Managing Change in State Departments of Transportation

Scan 5 of 8: Innovations in Work Force Strategies

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FOREWORD

Change Management in State DOTs

State departments of transportation are operating in an environment of unprecedented change. Evolving demands for transportation services, new technologies, workforce composition, stakeholders' concerns, and a constantly changing political environment create continuing demands for institutional change. To address these challenges, many state DOTs are undertaking a range of initiatives such as strategic planning, organizational restructuring, performance measurement, process engineering, and outsourcing.

Both anecdote and survey suggest that change management is now the major preoccupation of senior management. However, the rate of change is very uneven and not well-understood. Indeed, there appears to be more *innovation* than *imitation* -- since the creative approaches being introduced are not documented or widely discussed. Little "literature" on state DOT change management has been developed -- either case studies or "how to" material.

AASHTO's Strategic Interest

A 1998 AASHTO report on "The Changing State DOT" identified drivers of change and approaches being taken by state DOTs in change management. AASHTO's Year 2000 Strategic Plan activities then introduced an element concerned with facilitating institutional change. Meanwhile, a newly reorganized TRB Committee on Strategic Management, through calls for papers and annual meeting sessions, focused on studying the range of changes occurring in transportation organizations. This led to the formation of a committee to plan a special workshop on strategic management under the joint sponsorship of the Transportation Research Board Committee on Strategic Management, AASHTO Standing Committee on Quality, and the Federal Highway Administration (FHWA).

The Strategic Management Workshop

The two-day workshop (June 25-27, 2000) in Minneapolis was organized to facilitate peer-to-peer discussions among the CEOs and senior staff of the state DOTs about their experiences in managing internal and external change. This workshop focused on sharing recent experiences with managing internal and external change and lessons learned. Twenty state DOT CEOs participated in the workshop, and 35 state DOTs were represented by CEOs or senior staff. Conference dialogue dealt with three principal management challenges:

1. Strategic planning-related initiatives
2. Workforce and reorganization-related initiatives
3. Process and program delivery-related initiatives

The discussions identified a wide range of specific issues within each area that attendees felt deserve organized review via case studies, assessment of the state of the practice, and identification of promising concepts, approaches, and tools. Workshop participants used the results of these discussions to identify research that would help state DOTs lead and manage their changing organizations. Twenty-two research problem statements were crafted around the three subject areas.

TRB, at the urging of AASHTO and participating CEOs, immediately set up an NCHRP panel, chaired by Mary Peters of Arizona DOT, to develop a multiyear NCHRP research program under the 20-24 program established for special AASHTO research related to DOT administration. The panel combined and prioritized problem statements into eight strategic management issues for priority research. In view

of the lack of written material on these subjects, the panel decided to start with broad "scans" of the state of the practice in each area to provide guidance for a substantive multiyear research program. Each scan would summarize the challenges, document examples of current innovations, and recommend the appropriate initial components of a research program. The eight-month scan program -- including presentations at AASHTO Board meeting roundtables -- represented a highly unusual rapid-response approach to the priority placed on these issues by AASHTO and TRB.

Cross-Cutting Findings from the Initial Eight Scans

The eight scans produced considerable evidence of the number and breadth of change management initiatives within state DOTs. In general, these initiatives are concerned with the agencies as institutions, their mission and leadership, organization and workforce, process, and resources. The principal, common forces of change include:

1. Deliberate reorientation of strategic objectives in response to program limitations (Scan 3, operations), new technology (Scan 6, information technology), or funding (Scan 8, innovative finance)
2. Evolution of new forms of cooperation for improved service delivery with other public agencies (Scan 7, partnerships) and the private sector (Scan 2, outsourcing)
3. Workforce strategies (Scan 5) in response to downsizing, retirements, competition, and the need for new capabilities
4. The need to institutionalize and measure change management (Scan 1, strategic leadership) and improve agency image in the overall constituent context (Scan 4, positioning)

Overall, state DOTs today appear to be evolving away from single-purpose entities with standard approaches to producing a limited number of well-understood products and services. Instead, they are moving toward more flexible organizations designed to respond to constantly changing missions with ever-increasing efficiency through a shifting coalition of partners and stakeholders. Managers of these changes can clearly benefit from access to collective experience, including a better sense of the state of the practice and specific resources based on the more promising approaches. The scans identify some of the most valuable experience and provide important pointers to key issues for further dialogue and research.

Individual Scan Highlights

Scan 1 -- Innovations in Strategic Leadership and Measurement for State DOTs: Strategic planning itself is increasingly widespread in state DOTs. However, many CEOs find that the process often breaks down in the implementation stage -- creating buy-in and "institutionalization" of key change vectors. Yet some promising solutions are being found, including widespread participation of a variety of stakeholders in the process, a customer focus in terms of strategy and priorities, top management commitment to implementing the strategic agenda, ongoing communication to promote it, and "omni-directional alignment" among goals, performance measures, and budgets. Further research in each of these areas is needed to strengthen and integrate strategic management practices. *(Scan by T.H. Poister and D.M. Van Slyke of Georgia State University)*

Scan 2 -- Innovations in Private Involvement in Project Delivery: Outsourcing -- commonly employed for construction and design services to cope with lumpy demands or staff downsizing – is spreading to other functions within the project and service delivery functions. It is increasingly important to understand the relative costs and quality of work conducted in-house versus by external private firms. Current evidence is not conclusive, as cost comparisons may not have been systematic. More research and more collaborative efforts are required by transportation organizations to identify best practices and possible standard procedures. *(Scan by Dr. D. Hancher, P.E. and R. Werkmeister, P.E., University of Kentucky)*

Scan 3 -- Innovations in Institutionalization of Operations: Systems operations and management is already considered a mission priority by many state DOTs. However, the several types of operations-related activities -- ranging from ITS to maintenance of traffic -- are stovepiped and decentralized in most state DOTs. In most cases, there appears to be no common department-wide policy framework around which to organize for efficient integration of services and sustainable funding. Some member departments are establishing performance measures by conducting customer surveys, but implementation for program management is still in the very early stages. Further case study research into promising approaches is needed to connect customer interests and performance measures to integrated operations activities. *(Scan by Philip J. Tarnoff)*

Scan 4 -- Innovations in DOT Communications, Image, and Positioning: The scan focused on states known to be addressing issues of communications, image, and positioning. Those that were most advanced focused on improving both internal communications with staff and external communications with the public, elected officials, and the media. Some innovative states are assessing their image and identifying ways in which to clarify and improve it with the public, recognizing that image enhancement and improved constituent communications may lead to an improved position for the agency, to new resources, and to a more supportive audience for the agency's work. Increasingly, states report that proactive efforts to better communicate and to position the agency positively with decision makers have led to increased public support and legislative funding for the DOTs. Additional research in communications, positioning, and marketing to various constituencies was felt to be needed. *(Scan by K. Stein and R. Sloane of Howard/Stein-Hudson Associates)*

Scan 5 -- Innovations in Work Force Strategies: State departments of transportation face severe challenges in recruiting and maintaining their workforces. Innovative approaches are being taken to recruitment of core competencies such as IT and senior civil engineering. Retention and succession approaches were also investigated, including mentoring and reverse mentoring. However, more case study and research are needed in defining, recruiting, and retaining the necessary workforce. *(Scan by C. Gilliland of the Texas Transportation Institute)* **This scan is the topic of this file.**

Scan 6 -- Innovations in Organization Development as a Result of Information Technology: The rapidly changing environment of IT is challenging DOTs to deal with emerging opportunities and problems. This scan identified the range and types of new opportunities related to IT itself as well as related organizational development implications. Key issues include organization of the IT function, the cost-effective degree of outsourcing, and a range of management issues such as handling information overload, funding, procurement, and training. These areas suggest future research directions. *(Scan by C. Cluett and K. Baker of Battelle Seattle Research Center)*

