An Institute for Chief Administrative Officers of State Departments of Transportation

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Described in this paper are the design and implementation of a transportation executive institute for chief administrative officers of state departments of transportation (DOTs). Although education and training programs for state DOT staff are widely available, there has been little transportation education for chief administrators. The objectives of the Transportation Executive Institute are to contribute to the understanding of political, technological, social, legal, and economic forces affecting transportation management; increase the understanding of current issues in transportation; and provide a forum for the exchange of ideas and concepts related to transportation. The institute curriculum was developed on the basis of needs assessment surveys of the states. The results provided a priority ranking of organizational and policy issues of concern to chief administrators. The key elements of the success of the program have been (a) assuring that those who attended participated in program development, (b) recruiting outstanding program faculty, and (c) providing a comfortable and attractive learning environment.

The character of state transportation agencies has changed considerably during the past two decades in terms of mission and outlook. Most agencies functioned primarily as highway departments in the 1950s and 1960s, but with changes occurring at all levels of government in the 1970s, most of these agencies were reorganized as departments of transportation. In the 1980s state transportation organizations have been dealing with a broad spectrum of modes and issues, and have also been faced with problems resulting from reductions in work forces as the highway construction program has begun to wind down.

The management of state transportation agencies has also changed during this period. With the transformation to departments of transportation (DOTs) came administrators with backgrounds other than those common to the highway field. Many of these newcomers have been political appointees of governors rather than career professionals in transportation, and are generalists, as compared with the highway engineer-administrators of the past. Most have a short tenure and must deal with a wide spectrum of multimodal concerns. Usually, they are in the public spotlight as they deal with rapidly changing issues, and many do not have the background needed to identify and evaluate options and advise political leaders on a variety of technical issues. Today's chief administrative officers, while effective in the leadership role within a state DOT, still need to be quickly "brought up to speed" in key policy and organizational areas so that they can effectively deal with evolving issues.

In response to the special needs of administrative officers of state DOTs, the Transportation Executive Institute (TEI) was organized at the University of Virginia in 1984. The TEI is a 1-week program tailored for top managers of departments of highways and transportation to provide them a sound understanding of their organizations and of the forces of change that affect their operations. The think tank environment, and the extended time away from the office made possible within a university setting, is intended to provide a mechanism whereby current policy and managerial issues facing state DOTs can be fully developed, discussed, and debated. The purpose of this paper is to describe the design, organization, and implementation of the program and to discuss the response to it. Although education and training programs for state DOT staff are usually available, there has been little in the way of transportation education for top administrators and policymakers.

INSTITUTE CHARACTERISTICS AND OBJECTIVES

Several ground rules were established for the institute. First, the program is restricted solely to chief administrative officers (CAO) of state DOTs and officials of the U.S. Department of Transportation. This limitation assures that the program will be designed to meet the needs of CAOs and will address their common concerns from a state perspective. Thus, curriculum design can be tailored to and focused on problems faced by transportation agencies in states throughout the nation.

Second, the institute is not a management seminar in the general sense, but is intended to focus specifically on the issues that affect the top management of state transportation agencies. Thus, the TEI is not intended to duplicate other management programs, such as the Mississippi Highway and Transportation Management Institute, which is of 3-weeks' duration and intended primarily for middle management engineers. Furthermore, the TEI is not an executive management program such as is offered by schools of business administration. These programs attract middle and upper management personnel from private industry, and usually run for 6 to 9 weeks. Schools such as Harvard, Massachusetts Institute of Technology, Stanford, Virginia, and Northwestern have offered executive management programs of this type for many years.

The objectives of the Transportation Executive Institute are to (a) contribute to the understanding of the political, technological, social, legal, and economic forces affecting transportation and transportation management; (b) increase the under-

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standing of current issues in transportation; and (c) provide a forum for the exchange of ideas and concepts related to transportation.

PROGRAM DESIGN AND CONTENT

The institute curriculum was developed on the basis of needs assessment surveys of the states. Those respondents who indicated an interest in attending the institute, either the CAOs or deputy administrators, were asked to rate a series of topics on a scale of 1 to 5, with 5 representing "very important" and 1 representing "of little importance." The results from two surveys, the first conducted in 1984 and the second in 1985, are given in Tables 1 and 2. Each table gives the general subject areas and the means of the individual ratings for subtopics within the areas. For example, the general topic "information systems" was subdivided and rated as follows: computer-aided design (4.23), computer-aided financial management (4.27), and communications technology and state options (3.91). The overall rating given in Table 1 is 4.14.

