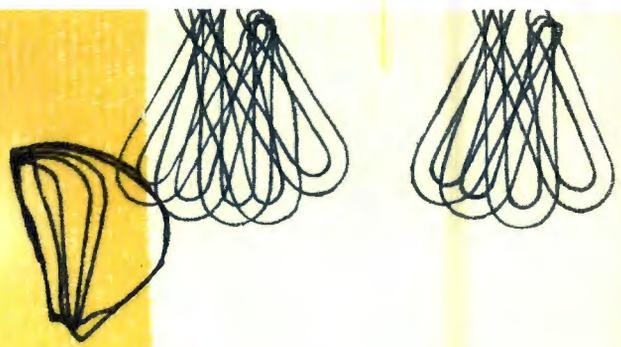


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MULTISYSTEMS, INC./BARTON-ASCHMAN ASSOCS, INC.
LACTC
PREPARATION OF A 504 TRANSITION PLAN FOR LA
COUNTY/SUBMITTED TO LACTC
06/20/80



1.5.1.2

PREPARATION OF A 504 TRANSITION PLAN FOR LOS ANGELES COUNTY

Submitted to
Los Angeles County Transportation Commission

June 20, 1980

By

 **multisystems, inc.**

1 050 Massachusetts Avenue, Cambridge, MA. 02138

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MULTISYSTEMS, INC./BARTON-ASCHMAN ASSOCS, INC.
LACTC
PREPARATION OF A 504 TRANSITION PLAN FOR LA
COUNTY/SUBMITTED TO LACTC
06/20/80



1050 Massachusetts Avenue, Cambridge MA. 02138 ■ 617-864-5810

June 19, 1980

Ms. Joan Medeiros, Administrative Officer
Los Angeles County Transportation Commission
311 Spring Street (Suite 1206)
Los Angeles, CA 90013

RE: Request for Proposals
Section 504 Transition Plan Preparation

LACTC/RCC
LIBRARY

Dear Ms. Medeiros:

Multisystems, Inc. in association with Barton-Aschman Associates, Inc., is pleased to submit the enclosed proposal to assist in the development of the Section 504 Transition Plan for Los Angeles County. Multisystems, Inc. is recognized nationally as a leader in the planning, management and evaluation of accessible conventional and specialized transit and paratransit services for elderly and handicapped persons. Barton-Aschman Associates is a nationally recognized planning and engineering firm with extensive experience in the planning and design of transit systems and transit facilities, and with extensive experience and familiarity with transportation planning and management organizations within Los Angeles County.

We believe that this partnership of organizations will bring together the experience needed to complete this project successfully, and will provide a staff with both the local familiarity and specific technical skills required for superior performance.

Multisystems and Barton-Aschman are prepared to commit an exceptionally experienced and capable project team to perform the major portions of the study on-site in Los Angeles County. A three person team including the Project Manager, will be stationed on site during the first month of the project (plan preparation). A two person team, including the Project Manager, will be stationed on site during the later phases (public hearings and plan revision) of the study. We believe that the commitment of this level of staff on a full-time basis is essential to the successful and timely completion of this project.

The project staff will be headquartered at the Barton-Aschman offices in Pasadena, California. Full administrative support services will be provided through that office, including word processing and graphics capabilities.

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1 2

June 19, 1980
Ms. Joan Medeiros
Page 2

Multisystems, Inc. and Barton-Aschman Associates, Inc. are both equal opportunity employers in full compliance with all state and federal laws pertaining to EEO/AA matters. Multisystems, Inc. is incorporated in the Commonwealth of Massachusetts.

This proposal represents a firm offer for a period of fifty (50) days commencing June 20, 1980, after which time Multisystems, Inc. reserves the right to revise the terms and conditions of the offer.

Multisystems, Inc. may be represented in negotiations for this proposal by David Alschuler, Vice President. All questions concerning this proposal should be directed to Mr. Alschuler at 617/864-5810.

Multisystems, Inc. and Barton-Aschman Associates, Inc. appreciate this opportunity to offer services to the LACTC. We look forward to future discussions concerning this project.

Sincerely,

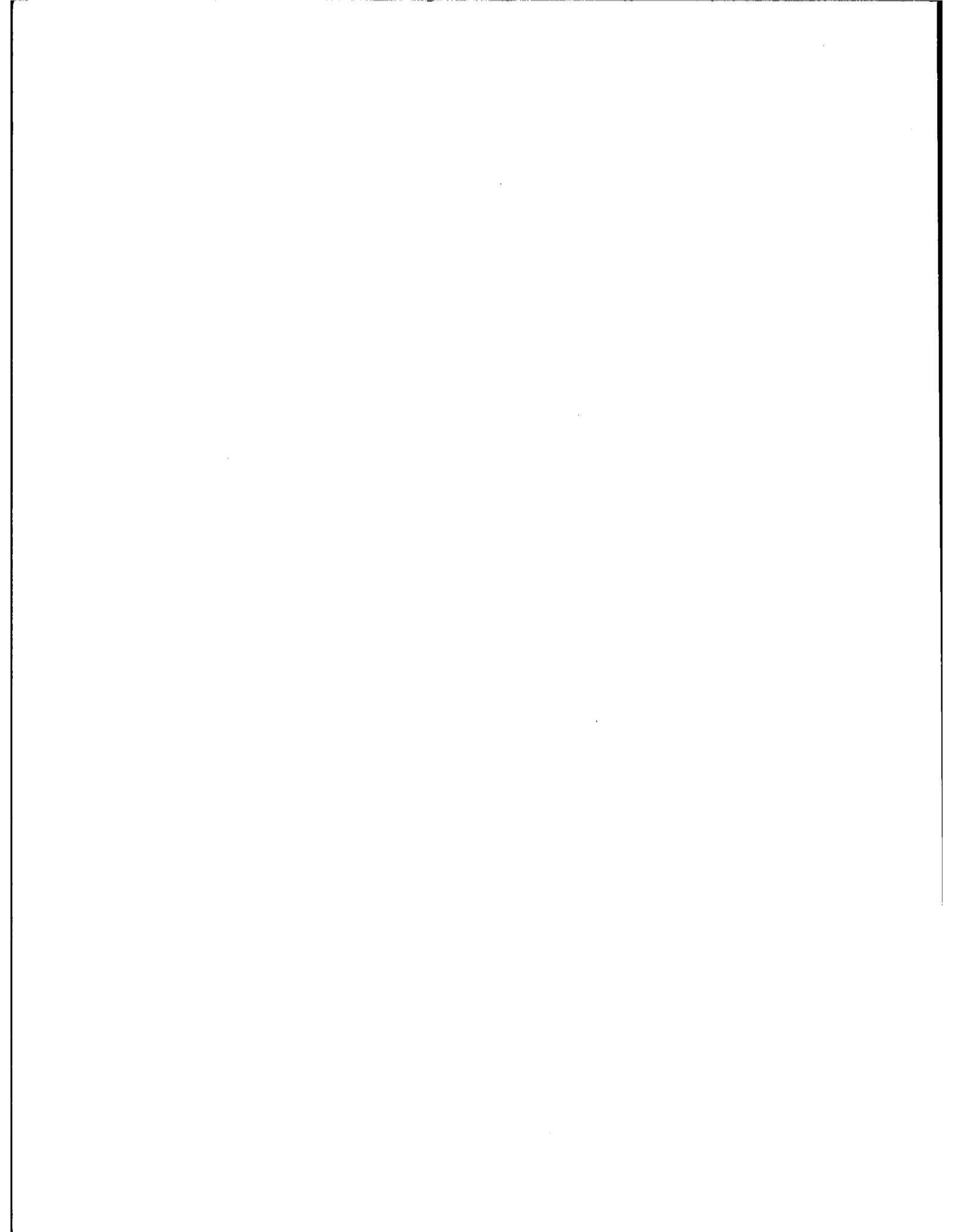
Martin Flusberg

Martin Flusberg
Vice President

MF/rr

Enclosure

cc: David Miller



29289021

PREPARATION OF 504 TRANSITION PLAN
FOR LOS ANGELES COUNTY

Submitted to
Los Angeles County Transportation Commission

June 20, 1980

By

 **multisystems, inc.**
Cambridge MA. 02138

and
Barton-Aschman Associates, Inc.
San Jose and Pasadena, CA
and Chicago, IL

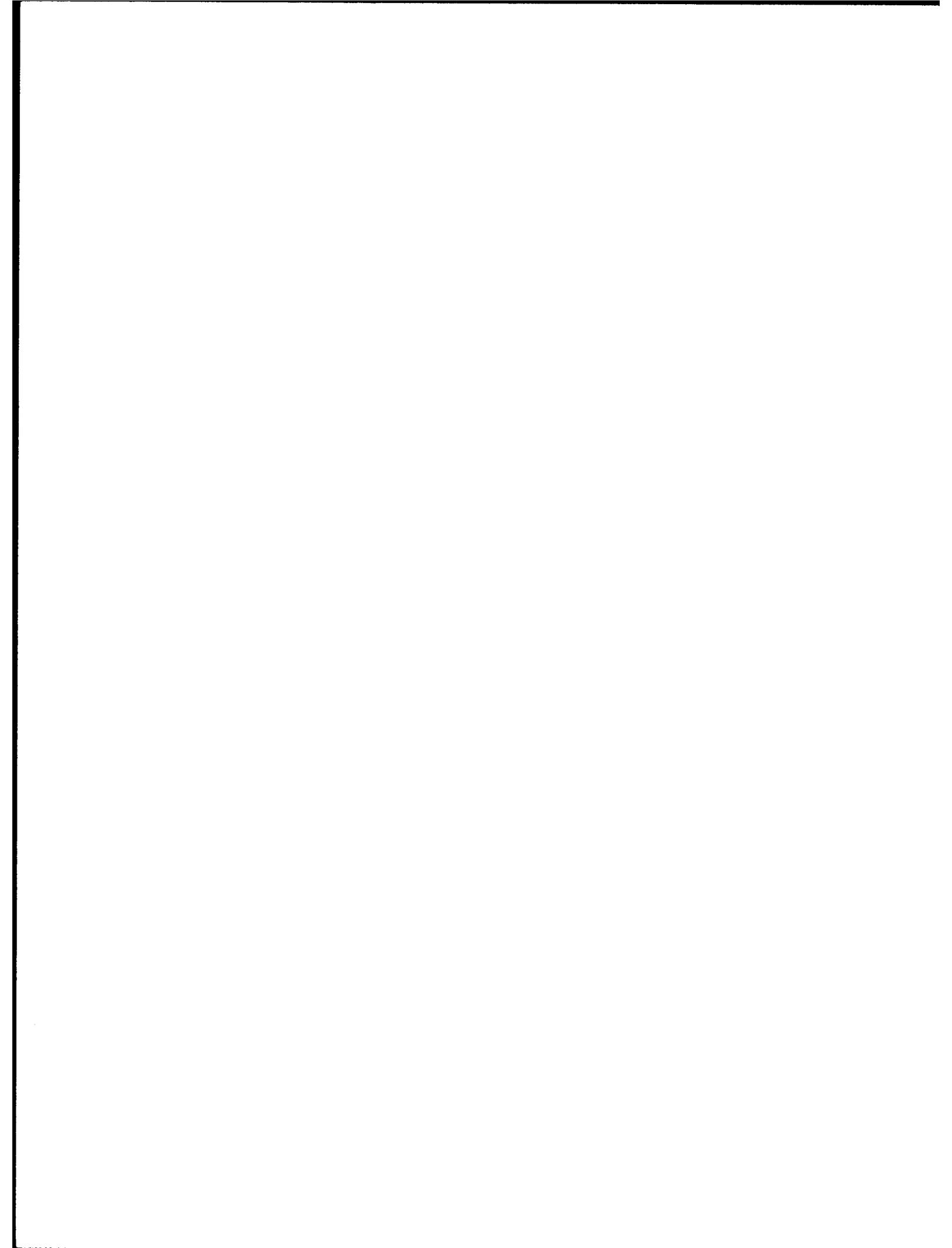
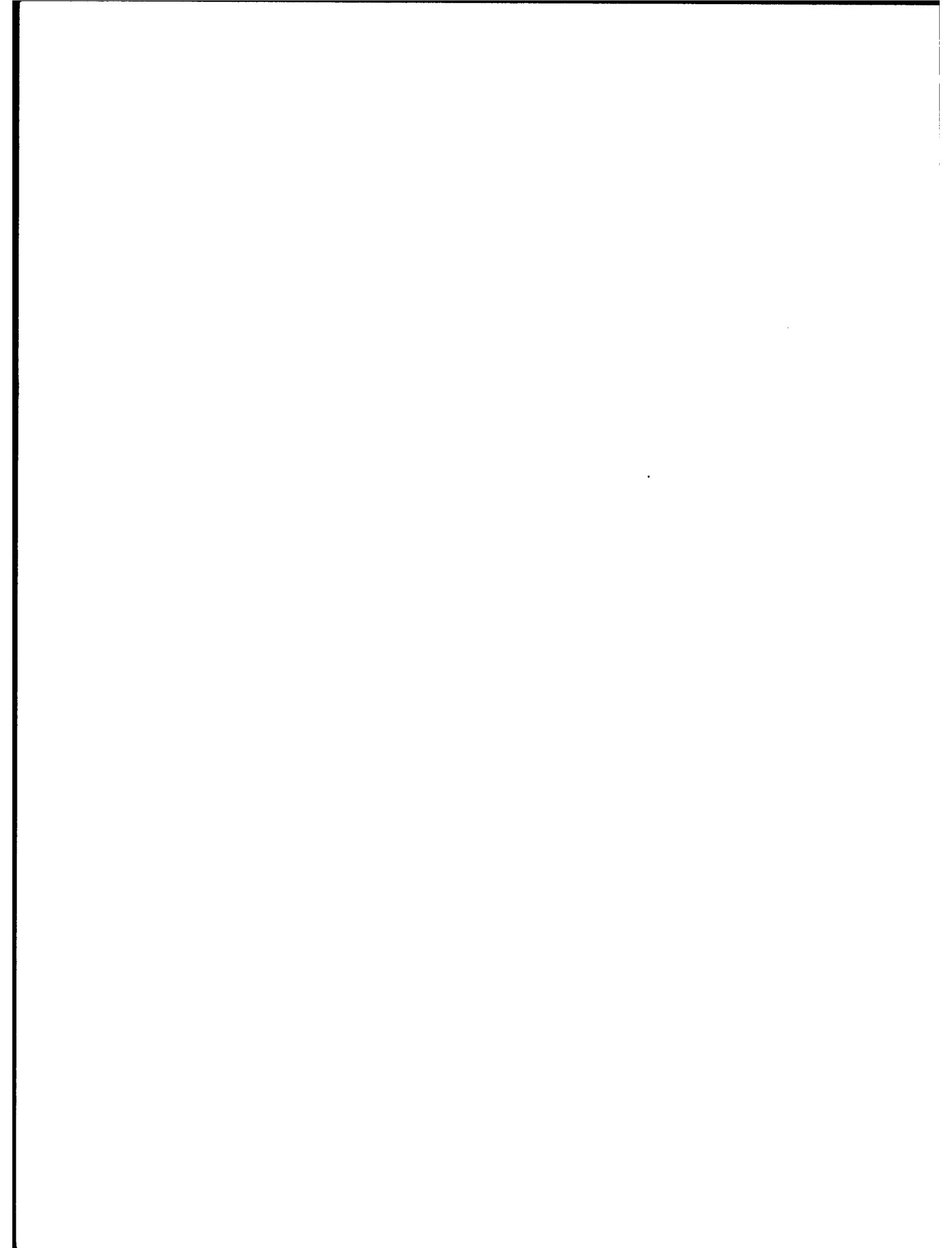


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Section I

Summary of the Proposal

1.1 Technical Approach

Multisystems and Barton-Aschman Associates will support LACTC through a four task Work Program designed to develop a County-wide Transition Plan which meets the requirements of the U.S. DOT rules implementing Section 504 of the Rehabilitation Act of 1973.¹ The key technical activities which must be undertaken during this effort are:

- Evaluation of the completeness of transition plans developed by the individual operators in the County with respect to U.S. DOT requirements.
- Performance of additional transition planning (or improved documentation of previous planning efforts) where that evaluation indicates deficiencies.
- Development of an integrated County-wide plan based on the plans of the individual operating properties, which provides consistent, compatible and integrated approaches from a County perspective and meets all federal requirements.
- Participation, support, and documentation of the program of public participation which will be focussed on the Draft County Transition Plan.
- Preparation of a Final Transition Plan which incorporates the feedback received during the public participation process.

A preliminary review of the status of existing transition planning activities at the individual properties within LA County undertaken by Multisystems staff in mid-June indicates that most of the properties anticipate achieving "full program accessibility" by mid-1982. However, additional work will be required with respect to certain operators to ensure full compliance with 504 rule requirements. Areas of particular concern include:

¹ See: Federal Register, May 31, 1979, Part II.

- Adequacy of attention of policies and procedures.
- Adequacy of inventory of fixed facilities.
- Consistency of proposed equipment purchase schedules and the capital improvement program reflected in the TIP.
- Completeness of documentation of public participation in transition planning.
- Consistency of assumptions (particularly budget and cost estimating assumptions) between operators.
- Consideration of issues relating to the accessibility of transfer points and interfaces between operators.

Multisystems and Barton-Aschman Associates will work closely with LACTC staff and each operating property to complete the necessary technical analyses and documentation in a timely and successful manner. Section 2 includes a detailed discussion of appropriate components of the County Transition Plan.

The proposal emphasizes a strong commitment by Multisystems and Barton-Aschman to place key staff on-site for the time periods necessary to successfully complete this project.

A ninety-day period-of-performance is proposed, as requested by the RFP.

1.2 Qualifications of the Proposing Team

Multisystems, Inc. and Barton-Aschman Associates, Inc. believe that we are exceptionally well-qualified to prepare a County-wide Transition Plan for LA County. Our suitability for this assignment is based on the following:

1. Familiarity with LA County

- Multisystems is currently completing a county-wide taxicab study for LACTC that has provided a thorough understanding of the characteristics of the communities that comprise LA County (as well as contact with some local operators). In addition, the firm is extremely familiar with SCRTD, the largest operator in the County.

(Multisystems is currently evaluating a routing and scheduling demonstration being conducted by SCRTD.) Related projects are: 1) development of a bus route patronage model; 2) evaluation of the impacts of the planned fare structure change.

- Barton-Aschman Associates has extensive experience working in Los Angeles County. The firm is currently working with SCRTD to analyze alternatives for the Rapid Rail Transit Starter Line. It has previously assisted SCRTD in its Title VI Compliance assessment and worked with SCAG assessing guideway transit concepts, analyzing air quality for the Los Angeles Basin, and performing demand modeling studies. The firm has also served the City of Los Angeles assessing downtown circulation and people mover systems. Finally, the firm has participated in the development of TDP's for a number of municipalities in the County.

2. Familiarity with E&H Transportation

- Multisystems has had extensive experience working on the transportation problems of the elderly and handicapped. The firm is managing the largest elderly and handicapped brokerage system in the country (in Allegheny County, PA). Multisystems also helped design and implement a major coordinated E&H system in Minneapolis/St. Paul. These two systems are now the major components of their respective area's 504 Transition Plans. The firm also has extensive familiarity with fixed route accessibility, and is currently evaluating projects in Washington, D.C. and West Palm Beach, Florida.
- Barton-Aschman has extensive experience in transit planning and operations studies, including planning of specialized services and engineering design of barrier free facilities.

3. Availability of Staff and Resources to Perform the Work:

- Multisystems can commit a sufficient number of individuals to perform the work in the tight time schedule. The planned completion of the LACTC Taxi Study in late June/early July will free up key individuals who are already extremely familiar with LA County.

- Barton-Aschman is able to commit a full-time Associate to the project for the key months of performance.
- Key Multisystems and Barton-Aschman staff will be on-site in Los Angeles during the first and third months of the study, with no other project commitments.
- All on-site staff will be supported by the Barton-Aschman office in Pasadena, California.

4. Qualifications of Key Staff:

- Multisystems has proposed that David M. Alschuler serve as Principal-in-Charge. Mr. Alschuler has extensive experience directing major transit planning and elderly and handicapped transportation planning projects. He currently serves as the MSI Principal for the LACTC Taxi Study.
- Keith W. Forstall will serve as Project Manager. Mr. Forstall currently serves as the Project Manager for the LACTC Taxi Study. Mr. Forstall has extensive experience in planning and evaluation of elderly and handicapped transportation services.
- David Miller, Manager of Transit services for Barton-Aschman Associates, will serve as the responsible Principal of his organization. Dr. Miller has directed a majority of the major transit studies undertaken by Barton-Aschman over the past decade, including major studies in Los Angeles County.

The project staff has been selected to provide a broad range of skills necessary to successfully complete the project. Key staff all have recent experience working within Los Angeles County. They also have extensive experience in planning conventional transit services, design of barrier free transit facilities, and design and operation of specialized transportation services.

A more complete description of Multisystems' qualifications can be found in Section V. The staffing plan and staff qualifications are discussed in Sections III and VI.

Section II

Technical Approach

2.1 Overall Approach

The objective of the proposed project is to prepare a County-wide Transition Plan which meets "Section 504" requirements, as described in "Nondiscrimination on the basis of Handicap in Federally-Assisted Programs and Activities Receiving or Benefitting From Federal Financed Assistance," (Federal Register, May 31, 1979). Guidelines for developing transition plans have been documented by UMTA in two reports, discussing bus transit and multi-modal transport systems respectively.

Each of the operators in Los Angeles County has already prepared a draft transition plan. The primary role of the consultant, therefore, will be to integrate the individual plans into a comprehensive, consistent county-wide document. This will involve the following basic activities.

TASK 1: Work With Individual Operators to Correct Deficiencies in Their Plans

Although the operators have already developed Transition Plans, there is a possibility that some or all of the plans have deficiencies which must be corrected before final submission to UMTA. Our preliminary review of the existing plans, as well as review of plans developed in other areas, suggest that such deficiencies do, indeed, exist in some of the plans. In our preliminary review of those plans, the following types of deficiencies were noted in one or more of the plans.

1. Insufficient attention to fixed facilities (other than vehicles).
2. Insufficient attention to policies and procedures.
3. Insufficient inventory of equipment.
4. Inconsistent tables/discussions of capital improvement plan.

5. Lack of discussion of service standards for interim service (or "equivalent" level of service for paratransit systems).
6. Lack of specific schedule for achieving program accessibility.
7. Insufficient documentation of public participation process.

We will work with the operators in the area to determine the extent to which these and other deficiencies exist and to correct such deficiencies. In many cases, the deficiencies appear to be a result of limited documentation, (rather than inadequacy of the planning process).