Scan 7 -- Innovations in Public-Public Partnering and Relationship Building in State DOTs: A wide variety of partnerships among state DOTs; other state, local, and federal agencies; and public stakeholders are improving project and program delivery and increasing efficiency across agency or jurisdictional lines. Promising areas for partnering include achieving environmental streamlining, rationalizing state-local maintenance responsibilities, and joint community problem solving. Examination of successful partnerships and relationships identifies common elements of success and provides a starting point for the development of new partnering tools more applicable to longer-term, peer-to-peer relationships among DOTs; other state, local, and federal agencies; and non-governmental stakeholders. *(Scan by Mark Ford of HDR-Portland)*

Scan 8 -- Innovations in Project Financing: There is now a very rich menu of innovative revenue sources and finance techniques. New revenues are available from toll facilities, HOT lanes, value or congestion pricing, special assessments and fees, shared resource projects, and/or joint development. These revenues can be combined to leverage scarce federal aid through both debt and equity approaches, capitalizing on the new flexibility within the federal aid and some state programs. Such new approaches to project financing can also benefit from innovative project development approaches. Research is needed on promising approaches to mainstream these approaches within transportation agencies. *(Scan by A. Reno and L. Hussey of Cambridge Systematics, Inc.)*

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EXECUTIVE SUMMARY

It would be nice to find a culprit on whom to blame state departments of transportation workforce problems. Some accuse the private sector for the raid on senior managers at state DOTs. Others point to politicians who advocate policies and budgets that make working for the state DOT an unattractive proposition. Still others may say that new laws and policies put too many demands on state DOT workers – with excessive public interaction. It appears, however; that the truth is that state DOTs face workforce challenges that are also being confronted by government organizations at all levels and by the private sector as well.

With nearly half of all state and local government employees between 45 and 64 years old, nearly two-fifths will be eligible to retire in the next 15 years. State transportation departments may have even higher numbers in those ranks because of the number of employees who started their careers concurrent with the Interstate Highway program. Regardless, even without private sector competition for senior transportation professionals, state DOTs are experiencing or will be facing, the departure of a good number of their leaders.

State DOTs also face a problem common with other sectors of industry and government – the need for personnel who are able to use new technology. The state DOT competes with all other public and private sectors for knowledgeable computer programmers, database managers, and network systems administrators. They also compete for individuals who know, or can learn, how to plan, implement, and operate intelligent transportation systems.

The one thing that has perhaps set apart some state DOTs from the private sector in the past has been how they have dealt with the challenges discussed above. As one researcher noted, in many cases states have proceeded as if these fundamental human resources realities didn't exist. That researcher charges that states perpetuated personnel systems that were rigid, rule-bound, and unresponsive. That is beginning to change, with some states engaged in stem-to-stern personnel management reforms.

What are state DOTs doing to meet workforce challenges? They are first attempting to keep a workforce in place by increasing efforts in recruitment and retention. They are strengthening professional development programs. They are putting succession programs and processes in place to help them avoid future problems.

Recruitment and Retention

Recruitment is the area with the highest level of innovations in state DOTs, with retention ranked as number two of the top five staffing plan priorities. Recruitment no longer means putting classified advertisements in the help wanted sections of the newspaper. Potential employees must be convinced that the state DOT is a good place to work, will be an employer that respects the individual's contributions, and will pay somewhat competitive wages and benefits. Just as important, current employes must be given reasons to stay in the organization. The high impact of losing experienced, training employes justifies an emphasis on retention programs and improved workforce policies and programs.

Trends at state DOTs appear to include the following:

- Streamlining the employment process – taking less time and less effort to hire;
- Putting more efforts into recruitment outreach – using multi-discipline teams that make forays into urban centers and other states;
- Instituting bonus programs for new hires, for referrals by existing employees, and for retention;
- Developing programs that emphasize the attractiveness of the state DOT as a workplace – allowing employees to have a family life and to think of the state DOT as a "family";
- Establishing employee satisfaction programs that include frequent two-way communications; and perhaps most importantly,
- Increasing salary levels as high as possible – using benchmarking of positions and salary surveys as justification.

Professional Development

State DOTs are increasing the attention on professional development programs. The departments are doing more to know their employees' strengths and weaknesses and develop programs to address the weaknesses. Some state DOTs are doing annual individual evaluations that strive to continually develop the employee's abilities. When state DOTs have not been able to fill some positions, some state DOTs have begun to identify existing employees that can be given the educational opportunities to qualify for them.

Succession Planning

In an effort to be better prepared to avoid future challenges, there is a growing emphasis on succession planning. Succession planning is an ongoing process that must receive the commitment of the agency's senior management and be institutionalized into the agency's general processes. The exercise of succession planning also often directly ties to the state DOT's strategic plan – calling for an examination of the agency's core values and agreement upon the core competencies being sought for those that will occupy positions of leadership.

Future Research

Another objective of the scan conducted in this project is the identification of future research. The scan points to several candidate projects that could be of immediate assistance to state DOTs:
- A detailed case study of succession planning and core competencies – both in state DOTs and the private sector;
- A comprehensive survey and description of programs in state DOTs that recruit or develop information technology staff;
- A comprehensive survey and description of recruitment and retention programs for civil engineer and planning staff;
- A review of private sector initiatives aimed at retaining employees; and
- An examination of mentoring programs, including reverse-mentoring.

INTRODUCTION

State departments of transportation (DOTs) are operating in an environment of unprecedented change. Changing demands related to transportation services, new technologies, workforce composition, stakeholders' concerns, and a constantly changing political environment, create both future uncertainty and a need for institutional change. In response to these challenges, state DOTs are undertaking a range of initiatives such as strategic planning, restructuring, performance measurement, process engineering, and outsourcing *(1)*. The American Association of State Highway and Transportation Officials (AASHTO) commissioned a report, "The Changing State DOT" in 1999 that identified drivers of change and approaches being taken by state DOTs in change management *(2)*.

A two-day workshop in Minneapolis June 25-27, 2000, responded to a strong interest in having peer-to-peer discussions among CEOs and senior staff of the state DOTs about their experiences in managing internal and external change. The workshop was co-sponsored by the Transportation Research Board's Strategic Management Committee, AASHTO, Federal Highway Administration (FHWA), and the Minnesota State Department of Transportation (Mn/DOT). Transportation executives shared their experiences in three facilitated sessions, using a "conversation circle" format. Sessions were organized around:

- Strategic planning-driven initiatives,
- Workforce and reorganization-driven initiatives, and
- Process and program delivery-driven initiatives.

Workshop participants used the output of these discussions to identify research that would help state DOTs lead and manage their changing organizations. Based upon the enthusiasm generated at the workshop, a National Cooperative Highway Research Program (NCHRP) panel was activated in September 2000 to begin to address some of the research needs. The panel met September 12-13, 2000, to select topics for initiating some quick-response, sole-source contracts to continue the momentum of the workshop. The panel evaluated the problem statements resulting from the workshop and consolidated them into eight topic areas for the quick scans. The objectives of the scans were as follows:

- Provide wider general knowledge of state DOT innovations, for sharing by TRB, AASHTO, etc.;
- Develop initial findings for discussion at the annual AASHTO meeting in December, 2000; and
- Provide base information to help the NCHRP panel guide longer-term research efforts.

A listing of the panel members and the scope of work for this scan are detailed in Appendix A.

Scan Approach

The researcher approached the task by making use of descriptions of self-identified innovations that were highlighted by state DOT CEOs or senior staff at the workshop on change.

In addition to the information shared orally at the workshop among the CEO and senior DOT staff participants, state DOTs also submitted briefs in the three subject areas that summarized activities and identified problems. As workforce strategies was one of the three subjects for which the briefs were submitted, the information was well suited to pointing the researcher to projects and programs. The researcher identified a contact list and specific projects to discuss from a review of notes taken at the workshop and the state DOT-submitted briefs. These contacts are shown in Appendix B.

Contact was made first by electronic mail. Follow-up and in-depth discussions took place using telephone contact. Response to the electronic mail approach was very positive. In general, most of those contacted either responded with information or directed the researcher to specific individuals with detailed knowledge of the programs. For example, if the initial contact was made with the state DOT's CEO, the researcher may have been directed to the agency's human resources director, chief engineer, or other individual with specific knowledge and experience with a project or program. This was most often done by the CEO forwarding the initial contact electronic mail note to those individuals or by responding to the researcher's inquiry and copying the individuals. This research approach was quick and minimized intrusion on the CEO's time.

