

258



# CIRCULAR

Transportation Research Board, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, DC 20418

## TRANSPORTATION EDUCATION AND TRAINING: AN UPDATE

### modes

- 1 highway transportation
- 2 public transit
- 3 rail transportation
- 4 air transportation
- 5 other

### subject areas

- 11 administration
- 12 planning
- 15 socioeconomics
- 17 energy and environment

### COMMITTEE ON TRANSPORTATION EDUCATION AND TRAINING

Michael D. Meyer, Chairman  
Massachusetts Institute of Technology

#### Members:

Moges Ayele, Morgan State University  
 William F. Brown, U.S. Department of Transportation  
 Louis F. Cohn, Vanderbilt University  
 Michael S. Bronzini, University of Tennessee  
 Lawrence N. Dallam, Metro Council Twin Cities  
 Roger L. Dean, Federal Highway Administration  
 Gordon J. (Pete) Fielding, University of California-Irvine  
 Harvey F. Heiges, Consultant, Transportation Systems Center  
 Louisa Ho, Greater Richmond Transit Company  
 Philip G. Hughes, Urban Mass Transportation Administration  
 L. Ellis King, University of North Carolina-Charlotte  
 Eva Luner-Lerman, San Diego Metropolitan Transit Development Board  
 Scott B. Harvey, Association of American Railroads

Ellen McCarthy, The Urban Partnership  
 Judy Meade, Urban Mass Transportation Administration  
 Charles T. Morison, Jr., Urban Mass Transportation Administration  
 Willa W. Mylroie, Consultant  
 Marian Ott, Metropolitan Transit Authority  
 C.S. Papacostas, University of Hawaii at Manoa  
 Craig E. Philip, Conrail  
 Louis J. Pignataro, Polytechnic Institute of New York  
 Milton Pikarsky, IIT Research Institute  
 Donald L. Spanton, Federal Railroad Administration  
 Sandra Spence, National Railroad Passenger Corporation (AMTRAK)  
 William M. Spreitzer, General Motors Research Laboratory  
 Mark R. Virkler, University of Missouri-Columbia

James A. Scott, TRB Staff Representative

### LETTER FROM THE CHAIRMAN

In a recent letter published in this Newsletter, I discussed the need for a joint government, industry, and university effort to examine the needs and opportunities of transportation education and training. Further, I suggested that the first step in this effort was a specialty conference. It is my pleasure to report that the subcommittee responsible for developing such a specialty conference has produced a draft proposal which serves as an excellent basis for a conference. As stated in the subcommittee report, the objectives of the conference are:

1. Define the skills and educational background needed by new transportation graduates to meet the

challenges they will face during their professional careers, as viewed by:

- (a) employers of transportation professionals,
- (b) transportation educators, and
- (c) users of transportation services.

Develop a consensus profile of the desired "educational products."

2. Determine where employers are obtaining their needed professional staffs during this period of depressed enrollment in university transportation programs, and assess the impact of these measures on the quality and efficiency of their programs.

3. Assess the current supply of and demand for

transportation professionals, and estimate the likely demands to be placed on various supply sources (academic degree programs, technical institutes, continuing education, in-house training programs) over the next two decades.

4. Measure current curricula against the standards developed above and propose changes to meet evolving educational needs.

5. Develop an action plan for both meeting the current crisis in transportation education and providing for the long-term contribution of transportation education to the profession.

We are currently in the process of finding sponsors for the conference. I am very optimistic that sponsors will be found and that the conference will be held in the near future. If you have any suggestions for the format or content of the conference, or wish to receive a copy of the proposal including a proposed schedule of sessions and topics, please contact Michael S. Bronzini, Director, Transportation Center, University of Tennessee, Knoxville, TN 37916, (615) 974-5255.