TABLE 1 MAJOR TOPICS IN TRANSPORTATION AS DEFINED BY STATE DOT ADMINISTRATORS IN 1984

Topic	Rating
Information Systems	4.14
A Look Ahead in Transportation	4.11
Changing Emphasis in DOTs From New Construction to Maintenance	3.96
Dealing with the Public	3.93
Funding and Manpower	3.88
Coping with DBE/WBE Requirements	3.57
Impacts of Changing Levels of Service	3.54
Trucks	3.44
The Transportation Manager and the Law	3.28
Synthesis	2.94
Transit and Rail Issues	2.89

Notes: Rating scale 1 to 5 (lowest to highest) with 22 states responding. DBE—disadvantaged business enterprises; WBE—women-owned business enterprises.

An examination of Table 1 indicates that the subjects of greatest interest to chief administrators in 1984 could be considered in two categories. The first dealt with their organizations and events that directly affected highway and transportation organizations in terms of goals, mission, priorities, sources of funding, and technology. The second area of concern was how their organizations had to deal with the outside world in terms of public perception, the law, and changes that would be occurring in the future.

The general subject areas that were rated high (3.8 or better) in 1984 were information systems, a look ahead in transportation, the changing emphasis in DOTs from new construction to maintenance, dealing with the public, and funding and manpower. Although the general subject dealing with the law was not rated as highly (3.28), one subtopic, tort liability, received a rating of 4.05.

In the 1985 survey, the chief administrators also expressed interest in both organizational and global issues, and although the priorities had changed somewhat, each of the five topics that received a rating of 3.8 or higher in the 1984 survey were also rated high in 1985. This result confirms the observation that chief administrative officers today are most interested in understanding what the future holds in transportation, funding sources and trends, dealing with human resources and employee productivity, effects of the changing emphasis within DOTs from new construction to maintenance, and dealing with the public.

TABLE 2 MAJOR TOPICS IN TRANSPORTATION AS DEFINED BY STATE DOT ADMINISTRATORS IN 1985

Topic	Rating
A Look Ahead in Transportation	4.40
Funding for Transportation	4.12
Manpower and Productivity	4.10
Coping with DBE/WBE Requirements	4.07
Impacts of Changing Levels of Service	3.95
Changing Emphasis in DOTs from New Construction to Maintenance	3.90
Information Systems	3.82
Inter- and Intragovernmental Relations	3.80
Dealing with the Public	3.80
Trucks	3.67
Maximizing Research Investments	3.40
Case Studies of State Transportation Departments	3.20
Environment: Land Use, Esthetics, and Noise	3.13
The Transportation Manager and the Law	3.02
Transit and Rail Issues	2.80

Note: Rating scale 1 to 5 (lowest to highest) with 15 states responding.

In the 1985 survey, several topics were added, including inter- and intragovernmental relations, maximizing research investments, case studies of state DOT's, and the environment. Topics considered of lower priority were those dealing with transit and rail issues, law, environment, case studies of DOTs, and research. The topic of trucks was given a higher rating in 1985, particularly the subtopic effects of new regulations on road quality (3.9) and structural changes and their impact on highway finance and design (3.9). Coping with disadvantaged business enterprises (DBE) and women-owned business enterprises (WBE) requirements was also rated higher in the 1985 survey.

The preceding information was used to design a program that would be responsive to the transportation issues deemed most critical by state highway administrators. There was considerable discussion as to the length of the program, recognizing that top administrators have many demands on their time and find it difficult to be away from their offices for an extended period. However, it was also believed that the program would have little impact if it were too short and the topics were covered hurriedly. Accordingly, a program length of 1 week, Sunday evening to Friday noon, was selected. Furthermore, each topic was allotted a minimum of one-half day to ensure that the coverage would not be superficial and that there would be ample opportunity for discussion, debate, and clarification.

The topics selected for the institute are not neatly labeled and found in textbooks. Instead, they are contemporary, broad rang-

TABLE 3 PROGRAM TOPICS: TRANSPORTATION EXECUTIVE INSTITUTE

1984	1985
Changing Emphasis in DOTs from New Construction to Maintenance	The Influences and Impacts of Changing Levels of Service
Funding Issues in Transportation	Tools for Managing and Operating Highway Systems
Manpower and Productivity	Funding Transportation in the 1980s
Computer-Aided Financial Management for Transportation Agencies	Human Resources and Employee Productivity
Tort Liability and Transportation	Microcomputers and Computer-Aided Design
Dealing with the Media	Dealing with the Governor and State Legislature
A Look Ahead	Trucking Issues Impacting State DOTs
	A Look Ahead

ing, and unique to the problems of transportation organization and administration. Accordingly, the lectures are tailored to the audience and taught by the most qualified persons available. The instructors are individuals who know their subjects well, understand the audience and their needs, and are able to communicate effectively. The TEI faculty are speakers who are not only "doers" in the topic but "thinkers" as well; that is, they are people who have taught and written about the subject and are able not only to discuss what they and their organizations are doing, but can articulate the broad issues that the topic implies. They are also familiar with the spectrum of approaches to various issues, both successful and unsuccessful.