The researcher also made contact with the chairman of the AASHTO subcommittee on personnel and human resources, the vice chairman of the group, and individuals at FHWA and the National Highway Institute who are actively involved in workforce issues. Additionally, the researcher performed a search of transportation and non-transportation related materials on the subject area.

FINDINGS

As an example of the timeliness and attention being paid to the subject, workforce issues was the focus of National Transportation Week in May 2000. In connection with that observation, a FHWA official was quoted as saying, "There is probably no other issue which reaches across all the modes in both the public and private sector *(3)*.

Identification of Problems

The primary problems identified in the scan include:

- Significant numbers of retirement-eligible employees, especially in the senior ranks;
- Competition for employees, both with the private sector and with other public sector employers;
- Increased needs for new skill sets to meet new technology demands; and
- Increased funding for transportation and the related increased workload.

A recent study on the aging state and local government work force conducted by a senior fellow at the Rockefeller Institute of Government calculates that 42 percent of the 15.7 million people working for state and local government in 1999 were between 45 and 64 years old *(4)*. The study estimates that two-fifths of state and local government employees will be eligible to

retire in the next 15 years, " raising the specter of the most significant talent and brain drain ever experienced by government." Because all levels of government and the public sector face roughly the same situation, the competition for employees is fierce.

Competition for transportation workers has also been affected by the increase in funding experienced in the age of the Intermodal Surface Transportation and Efficiency Act (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21). The demands on the state DOTs, often paired with political or policy decisions, have dramatically increased the use of the transportation private sector in planning and building projects. Thus, not only has the workload for the state departments of transportation increased, it has in turn led to an increased work load for the private sector. The situation has put the private sector and public sector in direct competition for the limited supply of transportation workers at all levels of experience. State DOTs are also at a disadvantage because during the past decade most have seen a reduction in their full-time employee (FTE) allocations. The average reduction among the state transportation agencies was 5.3 percent in the past 10 years *(5)*.

Not only are departments of transportation (local, state, and regional) competing for the traditional transportation employee, but also for individuals who possess skill sets that have become a necessity in using new technology in department administration, planning, design, and implementation. According to research completed by the Council of State Governments *(6)*, at least 20 states have more than 11 percent of their state information technology (IT) positions vacant. At least 14 of the 20 have IT vacancy rates of 16 percent or greater.

State DOT Responses to the Problems

Given the landscape created by the issues listed above, state DOTs are concentrating on the immediate situation as well as planning for the future. Recruitment and retention initiatives are of top priority for the agencies, while many of them are establishing or planning to establish succession planning programs. State DOTs are also stepping up internal professional development programs and partnerships with other entities to develop workers' skills.

Some specific examples of programs underway or planned are included in Appendix C of this report.

Recruitment and Retention

According to a national staffing plan study completed in 1999 by the New Mexico State Highway and Transportation Department *(5),* recruitment is the area with the highest level of state innovation and the highest degree of interest in making improvements. Retention ranks as the number two of the top five staffing plan priorities according to the research.

From this initial scan of state DOT practices, the recruitment and retention programs include the following:

- Pushing the employment hiring decision to the lowest level
- Streamlining the employment process

- o Using testing only when absolutely necessary
- o Making the test results available in a more timely manner
- o Authorizing on-the-spot hiring
- Stepping up the use of recruitment teams – using more people from more disciplines doing more outreach
- Offering referral bonuses to current employees
- Increasing salaries to the highest levels possible, using position benchmarking and salary surveys
- Competing with private sector firms
  - o Using signing bonuses
  - o Emphasizing the state DOT as a good place to work – a "family"
- Establishing or enhancing employee satisfaction programs
  - o Increasing the quality and frequency of communications with employees
  - o Executing annual employee surveys
  - o Using focus groups, employee interviews
  - o Providing updated tools for the job (renewed offices, equipment, technology, uniforms or allowances for special clothing)
  - o Offering flextime schedules
  - o Involving employees more directly in decision making

Succession Planning

In an effort to be better prepared to handle the loss of senior employees to retirement or their departure to the private sector or other public sector agencies, there is an emphasis at a growing number of state DOTs on succession planning. Succession planning is an ongoing process that must receive the commitment of the agency's senior management and become institutionalized into the general processes of the agency. As in the traditional private sector succession planning and management development programs, there is evidence of an effort to cross-train staff so that they can be better prepared to lead. Succession planning programs are also often a vehicle for examining the agency's core values and agreed upon competencies.

Professional Development

While the subject of another scan, many of the agencies are changing the way they do business – changing from a hierarchical bureaucracy to an organization that is more flexible, responsive, innovative and creative with a strong customer focus. To meet the demands of this shifting culture there needs to be a highly skilled workforce *(7)*. In a telephone conversation with one of the state DOT human resource directors, it was emphasized that evaluation of processes – making sure processes work the way they were designed and result in the desired outcomes – is vital to a productive workforce. There is a direct relationship between the processes of an agency and its workforce. For example, with recent increased levels of outsourcing come unprecedented requirements and new processes for managing that outsourcing that calls for skills and abilities not previously required. These requirements most often must be met by providing professional development programs for existing employees.

Most of the state DOTs contacted indicate an increased activity in professional development – or continuous learning – to provide the concepts and tools for managers to support the learning required to accomplish the cultural shift. Decision making is being pushed to lower levels and managers at all levels must know how to recognize something important, how processes are supposed to function, and be able to quickly respond to demands and situations.

Some of the state DOTs are doing individualized evaluations of each staff person for the development of a personalized annual professional development plan. These evaluations provide the departments with information on skills and abilities and identify gaps. Either department programs or private sector training and educational programs are used to address those gaps. Demonstrating the seriousness to the department, one state requires that supervisors complete annual plans for individuals they supervise as an eligibility requirement for their own annual pay increase.

States are developing new career ladders for even the lowest grade levels and have training achievement included as a requirement for advancement. One of the state DOTs is working with all of the universities in the state that offer advanced civil engineering degrees to establish a distance learning masters degree program. Another state DOT uses a temporary employment agency to provide temporary staff and training so that the individual is experienced and receives training prior to joining the department's permanent employment.

A number of states are also increasing internal educational efforts. One state DOT that had extreme difficulty recruiting information technology employees has established its own IT training. The state DOT allows existing DOT employees who may wish to change their careers to identify themselves, take aptitude tests, and then participate in a six-month full-time training program. The employee continues to receive the full pay from his or her previous position, and is guaranteed the ability to return to that job if the training is not successful. Each of the three classes held thus far have seen all graduates become productive IT employees.

Preliminary findings for the workforce strategies scan were presented by the researcher at the AASHTO annual meeting December 10, 2000, in the CEO Roundtable session entitled "Can State DOTs Avoid a Workforce Crisis?" A copy of the presentation used is included in this report as Appendix B. A slightly modified version of the presentation was also made at the annual meeting of the Transportation Research Board January 9, 2001.

INTERPRETATIONS AND CONCLUSIONS

Each of the scans completed in NCHRP 20-24(14) concentrate on some aspect of the changing state DOT. As the saying goes, "necessity is the mother of invention." It appears that state DOTs have been hovering near crisis status regarding their workforces, and they will continue to be at the near crisis-level for some time to come. A recent performance report on state government that was performed under the aegis of the journal *Governing (4)* described the situation quite well:

The single biggest component of any state budget is payroll, and the most important element in the execution of any statewide project is a well-trained workforce, ready to make things happen. ….For many years, most state leaders acted as if these fundamental human resources realities didn't exist. They perpetuated personnel systems that were rigid, rule-bound and unresponsive to the ordinary citizens who came into contact with them. Now, that is beginning to change. States as diverse as Minnesota, Oklahoma, and South Carolina are engaged in stem-to-stern personnel management reform.