Michael D. Meyer  
Chairman

#### COMMITTEE POSITION ON IMPORTANCE OF EDUCATION AND TRAINING

At the recent meeting of the TRB Committee on Transportation Education and Training, Committee members spent a great deal of time discussing the importance of informing members of Congress and officials of the U.S. Department of Transportation of the need for continued university research and education/training support. Several representatives of the U.S. DOT spoke at the Committee meeting and, in essence, stated that such support, already cut back by significant levels, will be non-existent by the end of the year. Last year, the Committee sent a policy statement to the Executive Committee which outlined the Committee's position on the importance of research and education/training support. (See following item.) Given possible further cuts in such support, the Committee wishes to reiterate the position it took last year.

This nation has an impressive transportation system; one of our most valuable resources.

The effectiveness of the existing system is due to contributions from educational institutions. Included are research oriented to improved technology, systems design, materials development and modeling in addition to the training and development of professionals to plan, develop, design, build, manage and operate these systems.

The decade of the 1980's presents new challenges for upgrading and managing this resource within economic constraints. A refocusing of skills, knowledge and concepts is required. In meeting this requirement, educational institutions have a vital role. A shift from emphasis on planning, design and development functions to a new thrust giving priority to maintenance, rehabilitation and systems management needs is needed.

Both government and industry have responsibilities to encourage and support this change in emphasis. Targeting of objectives in financial support of education and training programs will assure best uses of available funds. With demonstration of successful results, a basis for requesting additional funding will result.

TRB Committee on Transportation  
Education and Training

February 1, 1983

#### TASK FORCE ON WOMEN & MINORITIES ESTABLISHED

TRB Education and Training Committee Chair Mike Meyer has established a special Task Force on Women and Minorities. He gave the Task Force two charges: to develop a conference session for the 1984 Annual Meeting of TRB (see Call for Papers elsewhere) and to outline other mechanisms the Committee might use to further the cause of women/minority education and training. The Task Force is identifying specific issues around which it hopes to stir interest and seek out researchers who would write papers.

Sandra Spence, Corporate Secretary at Amtrak, was named to chair the Task Force. She was instrumental in the establishment of the national Women's Transportation Seminar's new Education Committee, which she also chairs.

Specific plans are already underway to survey members of the Women's Transportation Seminar (WTS) to determine the implications of a fact uncovered in a member survey conducted last year: 78 percent of the respondents to that survey had no formal education or training in education. The Task Force is interested in identifying other groups of transportation professionals to survey to determine if this is true of others such as minorities or white men.

If you wish to write a paper or otherwise contribute to the work of the Task Force, please write to Sandra Spence at Amtrak, 400 N. Capitol St., N.W., Washington, D.C. 20001.

#### PHYSICAL DISTRIBUTION EDUCATION

In the February 14, 1983 issue of Traffic World (p. 17-18), a traffic executive of a large corporation was quoted regarding the urgent need for appropriate education for people in the physical distribution field and the appalling lack of cooperation between education and business. He also noted the inconsistent pattern of courses in distribution, logistics and physical distribution management. He then discusses some valuable courses of instruction and what they should offer: Economics, Accounting, Marketing, Business Finance, Quantitative Analysis, Business Law, and Communications. This executive concludes with a plea for academic members to more aggressively pursue the goals of establishing a clear cut physical distribution degree in universities.

#### EDITOR'S CORNER

The fact that we have another issue of the Newsletter suggests that the Committee Chairman's proddings have had some effect.

As I wrote in our premier issue in March of 1981, our "hope is a long time effort at informing TRB members, academics and transportation professionals about important and useful information in the transportation education field as well as about the Committee's activities in fostering its objectives." Items appropriate to the Newsletter include short commentaries on pertinent transportation education issues, thought provoking ideas tossed out for discussion, brief reviews of articles and books of potential value to transportation professionals and educators, announcements of training and applied education programs, notes on Committee and subcommittee activities, listings of useful publications, discussion of curriculum concepts and experiments, and suggestions. Material in this issue is a guide to the type of material being sought. Repeating again from the first issue, brevity is also a key to acceptance of material for the Newsletter! Keep the material coming; send it to the Editor:

Dr. Harvey E. Heiges  
Transportation Systems Center  
Kendall Square, DTS-43  
Cambridge, MA 02142

MINUTES OF TRB COMMITTEE ON  
EDUCATION AND TRAINING  
JANUARY 19, 1983

1. The Chairman summarized accomplishments focusing on the Subcommittee goals and noting expanded Committee membership.

2. The Chairman reported for the Subcommittee on Papers and Sessions. See "Call for Papers" elsewhere in this Newsletter.

