

**ANNUAL REPORT
THE COUNCIL FOR
ADVANCED
TRANSPORTATION
STUDIES
1978**

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The University of Texas at Austin

PREFACE

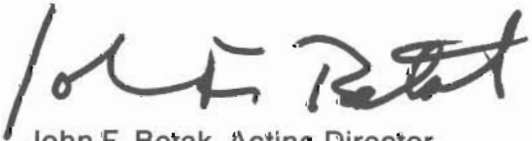
As in previous years, the Council's activities have expanded during 1977-78. The Council participated in ten funded activities and numerous other activities involving 17 different sponsors. The Council has continued major research involving the Texas Office of Traffic Safety, the United States Department of Transportation, the United States Forest Service, and the United Nations and World Bank, and has added other services and activities. The activities and capabilities of the Regional Transportation Information System have been expanded, providing students and faculty with rapid access to transportation data, publications, and information.

The Council again provided national leadership by organizing and cosponsoring the 2nd Southwest Conference on Mobility Programs for the Transportation Disadvantaged and conducted numerous other educational programs.

On September 1, 1978, Dr. John F. Betak assumed the position of Acting Director of the Council. Dr. Betak brings a wealth of experience in transportation research and in the activities of the Council, having served as Assistant Director for the past five years. With this background, Dr. Betak will provide the leadership which will allow the Council to grow and serve the needs of the local government, the state, and the nation.



Thomas W. Kennedy, Director



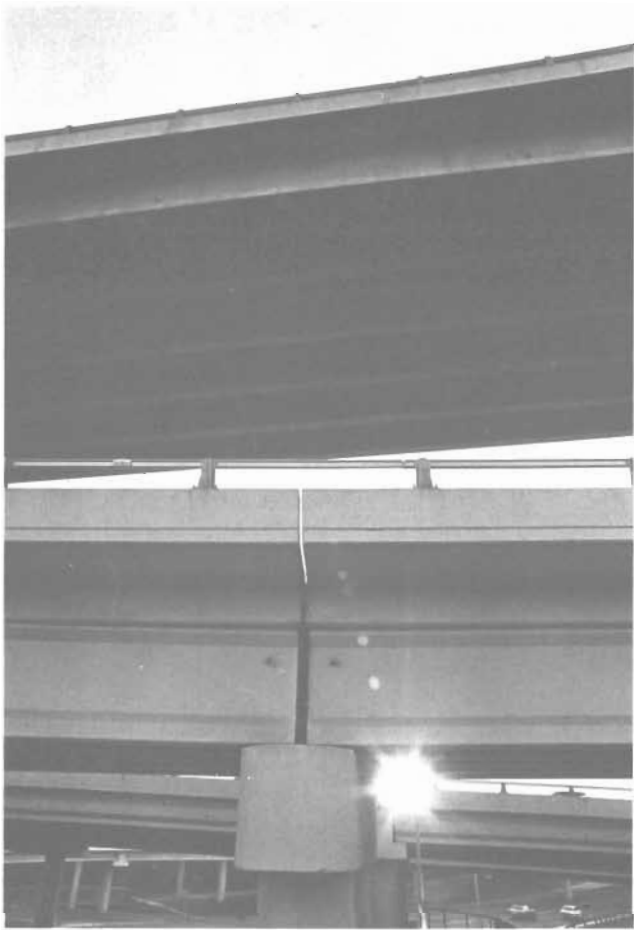
John F. Betak, Acting Director



John F. Betak and Thomas W. Kennedy

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The University of Texas at Austin

ORGANIZATIONAL OBJECTIVES AND ACCOMPLISHMENTS

FUNCTIONAL MISSION

The Council for Advanced Transportation Studies is a multidisciplinary organization established in May of 1972 by the Office of the President of the University to coordinate research and educational programs in transportation. Its steadily expanding and increasingly diverse spectrum of programs encompasses national, state, and local transportation problems. Drawing on the varied resources of the University's colleges and schools, these programs provide an academic background for the development of professional careers in several fields of transportation. Through its coordinating efforts, the Council has enabled faculty and students to work closely with both the private sector and government agencies towards common goals and interests in transportation education and research.

OBJECTIVES

In response to the transportation needs of the state, the nation, and local communities, the Council has developed a repertoire of diverse activities including research, education, information services, and public service components. The Council's overall objective is to combine these varied components into a coordinated university program.

RESEARCH

In its efforts to encourage transportation-related research within the University, the Council performs four basic services: (1) it identifies new areas for research, (2) it seeks out experienced faculty to conduct that research, (3) it locates external funding to support faculty research, and (4) it coordinates on-going research within the University. The Council's research program enables academic expertise to be applied to current transportation problems and links the University with industry, other universities, planning agencies, and all levels of government.

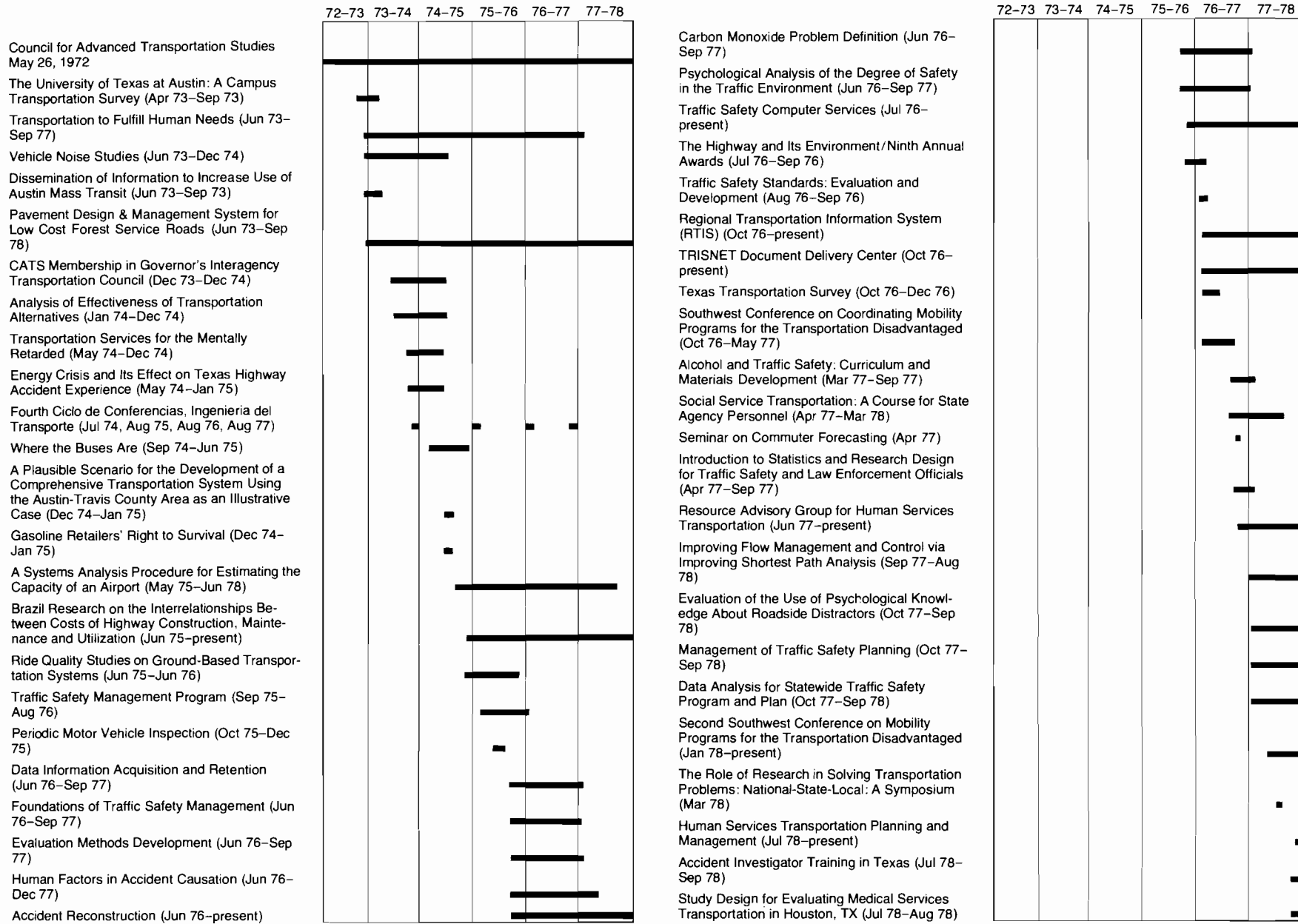
EDUCATION

The Council coordinates the development and teaching of transportation-related courses at the University of Texas at Austin. Studies in transportation may be undertaken in several undergraduate and graduate level programs. Colleges and schools participating in these programs are:

- Community and Regional Planning
- Business Administration (Management, Marketing, and General Business)
- Communication
- Engineering (Aerospace, Civil, and Mechanical)
- Law
- The Lyndon B. Johnson School of Public Affairs
- Social and Behavioral Sciences (Geography, Psychology, and Sociology).

The Council has developed a brochure entitled "Studies in Transportation" which describes transportation-related degrees, majors, programs, and courses. In addition to its academic activities within the University, the Council conducts short courses, workshops, and conferences on current transportation-related topics for a variety of private and public organizations.

Figure 1
PROJECTS BY ACADEMIC YEAR



INFORMATION SERVICES

The Regional Transportation Information System (RTIS) is the Council's information center. It contains materials and data on various transportation-related topics, including traffic safety, urban transportation, rural transportation, and transportation engineering. RTIS also has access to a national computerized information retrieval system containing selected references to technical literature and current research in transportation.

In addition to providing access to a growing collection of documents and data, RTIS houses a staff which researches and analyzes information for public and private organizations with interests in transportation. The Council also makes a continuous effort to use its RTIS resources to disseminate information which is of current interest.

PUBLIC SERVICE

Whenever possible, the Council assists public and private organizations charged with responsibility for various aspects of transportation. In the past the Council has contributed its expertise to work done by groups associated with the transportation disadvantaged, the highway environment, commuter forecasting, and the evaluation and development of traffic safety standards.

SPECIAL EVENTS OF 1977-1978

JOHN W. HUDDLESTON RECEIVES AWARD FROM THE NATIONAL COUNCIL FOR THE TRANSPORTATION DISADVANTAGED (FEBRUARY 1978)

In February 1978, John W. Huddleston, Research Associate of the Council, received the 1978 "Spirit of Achievement" Award to an Individual from the National Council for the Transportation Disadvantaged (NCTD). By presenting this award to John Huddleston, the NCTD recognized his efforts to increase awareness of human services transportation and of the elderly, handicapped, and low income populations who need it most. John Huddleston's friends and colleagues at the Council are pleased that he was accorded a national award of the status of the NCTD award before his death in March 1978.

John Huddleston joined the Council in 1973 as a Social Science Research Associate. For the previous six years, he had been an Assistant Professor of English at The University of Texas at Austin. He received his B.A. and M.A. at the University of California at Los Angeles and undertook Ph.D. studies at the University of California at Irvine.

At the Council, he was primarily involved in transportation research and training. He did most of the organization work for the first Southwest Conference on Coordinating Mobility Programs for the Transportation Disadvantaged, held in San Antonio in February 1977. He also coordinated the Human Services Transportation Short Course which followed up the conference in August 1977. He attended many transportation conferences in Texas and in other



states and delivered papers on such topics as the influence of interurban transportation systems on rural communities, alternative organizational structures for transportation systems, and the need for a national policy on mobility for the transportation disadvantaged. Through his public speaking and published papers, he was known nationally as a thoughtful spokesman for human services transportation.