Because of the problems faced by state DOTs – the exodus of retirees, the loss of productive employees to the private sector, the need to deal with bigger workloads in a time of losing FTEs – they have no choice but to change their mode of operation. The individuals at the DOTs who are responsible for crafting and executing these changes are eager to learn how others are handling the same challenges. Many of them face very similar situations and it would appear that they could benefit from peer-to-peer contact and sharing. In the workforce strategies area that exchange is taking place to some extent through the involvement of human resource directors in AASHTO activities. FHWA is also sponsoring an international and domestic effort to gather and document information aimed at HR practitioners. It is the researcher's observation that those activities should be enhanced and continued. Those efforts should also be brought to the attention of the CEOs and state DOT senior management.

While the ongoing need for peer-to-peer discussions and sharing is a high priority, it appears that there is also a need for state DOTs to find a way to benefit from private sector workforce strategies. Some of the states and FHWA have actively incorporated Malcolm Baldrige quality initiative concepts. As an example, perhaps there is the opportunity to pair with some of the private sector Baldrige winners or proponents. Or, perhaps NHI could develop or support a program for state DOTs that details how an agency could incorporate Baldrige principles, sharing the experiences of the state DOTs that have done so.

Workforce strategies is a topic that should continue to receive priority attention of the state DOT top leadership. It appears that those leaders will benefit from sharing of information with their peers and from research. Workforce issue research, like many policy-related areas, has not received the attention of the research community that has other aspects of the state DOT operations. Sensible, applied research in these issues appears as necessary at this point in time as any other subject being addressed by the transportation community.

The degree of importance of workforce issues to a state DOT is extreme. As one state DOT executive described it, the consequences of a high number of vacant positions or unskilled workers can truly compromise the transportation system as a whole and directly effect business and the traveling public. Yet, the workforce problems now faced can be viewed as an opportunity to develop and prepare the transportation workforce for the remainder of this century.

SUGGESTED RESEARCH

This researcher suggests three priority areas for future research that could have immediate and long-term benefit to state departments of transportation: (1) development of

guidelines for and assistance to state DOTs in succession planning; (2) an examination of programs for recruiting or developing information technology personnel; and (3) an examination of programs for recruiting and retaining civil engineer and planning personnel.

Succession Planning and Core Competencies

The Minnesota Department of Transportation appears to have been working on its succession plan longer than any of the other state DOTs contacted. The process it has used in developing the succession plan, and accompanying agreed upon core competencies, is seen as a model by other states. The New Jersey Department of Transportation (NJDOT) tailored its program after the Minnesota model and consulted extensively with Mn/DOT during its development. While the Kansas Department of Transportation (KDOT) succession planning efforts are not as formalized, it also has benefited from an examination of the Minnesota model. A thorough description of the experiences of these three state DOTs in implementing a succession planning program could be quite useful to all of the state DOTs and other transportation agencies. Among the issues to be investigated are the relationship to the state DOT's strategic planning efforts and the process of agreeing upon the core competencies for the workforce. Agreeing on the core competencies helps to define the desired culture of an agency. For example, Mn/DOT's competencies include:

- Leadership,
- Individual characteristics,
- Organizational knowledge,
- Technical knowledge,
- People management,
- Individuals values,
- Quality management,
- Learning and strategic systems thinking.

The research project could result in a product that includes guidelines to assist a state DOT in developing or evaluating a succession plan. It could contain copies of all of the relevant materials from the existing state DOT formal plans and a description of the informal planning accomplished by other states. It could also outline the process and provide suggestions for institutionalizing that process. The research should also include examples of outstanding private sector succession efforts, which may be more mature than the state DOT efforts. An estimated time period for developing the guidelines is 18 to 24 months, with a budget of $175,000 to $200,000.

Information Technology Staff Recruitment/Development

From a review of the literature and contact with the state DOTs, the researcher believes that the recruitment and retention of information technology staff is at crisis levels. This is a condition not unique to the public sector, as private companies are also facing the same challenge. However, there is one state that has taken an approach that could benefit other states. The Idaho DOT has begun to develop its own IT staff. The department recruits from its existing employees – who have some tenure with the department and may be more somewhat likely to

stay with the department. Individuals self-identify themselves and take aptitude tests. Employees have come from a variety of departments – motor vehicle registration, right-of-way, and district maintenance offices. They are placed in a six-month IT training program while they continue to receive the salary and benefits of the job they were in. Upon graduation from the class individuals become program analysts, systems analysts, or database administrators.

Research could describe this program in detail for use by other state DOTs. A survey of all of the state DOTs could be included as part of the research to determine if there are other innovative programs underway in recruiting or developing IT staff.

It is estimated that this project could be accomplished in nine to twelve months, with a budget of $75,000 to $100,000.

Civil Engineer and Planner Recruitment/Retention

A similar research project is suggested to document the details of programs aimed at recruiting and retaining civil engineers and planning personnel. With the emphasis on environment-related issues at state DOTs, transportation planners with training or capabilities to support environmental efforts have become as difficult to recruit and retain as civil engineers working in planning and design.

This research effort should include a range of specific areas:
- Hiring practices
- Salary programs
    - Salary surveys
    - Salary benchmarking
    - Bonus programs and other incentives
- Improved communications with employees
    - Employee surveys, focus groups
    - Methods of communications
- Employee satisfaction programs

In addition to documenting the details of programs in effect at the state DOTs, a possible product of the research effort could be the establishment of a website presence that includes links to salary surveys and benchmarking studies. It is estimated that this project could be accomplished in nine to twelve months, with a budget of $75,000 to $100,000.

Successes in Employee Retention

As competition for the workforce became more fierce in the past decade, many private sector firms stepped up programs aimed at retaining employees. There are lessons to be learned from the private sector, and some public sector agencies, that could assist state DOTs in their own retention efforts. To take best advantage of the knowledge of other programs, it will also be helpful to know what is important to state DOT employees. This research effort should include some direct surveys of representative state DOT employees. The work can be supplemented by ongoing efforts underway in some of the state DOTs, such as Florida. The research should also

include a review of efforts such as the videotapes developed by the New York State DOT that tells the story of the NYSDOT "family" and the relate the value of working at the agency.

Another facet of the research could question the impact of outsourcing on workforce retention – in both the private sector and the public sector.

The research project should relate information on successful projects or programs, while also getting to the core of why individuals seek employment at a state DOT and what would make them want to remain state DOT employees. An estimated time period for completing the research and producing a report is 18 to 24 months, with a budget of $150,000 to $200,000.

Mentoring and "Reverse Mentoring"

One of the more innovative strategies found during this scan was the use by a private sector firm of what might be considered "reverse mentoring." Because technology is changing so rapidly and because so many of the senior leaders at state DOTs are of an age that they did not receive training in those technologies, this is a concept that may have some promise for immediate transfer.

The General Electric Corporation has instituted a program company wide for all of its most senior managers, including the chief executive officer, that pairs a young Internet-savvy professional with a senior manager. Through the program, the senior executives become more hands on with their computers in general, and specifically with the Internet and its resources. The program has been credited as responsible for a major change in direction for the company. The side benefit is that many of these young professionals have now developed working relationships with those who may be their mentors in other issue areas.

This research project should do a comprehensive survey of the mentoring programs in state DOTs and the private sector, providing the tools and directives for development and execution of these programs. It should also make the connection between mentoring and succession planning. An estimated time period for completing the research is 12 to 18 months, with a budget of $75,000 to $100,000.

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APPENDIX A

NCHRP 20-24(14) PANEL MEMBERSHIP AND
SCOPE OF WORK FOR SCAN 5 – INNOVATIONS IN WORKFORCE STRATEGIES

Panel Membership

Ms. Mary Peters, Director of the Arizona Department of Transportation, chaired the panel. Panel members include: Thomas F. Barry, Jr., Secretary of Transportation, Florida DOT; Dwight M. Bower, Director, Idaho Transportation Department; E. Dean Carlson, Secretary of Transportation, Kansas DOT; James C. Codell III, Secretary, Kentucky Transportation Cabinet; Dr. Peter B. Everett, Professor, Pennsylvania State University; Dan Flowers, Director, Arkansas State Highway and Transportation Department; Dr. Lester A. Hoel, L.A. Lacy Distinguished Professor of Civil Engineering, University of Virginia; John C. Horsley, Executive Director, AASHTO; David L. Huft, Program Manager – Research, South Dakota DOT; Dr. Anthony R. Kane, Executive Director, FHWA; Larry M. King, Deputy Secretary for Planning, Pennsylvania DOT; Dr. Thomas D. Larson, Consultant; Dr. Richard R. Mudge, President, U.S. Wireless Compass Services; Dr. Catherine L. Ross, Executive Director, Georgia Regional Transportation Authority; Elwyn Tinklenberg, Commissioner, Minnesota DOT; Thomas R. Warne, Executive Director, Utah DOT; James Weinstein, Commissioner, New Jersey DOT; and Parker F. Williams, Administrator, Maryland State Highway Administration.

