

Spreading the gospel



During the past few years, a small group of zealots, lead by PHIL TARNOFF, has been on a crusade to convince public officials in the US that transportation operations can have as great an impact on mobility and safety as the construction of new facilities. In an era of shrinking construction budgets and increased costs, the effective use of existing facilities through improved operations must receive a high priority from transportation agencies

At a recent meeting of the American Association of State Highway and Transportation Officials (AASHTO) Subcommittee on System Operations and Management (SSOM), senior transportation officials gave the attendees a “dose of reality.”

They indicated that the lack of emphasis on operations was not due to their failure to appreciate its value, but rather a reflection of a shortage of qualified personnel. Since operations is in its infancy as a transportation specialty, experienced managers who have been promoted to senior positions within their agency hierarchies are in short supply. This problem is compounded by the fact that few if any universities provide operations-oriented curricula.

The discussions at the SSOM meeting concluded that a training process was needed for individuals with the interest and potential to assume leadership roles within the transportation operations field. Traditional short-courses, because of their limited time span cannot fill this need, because they do not provide adequate time for practice and reinforcement of the principles being instructed to ensure full understanding and retention of the subject matter.

When they exist, the offerings of colleges and universities tend to be relatively theoretical, and do not consider the practical aspects of personnel management, organization and policy, with which an operations manager must be concerned. For these reasons, it became clear that a new type of training was required, that focused on the needs of transportation operations managers. This training became known as the Operations Academy which was funded by the I-95 Corridor Coalition, and developed at the University of Maryland’s Center for Advanced Transportation Technology.

The Operations Academy

An effective traffic operations manager must be familiar with transportation policy, personnel management, organization, funding, supply/demand relationships, safety measures, traffic engineering and a host of other topics. The challenge faced by the organizers of the Operations Academy was to cover these subjects in a meaningful way.

The Academy’s program was developed with the assistance of a steering committee made up of representatives from the I-95 Corridor Coalition, State DOT’s, the Institute of Transportation Engineers and private industry. The committee agreed on the following set of guiding principles:

- Emphasis on mid and senior level management: A prerequisite for organizational focus on management and operations requires internal support at mid and upper levels of management. The initial program was developed with the needs of these individuals in mind.
- Management level training: The focus on management level personnel lead to an emphasis on non-engineering subjects such as interaction with the public, policy, performance measures, etc. Technical information was provided in a prestudy curriculum that was defined to ensure a common understanding of the tools of operations by the attendees and reviewed during an

initial classroom presentation.

- A curriculum that emphasized retention: The development of a curriculum that covered all essential material while providing adequate reinforcement to ensure student retention, proved to be a challenge. This requirement was satisfied through classroom presentations with reinforcement through field trips, workshops, guest speakers, preparation of an operations template, and class exercises.

- Lasting value to participants: While the greatest reward received by attendees was the lasting value of the education they received, additional tangible rewards were also important. Rewards identified and provided include framed diplomas, paperweights, continuing education units, news releases provided to their respective agencies, announcements and articles in trade journals, and most important, ongoing networking with their fellow attendees.

General structure

The Operations Academy program offered attendees a mix of learning experiences intended to reinforce the principles of operations through a multi-faceted training program. The two week program and the 40 hours of prestudy were allocated as shown in Table 1.

Format	Percent Time	Hours
Prestudy	33%	40
Classroom		
lectures	30%	35
Workshops	15%	18
Field visits	15%	18
Dinner/lunch		
speakers	4%	5
Opening/Closing	3%	4
Totals	100%	120

The glue that integrated these disparate formats was a process known as the operations template. This template was developed by the class as a continuing exercise used to identify key features required for effective operations. It included items such as customer service orientation, performance measures, organization, demand/supply balance, etc. These items were used as the basis of the workshops and for analyzing the operations that had been visited during the field trips. Field trip For example, had performance measures been identified for management of the freeway service patrol operation, and were all drivers acquainted with their existence?

Instructional content

The prestudy and classroom lectures provided the foundation for the other operations academy activities. The prestudy period was a rigorous program of self-regulated home study using a variety of printed and on-line resources. The distance learning courses offered by the



The March 2007 Graduating Class, with Phil Tarnoff in the back row, sixth from the right

Consortium for ITS Training and Education (CITE) were a major component of the prestudy program. The intent of the prestudy was to ensure that all students arrived at the Academy with a common understanding of the fundamentals of transportation engineering, safety, transit, intermodalism and ITS. The subjects included in the prestudy are shown in Table 2. All attendees were required to successfully complete a series of prestudy exams before they could attend the academy.

Table 2. Prestudy Course Material

Subject	Format
Traffic Operations	On-Line (CITE) Traffic Engineering Text
Traffic Safety	Various Reports
Planning and Policy	On-Line (CITE) Various Reports Traffic Engineering Text
ITS	On-Line (CITE)
Freight and Mobility	On-Line (CITE) Supplemental Report
Organization and Management	Various Reports

The prestudy was just the beginning of the formal instruction. A series of seven general subjects identified as critical for operations managers, had been identified by the steering committee. The curriculum shown in Table 3 was developed by the instructors who were selected for their respective sessions based on their in depth experience in with the subject matter. At the conclusion of each instructor's presentation attendees were required to take a practice exam, and complete an evaluation of the presentation. A subset of questions from the practice exams was included in the final exam, which all attendees were required to pass.

