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16. Abstract This document is the culmination of the sixth offering of an innovative transportation engineering graduate course at Texas A&M University entitled, "Advanced Surface Transportation Systems". The fifth offering of the course was presented during the summer 1996 term. As part of the course, a Mentors program was initiated as a means of providing the students with unique learning experiences. Six top-level transportation professionals from private enterprise and departments of transportation, who are leaders in their field and who have extensive experience with Intelligent Transportation Systems, were invited to Texas A&M University to present a 1½-day Symposium on Advanced Surface Transportation Systems at the beginning of the summer term. Immediately following the Symposium, the students enrolled in the course participated in a Forum and a Workshop with the transportation professionals and course instructor. Based on mutual interests, each student was assigned to one of the professionals who served as a mentor (along with the course instructor) for the remainder of the summer term. Each student worked with his/her mentor and course instructor to identify a topic area and objectives for a term paper. In addition to discussions with the course instructor, the students (communicating via telephone, fax, e-mail, and mail) worked directly with the mentors throughout the term while preparing their term papers. The mentors returned to the Texas A&M University campus near the end of the summer term to hear and critique the students' presentations.					
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GRADUATE STUDENT PAPERS

ADVANCED SURFACE TRANSPORTATION SYSTEMS

AUGUST 1995

Class mentors and instructor (front row, from left) Jack Kay, Tom Werner, Conrad Dudek (back row) Gary Trietsch, Walter Kraft, Walter Dunn, Les Jacobson.

PREFACE

This document is the culmination of the fifth offering of an innovative transportation engineering graduate course at Texas A&M University entitled, "Advanced Surface Transportation Systems," which was presented during the 1995 summer term. As part of the course, a Mentors program provided the students with unique learning experiences. Six top-level transportation professionals from private enterprise and departments of transportation, who are leaders in their field and who have extensive experience with Intelligent Transportation Systems, were invited to Texas A&M University to present a 2-day Symposium on Advanced Surface Transportation Systems at the beginning of the summer term. Immediately following the Symposium, the students enrolled in the course participated in a Workshop with the transportation professionals and course instructor. Based on mutual interests, each student was assigned to one of the professionals who served as a mentor (along with the course instructor) to the student for the remainder of the summer term. Each student worked with his/her mentor and course instructor to identify a topic area and objectives for a term paper. In addition to discussions with the course instructor, the students (communicating via telephone, fax, e-mail and mail) worked directly with the mentors throughout the term while preparing their term papers. The mentors returned to the Texas A&M University campus near the end of the summer term to hear and critique the students' presentations.

One important objective of the program was to develop rapport between the students and the transportation professionals. The opportunity for the students to communicate and interact with top transportation officials, who are recognized transportation engineering experts, was a key element to the students gaining the type of learning experiences intended by the instructor. Therefore, extra care was taken to encourage interaction through the Symposium, Workshop and social events.

Comparable to the previous years, this program was again extremely successful. The students had an excellent opportunity to interact directly for an extended period of time with top-level transportation professionals who are recognized for their knowledge and significant contributions both nationally and internationally.

Walter Dunn, Leslie Jacobson, Jack Kay, Walter Kraft, Gary Trietsch, and Thomas Werner devoted considerable time and energy to this program. We are extremely grateful for their valuable contributions to the educational program at Texas A&M University.

The opportunity to bring top-level transportation professionals to the campus was made possible through financial support provided by the "Advanced Institute" at Texas A&M University which is sponsored by the University Transportation Centers Program of the U.S. Department of Transportation, and from funds received from the Zachry Teaching Program from the Dwight Look College of Engineering at Texas A&M University.

Gratitude and appreciation are expressed to Dr. Carroll Messer, Professor of Civil Engineering, Texas A&M University, who helped me pioneer this innovative graduate course in transportation engineering. Dr. Messer was a co-instructor for the course during the first two years it was offered. Other teaching commitments required his attention during subsequent summer terms.

Sandra Mantey, Senior Secretary with the Texas Transportation Institute, once again coordinated the Symposium and Workshop in a very efficient and professional manner.

Congratulations are extended to the transportation engineering graduate students who participated in this course in 1995. Their papers are presented in this Compendium. A listing of papers prepared by students who were enrolled in previous offerings of the course is shown in the Appendix of this Compendium.

Conrad L. Dudek
Professor of Civil Engineering

MENTORS



WALT DUNN

Mr. Walt Dunn is recognized for his expertise in freeway corridor traffic management, freeway incident management, and intelligent transportation systems (ITS). He is the founder and principal partner of Dunn Engineering Associates, a firm he started in 1982, which specializes in traffic management for both the private and public sectors.

Currently, he provides consulting engineering services on ITS projects for the Federal Highway Administration, the New York State Department of Transportation, New Jersey Department of Transportation, Pennsylvania Department of Transportation, Michigan Department of Transportation, and the Massachusetts Highway Department.