The panel is also provided liaison support by Dennis C. Judycki, Director of Research, Development and Technology, FHWA; Robert E. Skinner Jr., Executive Director, TRB; and staff support by Crawford F. Jencks, Manager, NCHRP, TRB; Dr. Robert J. Reilly, Division D (Cooperative Research programs) Director, TRB; and Daniel R. Benfield Jr., Information Specialist, TRB.

The panel selected the following eight subject areas for preliminary scans for innovations:

- Strategic Leadership and Measurement
- Private Involvement in Project Delivery
- Institutionalizing Systems Operations
- DOT Communications, Image, and Positioning
- Workforce Strategies
- Organization Development as a Result of Information Technology
- Partnering and Relationship Building
- Project Financing

Scope of Work

Cynthia A. Weatherby Gilliland of the Texas Transportation Institute was selected to perform the scan on workforce strategies. The scope of work was developed following her selection and contract execution. It was presented to TRB November 21, 2000, and includes the following tasks:

- Task 1 – Refine Scope of Work
  - o Product: Refined scope of work
  - o Delivery date: One week after contract execution
- Task 2 – Identify and Summarize Innovative Practices

- Task 3 – Prepare Presentations for AASHTO CEO Roundtable
  - Product: PowerPoint® presentation for AASHTO roundtable
  - Delivery date: November 30, 2000
- Task 4 – Identification of Future Research Topics
- Task 5 – Documentation of Scan Project
  - Product: Draft final report
  - Delivery date: March 1, 2001
- Task 6 – Submission of Final Report
  - Product: Final report
  - Delivery date: April 15, 2001

APPENDIX B

INITIAL CONTACTS UTLILIZED
IN SCANNING WORKFORCE STRATEGIES

State DOT	Activity/Program	Initial Contact
Arizona	Use of exit interviews to gain insights on keeping personnel	Victor Mendez
California	Hiring centers in major metropolitan areas	Brent Felker
California	Recruitment teams that travel to reach out-of-state graduates	Brent Felker
California	Focused training evaluations for each employee to identify listings of job-specific skills deficiencies and development of individual training plans	Brent Felker
Delaware	Competitive pay range for engineers	Anne P. Canby
Delaware	Agreement with temporary employment agency to train and develop future permanent employees	Anne P. Canby
Delaware	Increased staff communications through interviews, surveys, and focus groups	Anne P. Canby
Florida	Deferred Retirement Option Program; individual letter to each employee providing comprehensive information on their full compensation	Thomas F. Barry
Florida	Individual training plans with supervisors/managers responsible for scheduling employee training	Thomas F. Barry
Florida	Model classification and pay program, emphasizing pay for performance and accountability; rented uniforms for maintenance employees	Thomas F. Barry
Idaho	Reorganization of district offices allowing maintenance/engineering and maintenance/construction cross-utilization	Dwight M. Bower
Idaho	Non-managerial engineering career ladder and construction management positions	Dwight M. Bower
Idaho	Streamlined recruitment eliminating testing process and staff engineer and IT hire-ins at maximum pay range; internal recruitment for staff interested in being "home grown" by the DOT for information technology positions; expanded intern program; and succession planning	Dwight M. Bower
Kansas	Salary bonuses (signing, retention, recruitment); starting pay differential for hard-to-fill positions; flextime schedules; reimbursement for safety clothing	Terry W. Heidner
Kentucky	Expanded career path for frontline maintenance and traffic employees, including new compensation programs and a training curriculum	James C. Codell
Kentucky	Cross-functional teams for project development and post construction reviews	James C. Codell
Kentucky	Decentralization, granting greater authority to construction resident engineers, project development teams with greater responsibility and accountability	James C. Codell
Louisiana	Dual-track career ladder for management and technical positions	Kam K. Movassaghi, Ph.D., P.E.
Louisiana	Cooperation with six universities to offer one-year masters degree program in civil engineering	Kam K. Movassaghi, Ph.D., P.E.

State DOT	Activity/Program	Initial Contact
Minnesota	Incorporation of seven individual core competencies into all human resource functions and tools	Elwyn Tinklenberg
Minnesota	New transportation specialist position series	Elwyn Tinklenberg
Minnesota	Succession planning	Elwyn Tinklenberg
Missouri	Planned expansion of employee development program and formal succession planning	Henry Hungerbeeler
Missouri	Uniforms for maintenance personnel	Henry Hungerbeeler
Montana	Pay exceptions for difficult to fill positions and to retain critical technical staff incumbents	James D. Currie
New Hampshire	Reduction in human resource processing time through process modifications and re-allocation of duties	Leon S. Kenison
New Mexico	Pay for performance program linked to budget allocations and customer service	Pete Rahn
New Mexico	Selection of supervisors using a committee process that includes those to be supervised, corporate executives, etc.	Pete Rahn
New York	Inventory of regional office staffing patterns and benchmarking to private sector firms and other public DOTs	Richard Albertin
North Dakota	Employee satisfaction survey; planned succession plan and mentoring program	Tom D. Freier
Pennsylvania	Utilization of Malcolm Baldrige National Quality Award criteria; internal customer satisfaction team	Bradley Mallory
Pennsylvania	Creation of a center for performance excellence for managing employee development and linking education to strategic goals; recognition systems coordinator position established to design sound recognition practices; contract with a university for developing a morale index	Bradley Mallory
Pennsylvania	Evaluation of other industries (private sector downsizings and mergers, military retirees) for potential employees	Bradley Mallory
Puerto Rico	Performance based salary structure with 25% of increase based on performance	Sergio L. Gonzalez, Ph.D.
South Carolina	Comprehensive salary survey leading to special pay increases for more than half the workforce	Richard Stewart
South Carolina	Upgrade of workplace for every employee	Richard Stewart
South Carolina	Institution of programs with school districts, including high school student entry level positions and additional internships for college engineering students	Richard Stewart
South Dakota	Increased team work with consolidation of departments to only three divisions	Leon Schochenmaier
Tennessee	Reorganization of senior management staff positions and offices	Mike R. Shinn
Tennessee	Cross-training of future leaders to prepare them for job ascension	Mike R. Shinn
Utah	Polo shirts awarded for performance	Thomas R. Warne

State DOT	Activity/Program	Initial Contact
Utah	Succession management plan	Thomas R. Warne
Vermont	Implementation of project management system for all capital projects	Brian R. Searles
Vermont	Reorganization efforts	Brian R. Searles
Vermont	Market factor study and classification review of engineering and technical staff	Brian R. Searles
Virginia	Delegation of hiring authority to district and division administrators	Constance Sorrell
Virginia	Institutionalization of project management practices; training in project management	Constance Sorrell
Virginia	Compensation reform system, allowing greater manager flexibility in hire-in salaries and salary increases to retain employees; use of workload planning system	Constance Sorrell
Wisconsin	New cross-functional organization	Terrence D. Mulcahy
Wyoming	Creation of internal "university" for training	Sleeter C. Dover

APPENDIX C

EXAMPLES OF WORKFORCE STRATEGIES

Project or Program	Contact
Exit Surveys	Bill Kelly Special Projects Personnel Department Arizona DOT 602/712-8733 (voice) 602/712-6940 (fax)

Description

An exit interview program was re-established by the Arizona DOT in January 1997 to collect data about personnel turnover and to identify areas for improvements in personnel policies (PER-16.01 – Exit Interview Program). All departing employees are provided the opportunity to participate in the Exit Interview Program. Each employee may appear in person for an interview with the immediate supervisor or higher, including the agency director, or provide written statements concerning their employment. Information gained through the frank statements by departing employees will be examined for possible use to improve working conditions in the department.