Other activities

The prestudy and classroom activities by themselves, do not offer the hands-on experience essential to reinforcing and internalizing the concepts being presented. The intent of the field studies and workshops was to provide the needed repetition and practice while offering a range of learning experiences. Field studies included freeway service patrol ride-alongs, visits to two traffic operations centers (one state and one local), and a tour of the Port of Baltimore's container facility. At the conclusion of each field study, workshop groups were asked to complete an evaluation of the degree to which the facility employed the principles listed on the operations template.

Two workshops were included in the Academy's agenda. The first workshop emphasized the application and analysis of technical solutions to the problem of a congested corridor. The second workshop required the definition of an operations unit for an existing Department of Transportation. The workshops were completed by each of the four workshop groups. At the conclusion of each workshop, the groups were required to prepare a brief written report and a PowerPoint presentation describing their solutions. The quality of the group's solution was evaluated by the instructors based on this material including its comparison with a set of pre-determined criteria. The class was also asked to vote on the quality of each group's solution,

An interesting result of the iterative instruction (classroom, field studies and workshops), is that they provided instructors with an opportunity to assess the degree to which the material was being absorbed by the students. During the academy, it became clear that the importance of risk assessment had not been understood by the majority of attendees.

Fortunately, time had been intentionally reserved on the agenda to address difficulties of this nature. In this particular case, the subject of risk assessment was further reinforced through an exercise in which the class

Graduates from the March 2007 Senior Management Program

Name	Agency	Name	Agency
Tom Blaine	New Mexico DOT ITS Bureau	Wesley Mitchell	MD SHA
Frank Cippel, PE	PennDOT	Scott Nazar	PennDOT
Steve Clinger	FHWA	Michael Smith	Niagara International Transportation Technology Coalition
Patty Eason, PE	North Carolina DOT	Lee Starkloff	MD SHA
Jonathan Hanson	New Hampshire DOT-Bureau of Turnpikes	Gregory Stone	Maine Turnpike Authority
Woody Hood	MD SHA - OOTS	Mohamad Tales, PE, PTOE	New York City DOT
Daniel Jacobs	MTA Bridges & Tunnels	Paul Wai	Florida's Turnpike Enterprise
Paul Jodoin	Massachusetts Highway Department	Jeffrey Weatherford	City of Houston DPW & Engineering
Tim Lattner	Florida DOT	Aaron Weatherholt	Illinois DOT
Bill Legg	Washington State DOT	Tim Wolfe	Arizona DOT
Ling Li, PE	Virginia DOT		
Robert Limoges	NYS DOT-Operations Division		

Table 3. Courses and Presenters

Session Title	Presenter
Overview of Operations (Why it's important)	Steve Lockwood, Parsons Brinckerhoff
Operations as a System (Supply/Demand relationships)	Phil Tarnoff, University of Maryland
Relevance and Leverage (Comparison of operations with construction impacts)	Phil Tarnoff, University of Maryland
Performance Measures (What are they, when to use, how to use)	Daniella Bremmer, Washington State DOT
Customer Service (Importance, managing conflict, evaluating customer satisfaction)	Pat Noyes, Consultant
Organization (Effective operations organizations)	Connie Sorrell, Virginia DOT
Planning and Policy (Regional planning, policy, funding)	George Schoener, I-95 Corridor Coalition

developed an actual risk mitigation plan. As a result of this exercise, an instructional deficiency was eliminated, and another level of reinforcement applied.

The Academy also included a number of lunch and dinner speakers who delivered presentations on management, outsourcing, freight movement, and the roles of FHWA and AASHTO in supporting operations. The speakers provided an added dimension to the Academy, through their informal interactions with the class, which encouraged in-depth class discussions. They also covered topics that could not be included in the mainstream curriculum without exceeding the available time and attention span of the attendees. The speakers were well received, and their remarks frequently generated lively and interesting discussions.

The outcome

Twenty two students attended the Academy from agencies throughout the United States (Washington State to Florida), and with a variety of backgrounds including maintenance, traffic engineering, assistant district engineers, traffic operations center management, etc. All students successfully completed the prestudy and participated in the entire two week program attending all lectures, workshops and field trips. The evaluations received were uniformly complimentary about the program. Representative comments included:

- “The Operations Academy provided a strong, relevant program which addressed many of the problems and issues I face on an on-going basis.” – Bill Legg, Washington State DOT
- “The Operations Academy brought the philosophy

of conceptual operations into clear focus. It will build future leaders that will move into decision making positions.” Tom Blaine, New Mexico DOT

- “This was an incredibly comprehensive program. I will be able to apply concepts learned right away, not only from the country’s expert in operations, but from our peer states’ experiences as well. I will recommend the program strongly to others in my state!” – Rob Limoges, New York State DOT

One of the most significant outcomes of the Academy was the degree of networking that has occurred since its completion. A list serve has been established on the Academy’s website reserved exclusively for interaction among the graduates. To this date, there has been a constant stream of messages including information on policies, memoranda of understanding, sample concepts of operations, job openings, etc. The website also includes a slide presentation describing the academy which has been used by its graduates to describe their experience to their own organizations. At the conclusion of the program, attendees discussed the possibility of a class reunion; an indication of the high level of networking that was to occur.

Thus the Academy has developed an initial nucleus of personnel, likely to become the senior system operators and department heads of the future. It will be interesting to track their careers, as well as those of future graduates, to determine whether the Academy has had an impact on the integration of transportation operations into the culture of today’s transportation agencies. All the signs are positive. **TH**

Visit www.operationsacademy.org