SECOND SOUTHWEST CONFERENCE ON MOBILITY PROGRAMS FOR THE TRANSPORTATION DISADVANTAGED (AUGUST 8-11, 1978)

Project Director: John F. Betak

Project Manager: Michael K. Allen

Sponsors: Resource Advisory Group for Human Services Transportation (Texas) and the United States Department of Transportation

The Council coordinated the 2nd Southwest Conference on Mobility Programs for the Transportation Disadvantaged, held in Houston, Texas, from August 8-11, 1978. Participants in the conference included over 200 representatives from federal, state, and local social service agencies, transportation providers, consumer groups, and transportation planners from 16 states and the U.S. territory of American Samoa. The conference focused on the topic of evaluation of transportation programs for the transportation disadvantaged, a group which includes the elderly, handicapped, and low income.

The three General Sessions of the conference consisted of panel presentations, followed by discussion among panel members and with the audience. The first General Session assessed the types of transportation that have been available to the transportation disadvantaged and explored current and future developments in the field. The second General Session

examined current and pending legislation to identify the evaluation requirements which are currently built into federal programs and the elements of pending legislation which may affect evaluation. In the third General Session, alternative methods of providing transportation for the transportation disadvantaged were examined, and the approaches of different states and regions were presented and compared.

In workshop sessions, participants pursued in depth issues raised in the General Sessions. The workshops considered the objectives and ramifications of specific acts of legislation and their effects on transportation operations and addressed the major problem of determining meaningful criteria for evaluating the effects of federal programs.

Special topic forums were also convened to deal with problems such as estimating transportation costs, insurance, vehicle and equipment selection, and coordination and consolidation of transportation programs.

Conference speakers included Mr. Ira Kaye of the Office of Rural Development, U.S. Department of Agriculture; Mr. John Salvesen of the National Council for the Transportation Disadvantaged; Mr. Glen Ford, Regional Director of the Urban Mass Transportation Administration; and Mr. Phillip L. Wilson of the Texas Department of Highways and Public Transportation.

In the final meeting of the Conference, six resolutions were formulated and adopted in plenary session. Four resolutions relate to four acts of federal legislation affecting programs for the transportation disadvantaged. A fifth resolution concerns vehicle and equipment selection for the transportation disadvantaged. A sixth resolution dedicates the 2nd Southwest Conference on Mobility Programs for the Transportation Disadvantaged to the memory of John W. Huddleston, formerly of the Council for Advanced Transportation Studies, who organized the 1st Southwest Conference in 1977 and was known nationally for his efforts to increase human services transportation awareness throughout Texas and the United States.



10TH ANNUAL AWARDS/1977: THE HIGHWAY AND ITS ENVIRONMENT

Sponsor: U.S. Department of Transportation, Federal Highway Administration

Dr. John F. Betak, Assistant Director of the Council, participated as one of seven judges in the 10th Annual Awards competition of "The Highway and its Environment," sponsored by the Federal Highway Administration and held in Chicago on October 27-28, 1977. The contest, held annually, is designed to give public recognition to agencies, organizations, and business enterprises which have taken action to protect, preserve, and enhance the highway environment. Sections of highway and adjacent structures are cited for excellence on the basis of how well they complement the surrounding environment.



Figure: 2

PROJECTS AND ACTIVITIES OPERATING IN 1977–1978

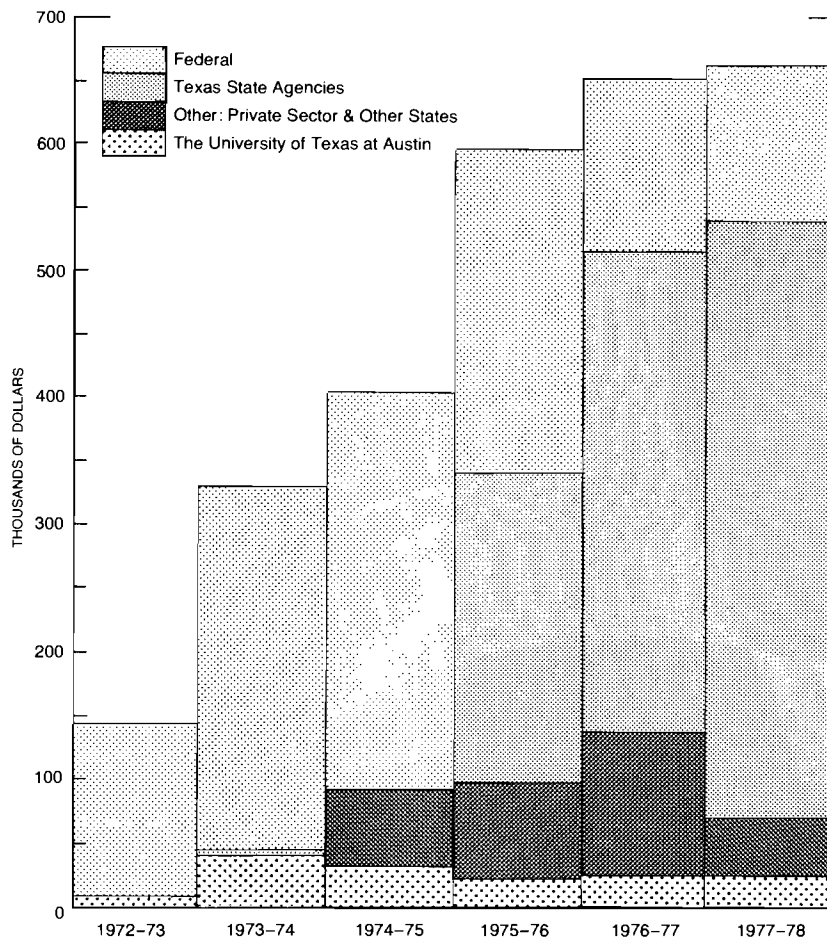
<i>Project</i>	<i>Sponsor</i>
1. Brazil Research on the Interrelationships Between Costs of Highway Construction, Maintenance, and Utilization	Ministerio dos Transportes—Brazil Empresa Brasileira de Planejamento de Transportes—GEIPOT United Nations Development Program International Bank for Reconstruction and Development
2. Pavement Design and Management System for Forest Service Roads—Phase III: Implementation	U.S. Forest Service
3. A Systems Analysis Procedure for Estimating the Capacity of an Airport	U.S. Department of Transportation
4. Accident Reconstruction	Texas Office of Traffic Safety
5. Accident Investigator Training in Texas	Texas Office of Traffic Safety
6. Improving Flow Management and Control via Improving Shortest Path Analysis	U.S. Department of Transportation
7. Evaluation of the Use of Psychological Knowledge About Roadside Distractors	Texas Office of Traffic Safety
8. Study Design for Evaluating Medical Services Transportation in Houston, Texas	Texas Department of Human Resources
9. Alcohol and Traffic Safety: Curriculum and Materials Development	Texas Education Agency
10. Management of Traffic Safety Planning	Texas Office of Traffic Safety
11. Social Service Transportation: A Course for State Agency Personnel	Coordinating Board, Texas College and University System
12. Human Services Transportation Planning and Management	Coordinating Board, Texas College and University System
13. The Role of Research in Solving Transportation Problems: National-State-Local: A Symposium	Department of Civil Engineering, U.T./A. Council for Advanced Transportation Studies Center for Highway Research Bureau of Engineering Research Student Chapter, Institute of Transportation Engineers, U.T. at Austin Student Chapter, American Society of Civil Engineers, U.T. at Austin
14. TRISNET Document Delivery Center	U.S. Department of Transportation Council for Advanced Transportation Studies
15. Data Analysis for Statewide Traffic Safety Program and Plan	Texas Office of Traffic Safety
16. Traffic Safety Computerized Services	Texas Office of Traffic Safety
17. Resource Advisory Group for Human Services Transportation	Nine state agencies and three university components
18. Second Southwest Conference on Mobility Programs for the Transportation Disadvantaged	Resource Advisory Group U.S. Department of Transportation
19. Contemporary Transportation Issues	Department of Civil Engineering Council for Advanced Transportation Studies
20. Topics in Transportation	General and Comparative Studies Council for Advanced Transportation Studies

ACTIVITIES

The Council's activities in the past year have expanded into new areas and strengthened previous commitments. Of the 20 projects and activities listed in Figure 2, 8 are new projects and 12 are the continuation of projects begun in previous years. Eight projects may be said to deal primarily with research, 7 with education, 3 with information services, and 2 are the most important of the Council's several public service activities. These projects represent an allocation of approximately \$650,640 (see

Figure 3). In addition, a significant amount of time and services has been contributed by the University faculty, staff, and officials from the public and private sectors. This year, Council programs have involved 42 faculty and professional staff, 32 graduate students, 5 undergraduate students, 7 full-time technical staff, and 6 full-time support staff.

Figure 3
PROJECT FUNDS 1972-78: ALLOCATION AND GROWTH



RESEARCH

BRAZIL RESEARCH ON THE INTER-RELATIONSHIPS BETWEEN COSTS OF HIGHWAY CONSTRUCTION, MAINTENANCE, AND UTILIZATION (1975-1980)

Principal Investigator: W. Ronald Hudson,
Civil Engineering

Sponsors: Ministerio dos Transportes—
Brazil
Empresa Brasileira de Planejamento de
Transportes—GEIPOT
United Nations Development Program
International Bank for Reconstruction and
Development

A major research program on the inter-relationships between costs of highway construction, maintenance, and utilization is being conducted in Brazil to develop an improved highway planning model for low volume roads in developing countries. This model will define the interrelationships between the three components affecting road transportation costs—construction,

maintenance, and utilization—and will assist administrators in Brazil and in other developing countries in making decisions toward optimizing investments. The main activity of the past year has been the collection and preliminary analysis of data via three tools: 1) a series of road user cost surveys designed to obtain vehicle operating cost data that will be analyzed to establish relationships between individual user operating costs (in terms of tires, gasoline, maintenance, oil, depreciation, etc.) and those characteristics of roadways that influence these costs; 2) road user costs and traffic experiments that will produce a model for predicting speed and fuel consumption for rural roads as a function of the road's geometry and surface quality; and 3) pavement and maintenance studies to measure the performance of pavements constructed with different materials and at different times under different traffic loadings and maintenance programs. The basic research is being conducted on rural highways in the central Brazilian states of Minas Gerais and Goiás and in the Federal District, with satellite studies in other areas of Brazil as needed and when economically feasible. At the University of Texas at Austin, a support staff has built a reference collection and transmitted it to Brazil and is analyzing and evaluating computer models to assess their usefulness in the Brazil research.



A PAVEMENT DESIGN AND MANAGEMENT SYSTEM FOR FOREST SERVICE ROADS. PHASE III: IMPLEMENTATION (1976-1978)

Co-Principal Investigators: B. Frank McCullough, Civil Engineering and W. Ronald Hudson, Civil Engineering

Sponsor: United States Forest Service

Since its inception in July 1974, the research project "Pavement Design and Management System for Forest Service Roads" has gone through three phases. Phase I was devoted to the formulation of a preliminary conceptual system; Phase II produced a working model of a computerized pavement design and management system; and Phase III has been a testing and implementation stage. During the past two years, the system has been successfully incorporated into Forest Service operations in about 20 National Forests in the states of Oregon, Washington, Montana, Idaho, Utah, Colorado, Florida, Arkansas, and Georgia. Through a sensitivity analysis that includes all input variables contained in the Program User's Manual, problems in the system have been corrected and the system has been improved. The system will allow the Forest Service to plan and design its roads in light of the kind of use which they will absorb over a period of years. It will also allow for cost projection over about the next 20 years.

Another facet of Phase III has been a series of training sessions for Forest Service personnel who have been using the system on a trial basis. In the past year, two sessions have been held, one in Portland, Oregon, and the other in Missoula, Montana.