A four-page post employment survey, considered confidential, includes sections on reasons for leaving; career opportunity; financial considerations; safety and working conditions; health and family considerations; other personal concerns; work-related concerns; organizational concerns; and training concerns. Employees who leave without completing receive one in the mail. A review of the information has indicated that employees are leaving AzDOT because of inadequate pay, lack of monetary reward for good performance, lack of opportunity for advancement. Job security has been ranked high by departing employees.

Project or Program	Contact
Increased Project Delivery Training	David Polster Capital Project Skill Development Caltrans 1515 River Park Drive, Suite 210 Sacramento CA 95825 916/263-4980

Description

In 1998-99 Caltrans received a budget increase of nearly $2 million for project delivery training. Using some of those funds, the capital project training budget came to a total of $2.3 million. This amount was more than a seven-fold increase in one year. For the first time in more than eight years, the capital program spent more on training than what was budgeted. Thus, some units used savings in other areas to fund training. Classes touched on all areas of the project development process, from the initial preparation of a project study report to the final completion of construction. Employees received 435,925 hours of instruction – or an average of 47 hours per employee. Caltrans relied heavily on vendor-supplied training than in previous years.

When the program first increased, the selection of classes was based on the priorities of Caltrans managers. Class selection is now based on a detailed assessment of the knowledge and skills needed to produce improvements. The Caltrans assessment includes:
1. Identification of the knowledge and skills needed in order to produce each of the sub-deliverables that can be required for a state highway project. The agency is using a "work breakdown structure" that defines each sub-deliverable that may be needed.
2. Performance of a "gap analysis" that compares the needed knowledge and skills against the actual knowledge and skills of the department's workforce.
3. Identification of specific classes that teach the required knowledge and skills and prepares cost estimates for the development and delivery of each class.

The focused training evaluation is seen as invaluable in determining and prioritizing training needs. The up-front effort to plan the training is being used to justify the need for and amount of training in the annual budgeting process.

Project or Program	Contact
Out-of-State Recruitment Teams	Janice Diaz Exams and Recruitment Caltrans 916/227-7836

Description
Until recently recruitment by Caltrans was limited to within California. Caltrans has begun to send recruitment teams to reach out-of-state graduates. The composition of the teams varies depending upon the colleges being visited, but have included civil engineers, planners, and surveyors.

Project or Program	Contact
Hiring Centers in Metropolitan Areas	Brent Felker Caltrans Brent_Felker@dot.ca.gov

Description
Caltrans has also established temporary hiring centers in metropolitan areas throughout the state to recruit employees. The centers are viewed as very successful. Marketing of the centers produced large numbers of applicants. At the weekly hiring center operation, there were interview panels available to determine qualifications; physicians present to perform required physicals; and administrative staff from the recruitment and personnel departments available to process paper work – all in the same location, allowing for an "assembly line-like" process.

Project or Program	Contact
Uniforms for Maintenance Employees	Sharon Holmes State Maintenance Engineer Florida Department of Transportation 850/488-8814

Description
Florida Department of Transportation established a procedure in 1993 to provide uniforms for maintenance employees. The practice is seen as being very appreciated by the staff and provides a more professional appearance to the public. The program consists of providing one clean pair of pants and one shirt for each employee for each day of the employee's workweek. Also, safety shoes and one jacket per employee may be provided.

Project or Program	Contact
Deferred Retirement Option Program	David S. Ferguson Personnel Officer Florida Department of Transportation 850/414-5305 850/414-2748 (fax) Burns Building, MS 50 605 Suwannee Street Tallahassee, FL 32399-0450 David.Ferguson@dot.state.fl.us

Description
The Florida legislature created a program in 1998 to all employees to qualify for a non-reduced retirement benefit to, in effect, retire and draw retirement income while continuing in their current state job performing the same duties with no reduction in salary or benefits for up to five additional years. The employee's monthly retirement check is deposited into a tax deferred interest-bearing account. The personnel director believes the program to be a big benefit for the state DOT, as it has large numbers of retirement age personnel. However, the program that allows employees to stay for an extra five years is seen as a temporary solution to the problem, and succession planning is being considered.

Project or Program	Contact
Sharing Information on Complete Compensation Package	David S. Ferguson FDOT

Description
FDOT is developing a one-page summary of each employee's total compensation package, including all benefits, to emphasize to the employee his or her worth to the agency. Personnel department employees drafted the computer program being used to extract the information from state records. The information will be sent to each employee with a letter providing comprehensive information about the full compensation package.

Project or Program	Contact
Performance Evaluations and Individualized Training Plans	David S. Ferguson FDOT

Description
Annual performance evaluations are completed on each employee, rating the employee on goals set in the previous year. The evaluation process was established as part of a model classification and compensation plan implemented in 1995. The model incorporates the principle of pay broad banding and included the development of new compensation, recruitment and selection, and performance appraisal programs. It emphasizes pay for performance and accountability and provides the data necessary for the effective pay administration and statistical analysis. Supervisors were trained in the use of the new model to fortify the consistent application of the procedures. FDOT also requires that each employee have an individual training plan prepared and submitted by his or her supervisor. The information is used to develop the training programs to encourage each employee to their fullest potential. Supervisors and managers are responsible for scheduling their employees to attend identified training courses that will assist in their professional development. A training reporting system tracks courses that are taken. The program has an estimated 99.8 percent compliance, as supervisors who do not prepare reviews and schedule training are not eligible for their own pay increases.

Project or Program	Contact
Annual Employee Surveys	David S. Ferguson FDOT

Description
FDOT has instituted an annual employee survey for all employees. The department then follows up with employee teams on subjects if indicated by the survey results. Surveys are mailed to a consultant to maintain the employee's confidentiality. The survey uses an optical scan sheet to enable quick turn-around (approximately two to three weeks).

Project or Program	Contact
Reorganization of District Office Staff to Allow Cross Utilization	Jim Ross Chief Engineer Idaho Transportation Department P.O. Box 7129 Boise, ID 83707-1129 jross@itd.state.id.us 208/334-8803

Description

Primarily because of seasonal variances in staffing needs and availability, the Idaho Transportation Department reorganized district offices to allow the managers to utilize staff via cross-utilization of both maintenance and engineering personnel, predominantly in the transportation technician series. This resulted in a new career ladder for transportation technicians that consists of transportation technician, senior transportation technician, and principal transportation technician. The requirements for the positions include certification as inspectors and commercial drivers license. Previously there had been separate maintenance and construction technician positions, with different position requirements. This situation had led to extreme workload in the summer months for inspectors and a limited workload for the employees in the winter months. The change has been judged by the DOT as creating a win-win situation, providing workers appropriate to the needs and allowing individuals to better schedule annual leave and have a more level workload. While all new hires have the same position requirements, district engineers may decide how workers are assigned. It is reported that the employees did not like the change initially, but now appreciate the variety that the job offers. It is also thought that the change has encouraged more teamwork and ongoing ownership of projects.

Project or Program	Contact
Non-Managerial Career Ladder	Jim Ross ITD

Description

IDT has implemented classifications for engineers who have a high level of technical expertise to be promoted to a level equivalent to managerial level engineers. The action was taken to retain these individuals who have special technical expertise, often providing the expertise statewide. Two positions were created – Technical Engineer I and Technical Engineer II. The change is credited with retaining engineers important to the department's operations and with increasing staff morale.

Project or Program	Contact
Construction Management Position	Jim Ross ITD

Description

The ITD has implemented a construction management position, and has plans to implement a personnel series for construction management. The department has had some difficulty in establishing a salary level commensurate with its idea of the position – which is seen equal to perhaps a district engineer or resident engineer. The intent is to place construction managers, with appropriate degrees in construction management, in each of the resident or district offices.

