle exit, and then Michigan Avenue to Detroit's CBD. Approximate running time would be 50 minutes. Ridership for the route extension is estimated at 90 riders, though the park and ride facilities might generate additional riders from beyond the study area.

3. Fenkell

Extend route beyond its current terminus at Farmington Road to Haggerty Road. Proposed route originates at Five Mile Road and Haggerty and follows Five Mile to Grand River; southeast on Grand River to the Jeffries; exiting at the Michigan/Myrtle exit; and to the CBD as above. Approximate express running time was estimated at 43 minutes. A total of 114 new inbound riders were estimated to be generated by this extension.

4. Plymouth

Retain current terminus, but maintain 15 minute headways. Run originates at Sheldon Road and Ann Arbor Trail and follows Ann Arbor Trail to Plymouth; Plymouth to Grand River and then via the Jeffries; exiting at the Michigan/Myrtle exit, as above. Approximate running time is 57 minutes. The suburban portion of this route is estimated to generate 92 additional riders.

F. SERVICE SUMMARY

On the basis of data derived from analysis of potential and existing transit service areas, plus projected ridership estimates for new and modified routes it is recommended that eleven routes utilize the reserved lane. As discussed above, SEMTA will operate three of the routes originating in Oakland County and terminating in the CBD: Evergreen, Telegraph, and Greenfield. Further discussion with officials of D-DOT and the City of Detroit will be held to determine the feasibility of SEMTA buses handling limited passenger loadings for these routes within Detroit.

TABLE VI-F-1

D-DOT JEFFRIES SERVICE RECOMMENDATION (PHASE ONE)

Line	No. of buses Using RBL AM	PM	No. of new buses required to maintain recommended headways	Capital Costs	Revenue	Annual Operating Subsidy for New Service
Grand River	23	20	--	$ ---	$ ---	$ ---
Imperial	25	24	--	---	---	---
Joy Road	15	12	--	---	---	---
Tireman	5	5	0	---	43,605	43,926
Livernois	5	5	3	210,000	68,850	11,965
Schaefer	5	5	3	210,000	84,226	12,863(+)
Southfield	5	5	4	280,000	44,982	36,833
Schoolcraft	5	5	4	280,000	23,409	61,186
D-DOT TOTAL	88	81	14	$980,000	$275,072	$141,047

(+) Profit

TABLE VI-F-2

SEMTA JEFFRIES SERVICE RECOMMENDATION (PHASE ONE)

Line	No. of buses Using RBL AM	PM	No. of new buses required to maintain recommended headways	Capital Costs *	Revenue	Annual Operating Subsidy for New Service
Greenfield	6	6	5	$ 350,000	$105,672	$ 34,891
Evergreen	6	6	5	350,000	71,145	72,953
Telegraph	6	6	6	420,000	75,097	104,356
SEMTA TOTAL	18	18	16	$1,120,000	$251,914	$212,200

*Capital acquisition assumes a 1976 cost of $70,000 per bus.

TABLE VI-F-3

JEFFRIES EXCLUSIVE BUS LANE INFORMATION
OPENED WEST TO SCHAEFER
INBOUND

Bus Line Number Of Busses Between 6:45-9:10 am	Entrance Ramp	Enters Freeway	Enters Bus Lane	Leaves Bus Lane	Exit Ramp**	Leaves Freeway At Station**	Distance of Bus Lane Miles	Distance Changing Lanes Miles
Imperial 25	Wyoming	2500' E. of Wyoming	482 2500' E. of Wyoming	4000' West of Warren	Ford Fwy. Warren	200' W. of	3.10	.45
Grand River 23	Grand River	1200' E. of Grand River	398 2500' E. of Wyoming	4000' W. of W. Gr. Blvd.	W. Gr. Blvd.	1700' W. of W. Gr. Blvd.	2.00	.45
Joy 15	Joy	1000' E. of Joy	589' 3400' E. of Joy	Gr. River R.R. Crossing	Fisher*	600' South of Myrtle	2.10	.45
Livernois 5	Livernois	1200' E. of Livernois	567 3600 E. of Livernois	Gr. River R.R. Crossing	Fisher	600' South of Myrtle	2.55	.45
Schoolcraft 5	Wyoming	2500' E. of Wyoming	2500' E. of Wyoming	Gr. River R.R. Crossing	Fisher	600' South of Myrtle	4.35	0
W. Chicago 3	Livernois	1200' E. of Livernois	567 3600' E. of Livernois	Gr. River R.R. Crossing	Fisher	600' South of Myrtle	2.55	.45

TABLE VI-F-3

Between 6:45-9:10am	Entrance Ramp	Freeway	Enters Bus Lane	Leaves Bus Lane At Station	Exit Ramp**	Leaves Freeway At Station**	Distance of Bus Lane Miles	Distance Changing Lanes Miles
Tireman 5	Tireman Blvd.	900' E of Blvd.	4100' E. of Blvd.	Grand Trunk RR Crossing	Fisher	600' S. of Myrtle	.75	.60
Evergreen 6	Grand River	1200' E of Grand River	2500' E. of Wyoming	Grand Trunk RR Crossing	Michigan Myrtle	600' S. of Buchanan	4.35	.45
Southfield 5	Grand River	1200' E of Grand River	2500' E. of Wyoming	Grand Trunk RR Crossing	Fisher	600' S. of Myrtle	4.35	.45
Greenfield 6	Grand River	1200' E of Grand River	2500' E. of Wyoming	Grand Trunk RR Crossing	Michigan Myrtle	600' S. of Buchanan	4.35	.45
Schaefer 3	Grand River	1200' E of Grand River	2500' E. of Wyoming	Grand Trunk RR Crossing	Fisher	600' S. of Myrtle	4.35	.45
Telegraph 6	Grand River	1200' E. of Grand River	2500' E. of Wyoming	Grand Trunk RR Crossing	Michigan Myrtle	600' S. of Buchanan	4.35	.45

* Using Merge Distance of 800 feet per lane.

** Exclusive Bus Lane Ends at Grand Trunk R.R. Crossing 300' N of Buchanan.

Implementation of routes recommended for the first section of the Jeffries reserved lane project will be staged to reflect the availability of equipment and the need to provide service to areas currently without service. The eleven routes will be implemented in three phases:

(1) Routes not requiring new equipment will receive priority in the implementation program. These are Grand River, Imperial, Joy Road and Tireman.

(2) Routes in new service areas are second priority and will be implemented as equipment is made available under FY 76 Capital Grants.

(3) Routes in existing service areas requiring new equipment will be implemented last, or possibly will be implemented with existing equipment and reduced headways.

All routes will utilize the reserved lane to the maximum extent possible except in those instances where use of the lane is determined to existing riders, or causes delays greater than those currently experienced in surface routes.

This report recommends that physical improvements to the I-75, I-96 interchange as detailed in Chapter VIII of this report be implemented to allow for routing of the reserved lane directly into the CBD.

The staged implementation program would be:

	Line	Possible Date of Implementation
I	Grand River	September 1, 1975
	Imperial	September 1, 1975
	Joy Road	September 1, 1975
	Tireman	September 1, 1975
	Schoolcraft	September 1, 1975
II	Telegraph	September 1, 1975
	Evergreen	September 1, 1975
	Greenfield	September 1, 1975
III	Livernois	January 1, 1976
	Schaefer	January 1, 1976
	Southfield	January 1, 1976

The Michigan Department of State Highways and Transportation estimates that the next section of I-96 to be opened to the public will be that portion from Schaefer, the current terminus, west to the Southfield Freeway (M-39). Completion date is projected to be September, 1976. At that time a number of routes (Greenfield, Southfield, Evergreen and Telegraph) would be rerouted to take advantage of the larger segment of the reserved lane. Similarily, routes into Western Wayne County (Fenkell, Second, and Plymouth), and the

extension of Grand River to Halsted Road would also be implemented at that time. In addition, routes on arteries perpendicular to the Jeffries will be reviewed as to their potential to serve CBD commuters via the reserved bus lane.

The entire length of I-96, to I-275, is scheduled for completion by the Fall of 1977. An extension of the reserved lane restriction beyond the Southfield Freeway will depend both on the degree of traffic congestion on the Jeffries and commuter response to the new bus service, as well as to car pool use of the existing reserved lane.

G. DETROIT CBD TRANSIT SERVICE

The utilization of the exclusive bus/car pool lane on the Jeffries Freeway has considered the rerouting and extension of several existing and new bus lines to use this facility. The initial phase of the exclusive lane will use only that portion of the Jeffries Freeway that is open from the Detroit Central Business District to Schaefer Road, where the Jeffries Freeway now intersects Grand River Avenue. As a result of this limited length of freeway, the effective use of the Jeffries Freeway as an exclusive bus/car-pool lane facility appears to be somewhat minimized. (See Table VI-F-2). Also, there are only a limited number of entrance points at which buses may enter the Jeffries Freeway.

The Detroit Department of Transportation reviewed its bus lines that potentially could use the Jeffries Freeway. These lines and the number of coaches that could operate during the morning and afternoon peak periods, as well as during the base periods are tabulated in Table VI-G-1.

TABLE VI-G-1
NUMBER OF COACHES AND DESTINATON FOR JEFFRIES ROUTED LINES

Express Line	A.M. 6:45-9:10	Base	P.M. 4:10-6:20	Central Business District Destination
Grand River	23	-	15	Jefferson & St. Antoine (Established)
7 Mile Imperial	25	12	24	Larned & Randolph (Established)
Joy Road	15	-	12	Cadillac Square (Established)
Evergreen	6	-	5	Renaissance Center
Schaefer	5	-	5	"
Greenfield	6	-	5	"
Telegraph	6	-	6	Renaissance Center
Southfield	5	-	5	"
Tireman	5	-	5	Blue Cross
Livernois	5	-	5	"

The proposed routing of buses through the CBD depended upon whether the bus service was new or already existing (see Map VI-G-1).

Three existing express bus lines (Grand River "Red" Express, Seven Mile Imperial, and Joy Road Express) will use portions of the Jeffries bus lane. In each case, buses to operate over each line will make its first CBD stop as at present. This was necessary to provide continuity in transit patterns for existing patronage. The existing stops serve many passengers, and to change them could reduce current patronage levels. At the same time it was also recognized that some other portions of the CBD are not adequately serviced by express bus operations. Thus, the new bus lines will provide service beyond established travel corridors which presently connect the northwest part of Detroit and the CBD.

The proposed CBD routing of the Livernois and Tireman lines, (as well as re-routed bus service) is shown on Map VI-G-1. The new bus line will proceed from Fort and Third, eastward on Fort to Cadillac Square, then via Randolph, Larned, and the Northbound Chrysler Freeway service drive. The line will continue north to Lafayette, then to the southbound Chrysler service drive and the Blue Cross Building. The afternoon layover point for the return outbound trip will be on the southbound service road next to the Blue Cross Building. The reverse direction flow will be: Chrysler southbound service drive to Congress, to Randolph, to Cadillac Square and then to Fort Street. The bus will then follow Fort to Second, proceed north on Third, crossing Michigan to Bagley, where they will then return to Second and continue northward to the westbound Fisher service drive. At this point the afternoon peak hour express buses will enter the westbound Fisher Freeway and proceed onto the Jeffries Freeway.

The Southfield and Schaefer routes will follow the Grand River "Red" Express routing and layover points, as these essentially correspond to the Grand River "Red" CBD routing.

The Plymouth and Fenkell routes will retain their current CBD routing and layover points, as these essentially correspond to the Grand River "Red" CBD routing.

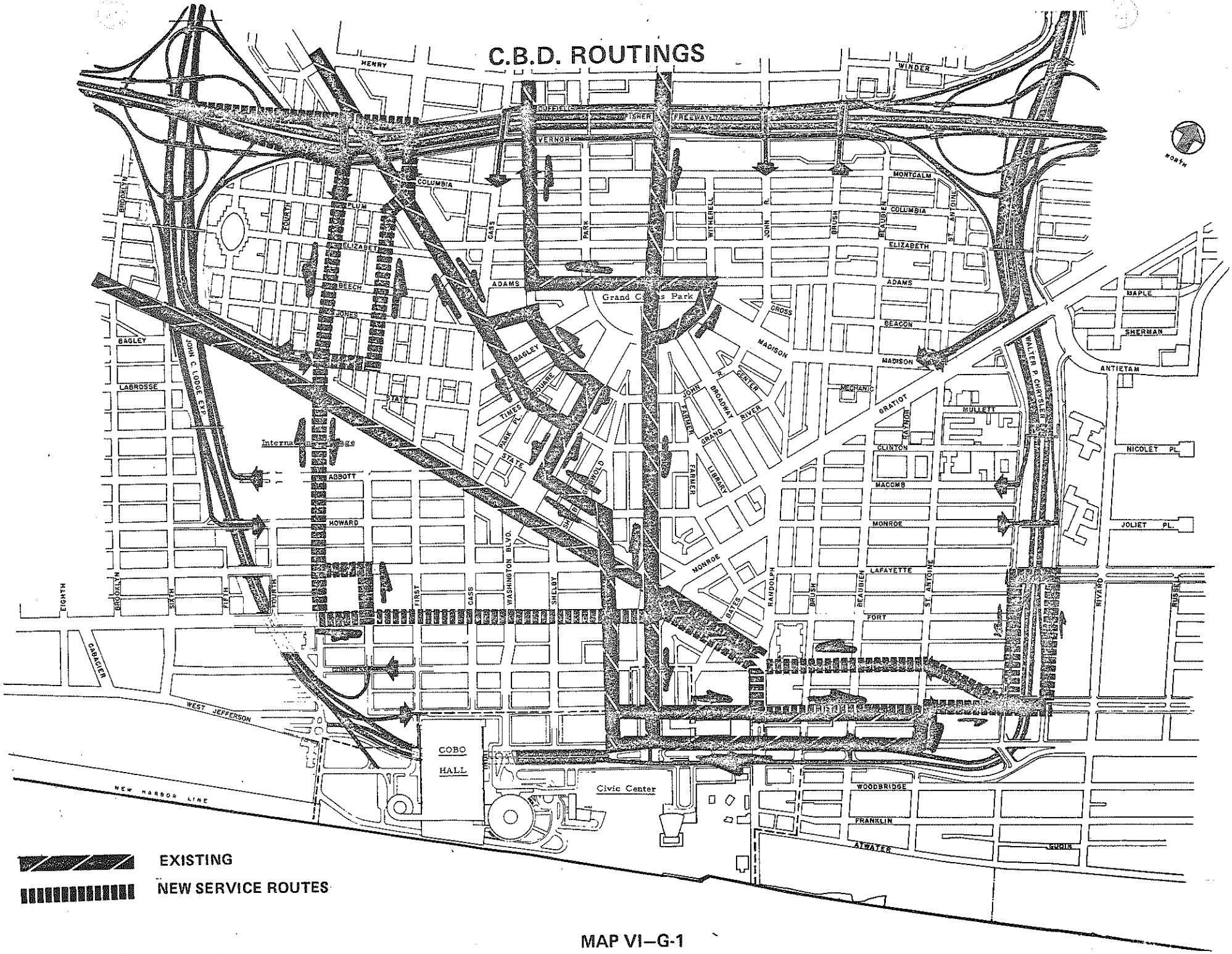
The Evergreen, Greenfield, and Telegraph routes are planned to exit at Michigan-Myrtle, and travel via Michigan to Griswold, then south to Fort Street. Layover points have not yet been determined, but coaches are expected to cross Woodward Avenue. PM returns will be the reverse of the AM route.

The CBD corridors selected for Jeffries oriented service provide maximum accessibility to downtown employment centers. (See Map VI-G-2)

An analysis of TALUS 1968-1990 CBD employment yielded information concerning distribution of Detroit's projected 1978 CBD population of 125,000*, which was used to plan for optimal bus routing.

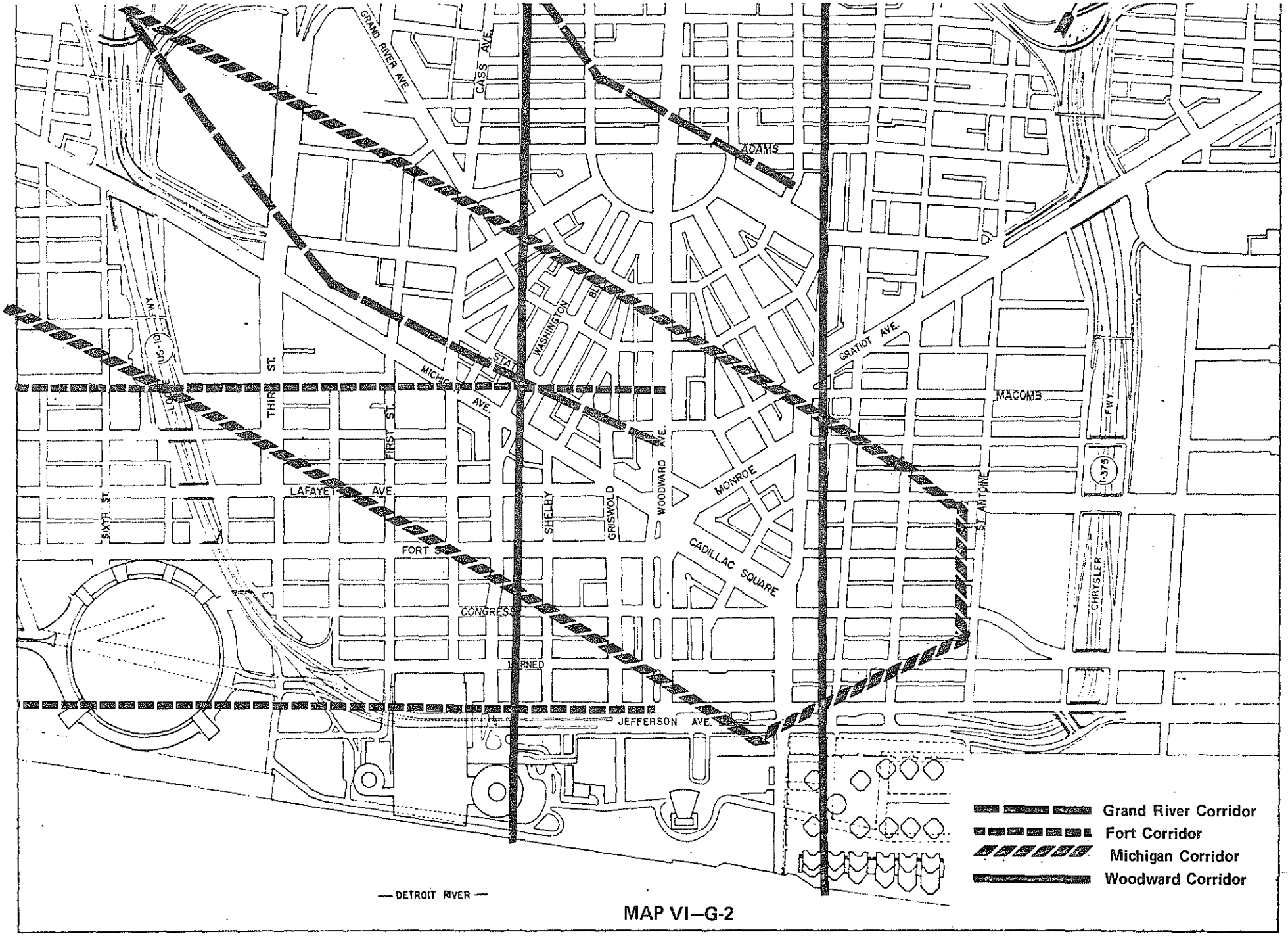
The route currently utilized by the Grand River Express (Grand River to Cass, to State, to Griswold, to Larned, to Beaubien, to Jefferson), offers

*For the purposes of this analysis the projected 1978 Renaissance Center employment level of approximately 10,000 persons was not included.


C.B.D. ROUTINGS
HENRY
WINDER
CHRYSLER FREEWAY
VERNOR
NORTH
COLUMBIA
MONTCALM
BROOKLYN
PLUM
GRATIOT
PARK
WITHERELL
JOHN R.
BRUSH
BEAUBIEN
ST. ANTOINE
ELIZABETH
ADAMS
BEECH
JONES
Grand Circus Park
GROSS
BEACON
MAPLE
SHERMAN
BAGLEY
JOHN C. LODGE EXP.
MADISON
WALTER P. CHRYSLER EXP.
ANTIETAM
LABROSSE
STATE
TIMES SQUARE PL.
COURT
JOHN R.
BROADWAY
CENTER
MECHANIC
RIVER
GRATIOT
MULLETT
International Passage
FARMER
GRAND
RAYNOR
CLINTON
NICOLET PL.
ABBOTT
LIBRARY
MACOMB
HOWARD
MONROE
JOLIET PL.
EIGHTH
SIXTH
FIFTH
FOURTH
FIRST
CASS
WASHINGTON BLVD.
SHELBY
RANDOLPH
BATES
BRUSH
BEAUBIEN
ST. ANTONE
LAFAYETTE
RIVARD
RUSSEL
FORT
CABACIER
CONGRESS
WEST JEFFERSON
COBO HALL
Civic Center
NEW HARBOR LINE
WOODBRIDGE
FRANKLIN
ATWATER
EXISTING
NEW SERVICE ROUTES

MAP VI–G-1

EMPLOYMENT ACCESSIBILITY BY ROUTE



MAP VI–G-2

the highest degree of accessibility for CBD employees. The only area of employee concentration in the CBD more than 800 feet from this route is the northeast section near Gratiot and I-75 (Detroit General Hospital and Recorder's Court Building). Approximately 100,000 employees have access to this route, which currently terminates at Jefferson, across from the Renaissance Center developments.

Other D-DOT routes utilizing the Grand River Corridor offer similarly high accessability for employees. The Plymouth Express, via Grand River, is within the 800 foot range of 89,000 commuters. The fact that this route does not cross Woodward Avenue, but rather circles the Michigan Gas Company, at Griswold and Jefferson, accounts for the lower accessibility.

Routes utilizing Michigan Avenue and terminating at the Cadillac Square Building are accessible to 81,000 employees. This route is less accessible than the Grand River Corridor for commuters to the Grand Circus Park area and to the Blue Cross-Blue Shield building. This routing could be improved by having Michigan coaches turn south on either Griswold, Woodward, or Brush, and operates east via Larned to Beaubien.

Coaches bisecting the CBD via Woodward are accessible to only 87,700 commuters. Employees of the Edison Company, I.R. S. and the soon to be completed McNamara Federal Office Building are beyond the 800 foot circle. The Hamilton, Fenkell, Second (local) and the Imperial Express routes enter the CBD via Woodward. The Second Express operates on I-75 to Lafayette. The segment from Lafayette to Cadillac Square offers the least accessibility (15,709).

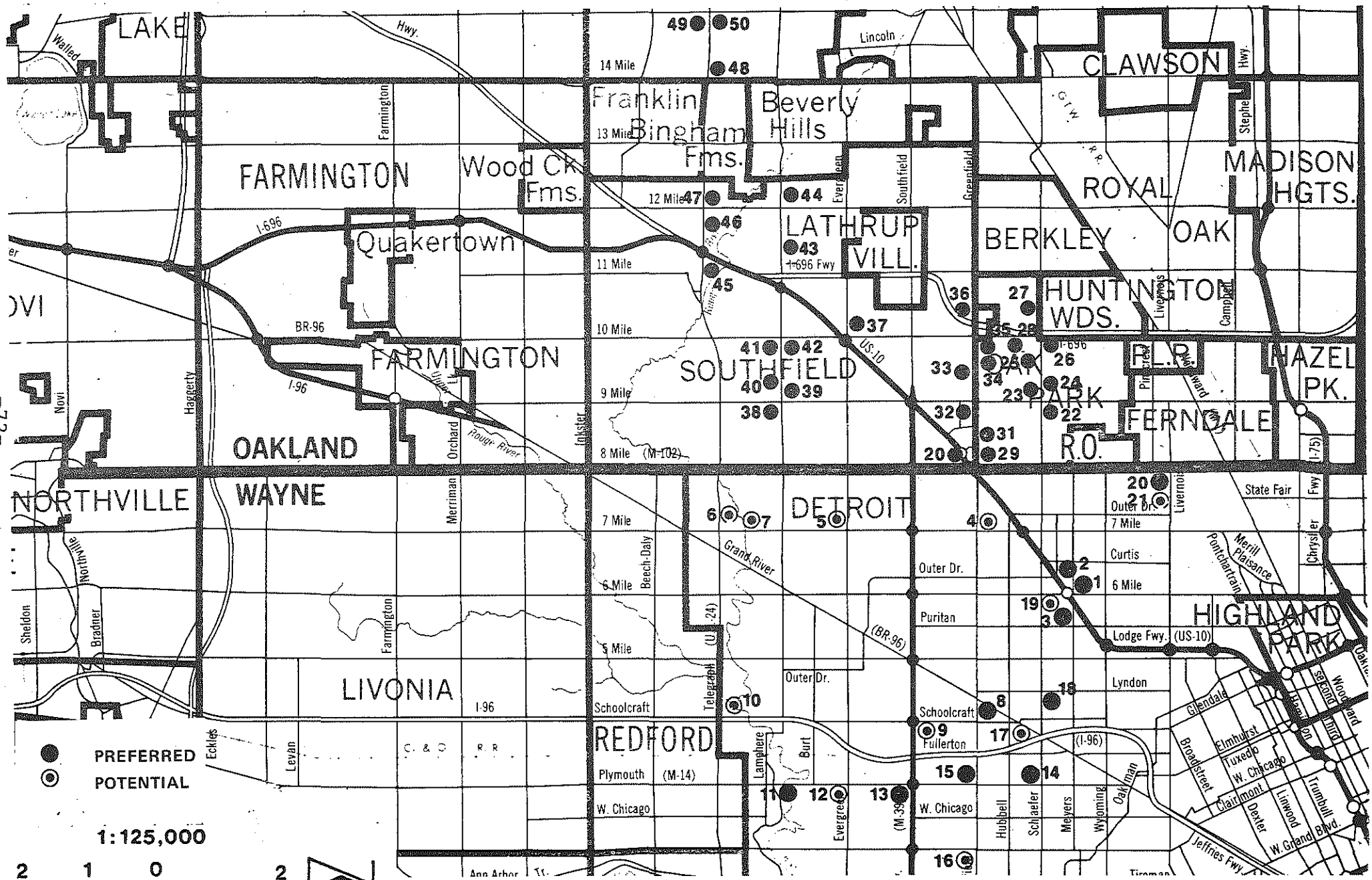
The other route variation is utilized by Joy coaches; Lafayette, to Cass, to Fort to Cadillac Square, serving 79,500 persons. Of course, the 800 foot distance has been arbitrarily selected, as an indicator of excellent access distance. Were the "normal" yardstick of 1,500 feet to be used, virtually 100 percent of CBD employment would be within walking distance of each route. To stay within the 800 foot radious boundary however, buses are planned to be routed via Grand River and Michigan wherever possible.

The possibility of exclusive or reserved bus lanes in the Central Business District was also reviewed. Several streets that are now being used by bus routes planned for Jeffries service were investigated for their possible use as reserved lanes for exclusive bus operation, including Woodward Avenue, Michigan and Fort. After the review, it was determined that the benefits derived from an exclusive bus lane on surface streets in downtown Detroit would not be practicle or worthwhile. With present traffic volumes, traffic movement on these CBD streets now moves well. The use of an exclusive bus lane would unnecessarily restrict traffic operation and would not significantly improve transit movement service in the CBD, including

express buses, serve all coach stops. For these reasons no exclusive bus lanes are recommended for the Central Business District.

As mentioned above, all service entering the CBD from the Jeffries bus lane will use established bus stops. Some additional signing will be necessary to indicate the discharge and pick-up locations for the new express bus service. This work should commence prior to initiating the new service.

POTENTIAL PARK AND RIDE SITES



MAP VII–B-1

SEMTA

VII - PARK AND RIDE

A. EXISTING CONDITIONS

The region's main railroad commuter service provides the best example of traditional park and ride service. Approximately 750 spaces are provided at eight Grand Trunk Western railroad stations in Oakland County, with expansion slated for the near future.

Until recently there was only one park and ride site in Southeast Michigan specifically associated with bus service. A parking lot, on the western boundary of Detroit's CBD, includes a pass permitting use of a shuttle bus loop through the downtown area in the monthly rental fee.

With no other formal park and ride lots available, some commuters have resorted to parking on streets (where allowable), near bus stops, or in some cases, using parking areas adjacent to regional shopping centers. In the latter case, uniformed security guards either prohibit parking on the lots, or direct the bus riders to park their vehicles at the fringe of the parking area.

During 1973 and 1974, SEMTA inaugurated a series of premium fare express bus services, known as "DASH" runs, connecting residential districts with major employment centers, not all in Detroit's CBD. A key element of the 12 DASH services currently in operation has been the provision of free parking spaces for riders at church, school, and shopping center lots.

B. SITE ALTERNATIVES

A list of probable park and ride sites was compiled for possible use within the Jeffries service area, as follows:

(1) Sites were reviewed using Sanborn maps, with field surveys made afterwards. Review of the potential for park and ride sites within Detroit was confined to the Grand River/Jeffries Corridor. (See Map VII-B-1)

(2) The selection of park and ride lots included consideration of several factors:

a. proximity to bus lines which will use the Jeffries freeway.

b. availability of parking spaces during the daytime hours.

c. convenience of lots, and access and exit characteristics.

d. security of vehicle and lot user.

The availability of the park and ride lots was not determined. Property owners will be contacted during the initial phase of implementation of the Jeffries reserved lane.

Table VII-B-1 lists possible park and ride locations within Detroit.

(3) Oakland County potential park and ride sites were reviewed along five major arterials, as shown in Table VII-B-2.

(4) Potential park and ride locations have been plotted on Map VII-B-1. A review of the sites indicates that there are more locations shown than would be necessary. Therefore, the most preferred lots of this group were identified in accordance to their adaptability to transit use, and geographic location. In the event that these lots are not available, other alternative lots from the list would be selected.

C. COST

In both the Detroit and suburban areas, no recommendations for specific park and ride sites have been set forth, as mentioned above. It is anticipated that during the implementation process contacts with lot owners will be made. Thus, no operating or rental costs have been calculated for use of privately owned lots for Jeffries parking spaces. Current SEMTA policy is to solicit use of lots on a rent free basis and assist in defraying the cost of maintenance and snow clearance of that portion of the lot used by transit patrons.

Not previously discussed has been the concept of land purchase, either by SEMTA or the Highway Department. This option will be explored during the implementation stage of the project, thus making specific costing calculations difficult to develop at this time. If negotiations fail to develop free use of existing lots for park and ride service, SEMTA and MDSH&T will have to consider purchase of land for park and ride lots.

TABLE VII-B-1

POTENTIAL DETROIT PARK AND RIDE LOCATIONS

Location		Owner	Number Spaces	Lighting	Number Spaces Available (Est)
1.	6 Mile-Lodge	Detroit Bank & Trust	50	No	10
2.	Outer Drive-Lodge	Church	80	No	50
3.	Puritan-Lodge	Top Hat	35	Yes	20
4.	Greenfield-N of 7 Mile	Seven-Green Shopping Center	300	Yes	200
5.	Evergreen-7 Mile	Seven-Evergreen	600	Yes	200
6.	Grand River-N of 7 Mile	Shopping Center			
7.	7 Mile-W of Berg	---	100	No	100
8.	Grand River-Greenfield	Federal's	200	Yes	30
9.	Schoolcraft-Memorial	Methodist Church	150	No	100
10.	Schoolcraft-Telegraph	Shopping Center		Yes	40
11.	Plymouth-Burt	Bretton Pool-Rouge Park		No	100
12.	Plymouth-Evergreen	Plymouth-Evergreen Shopping Center	1000	No	700
13.	Plymouth-Southfield	K-Mart	1000	Yes	20-100
14.	Plymouth-Schaefer	American Motors		No	100
15.	Chicago-Greenfield	Shopping Center		No	30
16.	Joy-Greenfield	Shopping Center	800	Yes	100
17.	Schaefer-S of Grand River	---		No	100
18.	Schaefer-Lyndon	---		No	100
19.	Schaefer-6 Mile	Shopping Center		Yes	300
20.	Livernois-8 Mile	---		Yes	200
21.	Livernois-7 Mile	Municipal Parking Authority		Yes	200

TABLE VII-B-2

POTENTIAL PARK AND RIDE SITES BY ROUTE (OAKLAND COUNTY)

Location	Parking Spaces (EST)	Lighting	Owner
Coolidge/Schaefer			
22. Nine Mile/Coolidge (South)	400	Yes	Oak Park Center
23. Nine Mile/Coolidge (North)	180	Yes	Oak Park Plaza (rear)
24. McClain/Coolidge	325	Yes	Oak Park Lanes & Frank's Nursery
25. Allan/Coolidge	80	Yes	Young Israel
26. Ten Mile/Coolidge	200	Yes	Dexter-Davison Plaza
27. Harvard/Coolidge	225	No	Our Lady of LaSalette Hall, School & Church
28. Oak Park Blvd./1/2 Mile West of Coolidge (currently being used by DASH)	165	Yes	Oak Park Community Ctr.
Greenfield			
29. Eight Mile/Greenfield	1,500	Yes	Green-8 Shopping Ctr.
30. Eight Mile/Greenfield	10,000	Yes	Northland
31. James Street/Greenfield	250	Yes	Kodak Building
32. Providence Dr./Greenfield	800	Yes	Americana Theatre
33. Lincoln Dr./Greenfield	700	Yes	Lincoln Center
34. Oxford/Greenfield	35	No	Greenfield Presbyterian Church
35. Oxford/Greenfield	50	No	Greenfield Church of Christ
36. Nine Mile/Greenfield		No	Vacant Property

TABLE VII-B-2

POTENTIAL PARK AND RIDE SITES BY ROUTE (OAKLAND COUNTY

Location	Parking Spaces (EST)	Lighting	Owner
Evergreen			
37. Civic Center Dr. (10-1/2 Mile)/Evergreen	600	Yes	Southfield Civic Ctr.
Lasher			
38. Nine Mile/Lasher	200	Yes	Plum Hollow Lanes
39. North of Nine Mile/Lasher	125	Yes	Emanuel Lutheran Church
40. North of Nine Mile/Lasher	80	Yes	Apostolic Lutheran Church
41. North of Nine Mile/Lasher	100	Yes	Syrian Orthodox Church
42. Eleven Mile/Lasher	160	Yes	Minnesota Fabrics/ Arnolds Drugs
43. South of Twelve Mile/ Lasher	375	Yes	Highland Park Baptist Church
44. North of Twelve Mile/ Lasher	100	Yes	St. Ives Church
Telegraph			
45. North of Ten Mile/ Telegraph	350	Yes	Tel-Ex Shopping Ctr.
46. North of Ten Mile/ Telegraph	500	Yes	Raliegh House
47. Twelve Mile/Telegraph	5000	Yes	Tel-12 Mall
48. Fourteen Mile/Telegraph	600	Yes	Temple Beth El
49. Maple/Telegraph	550	Yes	Bloomfield Plaza
50. Mpale/Telegraph	120	Yes	Franks Nursery

VIII - TRAFFIC CONTROL

A. SIGNING AND PAVEMENT MARKING

The success of the reserved bus lane is to a very large measure dependent upon traffic restrictions being self enforcing. Signing and pavement markings will be the major information source for motorists. The effectiveness of these devices will determine if this form of joint transit-car pool reserved lane use is viable.