TASK 2: Develop County-wide Plan

The County-wide plan is effectively a compilation of the individual plans. These plans must be integrated in a way that ensures consistency (e.g., in costs used for vehicle acquisition, schedules of vehicle acquisition, etc.) and coordination (e.g., with respect to inter-municipal travel, shared facilities, etc.). As part of this, we would also perform the following:

1. Review the Commission-adopted 1979 E&H policies and actions for compliance with 504.
2. Update information contained in the SCAG Regional E&H plan.
3. Document existing coordination of transit planning with other federal programs.
4. Review current (commuter) and proposed (rapid) rail services and, if appropriate, include in the transition plan provision for achieving accessibility.

The Transition Plan will be prepared and printed in draft form approximately 30 days after the "Notice to Proceed." The Consultant will provide a camera-ready master and ten copies of the Draft to the LACTC.

TASK 3: Participate in Community Involvement Process

We will help LACTC prepare materials for all community participation meetings, including the five regional workshops, the public hearing and, if appropriate, meetings with the Elderly and Handicapped Transportation Advisory Council. We will attend and tape all such meetings, and prepare detailed documentation of each meeting. Included will be a description of public comments and the responses to such comments.

TASK 4: Preparation of Final Transition Plan

The consultant team will revise the Transition Plan in close interaction with LACTC staff based on the input received during the community participation process. The results of the regional workshops will be documented in the Transition Plan itself.

A Final Transition Plan will be prepared and submitted to LACTC in camera-ready form approximately 90 days after "Notice to Proceed."

2.2 Outline of County-wide Transition Plan

The proposed development of a county-wide Transition Plan consistent with the outline included in the RFP is included below. Please note that while the major headings conform with those shown in the RFP, there has been some minor reformatting of subheadings (particularly in Sections 3 and 5). This was done merely to allow integration of some related discussions, and in no way impacts the contents of the Transition Plan.

2.2.1 Describe and Evaluate Program Accessibility

This first component of the Transition Plan is an inventory of services, facilities, and policies, and an assessment of the extent to which they satisfy program accessibility guidelines.

1. Describe Vehicles, Facilities and Services

This element of the Transition Plan serves essentially as an inventory of existing services as well as a preliminary indication of plans for improving accessibility. For each operator in the County, the Transition Plan would indicate:

- a. Type of service (e.g., fixed route, dial-a-ride).
- b. Current fleet size/peak vehicle fleet/types of vehicle.
- c. Current number/type of accessible vehicles.
- d. Current schedule of vehicle replacement.
- e. Anticipated number of vehicles accessible by July 1982/July 1989.
- f. Other fixed facilities (e.g., park and ride lots, administrative offices, shelters, etc.).
- g. Accessibility of other fixed facilities.
- h. Current plans for new facilities.
- i. Schedule for improving accessibility of fixed facilities.

This county-wide inventory would come primarily from the transition plans of the individual operators. However, if certain, non-vehicle facilities were not noted by the individual operators (e.g., based on our first-pass look at SCRTD's plan, it is unclear whether they adequately addressed administration facilities), it will be necessary to visit such facilities and expand the inventory.

2. Describe Relevant Policies and Procedures

In this element of the Transition Plan, all policies and procedures which influence program accessibility will be identified. This will include, but not be limited to, the following:

- a. Employee sensitivity training in working with the handicapped.

- b. Employee training in lift operation.
- c. Procedures in event of lift breakdown.
- d. Safety/evacuation procedures in case of vehicle breakdown or emergency.
- e. Preferential seating.
- f. Fare structure.
- g. Screening for eligibility for reduced fares or specialized services.
- h. Provisions for consumer input and complaints.
- i. Accessibility of informational materials to handicapped (e.g., availability of Braille maps and schedules; teletype equipment in telephone information center; route destination signs on buses, etc.).
- j. Accommodations for companions or aids to the handicapped (e.g., allowing seeing eye dogs room to sit with handicapped individuals).
- k. Maintenance practices regarding accessibility equipment.

Again, the majority of this information will come directly from the existing transition plans. However, our preliminary review of these plans suggests that some operators may have paid relatively less attention to policies and procedures than to vehicles and facilities; it will therefore be necessary to expand on these discussions with respect to certain operators.

3. Evaluate Vehicles, Facilities, Services, Policies and Procedures

In this element, the inventories contained in the previous sections are evaluated to determine whether the systems achieve program accessibility now or are scheduled to achieve program accessibility by July 1982. The types of questions that must be answered are relatively straightforward:

- 1. Will the vehicle fleets achieve 50% accessibility during peak hours? Is this standard likely to be achieved when potential mechanical difficulties with lift equipment are taken into account?

2. Are other fixed facilities accessible? Are there plans to make them accessible?
3. Are current employee training practices adequate?
4. Are there adequate contingency plans for lift/vehicle breakdowns?
5. Are current maintenance practices adequate to ensure continued availability of lift equipment?, etc.

This element effectively determines the extent to which interim service will be required.

2.2.2 Describe Improvements and Policies Directed Towards Program Accessibility

This component comprises a major element of the Transition Plan, in that it sets out the program for achieving accessibility. Given the current status of program accessibility in the County, it should be relatively straightforward to pull together all of the information required in this section.

1. Describe Capital Improvements to Vehicle Fleet

This section will outline the currently planned vehicle replacement/acquisition program, including, for each operator: types of vehicles being acquired (e.g., full-size bus, van, etc.); cost of acquisition; schedule of acquisition; vehicles to be phased out; total vehicle fleet; expected peak fleet and accessible vehicle fleet anticipated for each year 1981-1989 based on this schedule; etc. Any potential delays in acquiring vehicles, due to unavailability of funds, delays in securing capital grants, and vehicle delivery delays will be identified at this point along with an indication of the impact of such delays on achieving program accessibility. Cost uncertainties related to vehicle acquisition will be outlined at this point as well.

2. Describe Capital Improvements to Other Fixed Facilities

In this section, the proposed capital improvements to shelters, terminals, administrative offices, and any other fixed facilities will be identified, along with the costs and schedule of implementation.

3. Describe Policy and Procedure Modifications

In this section, all proposed changes in policies and procedures (based on Section 1.3) will be identified and described fully. In this, as in the previous sections, an indication will be made of whether full program accessibility will be achieved by July 1982.

2.2.3 Describe Alternative Interim Services

This component of the transition plan has been the most difficult and important one in many other areas. Such is not likely to be the case in Los Angeles County, since the majority of operators appear to be headed towards achieving full program accessibility by 1982. Our preliminary review of the existing operator transition plans suggests that only the City of Commerce may have difficulty achieving program accessibility by 1982, although a more careful review of the plans may identify other areas that will require interim service for some period of time. (The city of Gardena has the equivalent of interim service in place, should the 1982 schedule not be met, but their transition plan may require elaboration on the extent to which the service meets service standards.) Once we identify which areas require interim service, we will outline service alternatives and propose an interim service which meets proposed service standards.

1. Develop/Document Service Standards

In this element, a set of standards will be developed by which alternative services will be deemed acceptable or not acceptable as interim services. Such standards relate to the comparability of interim service with the existing fixed route

service in the area. As such, the standards would include such issues as geographic coverage, hours of service, fares, travel times (including walk, wait, and ride times, etc.). Note that comparable service need not imply identical service; the key issue is whether the local handicapped community approves of a certain standard. Thus, for example, a two-hour advance notice requirement plus average ride time of 20 minutes for a demand-responsive service may be deemed "comparable" to a fixed route system with 30-minute headways which has an average ride time of 15 minutes plus an average walk time of 5 minutes.

To the extent that such standards have already been established, in a particular area, we will document the process used to reach such standards. If, for some reasons, those standards have not been determined for an area which requires interim service, we will work with the Elderly and Handicapped Transportation Advisory Council to develop a set of standards. We would then present the proposed standards at the appropriate regional workshop for suggested modifications and concurrence. The appropriate portions of the minutes of these meetings would form the basis of the documentation of the standard setting process.

2. Evaluate Existing Services and Describe Service Changes

The extent to which any existing services (such as the one in the city of Gardena) can meet accessibility requirements can be determined by comparing current service levels with the adopted standards. Once that is accomplished, the next step is to outline service changes needed to achieve accessibility.

This element of the transition plan will then outline the plans for the proposed interim service, including: type of service; hours of service; proposed vehicle fleet size; management structure; cost of capital acquisition; operating cost; etc. For any operator introducing a new service, it may be necessary to consider a number of alternatives.

For those operators selecting interim service, the costs of such service would be compared with the costs of achieving fixed route accessibility by 1982.

This element will also included an implementation schedule, as well as an indication of whether and when such interim services would be phased out (as accessible fixed route service is phased in).

3. Describe Funding for Interim Service

In this section, the proposed mechanism for supporting the operations of the interim service will be identified. This will involve equivalent expenditure of at least 2% of the Section 5 funds programmed for the affected region of the County.

2.2.4 Describe Implementation of the Transition Plan

In this component, the previous two sections of the transition plan are merged to describe the planned implementation of accessible services (including interim services) throughout the County. This will involve the following:

1. Capital Improvement Program

This element will outline the entire capital improvement program, tying each improvement to the appropriate TIP annual element and identifying:

- a. Capital improvements to be made.
- b. Cost of each element.
- c. Contribution to accessibility (including whether element is for interim services).
- d. Funding sources (by element, amount).
- e. Annual funding/expenditures.
- f. Schedule/priority of implementation.

2. Schedule of Implementation

This section will summarize the schedule of achieving program accessibility, based on schedules developed in previous sections of the plan. Again, any uncertainties about the schedule will be identified, and the potential implications for program accessibility noted.

3. Program for Coordination

It is important that the county-wide transition plan ensure that there is adequate coordination between operators in the county. This is consistent with the goals of A.B. 103, which calls for the development and implementation of a general transit coordination and service program.

Coordination is necessary to ensure that handicapped individuals can travel between municipalities in much the same manner as non-handicapped. In particular, areas which will not achieve system accessibility by 1982 must have a mechanism for interfacing with contiguous areas which may be achieving accessibility. In addition, there must be provisions for achieving accessibility at any facilities shared by more than one operator (e.g., transfer points). Coordination may also be important when service contracts are being awarded. Finally, the county-wide Transition Plan should ensure that there is consistency among the plans submitted by the individual operators, in terms of scheduling, costs proposed, procedures, etc.

This section of the transition plan will also discuss coordination with rail service, if appropriate, as well as with any FHWA programs.

2.2.5 Describe Community Participation

In this component of the plan, the process used to involve citizens in transition plan development in each area will be fully documented. Included will be:

- a. The way in which members of the advisory groups were solicited.

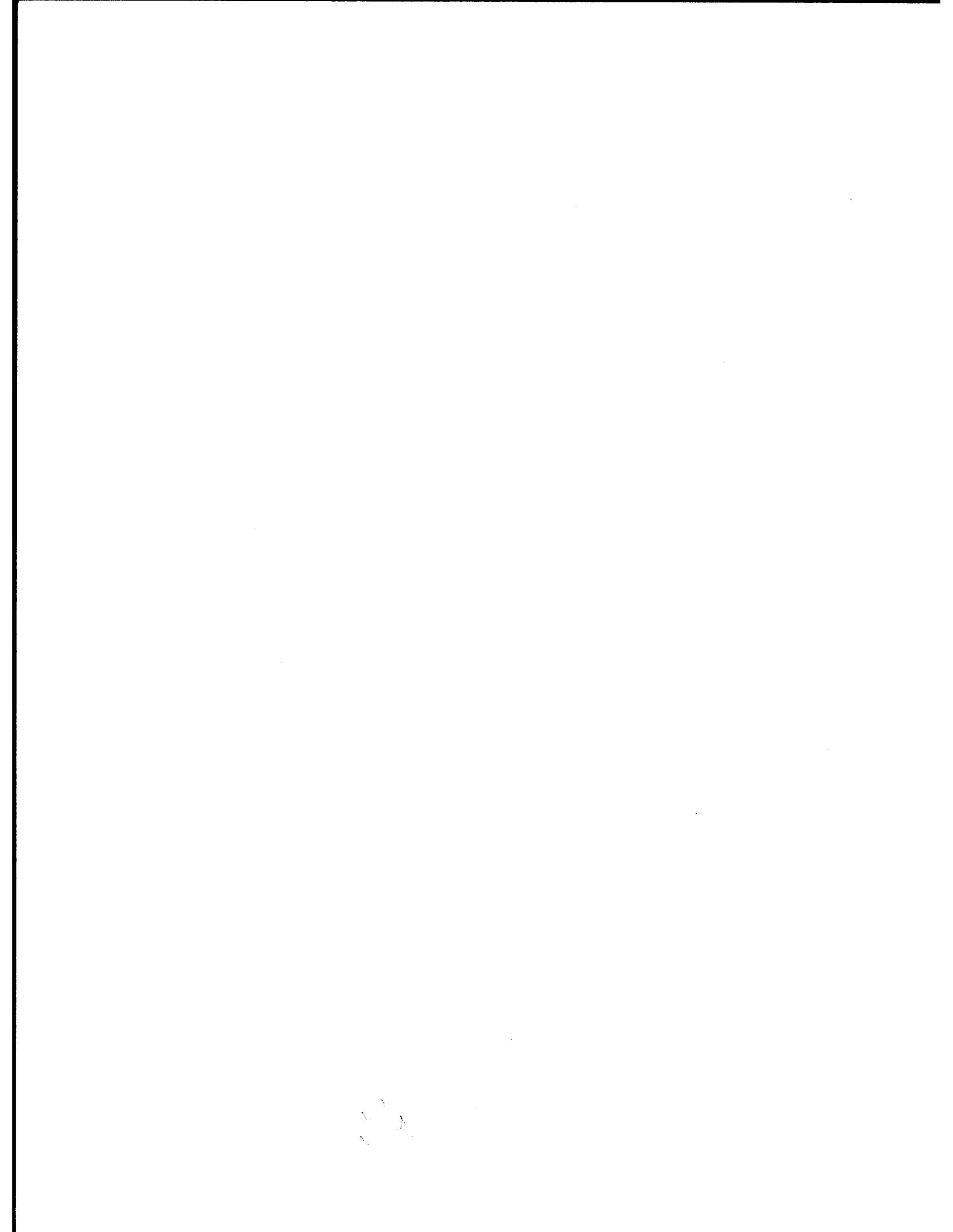
- b. Membership lists for each such group.
- c. Minutes of each meeting.
- d. Summaries of meetings focussing on what was presented, comments received, and revisions made as a result of the comments.
- e. Minutes of any public hearing held.

In addition, a brief overview of the overall community involvement process will be prepared for each area, along with a discussion of the mechanism which was established for continuing citizen involvement beyond the submission of the transition plan.

At least the same level of documentation will be maintained and provided for the citizen participation process to be followed in developing the county-wide plan. This will include documentation of meetings with Elderly and Handicapped Transportation Advisory Council, the regional workshops, and the public hearing.

2.2.6 Endorsement by Local Governing Boards

The final transition plan will include endorsement by each appropriate local governing board.



Section III
Staffing Plan

Multisystems Inc. and Barton-Aschman, Inc. are able to offer LACTC a project staff who are exceptionally familiar with the Los Angeles area, with the USDOT 504 regulations, and with planning and design of transportation services for the elderly and handicapped. The study team will include the same Multisystems staff currently completing a study of the taxicab industry in the County for LACTC, and Barton-Aschman staff familiar with the County.

David M. Alschuler, Vice President of Multisystems, will serve as Principal-in-Charge, the same role he has played on the taxi study. Mr. Alschuler has served in a similar capacity for Multisystems as Principal responsible for the E&H paratransit brokerage system in the Pittsburgh area; that system is to serve as the major component of interim service in the transition plan. From this and other projects, Mr. Alschuler has gained a full understanding of 504 regulations. He has extensive experience in directing major transit planning and development studies in Connecticut and New York.

Keith W. Forstall, a Senior Transportation Analyst at Multisystems, will serve as Project Manager, the same position he has held on the LACTC Taxi Study. Mr. Forstall has had extensive experience working with elderly and handicapped transportation in projects in Pittsburgh, and directing projects in New Haven and Delaware County, PA. The completion of the LACTC Taxi Study is scheduled for early July, permitting Mr. Forstall to work full time on the Transition Plan effort and to be available (on-site) during the critical parts of this effort.

Amy L. Wexler, a Transportation Systems Analyst of Multisystems, will also participate in the project. Ms. Wexler has recently worked on the LA Taxi project, as well as

participating in the evaluation of accessible fixed route bus service in Washington, D.C. and W. Palm Beach, FL.

David R. Miller, Principal Associate and Manager of Transit Services for Barton-Aschman, will serve as the responsible principal for his organization. Dr. Miller has extensive experience directing major transit planning studies, including responsibility for the firm's on-going project assessing rapid rail starter line alternatives for SCRTD. He is also nationally recognized as an expert in planning of barrier-free rapid transit system facilities.

Claudia R. Berry is an Associate at Barton-Aschman Associates. Since joining the firm in 1979, she has been involved in a broad range of multimodal transportation planning studies. Prior to joining Barton-Aschman, she was employed by the Houston-Galveston Area Council, where she participated in the development of that region's elderly and handicapped transportation plan.

Complete Resumes of these individuals are included in Section VI.

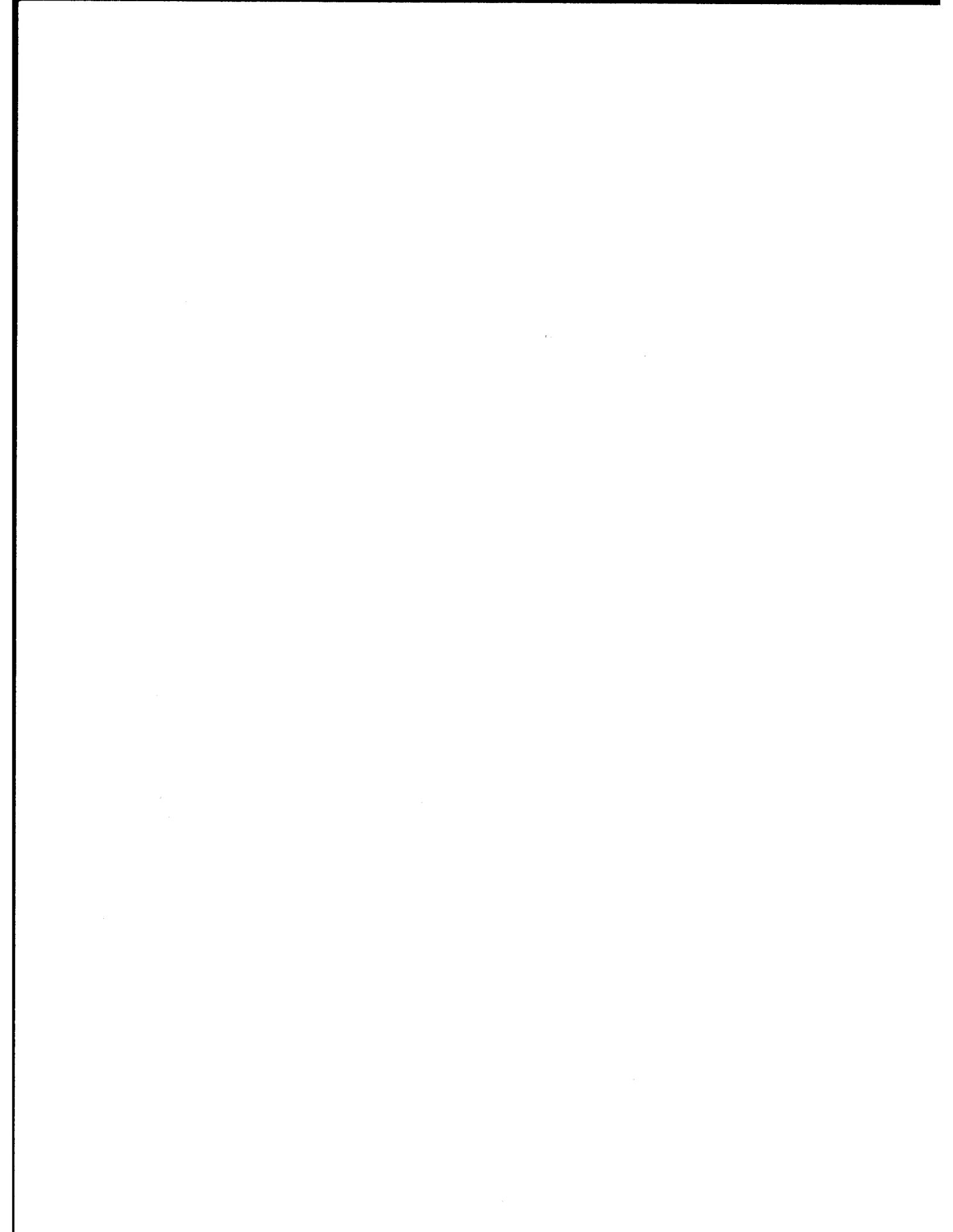
We plan to have three members of the project team, Mr. Forstall, Ms. Wexler, and Ms. Berry, on-site in Los Angeles for the entire first month of the effort, while the transition plan is being developed. At least one of the Principals will be on-site for at least two weeks each during that period. We will have staff on-site as necessary beyond that period to: attend public participation meetings; meet with operators; and meet with LACTC staff as necessary.

Section IV

Work Schedule

The proposed schedule of activities is as follows:

<u>Task</u>		<u>Completion</u>
1. Work with operators to correct deficiencies	-	30 days into study
2. Prepare draft county-wide plan	-	30 days into study
3. Community participation	-	90 days into study
4. Prepare final county-wide plan	-	90 days into study



Section V

Experience of the Proposing Firms

5.1 Experience of Multisystems, Inc.

Multisystems, Inc. was founded in 1966 by faculty members in the Department of Civil Engineering at the Massachusetts Institute of Technology and has grown in size to fifty full-time staff members. Highly skilled, multi-disciplinary teams of planners, engineers, analysts, architects, and computer scientists are utilized to determine critical technical, social, economic, and political issues in the areas of planning, design, and policy. Numerous projects in comprehensive transit and transportation planning, facility planning, and management consulting have provided experience in the areas of community and inter-personal relations. The staff has extensive experience in working directly with public agencies, citizen advisory groups, and private clients to create a successful problem-solving environment.

The Transportation Systems Division of Multisystems, Inc. has developed a broad range of capabilities and experience in transportation systems planning, analysis and management. This experience includes:

- Planning specialized services for the elderly and ✓
handicapped
- Planning, implementation, and management of innova-✓
tive systems and demonstrations
- Development of evaluation methodologies ✓
- Market research
- Evaluation of transportation demonstration projects ✓
and system performance
- Computerized management support for transportation
operations
- Transportation supply and demand modeling ✓

- Transit development planning
- Transportation economics

A brief summary of recent project experience in these areas is contained in the following discussion.