Project or Program	Contact
Train Your Own Information Technology Staff	Keith Bumsted Deputy Director Idaho Transportation Department 208/334-8788 Kbumsted@itd.state.id.us

Description

IDT had found it difficult, if not impossible, to hire information technology specialists. They have been successful in identifying IDT employees who are interested in changing careers who then train for the IT positions. Working with Boise State University, IDT found a standardized aptitude test that is used to qualify individuals for the training program. The program also requires that individuals have five or more years of tenure with the agency to qualify. The two largest pools for the IT training program have come from the Division of Motor Vehicles and the Division of Highways (engineering technicians and right-of-way section specialists). Individuals in the maintenance sections of district offices have also participated. IDT personnel believe that some of the success of the program may be attributed to the fact that these employees are already committed to public service; have loyalty to the department; and appreciate the investment being made in them by the department. The employees chosen for the six-month training program continue to receive the salary of the position that they were in, and are guaranteed if the training experience isn't successful that they can return to that position or a similar one. Several commercial training firms are used to execute the training that has been developed similar to a college computer science curriculum. Certified instructors present training on basic programs, such as Oracle and Microsoft software. IDT staff presents training on specific IDT software systems. At the end of the six-month training period, graduates fill positions such as program analyst, systems analyst, and database administrator. If they leave the department during the first year after the training, individuals are required to refund a portion of the training cost. There is also an on-going training program for the IT professionals that supports upgrading of skills and certifications in Microsoft, Oracle, or other programs. IDT is considering giving bonuses upon receipt of certifications.

Project or Program	Contact
Decentralization and Construction Resident Engineer Empowerment	Dexter Newman Director of the Division of Construction Kentucky Transportation Cabinet Room 410 State Office Building Frankfort, KY 40622 502/564-4780 dnewman@mail.kytc.state.ky.us

Description

In part because of a state government program known as Empower Kentucky, the Kentucky state transportation department began to evaluate and overhaul its policies to push decision making to the lowest levels possible. Supporting that effort, the department initiated a major ongoing training program. There was also a conscious decision to hire individuals with interpersonal skills as well as high quality abilities in engineering and management. The training program was developed and executed in all the resident offices and also included contracted personnel. For example, the construction inspection class includes 12 department staff and 12 individuals from industry – who train and then work side-by-side. Special training programs are executed in the winter months, taking advantage of inclement weather. Training emphasizes preparing employees to know what is important, to take charge, and to make decisions quickly – or to pass the situation quickly upwards for a decision.

The program encourages employees to take risks. As an example, the construction resident engineers now approve the majority of contract change orders. Communications is also emphasized. The department believes that with improved processes, and employees who are well trained on those processes, that it has streamlined its work and produced substantially better results. The agency also notes the importance of central office staff giving wholehearted support, providing quality assurance, and continuing technical resources. Base pay has been raised, and distinct career paths created.

Project or Program	Contact
Project Development Team Responsibility and Accountability	Mike Hancock Deputy State Highway Engineer for Construction and Operations Kentucky Transportation Cabinet Room 410 State Office Building Frankfort, KY 40622 502/564-3730 502/564-2277 (fax) mhancock@mail.kytc.state.ky.us

Description

In keeping with the Empower Kentucky efforts mentioned above, project development teams in the district offices are now being responsible and accountable for the timely delivery of projects. Cross-functional teams are being utilized in the project development process to identify and resolve issues as the project develops rather than during a later review. Performance measures are being used to track the ability of these cross-functional teams to meet project schedules. These teams also participate in post-construction reviews to identify lessons learned from the experience. That participation also provides insights to the construction personnel on planning, design, and environmental considerations.

The project development process is under review to focus on the customer (the construction personnel) and the ultimate users of the system. The review is concentrating on what items are needed to be successful and, in turn, looking at each of those items to determine the best ways to deal with each. An "environmental leadership team" is working with the environmental community, the public, and construction contractors in this effort. Baldrige quality criteria are also being utilized by the agency.

Project or Program	Contact
Cooperative Civil Engineering Masters Degree with Universities	Kirk Clement Research Center Louisiana Department of Transportation and Development 225/767-9139

Description

The Louisiana state transportation agency is developing an applications based masters degree in civil engineering that will be offered by six of the seven universities in the state offering graduate degrees in civil engineering. The program is patterned somewhat after a joint effort by universities to offer nursing degrees. A uniform curriculum would be used on each campus, with cross listings in each of the university catalogs. Distance learning technology would be used to teach the course. The degree would concentrate on transportation engineering – planning, construction project management; contract management; structures; and general transportation. It is planned that state transportation agency personnel will attend the classes in agency facilities, with the agency paying all tuition costs. Private firm employees will also be allowed to participate for a fee. The agency plans to request that an employee commit to remaining an employee for at least a year following receipt of the degree. It is anticipated that the degree will qualify the employee for an additional pay increase. A bonus for degree completion is also under consideration. The degree program is seen by the agency as both a retention tool and a way to impart new technology to its workforce.

Project or Program	Contact
Development of Core Competencies	Cathryne Walz Office of Human Resources Minnesota Department of Transportation 651/296-3101 651/297-7944 (fax) cathy.walz@dot.state.mn.us

Description

The Minnesota Department of Transportation (Mn/DOT) has identified and defined seven individual core competencies that describe how successful employees perform on the job and helps employees understand the actions or behaviors that are desired. They have been incorporated into all human resources functions and tools including: position descriptions, performance communications, career planning, succession planning, recruitment, and selection. The seven competencies include:

- Leadership
- Learning and strategic systems thinking
- Quality management
- Organizational knowledge
- People management
- Technical knowledge
- Individual characteristics

Each competency is further detailed. For example, for the "leadership" competency, desired attributes include:

- Build constructive relationships
- Take calculated risks
- Act decisively in a crisis
- Communicate clearly and effectively
- Take actions to improve practices and procedures
- Sought out by others for counsel and advice

The department believes that the individual competencies support Mn/DOT's mission, vision, and values and help it to communicate with employees the expectations that align behavior with organizational goals. Incorporating the competencies in the ongoing performance management process and holding supervisors and managers accountable for providing regular feedback has kept the agency focused on meeting the organization's goals.

Project or Program	Contact
Succession Planning	Cathryne Walz

Description

The Mn/DOT formal succession planning has been in operation since 1994. The model identifies the top leadership positions within the organization and provides a comprehensive assessment of those employees currently holding managerial status to be assessed for their readiness to fill theses positions. The agency claims that this competency-based, developmentally driven executive staffing model has directly influenced 21 senior executive management appointments since its inception.

There are four phases to the Mn/DOT succession planning effort:

- Gathering data
- Soliciting participants
- Conducting assessments
- Providing feedback

The succession planning effort is aimed at providing the agency with leadership that is aligned with the department's strategic goals and objectives. It provides a talent pool of successors to fill critical positions without unnecessary operational disruptions. It allows the department to know its internal talent and also to reach outside for specific individuals to add to the team. Participants in the program are given feedback on the areas requiring further development, and action is taken on those development needs.

Project or Program	Contact
Implementation of Cross-Functional Worker Classification Series	Cathryne Walz

Description

Implementation of the Transportation Specialist Series (TSS) is the product of combining three distinctly different, yet closely related classifications: the Highway Technical Series, Highway Maintenance worker Series, and Bridge Worker, to assist the department deal with peaks and valleys in work and deploy resources when needed. Employees in those classifications were converted to the new classification and professional development plans are being identified to target expanded skill needs. The process of combining the six worker classifications into four TSS classifications took approximately 25 years. A white paper was written on the subject in 1981. The department continued to pursue the concept, working with the American Federation of State, County, and Municipal Employees (AFSCME). The concept was piloted in 1995 in District 8, working in partnership with AFSCME. The memorandum of understanding with the local union that allowed the two-year pilot was ended in June 1998 and the local membership did not agree to extend it. However, in November 1999, Mn/DOT implemented the new classification system department-wide.

Mn/DOT believes that the organizational barriers between construction and maintenance have been minimized as the new classification system is being implemented. The goals for the program are:
- To create an environment in which flexible, multi-skilled workers are used to the fullest capacity;
- To provide increased flexibility in employee assignment;
- To improve opportunities for employees to make decisions regarding their daily work activities;
- To increase training and skill development opportunities for line employees; and
- To create a link between employees' skill development and mastery and their wage progression.