Because of its importance, considerable effort was put into this phase of the project. The signing relies heavily on the symbol of a bus and a vehicle occupied by three persons, combined with the "GREEN LANE" theme denoting speed or the "go" characteristic of the lane. The reserved lane will be delineated from non-exclusive lanes by a six-inch, solid white line and by crystal raised pavement markers at 50 foot intervals. A normal four inch, solid yellow line will mark the median side of the lane. Placed every 750 feet in the center of the reserved lanes will be a 2½ foot by 12 foot diamond shaped symbol formed by six-inch white lines. (See Figure VIII-A-1). This symbol has been approved by the Federal Highway Administration for use on all exclusive bus lanes. Permission to experiment with these distinctive signs and markings has been received from the National Advisory Committee.

1. The Symbols

The United States is moving toward an international system of traffic control devices, which emphasizes pictures and symbolic signs rather than written messages. Therefore, it was decided that the signing for the Jeffries reserved lane should be developed with the understanding that the message be carried primarily by symbols rather than words.

At the present time, national symbols have been adopted for trucks, airplanes, and even snowmobiles, but not for public transit vehicles. Because the Jeffries reserved lane will be used by buses, a vehicle symbol was designed that would quickly and unmistakably be identified as a bus. Specifications, photographs and drawings from several bus manufacturers were studied before a bus symbol was created. The result is the symbol shown in Figure VIII-A-2. This symbol, which includes a bus operator, parallels the simplistic style of other nationally accepted vehicle symbols. It will be easily recognized, and clearly conveys the message of the lanes restricted.

The Jeffries reserved lane is not intended to be limited to bus use only. It was decided that any vehicle occupied by three or more people could travel in the reserved lane, thus encouraging the formation of car pools for home to work trips. During the peak hours, the average occupancy of an automobile in Detroit is only 1.6 persons. A significant increase in the number of vehicles occupied by three or more people will serve to reduce traffic volume and the level of congestion.

Although trucks and other vehicles such as campers, and vans also occupied by three or more people, will not be banned by ordinance from the reserved lane, the majority of vehicular traffic will be private automobiles.

Therefore, the automobile was selected as the vehicle symbol to convey the message, "a vehicle occupied by three or more people." The symbol, shown in Figure VIII-A-3, represents a typical up-to-date passenger car. Three figures are clearly shown inside the automobile.

These two symbols, the bus, and the automobile with three occupants, are used together on the sign shown in Figure VIII-A-4. This sign displayed prominently over the reserved lane will inform the Jeffries Freeway driver of exactly who is eligible to use the lane.

2. The "Green Lane" Lettering

As previously outlined, the theme "GREEN LANE" was chosen to characterize the Jeffries reserved lane. This theme will appear throughout the entire public information program. The words "GREEN LANE" will appear on freeway signs to coordinate them with the advertising campaign.

The freeway scene is already a myriad of destination, directional, and regulatory signs. Therefore, while conforming to the standards set forth in the Manual on Uniform Traffic Control Devices, the "GREEN LANE" signs should be distinct. As mentioned earlier, one reason the term "GREEN LANE" was chosen was because in traffic "GREEN" denotes "GO." The advantage of the reserved lane is that by using it one can "go faster" by avoiding the congestion in other lanes.

The best way to visually depict this message on a freeway sign is with stylized lettering. The problem is to find a type of lettering which creates the illusion of motion and yet which is highly legible at freeway speeds. After researching and testing nearly one thousand types of stylized lettering, the decision was made to use the type illustrated in Figure VIII-A-5. The fact that the lettering is Italic, gives the sense of motion desired: The use of upper and lower case letters makes the message easily readable.

3. Color

In keeping with national standards for freeway directional guidance signs, as well as conveying the "GREEN LANE" theme, the freeway signs for the Jeffries reserved lane will be primarily green and white.

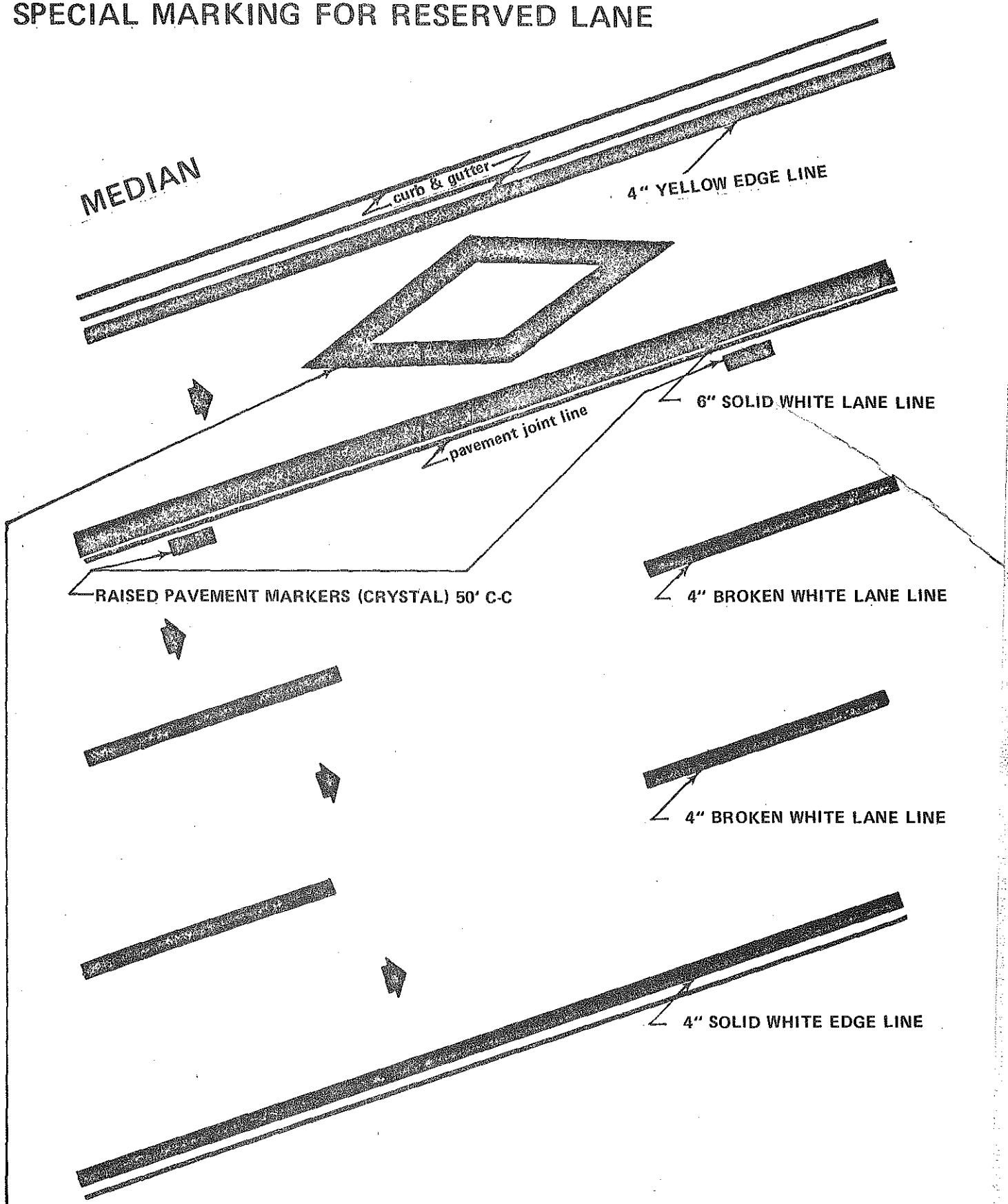
Since these signs are also regulatory signs, the word messages with the exception of "GREEN LANE" will appear in black on white in compliance with the Manual on Uniform Traffic Control Devices.

4. Word Messages

The Jeffries Freeway reserved lane project is unique. Therefore, none of the standard wordings shown in the Manual as sign legends are applicable. Because of the limited space and reading time available for a freeway sign, the challenge was to convey a rather complicated message as briefly as possible.

The initial concept was to reserve a lane for car pools as well as buses. The term "car pool" became controversial in that the lane was not restricted to car pools in the strict dictionary sense of the word. Usually, a car pool is defined as

SPECIAL MARKING FOR RESERVED LANE



12' X 2½' DIAMOND-SHAPED SYMBOL MARKING FORMED BY 6" WHITE LINES. SYMBOL SPACING APPROXIMATELY 750'

FIGURE VIII–A-1

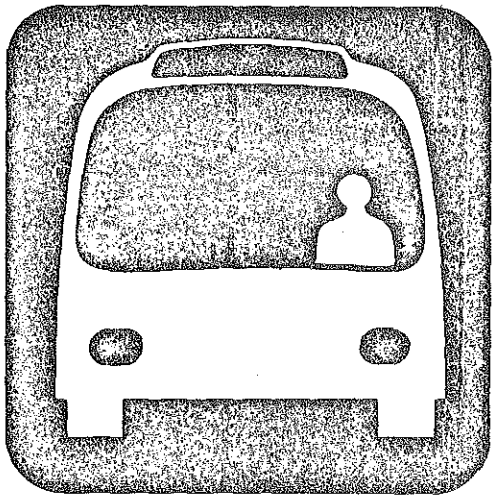


FIGURE VIII–A-2

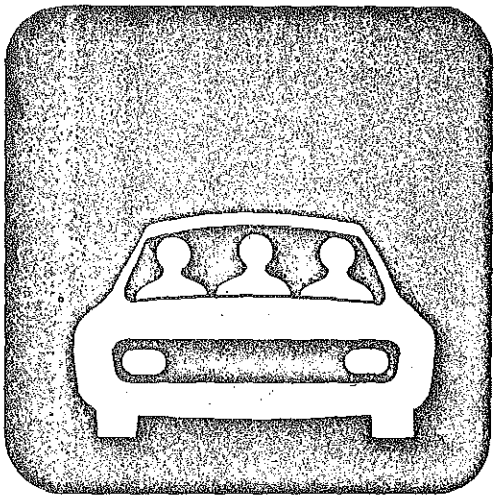


FIGURE VIII–A-3

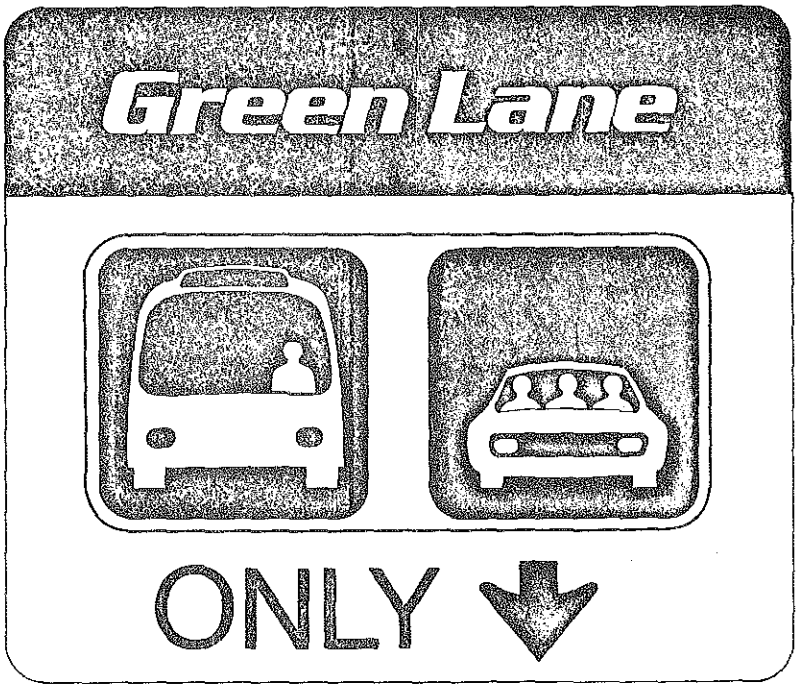


FIGURE VIII–A-4

Green Lane

FIGURE VIII–A-5

"...a joint arrangement by a group of private automobile owners in which each in turn drives his own car and carries the other passengers."

This could conceivably prevent the reserved lane from being used by those who are not in an organized "car pool." In order to avoid any confusion in this area the message will read:

VEHICLES
3 OR MORE
PEOPLE

BUSES

This makes it absolutely clear that the lane is reserved for any vehicle occupied by three or more people and for buses.

5. Specifications

Details for the Jeffries reserved lane freeway signs are shown in Figures VIII-A-6 through VIII-A-9. Included is a sign for advance warning near the beginning of the reserved lane, one to be used at intervals over the reserved lane, one to be added on light poles or bridge piers and along entrance ramps, and one to be used at the termination of the reserved alne. Map VIII-A-1 details the locations of specific signs along the Jeffries route.

The total cost of recommended pavement markings and signing of the reserved lane is estimated to be $100,000.

B. GEOMETRICS

The capacity of the reserved lanes is expected to be ample since no more than 250 vehicles during any peak hour are initially anticipated.

Capacity restraints are expected, however, at both ends of the reserved lane section where vehicles will be required to mix with other traffic. Contingency plans for geometric revisions have been prepared for implementation should other solutions prove insufficient in reducing delays to reserved lane vehicles. The possible geometric revisions are as follows:

1. West Terminus of Reserved Lane - westbound afternoon peak hour traffic is now experiencing five to ten minute delays at the temporary ending of the Jeffries (I-96) Freeway, at Grand River. This condition was reviewed by analyzing aerial video tapes taken by the Highway Department during the afternoon peak. The analysis reveal that minor signalization revisions would considerably reduce existing delays; however, if the improvement is not sufficient two additional plans have been prepared. Both plans are similar in that they will be used only until the freeway is opened further to the west, and will use currently unopened, but existing lanes to accommodate reserved lane vehicles.

SIGN TO BE ADDED AT RANDOM LOCATIONS IN MEDIAN ON LIGHT POLES OR BRIDGE PIERS. SIGN ALSO TO BE USED ALONG EACH ENTRANCE RAMP.

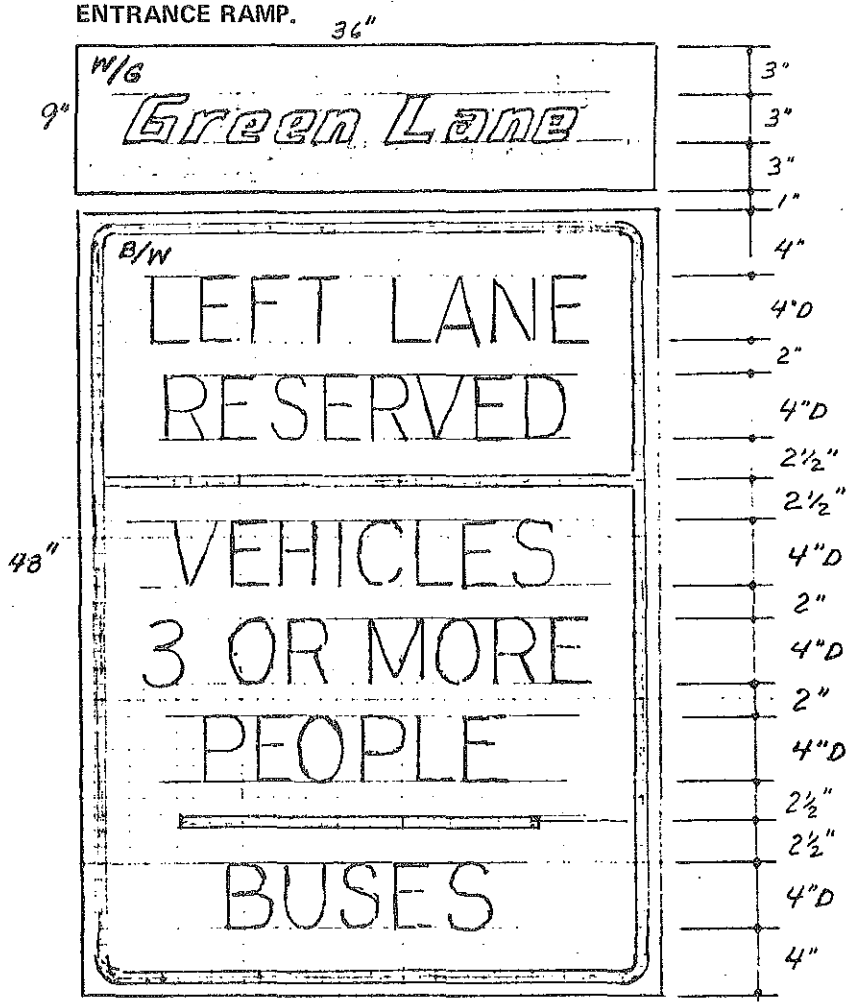


FIGURE VIII–A-6

SIGN TO BE USED AT TERMINATION OF RESERVED LANE

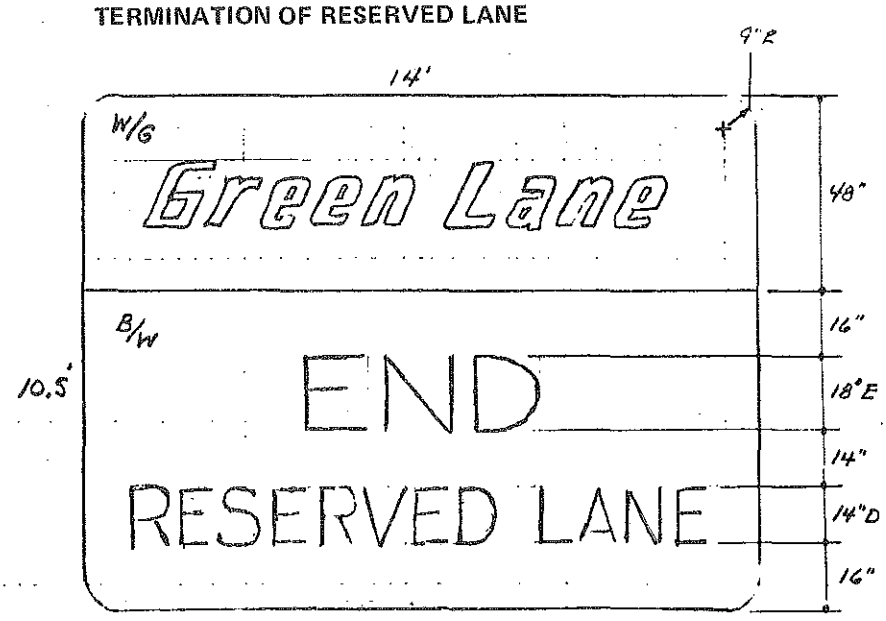


FIGURE VIII–A-7

ADVANCE SIGN FOR USE
NEAR BEGINNING OF RESERVED LANE

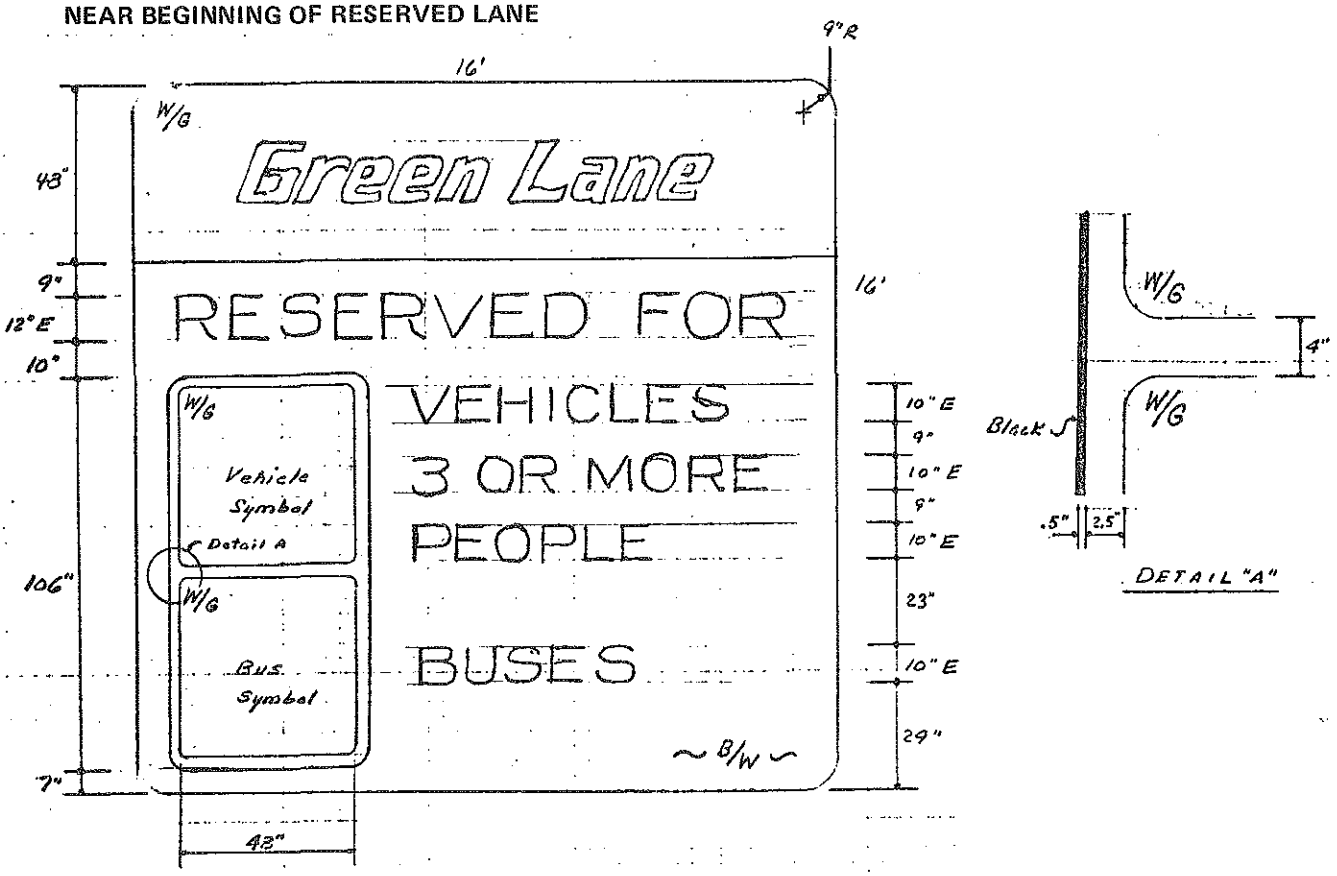


FIGURE VIII–A-8

SIGN TO BE USED AT
INTERVALS OVER RESERVED LANE

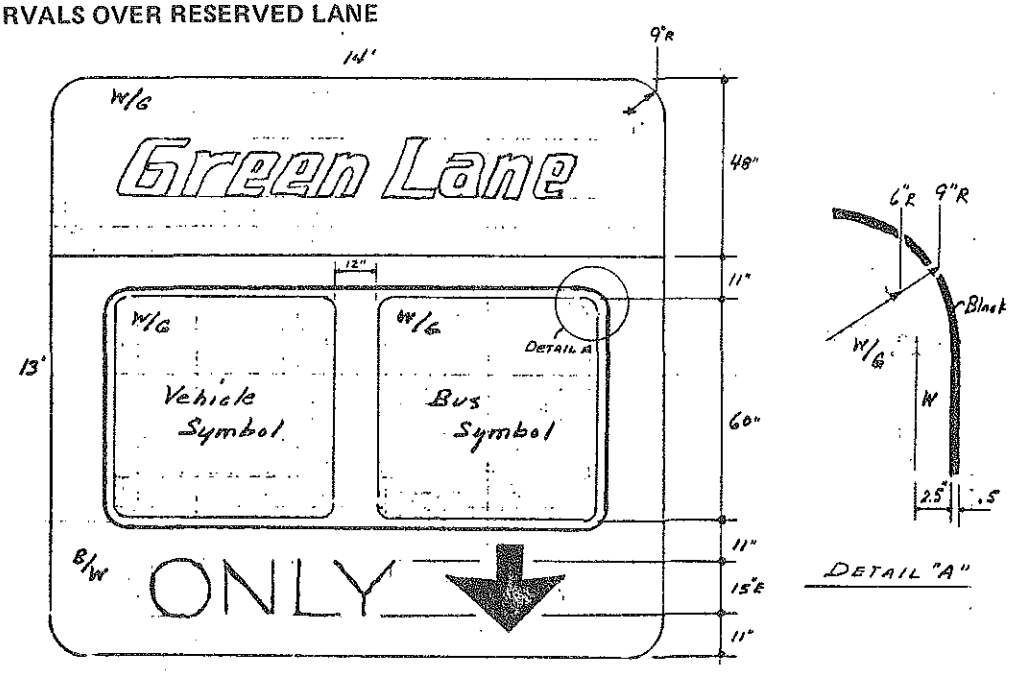


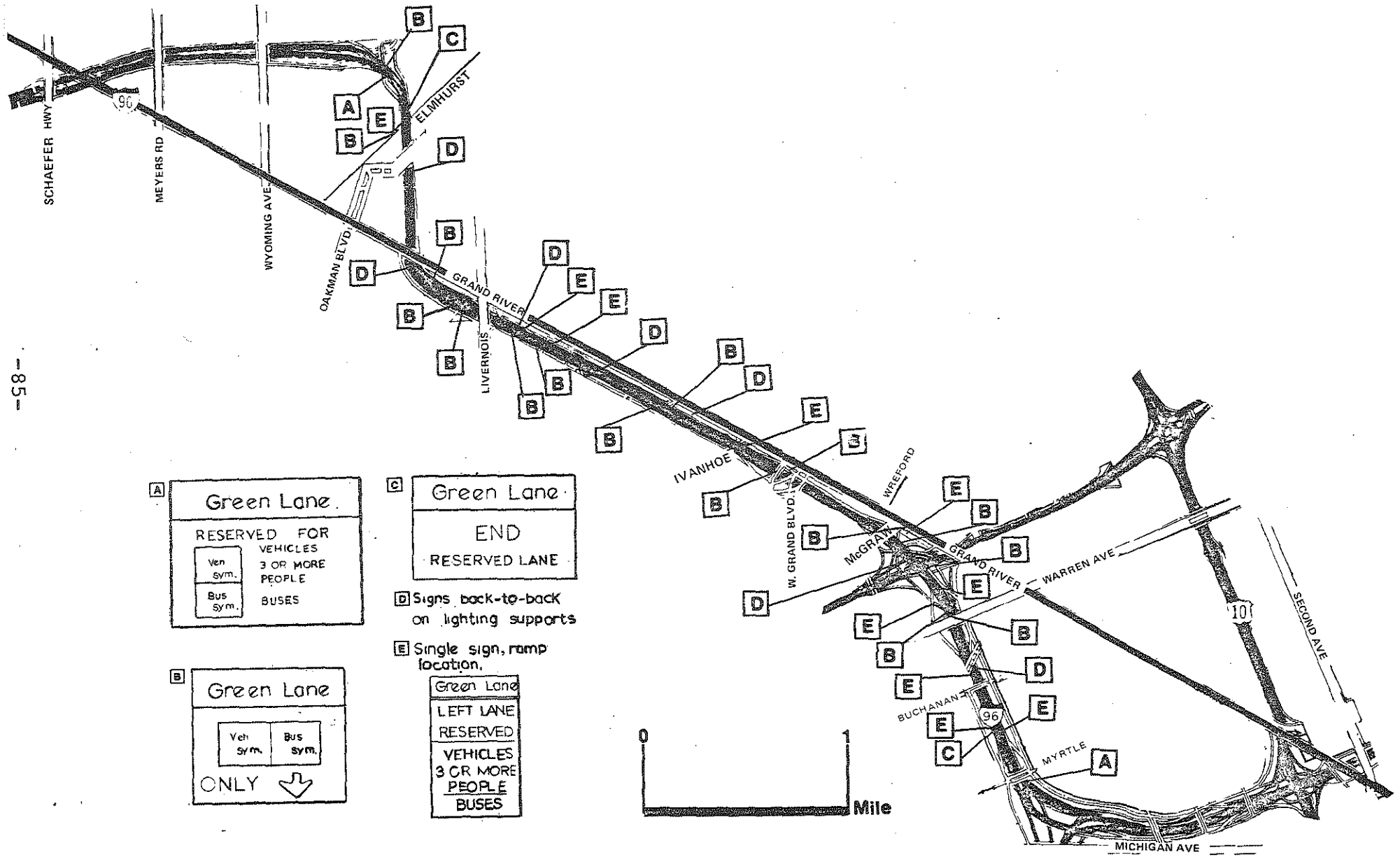
FIGURE VIII–A-9

All signs will be reflectorized

W/G – white on green

B/W – black on white

LOCATION OF RESERVED LANE SIGNING RESTRICTIONS



A Green Lane
RESERVED FOR
Veh Sym. VEHICLES 3 OR MORE PEOPLE
Bus Sym. BUSES

B Green Lane
Veh Sym. | Bus Sym.
ONLY

C Green Lane
END
RESERVED LANE

D Signs back-to-back on lighting supports

E Single sign, ramp location.

Green Lane
LEFT LANE RESERVED
VEHICLES 3 OR MORE
PEOPLE
BUSES

MAP VIII–A-1

The plans differ in that one proposes construction of an additional lane to the south of the exit ramp. Reserved lane traffic would stay in that lane until it reached a special signal, thus allowing vehicles to be in proper position to make right turns at the cross street. The cost of this improvement was estimated at $70,000.

The second plan called for the westbound reserved lane to cross the unopened eastbound roadway, then proceed to lane on the north side of the entrance ramp, intersecting the signalized cross street. The estimated cost of this proposal was $95,000. Design drawings for the west terminus of the reserved lane is included as Appendix "B".

2. Southeast Terminus of Reserved Lane - Alternative One - A capacity restraint is now evident during morning peak periods for eastbound traffic on I-75, just north of the Jeffries Freeway. This bottleneck causes traffic to reduce to level "E" or level "F" conditions on eastbound I-96, and onto the northbound I-74 two-lane turning roadway. This backup will seriously impede reserved lane traffic to the CBD. A plan was thus developed to allow reserved lane traffic to by-pass this congested area. The plan would provide for both directions of traffic and would connect the end of the reserved lane directly with Michigan Avenue. The estimated cost of this improvement is $600,000. Design drawings of the southeast terminus of the reserved lane are included in Appendix C.

Alternative Two - In order to implement a successful reserved bus lane on the Jeffries Freeway, it was considered necessary to terminate the lane at same point closer to the Detroit CBD than Buchanan Avenue, on I-96. After a review of the existing freeway network it appeared that one logical termination point would be at a ramp to Third Avenue from I-75, with buses then utilizing Grand River to the CBD. To extend the exclusive lane to Third Avenue would require some construction, as follows:

1. Ramp in the median up to the Third Street Bridge, at $480,000.

2. From southeast bound I-96 on turning roadway to I-75, widening existing structure 30 feet to accommodate both directions of lane flow. Addition of a median barrier separating bi directional flow, at $275,000.

3. From southbound I-96, crossing I-75 connecter, widen 30 ft. to accommodate both directions of lane flow. Addition of a median barrier separating bi directional flow, at $375,000.

4. Road and shoulder work to remove I-75 median barrier and construct concrete barrier at $1.6 million.

It is estimated that total construction costs exclusive of engineering and administration would be 2.7 million dollars.

Design drawings of the southeast terminus of the reserved lane are included in Appendix C.

C. LAW ENFORCEMENT PROGRAM

The exclusive bus-car pool lane is to be located in the high speed (median) lane of the Jeffries Freeway from Grand River-Schaefer to near the Michigan-Myrtle exit. The lane will be identified by overhead signs and pavement markings. Unlike exclusive bus/car pool lanes in other areas of the county, there will be no physical barrier segregating the lane from the normal traffic flow.

Success of the project is predicated on the exclusion of vehicles with less than three occupants from the exclusive lane. Prior to, and during the initial stage of designating this exclusive lane, an educational and promotional campaign will be initiated to instruct drivers as to the purpose and proper use of the lane. However, there is indication that such a program still will not induce total compliance, as there are drivers who habitually disregard non-monitored ordinances. Since success of the project relies on a high degree of compliance, adequate police monitoring and enforcement are vital.

Act 1364 of 1974, amending section 642 of Act No. 300 of the Public Acts of 1949, allows traffic control devices to be erected directing specified traffic to use designated lanes. A copy of the Act which was signed into law on October 15, 1974 is included as Appendix E.

Realizing the need for active police monitoring and enforcement of the lane restrictions, a representative of the City of Detroit Police Department was invited to be a member of the Jeffries Technical Committee. The expertise brought to the Technical meetings was valuable in ascertaining problems which might arise in regard to lane restrictions.

The initial proposal for assuring compliance with the lane restriction was to fund a separate police unit to patrol the lane throughout the day. Patrols were expected to be intense during the early days of the project and to decrease as compliance increased. Initially, only warnings would be issued to errant drivers. After a two week adjustment period, summonses would be issued for non-compliance with the exclusive lane's rules. A six month demonstration program requiring a minimum of three officers plus appropriate equipment was proposed. The Law Enforcement Assistance Association (LEAA) was considered as a possible funding source.

The Police Department representative, after conferring with police and municipal officials, stated that the department regarded patrol of the freeway and enforcement of ordinances governing lane restrictions as an assignment which the police had already undertaken. Monitoring and enforcement necessary to insure compliance with regulations would be assumed by existing staff of the Motor Traffic Division and any additional costs incurred would be absorbed in the Police Department budget. Since the entire length of the exclusive bus-car pool lane is located within the confines of the City of Detroit and since the Police Department is the designated law enforcing body of the City, members of the Technical-Advisory Committee recommended acceptance of the Police Department proposal.

IX - PUBLIC INFORMATION PROGRAM

A. OBJECTIVES

As has been mentioned earlier in this report, the implementation of an exclusive bus and car pool lane on the Jeffries Freeway will entail certain law enforcement problems, as the reserved lane will be adjacent to and not separated from other freeway lanes. Being aware of this problem, the Jeffries task force wrote a public information program into the work program. The public information campaign was considered necessary for both auto and transit passengers, with different levels of information required to be transmitted to each.

A basic aim of the public information program was to inform potential freeway users of the reserved lane restrictions. Through use of the media, and a pre-implementation program, residents of the region could become familiar with the reserved lane program.

The concentration of publicity would not be limited just to the project's transit service area. Due to the widely dispersed travel characteristics in Southeast Michigan, auto users of the reserved lane could potentially have initiated their trips at any point within the 7-county region. It was also recognized that some users, such as truck and bus drivers, as well as outstate residents, would be driving towards the Jeffries reserved lane with no prior information as to the lane restrictions. A signing program was investigated so as to inform these drivers, as well as remind regional residents of the existence and conditions governing of the reserved lane.

After setting out these basic objectives of the public information program, it was considered essential to develop a project "theme", such as had been done in Seattle, with their very successful "Blue Streak" express bus program. The resulting "Green Lane" concept, described in Chapter VIII of the report, was accepted as the theme for the Jeffries project.