A SYSTEMS ANALYSIS PROCEDURE FOR ESTIMATING THE CAPACITY OF AN AIRPORT (1975-1978)

Principal Investigator: B. Frank McCullough, Civil Engineering

Sponsor: United States Department of Transportation

The purpose of the research undertaken in the project "A Systems Analysis Procedure for Estimating the Capacity of an Airport" is the development of a viable tool for predicting the effects on capacity of altering the location, operation, or design of individual components within an airport terminal. For the purposes of this research, the terminal building is conceived of as a network and is partitioned into modular components. A recursive algorithm is used to allocate flows of passengers, visitors, and baggage among the components during successive time intervals. Component models are utilized to compute service completions and congestion measures at each component during each time interval. The congestion measures are compared to "acceptable" limits of congestion, as specified by airport users. The system provides a means of identifying where in the airport network congestion is occurring and the possibility of isolating and correcting the faulty component. The main activity of the past year has been data collection, in four Texas airports, for the purpose of testing the ACAP model computer program. It is felt that the model will be most useful to consultant engineers and airport managers responsible for designing new airports and/or enlarging existing facilities.

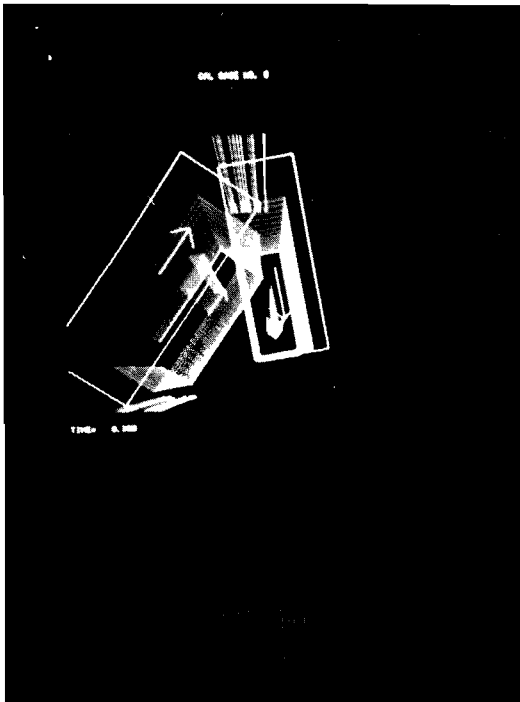
ACCIDENT RECONSTRUCTION (1977-1978)

Project Managers: Walter S. Reed, Mechanical Engineering, and Craig C. Smith, Mechanical Engineering

Sponsor: Texas Office of Traffic Safety

The goal of the Accident Reconstruction project is to develop computer techniques for accident simulation that will allow investigators to reconstruct traffic accidents with more accuracy than has been previously possible. Initially, programs that had been developed at Calspan Corporation under the sponsorship of the National Highway Traffic Safety Administration were obtained and implemented on our computer facilities. Graphical capability was also developed, which allowed greater interaction between the investigator and

the computer programs. During the past year, the system has been used to reconstruct about eight fatal accidents in Travis County and two others of special interest outside Travis County. During the process, the Project Managers have consulted with the Austin Police Department and the District and County Attorneys' Offices concerned with the accidents being reconstructed. Additionally, based upon the experience gained thus far, new computer programs and techniques are being developed, aimed at a modularized approach to accident simulation which will allow an investigator to define separate phases of an accident and to examine each phase individually. In this way, the computer will provide immediate feedback on the "goodness" of assumptions related to a particular phase. Accidents can be reconstructed in this way at much lower cost than when using a large full-scale computer program. It is expected that eventually this approach will also allow implementation of the programs on a mini- or micro-computer which could be installed in a police department office at a relatively low cost. Two videotapes on computer simulation of motor vehicle accidents have been produced, and findings have been presented to police officers from all over Texas at the Advanced Accident Investigator Course sponsored by the Office of Traffic Safety.



Simulation of a motor vehicle accident on a mini-computer screen

ACCIDENT INVESTIGATOR TRAINING IN TEXAS (July–September 1978)

Project Manager: Walter S. Reed, Mechanical Engineering

Sponsor: Texas Office of Traffic Safety

Under the short-term project entitled "Accident Investigator Training in Texas," the Project Team attended the Advanced Accident Investigator Course sponsored by the Texas Office of Traffic Safety and held at Texas A & M University in August 1978. The Project Manager and colleagues presented an overview of the procedures and applications of computer simulation of motor vehicle accidents, based on their findings under the Accident Reconstruction project. The Project Team also developed and tested a short survey designed to measure attitudes of law enforcement officials towards accident investigation, e.g., what priority such officials placed on accident investigation as opposed to investigation into other types of crime. This survey was distributed to and filled out by the 25 attendees of the Advanced Accident Investigator Course.

IMPROVING FLOW MANAGEMENT AND CONTROL VIA IMPROVING SHORTEST PATH ANALYSIS (1977–1978)

Principal Investigator: Darwin Klingman, General Business and Computer Sciences

Sponsor: United States Department of Transportation

The specific purpose of the project "Improving Flow Management and Control via Improving Shortest Path Analysis" is to improve computer tools for flow management and control by conducting a full-scale, interdisciplinary investigation of in-core out-of-core shortest path algorithms.

Shortest path analysis, which involves finding shortest paths from all members of some subset of network intersections to all members of some other subset of intersections, has proved valuable in diverse practical applications, e.g., in planning transit system expansion and vehicle routing; in preparing time and distance charts; in comparing modes of transportation; and in estimating the effects of reallocating transit vehicles. Shortest path analysis has been increasingly relied upon in recent years, and the number and complexity of shortest path models has been steadily growing. The more realistic models become (i.e., the more closely they represent real-life situations), the larger and more complex they become, and the more data must be entered in the computer memory, with the concomitant risk of rapidly consuming the available memory space.

The importance of the research conducted during the past year under this project is that it has produced a means of storing computer data in external devices, or "out-of-core," and a means of retrieving this data that is only ten percent slower than the best in-core codes (where all data is stored in the computer memory) when solving problems in an in-core mode. On large-scale computers, these new algorithms, or codes, are able to solve problems involving millions of variables. Consequently, researchers can begin to build and solve much larger, more realistic mathematical models for transportation-related problems. In addition, reducing memory requirements will allow these important planning and evaluation tools to be run with smaller computer configurations, thereby producing cost savings as well as making these tools available to new groups of users who do not have large-scale facilities.



EVALUATION OF THE USE OF PSYCHOLOGICAL KNOWLEDGE ABOUT ROADSIDE DISTRACTORS (1977-1978)

Project Manager: Charles J. Holahan, Psychology

Sponsor: Texas Office of Traffic Safety

The project "Evaluation of the Use of Psychological Knowledge about Roadside Distractors" follows up a project conducted in 1976-77 that was designed to identify roadside distractors in the traffic environment. The Evaluation project has as its objective to facilitate the implementation of traffic safety standards at the local level regarding (1) the regulation of commercial signs and lights and (2) the design and placement of traffic control devices. A major activity of the past year has been the compilation and analysis of data on night traffic accidents at selected intersections in Austin with a view to determining the relationships between lighted commercial distractors and specific types of night accidents. The Project Team has also developed a Lighted Distractor Inventory (LDI) which provides categories for types of distracting stimuli on the basis of size, motion, colors of background and lettering, and relative proximity to the traffic regulatory device or sign. A third aspect of the project involves the compilation of information on psychological knowledge of commercial distractors and traffic accidents, communication of this information to city traffic officials, and the evaluation of actual utilization of this knowledge by city traffic officials.

STUDY DESIGN FOR EVALUATING MEDICAL SERVICES TRANSPORTATION IN HOUSTON, TEXAS (July-August 1978)

Co-principal Investigators:
John F. Betak, Council for Advanced Transportation Studies
Mark Daskin, Civil Engineering
Randy B. Machemehl, Civil Engineering
Ronald Briggs, Geography, University of Texas at Dallas

Sponsor: Texas Department of Human Resources

In July 1978, the Council undertook a short-term project to develop a plan for conducting comprehensive evaluations of two contracts for the provision of medical transportation to Title XIX recipients in the Houston metropolitan area. The contracts to be evaluated are between the Texas Department of Human Resources (DHR) and the Greater Houston Transportation Company (Yellow Cab Company) and between DHR and HouTran, Inc., the agency responsible for public transportation in Houston. The plan for evaluating these two contracts will serve as a model for carrying out evaluations of medical services transportation in other urban areas.

RESEARCH DEVELOPMENT: PROPOSALS

The Council regularly monitors information sources to determine potential state or national sponsors for transportation research interests of the University community. During the past year, the Council has circulated approximately 150 requests for proposals among its Faculty Associates. Of these requests, the following research proposals were submitted through the Council to the sponsoring agency:

"Human Services Transportation Planning and Management" was submitted to the Coordinating Board, Texas College and University System, on October 31, 1977. The Principal Investigator was Dr. C. Michael Walton, Department of Civil Engineering. This proposal was funded for twelve months beginning April 1, 1978.

"Urban Change and Ethnic and Class Integration" was submitted to the National Institute of Mental Health on November 1, 1977. The Principal Investigators were Dr. John F. Betak; Dr. Charles J. Holahan, Department of Psychology; and Dr. Barbara J. Chance, Department of Sociology. On January 11, 1978, the University received a site visit from a committee designated by NIMH and consisting of Mr. Maury Liebermann, Center for Studies of Metropolitan Problems, NIMH; Dr. Robert Weiss, Laboratory of Community Psychiatry, Harvard Medical School; and Dr. James Taylor, School of Social Welfare, University of Kansas.

"A Linguistic Theory of Individual Travel Behavior" was submitted to the Department of Transportation on December 1, 1977. The Principal Investigator was Dr. John F. Betak.

"Development of Cost-Effectiveness Measures and a Planning Methodology for Transportation Services for the Elderly and Handicapped" was submitted to the Department of Transportation, Urban Mass Transportation Administration, on January 20, 1978. The Principal Investigator was Dr. Sandra Rosenbloom, Graduate Program in Community and Regional Planning. This proposal received funding for the 1978-79 fiscal year.

"Human Services Transportation Planning and Management: An Educational and Training Program" was submitted to the Department of Transportation, Urban Mass Transportation Administration, on January 20, 1978. The Principal Investigators were Dr. C. Michael Walton and Dr. Randy B. Machemehl, both of the Department Civil Engineering.

A Contract Renewal Request for the proposal "Improving Flow Management and Control by Improving Shortest Path Analysis" was submitted to the Department of Transportation on April 3, 1978. The Principal Investigator was Dr. Darwin Klingman, Computer Sciences. This proposal received funding for the 1978-79 fiscal year.

EDUCATION

CONTEMPORARY TRANSPORTATION ISSUES

Instructors: Thomas W. Kennedy, Council for Advanced Transportation Studies and Civil Engineering, Fall 1977
C. Michael Walton, Civil Engineering, Spring 1978

Sponsors:
Department of Civil Engineering
Council for Advanced Transportation Studies

The purpose of the graduate transportation seminar (CE 391T and UC 380) conducted each semester is to provide a forum for presenting current issues of major significance facing the transportation sectors of our society and environment. The seminar is structured so as to provide the students with exposure to the thinking of individuals who are engaged in various facets of the transportation profession. The intent is to broaden the students' knowledge and awareness of current issues. The theme for the course in Spring 1978 was "State and Local Transportation Issues."