3. The Chairman of the Subcommittee on the Specialty Conference, reported on a proposal for a Transportation Education and Training Conference. The conference would be held in the summer of 1983 or spring of 1984. See Chairman's letter for more information. Committee members generally agreed the conference should encompass planning, management, and business as well as engineering topics. "Case Histories" rather than "Success Stories" would be preferred. A conference such as the one proposed appears overdue.

4. The Chairman of the Subcommittee on Training gave several observations on transportation training programs. Of the 13 successful college programs identified, the common thread is a commitment to work with private industry. Organized labor is taking on more of a role in working with industry in matters of productivity and performance.

5. The Editor of the Committee Newsletter reported that only one was issued this year, due mainly to lack of items submitted. The Editor pleaded for items; send to Harvey Heiges, Transportation Systems Center, DTS-43, Kendall Square, Cambridge, Massachusetts 02142. Each Subcommittee was also charged with providing newsletter items.

6. An alternate for the newly appointed Chairman of the Task Force on Minority Education and Training reported that the Task Force has plans for a session at the 1984 TRB meeting. See "Call for Papers" elsewhere in this Newsletter. Focus will be on demand for minorities and women in transportation. The Task Force will be surveying resources for available research papers and projects on topics related to minorities and women in transportation. The Chairman pointed out that the Task Force may involve people who are not Committee members.

7. The Chairman called attention to the TRB concern for disseminating research approaches that show high pay-off. An example was a cost saving technique used by the Kansas DOT for bridge repair.

8. A representative from UMTA briefed the Committee on funding for the eight university centers. A list of the Centers is given elsewhere in this Newsletter. The Centers' activities could be a topic for a session next year's annual meeting.

9. A representative from FHWA briefed the group on plans for a conference in the summer of 1983 for transportation planning faculty that would be patterned after the highly successful safety conference for college faculty held in 1982. More on this conference may be found elsewhere in this Newsletter.

10. It was announced that the Operations Research Society of America (ORSA) is preparing a directory of University Transportation Education Programs.

11. In response to the TRB liaison's recommendation that the committee be represented in the TRB manpower study, the Committee voted to take steps to be so represented.

CHALLENGE STIMULATES WTS ROLE  
IN EDUCATION

At a reception in late 1981, Representative Barbara Mikulski (D-MD) challenged members of the Women's Transportation Seminar (WTS) to "remember your younger sisters." She urged the women to seek opportunities to speak to groups of high school and college age young women and urge them to seek non-traditional careers including transportation. WTS has responded to that challenge.

The "Mikulski Challenge Committee" has developed a program guide for its chapters to use in the outreach program. WTS members have spoken at George Mason and George Washington Universities, Trinity College, the University of Maryland, New Jersey Institute of Technology, Long Island University and others. The Washington DC Chapter sponsored a one-day internship where students from the following universities, District of Columbia, Maryland, George Mason, American, Howard, Morgan State, Catholic and Johns Hopkins, spent the day on-the-job with WTS members and attended a luncheon meeting where Rep. Mikulski spoke. The Committee has also prepared an annotated bibliography of career information.

Recently, WTS established a standing committee on education to formalize the work of the Mikulski Challenge and to merge it with the Scholarship Committee which administers an annual \$1000 scholarship for a woman transportation major.

WTS PLANS "TRANSMAPS"

The Education Committee of the Women's Transportation Seminar (WTS) has undertaken a major project aimed at "mapping" transportation careers. The "Transmaps" will help young women identify specific job possibilities in the diverse transportation industry. The transmaps will also support the ongoing work of meeting the "Mikulski Challenge."

The maps will follow a model developed by the University of Maryland Office of Commuter Affairs using six personality types: realistic, investigative, artistic, social, enterprising, and conventional. Information on these types is drawn from the vocational theory of John L. Holland, Making Vocational Choices: A Theory of Careers, published by Prentice Hall in 1973.