The next objective to be met was the identification of existing and potential bus riders, and development of procedures to inform these persons of both the new services which would become available to them, as well as alterations to existing services.

After identification of the potential and existing market, it is essential to determine what information is to be disseminated prior to the implementation date; during the implementation state; and as continuing education during the post implementation period.

Another objective was to identify information outlets, such as radio TV, newspaper, billboards, etc., and schedule their use prior to, during and after project implementation. To prepare the basic media coverage and cost estimates, SEMTA retained the noted advertising firm of Young and Rubicam, of Detroit.

B. DESCRIPTION

The Young and Rubicam recommendations, incorporated in this report as Appendix "F", outline a program to cover the region with multi-media informational messages prior to, during and after implementation of the Jeffries Freeway program. While stressing concentration within the Jeffries service area through use of newspapers (sub-regional editions) and billboards, the regional coverage would accomplish two goals:

1. Provide information to auto users of the Jeffries Freeway who reside beyond the Jeffries service area.

2. Provide background knowledge of the principle of reserved bus and car pool lanes to persons who normally wouldn't use the Jeffries Freeway, but who use other freeways that might receive a reserved lane in the future.

The Y & R program recommends starting TV, newspapers, radio and outdoor advertising at least one month prior to inauguration of the project. Emphasis among the media is shifted during the pre- and post-implementation period. For example, large illuminated painted bulletin boards would be scheduled during the six-month implementation period, while smaller outdoor posters would be used in the immediate service area during the "pre-opening" and immediate "post-opening" period.

Radio spots would be placed on ten Detroit radio stations, with a total 120 announcements per week, scheduled at various weekday and weekend hours.

Television announcements would be placed during the early and late news blocks, and in prime time, when most adults watch television.

As discussed above, the use by Detroit newspapers of "sub-regional" editions allows heavy concentration of messages to certain areas, thus maximizing coverage in an economical manner.

C. COST

Based on the six month pre- and post- implementation schedule recommended by Young and Rubicam, total advertising expenditures would be $267,410, spread as follows:

TABLE IX-C-1
BUDGET SUMMARY

MEDIA			
	OUTDOOR - PAINT	$ 29,700	
	OUTDOOR - POSTER	15,362	
	RADIO	89,446	
	TELEVISION	26,600	
	NEWSPAPER	29,932	
			$191,060
PRODUCTION			
	OUTDOOR	$ 8,000	
	RADIO	15,000	
	TELEVISION	15,000	
	NEWSPAPER	5,000	
			$ 43,000
PUBLIC RELATIONS CONSULTANT			$ 20,000
SEMTA STAFF			$ 13,350
		GRAND TOTAL	$267,410

NOTE: Cost based on rates prevailing at this time and subject any economic increases that may be announced prior to implementation of these schedules.

APPENDICES
FEASIBILITY STUDY
OF
RESERVED BUS–CAR POOL LANES
FOR JEFFRIES FREEWAY (I-96)

SEMTA

APPENDICES
FEASIBILITY STUDY
OF
RESERVED BUS–CAR POOL LANES
FOR JEFFRIES FREEWAY (I-96)

JUNE, 1975

MICHIGAN STATE HIGHWAY COMMISSION

SOUTHEASTERN MICHIGAN TRANSPORTATION AUTHORITY

CITY OF DETROIT, DEPARTMENT OF TRANSPORTATION

SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS

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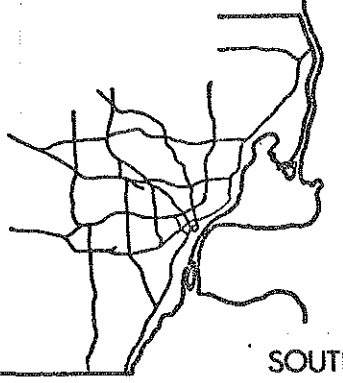
1974 JEFFRIES FREEWAY STUDY

ON-BOARD TRANSIT SURVEY OF APRIL 24, 1974 ANALYSIS PROCEDURES AND RESULTS



SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS

ABSTRACT

TITLE:	1974 Jeffries Freeway Study On-Board Transit Survey Of April 24, 1974 Analysis Procedures & Results
AUTHORS:	James Schultz Brenda James James Aho
SUBJECT:	Transit Surveys For The Southeast Michigan Region
DATE:	January, 1975
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NUMBER OF PAGES:	
ABSTRACT:	This report documents all work regarding the analysis of the 1968 and 1974 On-Board Transit Surveys as accomplished under contract to the Southeast Michigan Transportation Authority. As such, the Southeast Michigan Council of Governments is solely responsible for its contents.

1974 JEFFRIES FREEWAY STUDY
ON-BOARD TRANSIT SURVEY OF APRIL 24, 1974
ANALYSIS PROCEDURES & RESULTS

By

James Schultz
Brenda James
James Aho

Completed January, 1975

This report was prepared in cooperation with the Southeastern Michigan Transportation Authority with the assistance of the U. S. Department of Transportation, Federal Highway Administration.

Prepared by

Southeast Council of Governments, 8th Floor, Book Building, 1249 Washington Boulevard, Detroit, Michigan 48226.

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CHAPTER I: INTRODUCTION

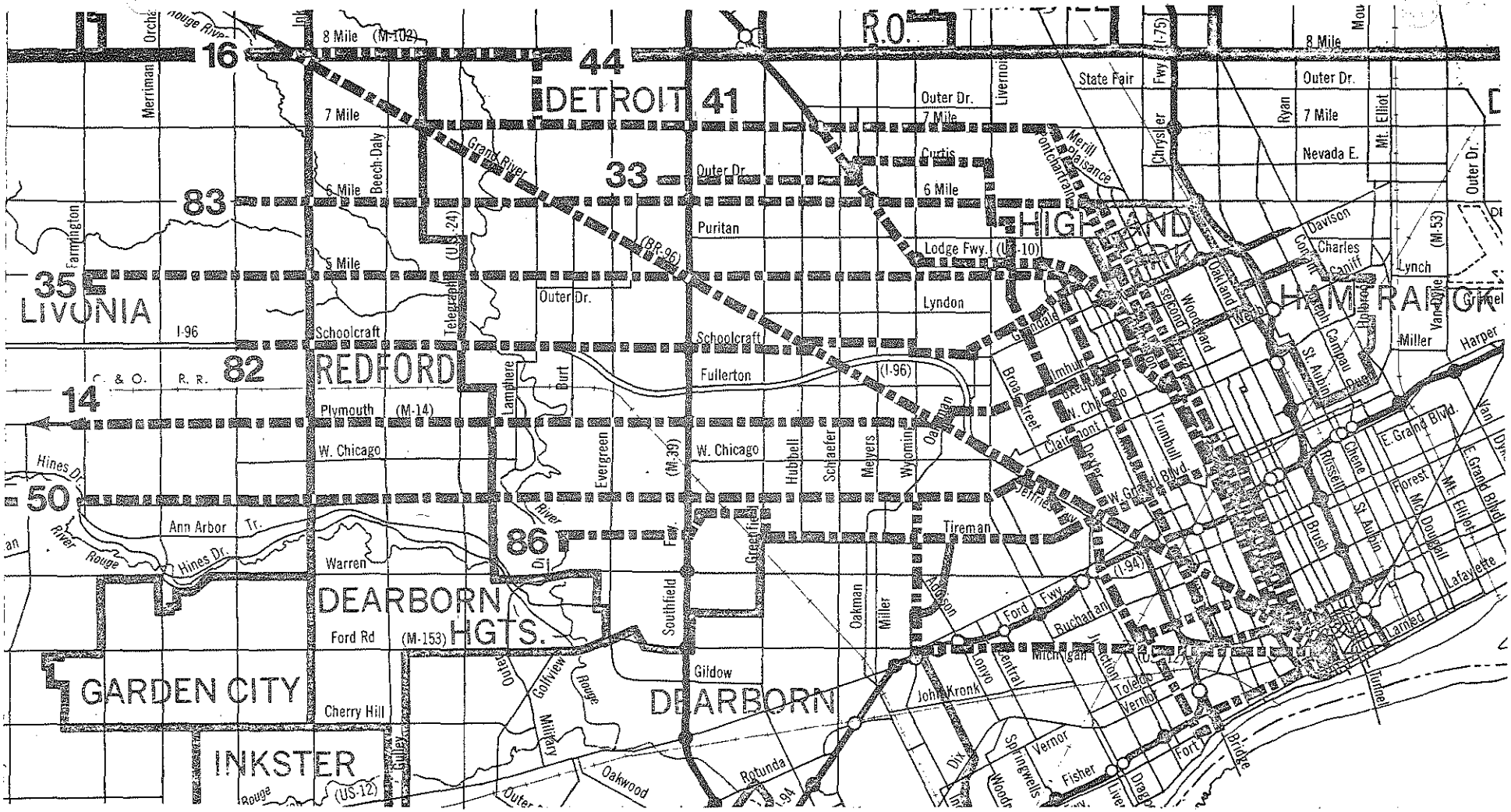
The Jeffries Freeway Study, On-Board Transit Survey was given on Wednesday, April 24, 1974, with self-prepared, postage paid postcard survey cards being distributed to all passengers boarding the following City of Detroit D. O. T. (DSR) bus lines:

50 - Joy Road
35 - Fenkell
41 - Hamilton
83 - Second
16 - Grand River
33 - Dexter
44 - Imperial Express
14 - Plymouth
86 - Tireman
82 - Schoolcraft

(Bus routes for these bus lines are shown in Map 1)

The cards were distributed only to passengers boarding buses operating inbound to the Detroit CBD and only for those buses that were expected to reach the Detroit CBD (either directly or by transferring) between 7:30 a. m. and 9:00 a. m.

The purpose of this report is to document in detail each phase of the procedures used to analyze, tabulate, and compare the survey reults against a similar survey administered in 1968 by the City of Detroit, D. O. T. (DSR).



MAP 1
1974 JEFFRIES FREEWAY STUDY
BUS LINE SURVEYED

16 – Grand River	14 – Plymouth
50 – Joy	33 – Dexter
86 – Tireman	83 – Second
82 – Schoolcraft	35 – Fenkell
41 – Hamilton	44 – Imperial Express

Bus Line 16 (Grand River) runs to Farmington Road.

Bus Line 14 (Plymouth) runs to Ann Arbor Trail.

CHAPTER II: ANALYSIS PROCEDURES

The purpose of this chapter is to describe each procedural step utilized in the development and analysis of the On-Board Transit Survey. A description of each step in the analysis follows. A flowchart illustrating the interface of all survey analysis procedures is shown in Figure 1, with additional information regarding the trip table analysis is shown in Figure 2.

1) Survey Form Design

The survey form shown in Figure 3 was designed in March and April of 1974 at a series of meetings between SEMTA and SEMCOG staff. Design of the survey form incorporated several questions from the 1968 CBD Transit Survey including questions regarding: trip purposes, trip mode choice, destination traffic analysis zone, age of respondent, and bus line number. Inclusion of these questions on the Jeffries Fwy Transit Survey will allow time series analysis to be undertaken for the variables described (See Chapter IV.)

A pre-test of the survey card designated for the Jeffries Fwy. Transit Survey was conducted Tuesday, April 9, 1974 on the DSR Van Dyke bus line. No difficulties were encountered from the pre-test and the survey from was printed for the April 24th test in the Jeffries Fwy Corridor.

2) Survey Form Coding

A presentation and explanation of coding procedures developed for the Jeffries Fwy Transit Survey was made to SEMTA and SEMCOG staff on May 3, 1974. The coding used to convert the information written on the survey form by each respondent into a machine readable form is shown in Appendix 1. The coding guide as shown consists of four major sections:

1) Coding Guide Text (SEMCOG File #371)
2) File Layout Sheet (SEMCOG File #371)
3) Major Office Building File List (SEMCOG File #370) -

FIGURE 1
JEFFRIES FREEWAY STUDY
ON-BOARD TRANSIT SURVEY OF APRIL 24, 1974
ANALYSIS PROCEDURES

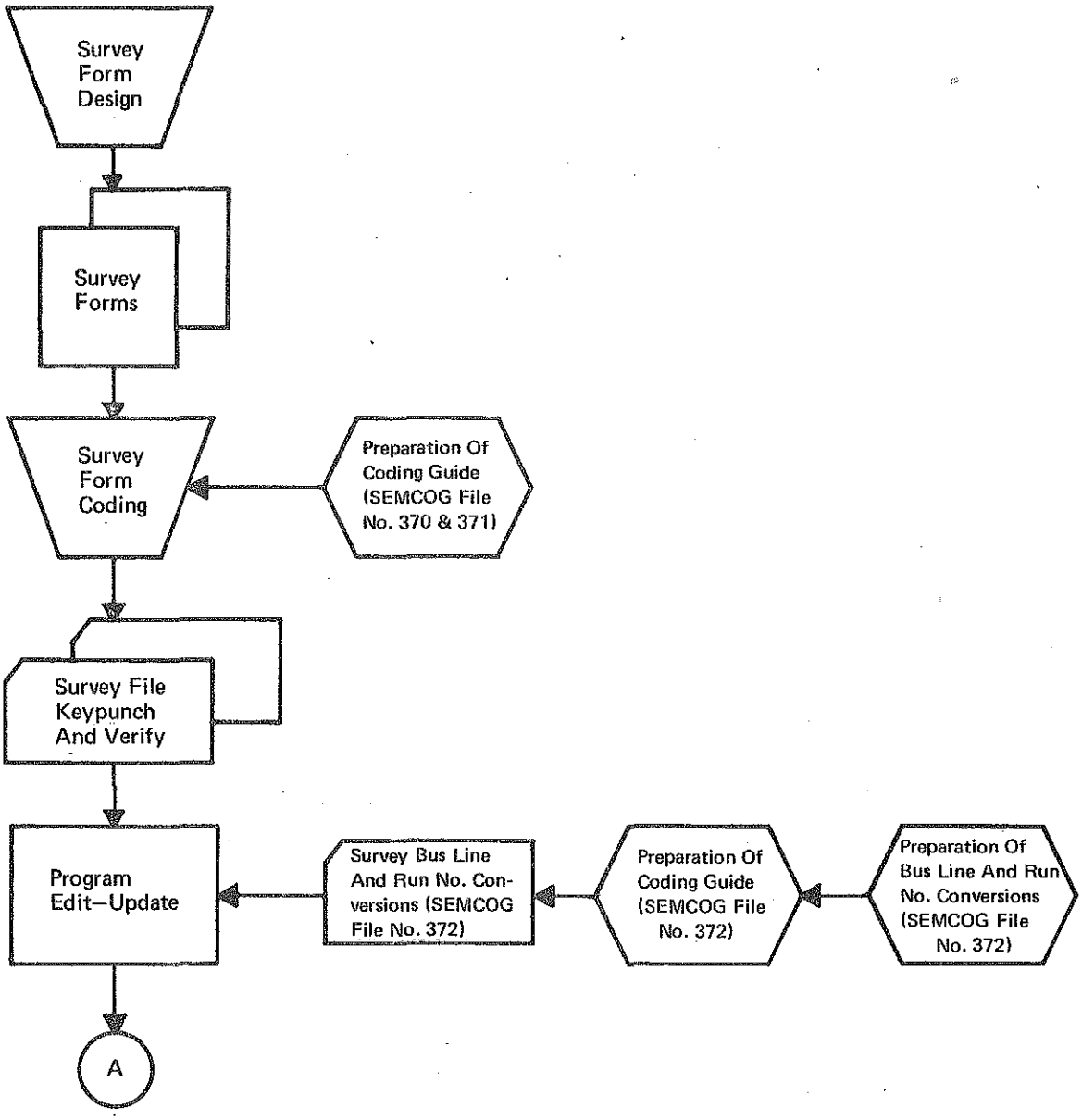


FIGURE 1
JEFFRIES FREEWAY STUDY
ON-BOARD TRANSIT SURVEY OF APRIL 24, 1974
ANALYSIS PROCEDURES

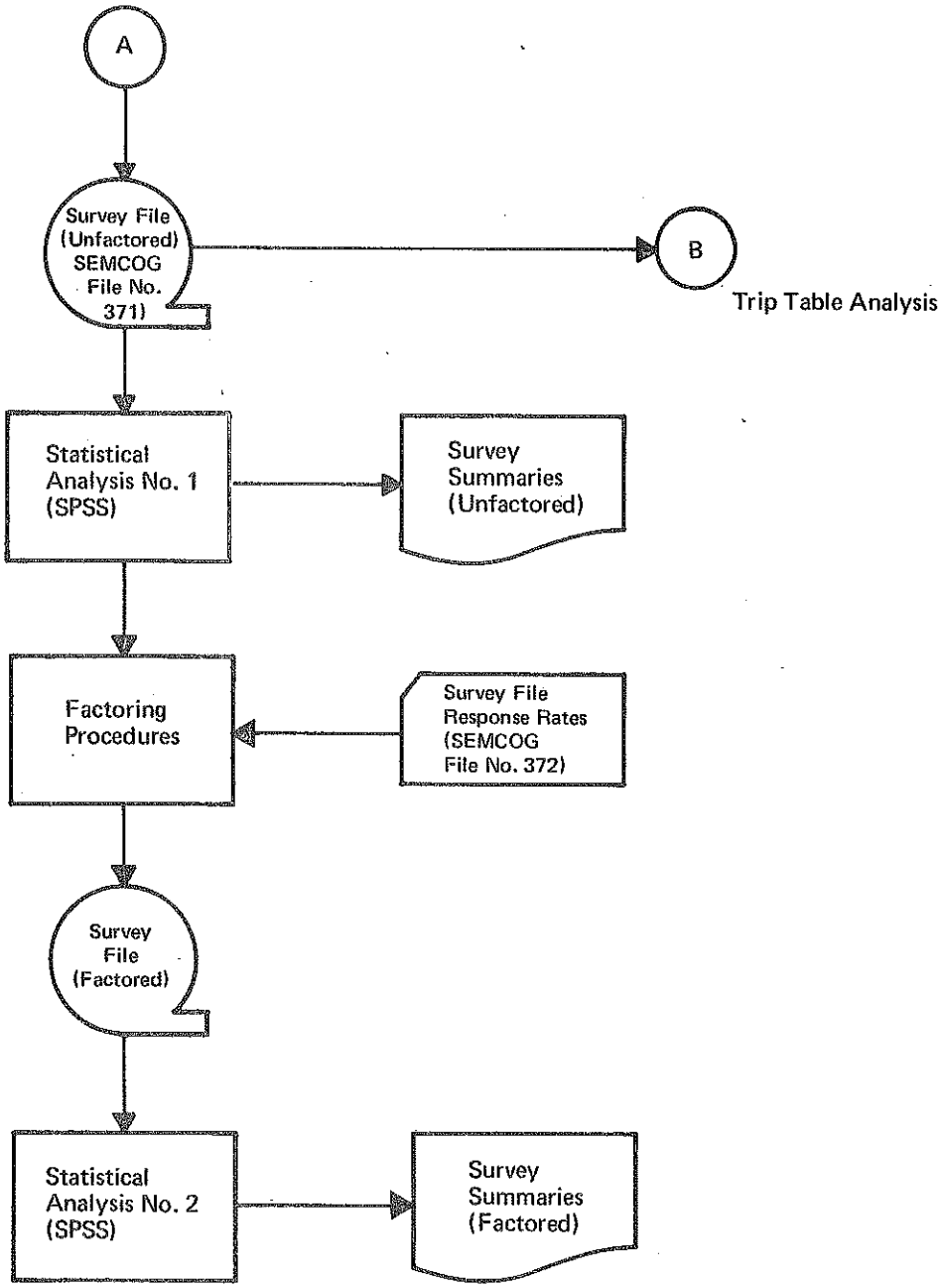


FIGURE 2
JEFFRIES FREEWAY STUDY
ON-BOARD TRANSIT SURVEY OF APRIL 24, 1974
TRIP TABLE ANALYSIS

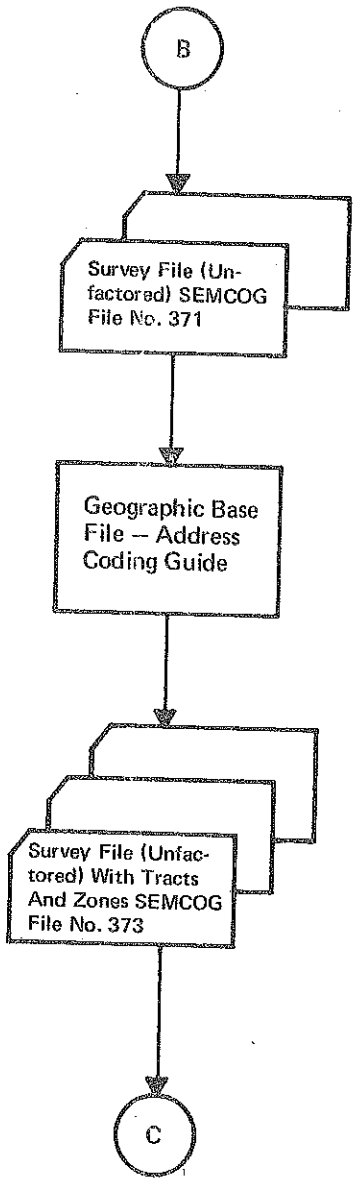


FIGURE 2
JEFFRIES FREEWAY STUDY
ON-BOARD TRANSIT SURVEY OF APRIL 24, 1974
TRIP TABLE ANALYSIS

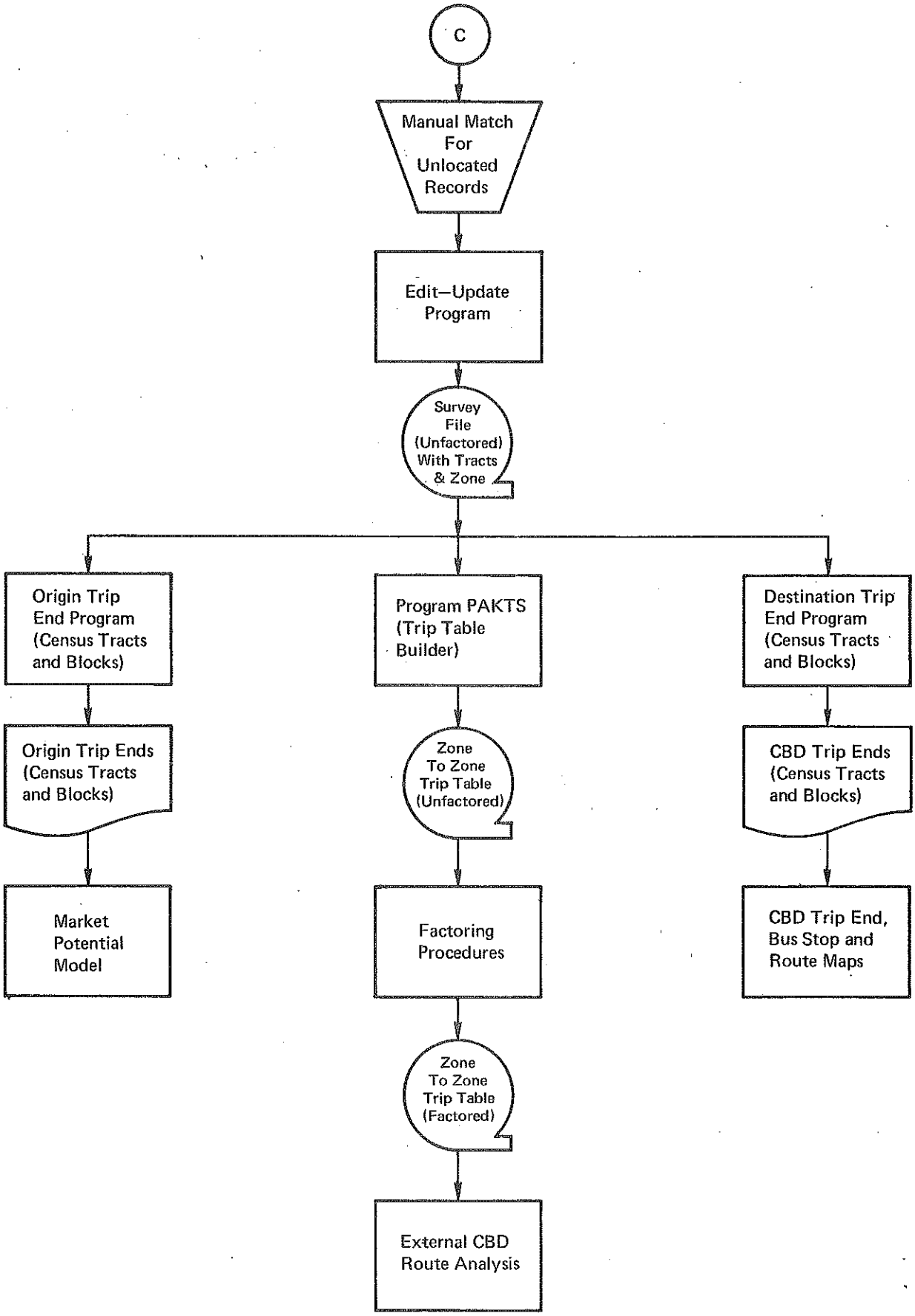


FIGURE 3

DEAR RIDER:

YOUR HELP IS NEEDED TO IMPROVE BUS SERVICE.
PLEASE ANSWER THESE QUESTIONS AND DROP THE CARD IN ANY U.S. MAIL BOX, FREE OF CHARGE.
THE D.S.R. AND SEMTA THANK YOU FOR YOUR COOPERATION.
(THIS INFORMATION IS CONFIDENTIAL. NO ONE WILL CONTACT YOU ABOUT YOUR ANSWERS.)

1. WHERE DID YOU GET ON THIS BUS? _____ (NEAREST STREET CORNER)

2. HOW LONG DID YOU WAIT FOR THIS BUS? _____ (MINUTES)

3. DID YOU TRANSFER FROM ANOTHER BUS? ☐ YES ☐ NO

   IF "YES", WHAT BUS LINE DID YOU TRANSFER FROM? _____

   WHERE DID YOU BOARD THE FIRST BUS? _____ (NEAREST STREET CORNER)

4. WHY ARE YOU MAKING THIS TRIP (CIRCLE ONE OF THE FOLLOWING)?

   A. GOING TO WORK
   B. COMING FROM WORK
   C. PERSONAL BUSINESS (VISIT DOCTOR, LAWYER, BANK, ETC.)
   D. SOCIAL RECREATION (VISIT FRIEND, GO TO MOVIE, ETC.)
   E. SHOPPING
   F. SCHOOL
   G. OTHER _____ (SPECIFY)

5. WHERE WILL YOU GET OFF THIS BUS? _____ (NEAREST STREET CORNER)

   WHEN YOU GET OFF THIS BUS, WILL YOU TRANSFER TO ANOTHER BUS LINE? ☐ YES ☐ NO

   IF "YES", WHAT BUS LINE WILL YOU TRANSFER TO? _____

6. WHAT IS YOUR DESTINATION FOR THIS TRIP? _____ (ADDRESS OR BUILDING NAME)

7. WHAT ARE THE MAIN REASONS YOU TOOK THE BUS ON THIS TRIP?

   A. BUS MORE CONVENIENT THAN AUTO
   B. BUS LESS EXPENSIVE THAN AUTO
   C. DO NOT LIKE TO DRIVE
   D. NO DRIVERS LICENSE
   E. FAMILY DOES NOT OWN AN AUTO
   F. AUTO USED BY ANOTHER MEMBER OF FAMILY
   G. PARKING NOT AVAILABLE AT A REASONABLE PRICE
   H. OTHER _____ (SPECIFY)

8. HOW MANY AUTOS ARE AVAILABLE TO YOUR FAMILY? 0 1 2 3 OR MORE

YOUR ANSWERS TO THE FOLLOWING QUESTIONS WILL BE VERY HELPFUL, BUT ARE NOT REQUIRED.

9. AGE _____

10. SEX – ☐ FEMALE ☐ MALE

11. YOUR HOME ADDRESS _____ (ADDRESS) _____ (CITY)

12. DO YOU HAVE ANY SUGGESTIONS FOR BETTER BUS SERVICE? _____

_____

_____

THANK YOU FOR YOUR HELP. PLEASE MAIL THIS, POSTAGE FREE, AT ANY U.S. MAIL BOX.

used to translate building names to street addresses so that the Geographic Base File - Address Coding Guide ADMATCH Programs could identify CENSUS Tracts and blocks, as well as traffic analysis zones.

4) Bus Stop Maps
   a) Detroit CBD
   b) City of Detroit and Wayne County
   c) Oakland County
   - All three maps were used to translate street intersections into a four digit code which represented a location where people board and disembark from a bus. Due to the size of the maps, they will not be included in this report. However, copies of these maps are being held on file by SEMCOG.

3) Program Edit-Update

The edit-update procedures used in the keypunched and key verified deck was a two-step process. First, each field of the coded survey was checked for allowable codes (as defined by the coding guide). And, second the survey file (SEMCOG File #371) was updated with bus run type, bus line number, and bus run number based on the survey number found on File #371. SEMCOG File #372 contained the necessary information to update the survey file. (See Appendix II.)

In addition, a manual edit of the original survey forms completed by the respondents eliminated some from further analysis for a variety of reasons (i.e., illegible, unintelligable and unsolicited survey responses were not coded).

At this stage, a 150 column record for each response was created and saved on 9-Track Tape. The file format for this file is shown in Figure 4. This 9-Track Tape of the Survey File (unfactored), SEMCOG File #371 was then input into the Trip Table Analysis. A 7-Track Tape copied from the original 9-Track Tape was produced and sent to Control Data Corporation so that the Statistical Analysis could be completed.

FIGURE 4
SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
STANDARD LAYOUT FORM

RECORD TITLE:

FILE NO: P371V020

POS	DESCRIPTION
1	
2	"371"
3	
4	BUS LINE #
5	
6	BUS RUN TYPE
7	
8	BUS RUN #
9	
10	SURVEY #
11	
12	
13	
14	SURVEY ORIGIN
15	BUS STOP #
16	
17	
18	WAIT TIME
19	
20	ORIGIN BUS TRANSFER
21	TRANSFER ORIGIN
22	BUS LINE #
23	
24	TRANSFER ORIGIN
25	BUS STOP #
26	
27	
28	TRIP PURPOSE
29	DISTINATION
30	BUS STOP #
31	
32	
33	DEST. BUS TRANSFER
34	DEST. TRANSFER
35	BUS LINE #
36	
37	
38	DEST. ADDRESS CODE
39	
40	DESTINATION ADDRESS
41	DESTINATION
42	ADDRESS (CONT.)
43	
44	ST. DIRN. PREFIX
45	
46	
47	
48	
49	DESTINATION
50	
51	
52	
53	STREET
54	
55	
56	
57	
58	NAME
59	
60	
61	
62	
63	
64	
65	DESTINATION
66	STREET
67	TYPE
68	
69	DESTINATION
70	CENSUS COUNTY CODE
71	
72	DESTINATION
73	CENSUS MCD CODE
74	
75	
76	DESTINATION
77	TRACT
78	
79	
80	
81	DESTINATION
82	BLOCK
83	
84	DESTINATION
85	ZONE
86	
87	
88	
89	TRIP
90	MODE
91	CHOICE
92	
93	
94	
95	
96	AUTO AVAILABILITY
97	
98	AGE
99	
100	SEX
101	ORIGIN ADDRESS CODE
102	
103	ORIGIN
104	ADDRESS
105	
106	
107	ST. DIRN. PREFIX
108	
109	
110	
111	ORIGIN
112	
113	
114	
115	STREET
116	
117	
118	
119	NAME
120	
121	
122	
123	
124	
125	
126	
127	
128	ORIGIN
129	STREET
130	TYPE
131	
132	ORIGIN CENSUS
133	COUNTY CODE
134	
135	ORIGIN CENSUS MCD

COMMENTS:

SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
STANDARD LAYOUT FORM
FIGURE 4 CONT'D

RECORD TITLE:

FILE NO: F371V020

POS.	DESCRIPTION	POS.	DESCRIPTION	POS.	DESCRIPTION
136	ORIGIN CENSUS MCD	176		216	
137	CODE	177		217	
138	ORIGIN	178		218	
139	CENSUS	179		219	
140	TRACT	180		220	
141		181		221	
142		182		222	
143		183		223	
144	ORIGIN	184		224	
145	BLOCK	185		225	
146		186		226	
147	ORIGIN	187		227	
148	ZONE	188		228	
149		189		229	
150		190		230	
151		191		231	
152		192		232	
153		193		233	
154		194		234	
155		195		235	
156		196		236	
157		197		237	
158		198		238	
159		199		239	
160		200		240	
161		201		241	
162		202		242	
163		203		243	
164		204		244	
165		205		245	
166		206		246	
167		207		247	
168		208		248	
169		209		249	
170		210		250	
171		211		251	
172		212		252	
173		213		253	
174		214		254	
175		215		255	
				256	
				257	
				258	
				259	
				260	
				261	
				262	
				263	
				264	
				265	
				266	
				267	
				268	
				269	
				270	

4) Statistical Analysis #1 (SPSS)

Various cross tabulations of the unfactored survey file were produced by the SPSS package of statistical programs available on the CDC-6600. Specifically the following cross tabulations were produced:

1) Wait Time (Bus Line #, Bus Run Type)
   Values: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11-15, 16-20, 20+, blank

2) Origin Bus Transfer (Bus Line #, Bus Run Type)
   Values: 1, 2, blank

3) Transfer Origin Bus Line # (Bus Line #, Bus Run Type)
   Values: See Chapter III, Question 3 & 5 Summaries

4) Trip Purpose (Bus Line #, Bus Run Type)
   Values: 1, 2, 3, 4, 5, 6, 7, or blank

5) Destination Bus Transfer (Bus Line #, Bus Run Type)
   Values: 1, 2, blank

6) Destination - Transfer Bus Line # (Bus Line #, Bus Run Type)
   Values: See Chapter III, Question 3 & 5 Summaries

7) Trip Mode Choice (Bus Line #, Bus Run Type)
   Values: 1, 2, 3, 4, 5, 6, 7, 8, or blank

8) Auto Availability (Bus Line #, Bus Run Type)
   Values: 0, 1, 2, 3, blank

9) Age (Bus Line #, Bus Run Type)
   Values: 0-15, 16-19, 20-29, 30-39, 40-49, 50-65, 65+, or blank

10) Sex (Bus Line #, Bus Run Type)
    Values: 1, 2, blank

11) Survey Origin Bus Stop Number (Bus Line #, Bus Run Type)
    Values: 1500-3500

12) Transfer Origin Bus Stop Number (Bus Line #, Bus Run Type)
Values: 1500-3500

13) Destination Bus Stop Number (Bus Line #, Bus Run Type)
Values: 1500-3500

14) Boarding - Bus Stop Number Summary
Values: 1500-3500 for the combined Survey and Transfer Origin Bus Stops

15) Total - Bus Stop Number Summary
Values: 1500-3500 for the combined Destination and Survey and Origin Bus Stops

Note: Bus Run Types should be grouped as follows:

1) Bus Run Type "0" and "2" (Local Buses)
2) Bus Run Type "1" and "3" (Express Buses)

This holds for all tabulations listed above

5) Factoring Procedures #1

Based on suggested procedures described in the report, Urban Mass Transportation Travel Surveys,[1] the following survey bias was anticipated and accounted for:

> "It was anticipated that the rate of questionnaire return would vary for bus riders having different socio-economic characteristics. To help correct this, separate expansion factors were developed for the express and local bus runs on each bus line."[2]

The net result of the factoring required by the preceding correction was a set of two factors for each bus line. Information on the survey form allowed the allocation of both cards coded and cards handed out to the various sub-categories for the development of the two expansion factors for each bus line. (SEMCOG File #372). In addition, separate expansion factors were computed and applied to each survey question since respondents did not answer all questions on the survey form. The survey expansion factors developed for each question by each bus line are shown in Table 1.