Transportation Executive Institute
University of Virginia

CHANGING EMPHASIS FROM NEW CONSTRUCTION TO MAINTENANCE

Outline of Presentation	Personal Notes

I. Background
  A. Trends
    1. Mechanization and Unionization
    2. Reduction in Manpower
  B. Funding
    1. Trends in Construction versus Maintenance
    2. Current Legislation
      a. Federal
      b. State
  C. Definitions
    1. Maintenance
    2. 4 R
    3. Construction

II. Maintenance Issues
  A. Limitation of Funds
    1. Inflation Effects
    2. Petroleum Product Costs
    3. Federal-Aid Limitations
    4. Inadequacy of Unit Tax
  B. Highway Loads
    1. Increasing Traffic Volumes
      a. Roadway Occupancy
      b. Routine Maintenance
    2. Increasing Axle Loads
      a. Pavement Damage Measurement
      b. Load-Damage Relationships
  C. Levels of Service
    1. Policy Decisions
    2. Implementation
      a. Methods of Measurement
      b. Data Handling and Analysis
      c. Management Controls

FIGURE 1 Illustration of lecture format.

The topics covered are those given the highest ranking in the survey of chief administrative officers, but the faculty is responsible for establishing the lecture content and format. Table 3 gives the program topics for the 1984 and 1985 sessions.

The material covered in each topic was given to the participants in a detailed outline form, with space sufficient for note taking. An illustration of the format used is shown in Figure 1. In addition, each participant received an extensive bibliography and a set of supplementary readings, including books, monographs, and papers.

To supplement the formal academic program, other activities were included for further enrichment of participants. These included two evening optional management seminars that dealt with understanding behavior and management styles and productivity in the public sector. Further, three formal dinners were held, one with speakers in the famed Dome Room of the University's Rotunda. A separate program for spouses was also held.

LECTURE TOPICS AND OUTLINES

The course material included detailed outlines, recommended readings, specially prepared lecture notes, and (where appropriate) extensive bibliographies. Listed next is a description of the subject matter included in each topic. (To provide a list of the recommended readings here would be impractical because of the number of publications involved.)

Changing Emphasis in DOTs From New Construction to Maintenance

Introduction: Trends, Funding, Definitions

Maintenance Issues:

- Limitation of funds
- Highway loads
- Levels of service
- 4-R design standards
- Deferred maintenance
- Work under traffic
- Personnel–staffing
- Contract maintenance

- Highway Network Maintenance and Operations
  - Management Systems
    - Introduction to management systems
    - Highway maintenance management systems
    - Pavement management systems
    - Bridge maintenance management systems
    - Equipment management systems
- Funding Issues in Transportation
  - Historic framework for transportation finance
  - Patterns of transportation use
  - Spending for transportation
  - Current revenue sources
  - Principles of highway finance
  - Results of transportation investment
  - Outlook
- Human Resources and Employee Productivity
  - Importance of human resources and productivity
  - Review of relevant literature
  - Results of TRB Professional Needs Study
  - Options to enhance organizational productivity
  - Developing a human resource plan
- Microcomputers and Computer-Aided Design
  - Definition of microcomputers
  - Microcomputer hardware
  - Microcomputer software
  - Comparison of microcomputers and other computers
  - Microcomputer use in state DOTs
  - Definition of computer-aided design and drafting (CADD)
  - Computer-aided drafting as a special form of CADD
  - Detailed description of elements of CADD
  - Status of CADD in transportation
  - Description of examples of CADD
  - Future of CADD
  - Management consideration of CADD
- Tort Liability and Transportation
  - Introduction: Legal Responsibility, Public Liability, Changing Legal Concepts
  - Reducing the risks of liability
  - Preparation for trial
  - Developing a loss mitigation program
  - Managing claims activities
  - Case studies and discussion
- Dealing With the Media
  - Why do many public officials fear the press?
  - Who are the media?
  - What polls show about conflict between media and public officials
  - How are the news media organized?
  - Rules of the conflict
  - What reporters expect
  - What public officials can do to help media relations
- Trucking Issues Impacting State DOTs
  - History, industry composition, DOT reorganization
  - Uniformity
  - Taxes
  - Size and weight
  - Safety
  - Other issues
- A Look Ahead in Transportation
  - Key role of DOTs in the future U.S. economy
  - Background and setting of DOT operations
  - Managing state systems in a changing world
  - Assessing the travel future
  - Outlook for freight
  - Expanding transport responsibilities: the demand side
  - Financing strategies for the future
  - DOT operations in a global context