TOPICS IN TRANSPORTATION

Instructor: David A. Sands, Fall 1977

Sponsors:
Division of General and Comparative Studies
Council for Advanced Transportation Studies

This undergraduate course (TNS 320) is intended to give a broad overview of the field of transportation. The course is designed to cover transportation modes and alternatives, the current state-of-the-art, and concepts of planning and controlling transportation development from a multidisciplinary standpoint. The seminar gives the students an overview of transportation policy and planning on a state and national level. Students obtain valuable practical experience in solving transportation-related problems through participation in group projects.

ALCOHOL AND TRAFFIC SAFETY: CURRICULUM AND MATERIALS DEVELOPMENT (March–September 1977)

Project Director: David A. Sands, Council for Advanced Transportation Studies

Sponsor: Texas Education Agency

Under the project "Alcohol and Traffic Safety," a four-hour prototype curriculum was developed treating implications of, and means to avoid, driving or riding with a driver impaired by alcohol. The curriculum will be included in the State Driver Education Program by the Texas Education Agency. In September 1977, members of the project staff traveled to Spicewood, Texas, to conduct a workshop about the new curriculum for forty coordinators from the twenty Regional Education Service Centers in Texas.



Dr. Randy B. Machemehl addresses Traffic Safety Coordinators at the Problem Identification Short Course in January, 1978.

MANAGEMENT OF TRAFFIC SAFETY PLANNING (1977-1978)

Project Manager: Stephen T. Martin

Sponsor: Texas Office of Traffic Safety

The project "Management of Traffic Safety Planning" has had two components: (1) a training package of four short courses conducted for the Traffic Safety Coordinators of the Texas Office of Traffic Safety (OTS) and (2) the compilation of data sets on Texas accidents to be delivered to the field staff of OTS. Four three-day short courses on the subjects of Planning, Problem Identification, Counteractivity Design, and Evaluation, respectively, were conducted throughout the past year for Texas Traffic Safety Coordinators. The four topics correspond to the four components of systems analysis, or systems management, and are designed to establish a systems management approach to the analysis of traffic safety.

The data set that has been developed under this project, *ACCIDENT RECORD SUMMARY 1977*, is a summary of Texas accidents in 1977 composed of cross-

tabulations of one dependent variable, severity of accident, with 14 independent variables, such as age of driver, rural/urban population group to which driver belongs, type of roadway, and weather conditions. This data is collected and cross-tabulated for three types of jurisdictions: OTS district (a grouping of counties), each county in a district, and each city of 25,000 or over in each county. Using the data set, Traffic Safety Coordinators will be able to isolate traffic safety problems with greater precision, pinpointing their exact location in a county. They will also be able to predict with greater accuracy the effects of implementing a certain countermeasure.

A "Synthesis Seminar on Systems Management" was held in July 1978 for the state staff of the Office of Traffic Safety. In addition, a fifth short course entitled "Synthesis Workshop" was conducted for Traffic Safety Coordinators in September 1978.

SOCIAL SERVICE TRANSPORTATION: A COURSE FOR STATE AGENCY PERSONNEL (1977-1978)
HUMAN SERVICES TRANSPORTATION PLANNING AND MANAGEMENT (1978-1979)

Project Manager: C. Michael Walton, Civil Engineering

Sponsor: Coordinating Board, Texas College and University System

The two projects "Social Service Transportation: A Course for State Agency Personnel" and "Human Services Transportation Planning and Management" are two phases of one community service activity. Both projects are a response to the following situation: state social service agencies that provide such programs as medical care, nutritional services, day care, and rehabilitation services find that they must often provide transportation for their clients to these primary services. These two projects are primarily training projects designed to enable the personnel of these agencies to acquire some expertise in transportation planning and management. A further-reaching intent of the projects is to provide state agency personnel with tools for planning and implementing a coordinated statewide human services transportation system to replace the agency-specific and duplicative systems that now exist.

In the past year, the project staff has developed curriculum for a two-day short course entitled "Human Services Transportation Planning and Management" on transportation system planning, cost identification, budgeting, and program evaluation and monitoring, to be offered three

times during the project year. A specialized Human Services Transportation Planning and Management Seminar was held at the University of Texas at Austin on January 9-10, 1978, and was attended by about 40 program administrators, regional and local transportation planners, and transportation providers. Funds from these projects also supported the 2nd Southwest Conference on Mobility Programs for the Transportation Disadvantaged, held in Houston on August 8-11, 1978. Activities planned for the coming year include producing a set of manuals to be used by state agency personnel as guides for planning, managing, and evaluating human services transportation programs.

THE ROLE OF RESEARCH IN SOLVING
TRANSPORTATION PROBLEMS: NA-
TIONAL-STATE-LOCAL: A SYMPOSIUM
(March 1978)

Program Chairman: Grover Cunningham,
Council for Advanced Transportation
Studies

Sponsors: Department of Civil Engineering,
University of Texas at Austin
Council for Advanced Transportation
Studies

Center for Highway Research
Bureau of Engineering Research
Student Chapter, Institute of Transporta-
tion Engineers, University of Texas at
Austin

Student Chapter, American Society of Civil
Engineers, University of Texas at Aus-
tin

On March 13, 1978, the Council co-
sponsored a symposium on "The Role of
Research in Solving Transportation Prob-
lems: National-State-Local." The purpose
of the symposium was to create an envi-
ronment for exchanging information and
ideas on transportation problems and re-
search and to provide a forum for the
expression of the perspectives of the Con-
gress, the Legislature, and planners and
administrators at all levels of government.
Dr. Thomas Kennedy, Director of the
Council, spoke to the assembly about the
functions of the Council; and Dr. W. Ronald
Hudson, Dr. B. Frank McCullough, and Dr.
C. Michael Walton, all Faculty Associates of
the Council from the Department of Civil
Engineering, participated in the program as
moderators. Speakers in the Symposium
included Mr. Mike Naeve, Staff Coordinator
for the United States Senate Subcommittee
on Transportation; Dr. Gerald Love, As-
sociate Administrator for Research and
Development, Federal Highway Adminis-
tration; Mr. B. L. DeBerry, Engineer-Direc-
tor, Texas State Department of Highways
and Public Transportation; and Mr. W. C.
(Cliff) Franklin, Director, Planning and
Research, Dallas Transit System.



*Mike Naeve, Staff Coordinator, U.S. Senate
Subcommittee on Transportation*



INFORMATION SERVICES

REGIONAL TRANSPORTATION INFORMATION SYSTEM (RTIS)

The Council's Regional Transportation Information System (RTIS) is an information center containing transportation-related materials and data. Among the subject areas it covers are traffic safety, transportation engineering, urban transportation, rural transportation, and rail transportation. RTIS has a substantial collection of microfiches from the National Technical Information Service and approximately 2,000 paper copies of books, reports, and journal articles. RTIS will lend materials to University students, faculty, and staff, and to users outside the University. The center also has an interlibrary loan service which enables it to borrow from other transportation libraries materials which may be lacking in its own collection.

RTIS is in the process of building an on-line data base containing its collection. This will allow the librarian to perform computer searches using a thesaurus of transportation-related key words. In the future, the data base will include an author-title access and references to materials located in other libraries and agencies in the Austin area.

In addition to the document center, where the hard copy materials are housed, RTIS has a data component which handles computerized information on transportation. This component provides fast response to the informational needs of persons concerned with transportation and traffic safety planning, operations, and technology. RTIS participates in the national TRISNET information network, described below, and has been responsible in the past year for providing data and computer support to the Texas Office of Traffic Safety under the project "Data Analysis for Statewide Traffic Safety Program and Plan."

TRISNET DOCUMENT DELIVERY CENTER

Project Director: John F. Betak, Council for Advanced Transportation Studies

Sponsor: United States Department of Transportation
Council for Advanced Transportation Studies

TRISNET is the Transportation Research Information Services Network, a network established by the U.S. Department of Transportation and consisting of six Document Delivery Centers, of which the Council's Regional Transportation Information System (RTIS) is one. As a Document Delivery Center, RTIS receives approximately 40 transportation-related documents per week, mainly from the National Technical Information Service, which it catalogues and maintains for the use of interested individuals and organizations both within and outside the University. RTIS also participates in TRIS-ON-LINE, a computerized information-retrieval system of selected references to technical literature and ongoing research in transportation.

Through its computerized data retrieval system, RTIS can retrieve all the documents in the Council's library and part of the collection in the University of Texas Library. A microfilm index of the Department of Transportation Library provides further assistance in accessing documents. As part of the nationwide TRIS network, RTIS is tied into the main TRIS terminal at the Battelle Research Laboratories in Columbus, Ohio, the Lockheed Dialog facilities in Palo Alto, California, and the Highway Safety Literature system in Rockville, Maryland. Thus, a user who desires to compile a bibliography of publications on a certain transportation-related subject may, by entering key words into the computerized system, retrieve from each of the data bases a list of complete references of documents on the subject and their locations.

**DATA ANALYSIS FOR STATEWIDE
TRAFFIC SAFETY PROGRAM AND PLAN
(1977-1978)**

**Project Manager: John F. Betak, Council for
Advanced Transportation Studies**

Sponsor: Texas Office of Traffic Safety

The staff of the Council's Regional Transportation Information System (RTIS) has been engaged in the past year in background research into and analysis of the Department of Public Safety's accident files with a view to providing material useful to the development of the 1979 Highway Safety Program for the State of Texas. The culmination of this research is the three volumes of *TEXAS TRAFFIC ACCIDENT ANALYSIS: 1976* in which twelve modules suggested by the National Highway Traffic Safety Administration (e.g., motorcycle accidents, pedestrian accidents, school bus accidents) are analyzed by means of statistical analysis of cross-tabulations of certain variables. Such analyses will aid traffic safety planners in evaluating and redesigning the Highway Safety Plan for Texas and will suggest countermeasures for reducing accidents in the State.

The RTIS staff has also produced during the past year an extensive data set entitled *ACCIDENT RECORD SUMMARY 1977* comprised of a series of cross tabulations involving fourteen independent variables (e.g., age of driver, highway conditions, weather conditions) and one dependent variable, severity of accident. The data set will be of use to Traffic Safety Coordinators in Texas in pinpointing the exact location of traffic problems and in predicting with greater accuracy the effects of implementing certain countermeasures.

The staff has also obtained documents and data relating to Traffic Safety throughout the rest of the United States and selected parts of the world. These materials have been catalogued and made available to OTS personnel on request. The staff has assisted OTS personnel in performing specialized information retrievals and has provided consultation on specialized analysis requests.

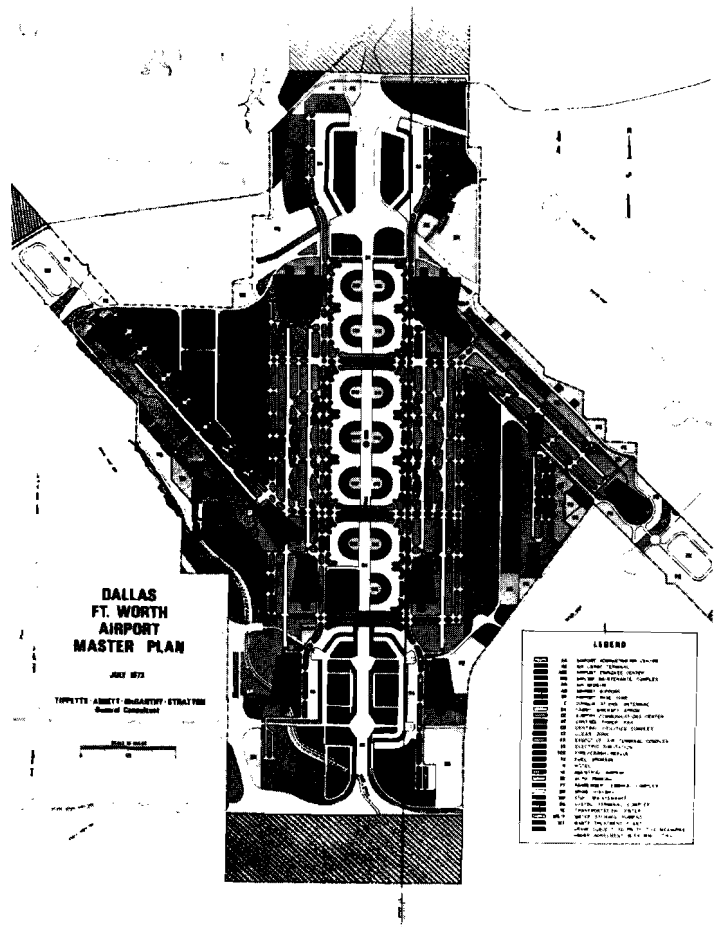


TRAFFIC SAFETY COMPUTERIZED SERVICES

Project Manager: John F. Betak, Council for Advanced Transportation Studies

Sponsor: Texas Office of Traffic Safety

The project entitled "Traffic Safety Computerized Services" represents a continuation and expansion of the support services offered to the Office of Traffic Safety by the Council. This project provides OTS access to the University Computation Center's processing facilities. For the Council, the project represents additional information and data handling activities which complement the Council's traffic safety information and data acquisition efforts.