TABLE 1

SURVEY EXPANSION FACTORS
(BUS LINE BY QUESTION)

	QUESTION CODE								
	1	2	3	4	5	6	7	8	9
Grand River - Local	5.3	5.3	5.3	5.3	5.4	5.6	5.6	6.0	5.6
Grand River - Express	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.4	2.2
Joy Rd. - Local	3.7	3.6	3.7	3.6	3.8	3.7	3.8	4.1	3.8
Joy Rd. - Express	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.1
Tireman - Express	3.3	3.3	3.3	3.3	3.3	3.4	3.5	3.6	3.5
Schoolcraft - Local	3.4	3.4	3.5	3.3	3.3	3.4	3.5	3.8	3.5
Hamilton - Local	3.6	3.6	3.6	3.6	3.6	3.6	3.8	4.1	3.8
Hamilton - Express	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.2	2.0
Plymouth - Local	4.3	4.3	4.4	4.3	4.4	4.5	4.3	4.8	4.5
Plymouth - Express	1.8	1.9	1.8	1.8	1.8	1.9	1.9	2.1	2.0
Dexter - Local	4.4	4.5	4.3	4.3	4.5	4.7	4.5	4.9	4.6
Dexter - Express	2.7	2.9	2.7	2.7	2.7	2.8	2.8	3.4	2.9
Second - Local	2.7	2.7	2.7	2.7	2.8	2.8	2.8	3.2	2.9
Second - Express	1.7	1.7	1.7	1.7	1.7	1.7	1.7	2.1	1.8
Fenkell - Local	5.0	5.2	5.0	5.0	5.1	5.2	5.2	5.6	5.1
Fenkell - Express	2.5	2.4	2.4	2.4	2.5	2.6	2.5	2.9	2.6
Imperial Express	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.2	2.0

Note: Question Codes are as follows:

1 - Origin Bus Stop #
2 - Wait Time
3 - Origin Bus Transfer
4 - Trip Purpose
5 - Destination Bus Stop Number
6 - Destination Bus Transfer
7 - Auto Availability
8 - Age
9 - Sex

6) Statistical Analysis #2 (SPSS)

A similar set of cross-tabulations as those listed in Section #4 of this chapter was again prepared. However, these tabulations differ from those described in Section #4 in that the input file was weighted by the survey expansion factors described in Section #5. (See Table #1.) As such, tables from this analysis have been noted as "weighted."

7) Trip Table Analysis

One of the outputs described in Section #3 (Program Edit-Update) was a 9-Track Tape containing the 150 column survey record (See Figure 4) and it is this file which was input to the Geographic Base File - Address Coding Guide (GBF-ACG) ADMATCH programs. The GBF-ACG ADMATCH Programs translate the originally coded origin and destination address to census tracts and blocks, as well as sequential zones. A manual match of unlocated records and an update of the survey file insured that a majority of the survey origin-destination information would be retained. As a result of the fact that different response rates were encountered for the questions regarding trip origin and trip destination and respondents need not have responded to both origin and destination analysis of trips was divided into three parts as follows:

a) Origin Trip Ends - To assist in the analysis of the market potential of the Jeffries Fwy Project surveys which were codeable to census tract and block for the origin end of the trip were sorted by bus line and run type and tabulated.

b) Origin and Destination Trip Table - To assist in the analysis of restructuring the existing bus routes within the corridor, surveys which were codeable to sequential zones for both origin and destination were analyzed. Program PAKTS (Trip Table Builder) analyzed each record for origin zone and destination zone and compiled a matrix of zone to zone trip interchanges. Appropriate expansion factors to expand the unfactored trip table to a factored trip table which represented all transit passengers was accomplished by multiplying a trip table compiled for each bus line and run type, and summing all trip tables to arrive at a total transit person trip table for the corridor.

c) Destination Trip Ends - To assist in the analysis of CBD bus routes, surveys which were codeable to census tract and block for the destination of the trip were analyzed. To assist in the review maps illustrating the existing bus route, bus stops, and final destination within the CBD (by Census Tract and Block) were prepared. These maps were prepared based on survey results and as such were unweighted since maps were prepared for each bus line (express and local).

---

[1] Urban Mass Transportation Travel Surveys, Urban Trans System Assoc. for U. S.-DOT (Washington, D. C., 1972) P. 31

[2] Ibid, P. 31

CHAPTER III: 1974 ON-BOARD TRANSIT SURVEY RESULTS

The end product of the seven procedural steps of the survey analysis procedures described in the previous chapter was a set of computer printouts. These printouts contained: 1) Cross-tabulations for survey questions (both unweighted and weighted) and 2) Trip table analysis stratified by origin, origin and destination, and destination. Tables have been prepared by these two major categories and are summarized below:

1) Cross-Tabulations by Survey Question (Tables 2-17)

The tables included with this category illustrate survey results with respect to wait time, transfers, trip purpose, trip mode choice, auto availability, age and sex (see questions 2-5 and 7-10 of Figure 3). Both unweighted and weighted survey results are presented where possible. A brief summary of the survey results for each question follows.

The number of minutes a person waits for a bus (question 2) provides an indication of a transit passenger's perception of the level of service provided. For example, buses operating with large headways and running behind or ahead of schedule would cause long wait times. Conversely, if buses operate with small headways and run on time, passengers will experience little or no wait time. Results from Table 2 indicate that over 68 percent of all passengers experienced wait times less than 5 minutes and that there was no appreciable variation between express (7.1%) and local (65.3%). A greater amount of variation, however, was found between the unweighted mean wait times (Table 3) of bus lines. In every case but one (Dexter), express coaches caused less wait time indicating a better level of service. To determine whether the better level of service was the result of headways or schedule difficulties, the mean headway and mean wait time were calculated, and are shown in Table 5 and Table 6. Analysis of those comparisons indicated that wait time was not directly related to headways. In fact, no clear relationship was found.

Question #3 of the survey regarding origin bus transfers gives

TABLE 2

UNWEIGHTED WAIT TIME (MINUTES)
1974 JEFFRIES FREEWAY STUDY

Question #2: How long did you wait for this bus _____ ?
(minutes)

WAIT TIME (Minutes)	EXPRESS		LOCAL		COMBINED	
0	121	(6.9%)	82	(4.4%)	203	(5.6%)
1	90	(5.2%)	112	(6.0%)	202	(5.6%)
2	170	(9.7%)	191	(10.2%)	361	(10.0%)
3	209	(12.0%)	187	(10.0%)	396	(11.0%)
4	74	(4.2%)	64	(3.4%)	138	(3.8%)
5	576	(33.0%)	586	(31.3%)	1,162	(32.1%)
6	37	(2.1%)	30	(1.6%)	67	(1.9%)
7	64	(3.7%)	46	(2.5%)	110	(3.0%)
8	39	(2.2%)	49	(2.6%)	88	(2.4%)
9	3	(.2%)	3	(.2%)	6	(.2%)
10	227	(13.0%)	252	(13.5%)	479	(13.3%)
11-15	81	(4.6%)	138	(7.4%)	219	(6.1%)
15-20	28	(1.6%)	61	(3.3%)	89	(2.5%)
20+	8	(.5%)	44	(2.4%)	52	(1.4%)
No Response	18	(1.0%)	25	(1.3%)	43	(1.2%)
TOTAL Respondents	1,745	(100.%)	1,870	(100.%)	3,615	(100.%)

Number of missing observations = 4 (express)

TABLE 3

UNWEIGHTED MEAN WAIT TIME (MINUTES)
BY BUS LINE
1974 JEFFRIES FREEWAY STUDY

Bus Line #	Description	Run Type		TOTAL
		Express	Local	
14	Plymouth	5.256	7.009	5.963
16	Grand River	4.979	6.402	5.517
33	Dexter	6.151	5.559	5.669
35	Fenkell	6.190	6.986	6.641
41	Hamilton	5.816	6.266	6.148
44	Imperial Express	5.616	-----	5.616
50	Joy	5.660	8.389	6.642
82	Schoolcraft	-----	8.779	8.779
83	Second	4.240	7.034	6.416
86	Tireman	-----	7.512	7.512
TOTAL		5.459	6.780	6.142

TABLE 4

WEIGHTED MEAN WAIT TIME (MINUTES)
BY BUS LINE
1974 JEFFRIES FREEWAY STUDY

Bus Line #	Description	Run Type		TOTAL
		Express	Local	
14	Plymouth	5.256	7.009	6.316
16	Grand River	4.979	6.402	5.840
33	Dexter	6.151	5.559	5.635
35	Fenkell	6.190	6.986	6.778
41	Hamilton	5.816	6.266	6.195
44	Imperial Express	5.616	-----	5.616
50	Joy	5.660	8.389	7.033
82	Schoolcraft	-----	8.779	8.779
83	Second	4.240	7.034	6.610
86	Tireman	-----	7.512	7.512
TOTAL		5.485	6.703	6.313

TABLE 5

MEAN HEADWAY & WAIT TIME COMPARISON (MINUTES)
1974 JEFFRIES FREEWAY STUDY
LOCAL BUSSES

Bus Line #	Description	Mean Headway[1]	Mean Wait Time[2]
14	Plymouth	11.8	7.0
16	Grand River	4.8	6.4
33	Dexter	9.6	5.6
35	Fenkell	6.7	7.0
41	Hamilton	6.2	6.3
44	Imperial Express	-	-
50	Joy	9.5	8.4
82	Schoolcraft	18.5	8.8
83	Second	8.5	7.0
86	Tierman	16.0	7.5

NOTE:

1. Mean Headway was calculated by dividing 90 minutes by the total number of coaches that will arrive in the Detroit CBD between 7:30 and 9:00 A.M.

2. Mean Wait Time was tabulated from the survey responses for each bus line (see Table 3 or Table 4)

TABLE 6

MEAN HEADWAY AND
WAIT TIME COMPARISON (MINUTES)
EXPRESS BUSSES
1974 JEFFRIES FREEWAY STUDY

BUS LINE #	DESCRIPTION	MEAN HEADWAY[1]	MEAN WAIT TIME[2]
14	Plymouth	9.3	5.3
16	Grand River	3.9	5.0
33	Dexter	14.0	6.2
35	Fenkell	8.7	6.2
41	Hamilton	13.3	5.8
44	Imperial Express	4.9	5.6
50	Joy	7.0	5.7
82	Schoolcraft	---	---
83	Second	17.5	4.2
86	Tireman	---	---

Note: 1. Mean Heading was calculated by dividing 90 minutes by the total number of coaches that will arrive in the Detroit CBD between 7:30 and 9:00 A.M.

2. Mean Wait Time was tabulated from the survey responses for each bus line (see Table 3 or Table 4).

an indication whether the existing bus routes offer direct connections for existing passengers. And survey results indicate that almost 87% of all riders do not transfer and as a result it was assumed that overall the majority of existing riders find the existing routes satisfactory (Table 7). The distribution of origin bus transfers (buses transferred from) is shown in Table 8. Not shown in these tables, however, was the fact that for several bus lines significant transfers were observed. Specifically, it was found that over 20% of the passengers for the Grand River, Dexter and Hamilton locals and Grand River and Imperial expresses transferred from another bus line.

As a result, the tabulations shown in Table 7 were misleading and a clearer picture of origins and destinations would have to be gained. The trip table analysis provided this opportunity and will be discussed later.

Question #4 of the survey indicated that during the a.m. peak period (7:30 - 9:00 a.m.) most transit passengers were either going to work or school (Table 9). This was as expected as was the fact that work trips would be relatively a higher percentage of express bus passengers (91.5%) as compared to local bus passengers (61.9%) due to the structure of the bus routes themselves.

Survey question #5 regarding destination bus transfers (busses transferred to), like question #3, indicates whether existing bus routes offer direct connections. Here, satisfaction for existing bus routes (question #5) was found to be less than that found for question #3. Specifically, only 71.7% of all riders did not transfer to another bus (Table 10). In fact, it was found that all local buses showed transfers in excess of 20%, with passengers of the Schoolcraft local indicating that over 78% of its riders transfer to another bus line, with both the Joy Road and Tireman locals exhibiting transfers in excess of 40%. Transfers from the express buses were much less dramatic with only the Fenkell express showing transfers of greater than 20%. In summary, it would appear that local buses offer much less direct service (no transfers) than do express buses, however, one of the major service characteristics of local buses is to act as a feeder service to higher level transit (express buses). Survey results seem to confirm that this is in fact happening.

TABLE 7

ORIGIN BUS TRANSFERS

Question #3. Did you transfer from another bus? ___ yes ___ no

Origin Bus Transfer	Express		Local		Combined	
Yes	152	(8.7%)	305	(16.3%)	457	(12.6%)
No	1588	(91.0%)	1547	(82.7%)	3135	(86.7%)
No Response	5	(.3%)	18	(1.0%)	23	(.6%)
	1745	(100.0%)	1870	(100.0%)	3615	(100.0%)

Number of missing observations - 4 (express)

TABLE 8

ORIGIN BUS LINE NUMBERS FOR TRANSFERS
1974 JEFFRIES FREEWAY STUDY

Question #3. If "yes", what bus line did you transfer from?

Busline (Transferred from)	Express	Local	Combined
0 (No Transfer Indicated)	1597 (91.5%)	1575 (84.0%)	3172 (87.6%)
7 (Broadstreet)		1 (.1%)	1 (.0%)
8 (Buchanan)		4 (.2%)	4 (.1%)
10 (Woodward)	2 (.1%)	2 (.1%)	4 (.1%)
14 (Plymouth)	1 (.1%)	10 (.5%)	11 (.3%)
16 (Grand River)		29 (1.5%)	29 (.8%)
18 (Caniff)		3 (.3%)	3 (.1%)
21 (Chene)	1 (.1%)		1 (.0%)
22 (Clairmount)	1 (.1%)	14 (.7%)	15 (.4%)
24 (Conant)		1 (.1%)	1 (.0%)
25 (Gratiot)	1 (.1%)		1 (.0%)
28 (Crosstown)	6 (.3%)	13 (.7%)	19 (.5%)
33 (Dexter)	11 (.6%)	9 (.5%)	20 (.6%)
35 (Fenkell)	6 (.3%)	11 (.6%)	17 (.7%)
36 (Grand Belt)		9 (.5%)	9 (.2%)
37 (Greenfield)	19 (1.1%)	23 (1.2%)	42 (1.2%)
39 (Southfield)	8 (.5%)	6 (.3%)	14 (.4%)
41 (Hamilton)	3 (.2%)	4 (.4%)	7 (.2%)
44 (Imperial Exp.)		4 (.2%)	4 (.1%)
46 (Jefferson)		1 (.1%)	1 (.0%)
50 (Joy Road)	2 (.1%)	10 (.5%)	12 (.3%)
52 (Lafayette-Green)	1 (.1%)		1 (.0%)
53 (Van Dyke-Lafayette)	1 (.1%)		1 (.0%)
55 (Lahser)	1 (.1%)	2 (.1%)	3 (.1%)
57 (Linwood)	2 (.1%)	5 (.3%)	7 (.2%)
59 (Livernois)	7 (.4%)	23 (1.2%)	30 (.8%)
62 (McNichols-East)	2 (.1%)	6 (.3%)	8 (.2%)
63 (Meyers)	2 (.1%)	2 (.1%)	4 (.1%)
64 (Michigan Shuttle)		1 (.1%)	1 (.0%)
71 (Oakland)	1 (.1%)	1 (.1%)	2 (.1%)
72 (Oakman)	12 (.7%)	22 (1.2%)	34 (.9%)
74 (Puritan)	8 (.5%)	10 (.5%)	18 (.5%)
75 (Russell)		1 (.1%)	1 (.0%)
79 (Schaefer)	10 (.6%)	9 (.5%)	19 (.5%)
82 (Schoolcraft)	12 (.7%)	10 (.5%)	22 (.6%)
83 (Second)	9 (.5%)	4 (.2%)	13 (.4%)
84 (Seven Mile East)		6 (.3%)	6 (.2%)

TABLE 8

ORIGIN BUS LINE NUMBERS FOR TRANSFERS
1974 JEFFRIES FREEWAY STUDY
(Continued)

Question #3. If "yes", what bus line did you transfer from?

Busline (Transferred from)	Express	Local	Combined
86 (Tireman)	2 (.1%)		2 (.1%)
90 (Vernor)		2 (.1%)	2 (.1%)
92 (Warren		4 (.4%)	4 (.1%)
93 (West Chicago)	1 (.1%)	1 (.1%)	2 (.1%)
97 (Woodrow Wilson)	1 (.1%)	3 (.2%)	4 (.1%)
99 (Wyoming)	15 (.9%)	33 (1.8%)	48 (1.3%)
TOTALS	1745 (100.0%)	1874 (100.0%)	3619 (100.0%)

TABLE 9

TRIP PURPOSE
1974 JEFFRIES FREEWAY STUDY

Survey
Question #4. Why are you making this trip (circle one of the following)?

A. Going To Work
B. Coming From Work
C. Personal Business (visit doctor, lawyer, bank, etc.)
D. Social Recreation (visit friend, go to movies, etc.)
E. Shopping
F. School
G. Other _____ (specify)

PURPOSE	EXPRESS		LOCAL		COMBINED	
A.	1597	(91.5%)	1157	(61.9%)	2754	(76.2%)
B.	10	(.6%)	22	(1.2%)	32	(.9%)
C.	14	(.8%)	43	(2.3%)	57	(1.6%)
D.	1	(.1%)	10	(.5%)	11	(.3%)
E.	2	(.1%)	4	(.2%)	6	(.2%)
F.	106	(6.1%)	608	(32.5%)	714	(19.8%)
G.	7	(.4%)	19	(1.0%)	26	(.7%)
No Response	8	(.5%)	7	(.4%)	15	(.4%)
TOTAL	1745	(100.0%)	1870	(100.0%)	3615	(100.0%)

Number of missing observations = 4 (express)

TABLE 10

DESTINATION BUS TRANSFERS
1974 JEFFRIES FREEWAY STUDY

Survey
Question #5. When you get off this bus, will you transfer to another bus line?

RESPONSE	EXPRESS		LOCAL		COMBINED	
Yes	271	(15.6%)	610	(32.7%)	881	(24.4%)
No	1403	(80.6%)	1185	(63.5%)	2588	(71.7%)
No Response	67	(3.8%)	72	(3.9%)	139	(3.9%)
TOTAL	1741	(100.0%)	1867	(100.0%)	3608	(100.0%)

Number of missing observations = 11 (express)

Up to this point, the tabulations discussed have only reflected characteristics of the transit service provided. Questions 6-10 are concerned with the profile of the average bus passenger and his motives for riding the bus.

Question #6 regarding the passenger's age (Table 11) indicated that the greatest percentage of riders were between the ages of 20-29 for both express and local buses. An equally large percentage of riders between the ages of 16-19 was also identified for local buses which reflected the greater percentage of school trips for local buses. (See Table 9.) The calculation of mean age (Table 12) indicates that overall express bus riders are 37 years old while the comparable figure for local bus riders is 30 years old.

Question #7 regarding trip mode choice provides information as to the motives why a person took the bus for a particular trip. Here, it was found that express bus passengers were concerned with the cost of the trip and its comfort and convenience. Local bus passengers, on the other hand, were very concerned with reasons related to auto availability and licensing. In summary, the results shown in Table 13 indicate that "local" bus riders tend to be more transit captive than their counterpart express bus riders. As a result, local bus coverage must be a finer grain than express bus service because these passengers show a greater propensity to walk to the bus stop.

As if to underscore the importance of the results found for the preceding question, question #8 asked whether an auto was available for this trip. Tables 14 and 15 illustrate the unweighted and weighted survey responses. Analyzing the weighted survey results it was found that 13.1% of the express bus passengers and 25.7% of the local bus passengers had no auto available for this trip, which is consistent with the results found for the previous question. A closer examination indicates that over 25% of the passengers of the Plymouth, Dexter, Fenkell, Joy Road and Tireman locals and the Fenkell express have no car available (Table 16).

The final tabulation by survey question regards the sex of the passenger as found through the responses for question #10. Results shown in Table 17 indicate that in general transit

TABLE 11

AGE OF RESPONDENT
1974 JEFFRIES FREEWAY STUDY

Survey
Question #6. Age ____

AGE RANGE	EXPRESS		LOCAL		TOTAL	
0 - 15	33	(1.9%)	146	(7.8%)	179	(5.0%)
16 - 19	123	(7.0%)	458	(24.5%)	581	(16.1%)
20 - 29	492	(28.2%)	457	(24.4%)	949	(26.3%)
30 - 39	233	(13.4%)	154	(8.2%)	387	(10.7%)
40 - 49	237	(13.6%)	166	(8.9%)	403	(11.2%)
50 - 65	333	(19.1%)	231	(12.4%)	564	(15.6%)
Over 65	16	(.9%)	26	(1.4%)	42	(1.2%)
No Response	278	(15.9%)	232	(12.4%)	510	(14.1%)
Total	1745	(100.0%)	1870	(100.0%)	3615	(100.0%)

4 observations missing

TABLE 12

UNWEIGHTED MEAN AGE (YEARS)
1974 JEFFRIES FREEWAY STUDY

BUS LINE #	DESCRIPTION	RUN TYPE EXPRESS	LOCAL	TOTAL
14	Plymouth	38.302	30.823	35.247
16	Grand River	36.569	26.944	32.896
33	Dexter	32.571	31.182	31.429
35	Fenkell	33.881	27.696	30.258
41	Hamilton	34.224	28.979	30.339
44	Imperial Express	38.449	------	38.449
50	Joy	37.324	32.079	35.399
82	Schoolcraft	------	32.301	32.201
83	Second	37.738	31.665	32.951
86	Tireman	------	30.966	30.966
TOTAL		36.833 (36.652)	29.938 (29.680)	33.203 (31.906)

Note: Ages in parenthesis refer to waited mean ages for all express, local and total service.

TABLE 13

TRIP MODE CHOICE
(Rank Ordered By Response)

Question #7. What are main reasons you took the bus on this trip?

A) Bus more convenient than auto
B) Bus Less expensive than auto
C) do not like to drive
D) No driver's license
E) Family does not own an auto
F) Auto used by another member of family
G) Parking not available at a reasonable price
H) Other _____ (specify)

Express - based on 1745 respondants

733	42.0%	B - Bus less expensive than auto
727	41.7%	A - Bus more convenient than auto
520	29.8	G - Parking not available at a reasonable price
323	18.5%	F - Auto used by another member of family
238	13.6%	C - Do not like to drive
220	12.6%	D - No driver's license
185	10.6%	E - Family does not own an auto
117	6.7%	H - Other

Local - based on 1870 respondants

522	27.9%	D - No driver's license
442	23.6%	F - Auto used by another member of family
402	21.5%	E - Family does not own an auto
370	19.0%	A - Bus more convenient than auto
365	19.5%	B - Bus less expensive than auto
201	10.7%	H - Other
186	9.9%	G - Parking not available at a reasonable price
126	6.7%	C - Do not like to drive

Combined - based on 3615 respondants

1098	30.4%	B - Bus less expensive than auto
1097	30.3%	A - Bus more convenient than auto
765	21.2%	F - Auto used by another member of family
742	20.5%	D - No driver's license
706	19.5%	G - Parking not available at a reasonable price
587	16.2%	E - Family does not own an auto
364	10.1%	C - Do not like to drive
318	8.8%	H - Other

TABLE 14

UNWEIGHTED AUTO AVAILABILITY
1974 Jeffries Freeway Study

Question #8: How many autos are available to your family?

No. of Autos Available	Express	Local	Combined
0	222 (12.7%)	474 (25.3%)	696 (19.3%)
1	802 (46.0%)	742 (39.7%)	1544 (42.7%)
2	537 (30.8%)	434 (23.2%)	971 (26.9%)
3 or more	142 (8.1%)	137 (7.3%)	279 (7.7%)
No response	42 (2.4%)	83 (4.4%)	125 (3.5%)
Total	1745 (100.0%)	1870 (100.0%)	3615 (100.0%)

TABLE 15

WEIGHTED AUTO AVAILABILITY
1974 Jeffries Freeway Study

Question #8: How many autos are available to your family?

No. of Autos Available	Express	Local	Combined
0	470 (13.1%)	2014 (25.7%)	2485 (21.8%)
1	1640 (45.8%)	3070 (39.2%)	4711 (41.3%)
2	1090 (30.5%)	1826 (23.3%)	2917 (25.6%)
3 or more	291 (8.1%)	568 (7.2%)	859 (7.5%)
No response	86 (2.4%)	357 (4.6%)	443 (3.9%)
Total	3578 (100.0%)	7836 (100.0%)	11,414 (100.0%)

TABLE 16
ZERO AUTO AVAILABILITY BY BUS LINE
1974 JEFFRIES FREEWAY STUDY

BUS LINE #	DESCRIPTION	RUN TYPE EXPRESS	LOCAL	COMBINED
14	Plymouth	12.3%	32.4%	20.3%
16	Grand River	10.0%	23.6%	15.1%
33	Dexter	19.0%	28.0%	26.3%
35	Fenkell	27.2%	29.3%	28.4%
41	Hamilton	13.0%	21.9%	19.6%
44	Imperial Express	9.5%	----	9.5%
50	Joy	11.6%	29.0%	17.9%
82	Schoolcraft	----	20.8%	20.8%
83	Second	15.8%	19.7%	18.8%
86	Tireman	----	28.9%	28.9%

Note: Figures are to be read as "%" of all riders for a particular bus line who indicated no car was available to them.

TABLE 17

SEX OF RESPONDANT
1974 Jeffries Freeway Study

Question #10: Sex _____ Female _____ Male

Sex	Express	Local	Combined
Male	460 (26.4%)	491 (26.3%)	951 (26.3%)
Female	1167 (66.9%)	1280 (68.4%)	2447 (67.7%)
No Response	118 (6.8%)	99 (5.3%)	217 (6.0%)
	1745 (100.0%)	1870 (100.0%)	3615 (100.0%)
	(four observations missing)		(four observations missing)

riders are likely to be female (67.7%) as opposed to male. No significant variations were found between express and local coaches or between bus lines to this statement.

2) Trip Table Analysis Stratified By Origin, Origin And Destination, and Destination

a) Origins - As mentioned in the previous chapter, all survey records which were codeable to Census Tracts and Blocks for the origin end of the trip were sorted by bus line and run type. This information was the input into the market potential work where Census Tracts and Blocks were grouped according to route segments. Table 18 illustrates the number of origin records coded to tract-block level detail while Table 19 illustrates the resulting weighting factors.

b) Origin and Destination - For all records where both the origin and destination end of the trip were codeable to zone a trip table was prepared. The number of records for which origin and destination zones were determined is illustrated in Table 20. The Detroit CBD trip ends (zones 1-30) of the total trips previously identified in Table 20 are shown in Table 21. Both of these tables illustrate unweighted survey results. The computed trip table weighting factors used for the expansion of the trip table to represent all riders are shown in Table 22. The factored trip table was then used in the analysis of bus routes as they relate to passengers' ultimate origin and destination.

c) Destination - As part of the overall study, bus routes within the Detroit CBD were reviewed. To assist in this review, maps illustrating the existing bus route, bus stops, and ultimate destination by Census Block were prepared. The tables included within this section of the report (Tables 23-32) summarize CBD trip ends (for all records for which the destination could be coded to block level) by Census Tract, the percentage of CBD trip ends to total trip ends and the response rate for question #6 regarding the ultimate destination of the trip. Information regarding the survey response rate (independent of the question) is also indicated.

TABLE 18

ORIGINS TRIP END SUMMARY
1974 JEFFRIES FREEWAY STUDY

BUS LINE #	DESCRIPTION	LOCAL	EXPRESS	TOTAL
14	Plymouth	79(459)	102(294)	181(753)
86	Tireman	91(417)	---	91(417)
82	Schoolcraft	61(315)	---	61(315)
50	Joy	102(625)	147(379)	249(1004)
35	Fenkell	155(1057)	108(379)	263(1436)
41	Hamilton	241(1101)	67(211)	308(1312)
83	Second	175(708)	46(125)	221(833)
16	Grand River	184(1377)	230(881)	414(2258)
33	Dexter	232(1414)	49(208)	281(1622)
44	Imperial Express	---	271(851)	271(851)
	Total	1320(7473)	1020(3328)	2340(10801)

Note: Numbers identified within this table refer to the number of survey records coded to Census Tract, Block and Zone for all records where origin geocoding was possible.

Numbers in parenthesis refer to the total number of surveys distributed and hence the total number of passengers.

TABLE 19

ORIGIN TRIP END SUMMARY WEIGHTING FACTORS
1974 JEFFRIES FREEWAY STUDY

BUS LINE #	DESCRIPTION	LOCAL	EXPRESS
14	Plymouth	5.81	2.88
86	Tireman	4.58	----
82	Schoolcraft	5.16	----
50	Joy	6.13	2.58
35	Fenkell	6.82	3.51
41	Hamilton	4.57	3.15
83	Second	4.04	2.72
16	Grand River	7.48	3.83
33	Dexter	6.09	4.24
44	Imperial Express	----	3.14
	TOTAL	5.66	3.26

Note: The numbers shown within this table refer to the expansion factors used in the market potential work. They were calculated as follows:

$$\text{Weighting Factor} = \frac{\text{Total \# of Surveys Distributed}}{\text{Total \# of Surveys Coded to Census Tract, Block and Zone.}}$$

TABLE 20

ORIGIN AND DESTINATION
TRIP END SUMMARY
1974 JEFFRIES FREEWAY STUDY

BUS LINE #	DESCRIPTION	LOCAL	EXPRESS	TOTAL
14	Plymouth	66(459)	86(294)	152(753)
86	Tireman	73(417)	----	73(417)
82	Schoolcraft	47(315)	----	47(315)
50	Joy Road	76(625)	119(379)	195(1004)
35	Fenkell	132(1057)	97(379)	229(1436)
41	Hamilton	198(1101)	62(211)	260(1312)
83	Second	126(708)	42(125)	168(833)
16	Grand River	152(1377)	208(881)	360(2258)
33	Dexter	187(1414)	44(208)	231(1622)
44	Imperial Express	----	241(851)	241(851)
	TOTAL	2114(7473)	1798(3328)	3912(10801)

Note: Numbers reported in this table illustrate the number of surveys for which a zone could be identified for both the origin and destination end of the trip.

Numbers reported in parenthesis refer to the total number of passengers.

TABLE 21

ORIGIN AND DESTINATION
TRIP END SUMMARY
DETROIT CBD
1974 JEFFRIES FREEWAY STUDY

BUS LINE #	DESCRIPTION	LOCAL	EXPRESS	TOTAL
14	Plymouth	29	60	89
86	Tireman	29	---	29
82	Schoolcraft	12	---	12
50	Joy Road	26	118	144
35	Fenkell	34	72	106
41	Hamilton	38	55	93
83	Second	41	34	75
16	Grand River	40	162	202
33	Dexter	50	36	86
44	Imperial Express	---	---	177
	TOTAL	299	714	1013

Note: The Detroit CBD is defined as sequential zones 1-30.

This table summarizes responses for surveys which contained information for both origins and destinations.

TABLE 22

ORIGIN AND DESTINATION
TRIP TABLE EXPANSION FACTORS
1974 JEFFRIES FREEWAY STUDY

Bus Line #	Description	Local	Express
14	Plymouth	6.95	3.42
86	Tireman	5.71	----
82	Schoolcraft	6.70	----
50	Joy Road	8.22	3.18
35	Fenkell	8.01	3.91
41	Hamilton	5.56	3.40
83	Second	5.62	2.98
16	Grand River	9.06	4.24
33	Dexter	7.56	4.73
44	Imperial Express	----	3.53

Notes: Factors were developed by dividing the total number of passengers by the number of coded survey responses received for both origin and destination.