For each type, the Transmap will identify career possibilities, organizations and involvements, internships, volunteer and job opportunities, and where to turn for more information including trade associations and publications.

The Committee plans an early 1984 publication of the Transmaps. For more information contact Ms. Barri Standish, General Manager, University of Maryland Transit, Bldg. 13, College Park, MD 20742.

INTER-AMERICAN TRANSPORTATION WORKSHOP

A three-day U.S.-Brazilian Workshop on Transportation Energy was concluded at the Polytechnic Institute of New York on January 14, 1983. It brought together four Brazilian and eight American researchers to discuss important transportation energy issues including alcohol fuels, energy and goods transportation, and the impact of urbanization trends on energy use.

The workshop was sponsored by the Division of International Programs of the National Science Foundation and the Conselho Nacional de Desenvolvimento Científico e Tecnológico of Brazil, and organized by Dr. Luiz Gomes, of the Pontifical Catholic University of Rio de Janeiro, on the Brazilian side, and by Dr. Louis Pignataro, Mr. Arnold Bloch, and Ms. Marie Luciano, of the Polytechnic Institute on the American side.

## SUBCOMMITTEE ON TRAINING CHAIRMAN'S STATEMENT

Training in the transportation field today presents many challenges and opportunities. The rapid deterioration of our infrastructure, the poor state of the economy, the pressures to reduce public budgets and staffs, and quantum leaps in technology have all served to create extreme pressures on those working to solve our transportation problems. The pressures are to increase productivity, effectiveness and efficiency--to work smarter. Training must play a key part in making people "smarter."

There appears to be a lack of coordinated effort in transportation training. This is partially because the problem is so large. It is like the blind man trying to describe an elephant. The technologies include manufacturing, planning, design, construction, maintenance and operations for each of the modes. All levels of government are involved, as well as metropolitan planning organizations, transit operators, industry and educational institutions. The personnel include managers, professionals, technicians and labor.

The Subcommittee Chairman suggests that the efforts of the TRB Training Subcommittee be directed more to the "how" of training than the "what." This will help bring the size of the beast down to something more manageable and, with luck, the ensuing discussion will result in something useful to the transportation community.

Training is usually poorly managed. The training process is seldom thought of as a system that can be managed to optimize the investments made. This process involves analyzing needs, providing resources, conducting training, and evaluating the results which should then become a new analysis of needs. Each of these elements are discussed below:

1. An analysis of needs should include a look at the performance levels desired and the actual performance level. Training can help make-up the shortfall. Unfortunately, most training is conducted because it is available, not because it is needed. Teaching mechanics first aid because a good instructor is available is fine, but perhaps what is really needed is training on how to rebuild a transmission.

2. Resources include instructors, time, facilities, money and materials. Training materials should be performance-oriented whenever possible, but seldom are.

3. Training is traditionally conducted in a classroom environment, but this is not always the most effective. Learning can be most effective with one-on-one, on-the-job training (OJT). OJT, however, is seldom planned, monitored and evaluated so it usually falls short. Interactive computers offer exciting training opportunities that the transportation field has not yet begun to realize.

4. Very little effort is made to evaluate the true effectiveness of training and to learn from mistakes and successes. A rational evaluation should weigh the cost of the training effort against useful gains in knowledge or changes in performance. This is opposed to the normal "evaluation," which is usually a check on the instructor's popularity.

The training of technicians and laborers has generally received a much lower priority than the training of managers and professionals. The greatest training needs probably exist in the sub-professional groups. The National Institute for Certification in Engineering Technologies offers certification in a series of technician career fields. This certification concept could be expanded to include more fields and could be used by training managers to both analyze training needs and evaluate training.

Finally, the role of the training manager in transportation organizations is usually ill-defined and ineffective. There is very little "networking" available to transportation training managers, preventing an effective

sharing of ideas. A sense of professionalism should be instilled in training managers so they can gain the respect and confidence of their top management.