Planning Specialized Services for the Elderly and Handicapped

Multisystems, Inc. has performed a number of technical studies and developed several transportation system designs oriented specifically to meeting the mobility needs of elderly and handicapped market segments. Recent projects include:

- ✓ ● Port Authority of Allegheny County: Multisystems is serving as a broker/agent in a countywide paratransit brokerage system for the elderly and handicapped. Activities include contracting with private for-profit and non-profit agencies to provide service, arranging for agency participation, marketing, central information, monitoring, billing and accounting, etc.
- ✓ ● South Central Connecticut Elderly and Handicapped Transportation Operations Study: Multisystems, Inc. developed a coordinated transport service delivery system for the elderly and handicapped in the New Haven region, under the auspices of the local Regional Planning Agency. Primary focuses of the study have been the areas of vehicle control, financial control and management, and system evaluation.
- ✓ ● Minneapolis/St. Paul, Minnesota: As part of the statewide paratransit demonstration program, Multisystems assisted in the planning and implementation of a metro-area E&H demonstration. The project involves the integration of a shared-ride taxi service and, private, non-profit services, with a publicly operated chair carrier service, through a single control center.
- ✓ ● North Central Council of Governments Elderly and Handicapped Shared-Ride Taxi Study: Multisystems completed a study of system design requirements and performance characteristics for shared-ride taxi services oriented toward elderly and handicapped populations.
- Rochester-Genesee Regional Transportation Authority Transportation Support Center Study: Multisystems assessed the feasibility of a Transportation Support

Center that would assist human service agencies by providing a range of transportation support services (e.g., centralized information, maintenance, accounting, etc.).

- Cleveland Regional Transit Authority Demand-Responsive Elderly and Handicapped Transportation Study: Multisystems designed and administered a survey to assess the impacts of existing transportation programs for the elderly and handicapped. Service modification recommendations address the goals of making the programs more responsive to community needs and more cost-effective.
- ✓ ● Delaware County Coordinated Elderly and Handicapped Paratransit System: Multisystems, Inc. has begun work in designing a coordinated E&H paratransit system for this suburban Philadelphia county.
- New York City and Mercer County, New Jersey Evaluations: Multisystems Inc. is currently evaluating elderly and handicapped demonstration projects in these two locations. The former system is operated on the Lower East Side of Manhattan by the Vera Institute of Justice and is unique in that ex-convicts are used as drivers. The latter involves a coordinated agency delivery system. *esp. sex offenders & convicted assaultants...*
- Other projects include: (1) the development of a computerized data base for analyzing the cost implications of satisfying "Section 504" requirements for all rail systems in the country; (2) an evaluation for the Seattle Metro to assess the cost-effectiveness of accessible conventional services compared to the provision of a separate demand-responsive service; (3) a study for the National Science Foundation to explore the potential for replacing work transportation for handicapped persons through the use of home computer terminals; (4) an analysis of the feasibility of automating the scheduling functions for the Denver handyRide service for the elderly and handicapped; and (5) ✓ evaluation of the use of wheelchair-accessible buses (including training and marketing activities) in Palm Beach and Washington, D.C.

Planning, Implementation, and Management of Innovative Urban Transportation Systems, Demonstration Projects, and Demonstration Programs

Multisystems, Inc. has acquired a broad range of experience in the planning, implementation and management of innovative service concepts and demonstration projects, both in the

context of UMTA's Service and Methods Demonstration Program and under contract to a variety of state, regional, and local organizations. Representative projects include:

- ✓ ● Minnesota Paratransit Demonstration Program: Multisystems assisted the Minnesota Department of Transportation, Bureau of Policy and Planning, in defining the objectives and structure of the largest statewide paratransit demonstration program in the nation. The firm is presently providing technical assistance in the implementation of that program.
- Boston, Massachusetts: Multisystems implemented an innovative shared-ride taxi system at Boston's Logan International Airport under a "turnkey" management contract to the Massachusetts Port Authority.
- Merrill, Wisconsin: Multisystems planned and managed the implementation of the point deviation service in Merrill under a "turnkey" contract for the Wisconsin Department of Transportation.
- Westport, Connecticut: Multisystems developed a service design and implementation plan to allow the integration of a wide range of public and private conventional and paratransit services. The plan has served as the basis for an SMD demonstration grant. Multisystems remains under contract to assist the Westport Transit District in the implementation and management of the demonstration.
- International Taxicab Association: Multisystems under contract to the ITA and UMTA, developed "Paratransit Implementation Procedures" manuals oriented towards private paratransit operators and public planners.
- Madison, Wisconsin: Multisystems assessed the feasibility of coordinating taxis and transit service in Madison during late evening hours.
- Nassau County, New York: Multisystems designed a shared-ride taxi demonstration for the Nassau County Office of Public Transportation. The demonstration plan served as the basis for an SMD project application to provide implementation assistance.
- Inner City Transit Demonstrations: Multisystems assisted UMTA in the development of inner city demonstration projects for the SMD program.

- Arlington, Texas: Under contract to the North Central Texas Council of Governments, Multisystems evaluated alternatives for employing underutilized school buses for community transit. Alternatives explored attempted to integrate transportation needs of the school district, the city, and the local community. Scenarios were analyzed under present and "energy emergency" conditions.
- Paratransit Assessment: Multisystems is currently under contract to UMTA to perform a comprehensive assessment of the present and future role of all forms of paratransit services.
- New Jersey Department of Transportation Paratransit Study: Multisystems is currently providing assistance in a comprehensive statewide study of taxi services, regulations, and procedures.
- Transportation Systems Center: As part of the UMTA Service and Methods Demonstration Program, Multisystems is examining potential applications of school buses for providing general public transportation and the use of general public transportation for transporting school children. The final product will include the design of demonstration projects using these concepts.

Development of Evaluation Methodologies

Multisystems, Inc. has gained extensive experience in the development and implementation of evaluation methodologies through its experience in demonstration project evaluation, transportation systems planning and evaluation, and general technical studies carried out in conjunction with demonstration project planning. This experience includes:

- Bus Transit Monitoring System Development: Multisystems is currently developing a statistically based data collection system for the Urban Mass Transportation Administration in response to the need for cost-effective transit system performance monitoring and evaluation. Following a test trial of the data collection/ monitoring system, a complete system manual will be produced.
- Development of an Operations Data Monitoring System for the Massachusetts Bay Transportation Authority (MBTA): Multisystems developed a comprehensive monitoring system for route ridership and revenue data for the MBTA in Boston.

- Transit Reliability Study: Multisystems, under its contract to U.S. DOT/TSC to support SMD program activities, has undertaken a comprehensive study of transit reliability impacts on users and suppliers, and how these impacts can be measured for purposes of evaluation.
- Fixed-Route Bus System Analysis: Multisystems staff assisted the Boston Urban Observatory in the development of analytical techniques to determine the effect of changes in route structure and schedules of fixed-route bus systems on ridership. The techniques were applied to bus routes of the Massachusetts Bay Transportation Authority (MBTA) to help revise routes and schedules and improve service and operating efficiency.
- Development and Implementation of Evaluation Plans: Multisystems has gained extensive experience and familiarity with state-of-the-art approaches to data collection and impact analysis through its recent activities undertaken for U.S. DOT/TSC. Evaluation plans and methodologies have recently been developed for a broad range of innovative transportation projects including: preferential treatment demonstrations (Houston), ride-sharing and brokerage demonstrations (Knoxville), demand-responsive transportation demonstrations (Xenia), integrated areawide systems (Ann Arbor), specialized DRT services for elderly and handicapped persons (Naugatuck), and wheelchair-accessible bus service (Palm Beach County and Washington, D.C.).

Market Research

Through a range of transportation systems planning and evaluation activities, Multisystems, Inc. has gained considerable experience in many areas of surveying and market research. Multisystems, Inc. has conducted on-board, telephone, home interview, or mailback surveys in such cities as Boston, Massachusetts; Rochester, New York; Greenwich, Connecticut; Knoxville, Tennessee; Xenia, Ohio; and Merrill, Chippewa Falls, DePere, and Wausau, Wisconsin. In addition, the firm has been involved in assessing the market for various services or commodities. Relevant studies include:

- MBTA Attitudinal Surveys: Multisystems, Inc. was involved in a 1,300-person home interview survey being conducted for the MBTA in the Boston area to help identify resident attitudes and promising marketing strategies. Multisystems' responsibilities

lay in the areas of survey design and analysis of results.

- Brockton Marketing Study: Multisystems, Inc. designed and analyzed a 600-sample telephone survey for the Brockton (Massachusetts) Area Transit system. Survey results formed the basis for recommended marketing and operating improvements.
- Cleveland RTA Market Analysis: Multisystems has responsibility for design and analysis of survey instruments for a 600-respondent sample drawn from the Greater Cleveland area. Users and non-users of specialized transit service will provide data to be assessed in terms of perceived system performance and impact on life style and mobility.
- Dallas/Fort Worth AIRTRANS: Multisystems, currently assessing user evaluation of system performance, is assisting the Airport Board Staff in planning future system growth.
- Shared-Ride Taxi Feasibility Study: Multisystems carried out a telephone survey for a taxi company in Brookline, Massachusetts to test the market for shared-ride service.
- Trailer/Container on Flat Car Services Study: For is a private corporation, Multisystems investigated the potential market for the range of TOFC and COFC services. The study assisted that organization in planning for providing such services.

Evaluation of Transportation Demonstration Projects and Systems Performance

Multisystems is currently under contract (or has recently completed) a wide range of evaluation activities designed to identify demonstration project impacts and evaluate transportation system performance. Relevant projects include:

- Evaluation of Service and Methods Demonstration Projects: Multisystems is currently under contract to U.S. DOT/TSC to evaluate demonstration projects. These evaluation activities span a broad range of service concepts and focus on a wide variety of user, supplier, and institutional impacts. Emphasis has been placed on identifying impacts and the causal relationships between those changes and observed impacts. The evaluation examines level-of-service, user, supplier, and institutional actions and impacts, in order to determine answers to the fundamental questions of "What happened?," "How did it happen?," and "Why did it happen?" On-going and recently completed evaluations include:

- ✓ - Naugatuck Valley, Connecticut: Multisystems is participating in the evaluation of an elderly and handicapped specialized service operating in rural Connecticut.
- ✓ - Palm Beach County, Florida and Washington, D.C.: Multisystems is evaluating demonstrations of fully accessible fixed-route bus service.
- Knoxville, Tennessee: Multisystems evaluated the impact of the "Transportation Brokerage" concept which was implemented in Knoxville. The Brokerage acts as a "market clearinghouse" to integrate services and facilitate efficient management and operation of public services. In a separate demonstration, the firm is evaluating various strategies aimed at increasing the utilization of transit.
- Ann Arbor, Michigan: Multisystems completed an evaluation of the integrated areawide transportation system operating in Ann Arbor.
- Boston, Massachusetts: Multisystems assisted in the evaluation of the preferential treatment lane (for carpools and buses) operated on Boston's Southeast Expressway.
- ✓ - Rochester, New York: Multisystems developed an evaluation methodology for analyzing the impacts of CBD fare free (bus) travel zones.
- Xenia, Ohio: Multisystems assisted in the evaluation a fixed route and subsequent demand-responsive system implemented in this city following a devastating tornado.
- Houston, Texas: Multisystems designed a comprehensive evaluation plan designed to monitor the impacts of preferential treatment strategies and upgraded express bus services in three major expressway corridors.
- New Jersey: Multisystems will be evaluating high occupancy vehicle lanes on the Garden State Parkway and I95/80 approach to the George Washington Bridge.
- ✓ - Washington, D.C.: Multisystems is evaluating two projects in the Washington, D.C. area. One involves a variety of marketing efforts aimed at increasing bus ridership to Dulles airport, while the other involves the equipping of fixed route buses with wheelchair lifts.

- Minneapolis/St. Paul, Minnesota: Multisystems is evaluating a project aimed at demonstrating techniques for increasing transit reliability.
- Philadelphia, Pennsylvania: Multisystems is evaluating a demonstration of a pre-emptive signaling system designed to increase the speed of a trackless trolley route.
- Miami, Florida and Los Angeles, California: Multisystems is evaluating two demonstrations involving transit routing and scheduling. The former utilizes the "zoned bus" concept, with timed transfers. The latter involves an incremental restructuring of an entire route system, with the intention of learning about the impacts of alternative route and schedule configurations.
- Los Angeles, California: Multisystems is evaluating a ride-sharing project implemented as part of the Natural Ridesharing Demonstration Program.

- Evaluation of Wisconsin Transit Demonstration Program: Multi-systems completed evaluations of demonstration projects in DePere, Merrill, Wausau, and Chippewa Falls, Wisconsin, under contract to the Wisconsin Department of Transportation.
- Evaluation of Dallas/Fort Worth Airport AIRTRANS System: Multi-systems has recently completed an evaluation of the technical performance of the AIRTRANS "people mover" system under contract to the Dallas/Fort Worth Airport Board. In an on-going study, Multisystems is evaluating system performance from a user perspective and is working with the Airport Board Staff to plan future expansions to the system.

Computerized Management Support for Transportation Operations

Multisystems has developed specialized computer software which was specifically designed to assist in the management and control of demand responsive and conventional transportation systems. Development of these software routines requires a thorough understanding of the availability and usefulness of transit system operation data.

- Wilmington, Delaware: Multisystems developed and installed a computerized management information system for a private (100 vehicle fleet) taxi company

which performs cost accounting and operations data reporting functions. The system is capable of integrating operations and cost accounting data and procedures reports which meet the federal (Projects FARE and TAXISTATS) reporting standards.

- Westport, Connecticut: Multisystems developed and installed a computerized (software) system which performs a variety of cost accounting operations, data processing, and dispatching assistance functions for a small "integrated transit" system which operates approximately twenty-five vehicles in a variety of conventional and paratransit services. The system integrates the cost accounting and operations data bases for each system component (as well as the entire system) and produces summary accounting data which meets federal reporting (Project FARE) requirements.
- New York State: Multisystems has developed a reporting system for a major school bus operator to help update student data bases on an ongoing basis. Currently there are plans to expand the reporting capability and introduce some automated scheduling aids.
- Pittsburgh, Pennsylvania: As part of the management of the elderly and handicapped paratransit brokerage system in Allegheny County, Multisystems has implemented an automated management information system. The system monitors carrier invoices and performance, prepares operations reports, and bills participating agencies, providing them with lists of all trips taken.

Transportation Supply and Demand Modeling

Multisystems has undertaken a wide range of applied systems analysis and operations research studies in the context of multi-modal urban and inter-urban transportation systems. The firm's depth of system analysis skills and familiarity with computer-based modeling techniques have been applied to a number of important national and regional transportation system policy and planning issues in the highway, rail, air, and urban public transportation sectors. Recent projects include:

- ✓ ● Analysis of the Impact of Major Modal Diversion: Multisystems recently developed a set of analytic performance models for a broad range of conventional (fixed-route) and paratransit (DRT, route deviation,

point deviation, checkpoint deviation, and subscription bus) service concepts. The models, which are UTPS compatible, are designed to analyze system performance under a range of system demand and supply configuration scenarios. This work was carried out under contract to U.S. DOT.

- ✓ ● Areawide Integrated Transit Performance Models: Multisystems is currently under contract to the Urban Mass Transportation Administration to develop computerized models which can assist in the planning and evaluation of comprehensive and integrated public transportation systems.
- ✓ ● Dial-a-Ride Demand and Supply Models: Multisystems developed analytic supply models for dial-a-ride, shared-ride taxi, and subscription bus services and assisted in the development of disaggregate demand models for these modes. This work was completed under the auspices of U.S. DOT/TSC. A component of this effort led to the development of procedures for applying demand-responsive feeder models within the UTPS framework.
- West Side Highway Project Demand Modeling: Multisystems recently completed a comprehensive review of the demand methodology employed by the consultant team which prepared the Environmental Impact Statement for New York City's West Side Highway Project. Multisystems' effort was carried out under contract to the U.S. Environmental Protection Agency.
- Transportation Resource Allocation Study (TRANS): Multisystems recently completed a study for FHWA to enhance and consolidate the TRANS model, an aggregate supply model designed to test federal policy alternatives on the national level.
- Railroad Yard Performance and Yard Capacity Models: Multisystems recently developed a set of models for the Federal Railroad Administration. These models are designed to allow analysis of the financial implications of improved yard management techniques in the context of different rail operating properties.

Transit Development Planning

Multisystems, Inc. has significant experience in development of short- and long-range plans for conventional transit and paratransit service development programs. Recent efforts include:

- New York State Small Urban Area Transit Studies Group II: Multisystems developed transit improvement or development programs for six urban areas in New York State, under contract to the New York State Department of Transportation, including Kingston, Jamestown, Saranac Lake, Hornell, Olean, and Norwich.
- Southwestern Connecticut: Multisystems recently completed the five-year Transit Improvement Program for the Southwestern Regional Planning Agency.
- Norwalk, Connecticut: Multisystems recently completed a five-year Transit Improvement Program for the Norwalk Transit District.
- Greenwich, Connecticut: Multisystems recently completed a five-year Transit Development Program for the Greenwich Transit District.
- Rochester, New York: Multisystems developed both short and long-range transit development programs for the Rochester metropolitan area.
- Pittsfield, Massachusetts: Multisystems developed a transit plan for this western Massachusetts community.

Transportation Economics and Investment Analysis

Multisystems, Inc. has extensive experience in the application of economic theory to the evaluation of urban transportation systems performance. The firm recently undertook several major research efforts for U.S. DOT which illustrate its experience and skills in this technical area:

- Highway Investment Analysis Study: Multisystems has developed the "Highway Investment Analysis Package" (HIAP) for the Federal Highway Administration. The package represents the current state-of-the-art software for analysis of the benefits and costs of individual highway project alternatives and the development of optional investment programs.
- Wisconsin Highway Investment Program: Multisystems is currently working with the Wisconsin Department of Transportation to develop that state's comprehensive short- and medium-range investment program. The effort includes implementation of the Highway Investment Analysis Package (HIAP) and its application in the state-specific context.

- Venezuela Comprehensive Investment Plan: Multi-systems developed a comprehensive multi-modal ten year investment plan and program for the Ministry of Transportation of Venezuela. The plan includes highway, rail, air, barge and marine terminal elements.
- Benefit-Cost Analysis of Integrated Transit/Paratransit Systems: Multisystems, under contract to U.S. DOT/TSC, evaluated the benefits and costs of integrated areawide paratransit and conventional transit systems. The evaluation focused on both quantifiable and non-quantifiable primary and secondary impacts of integrated paratransit on users, suppliers, and other institutional groups in a social, economic and environmental impact analysis framework.

5.2 BACKGROUND AND EXPERIENCE: BARTON-ASCHMAN ASSOCIATES, INC.

Barton-Aschman's multidisciplinary practice encompasses traffic engineering and transportation planning, urban and regional planning, economic development services, civil engineering, landscape design, and environmental and fiscal impact analyses. One hundred seventy-five trained and experienced men and women provide the broad range of disciplines and skills essential for producing practical and implementable solutions to a wide range of urban and regional problems.

The company provides nationwide services to public and private clients from offices located in Evanston, Illinois; Washington, D.C.; Minneapolis-St. Paul, Minnesota; San Jose and Pasadena, California; and Houston, Texas. Canadian clients are served by two Barton-Aschman affiliate companies: Barton-Aschman Canada Limited, Toronto, Ontario; and Barton-Aschman Jackson Consulting Ltd., Calgary, Alberta.

The present firm was organized in 1958. In that year, George W. Barton's traffic engineering and transportation planning firm merged with Frederick T. Aschman's urban planning practice. This merger, an innovative concept for its time, demonstrated the company's understanding of the fundamental relationships among transportation systems, land-use, and socioeconomic developments. This blending of transportation and urban planning skills marked the beginning of a tradition at Barton-Aschman--one in which many different areas of skill and perspective are drawn on to solve the special problems of clients.

The company has continued to strengthen its basic skills and expertise in traffic, transportation, and urban/regional planning through the acquisition of several specialty firms: W. C. Gilman & Co. (1966), specialists in transit consultation; W. V. Rouse Associates, Ltd. (1972), experts in socioeconomic impacts analysis; and R. H. Pratt Associates, Inc. (1977), specialists in transportation systems analysis and modeling. In 1978, the firm also began offering economic and real estate development marketing and financial services through its Economic Development Services Division.

LOS ANGELES AREA EXPERIENCE

✓ *Los Angeles SCRTD Starter Line Analysis.* Barton-Aschman Associates staff served on a team assisting the Southern California Rapid Transit District (SCRTD) to analyze the alternatives for the Starter Line of the rapid transit system proposed for the Los Angeles area. Barton-Aschman staff assisted in development of the work program, and played a key role in developing the transportation planning and land-use implications of the alternative modes and alignments for the Starter Line. Specific work tasks included development of evaluation criteria and measurement of accessibility impacts.

Preparation of Title VI Assessment for Southern California Rapid Transit District (SCRTD). SCRTD retained Barton-Aschman Associates to develop a work program to enable SCRTD to prepare its Title VI assessment as required by the Urban Mass Transportation Administration under the guidelines published by UMTA early in 1978. Barton-Aschman analyzed the availability of data and staff, developed a work program to prepare the assessment, and subsequently executed major portions of the work program. Preparation of the assessment included development and use of computer programs to analyze vehicle assignments and use of UMTA's MAP program to analyze accessibility, as well as liaison with many

departments in SCRTD for information pertaining to development and review of the narrative portion of the assessment. The assignment to prepare the assessment was completed two weeks ahead of schedule, and the submittal presented to UMTA.

Policy Analysis of Guideway Transit Systems: SCAG. Barton-Aschman Associates assisted the Southern California Association of Governments in preliminarily assessing the range of alternative *guideway transit concepts* potentially applicable to the Southern California region. The major trade-offs among various objectives which can be achieved by alternative transit strategies (line-haul, activity centers, collection/distribution) were explored. The possibilities for near-term actions which achieve substantial benefits, while preserving options for longer-term commitments, were examined. Major candidate systems within the spectrum of guideway transit service concepts and current status of applications were defined. The study identified the major options for the Southern California region with respect to various mixes of investment levels, time phasing, geographic locations, and operating strategies for major candidate systems.

Air Quality/Transportation Study for Los Angeles Basin. Barton-Aschman Associates has been recently engaged by the Southern California Association of Governments to undertake an air quality/transportation study for the Los Angeles Basin. The study scope includes summarizing transportation control and travel demand relationships, identifying the preferred travel demand models for alternative strategy testing, establishing a strategy analysis framework, defining evaluation criteria, screening control strategy alternatives, preparation of mode-choice sensitivity analyses to determine strategy effects on VMT, evaluation of travel and non-travel impacts of control strategy alternatives, and calculation of mobile-source emissions.

Los Angeles Area SCAG/LARTS Mode-Split Model Development. As part of a consultant team, Barton-Aschman assisted the LARTS staff in the development and testing of a new mode-split model for the Los Angeles region. This logit-type model was calibrated on a sample of 1967 O-D data. Three modes are covered--auto, transit, and car pool. While a home-based work trip mode-split model was successfully developed, a shopping mode-split model was only structured in conceptual form. The work trip model was made compatible with other elements of the CALTRANS travel demand forecasting system, and the consultant team was required to develop a detailed working familiarity with that system.