DISSEMINATION

Project Manager: Stephen T. Martin, Council for Advanced Transportation Studies

Sponsor: Council for Advanced Transportation Studies

The Council maintains and uses an extensive mailing list to keep interested groups informed of its activities. In addition, brochures, films, publication catalogues, and a newsletter are being developed to increase public access to the information.

PUBLIC SERVICE

RESOURCE ADVISORY GROUP FOR HUMAN SERVICES TRANSPORTATION

Following the 1st Southwest Conference on Coordinating Mobility Programs for the Transportation Disadvantaged in February 1977, representatives from various state agencies and public institutions of higher learning in Texas united to form the Resource Advisory Group for Human Services Transportation (R.A.G.). This group, formally ratified in June 1977, is one of the few organizations in the United States to attack the problem of coordinating human service transportation programs at the state level. The Council is a charter member of the R.A.G. which is currently composed of twelve members: nine state agencies and three university components.

Beginning in January 1978, Marion McCord and John Betak of the Council carried out negotiations with the R.A.G. concerning coordination of the 2nd Southwest Conference on Mobility Programs for the Transportation Disadvantaged, which the R.A.G. sponsored. In early spring 1978, Marion McCord, as the Council's representative, was appointed to the Funding Subcommittee of the R.A.G. which was formed to consider the possibility of submitting a research proposal to the United States Department of Agriculture. Ms. McCord was subsequently elected chairperson of that subcommittee. When the proposal was tabled in March, the Funding Subcommittee became the Working Committee for the Development of Goals and Objectives, and Ms. McCord maintained the position of chairperson of

this committee from March through June 1978. In June, the committee submitted its work to the full session of the R.A.G., and on July 17, 1978, the Goal and Objectives, as formulated by the committee and modified by the R.A.G., were approved and adopted.

Current members of the R.A.G. are: Council for Advanced Transportation Studies, University of Texas at Austin; Governor's Committee on Aging; Texas Commission on Alcoholism; Texas Department of Community Affairs; Texas Department of Health; Texas Department of Highways and Public Transportation; Texas Department of Human Resources; Texas Department of Mental Health—Mental Retardation; Texas Education Agency; Texas Rehabilitation Commission; Texas Transportation Institute, Texas A & M University; and the Urban Resources Center, Texas Southern University.

NATIONAL OIL FIELD CARRIERS CONFERENCE

On April 26, 1978, Dr. John Betak, Assistant Director of the Council, addressed the National Oil Field Carriers Conference at the Chariot Inn in Austin. Dr. Betak spoke on transportation safety with an emphasis on truck safety.

THE NEXT 200 YEARS: FUTURE TRANSPORTATION MODES

In May 1978, Dr. John Betak participated in a panel discussion with Richard Dodge, Jr., Associate Dean and Associate Professor of Architecture and Planning, and Dr. Reuben McDaniel, Jr., Associate Dean of the College of Business Administration and Associate Professor of Management, on "Future Transportation Modes." This conversation was taped and broadcast on the weekly radio program, "The Next 200 Years," co-produced by the University of Texas News and Information Service and KUT-FM (90.7 MHz), the University's public radio station, and distributed nationwide to over 150 other radio stations.

TRANSPORTATION ON CAMPUS

On February 16, 1978, Dr. John Betak participated in a transportation seminar sponsored by the University of Texas Interaction Committee. Participants in the panel discussion with Dr. Betak included Mr. Jim Wilson, Assistant to the Vice-President for Business Affairs, University of Texas at Austin; Mr. Doyle Stone, Vice-President of Operations of Transportation Enterprises, Inc., which operates the campus shuttle buses; and Mr. Joe Ternus, Director of the Urban Transportation Department of the City of Austin. The discussion focused on possible solutions to the shuttle bus and parking problems on the University of Texas at Austin campus.



GUEST LECTURERS AND PROGRAM VISITORS

LECTURERS

To provide a forum for students, faculty, and the community, the Council sponsors speakers from many areas of transportation. The graduate and undergraduate seminars host faculty members and national and international speakers from government, industry, and other universities. The following is a list of guest lecturers who participated in graduate seminar CE391T, "Contemporary Transportation Issues," during the academic year 1977-1978.

Leigh Boske, Assistant Professor of Public Policy LBJ School of Public Affairs The University of Texas at Austin Austin, Texas	"National Transportation Policy"
Randy B. Machemehl, Assistant Professor Department of Civil Engineering The University of Texas at Austin Austin, Texas	"Public Transportation System Planning in Small Urban Areas"
John F. Betak, Assistant Director Council for Advanced Transportation Studies The University of Texas at Austin Austin, Texas	"Policy Alternatives to Transportation"
Larry G. Walker, Materials and Test Engineer State Department of Highways and Public Transportation Austin, Texas	"New Developments in Highway Materials"
Joe S. Ternus, Director Urban Transportation Department City of Austin Austin, Texas	"The Present and Future of Transportation in Austin" "Public Transportation Plan for Austin"
John W. Huddleston, Research Associate Council for Advanced Transportation Studies The University of Texas at Austin Austin, Texas	"Transportation for the Elderly and Handicapped"
Robert P. Neuschel, Senior Partner McKinsey & Company, Inc. Chicago, Illinois	"An Overview of U.S. Transportation" "Air Transportation"
Ken Nevil, Administrator Texas Office of Traffic Safety State Department of Highways and Public Transportation Austin, Texas	"Traffic Safety Management or 'Who's Running the Show?'"

Bill Barker, Senior Transportation
Planner
North Central Texas Council
of Governments
Dallas/Fort Worth, Texas

“Major Issues in Urban
Transportation”

Russell Cummings
Public Transportation Coordinator
State Department of Highways and
Public Transportation
Austin, Texas

“Public Transportation
in Texas”

Chris Hendrickson
Department of Civil Engineering
Massachusetts Institute of Technology
Cambridge, Massachusetts

“An Approximate Analytical
Performance Model for
Feeder Transit Service”

D. C. Greer, State Highway Commissioner
and Professor Emeritus
The University of Texas at Austin
Austin, Texas

“The Administration of
State Highway Organizations”

Joe Moseley, Executive Director
Texas Coastal and Marine Council
Austin, Texas

“Deepwater Oil Terminal for
Texas”

Bill Bulloch, Director
Emergency Medical Services
City of Austin, Texas

“Transportation, Management,
and Emergency Medical Services”

Max Ulrich, Study Engineer
Austin Transportation Study
Austin, Texas

“Metropolitan Transportation
Planning Issues”

Virgil Anderson
Professor of Mathematics
Purdue University
Lafayette, Indiana

“Research on the Building
of Low-Cost Roads in Brazil”

Roy Bayless, Director of Aviation
Austin Municipal Airport
Austin, Texas

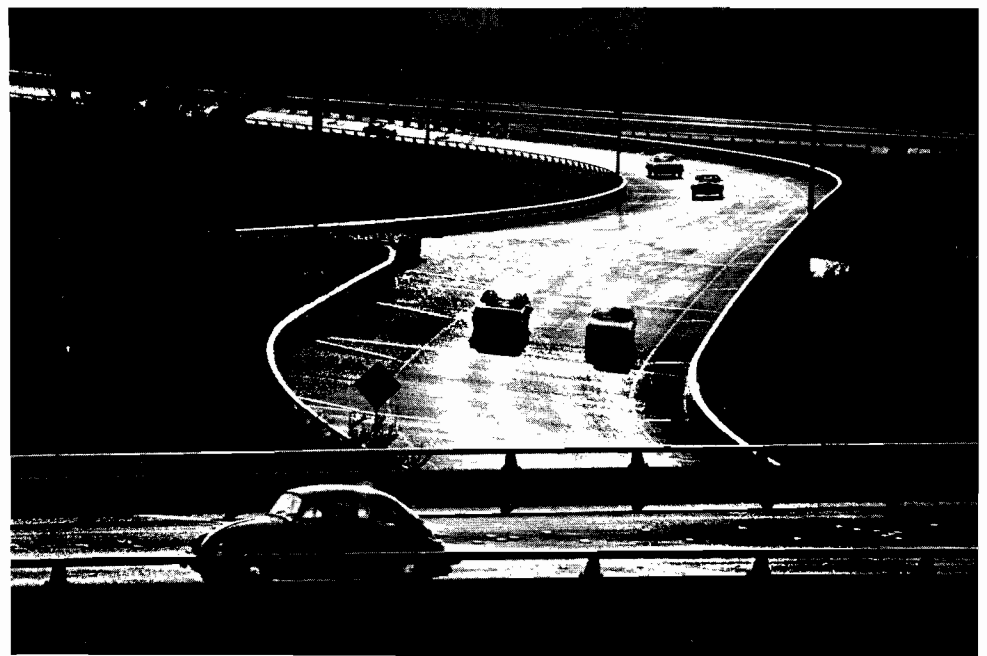
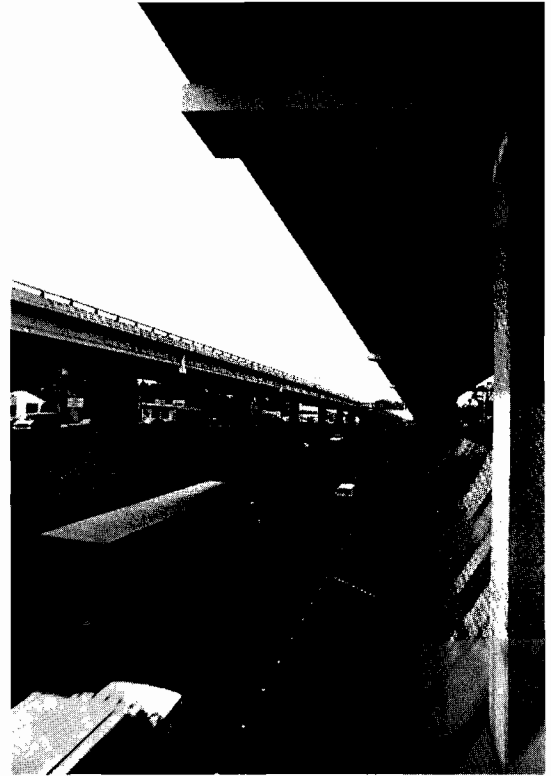
“Austin Airport Master
Plan and Issues”

John Whisenhunt, Assistant Director
Transportation Division
Texas Railroad Commission
Austin, Texas

“Statewide Rail Plan
for Texas”