The above thoughts are those of the Chairman of the Subcommittee. They may be off the mark and incomplete, but if they serve to generate some discussion among those interested in the state of training in the transportation community, then they will be worthwhile. If any reader would like to express an opinion on these ideas or other training issues, or would like to offer suggestions on a proper agenda for the Subcommittee on Training, please contact the Chairman:

Louis B. Stephens, Manager  
Training and Publications Group  
Byrd, Tallamy, MacDonald, and  
Lewis  
2921 Telestar Court  
P.O. Box 504  
Merrifield,  
Fairfax County, VA 22116.

Preliminary plans are being made for a session on training at the next annual TRB conference. Proposals for papers should be submitted to the Chairman of the Subcommittee as soon as possible. The deadline for submittal of papers for review is August 1, 1983.

### EDUCATION NEEDS OF THE PROFESSION CALL FOR PAPERS TRB 1984 ANNUAL MEETING

The Transportation Education and Training Committee will be sponsoring a session at the 1984 Annual Meeting of the Transportation Research Board. The purpose of this session is to examine the education and training needs of the profession. This includes not only undergraduate and graduate education, but also training and retraining programs for practicing transportation professionals. Those interested in submitting papers should contact Professor Mark Virkler, Department of Civil Engineering, 1047 Engineering Building, University of Missouri-Columbia, Columbia, MO 65211.

### WOMEN AND MINORITIES IN TRANSPORTATION EDUCATION CALL FOR PAPERS TRB 1984 ANNUAL MEETING

The Transportation Education and Training Committee has established a task force on women and minorities in transportation education. Those interested in participating on task force activities should contact Ms. Sandra Spence, Corporate Secretary, AMTRAK, 400 North Capitol Street, N.W., Washington D.C., 20001. One result of the task force activities will be sponsorship of a session at the 1984 Annual Meeting of the Transportation Research Board. Papers which examine the problems of women and minorities in transportation and their education/training needs will be considered for presentation at this session.

### TRAINING AND EDUCATIONAL OPPORTUNITIES FOR THE BUS INDUSTRY

In the January, 1983 issue of *Bus Ride* is a list of training and educational opportunities available to the bus industry. The list includes a short description of courses, dates, registration requirements, and addresses for obtaining further information. The education programs range, for example, from bus manufacturer training in maintenance to transit management at university institutes. Additional listings will appear in the April issue of *Bus Ride*. To submit information on forthcoming courses, write Friendship Publications, Inc., P.O. Box 1472, Spokane, WA 99210.

ADDRESSING THE COMMUNICATION GAP  
BETWEEN ACADEMICS AND  
PRACTITIONERS THROUGH TRAINING

One of the principal challenges facing the transportation research community is the perceived "gap" between academics and practitioners. This is particularly true in the field of transit where all too often one hears complaints by some concerning academic insensitivity to "real world" problems and frustration from others at the industry's resistance to innovation and potential improvements. To the extent that such talk is more than just rhetoric and reflects deeply rooted perceptions, it may, in fact, highlight a lack of mutual understanding concerning the potential and limitations of both areas.

In such a perspective, it becomes the responsibility of both academics and practitioners to explore potential benefits from enhanced inter-relationships. For example, practitioners may find solutions or at least directions for dealing with the dilemmas they face, or conversely the academic community may gain more perspective on their research and educational efforts, and give increased consideration to the goal of ultimately applying their results for the benefit of the community as a whole. However, given the considerable economic and political constraints currently placed on operators and planners, it is reasonable to suggest that the academic community shares a relatively higher prior portion of the burden of bridging this gap.

The notion of training and education may be one potentially powerful mechanism in this effort since they inherently entail the communication of ideas to different audiences. This has been our thought at the Institute for Urban Transportation (IUT) at Indiana University where management training has been a major focus since George Smerk's publication of "Mass Transit Management; A Handbook for Small Cities" in 1971. However, if the concept of training is to serve as a bridging mechanism, it must evolve from its more traditional definition as conveyance of specific techniques to one based on communication as a means of exchange.