Internal CBD Travel Demand Modeling, Los Angeles CBD Circulation-Distribution Program. As part of the Los Angeles Central Business District Circulation-Distribution Program, the prediction of short, pedestrian-scale travel demands was necessary. The situation was made complex by the variety of modes and policies that required testing and evaluation. In order to address these issues quantitatively,

disaggregate travel models were developed and applied. Four models (two noon-hour and two peak-hour) were calibrated using actual trip data collected from individual travelers in the Los Angeles CBD. To allow the application to multiple-choice situations, a multinomial logit model form was used.

This ridership forecasting effort was an integral part of the overall CBD Circulation/Distribution Program, which included the definition of a wide range of multimodal CBD transportation systems, development levels and assumptions, and CBD parking management policies. It formed a part of Los Angeles' successful DPM planning application.

Downtown Los Angeles Circulation-Distribution Study. The impending development of a major regional transit system in the Los Angeles metropolitan area has raised several important questions about the future role of the Los Angeles central business district. The construction of a fixed-rail system focusing on the Los Angeles CBD will be complemented by a separate distributor system in the downtown. Barton-Aschman Associates, in conjunction with four other consulting firms, conducted a transportation analysis of alternate distributor systems with several possible future growth patterns for the Los Angeles central business district. Work and non-work trips to downtown Los Angeles, as well as internal CBD trip-making, were simulated under different development assumptions for the year 1990. The capabilities of people-mover, mini-bus, and other systems to distribute travelers from rail transit stations and parking lots to their places of work and noontime activities were evaluated. Behavioral travel demand models were developed to describe the journey to work and "chains" of trips which typically occur in the noon hour. These models were used to develop the basic 1990 demands for travel within the Los Angeles CBD. Alternative distributor systems were evaluated with respect to their ability to accommodate 1990 travel demands and minimize environmental disruption. The extent to which alternative distributor systems complement the potential downtown development patterns was assessed.

Bunker Hill People-Mover System: Los Angeles, California. Barton-Aschman Associates served as the traffic, circulation, and parking consultant for this major downtown urban renewal project in Los Angeles. Two reports were prepared which dealt with the needs and specifications of a special pedestrian transport system, and the development of further guidelines for a proposed *people-mover system* to be developed in conjunction with a satellite parking program. Automated guideway facilities were considered in order to reduce walking times and to facilitate circulation in the project itself. Technical requirements and criteria for evaluating the various hardware systems which might be considered were developed. Guidelines for parking facilities and *transit alignment locations* were developed, alternative satellite parking locations were evaluated, a recommended satellite system was advanced, and general specifications for the design of the people-mover system, involving system operation characteristics, vehicle system operation characteristics, vehicle characteristics, travelway characteristics, and station characteristics, were developed. An evaluation of 12 specific hardware systems was conducted.

GENERAL HISTORY OF TRANSIT PLANNING EXPERIENCE

Mass transportation planning studies can vary widely in scope and content. They range from detailed, short-range technical studies, in which an immediate action program for transit service is prepared with detailed routes and schedules, to long-range forecasts in which the demands on hypothetical systems are projects 20 or 30 years into the future. The geographical area studied may be a town of 30,000 people, a city of two million, or a rural region with only a few thousand inhabitants. Transit studies may be conducted as independent entities, or they may be one of several components in a comprehensive urban transportation plan.

Barton-Aschman has extensive experience in the planning, design and operational analysis of transit systems in the U.S. and abroad. The company's assignments frequently involve a thorough analysis of the transit system in a particular city or region. Client services are outlined below:

Operations studies analyze operating procedures, routing, schedules, fare structure and collection, and equipment maintenance and replacement programs.

Comprehensive route analyses are conducted to improve transit service and increase revenues.

Transit service marketing involves developing effective public relations programs that encourage the public to use local transit services. Marketing programs may include employee courtesy training and the development of signs, symbols, equipment treatment, publications and promotional campaigns.

Valuation studies determine the value of rolling stock and other physical assets as a basis for purchase or sale of a transit company or as part of an operational analysis.

Fare adjustment studies and testimony examine the effects that changes in fares will have on ridership. These studies frequently include testimony before public regulatory bodies.

Rapid transit planning initiates or extends rapid transit programs in cities and unifies mass transportation programs with proposed highway and land-use development.

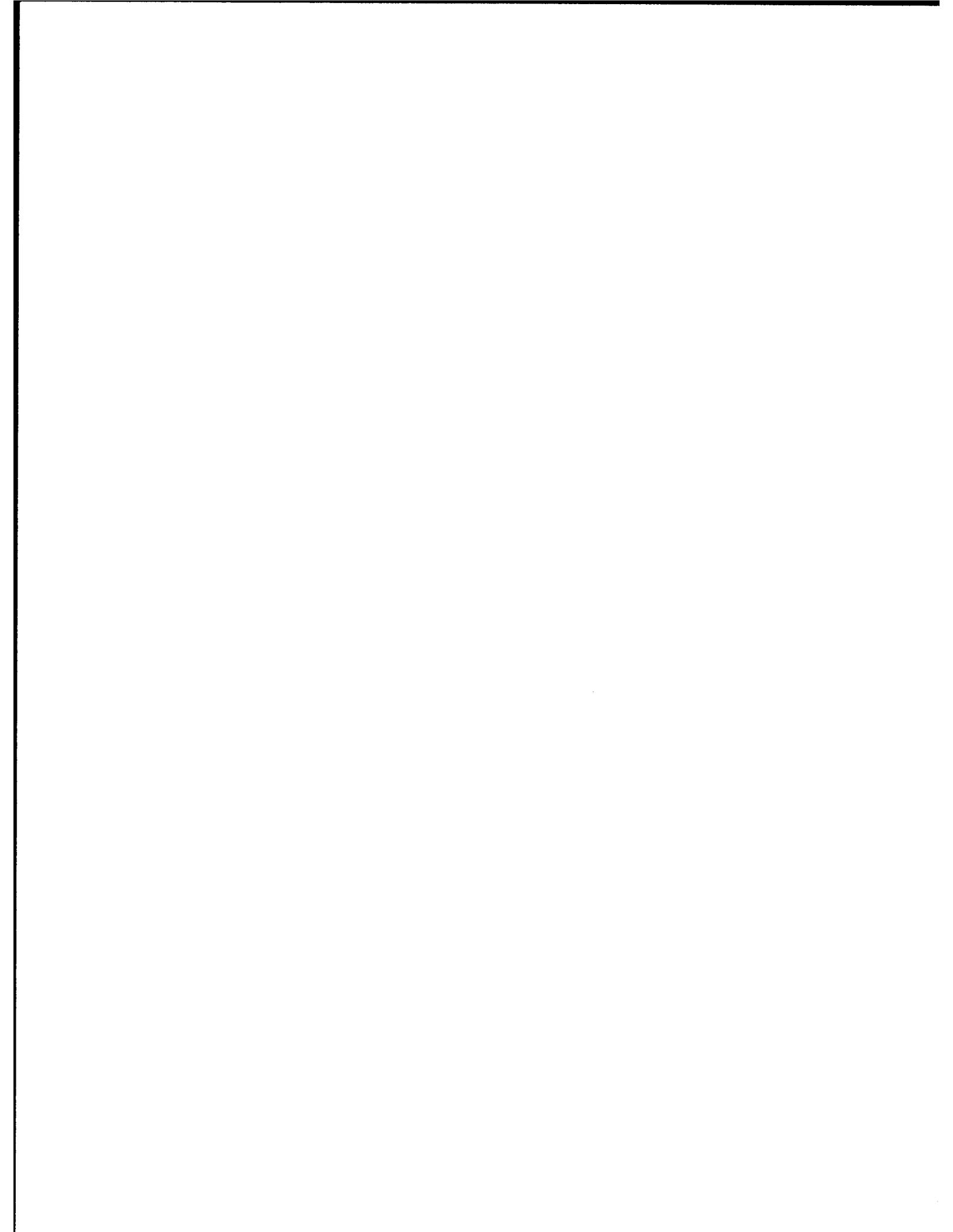
Scheduling review and evaluation analyzes the schedule-making process, driver productivity, data collection techniques and frequency and the placement of the schedule function within a transit organization.

Transit operation and planning studies have been conducted in hundreds of communities throughout the nation. A few of the cities in which studies have taken place include: Long Beach, Los Angeles, California; Chicago,

Decatur, Illinois; Milwaukee, Wisconsin; Denver, Colorado; Toledo, Ohio; Spartanburg, South Carolina; Tulsa, Oklahoma; Reno, Nevada; Minneapolis, St. Paul, Minnesota; Alexandria, Virginia; Albany, New York; Nashville, Tennessee; and Washington, D.C.

Section VI

Resumes



RESUME

David M. Alschuler

Education

B.A. Oberlin College, Urban Economics and Government, 1970.

M.C.P. Harvard University Graduate School of Design,
Cambridge, Massachusetts, Master of City Planning
(Transportation) 1973.

Professional Experience

March 1979 - Present

Vice President and Manager, Management Systems Division,
Multisystems, Inc.

Responsible for administration, marketing and supervision
of all corporate engineering and management systems
consulting and product development.

September 1978 - Present

✓ Director, ACCESS Transportation Systems, Inc.

Principal-in-Charge of the Pittsburgh, Pennsylvania
Elderly and Handicapped Transportation Brokerage
Demonstration. Responsible for oversight of ACCESS
subsidiary which provides contract management for a
countywide paratransit system of private operators in
Allegheny County, Pennsylvania.

March 1976 - February 1979

Manager, Transportation Systems Division, Multisystems,
Inc., Cambridge, Massachusetts.

Responsible for administration, marketing and supervision
of all corporate transportation consulting activities.

✓ Principal-in-Charge for technical support and evaluation
studies being carried out for U.S. DOT in conjunction
with the Urban Mass Transportation Administration's
Service and Methods Demonstration Program.

Project Manager for UMTA "Paratransit Assessment and
Future Directions Study" being performed for the UMTA
Office of Policy and Program Development.

Project Manager of the technical support team providing assistance for the Minnesota Paratransit Demonstration Program. The effort is being carried out in support of the Minnesota Department of Transportation and includes project planning, implementation, and management support for eight projects as well as overall program management assistance.

Project Manager for the "Paratransit Implementation Procedures Study" which was designed to assist public agencies and private operators in establishing mutually beneficial and productive relationships. This study was carried out under contract to the International Taxicab Association and the Urban Mass Transportation Administration.

Principal-in-Charge for Inner City Transit Study undertaken for the UMTA Service and Methods Demonstration Program. Demonstration concepts will be analyzed and implementation plans will be developed for three inner city demonstration projects.

Project Manager for "Paratransit Alternatives Study" for the Metropolitan Council of the Twin Cities. Phase I of the study focused on evaluation of the legal, institutional and regulatory environment surrounding delivery of paratransit services. Phase II focused on development of planning tools for purposes of policy planning and evaluation of paratransit alternatives.

✓ Evaluation of the Knoxville Service and Methods Demonstration Project, an "experimental" demonstration designed to test the concept of the "Transportation Brokerage". The "brokerage" serves as a system coordinator and integrator for a broad range of ridesharing, demand-responsive, and conventional transit services.

Project Manager for technical assistance contract in support of Westport Transit District Service and Methods Demonstration Project of integrated conventional transit and paratransit services. Project Manager for planning study which developed demonstration design and implementation plan.

July 1975 - March 1976

Senior Transportation Systems Analyst, Multisystems, Inc.

Project Manager for South Western (Conn.) Mass Transportation Study. Comprehensive short-range transportation and transit development plan for highly urbanized subregion of metropolitan New York with a population of 375,000 persons.

Design of an Evaluation Plan for the Houston Service and Methods Demonstration Project, a comprehensive program of improvements and preferential treatment strategies designed to improve transit productivity and service quality and reduce urban area VMT through increased automobile occupancy. The project includes contraflow lanes, priority ramp metering, park and ride services, a city-wide car-pooling program, and a CBD parking and transit circulation system.

1974 - 1975

Consultant, Multisystems, Inc.

Analysis of Federal legislation and policy memoranda; design of demand-responsive systems; financial plan for Rochester-Genesee Regional Transportation Authority Transit Development Plan.

1973 - 1974

Research Associate, Massachusetts Institute of Technology
Cambridge, Massachusetts

Project Manager for Planning, Evaluation and Administration for the Rochester-UMTA Service and Methods Demonstration in "Integrated Adaptable Metropolitan Transportation."

Project Manager for Rochester-Genesee Regional Transportation Authority - MIT Demand-Responsive Transportation Research Program, with responsibility for system management and monitoring the Rochester DAR system.

Project Manager for \$300,000 contract with Massachusetts Department of Public Works, directing research in areas of Programming, Fiscal Planning, and Management Information Systems.

1973

Teaching Assistant, Harvard University Graduate School of Design, Cambridge, Massachusetts.

EPA-sponsored urban development simulation course.

1972 - 1973

Research Assistant, Harvard University Graduate School of Design

NSF Study of the "Interaction Between Urbanization and Land". Public utilities demand modeling; transportation demand modeling.

1971

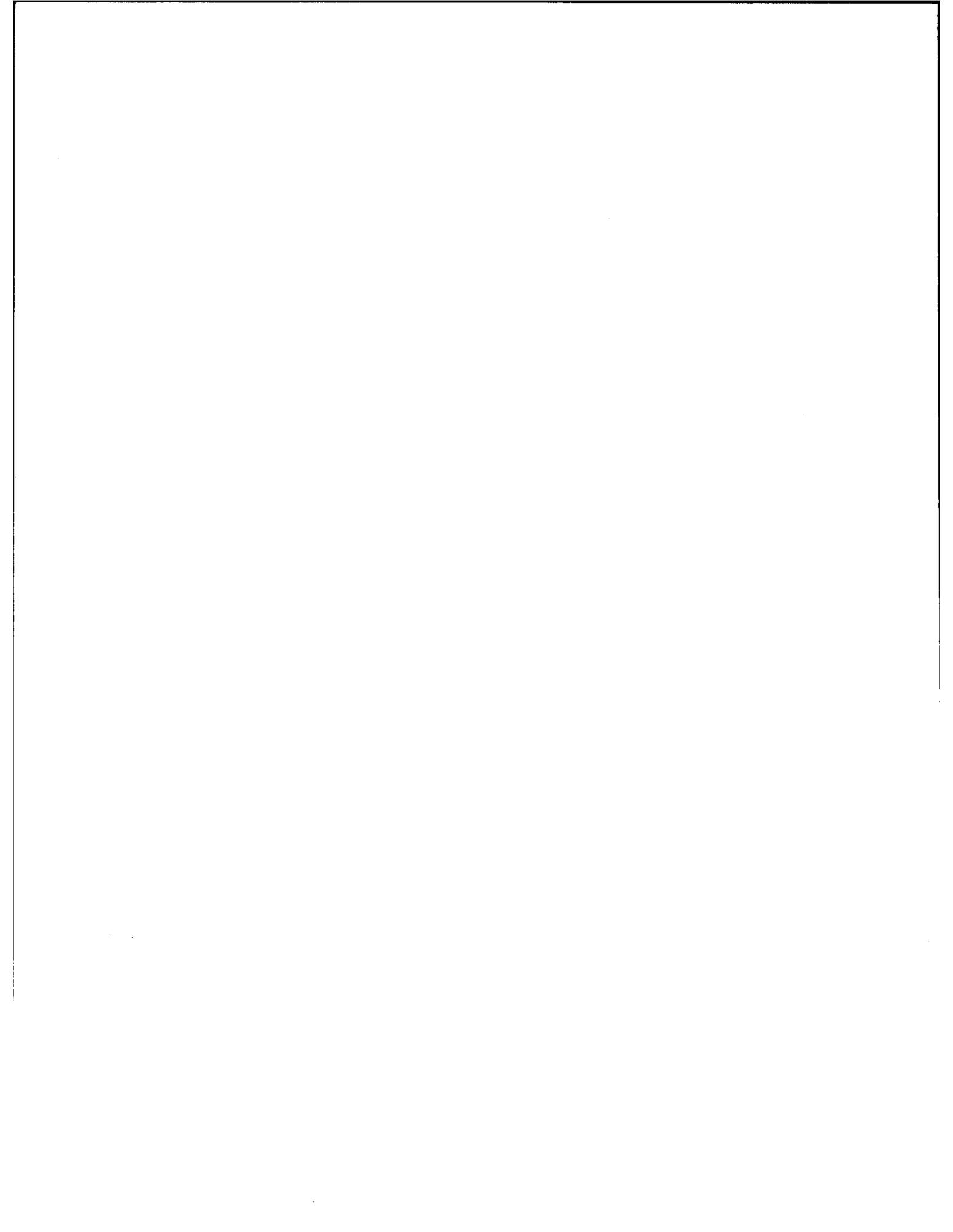
Planner, Urban Investment and Development Co., Chicago, Illinois.

New town pre-project planning; housing marketing studies; (new) project feasibility studies.

Publications

1. "Establishing a Contractual Framework for Paratransit Services," presented at the 4th Annual Conference on Rural Transportation of the Transportation Research Board, Vail, Colorado, June 1979.
2. "Labor Protections, Labor Standards and the Future of Paratransit." Prepared for presentation at the 58th Annual Meeting of the Transportation Research Board, January, 1979 and the Transportation Research Board Special Conference on Paratransit, February, 1979.
3. "Integrated Public Transportation in a Small Urban Area: The Westport Example," (with R. Clair and R. Bradley); Prepared for presentation at the Annual Conference of the American Association of Planning Officials, Indianapolis, Indiana: May 1978 and the 58th Annual Meeting of the Transportation Research Board, January 1979.
4. Taxis, the Public and Paratransit: A Coordination Primer, (co-author with K.W. Forstall), prepared under contract to the International Taxicab Association, May 1978.
5. "Paratransit Planning: An Application of a Systematic, Market-Oriented Planning and Programming Process," (with K.L. Sobel), prepared for presentation at the 57th Annual Meeting of the Transportation Research Board, January 1978.
6. "Establishing Contractual Relationships between Private Operators and the Public Sector for the Provision of Demand-Responsive Transportation Services," (with M. Flusberg), Transportation Research Record Report No. 608, Transportation Research Board, Washington, D.C., 1976.
7. "Paratransit--Existing Issues and Future Directions," (co-author with Daniel Roos), Transportation, Volume 4, Elsevier Scientific Publishing Company, Amsterdam, December 1975.

8. Procedures for Transportation Project and Systems Planning: Summary Report and Recommendations to the Massachusetts Department of Public Works, Massachusetts Institute of Technology, Department of Civil Engineering, Report Number R75-14, February 1975.
9. "Procedures for Transportation Project and Systems Planning Discussion Paper Number Two: Establishing Guidelines for Implementation of a Participatory Programming Process," Massachusetts Institute of Technology, Department of Civil Engineering, June 1974.
10. "Procedures for Transportation Project and Systems Planning Discussion Paper Number Five: Establishing Guidelines for Economic Analysis," Massachusetts Institute of Technology, Department of Civil Engineering, June 1974.
11. The Evaluation of Multimodal Transportation Plans: Case Study of Fall River, Massachusetts, (co-author with Thawat Watanatada, Wayne Pecknold, Terry Atherton, and Larry Bowman), Massachusetts Institute of Technology, Department of Civil Engineering, June 1974.
12. The Interaction Between Urbanization and Land Quality and Quantity in Environmental Planning and Design, (co-author with Carl Steinitz, James Brown, et.al.), Graduate School of Design, Harvard University, January 1973.



RESUME

Keith W. Forstall

Education

- M.E. Carnegie-Mellon University, Department of Civil Engineering (Design), 1977.
- M.S. Carnegie-Mellon University, Department of Civil Engineering, 1976.
- B.S. Lehigh University, Department of Civil Engineering, 1972.

Professional Experience

1979 - Present

Senior Transportation Analyst, Multisystems, Inc., Cambridge, Massachusetts.

- ✓ Responsible for much of the design, implementation, and marketing for UMTA's SMD transportation brokerage project in Pittsburgh, Pennsylvania. Responsibilities include:
 - Preparation of materials for soliciting and contracting with carriers.
 - Design and implementation of zone fare structure, scrip and third-party billing systems.
 - Development and implementation of the MIS program for the project.
 - Assistance in training of on-site staff and preparation of marketing program.
 - Management of the vehicle inspection program.
 - Liaison with local agencies, carriers, and consumers.
- ✓ Project Manager for project to develop a transportation service plan for improving the delivery of services for the elderly and handicapped in Delaware County, Pennsylvania.

Project Manager for Multisystems in conducting an inventory, evaluation, and analysis of all aspects of the taxicab industry in the state of New Jersey.

Project Manager for project to study the taxicab industry in Los Angeles County, California, and to propose a program for improving the industry in general and the regulatory system in particular.

1978-1979

Transportation Systems Analyst, Multisystems, Inc. Cambridge, Massachusetts.

Edited a report for the International Taxicab Association and UMTA to assist private operators in participating more fully in the market for paratransit services.

Helped prepare a short range policy analysis of needed improvements in local taxi and paratransit operations, for the South Central Connecticut Regional Planning Agency.

Project Manager for revisions to the taxicab regulations of the County Code in Montgomery County, Maryland.

Conducted a market research study for taxicab operators in Dade County, Florida.

Provided planning assistance on a statewide paratransit demonstration project being conducted by the Minnesota Department of Transportation.

Project Manager for evaluation of Boston and New York urban hovercraft services.

1977

Research Associate, Urban Systems Institute, Carnegie-Mellon University.

✓ Drafted a successful proposal for a 1.25 million dollar Service and Methods Demonstration (SMD) grant to implement a paratransit broker for the Pittsburgh area. Assisted the regional MPO with an elderly/handicapped self-ID program, a data collection program for special transportation services, and a citizen's advisory program. Project Manager of a second-year level master's course.

1972 - 1973

Assistant Engineer, New Jersey Department of Transportation.
Structural design engineering, bridge division.