R. L. Lewis
Chief Engineer of Highway Design
State Department of Highways and
Public Transportation
Austin, Texas

“The Five and Twenty-Year
Highway Plans for Texas”



The following speakers addressed the undergraduate seminar, TNS 320, "Topics in Transportation," in the Fall 1977:

Randall Kirk, Lecturer
Management Department
College of Business Administration
University of Texas at Austin
Austin, Texas

"Transportation from the
Private Sector Carrier
Standpoint"

Richard Dodge, Associate Professor
School of Architecture
University of Texas at Austin
Austin, Texas

"Energy and Transportation:
Interactions and Expectations"

Larry Todd
Office of Traffic Safety
Austin, Texas

"Transportation Safety"

C. Michael Walton, Associate Professor
Department of Civil Engineering
University of Texas at Austin
Austin, Texas

"Urban Transportation Modes
and Usage: Past, Present,
and Issues Impinging on Future"

Don Dial, Planning Engineer
State Department of Highways and
Public Transportation
Austin, Texas

"Present Status and Future
Projection of Modal Alternatives:
Highways and Public
Transportation"

Ralph Geho
State Department of Highways and
Public Transportation
Austin, Texas

"Present Status and Future
Projection of Modal Alternatives:
Marine Transportation"

Joe Ferran
Industrial Development Specialist
Texas Industrial Commission
Austin, Texas

"Present Status and Future
Projection of Modal Alternatives:
Rail and Pipeline"

John W. Huddleston
Council for Advanced Transportation
Studies
University of Texas at Austin
Austin, Texas

"Transportation for the
Transportation Disadvantaged"

Joel Wooldridge
Acting Director of Regional Planning
CAPCO
Austin, Texas

"Transportation Implications
of Comprehensive Planning
and Regional Development"

Merrill Goodwyn, Aviation Planner
Texas Aeronautics Commission
Austin, Texas

"Present Status and Future
Projection of Modal Alternatives:
Air Transportation"

Leigh B. Boske, Assistant Professor
LBJ School of Public Affairs
University of Texas at Austin
Austin, Texas

"U. S. Transportation: Past
and Present Dependency and
Future Alternatives"

VISITORS

Mr. Bob Williams, Texas Office of Traffic Safety, and the OTS Advisory Committee visited the Computer Applications Laboratory at the University of Texas at Austin on February 23, 1978, to see motor vehicle accident simulation techniques in operation.

Mr. Adrian Pelzner, Chief Materials Engineer, U. S. Forest Service, met with Dr. B. F. McCullough and other members of the Forest Service research project team on March 12, 1978, to discuss various aspects of Phase III of the project, "Implementation of the LVR System."

In late August 1978, the Forest Service Advisory Committee met in Austin to review the first draft of the Final Report of Phase III of the "Pavement Design and Management System for Forest Service Roads—Implementation" project. Forest Service personnel who attended were: Mr. Norbert Boe, Mr. Gerald Coughlan, Mr. Martin Everitt, Mr. Eugene Hansen, Mr. Bob Hinshaw, Mr. Duane Logan, Mr. Adrian Pelzner, Mr. Doug Scholen, Mr. Edward Stuart, Mr. Ron Williamson, and Mr. Hayward Taylor. University of Texas personnel who attended were Dr. B. F. McCullough, Dr. W. Ronald Hudson, Dr. Freddy L. Roberts, Mr. David McKenzie, Mr. David Luhr, Mr. Rudy Tellez, and Mr. Jose Diaz.

Dr. Darwin Klingman received visits from the following people interested in his research on shortest path analysis: Dr. Ellis Johnson, IBM, Yorktown Heights, New York; Professor-Doctor Uwe Pape, Technical University of Berlin; and Dr. Fred Glover, Professor of Management Sciences, University of Colorado, Boulder.

The following people visited the University out of an interest in the Brazil Research on the Interrelationships between Costs of Highway Construction, Maintenance, and Utilization: Professor Ing. Jorge Tosticarelli, School of Civil Engineering, Rosario University, Rosario, Argentina; Dr. John P. Zaniewski, Texas Research and Development Foundation, Brasilia, Brazil; Sr. Gustavo del Rio, Direccion General De Servicios Tecnicos, Secretaria de Asentamientos Humanos y Obras Publicas, Mexico, D. F.; and Sr. Jose Rivera, Vice Presidente, Asociacion Ejecutivo de Caminos, Mexico, D.F.

The Council and its Faculty Associates also received the following international visitors:

Mitja Zorga
Institute for Materials and
Construction Research
Ljubljana, Yugoslavia

Abdulla Sayyari
The University of Petroleum and
Minerals
Dhahran, Saudi Arabia

Matija Vilhar
Cooperator for Asphalt Technology
Republic Community for Roads
Ljubljana, Yugoslavia

Adedare S. Adedimila
Faculty of Engineering
University of Lagos
Lagos, Nigeria

Marvin Holsen
Norwegian Public Roads Administration
Oslo, Norway

Michael Larcher
UNDP Technical Representative
Republic of Mali

L'udovit Rondos
Associate Professor of Civil
Engineering
Slovak Technical University
Bratislava, Czechoslovakia

Sounkoun Sissoko
Chief of Soils and Pavements
Section
National Laboratories of Public
Works
Bamako, Mali

PROGRAM MANAGEMENT

Originally created by the Office of the President on May 26, 1972, the Council reports directly to Vice-President H. Eldon Sutton. As Director, Dr. Thomas W. Kennedy is responsible for the general administration of the total scope of Council programs and projects. Since in the past year he has continued his teaching and professional research activities, Dr. Kennedy has been assisted in his operational management responsibilities by Dr. John F. Betak, Dr. Grover Cunningham, and Dr. David A. Sands who provide administrative support to Faculty Associates and students associated with the Council.

An *Executive Committee of Deans* reviews the Council's programs and functions as an advisory committee for the Council. The members of the Executive Committee during the past year have been:

- Harold Box, Dean of School of Architecture
- Wayne Danielson, Dean of School of Communications
- Earnest F. Gloyna, Dean of College of Engineering
- Thomas W. Kennedy, Director, Council for Advanced Transportation Studies
- Robert D. King, Dean of College of Social and Behavioral Sciences
- George Kozmetsky, Dean of College of Business Administration
- Lymon C. Reese, Associate Dean, College of Engineering
- Elsbeth D. Rostow, Dean of LBJ School of Public Affairs
- A. R. Schrank, Dean of College of Natural Sciences
- Ernest E. Smith, Dean of School of Law
- James A. Hitt, Acting Dean of General and Comparative Studies
- Stanley Werbow, Dean of College of Humanities

PERSONNEL INVOLVEMENT

The Council has a clear mandate to undertake a multidisciplinary approach to transportation research and education, and to this end a broad cross section of the University faculty and students has always been involved in Council programs and activities. Since its creation in May 1972, over 80 faculty members from 22 departments of 11 colleges and schools have actively participated in Council activities as Faculty Associates. During 1977-78, 42 faculty and professional staff from 8 departments and 5 colleges and schools have participated in Council programs.

One of the Council's major concerns is the academic formation of graduate students who will enter the transportation professions with skills to contribute to the solution of problems in their various fields. In 1977-78, 32 graduate students from 10 departments of 6 schools have been involved in Council projects.

Undergraduate students have also made a significant contribution, with approximately 62 involved in Council programs up through 1976-77, and an additional 5 participating in 1977-78.

FACULTY

Faculty involvement in the Council's activities during the past year has been as follows:

Mark I. Alpert, Professor, Marketing Administration
Virgil Anderson, Visiting Professor, Civil Engineering
Michael Benedikt, Assistant Professor, Architecture
Alan Black, Assistant Professor, Architecture and Planning
Ronald Briggs, Associate Professor, Geography, University of Texas at Dallas
Gene A. Burd, Associate Professor, Journalism
Barbara J. Chance, Assistant Professor, Sociology
Mark Daskin, Assistant Professor, Civil Engineering
Richard Dodge, Associate Dean of Architecture, Architecture and Planning
Earnest F. Gloyna, Dean, College of Engineering
Linda L. Golden, Assistant Professor, Marketing Administration
R. C. G. Haas, Visiting Professor, Civil Engineering
Charles J. Holahan, Assistant Professor, Psychology
W. Ronald Hudson, Professor, Civil Engineering
Thomas W. Kennedy, Director; Professor, Civil Engineering
Darwin Klingman, Professor, Computer Sciences
Randy B. Machemehl, Assistant Professor, Civil Engineering
Edward E. McClure, Professor, Architecture and Planning; Director, Community and Regional Planning Graduate Program
B. Frank McCullough, Professor, Civil Engineering
Reuben McDaniel, Jr., Associate Dean, College of Business Administration; Associate Professor, Management
C. S. Noble, Assistant Professor, Civil Engineering

Walter S. Reed, Assistant Professor, Mechanical Engineering
Freddy L. Roberts, Visiting Associate Professor, Civil Engineering
Sandra Rosenbloom, Associate Professor, Architecture and Planning
Allan D. Schuster, Assistant Professor, Management
Craig C. Smith, Assistant Professor, Mechanical Engineering
C. Michael Walton, Associate Professor, Civil Engineering
Martha S. Williams, Professor, School of Social Work
Robert K. Young, Professor, Psychology

PROFESSIONAL STAFF

Thomas W. Kennedy, Director; Professor, Civil Engineering
John F. Betak, Assistant Director; Lecturer, Management
Grover Cunningham, Assistant Director
David A. Sands, Assistant Director; Lecturer, Management
John W. Huddleston, Research Associate
Stephen T. Martin, Education and Dissemination Coordinator
Marion McCord, Information Writer/Editor
Constance Hill, Information Writer/Editor
Michael K. Allen, Research Associate

TECHNICAL STAFF

Delbert Ervin, Information Center Coordinator
Karen Elliott, Documentation Center Librarian
Carol Beckham, Documentation Center Librarian
Frank Dilorio, Computer Programmer
Robert Jarry, Computer Programmer
Carol Libersat, Control Clerk-Coder
Leigh Anne Grover, Research Associate
Patricia Vines, Research Associate
James Hill, Graduate Research Assistant



SUPPORT STAFF

Nancy Webster, Administrative Secretary
Linda Harding, Accounting Clerk
Patricia Benson, Accounting Clerk
Elizabeth Day, Accounting Clerk
Janice Smith, Senior Secretary
Nancy DeSota, Senior Secretary
Mary Morando, Senior Secretary
Diana Schaefer, Senior Secretary
Rita Ischy, Senior Secretary

Work/Study Students:

Jesse A. Sanchez
Tim Grams
Victor von Zurmuehlen

PERSONNEL INVOLVEMENT IN RE-SEARCH PROJECTS

BRAZIL RESEARCH ON HIGHWAY COSTS

PROFESSIONAL INVOLVEMENT:

W. R. Hudson, Professor, Civil Engineering
C. S. Noble, Assistant Professor, Civil Engineering
R. C. G. Haas, Visiting Professor, Civil Engineering
V. Anderson, Visiting Professor, Civil Engineering
Grover Cunningham, Research Associate
Stephen Welch, Research Associate
David McKenzie, Computer Programmer
Stephen B. Horton, Computer Programmer

GRADUATE STUDENT INVOLVEMENT:

Robin Embry, Ph.D. candidate, Mechanical Engineering
Rajesh Kapadia, M.S.E.E., Business Administration
Steve Klein, M.S. candidate, Civil Engineering
David Luhr, M.S. candidate, Civil Engineering
David Potter, International Road Federation Fellow, M.S. candidate, Civil Engineering
Maitree Srinarawat, Ph.D. candidate, Civil Engineering

SUPPORT STAFF:

Rita Spohnholtz, Administrative Secretary
Brian McCullough, Clerk

FOREST SERVICE ROADS RESEARCH

PROFESSIONAL INVOLVEMENT:

B. F. McCullough, Professor, Civil Engineering
W. R. Hudson, Professor, Civil Engineering
Freddy L. Roberts, Visiting Associate Professor, Civil Engineering
David McKenzie, Computer Programmer

GRADUATE STUDENT INVOLVEMENT:

Jose L. Diaz, M.S. candidate, Civil Engineering

David Luhr, M.S. candidate, Civil Engineering
Rodolfo Tellez, M.S. candidate, Civil Engineering

SUPPORT STAFF:

Marie Fisher, Administrative Secretary
Dorothy Kenoyer, Senior Secretary

AIRPORT CAPACITY RESEARCH

PROFESSIONAL INVOLVEMENT:

B. F. McCullough, Professor, Civil Engineering
Freddy L. Roberts, Visiting Associate Professor, Civil Engineering

GRADUATE STUDENT INVOLVEMENT:

Edward V. Chambers, III, M.S., Civil Engineering
Tommy R. Chmores, M.S., Civil Engineering
Nicolau D. Fares Gualda, Ph.D., Civil Engineering

SUPPORT STAFF:

Marie Fisher, Administrative Secretary
Patricia Henninger, Senior Secretary

ACCIDENT RECONSTRUCTION RESEARCH

PROFESSIONAL INVOLVEMENT:

Walter S. Reed, Assistant Professor, Mechanical Engineering
Craig C. Smith, Assistant Professor, Mechanical Engineering

STUDENT INVOLVEMENT:

Hal L. Fitzpatrick, Ph.D. candidate,
Mechanical Engineering
John Hasty, B.S. candidate, Mechanical
Engineering
Seton Paul Kasmir, B.S. candidate,
Mechanical Engineering
Yoon Kwak, Ph.D. awarded May 1978,
Mechanical Engineering
Stephen Malone, Ph.D. candidate,
Mechanical Engineering
Lester Marshall, M.S. candidate, Mechan-
ical Engineering
Barry Olson, M.S. candidate, Mechanical
Engineering
Konrad Tzeng, Ph.D. candidate, Mechan-
ical Engineering

SHORTEST PATH ANALYSIS RESEARCH

PROFESSIONAL INVOLVEMENT:

Darwin Klingman, Professor, Operations
Research and Computer Sciences
Fred Glover, Professor, Management
Sciences, University of Colorado,
Boulder
John Hultz, Research Associate

GRADUATE STUDENT INVOLVEMENT:

John Mote, Ph.D. candidate, General
Business (Operations Research)
David Whitman, Ph.D. candidate, General
Business (Operations Research)

SUPPORT STAFF:

Cynthia Salamon, Senior Secretary

ROADSIDE DISTRACTORS RESEARCH

PROFESSIONAL INVOLVEMENT:

Charles J. Holahan, Assistant Professor,
Psychology

GRADUATE STUDENT INVOLVEMENT:

Jeffrey Anderson, M.A. candidate,
Psychology
Ralph Culler, Ph.D. awarded August 1978,
Psychology
Allen Dietz, Ph.D. candidate, Psychology
Sherri L. Evans, M.A. candidate,
Psychology
Patricia Griffin, M.A. candidate, Psychology
James Spearly, Ph.D. candidate,
Psychology

SUPPORT STAFF:

Karen Barenblat, Clerk-Typist
Martha Gail Moore, Clerk-Typist

OF MULTIDISCIPLINARY
ION IN TEXAS. Fitts-

6/77

FACTORS IN DRIVING
Williams, and Young...
6/77

TERMEASURES. Hales,
5/77

FACTORS IN ACCIDENT
Valentine, M. Williams,
3/77

IG GUIDE

2/77

INAL ACCELER-
OUND TRANSPOR-

RR 34 RELATIONSHIP BETWEEN ROADSIDE
SIGNS AND TRAFFIC ACCIDENTS: A FIELD
INVESTIGATION. Hales 11/77

RR 35 DEMOGRAPHIC VARIA
ACCIDENTS. Valentine, W

RR 32 SEAT BELTS: SA
Hales, Williams, and Y

RR 31 DRUGS AND THEIR EFFECT ON DRIVING
PERFORMANCE. Valentine, Williams, &
Young 5/77

RR 40 ALCOHOL AND
K. E. Young, D. Val

RR 41 EFFECTS OF

RR 45 CHARACTERIS

- RR 44 A TANDEM-
EVALUATING OVERALL
Chang-Ho Park & Y

RR 43 A PAVEMENT
SYSTEM FOR FOREST
ING MODEL Robert

RR 42 GUIDEWAY SIDEWALL ROUGHNESS AND
GUIDEWHEEL SPRING COMPRESSIONS OF THE
DALLAS/FORT WORTH AIRTRANS 8/76 C. Smith

RR 41 A LATERAL S
FOR THE DALLAS/FO
C. Craig Smith &

AN EVALUATION OF PRESENTATION DATA AND LITERS MEASUREMENT METHODS
FOR PUBLIC TRANSPORTATION SYSTEMS

AN EVALUATION OF PRESENTATION DATA AND LITERS MEASUREMENT METHODS
FOR PUBLIC TRANSPORTATION SYSTEMS

NEW PUBLICATIONS

RESEARCH REPORTS

- RR-38. Walton, C. Michael, John Huddleston, Richard Dodge, Charles Heimsath, Ron Linehan, and John Betak. THE INFLUENCE ON RURAL COMMUNITIES OF INTERURBAN TRANSPORTATION SYSTEMS, VOL. II: TRANSPORTATION AND COMMUNITY DEVELOPMENT: A MANUAL FOR SMALL COMMUNITIES. August 1977.

This work represents the second volume of research documented under a project entitled, "The Influence on Rural Communities of Interurban Transportation Systems." The manual consists of eight separately bound parts: an executive summary and seven chapters, including a glossary and bibliography. The purpose of the manual is to promote a more informed participation in the national, state, and regional decision-making process as it relates to transportation and to provide the basis for initiating and continuing comprehensive local planning for small urban places.

- RR-46. Walton, C. Michael, Richard Dodge, John Huddleston, John Betak, Ron Linehan, and Charles Heimsath. THE INFLUENCE ON RURAL COMMUNITIES OF INTERURBAN TRANSPORTATION SYSTEMS, VOL. I: THE INFLUENCE ON RURAL COMMUNITIES OF INTERURBAN TRANSPORTATION SYSTEMS. August 1977.

This work represents the first volume of research documented under a project entitled, "The Influence on Rural Communities of Interurban Transportation Systems." This report contains a description of the study process and the findings of the various research phases during the

project. It is hoped that this report will facilitate interactions between professional planners and representatives of smaller cities and will enhance the planners' appreciation of the uniqueness of the needs and vital issues of small urban areas.

- RR-52. Hales, Gary D., Martha S. Williams, and Robert K. Young. SEAT BELTS: SAFETY IGNORED. June 1978. (Draft)

This report surveys scientific research on the efficacy of seat belts, the effectiveness of public education campaigns for seat belt use, belt use in other countries, and alternatives to seat belts.

- RR-53. Valentine, Deborah, Martha Williams, and Robert K. Young. AGE-RELATED FACTORS IN DRIVING SAFETY. February 1978. (Draft)

Accident and violation rates are higher for older and younger drivers. This report reviews the causative and confounding variables that have been studied in relation to this phenomenon and is designed to be used as an educational tool.

- RR-54. Holahan, Charles J. RELATIONSHIP BETWEEN ROADSIDE SIGNS AND TRAFFIC ACCIDENTS: A FIELD INVESTIGATION. November 1977.

This report presents the results of a systematic investigation of the relationship between signs located near sixty randomly selected urban traffic intersections and traffic accidents at those intersections. The number of signs at a specific intersection, their type, size, and color were studied with regard to the dependent variable, at-fault accidents during the 1975 calendar year.

- RR-55. Valentine, Deborah, Martha Williams, and Robert K. Young. DEMOGRAPHIC VARIABLES AND ACCIDENTS. January 1978. (Draft)

This monograph reviews research on accident data pertaining to women, minority groups, and low economic status members. Other factors possibly related to accidents, such as race, occupation, and marital status, are also briefly discussed.

- RR-56. Fitzpatrick, Hal L., Craig C. Smith, and Walter S. Reed. FEASIBILITY OF MULTIDISCIPLINARY ACCIDENT INVESTIGATION IN TEXAS. September 1977. (Draft)

This report investigates the results of a study conducted to determine the feasibility of establishing Multidisciplinary Accident Investigation (MDAI) teams to investigate vehicle accidents in the State of Texas. It is recommended that MDAI teams not be established and that an accident review board be organized to analyze traffic accident data generated yearly by the State Department of Public Safety and to recommend accident countermeasures on the basis of these analyses.

- RR-57. Gualda, Nicolau D. Fares, and B. F. McCullough. MODELING THE AIRPORT TERMINAL BUILDING FOR CAPACITY EVALUATION UNDER LEVEL-OF-SERVICE CRITERIA. Forthcoming Fall 1978. (Draft)

This report presents steps undertaken to model the airport terminal building by using a modular approach. The terminal building is partitioned into modular components, and a recursive algorithm is used to allocate flows of passengers, visitors, and baggage among the components during successive time intervals. Congestion measures are taken

at each component and compared to "acceptable" limits of congestion as identified by airport users.

- RR-58. Chmores, Tommy Ray, and B. F. McCullough. AN ANALYSIS OF PASSENGER PROCESSING CHARACTERISTICS IN AIRPORT TERMINAL BUILDINGS. Forthcoming Fall 1978. (Draft)

This report describes an attempt to combine queueing theory and network analysis into a viable tool for capacity evaluation of the airport terminal building. The approach undertaken conceives of the individual processing facilities within the terminal building as the nodes of a network and of passengers and visitors moving from one facility to another as a flow along that network. This type of analysis enables the researcher to identify those facilities which limit passenger/visitor movements, i.e., those facilities where congestion is occurring.

- RR-59. Chambers, Edward V., III, B.F. McCullough, and Randy B. Machemehl. A USER'S MANUAL FOR THE ACAP MODEL FOR AIRPORT TERMINAL BUILDING CAPACITY ANALYSIS. Forthcoming Fall 1978. (Draft)

This report presents a systems approach for airport analysis and design. Included are a new definition of the airport system and a new systems analysis-based definition of level-of-service related capacity. Also included is the description of an algorithm and computer program which analyze the flow of passengers through the airport as a function of time.

- RR-60. Luhr, David R., and B. Frank McCullough. A PAVEMENT DESIGN AND MANAGEMENT SYSTEM FOR FOREST SERVICE ROADS—IMPLEMENTATION. Phase III. Forthcoming Fall 1978.

This report reviews the third phase of a three-phase project to develop and implement a pavement design and management system for low-cost, low-volume roads, in particular Forest Service roads. The specific objective of this phase was to implement the pavement management system (LVR), developed in Phase II on a trial basis, in selected Forest Service regions. The report includes results from a sensitivity analysis of the program and an examination of the Rutting Prediction Model. Recommendations include revising the aggregate road failure models and the establishment of a Forest Service system data base.

- RR-61. Valentine, Deborah, Gary Hales, Martha S. Williams, and Robert K. Young. MULTIDISCIPLINARY ACCIDENT INVESTIGATION. October 1978. (Draft)

This report reviews the literature generated by the Multidisciplinary Accident Investigation (MDAI) studies which were sponsored as part of the Highway Act of 1966. The use of a wide variety of professional disciplines to evaluate accident causation produced detailed information and suggestions relating to human factors, vehicular factors, and environmental factors as causes of accidents.