The concept of "training as exchange" is firmly embedded in the management training programs as we have or are developing at IUT, whether they be in the more specific topic areas of management performance auditing and labor negotiation or in the broader areas of financial management and managerial strategies. The training programs are intended not only to expose participants to new tools with which they are unfamiliar, but also to serve as a forum for discussion, where participants learn about similar problems faced by other properties, and where the IUT educators and staff gain an enhanced awareness of the environment in which participants work as well as knowledge of their specific problems.

Taking this one step further, training cannot happen in a void if it is to be used successfully to bridge the communication gap between academics and practitioners. It must be linked to the research needed to explore new directions for solving the identified problems, and should perhaps be linked as well to the concept of "technology transfer," which seeks to develop realistic approaches to the implementation of innovative solutions. Such a comprehensive approach to bridging the gap between academics and practitioners, involving not only training and education but also research and technology transfer, is sometimes found in engineering or planning oriented transportation programs but is a rather rare occurrence in the areas of management and public administration.

This underlies a need to which IUT is addressing itself, as are other UMTA-sponsored Centers for Transit Research and Management Development. However, the problems created by a communication gap between academics and practitioners are not confined to one area such as management but are generic to the entire transit

research community and represent a definite threat to research, education, and even to the industry itself, as we face an environment of increasingly scarce resources. One possible approach to this problem has been outlined here, but others need to be suggested, and TRB's Committee on Training and Education is certainly well placed to stimulate such a discussion.

Brendon Hemily, Director for  
Training and Education  
Institute for Urban Transportation  
Indiana University

Note: For further information on IUT's transit management training programs, contact Brendon at the Institute, 825 8th Street, Bloomington, Indiana 47405, or call (812) 335-8143.

TRAINING AND EDUCATION  
IN BUS MANAGEMENT

Year after year, the bus industry expresses a need for increased training and educational opportunities for its people. This is the result of changes that take place continually in today's fast moving world.

The changes that have taken place just in recent months in buses themselves make it necessary for maintenance people as well as operators and others to become more familiar with the changes. More changes are coming. For instance, electronics will become commonplace in many parts of the bus including the transmission and the engine. It is true that most changes are designed to improve upon the efficiency of the bus and decrease the dependence on maintenance. However, this is not always true, especially when something new is introduced. The people who work on the vehicles, drive them and even own them must be familiar with new ideas, products, etc., otherwise the efficiency claimed won't be achieved.

Friendship Publications has for some time, recognized the need for training and education and addresses this subject in a number of ways. For the sixth consecutive year, a \$1,000 Bus Maintenance Management Scholarship will be awarded. This is an opportunity for Friendship Publications to share in the industry and to help some deserving person receive educational opportunities toward a career in bus maintenance management.

With deregulation in the intercity/charter part of the industry, Friendship Publications has recognized the competition that will come about will increase the need for more knowledgeable people to sell tours and charters. As a result, a \$1,000 Bus Tourism Management Scholarship is being awarded this year. There are many educational opportunities in colleges, universities, and trade schools where individuals can increase their knowledge to become better in selling, conducting and managing the growing bus tourism business. Despite all the educational and training opportunities available, there is always a need for more for the bus industry.

-----  
Excerpted from W. A. Luke, "Viewpoint", BUS RIDE,  
February 1983, p. 37.

BUS TOURISM SCHOLARSHIP

Applications for Friendship Publications' \$1,000 Bus Tourism Management Scholarship for 1983 are being accepted. Persons interested in a career in bus tourism and wish to further their education are eligible. An entry form may be obtained by writing to Friendship Publications, Inc., P.O. Box 1472, Spokane, Wash. 99210.

Applications must be received by June 15, 1983 to be eligible. The person who, in the opinion of the judges, has the best qualifications for further education toward a bus tourism management position will be awarded the \$1,000

Scholarship. He or she will be notified by August 15, 1983, and the award presented soon afterward to the recipient and the educational institution involved. The Competition is open to any person in the United States, Canada or elsewhere.