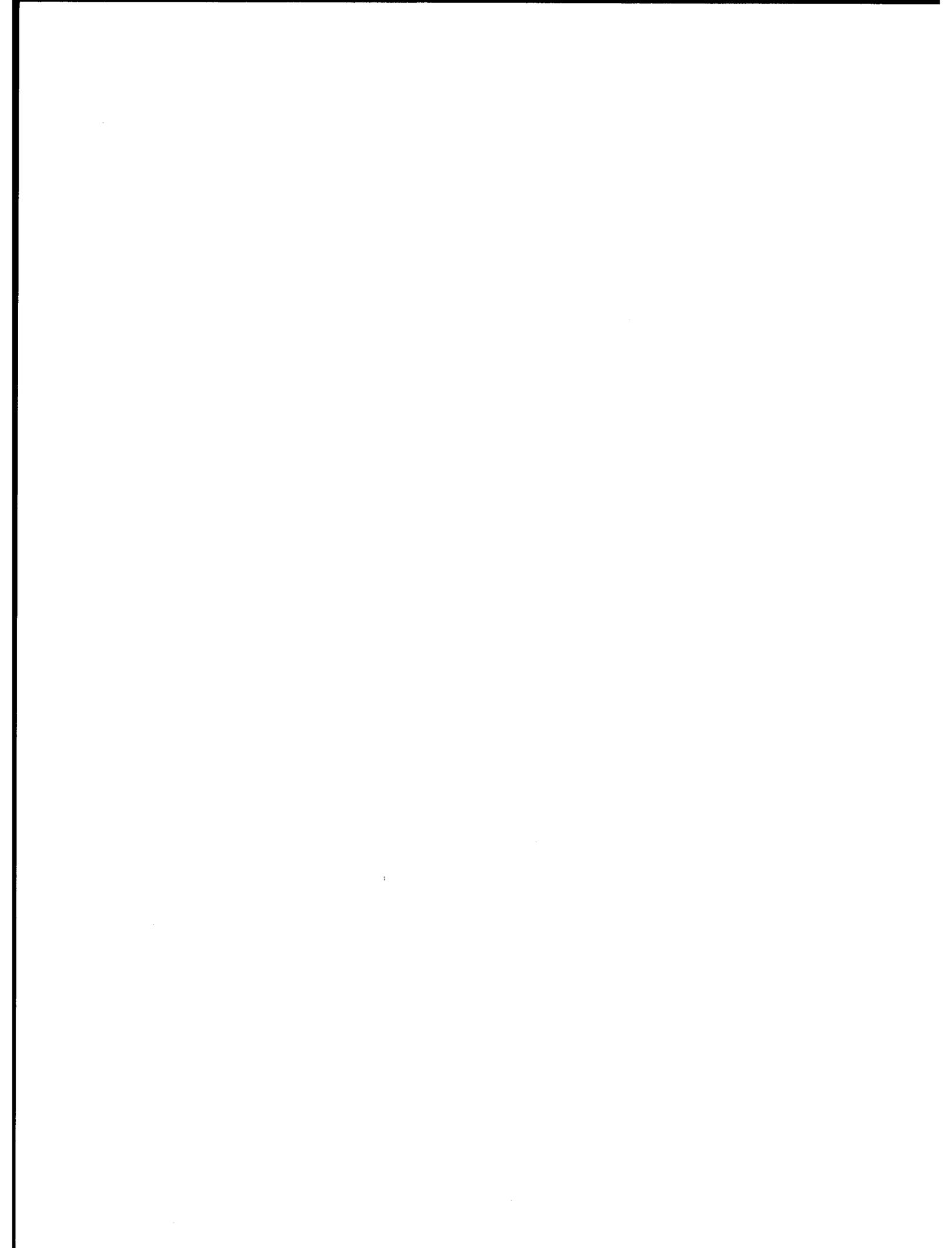
Professional Societies

Transportation Research Board

Member, Committee on Shared-Ride Taxi Operations, Institute of Transportation Engineers.

Papers and Publications

1. Dimensions and Future Strategies for Transportation Services to the Handicapped and Elderly of Allegheny County, Pennsylvania, report prepared for the Transportation Research Institute, Carnegie-Mellon University, Pittsburgh, Pennsylvania, March 1976.
2. A Prototype System for the Transportation Disadvantaged in Allegheny Southwest, report prepared for the Transportation Research Institute, Carnegie-Mellon University, Pittsburgh, Pennsylvania, June 1976 (with E.K. Yockey).
3. Transportation for Elderly and Handicapped Persons, report prepared for the Transportation Research Institute, Carnegie-Mellon University, Pittsburgh, Pennsylvania, July 1976 (with T. Au).
4. An Analysis of Truck Deliveries in a Small Business District, Transportation Research Record 637, 1978 (with G. Ahrens, R. Guthrie, and B. Ryan).
5. Taxis, the Public, and Paratransit: A Coordination Primer, Multisystems, Inc., reprinted by U.S DOT Technology Sharing Division, August 1978 (with D.M. Alschuler).
6. Productivity Improvements for Taxi/Paratransit Industry, Panel Discussion on Financial and Economic Issues from proceedings of a conference held at Carnegie-Mellon University, June 5-7, 1978, Carnegie Press, Pittsburgh, Pennsylvania, August, 1978.
7. "Project Design for a Coordinated Paratransit Service", printed in Transportation for the Elderly and Handicapped: Programs and Problems, U.S. DOT, December 1978 (with A. Blumstein, H. Miller, and R. Stafford).
8. Influence of Federal Protective Clauses on the Paratransit Implementation Process, paper presented at the 58th Annual Meeting of the Transportation Research Board, January 15-19, 1979, Washington, D.C. (with D.M. Alschuler).
9. Impacts of Allegheny County's ACCESS Program, paper presented at the 59th Annual Meeting of the Transportation Research Board, January 21-25, 1980, Washington, D.C. (with E.S. Roszner and T.V. Letky).



RESUME

Amy L. Wexler

Education

M.S. State University of New York (Buffalo), Civil Engineering, 1978

B.A. State University of New York (Buffalo), Psychology, 1974

Professional Experience

1978 - Present

Transportation Systems Analyst, Multisystems, Inc., Cambridge, Massachusetts

Conducting the evaluation of an UMTA Service and Methods Demonstration in the Washington, D.C.-Dulles International Airport corridor. The demonstration incorporates short range, non-capital intensive methods to improve ground access to Dulles by mass transit vehicles.

✓ Prepared an evaluation plan for an UMTA Service and Methods Demonstration of fully accessible bus service planned for the Washington, D.C. Metropolitan Area.

Designed surveys for an analysis of existing and potential users of the Greater Cleveland Regional Transit Authority's Community Responsive Transit (CRT) and Extra Lift services for the elderly and handicapped.

Prepared an evaluation plan for the UMTA SMD Dulles Airport Access project.

Investigated the feasibility of coordinated taxi/transit evening service in Madison, Wisconsin.

Planned local paratransit projects as part of a statewide paratransit demonstration program sponsored by the Minnesota Department of Transportation.

1976 - 1978

Department of Civil Engineering, State University of New York (Buffalo), Buffalo, New York

Prepared departmental reports to various university divisions; directed graduate admissions, and graduate and undergraduate advisement.

Investigated downtown Buffalo shopping patterns and assisted in evaluating the impact of proposed improvements on the downtown area.

1975 - 1976

Ambulatory Care Center, Buffalo General Hospital, Buffalo, New York

Coordinated city and county special services for hospital patients.

1974 - 1975

Department of Sociology, State University of New York (Buffalo), Buffalo, New York

Assisted in an investigation of demographic characteristics of the population of Afghanistan; coordinated with federal, state and university agencies concerning contract and budget arrangements

Publications

1. Draft Evaluation Plan for the Washington, D.C. Accessible Bus Project (with L. Englisher), prepared for the U.S. Department of Transportation (Transportation Systems Center), April 1979.
2. The Feasibility of Late Evening Taxi/Transit Coordination-Final Report (with M. Flusberg), prepared for the City of Madison Department of Transportation, May 1979.
3. Dulles Airport Access Demonstration-Evaluation Plan (with K. Sobel), prepared for the U.S. Department of Transportation (Transportation Systems Center), October 1978.
4. "Factors in Students' Selection of Areas of Concentration in a Flexible Curriculum", (with W.W. Recker), Proceedings, 1977 Conference on Frontiers in Education, American Society for Engineering Education, Urbana Champaign, October 1977.

RESUME

Daniel M. Fleishman

Education

M.R.P. University of North Carolina (Chapel Hill), Department of City and Regional Planning, Master of Regional Planning, 1977.

B.A. University of Michigan (Ann Arbor), Urban Studies and Architecture, 1974.

Professional Experience

October 1977 - Present

Transportation Systems Analyst, Multisystems, Inc., Cambridge, Massachusetts.

✓ Project Manager, evaluation of coordination of elderly and handicapped transportation services in Mercer County, NJ, as part of the TSC Service and Methods Demonstration evaluation contract.

✓ Project Manager, evaluation of specialized service for the elderly and handicapped (EASYRIDE) in New York City, as part of the TSC Service and Methods Demonstration evaluation contract.

Assistant Project Manager, contract for UMTA to study and assess paratransit's development to date and potential role in the future.

Analyst, contract to prepare a transit development plan for Cherry Hill, NJ. The effort involves extensive interaction with the community in exploring the feasibility of and potential alternatives for public transportation in Cherry Hill.

Analyst, subcontract for a Department of Energy study to develop land use/energy consumption data sets. The subcontract effort focused on relating transportation energy consumption to land use categories and urban structures.

Analyst, subcontract to assist the Wisconsin Department of Transportation in implementing the Highway Investment Analysis Package (HIAP), a computerized evaluation and investment programming model which has been developed to

aid state, regional, and local organizations in analyzing proposed investments and developing efficient investment programs.

Analyst, contract to provide assistance on a statewide paratransit demonstration program conducted by the Minnesota Department of Transportation. The contract involves preparation of plans for individual projects, as well as assistance in project implementation and evaluation.

Analyst, preparation of the impact evaluation plan for Phase II of the Morgantown (W. Va.) Personal Rapid Transit System, as part of the TSC Service and Methods Demonstration evaluation contract.

✓ Analyst, development of a brokerage system for coordinating transportation services for elderly and handicapped in Allegheny County, Pennsylvania.

1976 - 1977

Assistant Editor, Carolina Planning, a planning and policy oriented journal published by the University of North Carolina's Department of City and Regional Planning.

1976 (summer)

Research Assistant, Urban Mass Transportation Administration (Region IV), Atlanta, Georgia.

✓ Reviewed Transit Development Plans and Environmental Impact Statements; assisted in planning grant approval process; analyzed and summarized federal requirements concerning planning for the elderly and handicapped.

1974 - 1975

Computer Programmer, Internal Revenue Service, Washington, D.C.

Wrote and updated programs utilized in IRS Service Centers throughout the county - batch and real-time programming.

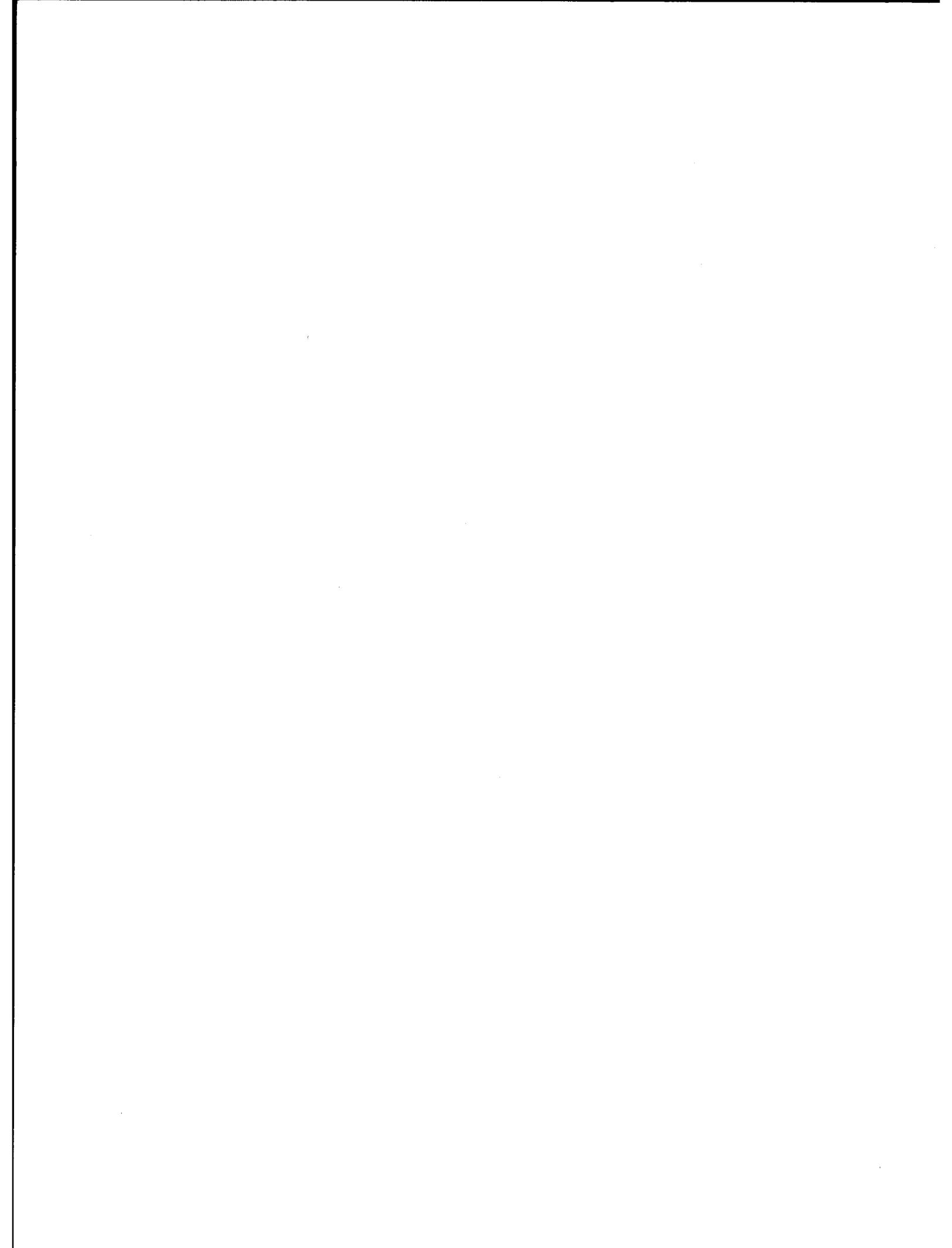
Professional Society Memberships

Member - American Planning Association

Member - Regional Planning Association (of New York)

Reports

1. Paratransit Assessment and Directions For the Future (Draft Final Report), prepared for U.S. Department of Transportation, Urban Mass Transportation Administration, February 1980 (principal author).
2. Morgantown Personal Rapid Transit System - Phase II Impact Evaluation Plan, prepared for the U.S. Department of Transportation (Transportation Systems Center and UMTA), December, 1978. (co-author with G.F. Ruprecht and H.L. Moore).
3. "Embodied Energy of Vehicles," in Preparation and Development of Land Use Energy Consumption Data Sets, Phase I Final Report, Vol. 2; ed. Urban Systems Research and Engineering, Inc., prepared for the U.S. Department of Energy (Contract No. EC-77-C-02-4528), August 1978 (sole author).
4. "Transportation Operating Energy," in Preparation and Development of Land Use Energy Consumption Data Sets. (co-author with J.A. Kruger and H.L. Moore).
5. "Embodied Energy of Guideways," in Preparation and Development of Land Use Energy Consumption Data Sets. (co-author with C. Pleatsekis).



RESUME

John P. Attanucci

Education

B.S. Cornell University (Civil Engineering), 1972
S.M. Massachusetts Institute of Technology
(Transportation), 1974

Professional Experience

1979 - Present

Senior Transportation Analyst, Multisystems, Inc.,
Cambridge, Massachusetts

Project Manager, development of data collection/
monitoring techniques for bus transit under contract to
UMTA.

Project Manager, Service and Methods evaluation of
transit routing and scheduling strategies to improve
performance in Los Angeles, California.

Project Manager, Service and Methods evaluation of the
impacts of fare structure change in Los Angeles,
California.

Project Manager, subcontract to analyze and recommend
transit service and fare policies as part of EPA
Statewide Implementation Plan for the State of
Connecticut.

1978 - 1979

Manager of Service Planning, Massachusetts Bay Transpor-
tation Authority, Boston Massachusetts

Analysis and recommendation of bus service changes
including new or extended route proposals and major
modification of the frequency or duration of existing
bus service; MBTA project manager for two UMTA funded
special studies: Systemwide Passenger Data Collection
Program and Prototype Bus Service Evaluation Project
which included the development and maintenance of a
system ridership and performance data base for use by
the service and operations planning staffs; and the
development and administration of the MBTA Suburban Bus
Program.

1975 - 1978

Chief Planner, Executive Office of Transportation and Construction, Commonwealth of Massachusetts

Technical and policy direction for the planning and implementation of low-capital, short-term transportation innovations such as statewide ride-sharing (carpool/vanpool) program, preferential roadway treatment for buses and carpools, and new public transportation services to and from Boston Logan International Airport; primary responsibilities within EOTC for ensuring adequate coordination and liaison with the plans and program of state and federal air quality and energy agencies.

1974 - 1975

Research Engineer, DSR Staff, Massachusetts Institute of Technology, Cambridge, Massachusetts

Project Manager for UMTA sponsored research engaged in developing guidelines to improve the planning of major urban transit projects and to provide an adequate base of technical information for determination of federal funding.

1973 - 1974

Teaching Assistant, Massachusetts Institute of Technology, Cambridge, Massachusetts

Responsibility for direction and guidance of an undergraduate laboratory course in transportation planning field survey and analysis techniques; other course administration responsibilities.

1973

Research Assistant; Massachusetts Institute of Technology, Cambridge, Massachusetts

Planning and implementing a ten-vehicle Dial-a-Bus system for Rochester, N.Y.

1972

Pennsylvania Department of Transportation, District 11-0, Planning and Programming Unit, Pittsburgh, Pennsylvania

Planning analysis and programming tasks regarding current and future highway construction, analysis of environmental impact of individual projects.

1971 - 1972

Advisor, Cornell University College of Engineering,
Ithaca, New York

Advisor for engineering undergraduates.

1971 - 1972

Editor-in-Chief of the Cornell Engineer, Cornell
University College of Engineering, Ithaca, New York

Editor-in-Chief of the monthly engineering student
magazine.

Publications

1. "Measurement of Traveller Response to Changes in Transportation System Supply", with Moshe Ben-Akiva, William A. Jessiman and Marvin L. Manheim, Cambridge Systematics, Inc., "White Paper" prepared for Design of Procedures to Evaluate Traveller Responses to Changes in Transportation System Supply, U.S. DOT, FHWA, Urban Planning Division, Washington, D.C., September, 1974.
2. "Carpool Experiences in the United States", with Nigel H.M. Wilson, prepared for OECD Conference "Better Towns with Less Traffic", Organization for Economic Co-operation and Development, Paris, France, April, 1975.
3. "Masspool: Comprehensive Statewide Ride-Sharing in Perspective", with Glenn E. Harkness, Proceedings of 1976 Annual Meeting, Transportation Research Forum, Boston, Massachusetts, October, 1976.
4. "Southeast Expressway Reserved Lane for Buses and Carpools", with Daniel Brand, Howard Morris, Charles Kalasuskas, Annual Meeting Transportation Research Board, Washington, D.C., January, 1978.
5. "Implementation and Preliminary Impact of a Shared-Ride Taxi Service for Boston Logan International Airport", with Daniel Greenbaum, Karla Karash, Joel Bornstein, Annual Meeting Transportation Research Board, Washington, D.C., January 1978.
6. Bus Service Evaluation Procedures: A Review with Leora Jaeger, Jeff Becker, prepared for UMTA by the Massachusetts Bay Transportation Authority, Report No. UMTA-MA-09-7001-79-1, Boston, Massachusetts, April 1979

Conference Presentations

1. "Preliminary Survey Results of Current Bus Service Evaluation Techniques," presented at APTA Annual Meeting, Toronto, Ontario, September, 1978.
2. "Institutional Factors in the Implementation of Auto Restrictive Measures: the Boston Area", presented at Annual Meeting Transportation Research Board, Washington, D.C., January, 1979.
3. "A Review of Bus Service Evaluation Procedures", presented at APTA Eastern Conference, Indiannapolis, Indiana, May, 1979.

DAVID R. MILLER

Principal Associate, Barton-Aschman Associates, Inc.

EDUCATION:

Doctor of Philosophy in Economics, Northwestern University
Master of Arts in Economics, Northwestern University
Bachelor of Science in Business Administration, Temple University

PROFESSIONAL ASSOCIATIONS:

Transportation Research Board
American Economic Association

EXPERIENCE:

Since joining Barton-Aschman Associates, Inc. in 1972, Dr. Miller's primary activities have been in the field of urban transportation planning. His expertise in regional economics and transportation economics has made him an extremely valuable asset to the transportation planning team. His versatility has been demonstrated by the variety of transportation activities he has assumed. He serves on the Transportation Research Board Committee on Public Transportation Planning and Development and the Committee on Transit Service Characteristics and on the American Public Transit Association Financial Management Committee.

Dr. Miller has been involved in the transportation field since 1956. His background includes five years of bus and rail transit operating experience in Cleveland and Philadelphia. Prior to joining Barton-Aschman, Dr. Miller served as a staff economist to the Office of the Assistant Secretary for Policy and International Affairs, U.S. Department of Transportation. He has been a faculty member in the Economics Department at Syracuse University and Executive Director of Syracuse's Urban Transportation Institute.

In addition to his consulting responsibilities, Dr. Miller is the Manager of Transit Services for Barton-Aschman Associates. In that capacity, he serves as technical advisor to the transit planning staff and spearheads business and development activities.

REPRESENTATIVE PROJECTS:

Dr. Miller is currently directing Barton-Aschman's work as part of a team studying the feasibility of implementing an automated highway system and is advising the Municipality of Buenos Aires, Argentina on their efforts to rehabilitate and extend their subway system and return it to the private sector. He has recently completed a study of equity issues in transportation system benefits for the Urban Mass Transportation Administration and a general aviation system plan for the Genesee/Finger Lakes region (New York State). Other recent projects include the Anderson, Indiana Urban Transportation Study, a short-range transit study in Anderson, South Carolina, route and schedule studies in Springfield, Illinois and Gary, Indiana, and technical assistance on a modified turnkey basis to the Lake County (Indiana) Economic Opportunity Council, Inc. to initiate dial-a-ride service for the elderly and handicapped in the area. Additional recent

DAVID R. MILLER (cont'd)

assignments include preparation of a Title VI submittal for the Southern California Rapid Transit District, technical assistance to the Chemung County (New York) transit operation, and a feasibility study of computerization of management information and scheduling for the Toledo Area Regional Transportation System.

Numerous previous task assignments with Barton-Aschman include Transit Development Program studies, assistance to the Southern California Rapid Transit District (Los Angeles) in preparation of an alternatives analysis for the Los Angeles rapid transit starter line, a transit consolidation and valuation study for the Tidewater Transportation Commission in Norfolk, Virginia, analysis of the feasibility of an urban-tracked air cushion vehicle in the Dallas-Ft. Worth area, concept design work on a dual-mode transit system, a feasibility study of a people-mover system for a private sector client, an airport planning study for the Indiana Airport Authority, and technical direction of an analysis of alternatives for the Morgantown (West Virginia) Personal Rapid Transit System.