Prior to starting Dunn Engineering Associates, Mr. Dunn worked for the New York State Department of Transportation for 16 years where he was director of the INFORM (Information For Motorists) project from inception through final design. INFORM is a corridor traffic management system designed to obtain better utilization of existing highway facilities. INFORM has been implemented in a 40-mile long highway corridor on Long Island, N.Y. as an operational demonstration.

Mr. Dunn successfully handled the traffic management of the 1986 U.S. Golf Open special event in Shinnecock Hills, New York. He is a co-author of the Freeway Incident Management Handbook and Communications Handbook for Traffic Control Systems for FHWA, Freeway Operations Project for the Transportation Research Board and "Freeway Management Systems for Transportation Efficiency and Energy Conservation" for Transport Canada.

On the national level, he is a member of the Freeway Operations Committee of the Transportation Research Board (TRB). He served as 1990 President of the Institute of Transportation Engineers (ITE) Met Section of New York and New Jersey, is a member of the American Society of Civil Engineers and Chi Epsilon and a licensed Professional Engineer in New York and New Jersey. Mr. Dunn is a Graduate of New Jersey Institute of Technology (B.S. in Civil Engineering) and Polytechnic University (M.S. Transportation Planning and Engineering).



LES JACOBSON

Mr. Les Jacobson is an expert in traffic management systems, especially freeway management and high occupancy vehicle systems. He received his Bachelor's degree in Civil Engineering from the University of Washington and his Master's Degree in Civil Engineering at the University of California at Berkeley.

Mr. Jacobson is the Traffic Services Manager for the Northwest Region of the Washington State Department of Transportation. He is responsible for all traffic engineering and electronic maintenance functions in the Region. He has been with the WSDOT since 1977 and has spent most of his career dealing with traffic management issues, especially freeway operations, HOV systems and more recently ITS. He was an integral member of the team that implemented the ramp metering system in Seattle in 1981 and supervised the operation of the Traffic Systems Management Center (TSMC) from 1983 through 1984. It was during his tenure at the TSMC that the first major HOV lane was opened on Interstate 5 in Seattle.

Mr. Jacobson spent five years at the Washington State Transportation Center (TRAC) at the University of Washington where he managed the WSDOT's Urban Systems Branch. He developed the WSDOT's Freeway and Arterial Management Effort (FAME). The program focused on research and implementation in the area of HOV systems, incident management and traffic management systems. He initiated WSDOT's ITS program, Venture Washington, during his tenure at TRAC.

Mr. Jacobson is responsible for the operation of the Seattle area's freeway HOV system. He sits on the WSDOT HOV Policy Task Force and was one of the major contributors to the WSDOT HOV Policy. He is currently involved in several HOV planning efforts. He is a registered professional engineer in Washington State. He is a member of the Institute of Transportation Engineers and the ITS Council, and the TRB HOV Systems Committee. He chairs the ITS America ATMS Committee and is a member of the Coordinating Council and Planning Committee. He chairs or sits on several NCHRP research panels, and teaches Traffic Flow Theory at the University of Washington.



JACK L. KAY

Mr. Jack L. Kay specializes in providing technical consulting with an emphasis in Intelligent Transportation Systems, in the areas of traffic control; traffic engineering and research; and implementation and funding program development. He has over 30 years of experience in traffic engineering, including over 25 years as a consultant to public and private agencies.

Mr. Jack L. Kay is CEO of the 270 person transportation consulting firm JHK & Associates, an SAIC company. Mr. Kay is/was involved as responsible officer, in the Maryland State Highway project known as CHART; Advantage I-75 project; for the evaluation of the operation of the INFORM System; and the FHWA project entitled "Investigation of Successful Implementation, Operation, and Maintenance of Traffic Control Systems". As member of the joint venture Mr. Kay is responsible for the overall strategic perspective and review of the multi-faceted projects encompassed within the I-95 Coalition.

Mr. Kay served as Project Director of the Smart Corridor Demonstration Project Conceptual Design Study; the California Department of Transportation project entitled the Statewide Smart Corridor Study; and for the implementation of a sophisticated traffic control system in the City of Anaheim. Previous traffic control system projects in which Mr. Kay has been involved include systems in the cities of Los Angeles, Baltimore, Phoenix, Tucson, Hartford, Alexandria, Salt Lake City, and the FHWA UTCS program. Mr. Kay has also worked extensively as an advisor on traffic and transportation projects for the World Bank.

Mr. Kay serves as the Chair of the Board of Directors of ITS America. He also is a fellow of the Institute of Transportation Engineers and chaired that organization's IVHS Advisory Committee during the committee's formation. Mr. Kay is a member of the Transportation Research Board's Freeway Operations Committee and the IVHS Task Force. Mr. Kay also serves as Section Chair of TRB's Group 3, Section A - Facilities and Operations. This section includes many of the TRB committees involved in IVHS related activities.



WALTER H. KRAFT

Dr. Walter H. Kraft is an international expert in the planning and design of improvements to reduce congestion and increase roadway capacity. He received his Bachelor of Science and Master of Science Degrees in Civil Engineering for Newark College of Engineering in 1962 and 1965, respectively, and his Doctor of Engineering Science in Civil Engineering from the New Jersey Institute of Technology in 1975. He is registered as a professional engineer in 16 states including Texas.