#### BUS MAINTENANCE MANAGEMENT SCHOLARSHIP

Persons interested in further education toward a career in bus maintenance management are urged to send for an entry form for the \$1,000 Bus Maintenance Management Scholarship for 1983, from the sponsor of the Scholarship, Friendship Publications, Inc., P.O. Box 1472, Spokane, Wash. 99210.

The Competition, open to any person in the United States, Canada or elsewhere, closes June 15, 1983. Judging will begin immediately afterward and the person awarded the Scholarship will be notified by August 15, 1983 and the \$1,000 Scholarship will be presented to the recipient and the recognized educational institute soon afterward.

#### STUDENT INTERNSHIPS IN TRANSIT

The San Diego Metropolitan Transit Development Board has offered special paid internships in the past three years to qualified, motivated college undergraduates and graduate students. The internships were project-specific, and interns were responsible for producing reports, presentations, or other products at the end of the internships. Each intern was responsible for making formal arrangements with a faculty advisor from his or her university to advise and review the work effort. The level of communication between the faculty advisor, intern, and MTDB staff varied as the projects required.

Past interns were Christopher Tyndall, University of California, San Diego; Eric Schreffler, University of California, San Diego; Therese Cauchon, San Diego State University; William Schwartz, Massachusetts Institute of Technology. Internship projects included a community involvement program for a transit center, a fare structure study, public information efforts for the San Diego Trolley, and policy development for private/public financing of transit services.

Future internships will be limited to one a year, preferably during the summer, and will require cooperative academic supervision and a minimum time commitment of 20 hours per week. All internships will be subject to funding availability and worthiness of proposed research.

Eva Lerner-Lam  
Director of Planning & Operations  
San Diego Metropolitan Transit  
Development Board

Note: For further information, contact Eva at the MTDB, 620 C Street, Suite 400, San Diego, CA 92101, (619) 231-1466.

Your Newsletter Editor was the initiator and the Director of the Internship Program at San Diego State University for 10 years and has strong, positive views on student internships as an extremely valuable approach to preparing and training people for the transportation field. In 1979, I prepared a "mini-manual" on developing an internship program at the request of a British education journal; the manual was subsequently reprinted by the DOT Office of University Research. If anyone is interested in having a copy, I will locate some copies; send your request to:

Harvey E. Heiges, Ph.D.  
Transportation Systems Center  
Kendall Square, DTS-43  
Cambridge, MA 02142

#### UNIVERSITY CENTERS FOR TRANSIT RESEARCH AND MANAGEMENT DEVELOPMENT

As UMTA seeks to enhance transit research and management development capabilities at the university level, the Center concept has been selected as a promising mode for the utilization of multi-disciplinary experiences. It is also a means by which (1) UMTA's University Research and Training Program and its Management Training Program can be more fully developed and (2) State and local agencies including transit operators can be favorably included as active participants in all aspects of the Centers' operations.

UMTA's financial support to eight Centers provides the means whereby each institution will create, operate and finance a transit research and management development center. Each institution will identify sources of local funds available to assist in the development of a Center. Also to be identified are relevant courses already in place, what curriculum materials could be developed, how the Center would become self-sustaining (eventually), how the local transit operator(s) would be involved, and how advisory or steering committees would be established and utilized. First courses to be offered within the Centers' operations are scheduled for the 1982-1983 Academic Year.

#### THE "CENTERS"

Institute of Transportation Studies  
University of California at Irvine  
Irvine, California 92717  
Dr. G.J. (Pete) Fielding  
(714) 833-5448

New York Institute of Technology  
Old Westbury, New York 11568  
Dr. Richard Dibble  
(516) 686-7722

Center of Urban Studies  
Portland State University  
Portland, Oregon 97202  
Dr. Kenneth Dueker  
(503) 229-4043

The Wharton School  
University of Pennsylvania  
Philadelphia, Pennsylvania 19104  
Dr. Howard Mitchell  
(215) 898-7818

Texas Southern University  
Houston, Texas 77004  
Dr. Naomi Lede  
(713) 527-7282

Florida A&M University  
Tallahassee, Florida 32307  
Mr. Addis Taylor  
(904) 599-3600

University of Michigan  
Ann Arbor, Michigan 48109  
Dr. George Gamota  
(313) 764-6200

Indiana University  
Bloomington, Indiana 47405  
Dr. George Smerk  
(812) 335-8143

For additional information call UMTA's University Research and Management Training Program, (202) 426-0080.