Dr. Miller also has been a guest lecturer on urban transportation at the University of Colorado-Denver Center, the University of Wisconsin-Milwaukee, Ohio State University, Sangamon State University, the University of Illinois, Princeton University, Wayne State University, and Indiana University.

SELECTED PUBLICATIONS

"On Measuring the Efficiency of Public Enterprises: Bus Operating Companies in the San Francisco Bay Area," *Transportation*, Volume 8, 1979.

"Planning for Elderly and Handicapped Accessibility in Advanced Transit Systems: Policy and Design Considerations" (with Kathryn Z. Heffernan), *Proceedings of the Advanced Transit Association International Conference*, Indianapolis, Indiana, April, 1978.

"Affirmative Action: New Rules for Service to Minorities," *Passenger Transport*, February 24, 1978.

"Editorial: An Open Letter to the New Secretary of Transportation," (with Michael A. Powills, Jr.), *Mass Transit*, Volume IV, January, 1977.

"Transit Operating Subsidies from the Local Perspective," in *Transit Operating Subsidies*, *Transportation Research Record No. 573*, Washington: Transportation Research Board, 1976.

"The Morgantown GRT Alternatives Analysis Study," in *PRT III*, Minneapolis: University of Minnesota, 1976.

Urban Transportation Factbook (editor). Detroit, Michigan: MVMA and AIP, 1974.

DAVID R. MILLER (cont'd)

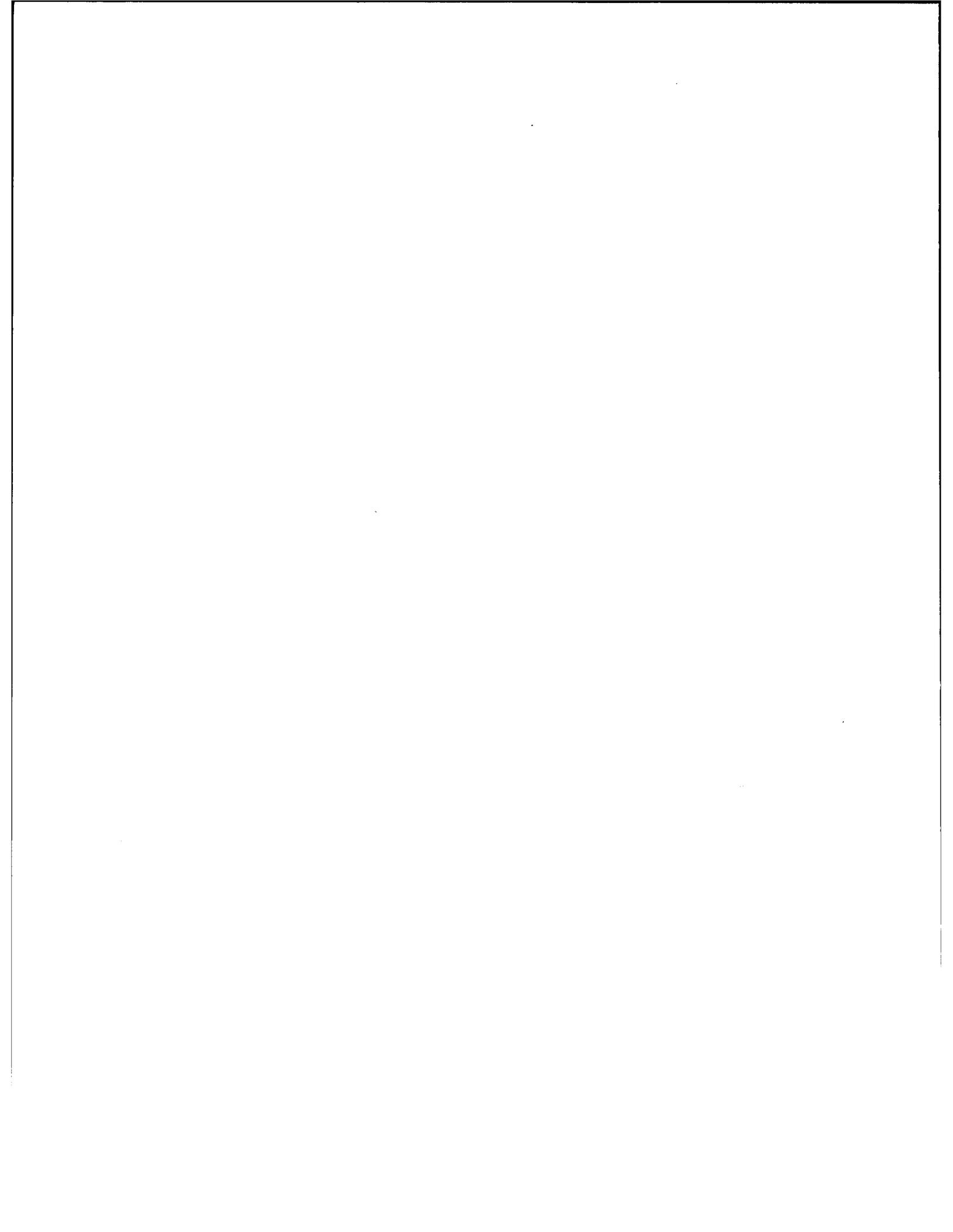
"Financing Public Transportation," in *Issues in Public Transportation*, Transportation Research Board Special Report 144, Washington: Transportation Research Board, 1974.

Urban Transportation Policy: New Perspectives (editor), Lexington, Massachusetts: D. C. Heath and Company, 1973.

"State Transportation Policy: New Challenges, New Institutions," *Public Administration Review*, May-June, 1973.

"Financing Mass Transit: Mobility is Among the Assets," *Technology Review*, December, 1973.

"Differences Among Cities, Differences Among Firms, and Costs of Urban Bus Transportation," *The Journal of Industrial Economics*, November, 1970, pp. 22-32.



ROBERT C. SCALES

Principal Associate, Barton-Aschman Associates, Inc.

EDUCATION:

Master of Engineering in Transportation, University of South Carolina
Bachelor of Science in Civil Engineering, The Citadel

PROFESSIONAL ASSOCIATIONS:

American Society of Civil Engineers
American Public Transit Association

REGISTRATIONS:

Professional Engineer in Illinois

EXPERIENCE:

Since joining Barton-Aschman Associates in 1971, Mr Scales has been involved in the design and evaluation of public transit systems street and highway networks, and parking facilities. Prior to joining Barton-Aschman, Mr. Scales was a civil engineer for the South Carolina Department of Highways.

REPRESENTATIVE PROJECTS:

In the field of transit system evaluation and design, Mr. Scales has directed or played a major role in the following projects: (1) short-range and transit development studies for Volusia County and West Volusia County, Florida; Lehigh-Northampton Counties and Warren, Pennsylvania; Jackson, Mississippi; Anderson and Muncie, Indiana; Bloomington, Rockford, Du Page County, and south suburban Chicago, Illinois; Grand Rapids and Southfield, Michigan; Charleston, Spartanburg, and Anderson, South Carolina; Wichita, Kansas; Santa Cruz, La Mirada, Carson, and South Gate, California; Mankato, Minnesota; and Wausau, Wisconsin; (2) corridor studies for Cincinnati East Side Corridor Demonstration Program; Houston Corridor Evaluation Study; and Denver East Corridor Program; (3) operations and management studies for Columbus, Ohio, Management and Marketing Study; WMATA Management Study; Market Evaluation of Radio Communications Study; and Daytona Beach, Florida, Transit Operations and Marketing Study; (4) long-range studies for Mid-Cities, Texas; and Grand Rapids, Michigan; (5) CBD analysis for the Minneapolis CBD Bus Lane Study; the Downtown Denver Circulation Study; and Denver Transitway/Mall Design Assistance; and (6) work on the Morgantown, West Virginia, PRT evaluation; Civic Center Terminal Design, Denver; Du Page County, Illinois, Shared-Ride Taxi Study; and St. Louis Transit Needs Analysis.

ROBERT C. SCALES (cont'd)

In the field of transportation engineering, Mr. Scales has worked on various projects throughout the Midwest. These have included site analysis of proposed hotel, residential, commercial, and industrial developments; the evaluation and planning of street and highway networks for central business districts and new towns; the design of parking programs for public and private developments; TOPICS assignments for municipal governments; the assessment of transit access to regional activity centers; and the planning of airport ground transportation systems.

LEE A. CODA

Associate, Barton-Aschman Associates, Inc.

EDUCATION:

Master of City and Regional Planning, Harvard University
Bachelor of Arts in Economics, Drew University

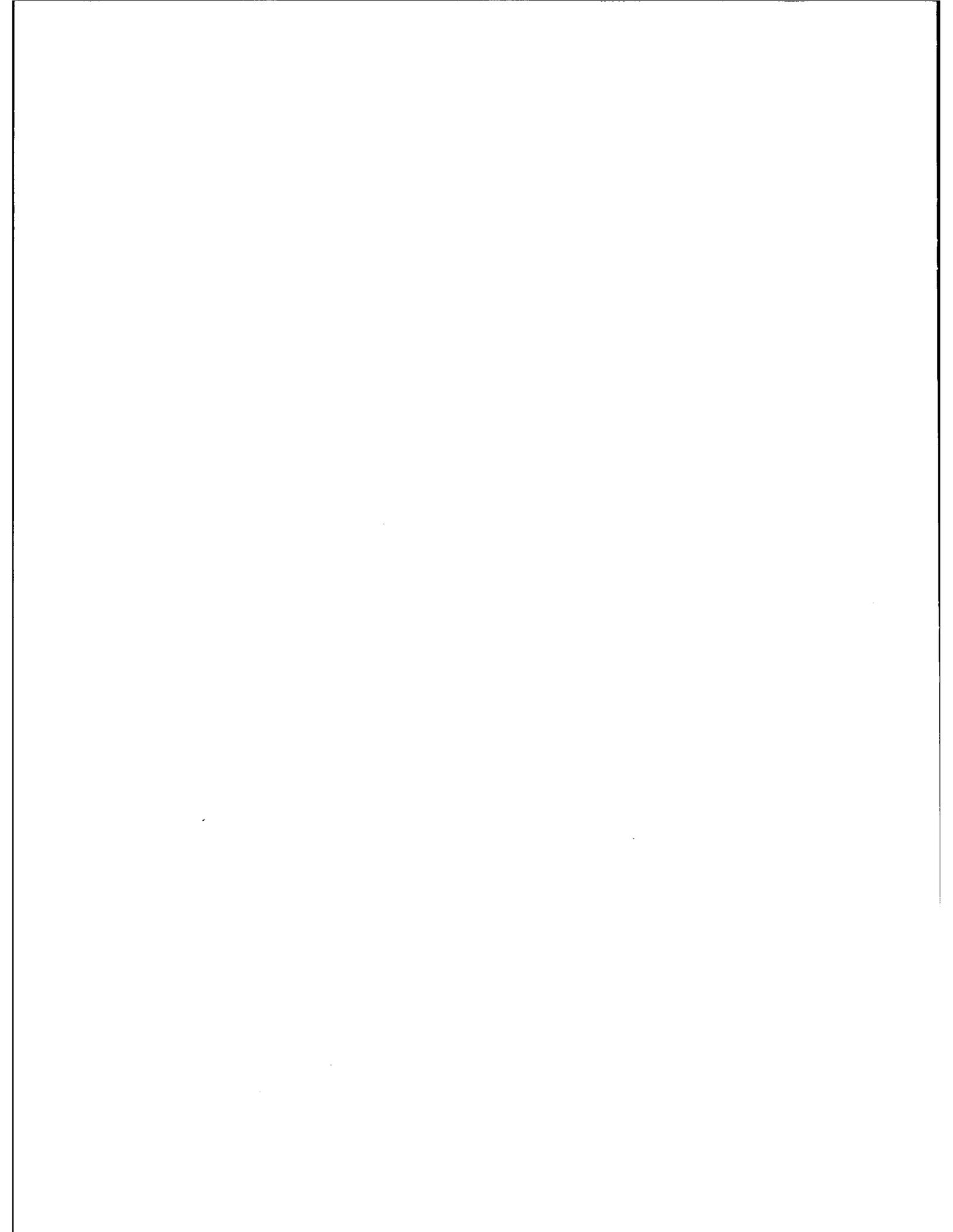
EXPERIENCE:

Mr. Coda joined Barton-Aschman Associates, Inc. after graduating from Harvard University in 1979. Specializing in transportation systems planning at Harvard, Mr. Coda's training emphasized modeling techniques and the analysis of management issues. He examined a carpooling incentive program administered by the State of Massachusetts and coauthored a report that presented the results of an in-depth analysis of the effectiveness of the program.

While at Harvard, Mr. Coda worked for GCA Corporation and Applied Resource Integration, Ltd. (ARI). As a member of a project team at GCA he participated in an analysis of the environmental and economic impacts of motor vehicle emission inspection and maintenance programs for several states.

Mr. Coda's work at ARI centered on issues relating to the transportation needs of the transportation-disadvantaged. He performed statistical analyses of the impacts of an elderly and handicapped para-transit alternative program in New York City. He also reviewed several elderly and handicapped fare subsidy programs and developed a demand model to assess the impact of a user-side subsidy on the travel behavior of the transportation-disadvantaged in Albuquerque, New Mexico.

Since joining Barton-Aschman, Mr. Coda has expanded his computer capabilities through work with federal transportation and air quality computer models. He is also involved in an evaluation of rural airport facility requirements for general aviation users.



CLAUDIA R. BERRY

Associate, Barton-Aschman Associates, Inc.

EDUCATION:

Masters of City Planning, Georgia Institute of Technology (Pending Thesis Approval)
Bachelor of Science in Political Science, North Carolina A & T State University

PROFESSIONAL ASSOCIATIONS:

American Planning Association

EXPERIENCE:

Ms. Berry joined Barton-Aschman Associates, Inc. in 1979. She completed her graduate course work toward a Masters of City Planning at Georgia Institute of Technology where she specialized in transportation planning.

In 1973, Ms. Berry worked as a Research Associate with the Transportation Institute of North Carolina where she assisted in the preparation of the state's multimodal transportation plan.

From 1974 to 1976, Ms. Berry worked as a planning intern in the Program and Budget Division of the Atlanta Regional Commission where her responsibilities included preparation and monitoring of agency contracts, coordination of regional planning programs; review of federal and state policy guidelines; and preparation of agency budgets.

As a transportation planner with the Houston-Galveston Area Council from 1976 to 1979, Ms. Berry coordinated both the Regional Citizen Participation Program for Transportation Planning and the Transportation-Air Quality Planning Program. Her responsibilities included program development and administration, staffing, program funding and contracting; and air quality and long-range transportation planning. She also assisted in the development of a regional plan for the elderly and handicapped and coauthored an environmental newsletter.

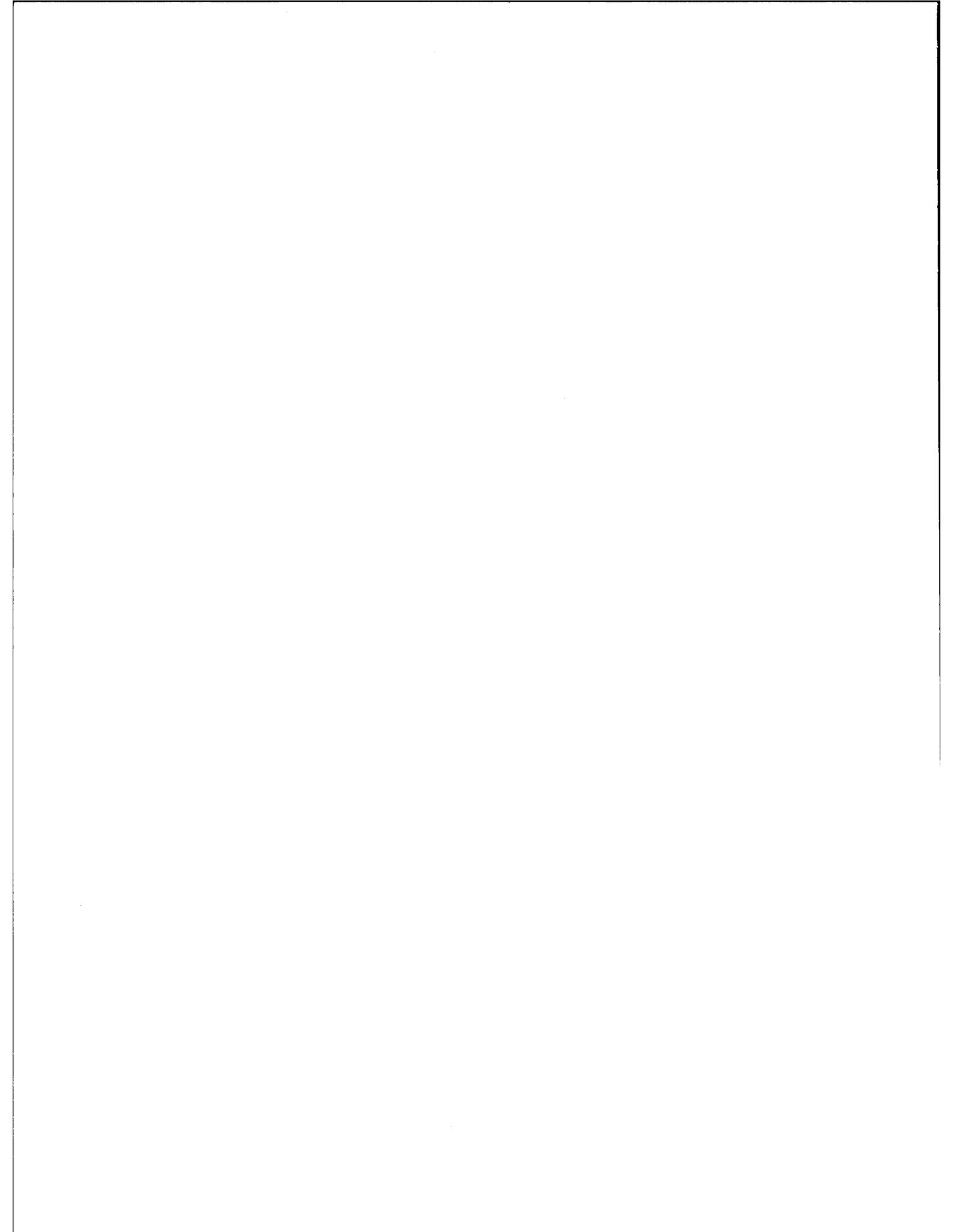
Since joining Barton-Aschman, Ms. Berry has participated in several projects including: (1) energy contingency planning research; (2) a traffic and transportation circulation plan for Knoxville's Energy Expo; (3) a study of the State Street bus mall; and (4) an air quality study of the Minneapolis/St. Paul area.

SELECTED PUBLICATIONS:

A Report on Transportation Needs in North Carolina, Transportation Institute of North Carolina, 1973 (Coauthor and principal researcher).

Citizen Participation in Transportation Planning, Houston-Galveston Area Council, 1977

Citizen Participation in Transportation Planning: Phase One Citizen Input Summaries and Analysis, Houston-Galveston Area Council, 1978.



Section VII
Cost Proposal

Multisystems Labor, Overhead, and Fee

	<u>Hour</u>	<u>Rate*</u>	<u>Cost</u>	
D. Alschuler	80	\$60.00	\$4800	
K. Forstall	320	31.00	9920	
A. Wexler	260	27.75	7215	
Word Processor	20	15.50	<u>310</u>	
TOTAL	<u>680</u>			\$22,245

Multisystems Direct Expenses

Airfare 7 r.t. Bos-LA @ 500	3500	
Apartment rental (3 br) 2 mo @ 1000	2000	
Subsistence (with apt) 70 days @ 25	1750	
Additional per diem (in hotel) 10 days @ 75	750	
Reproduction, postage, telephone	500	
Auto rental	<u>476</u>	
TOTAL DIRECT		8,976

Barton-Aschman - Labor, Overhead and Fee

	<u>Hour</u>	<u>Rate**</u>	<u>Cost</u>	
D. Miller	80	\$63.33	5066	
Associate	236	33.00	7788	
Word Processor	200	19.00	<u>3800</u>	
TOTAL	<u>516</u>			16,654

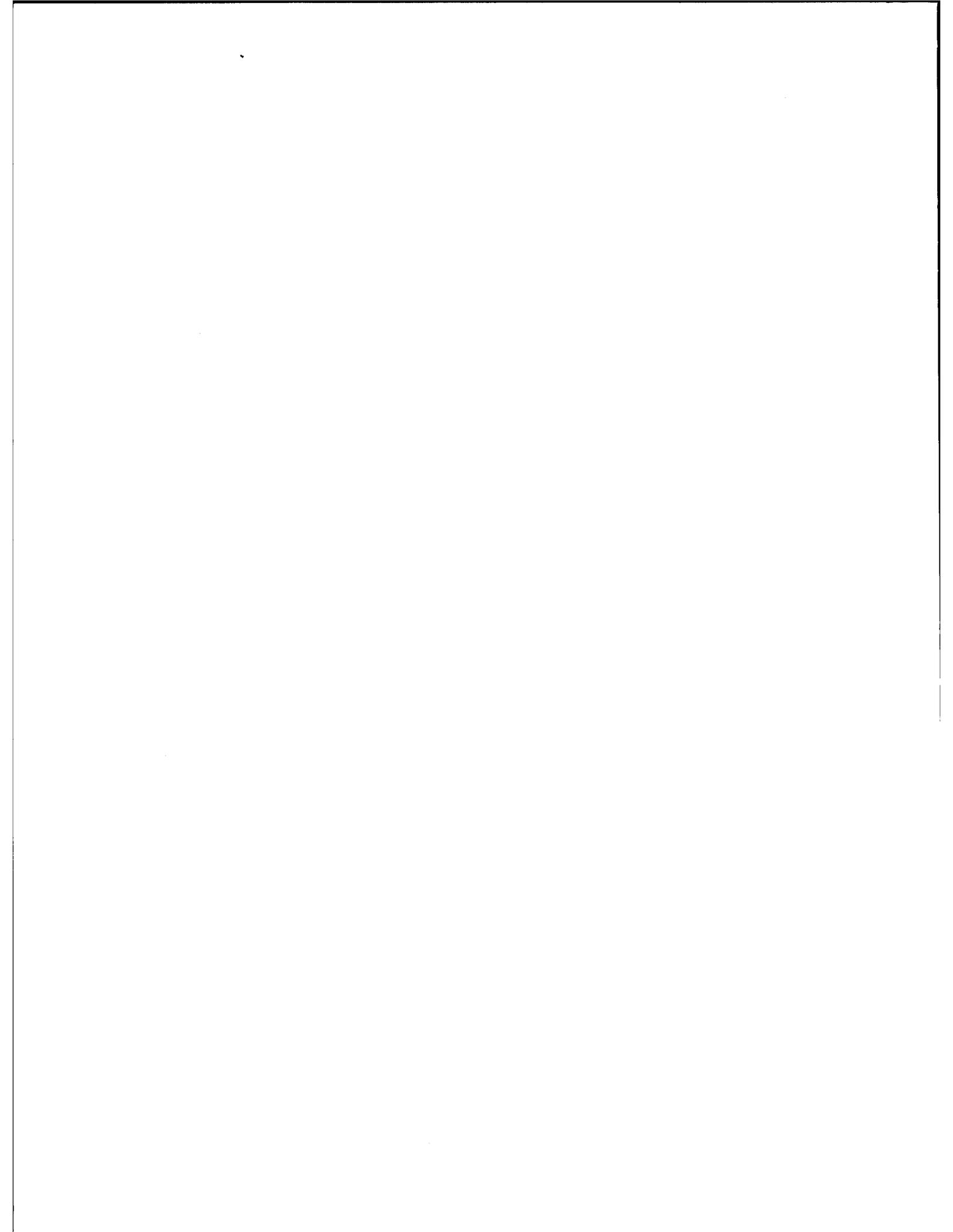
Barton-Aschman - Direct Expenses

Airfare 4 r.t. Chic-LA @ 250	1000	
Subsistence (with apt) 30 days @ 25	750	
Per diem (in hotel) 5 days @ 75	<u>375</u>	
TOTAL		<u>2,125</u>