TABLE 23

Plymouth

CBD Trip Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	Total
001	18 (45.0%)	55 (51.4%)	73 (49.6%)
033	5 (12.5%)	21 (19.6%)	26 (17.6%)
506	1 (2.5%)	3 (2.8%)	4 (2.7%)
507	11 (27.5%)	17 (15.8%)	28 (19.0%)
508	-	0	-
530	5 (12.5%)	11 (10.2%)	16 (10.8%)
TOTAL	40 (100.0%)	107 (100.0%)	147 (100.0%)

Total Trip End Summary

CBD	40 (43.9%)	107 (75.8%)	147 (63.3%)
Non-CBD	51 (56.0%)	34 (24.1%)	85 (36.6%)
TOTAL	91 (100.0%)	141 (100.0%)	232 (100.0%)
# Forms Distrib.	459	294	753
% Response for Destination	19.8%	47.9%	30.8%
% Response (Survey Rtn)	23.5% (108)	55.3% (163)	35.9% (271)

TABLE 24

Tireman

CBD Trip Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	Total
001	17 (42.5%)	0	17 (42.5%)
033	6 (15.0%)	0	6 (15.0%)
506	5 (12.5%)	0	5 (12.5%)
507	7 (17.5%)	0	7 (17.5%)
508	-	0	-
530	5 (12.5%)	0	5 (12.5%)
TOTAL	40 (100.0%)	0	0 (100.0%)

Total Trip End Summary

CBD	40 (39.2%)	0	40 (39.2%)
Non-CBD	62 (60.7%)	0	62 (60.7%)
TOTAL	102 (100.0%)	0	102 (100.0%)
# Forms Distrib.	417		417
% Response for Destination	24.4%	0	24.4%
% Response (Survey Rtn)	30.6% (128)	0 0	30.6% (128)

TABLE 25

Schoolcraft

CBD Trip Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	Total
001	4 (23.5%)	0	4 (23.5%)
033	-	0	-
506	1 (5.8%)	0	1 (5.8%)
507	7 (41.1%)	0	7 (41.1%)
508	-	0	-
530	5 (29.4%)	0	5
TOTAL	17 (100.0%)	0	17(100.0%)

Total Trip End Summary

CBD	17 (25.7%)	0	17 (25.7%)
Non-CBD	49 (74.2%)	0	49 (74.2%)
TOTAL	66 (100.0%)	0	66 (100.0%)
# Forms Distrib.	315		315
% Response for Destination	20.9%	0	20.9%
% Response (Survey Rtn)	30.4% (96)	0 0	30.4% (96)

TABLE 26

Joy Road

CBD Trip Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	Total
001	19 (47.5%)	120 (61.9%)	139 (59.4%)
033	2 (5.0%)	11 (5.7%)	13 (5.6%)
506	6 (15.0%)	14 (7.2%)	20 (8.5%)
507	9 (22.5%)	32 (16.5%)	41 (17.5%)
508	0	0	0
530	4 (10.0%)	17 (8.8%)	21 (9.0%)
TOTAL	40(100.00)	194 (100.0%)	234(100.0%)

Total Trip End Summary

CBD	40 (35.7%)	194 (92.4%)	234 (72.7%)
Non-CBD	72 (64.3%)	16 (7.6%)	88 (27.3%)
TOTAL	112 (100.0%)	210 (100.0%)	322 (100.0%)
# Forms Distrib.	625	379	1004
% Response for Destination	17.9%	55.4%	32.0%
% Response (Survey Rtn)	23.2% (145)	68.1% (258)	40.1% (403)

TABLE 27

Fenkell

CBD Trips Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	Total
001	17 (34.7%)	56 (50.5%)	73 (45.6%)
033	8 (16.3%)	9 (8.1%)	17 (10.6%)
506	8 (16.3%)	13 (11.7%)	21 (13.1%)
507	14 (28.6%)	25 (22.5%)	39 (24.4%)
508	-	1 (.9%)	1 (.6%)
530	2 (4.1%)	7 (6.3%)	9 (5.6%)
TOTAL	49 (100.0%)	111 (100.0%)	160 (100.0%)

Total Trip End Summary

CBD	49 (27.2%)	111 (78.7%)	160 (49.8%)
Non-CBD	131 (72.8%)	30 (21.3%)	161 (50.2%)
TOTAL	180 (100.0%)	141 (100.0%)	321 (100.0%)
# Forms Distrib.	1057	379	1436
% Response for Destination	17.0%	37.2%	22.4%
% Response (Survey Rtn)	20.3% (215)	41.7% (158)	25.9% (373)

TABLE 28

Hamilton

CBD Trip Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	
001	19 (35.8%)	48 (51.6%)	67 (45.9%)
033	9 (17.0%)	16 (17.2%)	25 (17.2%)
506	4 (7.5%)	5 (5.4%)	9 (6.2%)
507	14 (26.4%)	18 (19.4%)	32 (21.9%)
508	0	0 -	0
530	7 (13.2%)	6 (6.5%)	13 (8.9%)
TOTAL	53 (100.0%)	93 (100.0%)	146 (100.0%)

Total Trip End Summary

CBD	53 (19.2%)	93 (89.4%)	146 (38.4%)
Non-CBD	223 (80.8%)	11 (10.6%)	234 (61.6%)
TOTAL	276 (100.0%)	104 (100.0%)	380 (100.0%)
# Forms Distrib.	1101	211	1312
% Response for Destination	25.0%	49.3%	29.0%
% Response (Survey Rtn)	28.9% (319)	54.5% (115)	33.0% (434)

TABLE 29

Second

CBD Trip Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	
001	26 (38.2%)	16 (28.0%)	42 (33.6%)
033	13 (19.1%)	4 (7.0%)	17 (13.6%)
506	3 (4.4%)	10 (17.5%)	13 (10.4%)
507	21 (30.8%)	24 (42.1%)	45 (36.0%)
508	1 (1.4%)	- -	1 (.8%)
530	4 (5.8%)	3 (5.2%)	7 (5.6%)
TOTAL	68 (100.0%)	57 (100.0%)	125 (100.0%)

Total Trip End Summary

CBD	68 (35.7%)	57 (87.6%)	125 (49.0%)
Non-CBD	122 (64.2%)	8 (12.3%)	130 (50.9%)
TOTAL	190 (100.0%)	65 (100.0%)	255 (100.0%)
# Forms Distrib.	708	125	833
% Response for Destination	26.8%	52.0%	30.6%
% Response (Survey Rtn)	37.2% (264)	60.8% (76)	40.8% (340)

TABLE 30

Grand River

CBD Trip Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	Total
001	32 (49.2%)	173 (51.4%)	205 (51.1%)
033	17 (26.1%)	68 (20.2%)	85 (21.1%)
506	8 (12.3%)	15 (4.4%)	23 (5.7%)
507	5 (7.6%)	57 (16.9%)	62 (15.4%)
508	0 -	0 -	0 -
530	4 (6.1%)	23 (6.8%)	26 (6.4%)
TOTAL	65 (100.0%)	336 (100.0%)	401 (100.0%)

Total Trip End Summary

CBD	65 (29.5%)	336 (84.2%)	401 (64.7%)
Non-CBD	155 (70.4%)	63 (15.7%)	218 (35.2%)
TOTAL	220 (100.0%)	399 (100.0%)	619 (100.0%)
# Forms Distrib.	1377	881	2258
% Response for Destination	15.9%	45.2%	27.4%
% Response (Survey Rtn)	19.0% (263)	49.0% (432)	30.7% (695)

TABLE 31

Dexter

CBD Trip Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	Total
001	19 (28.7%)	33 (52.3%)	52 (40.3%)
033	14 (21.2%)	10 (15.8%)	24 (18.6%)
506	9 (13.6%)	4 (6.3%)	13 (10.0%)
507	14 (21.2%)	11 (17.4%)	25 (19.3%)
508	2 (3.0%)	-	2 (1.5%)
530	8 (12.1%)	5 (7.9%)	13 (10.0%)
TOTAL	66 (100.0%)	63 (100.0%)	129 (100.0%)

Total Trip End Summary

CBD	66 (25.3%)	63 (88.7%)	129 (38.9%)
Non-CBD	194 (74.6%)	8 (11.2%)	202 (61.0%)
TOTAL	260 (100.0%)	71 (100.0%)	331 (100.0%)
# Forms Distrib.	1414	208	1622
% Response for Destination	18.3%	34.1%	20.4%
% Response (Survey Rtn)	332 (23.4%)	79 (37.9%)	411 (25.3%)

TABLE 32

Imperial Express

CBD Trip Ends
1974 Jeffries Freeway Study

1970 Census Tract	Local	Express	Total
001	0	122 (40.5%)	122 (40.5%)
033	0	40 (13.2%)	40 (13.2%)
506	0	17 (5.6%)	17 (5.6%)
507	0	92 (30.5%)	92 (30.5%)
508	0	-	-
530	0	30 (9.9%)	30 (9.9%)
TOTAL	0	301 (100.0%)	301 (100.0%)

Total Trip End Summary

CBD	0	301 (74.6%)	301 (74.6%)
Non-CBD	0	102 (24.3%)	102 (24.3%)
TOTAL	0	403 (100.0%)	403 (100.0%)
# Forms Distrib.	0	851	851
% Response for Destination	0	47.3%	47.3%
% Response (Survey Rtn)	0	54.5% (464)	54.5% (464)

Review of the CBD trip end information indicated the following:

a) Response rate for destinations - Review of the results presented for each bus line indicated that the response rate for destination (question #6) changed appreciably if a passenger was aboard a local or express bus. It was found for example that the response rate for local buses was in the range of 16-27% while the response rate for express buses was in the range of 34-55%. This difference between the response rate for local and express buses was anticipated, however, since experience has shown that the rate of response varies for bus passengers having different socio-economic characterics, as well as different trip lengths.

b) CBD Trip End/Total Trip End Ratio - The second observation was that there were significant differences between local and express buses relative to the percentage of all bus passengers whose final destination lies within the Detroit CBD. For local buses, this percentage varied between 19-44% and for express buses the percentage of CBD trip ends to total trip ends varied between 75-93%.

(Note: Not all tables in this section total correctly due to rounding.)

CHAPTER IV: 1968 ON-BOND TRANSIT SURVEY RESULTS

As a part of the 1968 CBD Circulation Study, a bus passenger survey was conducted between July 31st and August 15th, 1968. Self-prepared, postage paid postcard survey cards (Figure 5) were distributed by survey personnel who boarded every other bus on every DSR bus line inbound to the Detroit CBD between the hours of 7:00 a.m. and 11:00 a.m. The survey cards were distributed to all passengers on each DSR bus line inbound to the Detroit CBD as they crossed a cordon line in the vicinity of East and West Grand Boulevard.

A total of 26,490 survey cards were distributed as part of the 1968 Bus Survey, a figure expected to reach 63% of the 41,587 bus riders entering the CBD (during the survey period) on an average day. Usable returns totaled approximately 7,100; a sample rate of approximately 17%. It is noted that the 1968 Bus Survey Coding Form and file layout are contained in Appendix III and Figure 6 respectively.

Survey results for all DSR bus lines surveyed follow, where results are presented for the age distribution of riders, trip distribution throughout the survey period, origins, trip purpose, trip mode choice, and walking distance at destination.

a) Age distribution - The largest percentage of survey respondents were found to be between 20-30 years of age or 27% of all trips (see Figure 7). Passengers in the 50-65 year age group accounted for 20% of all trips, while the 16-20, 30-40, 40-50 and 65 and over age group accounted for 15%, 13%, 17% and 7% respectively. The smallest percentage of riders was in the under 16 years of age group, accounting for only 1% of all trips to the Detroit CBD.

b) Trip distribution throughout the survey period - the number of passengers peaked between the hours of 8:00 a.m. and 9:00 a.m. During that hour, 43% of all persons entering the CBD by bus during the survey period arrived. (See Figure 8.)

c) Origins - Trip origins were identified through the use of

FIGURE 5

CITY OF DETROIT — CENTRAL BUSINESS DISTRICT STUDY

● Your help is needed to plan an improved transit system. Please fill out this card about the trip you are now taking and drop completed card in any U.S. mail box. Thank you.

PLEASE DO NOT WRITE IN GRAY BOXES

1. MY TRIP BEGAN AT _____ [6] [7] [8] [9] [10] [11]
   NEAREST STREET CORNER AND CITY

2. I AM ON THE _____ BUS [14] [15] [16]
   NAME OF BUS ROUTE

3. I WILL GET DOWNTOWN ABOUT : O'CLOCK [19] [20] [21]

4. WHEN DOWNTOWN, I WILL GET OFF THE BUS AT _____ [24] [25] [26] [27] [28] [29]
   NEAREST STREET CORNER OR OTHER IDENTIFICATION

5. I AM GOING TO _____ [32] [33] [34] [35] [36] [37]
   NEAREST STREET CORNER, ADDRESS OR BUILDING NAME

6. MY MAIN REASON FOR GOING DOWNTOWN IS [40]

   ☐ PLACE OF WORK ☐ BUSINESS CALL ☐ TO SHOP ☐ SCHOOL
   ☐ TO EAT ☐ PERSONAL BUSINESS (TO VISIT DOCTOR, LAWYER, BANK, GOVERNMENT OFFICE, ETC.) ☐ SOCIAL — RECREATIONAL PURPOSES
   ☐ TO TRANSFER TO ANOTHER BUS

7. CHECK ONE OR MORE PRINCIPAL REASONS YOU TOOK THE BUS ON THIS TRIP [43] [44] [45] [46] [47] [48] [49] [50]

   ☐ DO NOT LIKE TO DRIVE
   ☐ BUS MORE CONVENIENT THAN AUTO
   ☐ NO DRIVER'S LICENSE
   ☐ FAMILY DOES NOT OWN AN AUTO
   ☐ AUTO USED BY ANOTHER MEMBER OF FAMILY
   ☐ BUS LESS EXPENSIVE THAN AUTO
   ☐ PARKING NOT AVAILABLE AT A REASONABLE PRICE
   ☐ OTHER _____
   (SPECIFY)

8. MY AGE IS ☐ UNDER 16 ☐ 16-20 ☐ 20-30 ☐ 30-40 [59]
   ☐ 40-50 ☐ 50-65 ☐ OVER 65

9. COMMENTS _____

C of D—67-PO **THANK YOU FOR YOUR HELP**

FIGURE 6

SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
STANDARD LAYOUT FORM

1968 Detroit CBD Circulation Study

RECORD TITLE: Bus Survey File Format FILE NO:

POS.	DESCRIPTION
1	Precoded "T"
2	
3	
4	Blank
5	
6	
7	
8	
9	Trip Origin Zip Code
10	(Last 3 digits)
11	
12	
13	Blank
14	
15	Bus Line #
16	
17	Blank
18	
19	Downtown Arrival
20	Time (Hours - 10th
21	hours)
22	Bus Disembarkation
23	Analysis Zone
24	
25	
26	Bus Disembarkation
27	
28	Block #
29	
30	Destination
31	Analysis Zone #
32	
33	
34	Destination
35	
36	Block #
37	
38	
39	Blank
40	Trip Purpose
41	Blank
42	
43	
44	Trip Mode Choice
45	
46	
47	
48	
49	
50	
51	Blank
52	
53	Age
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	Blank
66	
67	
68	
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129	
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131	
132	
133	
134	
135	

COMMENTS:

FIGURE 7

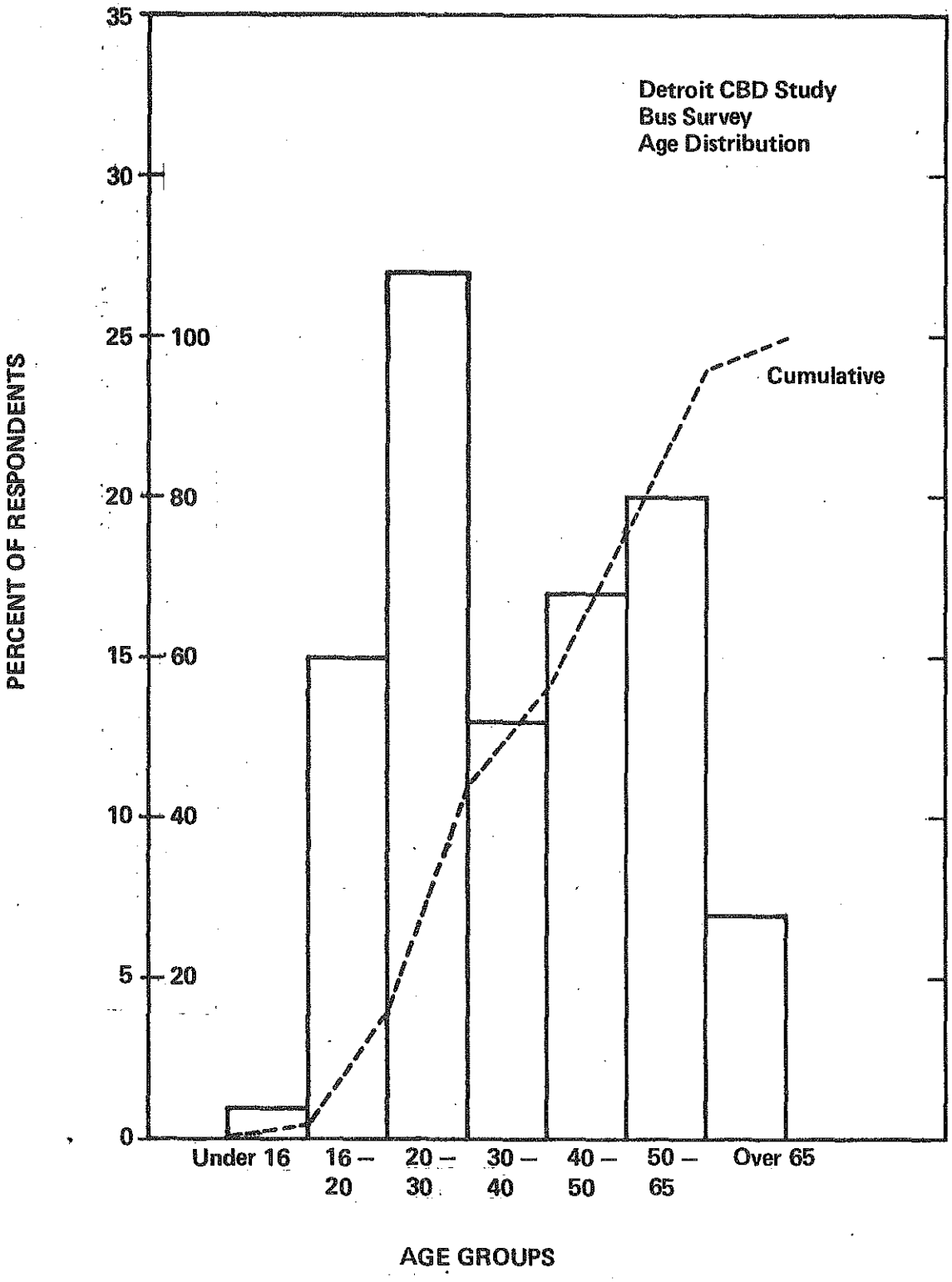
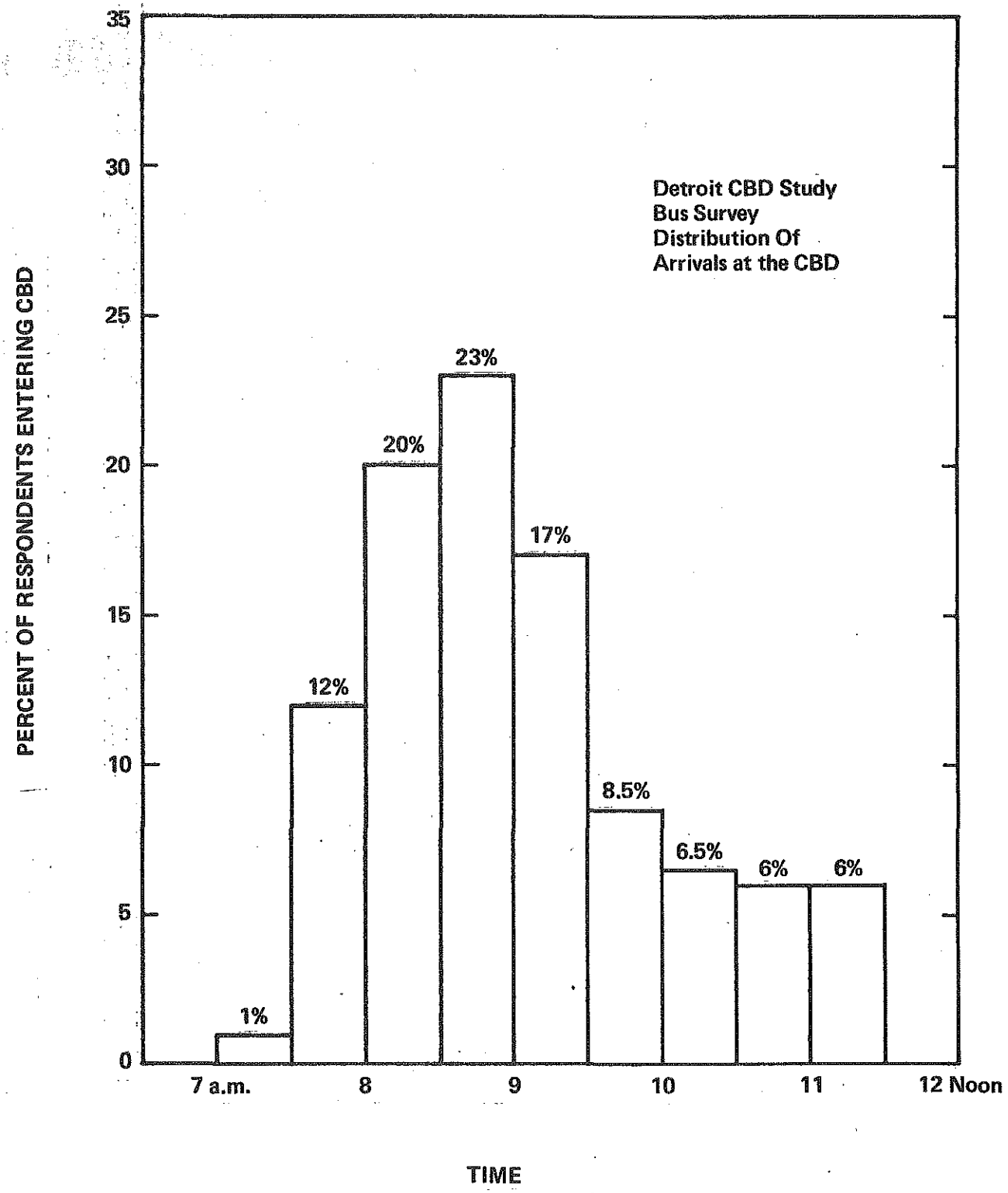

Detroit CBD Study
Bus Survey
Age Distribution
Cumulative
PERCENT OF RESPONDENTS
35
30
25
20
15
10
5
0
100
80
60
40
20
Under 16
16 – 20
20 – 30
30 – 40
40 – 50
50 – 65
Over 65
AGE GROUPS

FIGURE 8


Detroit CBD Study
Bus Survey
Distribution Of
Arrivals at the CBD
PERCENT OF RESPONDENTS ENTERING CBD
35
30
25
20
15
10
5
0
1%
12%
20%
23%
17%
8.5%
6.5%
6%
6%
7 a.m.
8
9
10
11
12 Noon
TIME

home postal zip-code numbers. From this information, it was determined that 86% of all passenger trips surveyed originated within the Detroit CBD. The adjacent suburban communities accounted for 13% of trip origins, while the outlying areas accounted for the remainder.

d) Trip purpose - As expected, the work trip was the predominate purpose for entering the CBD by bus. As illustrated in Table 33, 84% of all trips were for the purpose of going to work. It is noted, however, that the distribution shown in Table 33 does not reflect bus riders who entered the CBD to connect with other bus lines which would carry them to destinations outside of the CBD.

e) Trip mode choice - Table 34 lists the complete distribution of reasons passengers took the bus. In summary, it was found that 23% of the responses indicated that they were "bus captive," i.e., had no driver's license or had no automobile available to them. Responses related to economics (41%) and convenience (24%) were also mentioned frequently. It is noted that because multiple answers were accepted for this question, the percentages are based on the number of responses, rather than the number of respondents.

f) Walking Distance to Destination - Survey responses were matched against a block to block distance table (measured in feet) to gauge walking distances between bus stop and final destination. It was found that less than 15% of all passengers walked more than 1,500 feet to their destination. A walking distance of 800 feet appeared to be the median, which corresponds to a 3-minute walk for the average person (see Figure 9).

In summary, it was found that the average bus passenger in 1968 was likely to be 20-30 years of age, arriving in the CBD between 8:00 a.m. and 9:00 a.m., a city resident, going to work, traveling by bus because he was a captive rider and walking approximately 800 feet from his bus stop to his final destination.

TABLE 33

TRIP PURPOSE
1968 Bus Survey

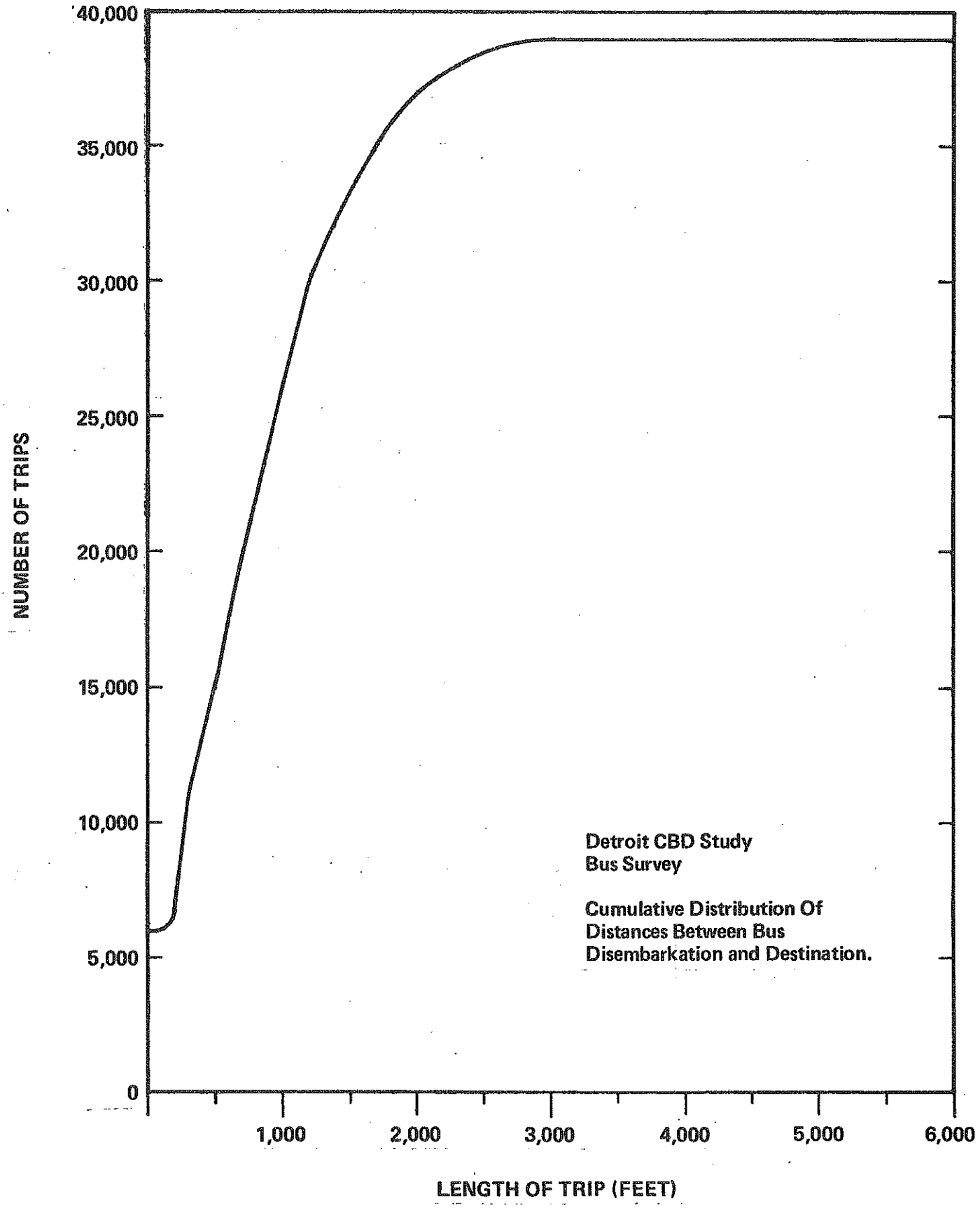
Trip Purpose	% of Respondents
Work	84
Business Call	3
Personal Business	3
Shop	8
School	1
Eat	-
Social - Recreation	1
Total	100%

TABLE 34

TRIP MODE CHOICE
1968 Bus Survey
(All Lines)

Reason	% of Responses	
Do not like to drive	1,024	(7.8%)
Bus more convenient that auto	3,197	(24.3%)
No drivers license	800	(6.1%)
Family does not own an auto	610	(4.6%)
Auto used by another member of family	1,600	(12.2%)
Bus less expensive than auto	2,690	(20.5%)
Parking not available at a reasonable price	2,654	(20.2%)
Other	563	(4.3%)
Total	13,138	(100.0%)

FIGURE 9


40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
NUMBER OF TRIPS
1,000
2,000
3,000
4,000
5,000
6,000
LENGTH OF TRIP (FEET)
Detroit CBD Study
Bus Survey
Cumulative Distribution Of
Distances Between Bus
Disembarkation and Destination.

CHAPTER V: COMPARISON SUMMARY BETWEEN 1968 AND 1974 ON-BOARD TRANSIT SURVEYS

Prior to any comparison between the 1968 and 1974 On-Board Transit Surveys, the surveys were reviewed as to sampling methods and type of survey. The following differences were observed:

1) The 1968 bus survey was distributed at a cordon line while the 1974 bus survey was distributed to all passengers as they boarded the bus.

2) The 1968 survey was conducted over several days while the 1974 survey was conducted on one day.

3) The 1968 survey covered every other bus for all bus lines in the DSR system while the 1974 survey covered only those bus lines within the Jeffries Freeway Corridor.

4) The 1968 survey covered the period between 7:00 - 11:00 a.m. while the 1974 survey covered the period between 7:30 and 9:00 a.m.

Due to the differences discussed above, the 1968 survey results were corrected to consider only those bus lines within the Jeffries Corridor and those which arrive downtown between 7:30 and 9:00 a.m. Other differences cited could only be recognized and not remedied. The corrections that were made, however, are discussed below:

a) 1968 bus lines within the Jeffries Freeway Corridor - In order to make a valid comparison between the 1968 and 1974 surveys, only bus lines whose routes were the same or similar to those bus lines surveyed in the course of the 1974 survey were considered. A list of the 1968 bus lines reviewed is shown in Table 35.

b) Survey times - The 1968 bus survey was conducted during the period from 7:00 a.m. to 11:00 a.m. To allow a direct comparison between 1968 and 1974, only trips between 7:30 a.m. and 9:00 a.m. were considered from the 1968 survey. This was accomplished by analyzing the survey records for values of 7.5 to 9.0 in columns 19-21 of the Coding Form (Appendix III).

TABLE 35

1968 BUS LINES
WITHIN THE JEFFRIES FREEWAY CORRIDOR

LINE # (LOCAL RUNS)	NAME
033	Dexter
035	Fenkell
016	Grand River
041	Hamilton
050	Joy
083	Second
086	Tireman

LINE # (EXPRESS RUNS	NAME
733	Dexter
716	Grand River
741	Hamilton
744	Imperial
750	Joy
714	Plymouth (Grand River)
814	Plymouth (John Lodge)
783	Second

Notes: Bus Line #'s are shown in columns 14-16 of the standard layout form of the 1968 Bus Survey File, see Figure 6, (Appendix III).

The Schoolcraft local, Plymouth local and Fenkell express lines were unsampled in the 1968 survey.

Assuming that the above corrections to the 1968 Bus Survey make it compatable to the 1974 survey, time-series analysis was conducted with regard to age distribution, trip purpose and trip mode choice of bus passengers. Discussion of these variables follows:

a) Age distribution - Although the question of age was worded somewhat differently between the 1968 and 1974 surveys, both surveys indicated that the majority of bus passengers were between the ages of 20-29. Specifically, 28% of the riders in 1968, and 27% of the riders in 1974 fell into this category (see Figures 10 and 11 respectively).

b) Trip purpose - Both the 1968 and 1974 surveys revealed that work trips were the predominant trip purpose for traveling to the CBD between 7:30 - 9:00 a.m. In 1968, 97.9% of transit trips on the Jeffries bus lines were work related (Figure 12), while in 1974 work trips accounted for only 76.2% of all trips (Figure 13). The decline in the percentage of work related trips in 1974 is mainly attributed to an increase in the number of school trips from .4% in 1968 to nearly 20% in 1974. And the increase in the percentage of school trips was anticipated due to the fact that survey forms were distributed as a passenger boarded the bus in 1974 and not in 1968. This rather subtle change meant that the 1974 survey would contain results for school trips outside of the CBD. No attempt was made at the time to examine strictly CBD bound trips between 1968 and 1974.

c) Trip mode choice - Figures 14 and 15 illustrate the distribution of trip mode choice of the survey responses for 1968 and 1974 respectively. Because multiple answers were accepted for trip mode choice on both questionnaires, the percentages shown are based on the number of responses rather than the number of respondents.