### NEW PUBLICATIONS

An Assessment of Research-Doctorate Programs in the United States: Engineering.

Prepared by the Committee on an Assessment of Quality-Related Characteristics of Research-Doctorate Programs in the United States. Sponsored by the Conference Board of Associated Research Councils (American Council of Learned Societies, American Council on Education, National Research Council, and Social Science Research Council). Lyle V. Jones, Gardner Lindzey, and Porter E. Coggeshall, eds. (National Academy Press, 1982; 204 pp.; ISBN 0-309-03336-5; \$10.50).

This volume and the one on the Humanities are two of five in a series that when completed, will contain information on hypothesized measures of quality in 2,699 research-doctorate programs in 32 disciplines. (See National Research Council News Report, December 1982, pp. 7 ff., for further information on the study and on the first volume, on mathematical and physical sciences.)

The engineering volume covers 326 programs in chemical, civil, electrical, or mechanical engineering. The volume on the Humanities contains data on 522 programs in 9 disciplines: art history, classics, English language and literature, French language and literature, German language and literature, linguistics, music, philosophy, and Spanish language and literature.

Forthcoming volumes will cover biological sciences and social and behavioral sciences.

Taken from News Report, Vol. 33, No. 1, Jan. 83  
National Research Council  
2101 Constitution Avenue N.W.  
Washington, D.C. 20418

### MASSACHUSETTS COMPREHENSIVE TRAINING PROGRAM

For the past three years, the Massachusetts Department of Public Works (MDPW) has been running a very successful Comprehensive training program for all levels of personnel. During a period of personnel layoffs and dwindling resources, the program has enabled MDPW to increase and improve critical employee job skills, develop skills required by the agency, and strengthen MDPW as an organization. In 1982, the program served over 1000 employees in eight districts and central office.

The program offers academic and skills training opportunities. Utilizing the 15 state community colleges, the academic component allows MDPW employees to earn Associate Degrees in Civil Engineering Technology or Business. It sponsors some employees in other college level courses to meet specific job-related skill needs. All academic courses run in the evenings.

In-service training includes one to four day skills training in any of 35 or more different areas such as Traffic Design Review, Sedimentation Pools, Spraying, and Diesel Engine Maintenance. To support this effort, the program provides training of MDPW trainers, technical assistance to managers and a quarterly newsletter. By training in-house trainers, the program increases MDPW's capacity to strengthen itself.

This FHWA-supported program is funded by one half of one percent funds from National Highway Institute. It is monitored by the MDPW Personnel Department, which contracts with the University of Massachusetts, Institute for Governmental Services to manage, develop and implement all aspects of the program. The Institute training team works very closely with both MDPW and the local FHWA office. The process used by the Institute to develop programs assures that these will meet MDPW needs. The Institute regularly conducts need assessments and interviews with MDPW management and staff and works with advisory committees to analyze job tasks and skill needs and to set appropriate training objectives. Institute staff then teach the courses, hire specialists from engineering firms and universities, or train MDPW experts to instruct sessions. Results of evaluations conducted after each college semester and training workshop are used to modify and redesign the program and to identify new training directions.

Over the past three years, the program has evolved from an emphasis on management and supervisory training, to a combination of engineering, clerical and general courses and now to a goal of delivering all highway-related training. The program has developed innovative ways of meeting MDPW's needs and FHWA's concerns. A high level of interaction and dialog between the Institute, MDPW and FHWA helps program staff maintain flexibility and responsiveness to MDPW's constantly evolving organizational and training needs.

Further information about the MDPW program can be obtained by contacting Mary Harrison, Program Administrator or Arlene Margolis, Training Coordinator, Department of Public Works, 100 Nashua Street, Boston, MA 02114, at (617) 542-6571.