He is a Senior Vice President of Farradyne Systems, Inc., a Parsons Brinckerhoff Company, and a Vice President of Parsons Brinckerhoff in New Jersey. He has been the Principal-in-Charge, Technical Consultant or Project Director of numerous study and design projects. Dr. Kraft has been an Adjunct Professor at the New Jersey Institute of Technology and the Polytechnic Institute of New York. He has also lectured at the International Conference on Traffic Engineering and Planning in Beijing, People's Republic of China, and at the Sino-American-British Urban Transport Planning Seminar, Beijing, People's Republic of China.

He has authored many published technical articles including his doctoral thesis entitled, "An Analysis of the Passenger Vehicle Interface of Street Transit Systems with Application to Design Optimization," 1975; "How to Optimize Traffic Signals, Public Work Magazine, December, 1985, translated into Chinese, November 1986; and the Traffic Signal Installation and Maintenance Manual, Institute of Transportation Engineers (ITE), 1989.

Dr. Kraft is very active in professional organizations and has received numerous awards. He has held several positions within the International Institute of Transportation Engineers, including International President (1987), Tour Leader for the Third Annual International ITE, ITS Council's Study Tour, "ITS Europe '93, Netherlands, Germany and France, September 23rd to October 2nd, 1993, Chairman, ITS Advisory Committee (1992), and currently Chairman, ITS Council. He is currently a member of the TRB Freeway Operations Committee. Dr. Kraft is also a member of ITS-America. Among the many awards and honors he received, includes the ASCE Frank Masters Award (1982), ITE Ivor S. Wisepart Transportation Engineer Award (1986) and the ITE Burton W. Marsh Award (1992).



GARY TRIETSCH

Mr. Gary Trietsch is Director of the Traffic Operations Division of the Texas Department of Transportation (TxDOT). The division has statewide responsibilities for highway operations including traffic safety, traffic engineering, traffic management, and railroad coordination.

Mr. Trietsch earned his bachelor's and master's degrees in Civil Engineering from the University of Texas at Arlington. He began his career with the department as a summer employee in 1967 in the Tarrant County construction section in the Fort Worth District. He worked summers and part time in this section until he graduated from college and then spent three years in the Tarrant County design section. For the next five years he worked in the Fort Worth district traffic engineering section. Mr. Trietsch then spent nine years in various increasingly responsible design capacities in the Fort Worth District office and was promoted to assistant district design engineer.

In July 1987, he transferred to Austin when he was named director of the safety and traffic operations section of the Safety and Maintenance Operations Division. The division was restructured and renamed the Maintenance and Operations Division in November 1988. At that time, he was assigned the duties of assistant division director for operations, which included, traffic safety, traffic engineering, traffic management systems, and the central permit operations section.

In recognition of outstanding service, Mr. Trietsch received the 1991 Dewitt C. Greer Award, one of two top awards presented annually by TxDOT for engineering leadership and excellence.

Mr. Trietsch is a member of the Institute of Transportation Engineers, American Association of State Highway and Transportation Officials, Transportation Research Board, National Association of Governors' Highway Safety Representatives, and ITS America.



THOMAS C. WERNER

Mr. Thomas C. Werner is an expert in traffic engineering and safety management, with a strong professional interest in freeway operations and ITS. He attended Canisius College in 1962 and received his Bachelors Degree in Civil Engineering at the University of Detroit in 1965 and MBA at State University of New York, Buffalo in 1973 and is a registered professional engineer in New York State.

Mr. Werner is the Director of the Traffic Engineering and Safety Division of the New York State Department of Transportation headquartered in Albany. He is the manager and administrator of statewide traffic engineering, highway safety and commercial vehicle safety programs for the Main Office and eleven regional offices. Mr. Werner has twenty years experience with the main office Traffic Engineering and Safety Division of NYSDOT. Prior to the Albany assignment, Mr. Werner served nine years in the Buffalo Regional Planning, Design and Traffic Safety offices working on traffic analyses for major expressway projects in the Western New York area. Mr. Werner has been involved in all phases of the Information for Motorists (INFORM) project on Long Island-- a state of the art freeway corridor traffic surveillance and control system. He also currently manages ATMS, ATIS, ARTS, and AVCS elements of NYSDOT's Intelligent Transportation Systems (ITS) program.

Mr. Werner is active in many professional organizations including TRB Freeway Operations Committee and several AASHTO Committees. He has served on the FHWA Expert Panel for Operations and Maintenance of Traffic Control System and was the recipient of an FHWA scholarship for participation in the 1991 ITE European IVHS study tour. Mr. Werner is the NYSDOT representative on TRANSCOM and the I-95 Corridor Coalition. He currently serves as Panel Chairman to NCHRP Project 7-13, "Quantifying Congestion" and is Vice-Chairman of the AASHTO Standing Committee on Highway Traffic Safety.

Prior to his current assignment, he served as Regional Director for the eight county Albany Capital District area.

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