"Bus Captivity" i.e., having no driver's license or automobile available for use accounted for a significant percentage of responses in both surveys. Twenty-five percent of the 1968 responses indicated "Bus Captivity" while the 1974 figure rose to 37%. Those indicating "No Driver's License" nearly doubled in 1974 from 1968 figures. (This increase in unlicensed transit riders can be attributed in part to the increase in school related trips and a subsequent increase in the number of riders in the 0-15 year age group). Both surveys indicated that bus

FIGURE 10

1968 BUS SURVEY
Jeffries Bus Lines
Age Distribution

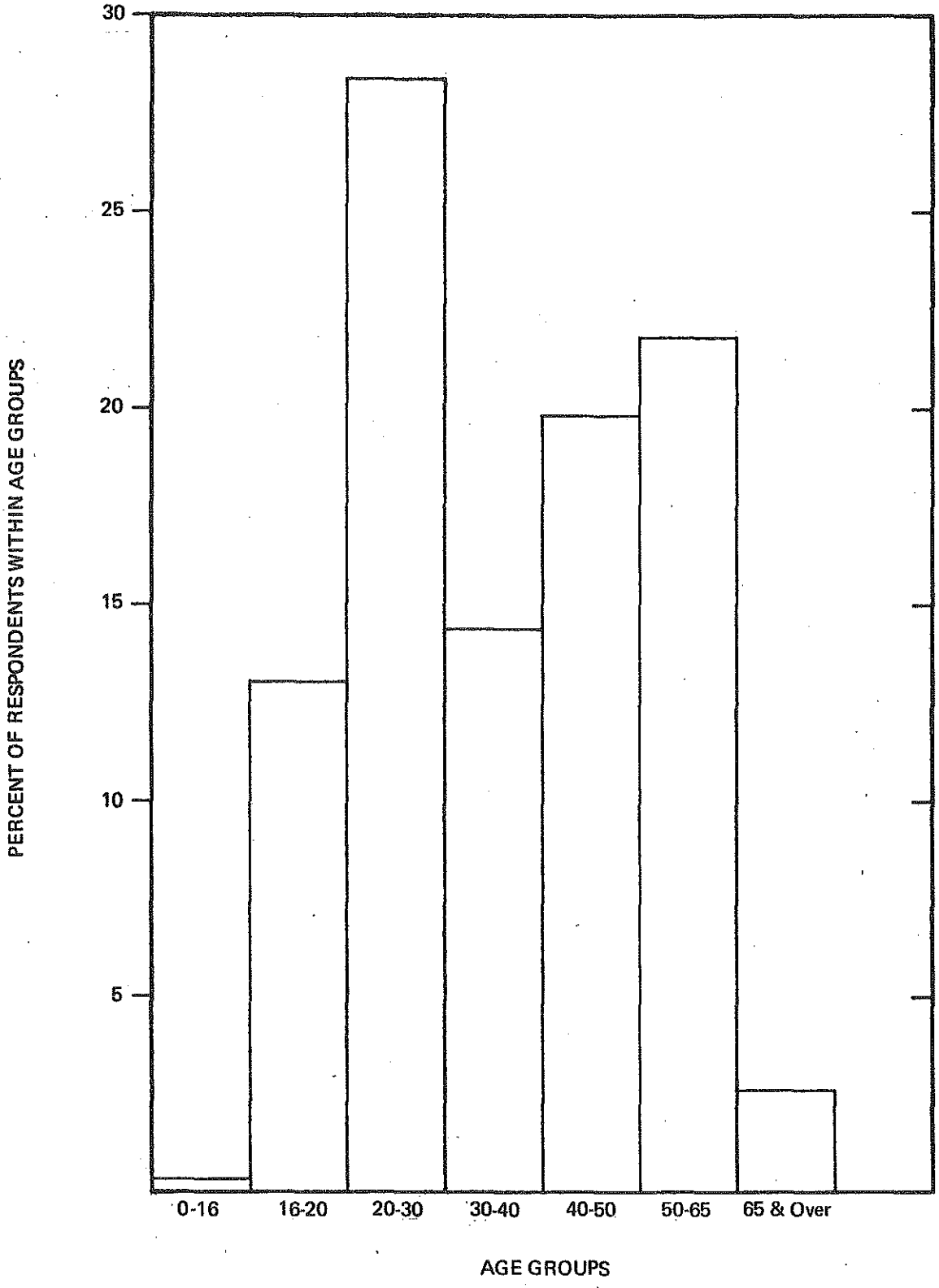


FIGURE 11

1974 BUS SURVEY
Age Distribution

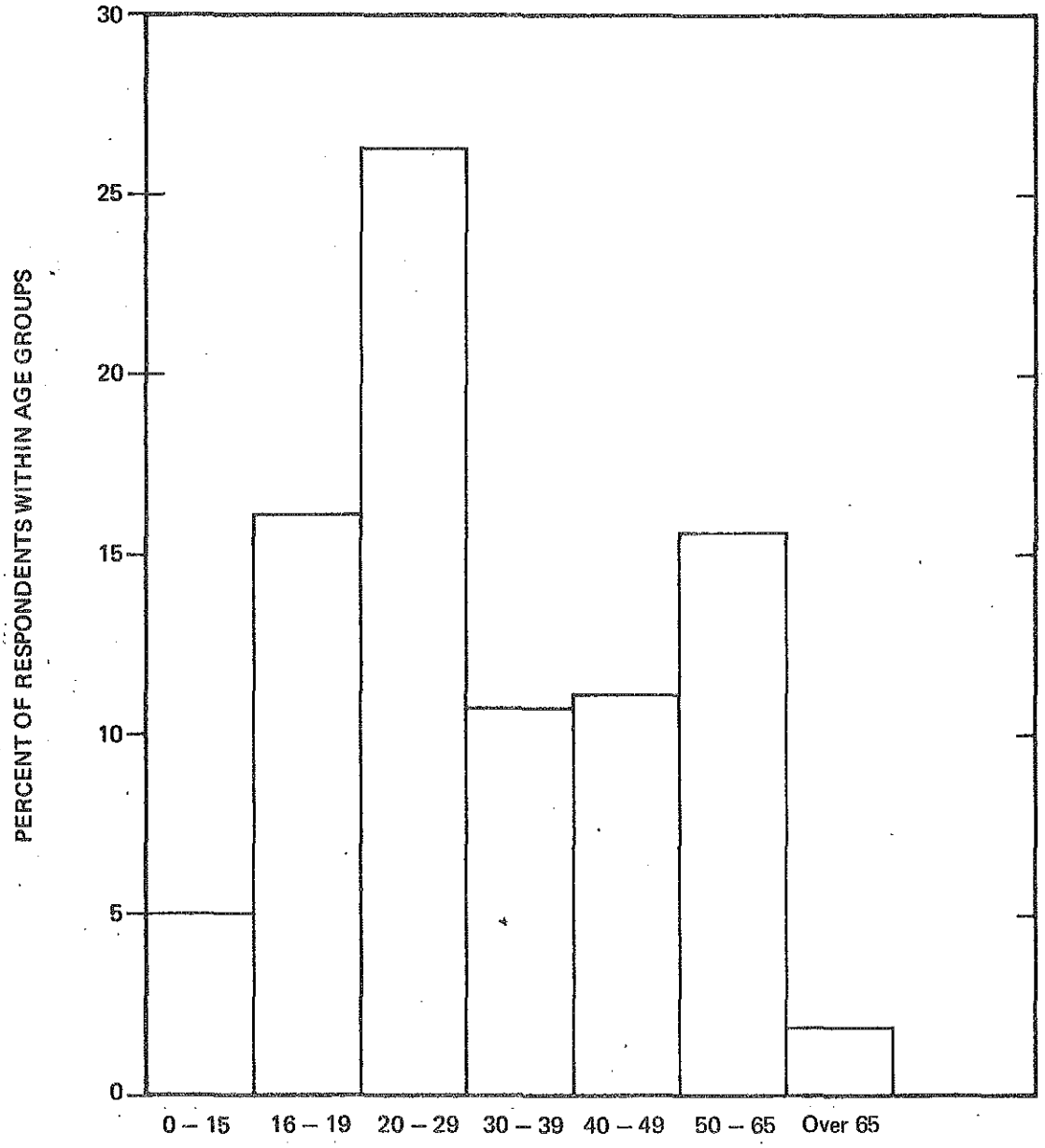


FIGURE 12

1968 BUS SURVEY
Jeffries Bus Lines
Trip Purpose

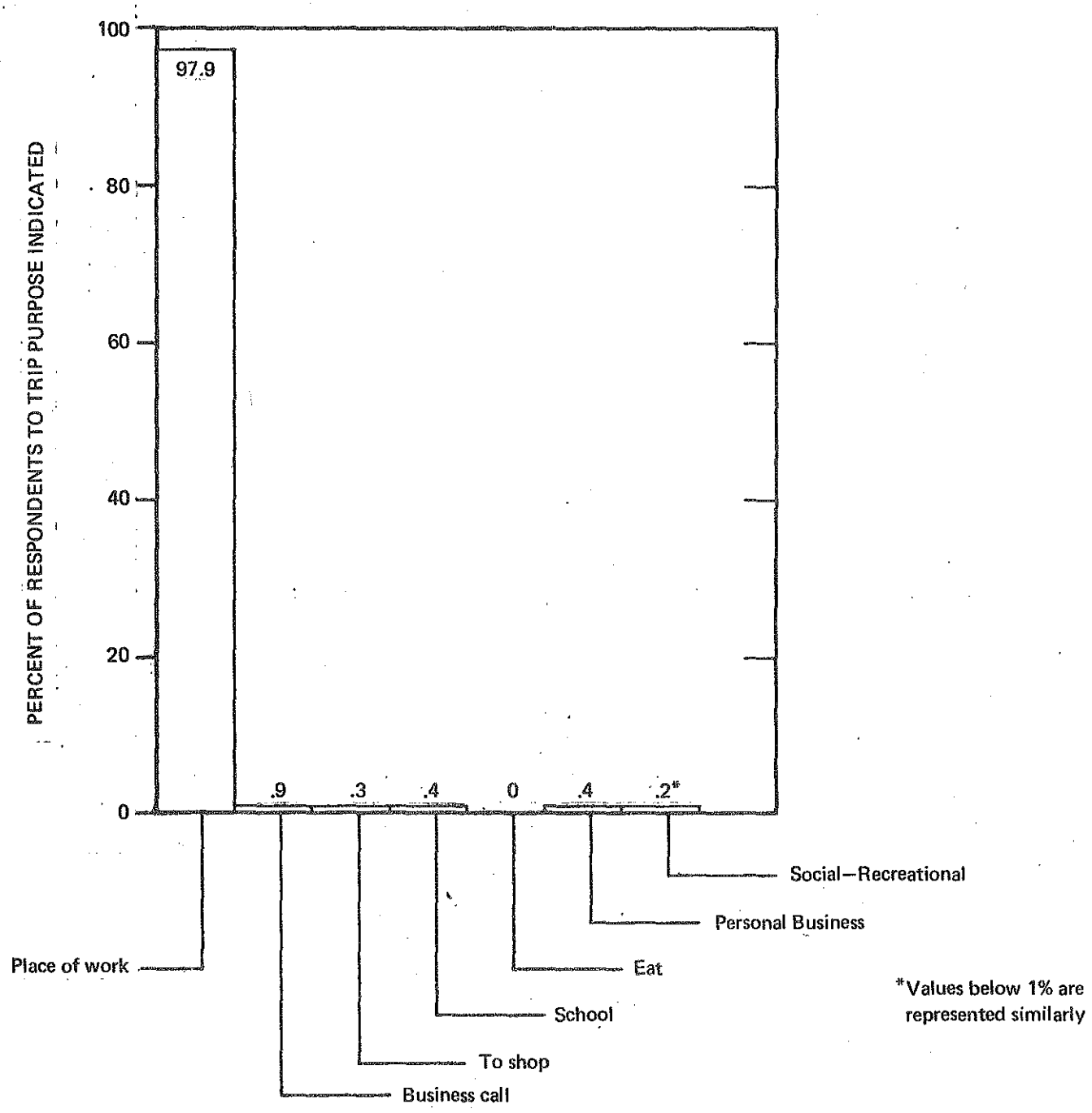
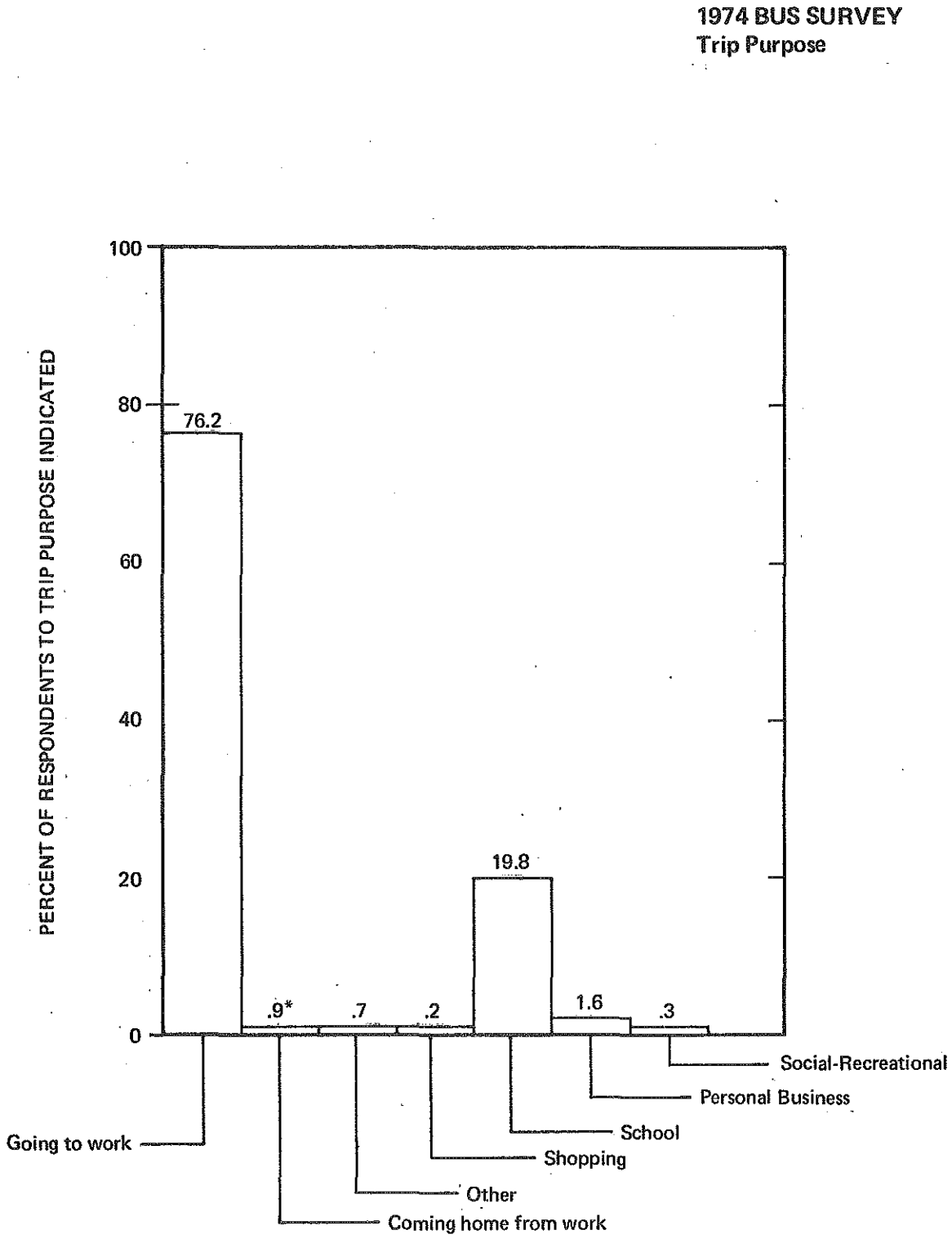


FIGURE 13

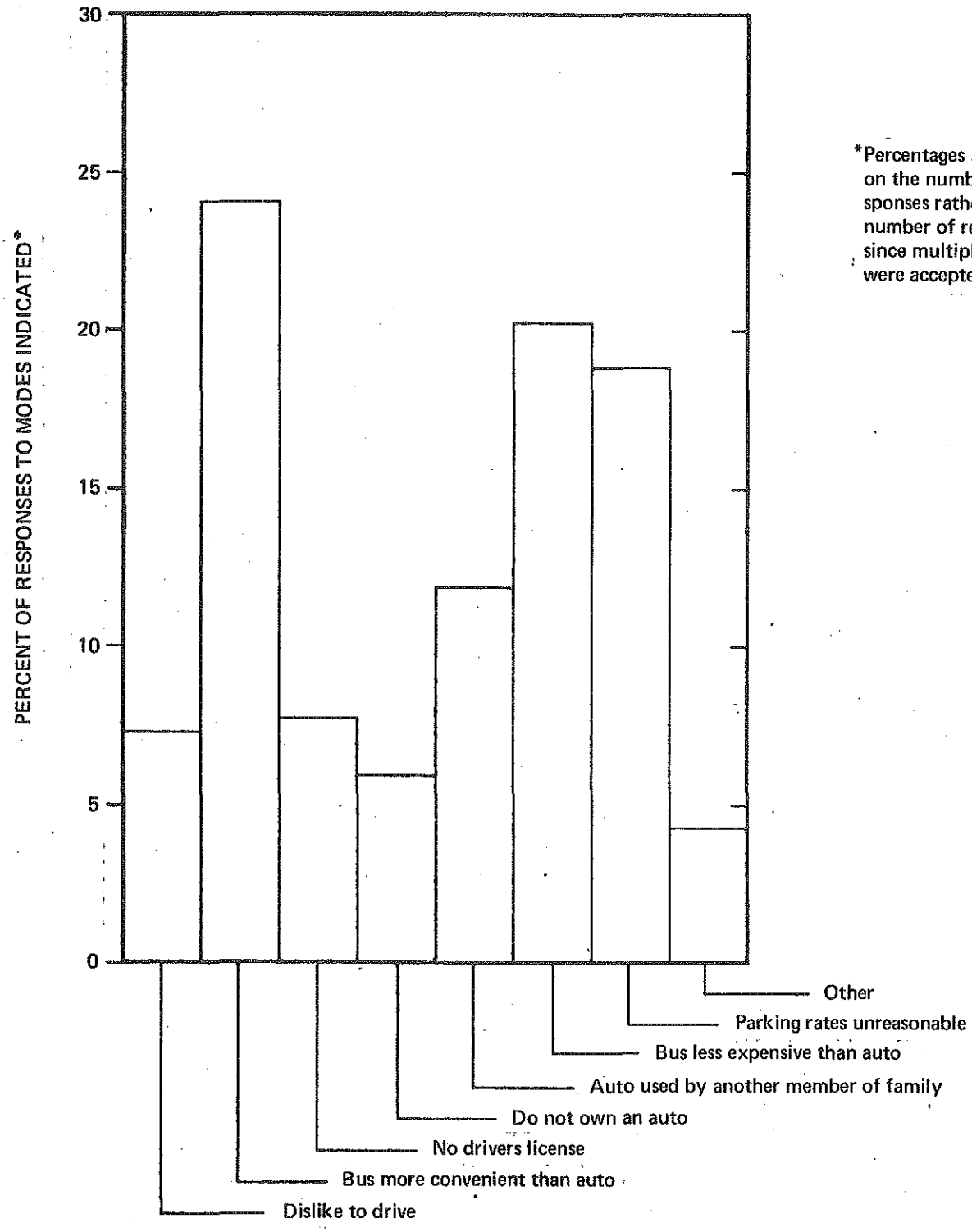


*Values below 1% are represented similarly

No response — .4%

FIGURE 14

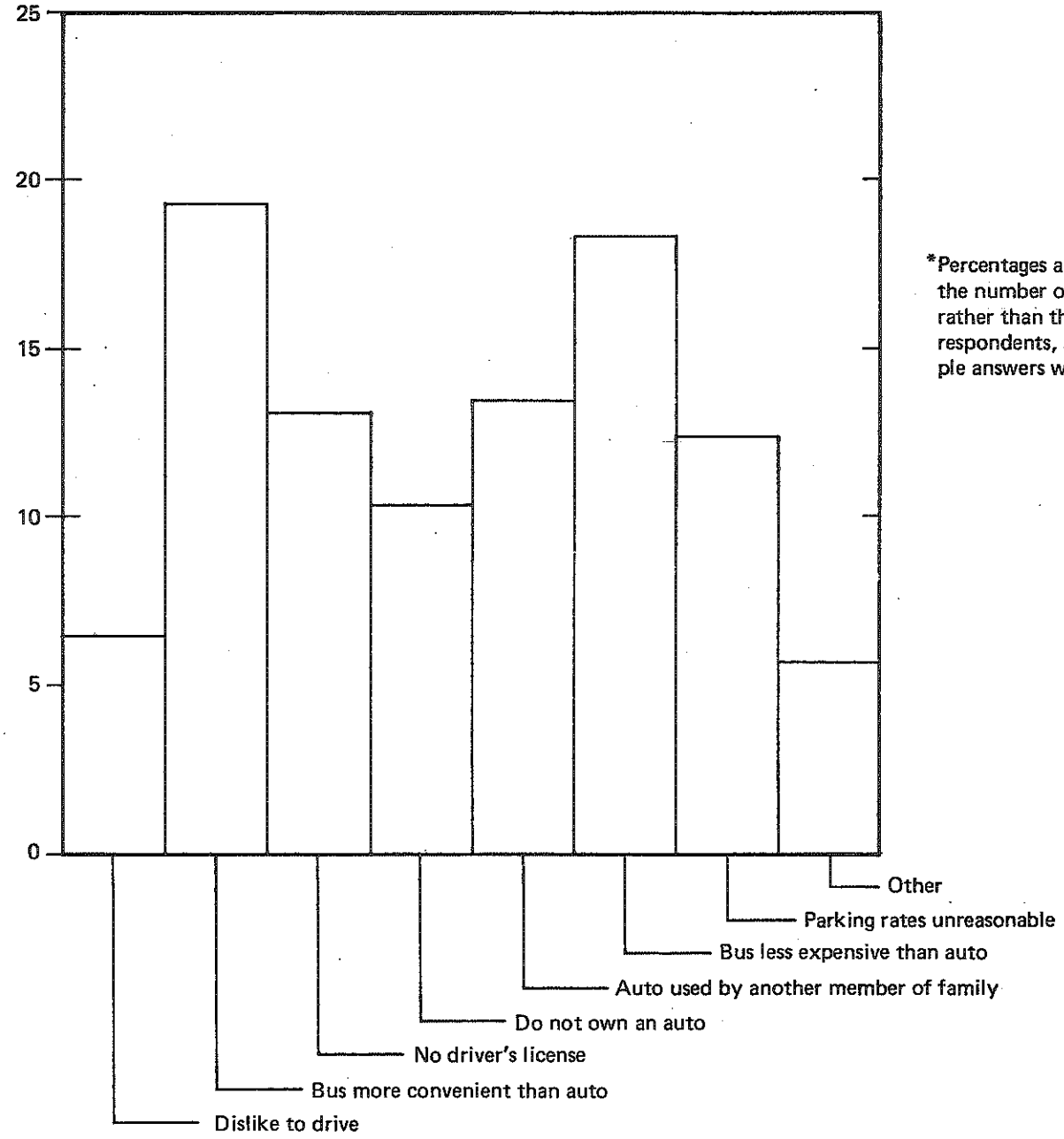
1968 BUS SURVEY
Jeffries Bus Lines
Trip Mode Choice



*Percentages are based on the number of responses rather than the number of respondents, since multiple answers were accepted.

FIGURE 15

1974 BUS SURVEY
Trip Mode Choice



*Percentages are based on the number of responses rather than the number of respondents, since multiple answers were accepted.

passengers preferred the convenience of the bus over the automobile. Economics was also an important factor in mode selection, accounting for 32% of the responses in 1974 and 39% in 1968.

In conclusion, the most significant change over time, as illustrated by data from the 1968 and 1974 surveys, was the increase in the percentage of school trips on CBD bound transit lines. Although few schools are located south of the Fisher Freeway or in the Central Business District proper, larger numbers of students are using transit to get to school. Cass Technical School appears to have generated the largest number of transit riding students, particularly on the Grand River and Dexter local lines, for bus lines in the Jeffries Freeway Corridor.

APPENDIX I

1974 Jeffries Freeway Study
On-Board Transit Survey
Coding Guide

1974 Jeffries Study
On Board Transit Survey

CODING GUIDE

NOTE: When there is no response to a survey question, columns pertaining to that question should be left blank.

Card "1"

Col. 1 - 3 File Number Pre-coded as "371".

Col. 4 Card Number Pre-coded as "1"

Col. 5 - 6 Bus Line Number Enter the number of the bus route surveyed. See Table 36 for these numbers.

Col. 7 Bus Run Type Enter the following codes:
0 - local runs
1 - express runs
2 - local runs by buses from another bus line
3 - express runs by buses from another bus line
For example - Code "2" used when Tireman Run #7 makes a Grand River run; code "3" used when Tireman Run #8 makes a Grand River express run.

Col. 8 - 9 Bus Run Number Enter, right justified, the number of the bus run surveyed. (See Table 37)

Col. 10 - 14 Survey Number Enter, right justified, the sequential number stamped on each survey card.

Col. 15 - 18 Survey Origin Bus Stop Number Enter, right justified, the number of the bus stop where rider boarded the bus on which this survey card was received. See station maps for bus stop numbers.

Choose the four digit bus stop number closest to stop described, (east, south or southeast). In no case should the bus stop number be more than 1 mile (1.6 kilometers) from the stop described. If it is, leave this field blank. (Survey Question #1, Where did you get on this bus?)

Col. 19 - 20 Wait Time Enter, right justified, code to the nearest minute.

(Survey Question #2, How long did you wait for this bus?)

Col. 21 Origin Bus Transfer Enter, right justified, the following codes:

1 - yes
2 - no

(Survey Question #3, Did you transfer from another bus?)

Col. 22 - 24 Transfer Origin Bus Line Number Enter, right justified, the number of the bus line transferred from. See Table I.

(Survey Question #3, If "Yes", what bus line did you transfer from?)

Col. 25 - 28 Transfer Origin Bus Stop Number Enter, right justified, the number of the bus stop where rider boarded his first bus.

(Survey Question #3, Where did you board this first bus?)

Col. 29 Trip Purpose Enter, right justified, the numeric code of the main purpose of making the trip.

1 - Going to work.
2 - Coming from work.
3 - Personal business (visit doctor, lawyer, bank, etc.
4 - Social recreation (visit a friend, going to a movie).
5 - Shopping.
6 - School.
7 - Other.

If more than one choice is circled, purposes 1, 2, 6 take priority...in that order.

(Survey Question #4, why are you making this trip?)

Col. 30 - 33 Destination Bus Stop Number Enter, right justified, the number of the bus stop where rider disembarked from the bus. See station maps for bus stop numbers. Choose the four digit bus stop #, closest to stop described,. (west, north or northwest). In no case should the bus stop number be more than 1 mile (1.6 kilometers) from the stop described. If it is, leave this field blank.

(Survey Question #5, Where will you get off this bus?)

Col. 34 Destination Bus Transfer Enter, right justified, the following codes:

1 - yes
2 - no

(Survey Question #5, When you get off this bus, will you transfer to another bus line?)

Col. 35 - 38 Destination - Transfer Bus Line Number Enter, right justified the number of the bus line transferred to. See Table I.

(Survey Question #5, If "Yes" what bus line will you transfer to?)

Col. 39 Destination Address Code Enter "1" when coder approximates the destination address.

(Note: For all other cases leave this field blank.)

Col. 40 - 44 Destination Address Enter, right justified, with leading zeros, the appropriate street address numbers. Field should not contain room numbers or box numbers.

(Survey Question #6, What is your destination for this trip?)

Col. 45 Destination Street Direction Prefix Enter, right justified, N, S, E, or W only. Code only if required to discriminate between address ranges for a given street.

(Survey Question #6, What is your destination for this trip?)

Col. 46 - 65 Destination Street Name Enter left justified, the street name.

(Survey Question #6, What is your destination for this trip?)

Col. 66 - 69 Destination Street Type Enter, left justified, the street name suffix necessary to discriminate between address ranges within a given coding limit area. See Table 38 for a list of standardized abbreviations.

(Survey Question #6, What is your destination for this trip?)

Col. 70 - 72 Destination Census County Code Enter, right justified, the CENSUS County Code for each respondent's final destination. (See SEMCOG memo of 8/20/73.)

Col. 73 - 75 Destination Census MCD Code Enter, right justified, the CENSUS MCD Code for each respondent's final destination. (See SEMCOG memo of 8/20/73.)

Card "2"

Col. 1 - 3 File Number Pre-coded as "371"

Col. 4 Card Number Pre-coded as "2"

Col. 5 - 6 Bus Line Number Enter the number of the bus route surveyed. See Table 36 for these numbers.

Col. 7 Bus Run Type Enter the following codes:
0 - local runs
1 - express runs
2 - local runs by buses from another bus line
3 - express runs by buses from another bus line
For example - Code "2" used when Tireman Run #7 makes a Grand River run; Code "3" used when Tireman Run #8 makes a Grand River express run.

Col. 8 - 9 Bus Run Number Enter, right justified, the number of the bus run surveyed. (See Table37)

Col. 10 - 14 Survey Number Enter, right justified, the sequential number stamped on each survey card.

Col. 15 - 22 Trip Mode Choice Enter, right justified, the code(s) of the choices selected.

1 - Bus more convenient than auto.
2 - Bus less expensive than auto.
3 - Do not like to drive.
4 - No driver's license.
5 - Family does not own an auto.
6 - Auto used by another member of family.
7 - Parking not available at a reasonable price.
8 - Other.

(Survey Question #7, What are the main reasons you took the bus on this trip?)

Col. 23 - 24 Auto Availability Enter, right justified, the number of autos specified.

(Survey Question #8, How many autos are available to your family?)

Col. 25 - 26 Age Enter, right justified, the age of the respondent in years, rounding to the nearest whole number.

Only two exceptions apply to the general rule:

1) if response is 21+, code as "99"

2) if response is 15 1/2, code as "15"

(Survey Question #9, Age_____)

Col. 27 Sex Enter, right justified, the sex of the respondent.

Codes are:

1 - Male
2 - Female

(Survey Question #10, Sex_____)

Col. 28 Origin Address Code Enter "1" when coder approximates the origin address.

(Note: For all other cases leave the field blank.)

Col. 29 - 33 Origin Address Code like Col. 40-44 of Card "1".

(Survey Question #11, Your home address?)

Col. 34 Origin Street Direction Prefix Code like Col. 45 of Card "1".

(Survey Question #11, Your home address?)

Col. 35 - 54 Origin Street Name Code like Col. 46-65 of Card "1".

(Survey Question #11, Your home address?)

Col. 55 - 58 Origin Street Type

Code like Col. 66-69 of Card "1".

(Survey Question #11, Your home address?)

Col. 59 - 61 Origin Census County Code Enter, right justified, the CENSUS County Code for each respondent's home address. (See SEMCOG memo of 8/20/73.)

Col. 62 - 64 Origin CENSUS MCD Code Enter, right justified, the CENSUS MCD Code for each respondent's home address. (See SEMCOG memo of 8/20/73.)

Major Office Building File
(3/25/74)
(Version 01)

Col: 1 - 3 File Number - Pre-coded as "370"

Col: 4 - 30 Building Name - Enter left justified the building name

Col: 31 Street Direction Prefix - Enter left justified, N,S,E, or W only. This code is present only if required to descriminate between address ranges for a given street.

Col: 32 - 36 Street Address - Enter right justified, with leading zeros, the appropriate street address numbers. This field should not contain room numbers or box numbers.

Col: 37 - 56 Street Name - Enter left justified the Street name.

Note: 1) This field should never contain the street name suffixes such as St, Av, Ave, Dr, Ct, Blvd. These suffixes must be stripped off and placed in the Destination Street Type field. This is true even for street names which have a suffix usually included as an integral part of the name such as:

Ewald Circle and
Grand Blvd

2) Numeric street names are expressed with numbers and not spelled out; thus

8 Mile not Eight Mile and
52nd not Fifty-Second and
1st not First

3) This field should not contain:

a) Room numbers and Building Names
b) Post Office or Rural Route Numbers
c) Any other data beside actual street names

Col: 57 - 60 Street Type: Enter left justified the street name suffix necessary to descriminate between address ranges within a given coding limit area. See Table 38 for a list of standardized abbreviations.

TABLE 36

1974 JEFFRIES FREEWAY STUDY

BUS LINE NUMBERS

NO.	NAME	NO.	NAME
1-2	Loop (Minibus)	50	Joy Road
4	Baker-West Vernor	52	Lafayette-Green
5	Belle Isle	53	Van Dyke-Lafayette
7	Broadstreet	55	Lahser
8	Buchanan	57	Linwood
10	Woodward	59	Livernois
12	Michigan	60	Mack
14	Plymouth	62	Mc Nichols East
16	Grand River	63	Meyers
17	Fort	64	Michigan Shuttle
18	Caniff	67	Mt. Elliott
19	Chalmers	71	Oakland
21	Chene	72	Oakman
22	Clairmount	74	Puritan
24	Conant	75	Russell
25	Gratiot	77	St. Aubin
27	Conner	79	Schaefer
28	Crosstown	80	Schoenherr-Redmond
33	Dexter	82	Schoolcraft
34	Eight Mile East	83	Second
35	Fenkell	84	Seven Mile East
36	Grand Belt	86	Tireman
37	Greenfield	90	Vernor
39	Southfield	92	Warren
41	Hamilton	93	West Chicago
42	Hayes Express	94	Cadillac-Harper
43	Holbrook	95	Woodmere
44	Imperial Express	96	West Jefferson
46	Jefferson	97	Woodrow Wilson
47	John R North	99	Wyoming
49	John R-Oakland		

TABLE 37
1974 JEFFRIES FREEWAY STUDY
BUS RUN NUMBERS

JOY #50
(1-1900)
(YELLOW)

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
10	101- 200	6:03	6:28 - 7:33
9	201- 300	5:43	6:22 - 7:45
* 7	301- 400	5:52	6:31 - 7:32
31	401- 500	6:21	6:46 - 7:56
*16	801- 900	6:30	6:55 - 7:42
29	701- 800	5:56	6:56 - 8:00
*14	601- 700	6:37	7:02 - 7:49
Plymouth *10	501- 600	6:13	6:52 - 8:13
*11	1- 100	6:44	7:09 - 7:56
*22	901-1000	6:51	7:16 - 8:03
15	1001-1100	6:53	7:18 - 8:25
* 1	1101-1200	4:05	7:09 - 8:32
32	1201-1300	6:36	7:15 - 8:33
*30	1301-1400	6:18	7:30 - 8:17

*Express

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
* 2	1401-1500	4:33	7:23 - 8:45
21	1801-1900	7:15	7:40 - 8:44
23	1701-1800	7:19	7:44 - 8:31
*17	1601-1700	7:00	7:39 - 8:40
* 8	1501-1600	5:31	8:02 - 8:49

*Express

TIREMAN #86
(1901-2400)
(GREY)

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
2	2301-2400	4:56	6:32 - 7:38
5	2201-2300	6:27	6:53 - 7:58
1	2101-2200	4:23	7:12 - 8:18
3	2001-2100	4:47	7:32 - 8:38
Grand River 12	1901-2000	5:09	7:52 - 8:58

SCHOOLCRAFT #82
(2401-2800)
(LIGHT BLUE)

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
3	2501-2600	5:08	6:33 - 7:30
6	2601-2700	6:25	6:54 - 7:55
2	2701-2800	5:00	7:19 - 8:20
1	2401-2500	4:32	7:44 - 8:44

GRAND RIVER #16
(2801-4500; 4701-6700)
(GOLD)

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
14	4401-4500	6:35	6:46 - 7:35
22	4301-4400	6:08	6:34 - 7:33
9	4201-4300	6:41	6:52 - 7:40
20	4101-4200	6:14	6:40 - 7:45
2	4001-4100	4:17	6:46 - 7:51
7	3901-4000	7:10	7:13 - 7:48
19	3801-3900	6:56	7:07 - 7:57
41	3701-3800	7:16	7:19 - 7:54
62	3601-3700	7:02	7:13 - 7:57
Tireman 7	3501-3600	6:35	7:01 - 8:03
4	3101-3200	4:29	7:05 - 8:09
68	3001-3100	7:30	7:33 - 8:08
3	2901-3000	4:39	7:12 - 8:16
69	2801-2900	7:38	7:41 - 8:22
School 1	3401-3500	5:29	7:22 - 8:28
NC 54	3301-3400	11:20 PM	7:27 - 8:26

GRAND RIVER #16
P. 2

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
School 10	6601-6700	7:53	7:56 - 8:35
21	3201-3300	5:45	7:37 - 8:42
34	5301-5400	7:47	7:58 - 8:42
29	5201-5300	7:22	7:48 - 8:50
18	5101-5200	6:01	7:54 - 8:58
*25	5001-5100	5:23	6:45 - 7:55
*65	5701-5800	7:07	7:18 - 7:57
Tireman * 8	5601-5700	6:41	7:07 - 8:00
*67	5501-5600	7:14	7:25 - 8:04
*58	5401-5500	6:48	7:14 - 8:07
*57	6101-6200	6:39	7:11 - 8:10
*59	6501-6600	6:54	7:20 - 8:13
*60	6401-6500	6:57	7:23 - 8:16
*61	6301-6400	7:00	7:26 - 8:19
*11	6201-6300	6:30	7:15 - 8:25

*Express

GRAND RIVER #16
P. 3

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
*33	5801-5900	7:09	7:35 - 8:28
* 8	5901-6000	5:06	7:39 - 8:32
W. Chicago * 2	6001-6100		8:00 - 8:39
*66	4901-5000	7:12	7:44 - 8:43
8-Mile * 6	4701-4800	6:05	8:00 - 8:53
*40	4801-4900	7:00	7:45 - 8:55

*Express

HAMILTON #41
(6701-8900)
(RED)

	RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
	17	8801-8900	6:23	6:34 - 7:30
	7	8701-8801	5:59	6:19 - 7:36
Greenfield	10	8601-8700	6:30	6:41 - 7:33
	15	8501-8600	6:21	6:38 - 7:42
	11	8401-8500	6:12	6:32 - 7:47
	23	8301-8400	6:41	6:52 - 7:52
	1	8201-8300	4:05	6:39 - 7:57
	25	7701-7800	6:36	6:53 - 8:02
	35	7801-7900	5:52	6:48 - 8:07
	29	7901-8000	6:46	7:02 - 8:13
	27	8001-8100	6:39	6:59 - 8:11
	32	8101-8200	6:59	7:15 - 8:20
	2	7201-7300	4:15	7:11 - 8:26
	24	7101-7200	7:11	7:27 - 8:33
	3	7001-7100	4:43	7:25 - 8:40

HAMILTON #41
P. 2

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
38	7301-7400	7:12	7:32 - 8:47
6	7401-7500	5:01	7:48 - 8:54
Fenkell *31	7501-7600	6:59	7:10 - 7:49
*12	7601-7700	6:18	7:30 - 8:09
*37	6901-7000	7:29	7:40 - 8:19
*53	6701-6800	6:39	7:50 - 8:29
Greenfield *10	6801-6900	6:30	8:10 - 8:49

*Express

PLYMOUTH #14
(8901-10,100)
(STONE)

	RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
	1	9201-9300	4:50	6:34 - 7:40
Greenfield	* 8	9101-9200	6:08	6:40 - 7:35
	*13	9001-9100	6:19	6:51 - 7:51
	5	8901-9000	4:30	6:32 - 7:51
	* 8	9601-9700	5:35	7:01 - 8:04
	12	9501-9600	6:05	7:14 - 8:12
7-Mile	*10	9401-9500	6:43	7:15 - 8:21
	14	9301-9400	7:03	7:28 - 8:16
Conant	12	10,001-10,100	6:35	7:42 - 8:30
Wyoming	*10	9901-10,000	6:58	7:23 - 8:38
	18	9801-9900	6:55	7:54 - 8:42
	* 7	9701-9800	5:27	7:45 - 8:50

*Express

DEXTER #33
(10,101-12,800)
(MEDIUM BLUE)

	RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
	10	12,501-12,600	6:37	6:49 - 7:38
	32	12,301-12,400	6:13	6:32 - 7:35
	5	12,401-12,500	5:17	6:23 - 7:46
	14	12,201-12,300	6:28	6:44 - 7:48
	6	12,101-12,200	6:19	6:41 - 7:54
Woodward	18	12,001-12,100	6:58	7:10 - 7:56
	9	11,901-12,000	6:33	6:52 - 8:02
	18	11,801-11,900	7:06	7:18 - 8:04
	1	11,701-11,800	4:06	6:48 - 8:11
Crosstown	20	11,601-11,700	6:40	7:02 - 8:12
Holbrook	5	11,501-11,600	6:50	7:09 - 8:19
	29	11,401-11,500	7:22	7:34 - 8:20
	30	11,301-11,400	6:58	7:17 - 8:27
Grand Belt	13	11,201-11,300	7:30	7:42 - 8:28

DEXTER #33
P. 2

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
NC 50	11,101-11,201	12:00	7:12 - 8:32
Fenkell 23	11,001-11,100	6:17	8:04 - 8:37
Baker 9	10,901-11,000	6:34	7:26 - 8:36
35	10,801-10,900	7:42	7:54 - 8:44
3/33	10,701-10,800	4:55	7:37 - 8:44
32	10,601-10,700	6:13	8:02 - 8:52
8	10,501-10,600	4:40	7:32 - 8:52
27	10,401-10,500	6:45	8:10 - 8:59
*24	10,301-10,400	6:31	6:47 - 7:30
*12	10,201-10,300	6:59	7:15 - 7:58
*21	10,101-10,200	6:15	7:30 - 8:13
*36	12,701-12,800	7:34	7:50 - 8:33
*22	12,601-12,700	7:23	8:11 - 8:54

*Express

SECOND #83
(12,801-14,300)
(INDIA)

	RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
	12	13,601-13,700	6:32	6:38 - 7:30
	4	13,701-13,800	4:59	6:19 - 7:38
	14	13,801-13,900	6:07	6:33 - 7:47
	8	13,901-14,000	6:40	6:55 - 8:00
Hamilton	31	14,001-14,100	6:07	6:39 - 8:07
Hamilton	8	14,101-14,200	5:39	6:52 - 8:16
	25	13,501-13,600	7:02	7:17 - 8:19
	3	14,201-14,300	6:43	7:09 - 8:30
	26	13,401-13,500	7:03	7:23 - 8:34
	2	13,301-13,400	4:53	7:19 - 8:45
	1	13,201-13,300	4:53	7:33 - 9:00
	*16	13,101-13,200	6:38	6:58 - 7:50
	*24	13,001-13,100	7:01	7:21 - 8:13
	*19	12,901-13,000	7:23	7:43 - 8:35
	*17	12,801-12,900	6:44	8:08 - 9:00

*Express

FENKELL #35
(14,301-16,300) (LIGHT GREEN)
(16,301-16,600) (DARK GREEN)

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
5	15,401-15,500	6:00	6:22 - 7:35
8	15,501-15,600	6:06	6:28 - 7:41
28	15,601-15,700	6:33	6:44 - 7:47
Hamilton 33	15,701-15,800	6:16	6:38 - 7:53
*23	15,801-15,901	6:17	6:39 - 7:33
2	15,901-16,000	4:00	6:36 - 7:59
*19	16,001-16,100	6:48	6:59 - 7:42
20	16,101-16,200	6:28	6:50 - 8:09
46	16,201-16,300	6:56	7:07 - 8:06
*25	16,301-16,400	6:36	6:58 - 7:52
14	16,401-16,500	6:39	7:01 - 8:14
NC 43	16,501-16,600	11:58 PM	7:06 - 8:16
*45	14,401-14,500	6:46	7:08 - 8:02
26	14,301-14,400	6:50	7:12 - 8:26
*18	14,501-14,600	6:55	7:17 - 8:11

*Express

FENKELL #35
P. 2

RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
Schoolcraft * 5	14,601-14,700	7:19	7:30 - 8:36
1	14,701-14,800	4:21	7:26 - 8:46
*48	14,801-14,900	7:28	7:49 - 8:22
22	14,901-15,000	6:43	7:34 - 8:44
*47	15,001-15,100	7:16	7:38 - 8:32
NC 44	15,101-15,200	11:38 PM	7:42 - 8:52
*49	15,201-15,300	7:50	8:01 - 8:44
* 4	15,301-15,400	5:02	7:58 - 8:52

*Express

All runs Express:

	RUN NUMBER	SURVEY NUMBERS	GARAGE	RUN TIMES
	5	17,601-17,700	7:21	7:38 - 8:19
	13	17,701-17,800	6:12	7:30 - 8:23
Hamilton	30	16,601-16,700		7:34 - 8:27
	12	16,701-16,800	7:12	7:37 - 8:47
Livernois	9	16,801-16,900		7:18 - 8:36
Hamilton	18	16,901-17,000		7:50 - 8:43
Livernois	10	17,001-17,100		7:57 - 8:50
	8	18,476-18,537	**7:20	7:39 - 8:57

**Not a complete "100" for each driver.

TABLE 38

LIST OF STREET TYPES AND THEIR STANDARD ABBREVIATIONS

Street Type	Standard Abbreviation
Alley	AL
Avenue	AV
Boulevard	BLVD
Bridge	BRDG
Calle	C
Circle	CIR
Court	CT
Crescent	CRES
Drive	DR
Expressway	EXWY
Extension	EXT
Freeway	FRWY
Highway	HWY
Lane	LA
Manor	MNR
Parkway	PKWY
Path	PATH
Pike	PKE
Place	PL
Plaza	PLZ
Point	PT
Road	RD
Row	ROW
Square	SQ
Street	ST
Terrace	TER
Throughway	THWY
Trail	TRL
Turnpike	TPKE
Walk	WALK
Way	WY

SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
STANDARD LAYOUT FORM
FIGURE 16

1974

RECORD TITLE: Jeffries Study-On Board Transit Survey FILE NO: 371-V010

POS.	DESCRIPTION
1	File #371
2	
3	
4	"1"
5	Bus Line #
6	
7	Bus Run Type
8	Bus Run #
9	
10	Survey #
11	
12	
13	
14	
15	Survey Origin
16	Bus Stop #
17	
18	
19	Wait Time
20	
21	Origin Bus Transfer
22	Transfer Origin Bus Line #
23	
24	
25	Transfer Origin Bus Stop Number
26	
27	
28	
29	Trip Purpose
30	Destination Bus Stop Number
31	
32	
33	
34	Dest. Bus Transfer
35	Dest. Transfer Bus Line #
36	
37	
38	
39	Dest. Address Code
40	Destination Address
41	
42	
43	
44	
45	St. Direction Prefix
46	Destination Street
47	
48	
49	
50	
51	
52	
53	
54	
55	Name
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	Destination Street Type
67	
68	
69	
70	Destination Censns County Code
71	
72	
73	Destination Census MCD Code
74	
75	
76	
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COMMENTS:

SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
STANDARD LAYOUT FORM
1974 FIGURE 16 CONT'D

RECORD TITLE: Jeffries Study-On Board Transit Survey FILE NO: 371-V010

POS.	DESCRIPTION
1	File #371
2	
3	
4	"2"
5	Bus Line #
6	
7	Bus Run Type
8	Bus Run #
9	
10	
11	
12	Survey #
13	
14	
15	
16	Trip
17	
18	Mode
19	
20	Choice
21	
22	
23	Auto
24	Availability
25	Age
26	
27	Sex
28	Origin Address Code
29	
30	Origin
31	Address
32	
33	
34	St. Direction Prefix
35	
36	Origin
37	Street
38	Name
39	
40	

POS.	DESCRIPTION
41	Origin
42	Street
43	Name
44	
45	
46	Cont'd
47	
48	
49	
50	
51	
52	
53	
54	
55	Origin
56	Street
57	Type
58	
59	Origin Census
60	County Code
61	
62	Origin Census
63	MCD Code
64	
65	
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POS.	DESCRIPTION
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COMMENTS:

SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
STANDARD LAYOUT FORM
FIGURE 17

RECORD TITLE: MAJOR OFFICE BUILDING FILE (VERSION 01) FILE NO: 370

POS.	DESCRIPTION	POS.	DESCRIPTION	POS.	DESCRIPTION
1	DECK 370	41		81	
2		42		82	
3		43		83	
4		44		84	
5		45		85	
6		46		86	
7		47		87	
8		48	STREET NAME CONT.	88	
9		49		89	
10		50		90	
11		51		91	
12		52		92	
13		53		93	
14		54		94	
15		55		95	
16		56		96	
17	BUILDING NAME	57		97	
18		58	STREET TYPE	98	
19		59		99	
20		60		100	
21		61		101	
22		62		102	
23		63		103	
24		64		104	
25		65		105	
26		66		106	
27		67		107	
28		68		108	
29		69		109	
30		70	BLANK	110	
31	ST. DIRECTION PREFIX	71		111	
32		72		112	
33		73		113	
34	STREED ADDRESS	74		114	
35		75		115	
36		76		116	
37		77		117	
38	STREET NAME	78		118	
39		79		119	
40		80		120	
				121	
				122	
				123	
				124	
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				134	
				135	

COMMENTS:

APPENDIX II

1974 Jeffries Freeway Study
Bus Line and Run Number Conversions
Coding Guide

Coding Guide
1974 Jeffries Fwy. Study
Bus Line and Run Number Conversions

Col. 1 - 3 File # Pre-coded as "372"

Col. 5 - 6 Bus Line Number Code right justified the number of the bus line being described. The following codes are used:

16 - Grand River
50 - Joy
86 - Tireman
82 - Schoolcraft
41 - Hamilton
14 - Plymouth
33 - Dexter
83 - Second
35 - Fenkell
44 - Imperial Express

Col. 7 Bus Run Type Enter the following codes:

0 - local runs
1 - express runs
2 - local runs by buses from another bus line
3 - express runs by buses from another bus line

For example - Code "2" used when Tireman Run #7 makes a Grand River run; code "3" used when Tireman Run #8 makes a Grand River express run.

Col. 8 - 9 Bus Run Number Enter, right justified, the appropriate bus run number.

Col. 12 - 17 Survey Number - Lower Limit Enter, right justified, the lower limit of the survey number possible for the bus run of the bus line being described.

Col. 19 - 23 Survey Number - Higher Limit Enter, right justified, the higher limit of the survey number possible for the bus run of the bus line being described.

Col. 25 - 27 Survey Forms Distributed Enter, right justified, the number of survey forms distributed for the bus run of the bus line being described.

Col. 29 - 32 Garage Time Enter, right justified, the time the bus left the garage.

For example: 6:03 AM code as 603
(AM Time is assumed)

Col. 34 - 37 Run Time-Start Enter, right justified, the time the bus began its run on the bus line beind described. See Col. 29-32 for coding conventions.

Col. 39 - 42 Run Time-End Enter, right justified, the time the bus ended its run on the bus line being described. See Col. 29-32 for coding conventions.

SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
STANDARD LAYOUT FORM

FIGURE 18 1974 Jeffries Fwy. Study

RECORD TITLE: Bus Line & Run # Conversions

FILE NO: 372

POS.	DESCRIPTION
1	
2	File #372
3	
4	Blank
5	Bus
6	Line #
7	Bus Run Type
8	Bus
9	Run #
10	Blank
11	
12	
13	Survey #
14	
15	(Lower Limit)
16	
17	
18	Blank
19	
20	Survey #
21	(Upper Limit)
22	
23	
24	Blanks
25	Survey Forms
26	Distributed
27	
28	Blank
29	
30	Garage
31	Time
32	
33	Blank
34	Run Time
35	- Start
36	
37	
38	Blank
39	Run Time
40	- End
41	Run Time - End Cont'd
42	
43	
44	
45	
46	
47	
48	
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COMMENTS:

APPENDIX III

1968 Bus Survey
Coding Guide

CODING GUIDE
1968 DETROIT CBD CIRCULATION STUDY
BUS SURVEY

Col. 1 — File # Pre-coded as "T"

Col. 9-11 — Trip Origin Zip Code Enter the last 3 digits of the postal zip code for the trip origin location. (Determine the proper zip by means of the Southeast Michigan Zip Code Map.)
(Question #1. "My trip began at_____.")

Col. 14-16 — Bus Line # Enter, right justified, the number of the bus line described. (Bus line numbers are found on Table 39.)
(Question #2. "I am on the_____bus.")

Col. 19-21 — Downtown Arrival Time Enter, right justified, the downtown arrival time indicated. (The survey card responses will read hours and minutes. Convert the time in minutes to tenths of an hour. See Table 40 for conversion equivalents.)
(Question #3. "I will get downtown about _____:_____o'clock.")

Col. 22-25 — Bus Disembarkation by Analysis Zone # Enter, right justified and with leading zeros, the analysis zone # where rider disembarked from the bus. (See CBD Map for zone #3's.)
(Question #4. "When downtown, I will get off the bus at _____.")

Col. 26-29 — Bus Disembarkation by Block # Enter, right justified, and with leading zeros, the block # where rider disembarked from the bus. (See CBD Map for Block #'s.)
(Question #4. "When downtown, I will get off this bus at _____.")

Col. 30-33 Destination by Analysis Zone # Enter, right justified and with leading zeros, the analysis zone # of riders described destination for this trip. (See CBD Map for zone #'s.)
(Question #5. "I am going to_____.")

Col. 34-37 Destination by Block # Enter, right justified, and with leading zeros, the block # of riders described destination for this trip. (See CBD Map for block #'s)

Col. 40 Trip Purpose Enter, right justified, the number corresponding to riders main purpose for this trip.
(Question #6. "My main reason for going downtown is:")

1 - Place of work
2 - Business call
3 - To shop
4 - School
5 - To eat
6 - Personal Business (to visit Doctor, Lawyer, Bank, etc.)
7 - Social-Recreational purposes
8 - To transfer to another bus

Col. 43-50 Trip Mode Choice Enter the figure 1 (one), for each response marked on the survey card, in the correspondingly numbered column on the coding sheet.
(Question #7. "Check one or more reasons why you took the bus on this trip.")

43 - Do not like to drive
44 - Bus more convenient than auto
45 - No drivers license
46 - Family does not own an auto
47 - Auto used by another member of family
48 - Bus less expensive than auto
49 - Parking not available at a reasonable price
50 - Other

Col. 53

Age Enter, right justified, the number which corresponds to the age grouping marked by the rider.

(Question #8. "My age is:")

1 - Under 16
2 - 16-20
3 - 20-30
4 - 30-40
5 - 40-50
6 - 50-65
7 - Over 65

TABLE 39

1968 Bus Line Numbers

Local Lines:

004	Baker - West Vernor
094	Cadillac - Harper
021	Chene
033	Dexter
035	Fenkell
017	Fort
016	Grand River
025	Gratiot
041	Hamilton
046	Jefferson
049	John R - Oakland
050	Joy
052	Lafayette - Green
057	Linwood
060	Mack
012	Michigan
071	Oakland
075	Russell
083	Second
086	Tireman
053	Van Dyke - Lafayette
090	Vernor
097	Warren
010	Woodward

Express Lines:

794	Cadillac Harper Express
733	Dexter Express
716	Grand River Express
725	Gratiot Express
741	Hamilton Express
742	Hayes Express
744	Imperial Express
746	Jefferson Express
749	John R - Oakland Express
750	Joy Road Express
760	Mack Express
714	Plymouth Express (Grand River)
814	Plymouth Express (John Lodge)
783	Second Express
753	Van Dyke Express
710	Woodward Express

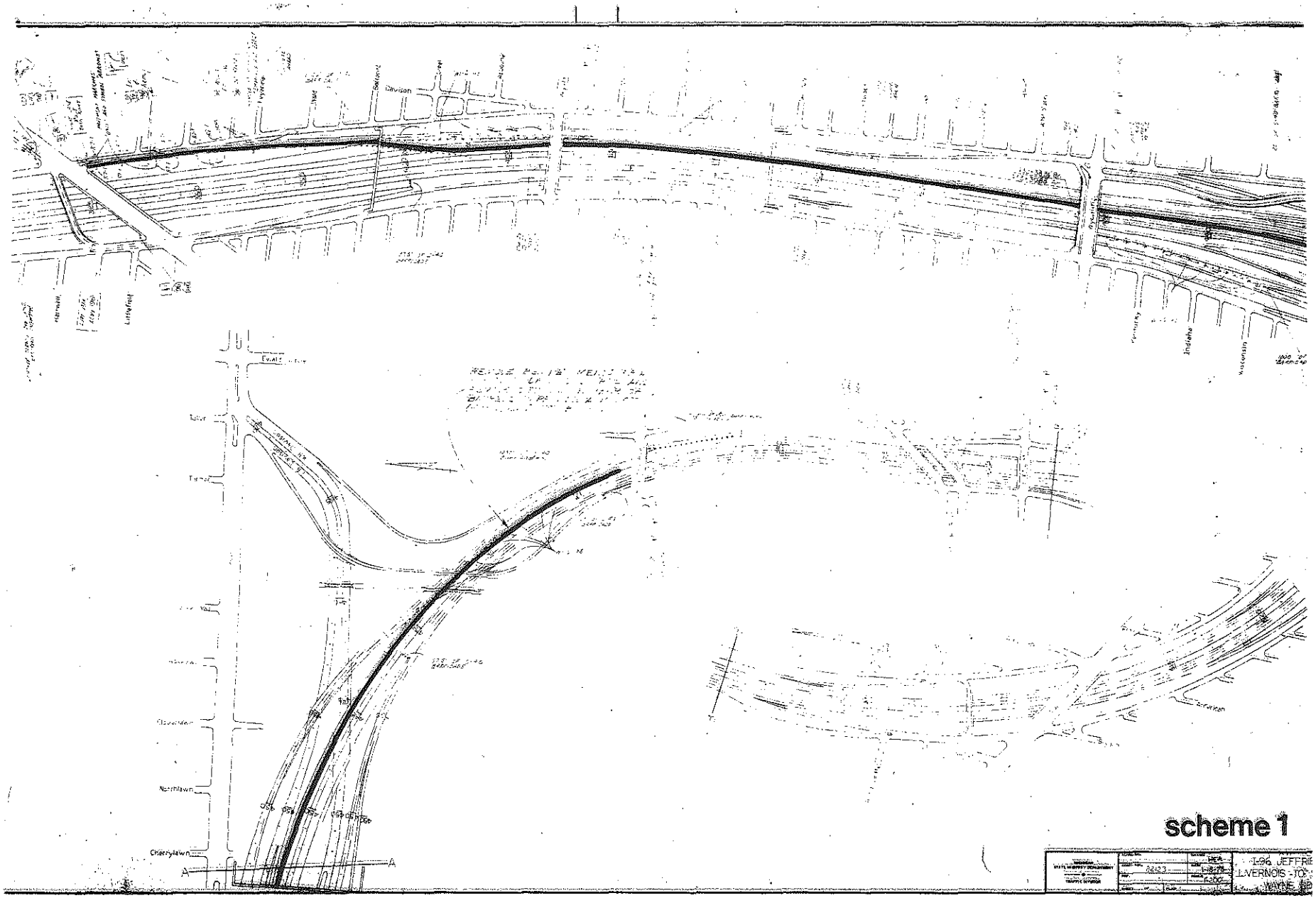
TABLE 40

Hour and Minutes to Hour and 10th of an Hour

Hour and Minutes (XX)			Equivalent Hour (X) and 10th of an Hour Col. - 19	20	21
XX-1:57	-	XX:02	X	X	.0
XX:03	-	XX:08	X	X	.1
XX:09	-	XX:14	X	X	.2
XX:15	-	XX:20	X	X	.3
XX:21	-	XX:26	X	X	.4
XX:27	-	XX:32	X	X	.5
XX:33	-	XX:38	X	X	.6
XX:39	-	XX:44	X	X	.7
XX:45	-	XX:50	X	X	.8
XX:51	-	XX:56	X	X	.9

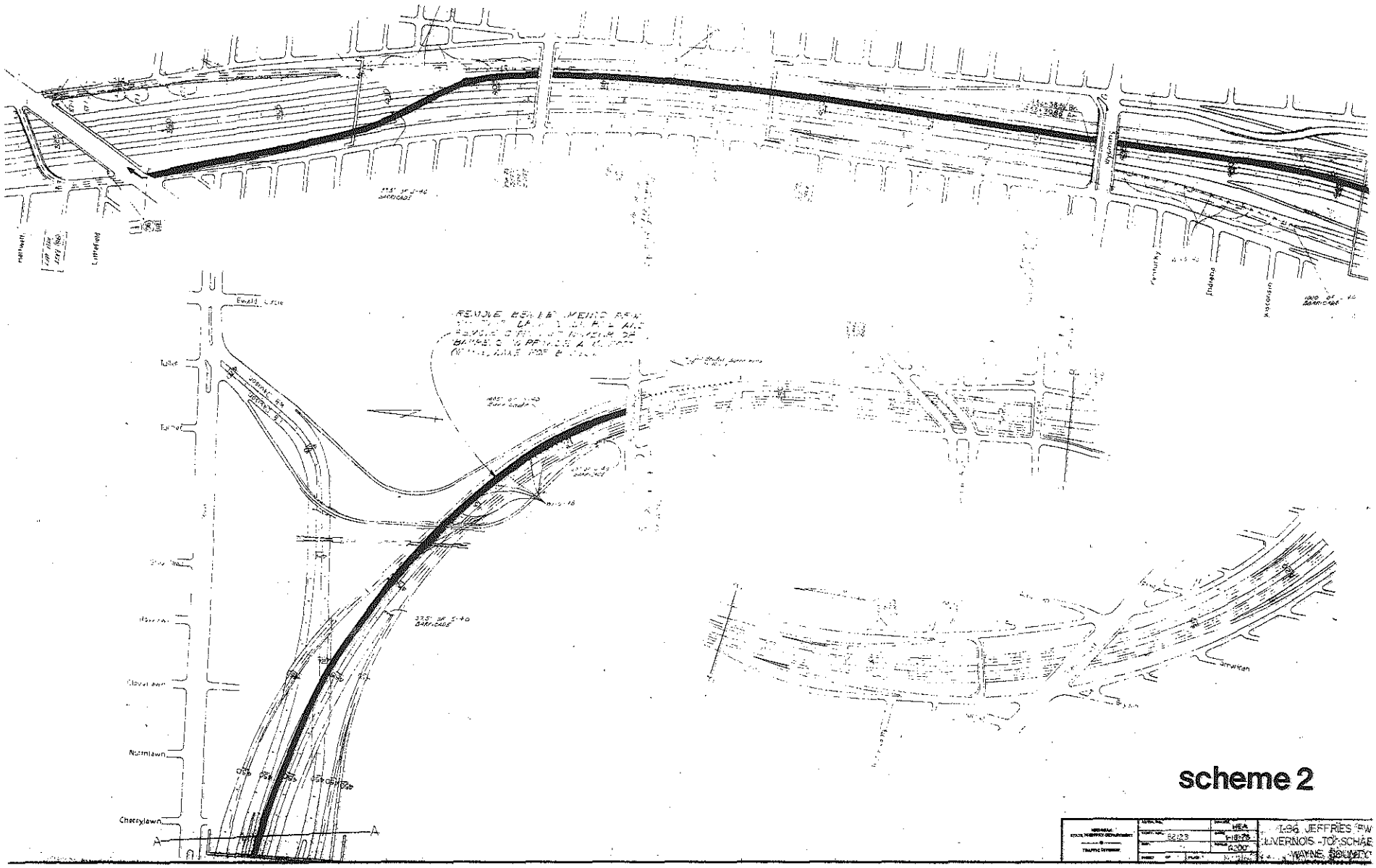
APPENDIX B

DESIGN DRAWINGS FOR WEST TERMINUS OF RESERVED LANE



scheme 1

			I-96 JEFFRIE
	72403	I-8-275	LIVERNOIS - TO
		F-306	WAYNE RD

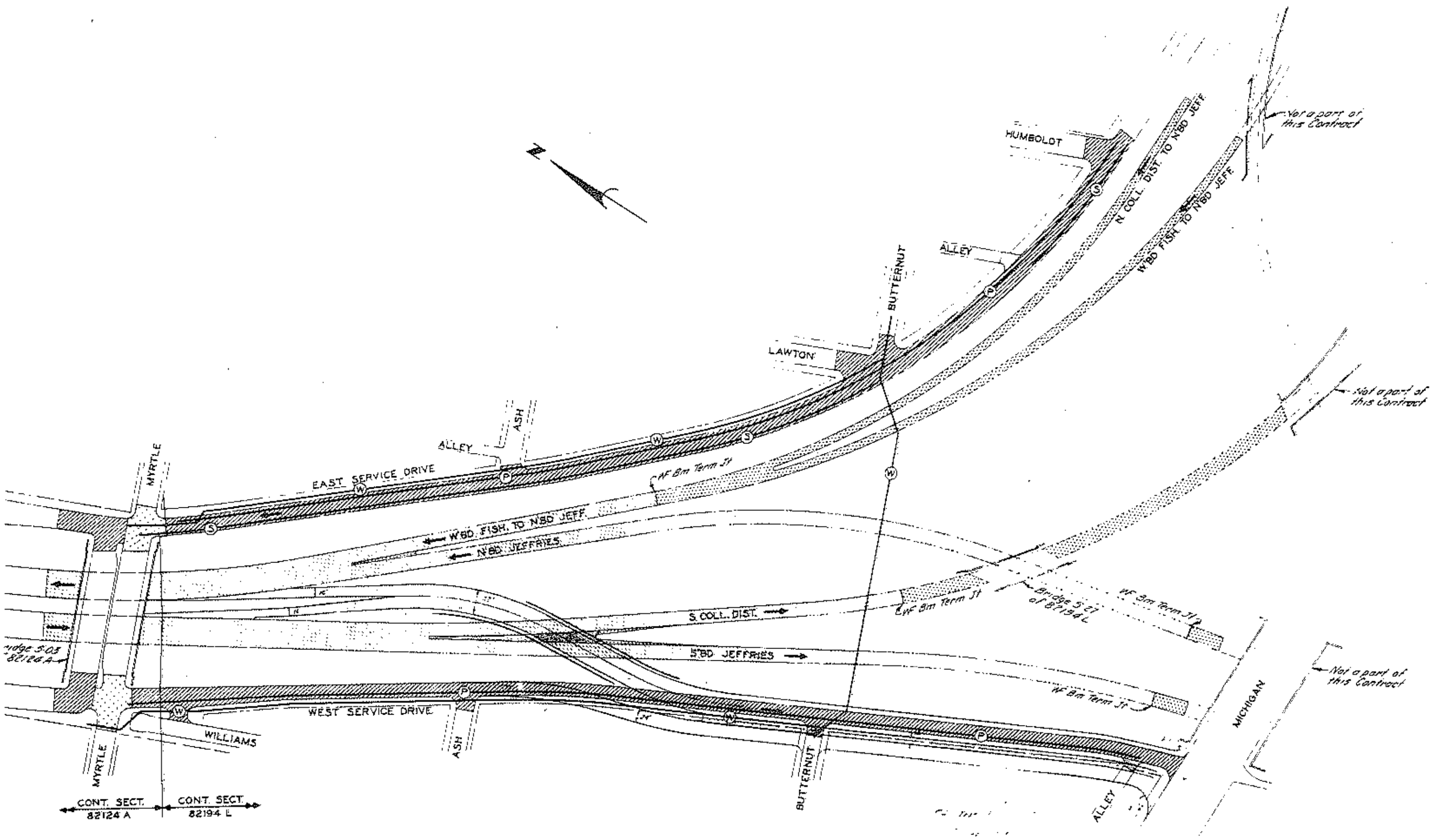


scheme 2

		MEA	I-96, JEFFRIES FWY
	82123	1:1000	LIVERNOIS - TOLSCHAE
		ROD	WAYNE, SOUTH

APPENDIX C

DESIGN DRAWINGS FOR SOUTHEAST TERMINUS OF RESERVED LANE



B P R DIV. NO	STATE	PROJ. NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MICH				
ROUTE / STATE PROJECT	COUNTY			SHEET NO.	TOTAL SHEETS

B P R DIV. NO	STATE	PROJ. NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MICH				
ROUTE / STATE PROJECT	COUNTY	City		SHEET NO.	TOTAL SHEETS
I-96	Wayne	Detroit		2	

UTILITY LEGEND

Sewer — (S)
Water — (W)
PLC — (P)

LEGEND

- Cont Reinf Concrete Pavement - 9" Uniform
- Concrete Pavement - 10" Uniform
- Concrete Pavement - 9" Uniform
- Conc Pavt - 9" Uniform (Special High Early Strength)
- Concrete Pavement - 8" Uniform
- Corrugated Concrete Divider - Type I

ITEMS IN CONTRACT

SEWERS:
East Service Drive Interceptor Sewer Myrtle to Butternut & Rel. West of Butternut to Humboldt

WATER MAINS:
24" Concrete Encased Freeway Crossing at Butternut
8" Header Mains East & West Service Drives Myrtle to Butternut
Miscellaneous Water Alterations

LIGHTING:
Service Drive Freeway Lighting Jeffries-Fisher Interchange
Alterations to City Power Communications and Lighting Facilities

DEPRESSED FREEWAY:
Grading, Drainage, Subbase, Paving, Bonding & Fencing of Main Roadways & Turning Roadways

SERVICE DRIVES:
Grading, Drainage & Paving of East & West Service Drives Myrtle to Humboldt & Myrtle to Michigan

BRIDGES & STRUCTURES:
Myrtle St. Bridge S03 of 82124
South Collector Distributor Bridge S27 of 82194L

GENERAL PLAN

FILE NO. USE NO. 350	STATE PROJECT	FEDERAL PROJECT	SHEET NO.
		I-96	2

APPENDIX D

CONSTRUCTION SCHEDULE - JEFFRIES FREEWAY

APPENDIX D

CONSTRUCTION SCHEDULE - JEFFRIES FREEWAY

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION

CONSTRUCTION PROGRAM
(COMPLETED OR UNDER CONSTRUCTION)

M.D.S.H. REPORT #2

COUNTY WAYNE NO. 82

(Continued Page 9)

TRUNK LINE NUMBER	PROJECT NUMBER	LOCATION	MILES	TYPE OF WORK	AWARD DATE	COMP. DATE	AWARD AMOUNT IN THOUSANDS			
							ROAD AMOUNT	NO. OF STRUCTURES	STRUCTURE AMOUNT	TOTAL
I-96	BI 82124-001 Pt.1	Warren to Myrtle St.	0.700	G&DS, 2@48' & 60' Conc. Pav't	2-12-68	7-71	4,726	4	2,795	7,521
I-96	BI-UI 82124-002	Michigan Ave. to North of Myrtle	0.387	G&DS, 2@36' Conc.Pav't	5-21-68	7-71	2,844	2	650	3,494
I-96	BI 82123-013 Pt.1	From Wreford to Warren (Other Type)	0.568 0.483	G&DS, Conc. Paving	6-24-68	7-71	4,872	10	4,085	8,957
I-96	BI 82123-045 Pt.1	At Warren Ave.	0.049	G&DS & Paving	3-12-69	7-71	2,393	3	944	3,337
I-96	BI 82123-043 Pt.1	Fr. Seebolt to Wreford	0.568	G&DS, 2@48' Conc.	6-23-69	#12-72	4,173	4	1,626	5,799
I-96	BI 82123-046 Pt.1	Fr. Fernwood to Larchmont	0.795	G&DS, 2@48' Conc.	6-23-69	#12-72	5,283	3	1,039	6,322
I-96	BI 82123-053	Fr. Woodside to Fernwood - Detroit	0.663	G&DS, Pav. Utility Alteration	5-12-70	#12-72	4,495	3	615	5,111
I-96	BI 82123-066	Fr.Elmhurst to Grand River - Detroit	0.289	G&DS, Pav.of Exp.Rdwys. Const. of Sewers,water main & lighting	5-12-70	#12-72	2,079	2	577	2,656
I-96	BI 82123-050	Fr. Grand River to Woodside - Detroit	0.554	G&DS & Pav.const. & alter.of sewers,etc. & Lighting & Signal	5-12-70	#12-72	5,031	4	1,948	6,979
I-96	I 82122-01247 A 035	Fenton to Dale St.	---	G&DS - Service Rds.	9-22-70	*11-73	3,367	1	3,539	6,906
I-96	BIU 82123-01267A	Conn. 1,000' N.of Plymouth Rd. N'ly on M-39, 900' S.of Schoolcraft Rd.	0.126 (Mil.on M-39)	G&DS, Service Rds.- Reconstruct M-39	9-2-70	*12-73	3,593	13	10,406	13,999
I-96	I 82122-038, 01244 A	E. of Beech Daly St. E'ly to E. of Fenton St.	---	G&DS 24' & Vari foot Conc.Pav.(Serv. Rd.)	10-13-70	*1-73	2,194			2,194

* Scheduled Completion Date

Rev. 12-31-72

Form 2141 (Rev. 3/72) 82 H

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION

(Continued Page10)

CONSTRUCTION PROGRAM
(COMPLETED OR UNDER CONSTRUCTION)