TOTAL COST \$50,000

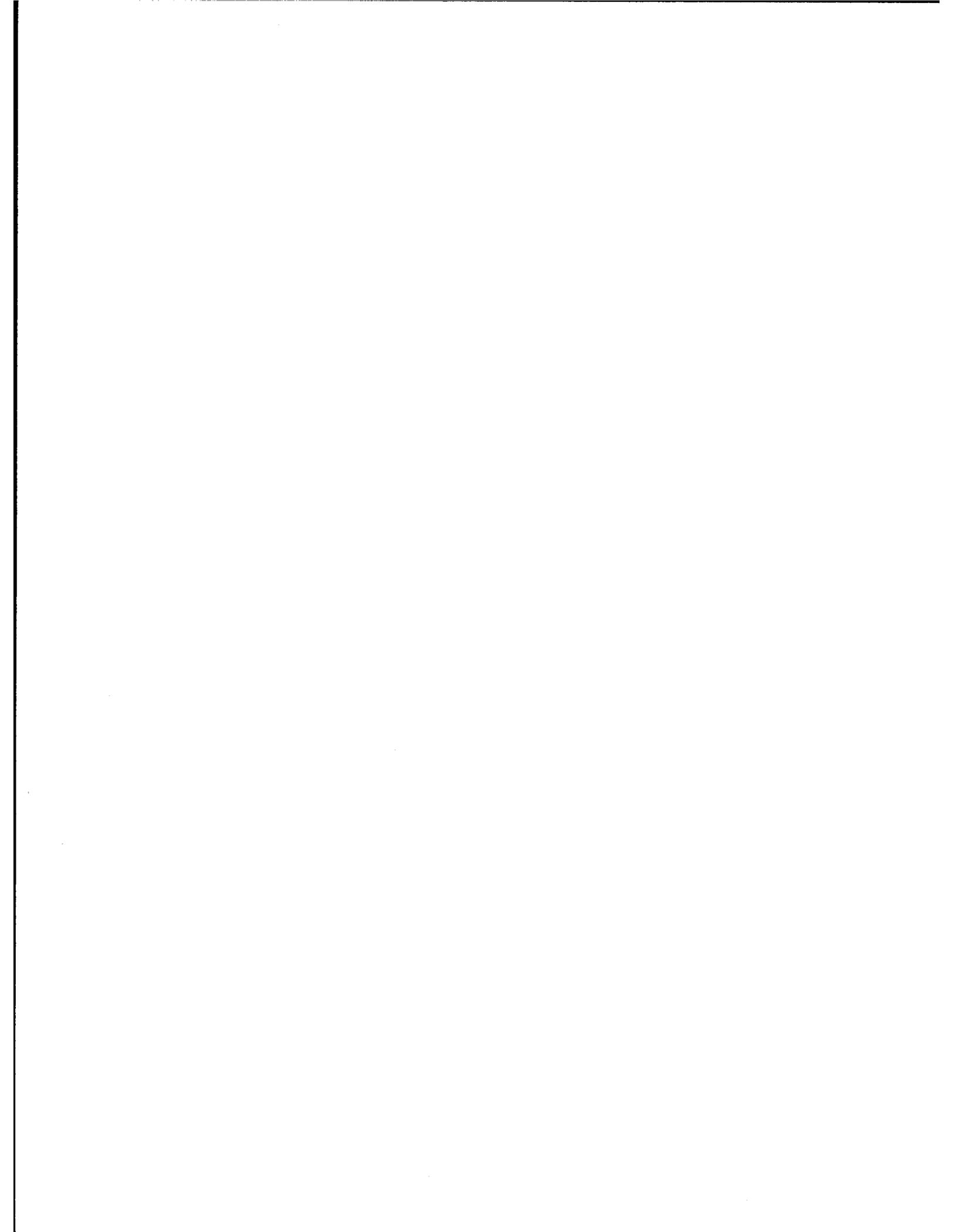
* includes an overhead rate of 135% + approximately 10% fee
 ** includes an overhead rate of 150.2% + approximately 10% fee

Could use better breakdown of labor/overhead



APPENDIX A

Detailed Project Descriptions



Multisystems, Inc. Project Descriptions

Project Title: Elderly and Handicapped Paratransit Management Program

Client: Port Authority of Allegheny County, Pennsylvania

Contract Type: Cost plus Fixed Fee

Project Duration: September, 1978 - In Progress

Project Summary: Multisystems is now managing a paratransit program in Pittsburgh, Pennsylvania. As the "broker" of elderly and handicapped paratransit services, Multisystems is responsible for all phases of the coordination process. Service agencies and individuals use the broker to arrange for the provision of specialized transportation throughout the service area; Multisystems administered a competitive bid process among authorized carriers in each of a number of sectors of the service area.

Part of the program management requires setting up a fund flow mechanism flexible enough to allow agencies to participate in the program regardless of how they are currently allowed to subsidize service (e.g., direct purchase of service, reimbursement only, etc.) Cash flow problems have also been considered. As the broker, Multisystems is directly responsible for "selling" service to funding agencies and individuals and "buying" from service providers.

Other responsibilities of the broker in this coordinated system include the centralization of transportation information and referral services, as well as administration of a centralized data collection, accounting, and system performance monitoring function. The

latter services are tailored to meet the system evaluation needs of sponsoring agencies, the Port Authority and UMTA.

The actual service began in March, 1979.

Project Title: Elderly and Handicapped Transportation Service Plan

Client: Delaware County Planning Department

Technical Monitor: Zofia Santo

Contract Amount: \$20,507

Project Duration: October 1979 -

Project Summary: Multisystems will assess the full range of Transportation services available for the handicapped and elderly of Delaware County, Pennsylvania. After reviewing the adequacy and efficiency of these services, and alternative market coordination options in operation elsewhere, Multisystems will design a program for improving the delivery of these services. This will include preparation of a comprehensive implementation plan and schedule. Close public interaction with concerned local individuals and organizations will be an integral part of the program's development.

Project Title: ✓ Elderly and Handicapped Transportation Operations Study

Client: Regional Planning Agency of South Central Connecticut

Technical Monitor: Herbert Burstein

Contract Amount: \$25,000

Contract Type: Fixed Price

Project Duration: August 1977 - April 1978

Project Description: ✓ Multisystems, Inc. has developed plans for coordinating transportation service for the elderly and handicapped in the New Haven Region. The plans call for participating agencies to enter into purchase of service agreements with a local taxi operator. Under this arrangement, the efficiencies of consolidation can be achieved, while agencies retain a degree of identity and control not commonly associated with consolidated systems. A major focus of the study was on structuring the vehicle and financial control systems, including functional specifications for an automated system.

Project Title: Remote Employment of the Physically Handi-
capped

Client: National Science Foundation, Research
Applied to National Needs Program

Technical Monitor: Herman Harvey

Contract Number: NSF-C-APR-77-19497

Contract Amount: \$24,948

Contract Type: Fixed price

Project Duration: October 1977 - April 1978

Project Summary: Among the employment difficulties of
physically handicapped individuals are
problems relating to the job site. In
response to such problems, a large number of
studies have been performed which focus on
transportation solutions designed to allevi-
ate the mobility barriers of physically
handicapped individuals. This study adopted
a very different approach, that of exploring
the potential of bringing the work to the
individual at his/her home through the use
of computers, small computer terminals, and
the nation's telecommunications network.

Isolationism

This communications substitute for
transportation has undergone economic,
institutional, market, and practical
analyses (with the input of physically
handicapped individuals). In addition to
such analyses, the final product of this
study included the design of a pilot
demonstration to implement the concept on a
scale sufficient to improve its viability.

Project Title: Adapting Algorithms for Pre-Scheduling
Transit Vehicles for Handicapped Persons

Client: Denver Regional Transit District

Technical Monitor: William Harris

Project Duration: October-December 1976

Project Summary: Multisystems, Inc., under contract to Denver
RTD, evaluated the potential for adapting
existing routing and scheduling algorithms
for the scheduling of vehicles in the Handy-
Ride program. HandyRide is a region-wide
subscription bus service for elderly and
handicapped persons. This study included a
review of all existing routing and
scheduling algorithms, and a determination
of the cost-effectiveness of automating the
scheduling of the present HandyRide System,
as well as an expanded, more flexible system.

Project Title: Transportation for the Elderly and Handicapped

Client: Seattle METRO

Project Duration: February 1976 - March 1976

Contact: Don Munro, Manager of Transit Planning

Project Summary: Multisystems, Inc. worked with Seattle METRO to develop strategies for improving the mobility of the elderly and handicapped living in the Seattle Metropolitan Area. Included in this work was the generation and evaluation of specific transit alternatives.

Project Title: Assessment of a Program for Transportation for the Handicapped and Elderly

Client: Rochester/Genesee Regional Transportation Authority

Technical Monitor: Stan Garver

Contract Price: \$31,704

Project Duration: August 1978 - October 1979

Project Summary: Multisystems conducted a feasibility study of a handicapped and elderly transportation support center in the Rochester region. This center would provide a variety of support functions to human service agencies currently providing transportation as well as directly providing for the transportation need of a core group of agencies. In a second phase of the study Multisystems will provide turnkey management for such a center if phase I concludes that a center is feasible. A set of procedural and training manuals, a management information system and an operating transportation service would be developed in this phase. The two phases are part of a larger study of transportation for the handicapped and elderly in the region.

Project Title: Transportation for the Elderly and Handicapped

Client: North Central Texas Council of Governments

Contact: William Barker

Project Summary: Multisystems, Inc. performed an analysis of demand-responsive transportation options, including premium ride taxi, shared-ride taxi, and advance request demand-responsive services, for serving the elderly and handicapped in urban, suburban and rural settings in the Dallas-Fort Worth area. Emphasis of the work was on establishing the relationships and trade-offs among demand, productivity, and level of service.

Project Title: An Analysis of Existing and Potential Users of RTA's Community Responsive Transit and Extra Lift Programs

Client: Greater Cleveland Regional Transit Authority (RTA)

Technical Monitor: Donald Yuratovac, Supervisor of Service Department

Contract Amount: \$25,000

Project Duration: November 1978 - August 1979

Project Description: Multisystems, Inc. recently conducted a survey of the users and non-users of two elderly and handicapped services (Community Responsive Transit and the Extra Lift Program) offered by the Greater Cleveland Regional Transit Authority.

The market research had three broad objectives:

- to assess the impact of the two programs on the mobility and life styles of the users,
- to obtain user evaluations/perceptions of operational aspects of the services, and
- to identify the major barriers to use perceived by the non-user population.

To fulfill these goals, survey instruments were designed and administered through telephone interviews to about 600 persons.

Project Title: Norwalk Transit Development Study

Client: Norwalk Transit District (Norwalk, Connecticut)

Technical Monitor: Paul Hoar, Executive Director

Contract Price: \$20,000

Project Duration: December 1975 - December 1976

Project Summary: Multisystems, Inc. conducted a transit development planning study to produce new and more efficient transit services for the Norwalk Metropolitan Area. The study focused special attention on the linkage between existing bus and commuter rail services, the relationships between Norwalk and adjacent communities, development of a service plan to meet the needs of transit dependent market segments, and the development of innovative management improvements for the operation and coordination of services. The study included evaluation of a variety of different service and management alternatives, and the selection of a single alternative for full development, including implementation plans and a detailed system design, all consistent with UMTA planning requirements.

Project Title: Greenwich Transit Study

Client: Directors, Greenwich Transit District

Project Duration: August 1975 - June 1976

Project Summary: Multisystems, Inc. conducted a transportation study for the Greenwich (Connecticut) Transit District. This study determined the feasibility of transit in the town, designed alternative transit systems that could be useful to the town, and proposed an implementation plan for the system selected as the most appropriate. The study included household, rail commuter, employee and agency surveys. Possible transit and non-transit alternatives were compared on the basis of service, financial, and impact criteria. The final report recommended a town transportation plan that coordinates an innovative transit system with non-transit transportation improvements.

Project Title: South Western Connecticut Transit Study

Client: Richard C. Carpenter, South Western Connecticut Regional Planning Agency

Project Duration: January 1976 - April 1977

Contract Amount: \$60,000

Project Summary: Multisystems, Inc. developed a plan for public transportation in South Western Connecticut, a region with a population of 300,000 persons living in seven communities, including two major urbanized areas. The study assessed regional objectives for transit and analyzed alternative service concepts and service levels with respect to these objectives. A regional Transit Improvement Program was developed as a basis to redefine existing services and to initiate new services in the member communities within a regional framework of implementation and management. This program serves as a basis for application for federal funding assistance, providing the overall framework for coordination and integration of multiple public and private transit and paratransit services within the region.

Project Title: Rochester, New York, Comprehensive Short and Long Range Transit Development Program

Client: Rochester-Genessee Regional Transportation Authority

Technical Monitor: Robert P. Aex

Project Duration: June 1974 - September 1975

Project Summary: Multisystems, Inc. prepared a comprehensive short and long range Transit Improvement Program for the Rochester, New York, metropolitan area. With over 700,000 residents in a variety of urban, suburban, and rural settings, the regional transportation authority sought a plan that would integrate its recent service innovations with existing conventional services and potential long run improvements.

The short range element of the project evaluated service options that could be implemented in less than five years. Of major importance were the issues of integrating innovative service concepts, such as dial-a-ride and park-and-ride, with existing conventional bus operations; providing adequate and appropriate service levels to all parts of the four-county region; improving the utilization of existing services through imaginative fare structures and operating policies; federal requirements for transportation to the elderly and handicapped; and overall financial feasibility within existing federal, state and local support programs.

The long run component of the project addressed capital intensive improvements to the regional public transportation system, including proposals for exclusive bus lanes

on freeways, various light rail based alternatives, and a major downtown transportation center. Multisystems, Inc. evaluated the proposals for technical and financial feasibility, made numerous minor and major modifications to the original proposals, conducted additional analyses and recommended an incremental program for the time staged implementation of a comprehensive system of high speed corridor services and downtown distribution systems. The recommendations included a mix of exclusive lane bus, light rail, and light rail distribution services in the CBD. The entire twenty year program was developed with flexibility as a key ingredient, thereby allowing the region to select from an array of alternatives in future years based on information that will be available in the future.

Project Title: Pittsfield Transit Study

Client: City of Pittsfield, Mayor's Transportation Committee

Project Duration: September 1973 - January 1974

Contract Amount: \$20,000

Project Summary: Multisystems, Inc. analyzed the transportation needs and designed the public transit system for Pittsfield, Massachusetts, a community of 56,000. Several alternative options for fixed route and demand-responsive systems were considered. Consideration was also given to various operating arrangements including a joint school bus/transit service, operation by a cab company, operation by the city, and contract operation with local carriers. Through close work with the local citizens committee and other interested groups, a final design was prepared for a fixed route bus system which served both Pittsfield and four surrounding towns and utilized the services of both local common carriers.

Project Title: Small Urban Area Transit Studies (Group II)

Client: New York State Department of Transportation

Technical Monitor: David G. Putz, Development Division

Contract Amount: \$107,000

Contract Type: Cost Plus Fixed Fee

Project Duration: November 1976 - January 1979

Project Summary: This study effort was aimed at evaluating the potential for public transit and recommending implementable public transportation systems which reflect the values and meet the needs of each of six small Upstate communities. Separate transit development plans were produced for Hornell, Jamestown, Kingston, Norwich, Orlean, and Saranac Lake, New York, to meet UMTA requirements. The detailed TDP's cover a five-year period and include discussion of anticipated financing, implementation responsibility, maintenance of the transit improvement program, coordination of transit systems, and management and operations improvements.

Project Title: Community-Based Transportation System Plan

Client: Township of Cherry Hill

Technical Monitor: Roberta Nalven, Director of Planning

Contract Amount: Phase I - \$28,963

Contract Type: Fixed Price

Project Duration: Phase I February 1980 - August 1980

Project Summary: This study is aimed at the development of a community-based public transit service in an official Philadelphia/Camden suburb with high auto ownership and no single town center. Phase I of the study will determine the feasibility of such service based on surveys of residents and transit commuters, discussions with local officials and representatives, analysis of data on community travel needs and assessment of potential funding sources. A community education program will then be included in the study to increase public awareness and knowledge about transit options. If an alternative is determined to be infeasible, additional study phases will address detailed design and implementation issues.

Project Title: Los Angeles County Taxicab Study
Client: Los Angeles County Transportation Commission
Technical Monitor: Ray Maekawa *Our Man!!*
Project Duration: January 1980 - June 1980
Contract Amount: \$50,000

Project Summary: Multisystems is undertaking a complete review of the taxicab industry in Los Angeles County. All local city ordinances are being compiled to review local municipal regulatory practices. The industry itself is being surveyed to determine operating practices and problems. Consumer complaint records are being reviewed to establish the need for better industry control.

One area of particular concern is LAX airport, which is presently suffering from the absence of an effective, legally authorized, and adequately budgeted enforcement agency. This makes control of both "bandits" and legitimate operators difficult at best. Another major focus of the project is the appropriateness of various regulatory reforms such as rate or market entry decontrols. The possibility of limited or comprehensive areawide regulation to replace the current individual regulation by 82 cities and other local government authorities is also being examined.

Project Title: Taxicab and Limousine Regulations Study
Client: Office of Transportation Planning, Department
of Transportation, Montgomery County,
Maryland
Contract Type: CPFF
Project Duration: August, 1978 - February, 1979
Technical Monitor: Genevieve Leary, Assistant Director

Project Summary: Multisystems reviewed existing regulations pertaining to taxi/paratransit services in Montgomery County, Maryland. In Montgomery County, the usual state and local laws are complicated by additional regulation from the Washington Metropolitan Area Transportation Commission (WMATC). The WMATC regulation has a strong influence on the structure of the proposed Code, which has to enable reform while accommodating the constraints of parallel regulation.

Major issues addressed include policy recommendations regarding full or partial free market entry, provision of shared-ride taxi services, and non-profit carrier regulation. The impact of services provided by non-profit organizations on safety and insurance protection of passengers was studied, as well as the impacts on for-profit carrier patronage.

The project included preparation of a draft of recommended legal/regulatory changes designed to improve the environment for paratransit services and eliminate redundant or obsolete sections of the existing Code.

Project Title: Statewide Paratransit Demonstration Program

Client: Minnesota DOT

Contract Type: Cost plus Fixed Fee

Contract Amount: \$105,000

Project Duration: April, 1978 - in progress

Project Summary: Multisystems is assisting MnDOT in developing a statewide paratransit demonstration program. Almost 40 separate projects have already been sponsored under an initial \$4.5 million dollar allocation from the state legislature. An additional \$5 million has been authorized for the second biennium. Multisystems is providing technical support in analyzing the project proposals from communities throughout the state. The objective is to develop a systematic collection of projects that will permit comparative evaluation of a variety of service concepts.

Projects are situated in Indian reservations, rural counties, and small towns in addition to several projects in the Twin Cities area. Some projects are targeted at elderly and handicapped persons; others are designed for the general public. A full range of private and public carriers are involved. Systems include shared-ride taxi, route deviation, dial-a-ride, subscription vanpool, and other service concepts.

Initially each project was assessed to determine if it could be integrated into the state program; in some cases this involved some system redesign. Multisystems also

helped structure the data collection and analysis requirements to maximize the results of an evaluation program.

One of the major projects that Multisystems is working on involves the implementation of a shared-ride taxi service for the ambulatory handicapped in Minneapolis. This service has been integrated with Project Mobility, a transit authority-operated chair-carrier service, through a central control facility. The control center is also responsible for allocating MnDOT funds to other specialized providers, a step towards full coordination.

Project Title: Case Study of Community Bus Systems

Client: North Central Texas Council of Governments

Technical Monitor: Larry Cooper

Contract Price: \$24,970

Project Duration: March 1979 -

Project Summary: Multisystems is currently under contract to perform a detailed case study to determine the feasibility of using school buses owned by the Arlington Independent School district as part of an energy contingency plan or in energy conservation measures. A number of alternatives are being analyzed including the reduction of school bus requirements by increasing walk distances to local bus stops, using underutilized school buses to provide peak and off-peak transportation to the general public, using school buses to provide shuttle service in and around the University of Texas at Arlington, and a joint service which fulfills all the needs of the community. Impact of each option is being measured in terms of its affects on energy consumption, mobility of the population, costs, service quality, accessibility, and safety. In addition the institutional, legal, and organizational aspects of the alternatives are being investigated.

Project Title: Subscription Commuter Bus Study

Client: Rochester-Genesee Regional Transportation Authority

Project Duration: June - September 1973

Project Summary: Subscription commuter bus service is designed to provide commuters with pre-scheduled door-to-door transportation at a reasonable price. Multisystems, Inc. analyzed such a service for Kodak Park, a major employment center with over 32,000 workers in Rochester, New York. Multisystems, Inc. examined the economics of vehicle size, routing and scheduling, methods of operation, and demand for subscription service. Surveys were conducted jointly with the client to determine employee interest in the service and to evaluate operational improvements that could be achieved through employee/employer cooperation.

Project Title: Share-a-Cab Implementation

Client: Massachusetts Port Authority

Technical Monitor: Joel Bornstein

Contract Amount: \$22,500

Project Duration: March-April 1977

Project Summary: Boston taxi operators operating out of Logan International Airport, threatened by the initiation of new limousine services at the airport, agreed to strike in early 1977. To avoid a prolonged strike, the Massachusetts Port Authority began working with the taxicab industry to establish plans designed to maintain the industry's competitive position. The resulting plan was for a shared-ride taxi system to operate from the airport. Multisystems, Inc. was retained to plan a control system for the centralized dispatching of the fleet and independently owned taxi vehicles which serve the airport, and to implement the system. In addition, Multisystems had responsibility for preliminary taxi pool area site design, control room design, development of training manuals, and training of all dispatching personnel. A pilot system serving 21 communities located to the west and northwest of Boston was implemented on April 26, 1977.