PROGRAM RESULTS

The 1984 and 1985 programs have been attended by chief administrative officers or deputies from 17 states, the FHWA, and Canada. Figure 2 shows the distribution of states represented. Participant evaluations have been positive, as indicated in Table 4, and many favorable comments were offered. Similarly, faculty lectures were well received. Interestingly, the evaluations for the second program were slightly lower than the first, including items such as food and lodging, which were identical in both programs. One measure of the program's success is the decision by the American Association of State Highway and Transportation Officials to continue its support of the institute.

TABLE 4 TRANSPORTATION EXECUTIVE INSTITUTE OVERALL EVALUATION (1984–1985)

Attribute	Rating 1984	1985
Overall administration and organization	5.00	4.85
Variety of instructional methods	4.00	4.00
Quality of instruction	4.14	3.85
Mix of practitioner and academics	4.54	3.70
Institute content	4.33	4.00
Classrooms	4.40	4.23
Lodging facilities	4.67	4.30
Food	4.74	4.69
Overall evaluation	4.58	4.38

Note: Rating scale 1 to 5 (ponses.

The key ingredients in the success of the TEI have been (a) assuring that those who attended participated in the selection of curriculum topics, (b) recruiting outstanding program faculty, and (c) providing a comfortable and attractive learning environment. Based on the experience gained, however, it is noted that the demand for a program of this type is constrained and factors such as program cost, travel distance, time away from the office, conflicts with other meetings, legislative or other crises, and perceived benefits from the program all serve to limit attendance. Because the total potential audience is probably fewer than 200 people, this small, albeit important group is not likely to produce large numbers for a program such as this. Educational enrichment is a deferrable commodity and

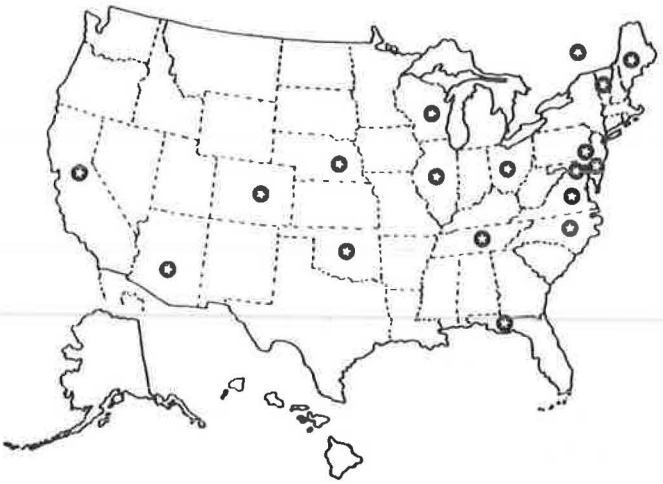

FIGURE 2 Origins of program participants.

the pressures of life tend to overtake the need and desire to stop now and then and "smell the roses." However, for those who do take the time, the rewards are many, both in expansion of horizons and in shared experiences.

CONCLUSIONS

What can be learned from this experience and what conclusions can be drawn that may be of assistance to transportation professionals or university groups in developing programs of this nature? Some key points are as follows:

- Transportation is a rapidly changing field and the environment in which top administration works is a moving target. Thus, any attempt to provide education or training must be constantly updated and revised.
- Educators are not accustomed to dealing with such rapid change. They often teach the same course year after year with textbooks that are out of date as soon as they are published. Perhaps a new form of education is required that assures greater relevance.
- Top administrators will spend a considerable portion of their most valuable resource—time—if they perceive that it will enable them to understand and do their jobs better. New administrators are a particularly fertile market for this type of training, but seasoned administrators with considerable experience can benefit as well.
- CAO's are concerned with why things happen and how things work in general. They do not want to get involved in specifics or details because they believe that this is the role for their technical staffs.
- A most important element of a program for top executives is their interaction with each other. Speakers cannot expect to deliver a 3-hour lecture, but must be able to handle give and take and draw on the experiences of such a group.
- To deliver a program of this type is a complex and challenging task. The student in the program is accustomed to running the show and expects to be treated in a first-class manner both in and out of the classroom.
- Finally, although there is a need to be innovative and creative, the program should "stay close to the customer." This is accomplished by having the participants involved in curriculum design and later in program evaluation.

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