- RR-62. Holahan, Charles J. PSYCHOLOGICAL ANALYSIS OF DEGREE OF SAFETY IN TRAFFIC ENVIRONMENT DESIGN. Forthcoming Fall 1978. (Draft)

Recent on-site accident inves-

tigation studies have estimated that between 10 and 25 percent of automobile accidents involve distraction as a principal causative factor. This report presents the findings of a research project designed to study the relationship between visual distractors in the roadside environment, such as advertising signs, neon lights, and gaudy billboards, and traffic safety. This project has involved the definition, operationalization, and measurement of visual distractibility in the traffic environment, including an analysis of distractions attributable to private signs and lights in the vicinity of public signs and signals and of distractions caused by an overload or improper placement of public signs.

- RR-63. Olson, Barry, and Craig C. Smith. AUTOMOBILE COLLISION RECONSTRUCTION: A LITERATURE SURVEY. Forthcoming Fall 1978. (Draft)

This report describes methods used for analyzing characteristics of automobile collisions and surveys the major papers dealing with each method. Computer techniques, which have been developed within the past few years, are reviewed, and their utility and limitations are discussed. A modular approach, where individual computer modules are used interactively by an investigator to reconstruct an accident in separate phases, is suggested.

TEXTS AND HANDBOOKS

- TH-6. Martin, Stephen T. (compiler). **MANAGEMENT OF TRAFFIC SAFETY PLANNING: FOUR WORKSHOPS TO AID IN DEVELOPING COMPREHENSIVE TRAFFIC SAFETY PLANS.** November 1977–June 1978.

This handbook was designed to serve as the curriculum textbook for the Management of Traffic Safety Planning Workshops sponsored by the Texas Office of Traffic Safety, State Department of Highways and Public Transportation. The Handbook is comprised of four sections, corresponding to the topics of the four workshops and to the four components of systems analysis or management: 1) Planning, 2) Problem Identification, 3) Counteractivity Design, and 4) Evaluation. The Handbook distribution is limited to those who have participated in the workshops.

- TH-7. Huddleston, John W. (compiler). **HUMAN SERVICES TRANSPORTATION PLANNING AND MANAGEMENT.** January 9 & 10, 1978.

This handbook was designed to serve as a guide to a seminar in Human Services Transportation Planning and Management held on January 9 & 10, 1978, at the University of Texas at Austin. The seminar was organized to follow-up a short course on the same subject held in August 1977. The topics covered and the format of the seminar were determined by questionnaires sent to the participants of the August short course. The seminar is structured around three topical presentations, 1) Demand/Supply Options, 2) Estimating Costs under Different Supply Alternatives, and 3) Developing Uniform Monitoring and Evaluation Procedures, each

followed by one or more workshops to identify specific problems, explore possible solutions, and make recommendations to the state Resource Advisory Group for Human Services Transportation.

- TH-8. McCord, Marion, Constance Hill, and Stephen T. Martin. **CONFERENCE HANDBOOK FOR THE 2ND SOUTHWEST CONFERENCE ON MOBILITY PROGRAMS FOR THE TRANSPORTATION DISADVANTAGED.** August 1978.

This Handbook was designed to serve as a guide to the general sessions, workshops, and forums of the 2nd Southwest Conference on Mobility Programs for the Transportation Disadvantaged, held in Houston from August 8–11, 1978. The Handbook also provides useful supplemental material, such as texts of relevant legislation, a description of the Resource Advisory Group for Human Services Transportation in Texas, and a glossary and bibliography.

MANUALS

- M 7. Betak, John, Frank Dilorio, Del Ervin, Tim Grams, Leigh Anne Grover, and Carol Libersat. TEXAS TRAFFIC ACCIDENT ANALYSIS 1976. 3 vols. May 1978.

These three volumes were produced for the Texas Office of Traffic Safety (OTS) for use in the development of the 1979 Texas Highway Safety Plan. The volumes include narrative descriptions of statistical methods, cross tabulations, and graphic representations of Texas highway accident data. This work is part of an ongoing project to provide information on traffic safety matters within a five state region comprised of Texas, Louisiana, Arkansas, Oklahoma, and New Mexico.

- M 8. Council for Advanced Transportation Studies (compiler). TEXAS OFFICE OF TRAFFIC SAFETY/SDHPT ACCIDENT RECORD SUMMARY 1977. September 1978.

This data set is a summary of Texas accidents in 1977 composed of cross tabulations of one dependent variable, severity of accident, with 14 independent variables, such as age of driver, population group (rural/urban) of driver, type of roadway, and weather conditions. Data is collected and cross-tabulated for 3 types of jurisdictions: the nine OTS districts, counties within the districts, and cities with population of 25,000 or over within the counties.

RELATED JOURNAL ARTICLES AND PAPERS

Numerous journal articles and papers have been published and presented during the academic year 1977-78. Those listed below are illustrative of the types of research and breadth of interests of the Council's Faculty Associates and Research staff.

- AP 58 Smith, C.C., and Y.K. Kwak. "Identification of the Dynamic Characteristics of a Bench-Type Automotive Seat for the Evaluation of Ride Quality." ASME TRANSACTIONS, JOURNAL OF DYNAMIC SYSTEMS, MEASUREMENT AND CONTROL, vol. 100, March 1978.
- AP 59 Smith, C.C., D.Y. McGehee, and A.J. Healey. "The Prediction of Passenger Riding Comfort from Acceleration Data." ASME TRANSACTIONS, JOURNAL OF DYNAMIC SYSTEMS, MEASUREMENT AND CONTROL, vol. 100, March 1978.
- AP 60 Huddleston, John, and C. Michael Walton. "Interurban Transportation Policy and the Rural Community." TRANSPORTATION RESEARCH RECORD 617, September 1977.
- AP 61 Linehan, Ronald, and C. Michael Walton. "Interurban Transportation Networks and Rural Economic Development." TRANSPORTATION RESEARCH RECORD 617, September 1977.
- AP 62 Dial, Robert, Fred Glover, David Karney, and Darwin Klingman. A COMPUTATIONAL ANALYSIS OF ALTERNATIVE ALGORITHMS AND LABELING TECHNIQUES FOR FINDING SHORTEST PATH TREES. Research Report CCS 291. Austin, TX: University of Texas at Austin, Center for Cybernetic Studies, April 1977. To appear in NETWORKS.

- AP 63 Holahan, C.J., and R. Culler. "Background Distractors and Reaction Time in a Simulated Traffic Environment." Paper presented at the 85th Annual Meeting of the American Psychological Association, San Francisco, California, August 1977.
- AP 64 Empresa Brasileira de Planejamento de Transportes—GEIPOT. RESEARCH ON THE INTERRELATIONSHIPS BETWEEN COSTS OF HIGHWAY CONSTRUCTION, MAINTENANCE, AND UTILIZATION. Report no. 2, Project Midterm Report—Preliminary Results and Analyses. Brasilia, August, 1977.
- AP 65 McCullough, B.F., Edward V. Chambers, III, and Freddy L. Roberts. "A Decision Tool for Airport Capacity Analysis." Paper presented at the Tri-Section Meeting of the American Society of Civil Engineers, Albuquerque, New Mexico, October 7, 1977.
- AP 66 Empresa Brasileira de Planejamento de Transportes—GEIPOT. RESEARCH ON THE INTERRELATIONSHIPS BETWEEN COSTS OF HIGHWAY CONSTRUCTION, MAINTENANCE, and UTILIZATION. Summary, Midterm Report—Preliminary Results and Analyses. Brasilia, November 1977.
- AP 67 Walton, C. Michael. "Public Transportation Options for Small to Medium Cities." Paper presented at the Annual State Department of Highways and Public Transportation Short Course, Texas A&M University, College Station, Texas, December 1, 1977.
- AP 68 Holahan, Charles J. "Relationship Between Roadside Signs and Traffic Accidents." Paper presented at the Annual Meeting of the Transportation Research Board, National Research Council, Washington, D.C., 18–20 January 1978.
- AP 69 Hudson, W. Ronald. "A Working Pavement Design and Management System." Paper presented to the Direccion Nacional de Vialidad and the Comision Permanente del Asfalto, Buenos Aires, Argentina, 28 March 1978.
- AP 70 Walton, C. Michael. "Various Approaches to Providing Public Transportation in Small Texas Cities." Presented at the 6th Annual Texas Transit Conference, Houston, Texas, 29 March 1978.
- AP 71 Hudson, W. Ronald. "Multi-disciplinary Transportation Research in Brazil." Paper prepared for ASEE Gulf-Southwest Section Meeting, Austin, Texas, 30 March–1 April 1978.
- AP 72 Walton, C. Michael. "Evaluation of Public Transit Options to Small Communities." Paper presented at the Spring Meeting of the Texas Section of the American Society of Civil Engineers, Corpus Christi, Texas, 7 April 1978.
- AP 73 Sayyari, Abdulla I., C. Michael Walton, and R.B. Machemehl. "A Delphic Approach Assessing the Influence of Interurban Transportation Facilities on Small Communities." Paper submitted to the TRANSPORTATION RESEARCH RECORD, August 1978.
- AP 74 Klingman, Darwin, John Mote, and David Whitman. COMPUTATIONAL ANALYSIS OF IN-CORE OUT-OF-CORE SHORTEST PATH ALGORITHMS. Research Report CCS 322. Austin, TX: University of Texas at Austin, Center for Cybernetic Studies, Forthcoming Fall 1978.

- AP 75 Smith, C.C., and W.R. Murray. "Guideway Sidewall Roughness Measurements on an Automated Guideway Transit (AIRTRANS) System." Submitted for publication in ASME TRANSACTIONS, JOURNAL OF DYNAMIC SYSTEMS, MEASUREMENT AND CONTROL. Forthcoming 1979.
- AP 76 Stewart, Michael L., Robert K. Young, and A.J. Healey. "Ride Quality Ratings as a Function of Sensory Input." Forthcoming in ERGONOMICS.
- TD 26. Chmores, Tommy Ray. AN ANALYSIS OF PASSENGER PROCESSING CHARACTERISTICS IN AIRPORT TERMINAL BUILDINGS. May 1978. (Master of Science in Civil Engineering)
- TD 27. Kwak, Yoon. INVESTIGATION OF DYNAMICS OF RUBBER-TIRED AUTOMATED GUIDEWAY TRANSIT VEHICLES FOR RIDE QUALITY ASSESSMENT. May 1978. (Ph.D. in Mechanical Engineering)
- TD 28. Chambers, Edward V., III. A USER'S MANUAL FOR THE ACAP MODEL FOR AIRPORT TERMINAL BUILDING CAPACITY ANALYSIS. August 1978. (Master of Science in Civil Engineering)

RELATED GRADUATE THESES AND DISSERTATIONS

- TD 24. Stewart, Michael Lee. ROAD SURFACE ROUGHNESS RATINGS AS A FUNCTION OF SENSORY INPUT. May 1975. (Master of Arts in Psychology)
- TD 25. Gualda, Nicolau D. Fares. MODELING THE AIRPORT TERMINAL BUILDING FOR CAPACITY EVALUATION UNDER LEVEL-OF-SERVICE CRITERIA. May 1978. (Ph.D. in Civil Engineering)
- TD 29. Olson, Barry. ACCIDENT RECONSTRUCTION BY COMPUTER SIMULATION: A MODULAR APPROACH. Forthcoming December 1978. (Master of Science in Mechanical Engineering)
- TD 30. Tellez, Rodolfo. SENSITIVITY ANALYSIS PERFORMED ON LVR PROGRAM FOR LOW-COST, LOW-VOLUME ROADS. Forthcoming December 1978. (Master of Science in Civil Engineering)



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