Project Title: Paratransit Implementation Procedures Study
Client: International Taxicab Association
Technical Monitor: Richard Gallagher
Contract Number: DOT-MD-06-0034 (subcontract)
Contract Amount: \$20,405
Contract Type: CPFF
Project Duration: November, 1977 - September, 1978
Project Summary: Multisystems, Inc. prepared a technical and informational report designed to assist private paratransit operators and public planners in the integration of private paratransit and the public conventional transportation services. Informational materials were prepared in the areas of service design, legal, regulatory and institutional relationships. The materials formed the basis for a series of workshops conducted jointly by UMTA and the ITA.

Project Title: ✓ Paratransit Assessment and Directions for the Future

Client: Urban Mass Transportation Administration
Major Systems Division

Technical Monitor: Jimmy Yu

Project Duration: December 1978 - February 1980

Contract Number: DOT-UT-90008

Contract Amount: \$170,954

Contract Type: CPFF

Project Summary: Multisystems Inc. is undertaking a comprehensive assessment of the "field" of paratransit for UMTA. The project includes an evaluation of the state-of-the-art, a determination of the desired future role and potential of paratransit, and a recommendation of policies, programs, and actions that will encourage the expansion and proper implementation of paratransit services. The study effort involves an extensive data collection phase, a review of recent research and operational experiences, and a comprehensive analysis of the institutional/organizational environments and constraints surrounding the delivery of paratransit services.

Project Title: Paratransit Alternatives Study

Client: Metropolitan Council of the Twin Cities

Technical Monitor: John Hoffmeister

Contract Amount: \$49,000

Project Duration: August 1976 - April 1977

Project Summary: Multisystems, Inc. completed a two-phase study examining paratransit alternatives in the Twin Cities area. The first phase focussed on a comprehensive review of the existing legal, regulatory, and institutional environments surrounding the delivery of paratransit services and recommended changes viewed as necessary in order to develop the range of services described in the regional comprehensive policy plan. The second phase of the study focussed on the documentation of existing methodologies for paratransit systems planning and evaluation and the transfer of these methodological skills to Metro Council and Metro Transit Commission staffs. Recommendations for a restructured planning process were developed, as well as recommendations for proceeding with implementation of new and innovative services through an orderly demonstration program.

Project Title: Nassau County Demand-Responsive Transportation System

Client: Nassau County Executive Office of Public Transportation

Technical Monitor: Martin Gach, Commissioner of Transportation

Project Duration: April 1974 - December 1975

Project Summary: Multisystems, Inc. assisted the Nassau County (New York) Office of Public Transportation (OPT) in the design of a demand-responsive transportation service for this county comprised of high density suburban communities with a total of 1.5 million persons. The system design called for an eventually unsubsidized, shared-ride service, operated by a consortium of local taxi companies under contract to the County. Funding would be used to provide vehicles and a centralized automated dispatching system, to market the system, and to provide a seed subsidy until break-even operation is achieved. The anticipated increases in efficiency created by ride-sharing and other elements of the plan were expected to enable the private companies to operate profitably at fares well below present taxi fares. Other features of the system design were a feeder service fare structure that is integrated with the commuter rail service fare, and a user-side subsidy for the elderly and handicapped.

Project Title: Integrated Conventional Transit and Paratransit System for Westport and Weston, Connecticut

Client: Westport Transit District

Technical Monitor: Richard Bradley, Executive Director

Project Duration: September 1975 - January 1976 (Phase I)
September 1976 - July 1979 (Phase II)

Contract Amount: \$24,000 (Phase I), \$27,500 (Phase II)

Project Summary: Multisystems, Inc. completed a technical study carried out under the auspices of the Westport Transit District (WTD) to investigate the potential for integrated conventional transit and paratransit service in the towns of Westport and Weston, Connecticut. The study evaluated existing paratransit and conventional transit needs, and proposed a comprehensive system design which integrated and coordinated the existing fixed route operations of the Westport Transit District with a broad range of paratransit services including shared-ride taxi, route deviation service, subscription service, carpooling and vanpooling. The system design called for extensive utilization of private sector resources and seeks to coordinate services through use of centralized control and dispatch facilities, integrated fare structures, and a service plan encompassing and interfacing all public transit and paratransit modes.

The technical study formed the basis for a successful grant application submitted to the Service and Methods Demonstration Program of the Urban Mass Transportation Administration.

Multisystems, Inc. is currently under a second contract to assist the WTD in implementing and managing the Demonstration project.

Project Title: Coordinated Evening Transit Service
Feasibility Study

Client: Madison, Wisconsin, Department of Transportation

Contact: Kathy Hicks

Project Duration: July 1978 - Present

Project Summary: The City of Madison expressed concern about the underutilization of its fixed route bus system during late evening hours (i.e., after 9:00 PM). In this study, Multisystems, Inc. explored the feasibility of increasing the cost-effectiveness of late evening public transportation service through the coordination of taxi service with the bus system. Options such as replacing outer route segments with taxi feeder service, providing fixed route taxi service in lieu of bus service, and introducing taxi feeder service in presently unserved areas which are seeking late evening routes, were explored. Both financial feasibility and institutional feasibility were considered. Madison DOT is currently in the early phase of implementing the recommended taxi feeder system. If implementation proceeds, Multisystems will evaluate the demonstration.

Project Title: Shared-Ride Taxi Service

Client: Bay State Taxi

Technical Monitor: Lewis Lubar

Project Summary: Multisystems has worked with a private taxi company in the Town of Brookline, Massachusetts (population 55,000), part of the Boston metropolitan area. The first phase involved a market study to determine whether there was demand for additional taxi service in the area. Following this the company was granted a license to operate 35 cabs in the community. The second phase of the work was a market research effort focusing on the potential for shared-ride taxi service.

Project Title: Taxi Inventory Study
Client: New Jersey Department of Transportation
Contract Type: CPFF (Subcontract)
Contract Amount: \$51,000
Project Duration: August 1979 - In Progress
Project Summary: Multisystems is participating in an in-depth assessment of the taxicab industry in New Jersey. The study focuses on both local regulatory environment and on operating characteristics of the industry. A review of all regulations and a survey of firms throughout the state is proposed. The output of the study will include recommendations on ways to improve the effectiveness of taxi operations.

Project Title: Wisconsin Demand-Responsive Transportation Demonstration

Client: Wisconsin Department of Transportation

Technical Monitor: Richard Taube

Contract Amount: \$37,300

Project Duration: September 1974 - June 1975

Project Summary: Multisystems, Inc. performed a transit feasibility study for Merrill, Wisconsin, a city of 10,000 persons, and subsequently designed the first demand-responsive transportation system in the State of Wisconsin. The system, which began service in April, 1975, is a hybrid fixed-route/demand-responsive service known as "point-deviation," and is serving as Wisconsin DOT's demonstration of demand-responsive transportation. It is also one of the first demonstrations of this type of DRT service in the nation. Multisystems, Inc. was responsible for all elements of system design and implementation, including scheduling, dispatching, and staff training. Multisystems, Inc. also has had responsibility for the marketing program, and for a continuing system monitoring effort.

Project Title: Near Term Taxi Study

Client: Regional Planning Agency of South Central Connecticut

Technical Monitor: Herbert Burstein

Contract Amount: \$26,000

Contract Type: Fixed Price

Project Duration: December 1977 - July 1978

Project Description: Multisystems Inc. was involved in an analysis of taxi operations in the City of New Haven. The study was aimed at developing a short-term strategy for improving taxi services, through a combination of operational changes, new market development, integration of public and private services and, if appropriate, changes in the regulatory structure to allow more innovative responses. Major recommendations focused on a restructuring of internal management.

TRANSIT PROJECTS RELATED TO THE PROPOSED STUDY

Several of our transportation studies have specifically addressed the needs of elderly and handicapped residents and how best to provide service for them. In addition, many of our public transit studies have dealt with special topics often directly related to the provision of transport services to this subgroup. Particularly, Barton-Aschman has acquired in-depth experience with para-transit and demand-responsive transit systems, with supplying transit service to rural areas, and evaluating the equity of transit service according to UMTA's Title VI requirements. A representative sample of transportation studies prepared by Barton-Aschman are briefly described below.

Transportation for the Elderly and Handicapped

Decatur, Illinois. In May, 1977, the City of Decatur contracted with W.C. Gilman & Co. for a study of alternative methods of upgrading the level of public transportation service available to the elderly and handicapped. The main impetus for this study was the expressed concern of several human service agencies dealing with the elderly and handicapped, as well as recent regulations issued by the Urban Mass Transportation Administration.

The main purpose of the study was an examination of the costs and benefits of providing special transportation service to the handicapped under various alternative service concepts. Interviews with representatives of several human service agencies were conducted in order to identify the special transportation problems and needs of the handicapped. Operating statistics from the existing transportation providers (Decatur Public Transit System and Yellow Cab Company) were used in the economic analysis. The experience of similar programs now operating in other communities was also drawn upon. From this analysis, a recommended program for meeting the needs of the transportation-handicapped within an affordable budget was developed.

Five alternative service concepts were evaluated; these included:

- Vehicle modification.
- Demand-responsive service operated by DPTS.
- Demand-responsive service operated by a human service agency.
- Demand-responsive service operated by the taxi company.
- Subsidized taxi service.

Based on the projected ridership and cost estimates, a subsidized taxi program was selected as the most appropriate way of establishing service for the transportation-handicapped. A one-year pilot program with the capability of expanding services as the demand requires was recommended.

Lake County, Indiana. Barton-Aschman Associates has recently completed the development of a "turnkey" specialized transportation system for Lake County (East Chicago), Indiana. Under contract to the Lake County Economic Opportunity Council, the firm has defined the entire operational framework for this 18-vehicle system.

Service is oriented primarily toward the elderly residents of the area. However, the Economic Opportunity Council desired to operate a more diversified specialized transportation system to better serve the differing needs of the clients of each of its constituent social service agencies.

The complex organizational and funding situation required that a detailed management information system be developed in order to properly allocate the costs of the service provided to each agency. Barton-Aschman produced driver training and operating manuals, job descriptions for all positions within the system, and detailed operations procedures.

Evaluation of Transportation Services Provided by Community Chest Agencies--Rochester, New York. During the past several years, the Rochester regional community has invested significant resources in the provision of public transportation services. These efforts have been undertaken primarily through the Rochester-Genesee Regional Transportation Authority (R-GRTA). The service has generally emphasized programs useful for the average citizen, that is, for the greatest number of people.

However, since the specific needs of individuals can be so varied, this approach does not fulfill all transportation needs. In response to this situation, additional agencies, namely those generally identified with the United Community Chest organization, have entered the transportation service field. Moreover, this response has been partly stimulated by the availability of funds through state and federal programs, allowing the agencies to purchase transportation equipment.

The result is that several agencies in Rochester are now in the transportation business to serve people who, because of physical and mental characteristics, cannot make use of general public transportation services. The involvement of these agencies, whose initial mandate probably did not include transportation service as a significant function, creates the potential for problems. These may include higher than necessary service costs, duplication of service, equity of service, the capability to continue service, person-power or driver shortages, and equipment maintenance problems.

Barton-Aschman Associates recently examined ways to improve the coordination among these various agencies. The study described a series of improvements that could be acted upon. These concerned facilities, equipment, operations, routes, costs, maintenance, dispatching, service

RECENT MAJOR TRANSIT STUDY PROJECTS
(Table includes Only Projects Since 1970)

Title of Project	Year Completed	Title of Project	Year Completed
SHORT-RANGE AND TRANSIT DEVELOPMENT STUDIES		Southgate (California) TDP	1976
Toledo (Ohio) Technical Study	1970	Reno (Nevada) TDP	1976
San Juan (Puerto Rico) Technical Study	1971	Southfield (Michigan) Technical Study	1976
Tulsa (Oklahoma) Technical Study	1971	Du Page County (Illinois) Technical Study	1977
Denver (Colorado) Technical Study	1971	Champaign-Urbana (Illinois) TDP	1977
Burlington (Iowa) Technical Study	1971	Austin (Minnesota) Technical Study	1977
Southward Transit Area Coordination Study (Chicago)	1971	Muncie (Indiana) TDP	1977
Lehigh-Northampton Counties (Pennsylvania) TDP	1972	Nashville (Tennessee) TDP	1977
York (Pennsylvania) Technical Study	1972	Fayetteville (North Carolina) TDP	1977
Fargo-Moorhead (North Dakota-Minnesota) Technical Study	1972	Decatur (Illinois) TDP	1977
Jackson (Mississippi) Technical Study	1972	Northwest Indiana Transit Study	1977
Volusia County (Florida) Technical Study	1972	Spartanburg (South Carolina) TDP	1977
Colorado Springs (Colorado) Technical Study	1972	Chicago South Suburban Mass Transit District (Illinois)	1978
Chittenden County (Vermont) Technical Study	1973	Warren (Pennsylvania)	1978
Bloomington-Normal (Illinois) TDP	1973	Chapel Hill (North Carolina)	1978
North Suburban Chicago (Illinois) Immediate Action Study	1973	Anderson (South Carolina) TDP	1979
Grand Rapids (Michigan) Technical Study	1973	Hickory (North Carolina) TDP	1979
Indianapolis (Indiana) Immediate Action Study	1973	Mifflin County (Pennsylvania) TDP	1979
Sheboygan (Wisconsin) TDP	1974	Union City (California) TDP	1979
Meridian (Mississippi) Technical Study	1974	Catawba County (North Carolina)	1979
Santa Cruz (California) Technical Study	1974	LONG-RANGE STUDIES	
Charleston (South Carolina) Technical Study	1974	Milwaukee Mass Transit Technical Planning Study (Transitway)	1971
Fort Collins (Colorado) Technical Study	1974	Colorado Springs Technical Study	1972
St. Louis (Missouri) TDP Preparation	1974	Grand Rapids (Michigan) Technical Study	1973
West Volusia County (Florida) TDP	1975	Rochester (New York) Regional Growth Alternatives	1974
Wichita (Kansas) TDP	1975	Mid-Cities (Texas) Technical Study	1974
Wausau (Wisconsin) TDP	1975	Dallas Transit Study	1974
Mankato (Minnesota) TDP	1975	Tracked Air-Cushioned Feasibility Study for Dallas-Fort Worth	1974
Santa Rosa (California) TDP Update	1975	Wichita Long-Range Technical Study	1975
Rockford (Illinois) TDP	1975	Transit Planning Framework (RTD Denver)	1975
Islip (New York) TDP	1975	Statewide Multimodal Transportation Sketch Plan for North Carolina	1976
Chula Vista (California) TDP	1976	Houston (Texas) Corridor Analysis	1976
Santa Cruz (California) TDP	1976	San Diego-Los Angeles Corridor Study	1976
Decatur (Illinois) TDP	1976	Twin Cities (Minnesota) Policy Plan for Transit	1976
La Mirada (California) TDP	1976	Northern Virginia Distributor System Study, Phase II	1976
Mower County (Minnesota) Technical Study	1976	Lansing (Michigan) Technical Study	1977
Carson (California) TDP	1976	Nashville (Tennessee) Long-Range	1977
Johnstown (Pennsylvania) TDP	1976	AHS Practicality Analysis (FHWA)	1978
Cudahy (California) TDP	1976	Du Page County (Illinois) Long-Range Transit	1979
Commerce (California) TDP	1976	AGT Impacts (General Alternatives Analysis)	1979
Huntington Park (California) TDP	1976		

RECENT MAJOR TRANSIT STUDY PROJECTS (cont'd)
 (Table Includes Only Projects Since 1970)

Title of Project	Year Completed	Title of Project	Year Completed
TRANSIT OPERATIONS AND MANAGEMENT			
Buffalo (New York) Transit Economic Study	1971	Skyways in Gateway Center (Minneapolis)	1978
Analysis of Transit Operations—JFK International Airport (New York)	1971	Toronto Waterfront People-Mover Study	1978
Columbus (Ohio) Management, Marketing, and Valuation Study	1972	Denver Transitway/Mail Design Assistance	1979
Appleton (Wisconsin) Operations and Management	1974	Indianapolis Downtown People-Mover Feasibility Study	1979
Tidewater (Virginia) Management and Consolidation Study	1974	Charleston (South Carolina) Central Area Transit Study	1979
Marin County (California) Transit Operations Analysis	1974	FACILITIES PLANNING	
Management Study for WMATA (Washington, D.C.)	1975	Transbay Bus Terminal, San Francisco	1972
Duluth (Minnesota) Management Information System	1975	Flint (Michigan) Office/Bus Maintenance Facility	1974
Duluth (Minnesota) Management and Organization Study	1975	Duluth (Minnesota) Maintenance Facility Analysis	1975
Dakota-Washington County (Minnesota) Route Ridership Study	1976	Milwaukee Transportation Center Study	1976
Mankato (Minnesota) Management Information System	1977	Northeast Corridor (Washington-Boston) Rail Station Planning	1976
Variable Work Hours Study, Twin Cities (Minnesota)	1977	Sioux City (Iowa) Transit Center	1978
Daytona Beach (Florida) Transit Operations and Marketing Study	1978	Milwaukee (Wisconsin) Transportation Center	1977
DART Service Standards Development (Wilmington, Delaware)	1978	Chula Vista (California) Transit Center	1977
Computerization of Management Functions, Toledo (Ohio)	1978	Long Beach (California) Transit Center	1977
Gary (Indiana) Route and Schedule Analysis	1978	Omaha Transportation Center	1977
Palm Beach County (Florida) Management and Operations Study	1976	Milwaukee Transit Facility Study	1978
Springfield (Illinois) Route and Schedule Analysis	1979	Anaheim (California) Transportation Center	1978
Update Analysis of Transit Operations—JFK International Airport (New York)	1979	RTA (Illinois) Satellite Garages Design	1978
CENTRAL BUSINESS DISTRICT TRANSIT STUDIES			
St. Paul (Minnesota) Circulation and Distribution Study	1972	Bramalea City Center Terminal, Brampton, Ontario	1978
Santa Barbara (California) CBD/TSM Study	1975	Sacramento (California) Transportation Center	1978
Los Angeles CBD Circulation and Distribution Study	1976	Iowa State Ground Transportation Center Development Planning and Design Guidelines	1979
Minneapolis Bus Lane Alternative Study	1976	Environmental Impact Assessment of CTA Bus Garage (Chicago)	1979
Alexandria (Virginia) Minitransit System	1976	Indianapolis (Indiana) Inter-Modal Transportation Center	1979
Crystal City (Virginia) People-Mover Study	1977	WMATA Bus Garage EIS Assistance, Washington, D.C.	1979
Albany (New York) Downtown Circulation Study	1977	Mobile (Alabama) Transit Facility Study	1979
Rochester (New York) CBD Transit Mail Design	1977	Gary (Indiana) Maintenance Facility	1979
Downtown Denver Circulation Study	1977	District Center Terminal Design, Erin Mills, Ontario	1979
Pasadena (California) Shuttle Bus Study	1977	MTC Maintenance Facilities Study (Minneapolis)	1979
Nashville (Tennessee) Downtown People-Mover	1977	Fayetteville (North Carolina) Ground Transportation Center	1979
Santa Monica (California) Central Area Circulation Study	1978	South Common Terminal Design, Erin Mills, Ontario	1979
PARA-TRANSIT, ELDERLY AND HANDICAPPED			
		North Dakota Rural Transportation Demonstration	1975
		Integration of School Bus and Public Transit Services in the Twin Cities (Minnesota)	1975
		Coordination of Taxi Services in the Twin Cities (Minnesota)	1975

RECENT MAJOR TRANSIT STUDY PROJECTS (cont'd)
 (Table Includes Only Projects Since 1970)

Title of Project	Year Completed	Title of Project	Year Completed
Northeast Suburban St. Paul Transportation Study	1976	Forecasting Travel Demands of the Economically Disadvantaged	1979
Dial-a-Ride Operations Planning (Lake-Porter Counties, Indiana)	1976	Development of Long-Range Transportation Planning Models, Houston	1979
Champaign County (Illinois) Retrofit Application	1977	Seattle Mode Split Modeling	1979
Decatur (Illinois) Elderly and Handicapped Study	1977	OTHER TRANSIT STUDIES	
Austin (Minnesota) Technical Study	1977	Dual-Mode Case Study: Milwaukee (UMTA)	1972
Rockville (Maryland) Feasibility Study	1977	Orange County (California) Park-and-Ride Study	1975
Human Service Agency Transportation Study (Rochester, New York)	1977	Morgantown PRT Evaluation	1975
Du Page County (Illinois) Shared-Ride Taxi Study	1978	Analysis of Means to Obtain Better Use of Existing Urban Transportation Facilities	1975
Spartanburg Elderly and Handicapped Study	1979	Transit Station Simulation Project (UMTA)	1975
TRAVEL DEMAND FORECASTING		Market Evaluation of Radio Communication Systems	1976
Ridership and Revenue Impact Analysis, WMATA Metro	1971	Arlington (Virginia) Corridor Study	1976
Mode Choice Model Development Assistance, Philadelphia	1973	St. Louis (Missouri) Transit Needs Analysis	1976
Metrorail Ridership Forecasts, Dulles Airport Corridor, Washington, D.C.	1975	Twin Cities (Minnesota) Low-Capital Alternatives Study	1977
Internal CSD Travel Demand Modeling, Los Angeles	1976	Denver East Corridor Transit Study	1977
WMATA Branch Avenue Line Environmental Impact Statement, Washington, D.C.	1977	UMTA Equity Study—Title VI Equity Transit	1977
SCAG/LARTS Mode Split Model Development, Los Angeles	1977	Short-Range Planning Software Systems Development (UMTA)	1978
Patronage Estimates for the Peninsula Transit Alternatives Project, San Francisco	1977	AGT Station Security Requirements	1976
Travel Demand Analysis, Buenos Aires, Argentina	1978	Los Angeles Title VI Submittal	1978
St. Paul DPM Ridership Forecasting	1978	Rehabilitation and Expansion of Buenos Aires Subway System	1979
Economic Planning Study for Garrett County, Maryland	1979	Inter-Modal Roadway Feasibility Study (FRA)	1979
		UMTA Equity Study—Title VI Phase 2	1979
		Transportation System Analysis of Energy and Environmental Impacts (Argonne National Lab)	1979

1971
1972

1973
1974

1975
1976

APPENDIX B

Equal Employment Opportunity Policy
and
Affirmative Action Plan

LACTC has been furnished a copy of Multisystems' EEO/AA Plan on file in conjunction with our work for the LACTC Taxi Study.

Additional copies will be submitted to LACTC upon request.