M.D.S.H. REPORT #2

COUNTY WAYNE NO. 82

TRUNK LINE NUMBER	PROJECT NUMBER	LOCATION	MILES	TYPE OF WORK	AWARD DATE	COMP. DATE	AWARD AMOUNT IN THOUSANDS			
							ROAD AMOUNT	NO. OF STRUCTURES	STRUCTURE AMOUNT	TOTAL
I-96	BIU 82122-037, 01250 A	W.City Lts. of Detroit E'ly to E. of Da Costa St.	---	G&DS 24' & Vari.Conc. Pav. (Service Rds.)	10-13-70	*1-73	2,768	4	3,157	5,926
I-96	BI U 82122-040, 01253	W.of Outer Dr. E'ly & SE'ly to W. of Evergreen	---	G&DS & Pav. of Service Rds.	12-14-70	*9-72	3,783	6	2,697	6,480
I-96	BI U 82123-01275A	Coyle Ave. E'ly to E. of Shirley St.	---	G&DS, Conc.Pav. of Service Rds.	12-15-70	6-74	2,497	3	4,823	7,320
I-96	I 82122-039, 01241 A	E. of Inkster Rd. E'ly to E. Beech Daly	---	G&DS, Vari.Wid.Conc. Pav't	1-6-71	*11-71	2,577			2,577
I-96	I 82122-01238 A	W. of Middlebelt E'ly to W. of Inkster Rd.	---	G&DS, Conc. Pav. Service Rds.	1-5-71	7-74	5,058	19	4,431	9,459
I-96	I 82122-01231 A	Serv.Rd. E. of Eckles, E'ly to E. of Farmington	---	G&DS Only	3-23-71	1-73	6,315	1	556	6,871
I-96	I 82122-01230 A	Interchange I-275, I-96 & M-14	---	G&DS	4-7-71	7-73	3,460.			3,460
I-96	I 82293-02934 A	Interchange Area	---	Structures	4-9-71	9-73*		3	1,941	1,941
I-96	BI UI 82123, 01291 A	Cloverlawn to Wyoming	0.360	G&DS; Paving	4-21-71	#9-74	4,910	4	2,494	7,404
I-96	I UI 82123, 01280 A	Near Shirley E'ly to W. of Wyoming	---	G&DS	5-12-71	9-73	4,906	6	2,684	7,590
I-96	BI U 82123, 01290 A	Jeffries Freeway - Sta. 455 to Sta. 470	0.341	G&DS Conc. Pav't	7-9-71	#9-74	3,274	4	1,176	4,450
I-96	BI U 82123, 01389 A	Fullerton to Oakman	0.398	G&DS, Conc. Pav't	9-13-71	#9-74	3,260	2	1,493	4,753
I-96	I 82122-01236 A	Fr. Farmington Rd. E'ly to W. of Middlebelt	---	G&DS; Serv. Rds.	11-9-71	6-73	2,762			2,762

* Scheduled Completion Date

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION

(Continued Page 11)

CONSTRUCTION PROGRAM
(COMPLETED OR UNDER CONSTRUCTION)

M.D.S.H. REPORT #2

COUNTY WAYNE NO. 82

TRUNK LINE NUMBER	PROJECT NUMBER	LOCATION	MILES	TYPE OF WORK	AWARD DATE	COMP. DATE	AWARD AMOUNT IN THOUSANDS			
							ROAD AMOUNT	NO. OF STRUCTURES	STRUCTURE AMOUNT	TOTAL
I-96	BI 82123-04161 A	Between Grand River Ave. and Monica	---	G&DS & Ramp Revision	3-8-72	9-74	143			143
I-96	BUI 82123-01284 A	Schaefer Rd. E'ly to Wyoming	1.042	G&DS; Dual-Dual 2@36' 2@48' Conc.	3-8-72	9-74	5,220			5,220
I-96	BIU 82123-01281 A	Under PCRR & Spur	---	Struct.	10-11-72	*9-73		2	2,303	2,303
I-96	BIU 82122-04226 A	IN C&ORR Oak Yard	---	Struct & Ret. Walls	10-11-72	*9-73		2	3,542	3,542
I-96	BIU 82122-04227 A	C & O RR Oak Yard Facility	---	Serv. Rd. Struct., Walls	5-4-73	*11-74	2,318	2	4,031	6,350
I-96	BI-UI82123-04229A	Fr. Southfield Rd. E'ly to St. Marys	0.598	G&DS 2@36' inside Vari., Outside	5-15-73	*6-74	3,823	2	3,618	7,441
I-96	I 82122-02923 A	Interch. I-275, I-96 & M-14	1.647	Conc. Paving	7-17-73	*11-73	1,029			1,029
I-96	BIU 82122-04533A	E. of US-24 E'ly to E. of Outer Drive	1.004	G&DS, 2@48' Conc.	11-9-73	*9-74	2,729			2,729
I-96	BIU 82122-04534A	E. of Outer Dr., E'ly to Evergreen	1.022	G&DS, Vair. Wid. Conc.	11-9-73	*9-74	5,181			5,181
I-96	BIU 82122-01270A	St. Mary Ave., E'ly to E. of Schaefer	1.386	G&DS, Dual-Dual 36 Conc.	11-23-73	*6-75	7,124	2	966	8,090
I-96	I 82122-04695 A	E of Beech-Daly Rd. E'ly to US-24	0.941	G&DS 2@48' & 2@60' Conc. Pavt	1-23-74	*6-75	3,185	2	814	3,999
I-96	I 82122-01237 A	W of Warner Ct. E'ly to E. of Inkster Rd.	1.790	G&DS 2@48' Cont. Reinf. Conc. Pavt.	1-24-74	*6-75	5,528	1	296	5,824
I-96	I 82122-01240 A	E of Inkster Rd. E'ly to E of Beech-Daly Rd.	0.945	G&DS, 2@48' & 60' Cont. Reinf. Conc. Pav	1-23-74	*6-75	4,835	6	1,787	6,622

* Scheduled Completion Date

Rev. 9-30-74

Form 2141 (Rev. 3/72) 82 J

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION

(Continued Page 12)

CONSTRUCTION PROGRAM
(COMPLETED OR UNDER CONSTRUCTION)

M.D.S.H. REPORT #2

COUNTY WAYNE NO. 82

TRUNK LINE NUMBER	PROJECT NUMBER	LOCATION	MILES	TYPE OF WORK	AWARD DATE	COMP. DATE	AWARD AMOUNT IN THOUSANDS			
							ROAD AMOUNT	NO. OF STRUCTURES	STRUCTURE AMOUNT	TOTAL
I-96 & I-275	I 82125--05957 A	N. of 6 Mi Rd. S'ly to N of 5 Mi. Rd.	1.619	G&DS 48' Conc.	1-24-74	6-75	3,899	1	626	4,525
I-96	BUI 82123-03591A	Temp Davison Conn.	---	G&DS, Paving	2-15-74	*1-75	1,260	1	239	1,499
I-96	I 82122-06543 A	Brookfield, Berwick, Merriman, Warner Ct.	---	Structure	2-21-74	*11-74		6	1,515	1,515
I-96	EACI 82122-06546	Various locations on I-96	---	Structures	3-4-74	*11-75		12	3,370	3,370
I-96	I 82125-06770 A	Over 7 Mi. Rd. & 8 Mi. Rd.	---	Structures	3-1-74	*2-75		3	1,183	1,183
I-96	EACI82125-06769 A	N. of 8 Mi. Rd. to N. of 6 Mi.	---	G&DS Only	3-18-74	*3-75	6,824			6,824
I-96	EACI82122-06542 A	E.of Farmington Rd. E'ly to E. of Warner Ct.	---	G&DS Only	4-26-74	*6-75	3,171			3,171
I-96	EACI 82122-06545A	W. of Newburg Rd. E'ly to E of Farmington Rd.	---	G&DS Only	5-15-74	*1-76	5,983			5,983

*Scheduled Completion Date

APPENDIX E

APPENDIX E

STATE OF MICHIGAN
77TH LEGISLATURE
REGULAR SESSION OF 1974

Introduced by Senator Fleming

ENROLLED SENATE BILL No. 1364

AN ACT to amend section 642 of Act No. 300 of the Public Acts of 1949, entitled as amended "An act to provide for the registration, titling, sale and transfer, and regulation of vehicles operated upon the public highways of this state; to provide for the licensing of vehicle dealers and wreckers; to provide for the examination, licensing and control of operators and chauffeurs; to provide for the giving of proof of financial responsibility and security by owners and operators of vehicles; to provide for the imposition, levy and collection of specific taxes on vehicles, and the levy and collection of sales and use taxes, license fees and permit fees; to provide for the regulation and use of streets and highways; to provide penalties for violation of any of the provisions of this act; to provide for civil liability of owners and operators of vehicles and service of process on nonresidents; and to repeal all other acts or parts of acts inconsistent herewith or contrary hereto," being section 257.642 of the Compiled Laws of 1970.

The People of the State of Michigan enact:

Section 1. Section 642 of Act No. 300 of the Public Acts of 1949, being section 257.642 of the Compiled Laws of 1970, is amended to read as follows:

Sec. 642. Whenever any roadway has been divided into 2 or more clearly marked lanes for traffic the following rules in addition to all others consistent herewith shall apply:

(a) A vehicle shall be driven as nearly as practicable entirely within a single lane and shall not be moved from the lane until the driver has first ascertained that the movement can be made with safety. Upon a roadway with 4 or more lanes which provides for 2-way movement of traffic, a vehicle shall be driven within the extreme right hand lane except when overtaking and passing but in no event shall cross the center line of the roadway except where making a left turn.

(b) Upon a roadway which is divided into 3 lanes and provides for 2-way movement of traffic, a vehicle shall not be driven in the center lane except when overtaking and passing another vehicle traveling in the same direction, when the center lane is clear of traffic within a safe distance, or in preparation for a left turn, or where the center lane is at the time allocated exclusively to traffic moving in the same direction the vehicle is proceeding and the allocation is designated by official traffic control devices.

(c) Official traffic control devices may be erected directing specified traffic to use a designated lane or designating those lanes to be used by traffic moving in a particular direction regardless of the center of the roadway and drivers of vehicles shall obey the directions of every such device.

(d) Official traffic control devices may be installed prohibiting the changing of lanes on sections of roadway, and drivers of vehicles shall obey the directions of the devices.

This act is ordered to take immediate effect.

Beryl J. Kenyon

Secretary of the Senate.

Thos. Thatcher

Clerk of the House of Representatives.

Approved _____

_____

Governor.

APPENDIX F

YOUNG & RUBICAM
PUBLIC INFORMATION CAMPAIGN MEDIA PLAN

SEMTA

JEFFRIES FREEWAY

RESERVED BUS-CAR POOL LINE PROJECT

PUBLIC INFORMATION CAMPAIGN

MEDIA PLAN

Date: December 12, 1974
Prepared by Young & Rubicam
Department of Media Relations and Planning

CONTENTS

Background

Introducing and sustaining knowledge of the Jeffries Freeway Reserved Bus-Car Pool Lane is somewhat unique by comparison with traditional new product or service efforts.

First, for purposes of this analysis, the prospects are of necessity broadly defined. In a sense every licensed or potential driver in the Tri-County metropolitan Detroit area is a prospect, with special emphasis on those who currently use this freeway. Additionally, with the opportunity for significant improvement in bus transportation, current and potential commuters -- either licensed or not -- also become a factor. Broadly speaking, all Detroit metropolitan area adults with an interest in transportation advancements, regardless of their use of this facility, must not be ignored.

However, advertising industry consumer media research patterns used extensively in this analysis cannot distinguish between licensed vs. potential drivers; users of the Jeffries Freeway vs. non-users; bus commuters vs. auto drivers; those generally interested in transportation advancements vs. those who are not.

So, while we may be able to define a different order of prospect priorities, the media plan is directed principally to the broad audience of adults in the Tri-County metropolitan area and is analyzed on this basis.

Secondly, and for obvious reasons, it is necessary to launch an announcement program prior to the availability of the reserved lane. Broad levels of coverage must be established quickly to educate current users of the Jeffries Freeway to this dramatic change and the consequent penalties for violators.

Thirdly, while general media coverage patterns of TV, radio, newspaper and outdoor spread geographically throughout the area, this plan will avail it self of the maximum flexibilities allowed in both newspapers and outdoor to cover more forcefully the areas of more direct access to the Jeffries Freeway.

And lastly, to assure maximum and frequent coverage of area adults in a relatively short period of time, our plan recommends a forceful schedule in each of the four major media -- television, newspapers, radio and outdoor -- rather than a traditional and more limited concentrated effort in one or two media.

Objectives

I. Announce the opening of the "reserved lane", available on the Jeffries Freeway with media levels sufficient to convince eligible drivers to use it.

II. Cover a maximum number of Tri-County adults with frequent advertising messages about this lane and its advantages.

III. Where possible, provide a heavier weighting of message frequency in the areas of more direct access to the Jeffries.

Strategy

I. Beginning in April and continuing in May, schedule television newspaper, radio and outdoor advertising that in combination will deliver maximum coverage and frequent massages among adults, in the Tri-County area, with emphasis in those areas directly flowing into the Jeffries Freeway.

II. Sustain the campaign during the summer months at a lower frequency level.

III. Build added weight in August and early September to alert those returning from vacation about the "reserved lane".

Media Rationale

The four major Detroit Media -- outdoor, radio, television and newspaper -- will be scheduled with varying emphasis during the program.

Outdoor

Illuminated painted bulletins (large, permanent fixtures) will be scheduled throughout the six month period. The smaller, regular outdoor posters will be used during the "pre-opening" and immediate "post-opening" period. This outdoor will be confined to the area immediately served by the Jeffries Freeway, and in which the majority of the prospective drivers of the "reserved lane" reside.

This technique in scheduling outdoor advertising will assure maximum exposure to all the potential users of the Jeffries Freeway throughout the campaign period. The outdoor advertising will also assure very high frequency of message exposure to these prospective drivers (over 100 times during the 60-day "pre- and post-opening" period). Exposure to this advertising will occur when the drivers are actually driving their cars in the area. Outdoor also provides the most economical means of providing advertising exposure.

Radio

Ten (10) Detroit radio stations will be used with a total of 120-130 announcements per week. This will provide a high frequency of message to the entire area adult population. The announcements will be aired at various times throughout the day, evening, and week-end periods to assure complete coverage of all drivers.

Because of the heavy use of the radio by car operators in Detroit, much of the exposure to these messages will occur while drivers are actually in their cars driving. Because of radio flexibility, the periods of radio advertising can be weighted to the two periods when higher emphasis is needed.

Television

Television will give the campaign immediate broad reach of the entire adult population. The announcements will appear during the early and late news blocks and in prime time. These are the times when the most adults are viewing television. Additional impact against prime prospects will be achieved by scheduling announcements in the late news periods when people may be susceptible to hearing about a better way to drive to work tommorrow. Television also gives the added benefit of motion and demonstration.

Newspaper

Since "nearly everyone reads a newspaper", this medium provides a high reach of the community and does it quickly. Because of a unique device available through the two Detroit metropolitan newspapers, additional concentration of messages can be delivered to those adults in the immediate Jeffries Freeway area. Newspapers can be scheduled to provide advertising at specific periods of time, also.

Media Plan

With varying emphasis, the four major media are planned for a six-month period. There are two periods when a heavier intensity of advertising will be applied -- first, during the "pre- and post-opening" period to acquaint drivers with the "reserved lane", and in the second or third month of operation to provide a reinforcement of the original message. The media flow chart of the entire schedule coupled with the media rationale and appendix will detail the plan completely.

Month I

Outdoor

The program begins approximately 30 days prior to the opening of the reserved lane with a "pre-opening" outdoor poster campaign using 45 boards in the area immediately adjacent to the Jeffries Freeway. At the same time two illuminated painted bulletins will be scheduled on the Jeffries Freeway; one out-bound, one in-bound. Two other illuminated locations will also appear on main arteries in the Jeffries corridor.

Radio

Three weeks prior to the opening, a heavy radio campaign directed to the entire region will schedule the same pre-opening message.

Television

Two weeks prior to the official opening a television campaign will begin that will provide coverage of the entire area adult population.

Newspaper

A full-page and a half-page newspaper ad will appear in the full edition of the two Detroit metropolitan newspapers and the lead Black newspaper prior to the official opening.

Month II

Outdoor

After the opening of the "reserved lane", the two illuminated painted bulletins on the Freeway will continue through September. The other two locations will be rotated every 60 days to new locations on main arteries within the Jeffries area.

The poster showing will be reduced to 34 boards with a patch placed over the original "pre-opening" message giving the copy a "now open" type of message.

Radio and TV

The radio campaign will continue for four weeks with "post-opening" copy as will the television schedule for two weeks.

Newspaper

During the 1st and 2nd months, ¼-page ads will appear in the northeastern editions of the two Detroit newspapers, along with a post-opening ½-page ad in the papers' full edition. In addition, three ads will appear in the Black newspaper.

Month III

With less media emphasis during this period, the aforementioned two ads in the newspapers plus four painted bulletins will be scheduled.

Month IV

Radio and Newspaper

During this period a second radio campaign will be aired, supplemented by a newspaper ad in the Southwest editions of the Detroit newspapers and the Black newspaper, to re-emphasize the "reserved lane", particularly to returning vacationers.

The total program will reach virtually all adults in the area. Over the 6-month period the average adult will be reached approximately 33 times with the adilts in the Jeffries area receiving many more impressions through outdoor message. This will develop 179 million gross impressions.

MEDIA PLAN DETAIL

AND

PERFORMANCE

MEDIA PLAN

MONTH	1				2				3				4				5				6			
WEEK	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PAINT	----------																							
POSTING	----------																							
RADIO	120-130/Wk																120-130/Wk							
TELEVISION	10-15/Wk																							
NEWSPAPER	X	X				X			X	X										X				

OUTDOOR

PRINTED BULLETINS

4 Rotary Bulletins/Month - 6 Months
24 Bulletins/Month @ $1,237.50 — $29,700

POSTERS

150 GRP (45 Boards) @ $188. each	$8,460.
100 GRP (34 Boards) @ $188. each	$6,392.
Sniping (34 Boards) @ $ 15. each	$ 510.
	$15,362

Total (Gross) $45,062

SCHEDULE

Month	0	1	2	3	4	5
PAINT:						
Jeffries	2	2	2	2	2	2
Rotary	2	2	2	2	2	2
POSTERS	45	34				

AUDIENCE (ADULTS) (MILLIONS)							TOTAL
Bulletin	7.7	7.7	7.7	7.7	7.7	7.7	46.2
Posters	30.2	22.5	-	-	-	-	

PERFORMANCE (ADULTS) (JEFFRIES CORRIDOR) (MONTHLY) PERCENTAGE COVERAGE/MESSAGE FREQUENCY

Percentage Coverage	98%	98%	15%	15%	15%	15%	98%
Message Frequency	61	56	28	28	28	28	244

EFFICIENCY

GROSS AUDIENCE	98,900,000
TOTAL COST	$45,062
CPM	.46

RADIO

122 SPOTS PER WEEK (10 STATIONS)
12 Weeks @ $6,882/Wk $89,466

SCHEDULE MONTH	0	1	2	3	4	5
# Wks	3	4	-	-	3	3
AUDIENCE (ADULTS) (000)						
3 Co's	12,020	16,027	-	-	12,020	12,020

PERFORMANCE (ADULTS) (ACCUMULATIVE BY FLIGHT) PERCENTAGE COVERAGE/MESSAGE FREQUENCY

							TOTAL
Percentage Coverage	75%	78%	-	-	78%	78%	78%
Message Frequency	5.4	12.1	-	-	5.4	10.3	22.4
GRP	403	940	-	-	403	806	1,746

EFFICIENCY

GROSS AUDIENCE	52,087,000
TOTAL COST	$89,466
CPM	$ 1.72

Source: Radio ARB April/May 1974

TELEVISION

DAYPART	GRP	AVG RTG HSLD	AVG RTG ADULTS	#/:30	#/:30	WEEKLY COST
Early News	40	14.0	9.3	350	3	$1,050
R.O.S. Prime	80	17.7	11.8	1,000	3	$3,000
Prime Access				550	2	$1,100
Late News	40	13.7	9.3	500	3	$1,500
	160				11	$6,650
					4 Weeks	$26,600

SCHEDULE

Month #0	Month 1
4/14	5/11

AUDIENCE (ADULTS)

	A.A. ADULTS (000)	#:30	Wkly	4 Wks
Early News	302	3	906	3,624
R.O.S. Prime	381	3	1,143	4,572
Prime Access	381	2	762	3,048
Late News	299	3	897	3,588
		11		14,832

PERFORMANCE (ADULTS) (ACCUMULATIVE) PERCENTAGE COVERAGE/MESSAGE FREQUENCY

	1 Week	2 Weeks	4 Weeks
Percentage Coverage	56%	73%	85%
Message Frequency	2.1	3.2	5.4
GRP (Demo)	115	230	459
GRP (Households)	160	320	640

EFFICIENCY

GROSS AUDIENCE	14,832,000
TOTAL COST	$26,600
CPM	$1.79

Source: NTI May 1974

NEWSPAPER

DETROIT NEWS

F.R.	1-Pg (2,480 1i) @ $1.92	$4,761.60	
	2-1,200 1i (2,400) @ $1.92	$4,608.00	
W&M*	4-600 1i (2,400) @ $1.695	$4,068.00	
	NET		$13,437.60
	GROSS		$15,809.34

DETROIT FREE PRESS

F.R.	1-Pg (2,400 1i) @ $1.78	$4,272.	
	2-1,200 1i (2,400) @ $1.78	$4,272.	
S.W.**	4-600 1i (2,400) @ .60	$1,440.	
	NET		$ 9,984.00
	GROSS		$11,746.18

MICHIGAN CHRONICLE

1-Pg (2,352 1i) @ $.50	$1,176	
1-1,200 1i (1,200) @ $.50	600.	
2-600 1i (1,200) @ $.50	600.	
		$ 2,376.00
TOTAL (NET)		$25,797.60
TOTAL (GROSS)		$29,931.52

SCHEDULE

MONTH	0	1	2	3	4	5
NEWS (F.R.)	Pg. 1,200	1,200				
NEWS (W&M)		600	2-600		600	
F.P. (F.R.)	Pg. 1,200	1,200				
F.P. (S.W.)		600	2-600		600	
CHRONICLE	Pg. 1,200	600	600			

* Western and Metro Zones
** Southwest Zone

NEWSPAPER AUDIENCE

	METRO CIRC.	EST. ADULT AUDIENCE
NEWS (F.R.)	652,000	1,434,000
NEWS (W&M)	440,000	968,000
FREE PRESS (F.R.)	440,000	968,000
FREE PRESS (S.W.)	202,000	444,000
CHRONICLE	47,000	103,000

AUDIENCE (ADULTS) (METRO) (000)

MONTH	0	1	2	3	4	5
NEWS (F.R.)	2,868	1,434				
NEWS (W&M)	-	968	1,936		968	
FREE PRESS (F.R.)	1,936	968				
FREE PRESS (S.W.)	-	444	888		444	
CHRONICLE	206	103	103		--	
	5,010	3,917	2,927		1,412	

PERFORMANCE (METRO) (ADULTS) (ACCUMULATIVE) PERCENTAGE COVERAGE/MESSAGE FREQUENCY

MONTH		0	1	2	3	4	5
3 Co's	Pctge. Cvge.	69%	72%				
	Message Frqcy.	2.1	3.0				
S.W.	Pctge. Cvge.	69%	74%	76%	-	78%	78%
	Message Frqcy.	2.1	3.9	5.8	-	6.6	6.6
	EST. TOTAL	69/2.1	69/2.1	73/34	-	77/6.2	77/6.2

EFFICIENCY

GROSS AUDIENCE	13,266,000
TOTAL COST	$29,932
CPM	$2.26

SCHEDULE/PERFORMANCE SUMMARY

	MONTH	0	1	2	3	4	5	
I.	NO. OF ADS							
	POSTER	4	4	4	4	4	4	6 Months
	PAINT	34	34					2 Months
	RADIO	3 Wks	4 Wks			3 Wks	3 Wks	13 Weeks
	TV	2 Wks	2 Wks					4 Weeks
	NSP	6 Ads	5 Ads	5 Ads		2 Ads		18 Ads
II.	AUDIENCE (ADULTS) (MILLIONS)							
	OUTDOOR	37.9	30.2	7.7	7.7	7.7	7.7	98.9
	RADIO	12.0	16.0			12.0	12.0	52.0
	TV	7.4	7.4					14.8
	NSP	5.0	3.9	2.9		1.4		13.2
III.	PERFORMANCE (ACCUMULATIVE) PERCENT COVERAGE/MESSAGE FREQUENCY							
	OUTDOOR*	98/61	98/56	15/28				98/244
	RADIO**	75/5.4	78/12.1			75/5.4	78/10.3	78/22.4
	TV**	73/3.2	85/5.4					85/5.4
	NSPS**	69/2.1	73/3.4	75/5.4		77/6.2		77/6.2
IV.	EFFICIENCY							
	PAINT							.64
	POSTER							.28
	RADIO							1.72
	TV							1.79
	NSP							2.26

*Jeffries Corridor Area Only (Monthly)
**Tri-County Metro Area (Accumulative)

BUDGET SUMMARY

MEDIA			
	OUTDOOR - PAINT	$ 29,700	
	OUTDOOR - POSTER	15,362	
	RADIO	89,466	
	TELEVISION	26,600	
	NEWSPAPER	29,932	
			$191,060
PRODUCTION			
	OUTDOOR	$ 8,000	
	RADIO	15,000	
	TELEVISION	15,000	
	NEWSPAPER	5,000	
			$ 43,000
PUBLIC RELATIONS CONSULTANT			$ 20,000
SEMTA STAFF			$ 13,350
		GRAND TOTAL	$267,410

NOTE: Cost based on rates prevailing at this time and subject to any economic increases that may be announced prior to implementation of these schedules.

APPENDIX

RADIO - COSTS

STATION	#/WK	$/:60	$/WK
WJR	12	135	1,620
WWJ	12	94	1,128
WWJ-FM	12	Comb.	-
CKLW	12	100	1,200
WXYZ	12	70	840
WDEE	12	62	744
WOMC	14	30	420
WJLB	12	27.50	330
WCHB	12	25	300
WJZZ	12	25	300
			$6,882
		13 Weeks	$89,466

SCHEDULE

R.O.S. 1/3 Drive
2/3 Day, Nite, Weekend

RADIO - AUDIENCE

STATION	METRO - ADULTS, M-S, 6A-12M AVG ¼ HR (00)	CUME
WJR	867	12,105
WWJ	434	6,952
WWJ-FM	320	3,950
CKLW	344	8,150
WXYZ	328	5,736
WDEE	312	4,025
WOMC	282	3,139
WJLB	235	3,511
WCHB	170	1,970
WJZZ	N.A.	N.A.
	3,292	

WEEKLY GROSS

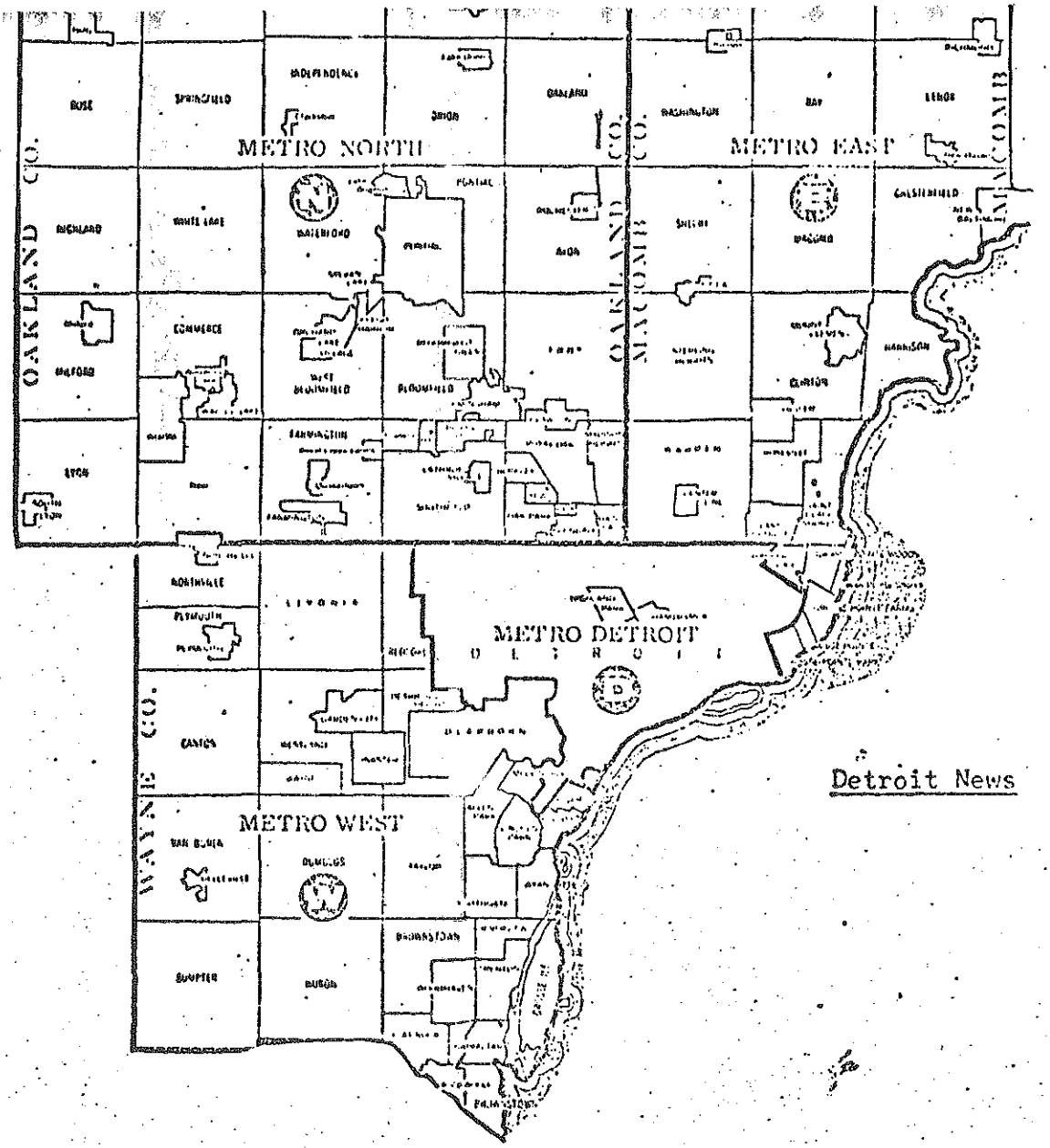
12 x 3,292	39,504
2 x 282	564
	40,068
	(4,006,800)

NEWSPAPER RATE/CIRCULATION ANALYSIS

PUBLICATION	NET RATE	CIRCULATION	MILINE	
Detroit News - F.R.	$1.92	684,852	$2.81	1,500 1i
3 Co	1.92	652,252	2.95	
West & Metro	1.695	440,000	3.85	1,500 1i
Detroit Free Press - F.R.	1.78	621,068	2.87	2,500 1i
3 Co	1.78	439,858	4.05	
S.W.	.60	201,477	2.98	
Michigan Chronicle - F.R.	.50*	48,620	10.90	
3 Co	.50*	46,780	11.33	

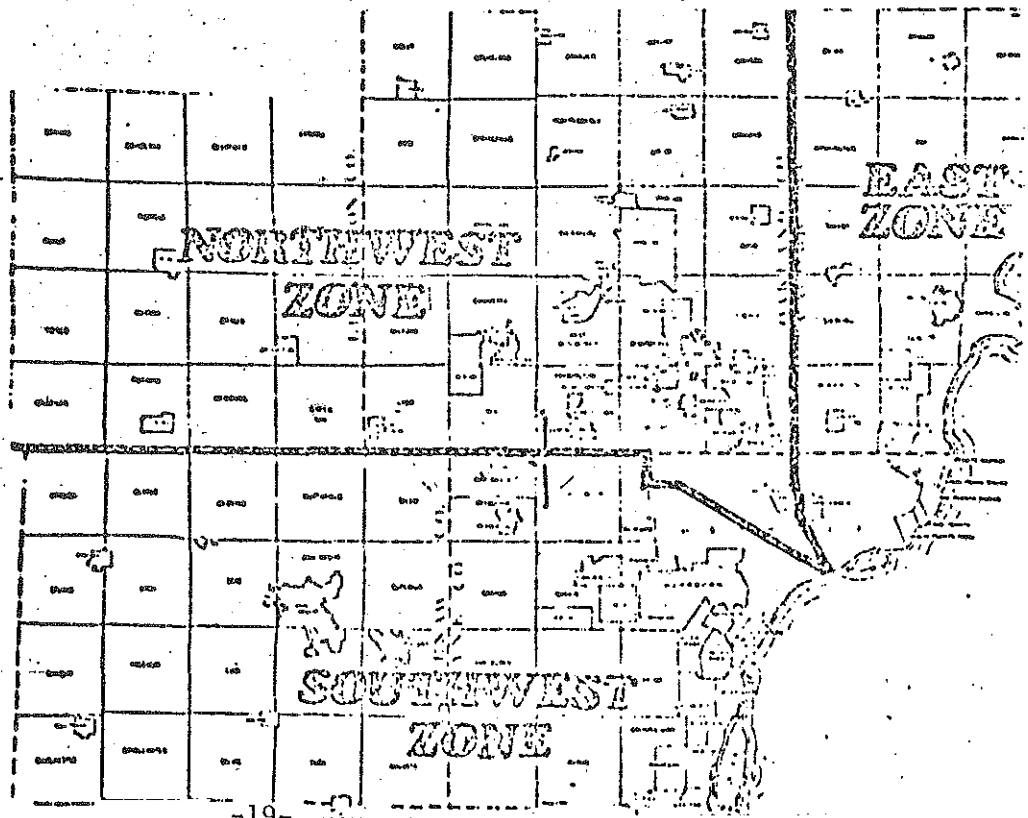
* Incl 15/2

DETROIT NEWSPAPER
NE EDITIONS



Detroit News

Detroit Free Press



S. E. M. T. A.

TENTATIVE LOCATION LIST

Illuminated Posters

Month 0-1

1. Seven Mile Road east of Inkster
2. Inskter south of Schoolcraft
3. Middlebelt at Joy Road
4. Plymouth at Burt
5. Joy Road west of Southfield
6. Oakman south of Ford Road
7. Warren Road east of Southfield
8. Wyoming at Joy Road
9. West Chicago east of Greenfield
10. Schaefer south of Plymouth
11. Greenfield south of Schoolcraft
12. Grand River west of Greenfield
13. Fenkell West of Schaefer
14. Puritan east of Livernois
15. Linwood south of Fenkell
16. Davison east of Linwood
17. Dexter south of Joy Road
18. West Grand Blvd. at Linwood
19. Chicago at 12th Street
20. Grand River at Forest
21. Michigan Ave. west of Grand Blvd.
22. W. Fort west of Grand River
23. Woodward north of Vernor Hwy.
24. Cass north of Warren
25. Second Avenue so. of Chicago
26. Schoolcraft at Farmington Road
27. Fenkell west of Telegraph
28. Grand River west of Lahser
29. Eight Mile Road at Lahser
30. McNichols east of Greenfield
31. Seven Mile east of Greenfield
32. Livernois south of Davison
33. Grand River west of Wyoming
34. McGraw east of Livernois

Month 0 only

A. Eight Mile east of Coolidge
B. McNichols east of Wyoming
C. John Lodge at W. Outer Drive
D. Wyoming north of Schoolcraft
E. Joy Road west of Livernois
G. Trumbull north of Michigan
H. Warren east of Lonyo
I. Telegraph north of Plymouth
J. Schoolcraft east of Evergreen
K. Tireman west of Livernois

Illuminated, Painted Bulletings:

Month 0-5 (Jeffries Freeway, statis)

1. Outbound north of Ford Freeway
2. Inbound at Joy Road

Month 0-1 Rotary

1. Outbound Grand River at Lodge Freeway
2. Outbound (e) Davison at Livernois

Month 2-3 Rotary

1. Inbound Grand River at Six Mile
2. Outbound (e) Davison at Livernois

Month 4-5 Rotary

1. Southbound Telegraph north of Schoolcraft
2. Outbound Grand River at Southfield Freeway