Project or Program	Contact
Succession Planning	Rich Millard Human Resources Director Missouri Department of Transportation 105 West Capitol Avenue P.O. Box 270 Jefferson City, MO 65102 573/751-7449 573/526-4908 (fax)

Description

MoDOT has initiated a succession planning effort, in part to deal with the potential massive early retirements because of retirement legislation passed in 1999. Positions are being targeted for succession planning. It now appears that upper middle management through lowest senior management will be the target and used to pilot the program.

Project or Program	Contact
Employee Development Program	Rich Millard MoDOT
Description	
MoDOT is also expanding the role of the Employee Development program and staff. The department hired a new manager of Employee Development who had been head of a university graduate program. Through a program that will involve internal training, conferences, contract training, and graduate degree programs, MoDOT plans to take action to close competency gaps. In addition to concentrating on improving individual performance, the program also seeks to improve the organization. It asks the questions, "what do we want to improve and why is the improvement needed?" Through this "organizational development" organizational structure, processes, and procedures are examined and changes suggested if necessary. The department also uses mentoring it the employee development program.	

Project or Program	Contact
Computerized Hiring Process	Fran Buczynski Human Resources Administrator New Hampshire Department of Transportation P.O. Box 483 Concord, NH 03302-0483 603/271-3492 fbuczynski@dot.state.nh.us
Description	
The New Hampshire DOT developed a computerized analysis of the department's hiring process, using an ACCESS database. This analysis allowed the department to document the various stages of the internal hiring and selection process. Information gained through the process was compared to the process time at other state DOTs using the "Staffing Plan Survey of State Transportation Agencies" prepared by the New Mexico State Highway and Transportation Department. Within three months of developing the analysis, the New Hampshire agency was able to reduce Human Resource bureau processing time by 50 percent through process modifications and a re-allocation of duties. In addition, manual mail processing of requests for approval to post positions was reduced by 41 percent through the use of information technology communications. This is especially important to the department, as there is an approximate 40 percent vacancy rate in the highway design group at the agency.	

Project or Program	Contact
Hiring Panels	Anthony L. Alarid Human Resource Director New Mexico Highway and Transportation Department 1120 Cerrillos Road Santa Fe, NM 87504 505/827-5196 Anthony.larid@nmshtd.state.nm.us
Description	
In an effort to hire the highest quality employees to fill positions, and also to eliminate political influences on the hiring process, the NMSHTD implemented a hiring process that emphasizes behavioral skills and management practices that prize participation and leadership. The selection of employees for every supervisory position at the state DOT is chosen by an interview committee. At the lower levels of supervision, at lease three individuals serve on the committee – with representatives from those who will be supervised, a peer, and the individual to whom the supervisor will report. For higher levels of supervision, five-member committees are used – with the same three as above, plus another person from within the organization and an individual from outside the state DOT. Individuals from outside state government have come through the involvement of Quality New Mexico – including vice presidents of corporations such as Honeywell, Intel, and Motorola. The program is credited with turning around the agency's morale and effectively eliminating political influences on employment decisions.	

Project or Program	Contact
Staffing Plan Database	Anthony L. Alarid NMSHTD

Description

Having identified no other statewide transportation department staffing plan databases in their 1999 staffing plan study, the New Mexico state DOT developed an ACCESS-based database. The database in intended to provide an effective planning tool for human resources professionals to track employee information from the data of hire to succession planning. The database allows tracking of more than 200 attributes about employees. The state DOT shared a copy of the database on CD ROM at the 2000 Annual AASHTO meeting, which also includes an introductory movie featuring Tony Alarid.

Project or Program	Contact
Succession Planning	Laurie B. Gutshaw Chief of Staff New Jersey Department of Transportation 1035 parkway Avenue P.O. Box 601 Trenton, NJ 08625-0601 609/530-2002 609/530-3894 (fax) lauriegutshaw@dot.state.nj.us

Description

Working with advice from the Minnesota DOT, the New Jersey DOT is structuring a succession plan. The state DOT is considering the creation of a director-level position that will be focused on the succession planning effort. Development of agreement on core competencies and institutionalization of a department-wide commitment to the program are underway.

Project or Program	Contact
Promotional Videotapes	Joseph H. Boardman, Commissioner Department of Transportation Building 5, State Office Campus Albany, NY 12232 518/457-4422 518/457-4190 (fax)

Description

Believing that while competition with the private sector on wages alone cannot be won by the state DOT, the department developed two videotapes emphasizing benefits other than wage levels. The videos (one short version/one longer version) are titled, "People Led by Values." They both emphasize the NY State DOT family -- both the feeling of family within the organization and the many examples of several generations working for the organization. Among other themes incorporated are environmental stewardship and the value of the work accomplished by the department to the public. The videos are being used within the organization and as recruiting tools.

Project or Program	Contact
Regional Administrative / Clerical Study	Scott A. Wixson Director Budgeting Bureau NYSDOT, State Campus, 5-417 Albany, NY 12232 518/457-2465 swixson@dot.state.ny.us

Description

In a time of ever-increasing dependence upon computers by all levels of staff, and increasingly smaller staffs, the state DOT initiated a study of the most appropriate levels of administrative and clerical staff for the department. Private engineering firms and other public departments of transportation were benchmarked to determine the ratio of administrative / clerical staff to engineering/technical staff and the level of computerization in the organizations. Data on current workload by function is being collected and a methodology for determining the appropriate staff patterns and levels is being developed.

Project or Program	Contact
Use of Malcolm Baldrige National Quality Award Criteria	Bradley L. Mallory, Secretary of Transportation Department of Transportation 400 North Street, 8th Floor P.O. Box 3543 Harrisburg, PA 17101-3543 (717) 787-5574 (717) 787-5491 Fax

Description

PennDOT has adopted the Baldrige National Quality Award criteria. Specifically, Category 5.0, Human Resources Development and Management, addresses workforce and reorganization issues, such as work design, training, education, and development, and employee satisfaction and well being. An Internal Customer Satisfaction team was established in December 1998 to recommend and implement changes to the department's human resources systems. While many of the recommendations must await statutory or regulatory changes, there have been successful improvements to the systems that include:

- Creation of a Center for Performance Excellence that manages employee development and links education to strategic goals,
- Establishment of a Recognition systems Coordinator position to assist the organization in designing sound recognition practices,
- Establishment of a department-wide wellness program, and
- Development of a morale index, working with Penn State University.

Project or Program	Contact
Summer Transportation Institute for High School Freshman and Sophomores	Barbara Beagle Special Projects and Community Development South Carolina DOT 803/737-6361 beaglebd@dot.state.sc.us

Description

The South Carolina DOT, working with Benedict College, South Carolina State University, and the Urban League, sponsors a summer transportation institute to encourage students to consider transportation careers. The program includes room and board on a college campus for four weeks. The curriculum includes information about ground, air, and water transportation. The state DOT assists with administration of the program and recruits speakers, plans meetings, and coordinates field trips.

Project or Program	Contact
Employee Work Space Upgrade	Carl Chase Assets Manager South Carolina DOT 803/737-1390 chasec@dot.state.sc.us

Description

A strategic plan was developed in 1998 to improve the workplace environment for all employees statewide – 5,300 employees working in 540 facilities. In the first three years of the plan the department has improved the workspace of approximately 675 employees. Employees have been very receptive to the program, which has ranged from major renovation to adding accent walls in offices to ergonomic seating for dump trucks and backhoes.   The program is seen as contributing positively to morale, which had been identified as a problem in the development of the strategic plan.

Project or Program	Contact
Salary Survey	Jack Swails Director, Human Resources South Carolina DOT P.O. Box 191 Columbia, SC 29202 803/737-1321 swailsjm@dot.state.sc.us
Description	
The South Carolina DOT conducted a special one-time salary survey project in 1999, where every classification in the agency was included. The survey benchmarked against 461 organizations -- other state DOTs in the southeast, cities and counties in South Carolina, other state agencies, and private firms. As a result, approximately half of the pay bands were increased – impacting more than 2,900 employees. The department estimates that while it began at the bottom of a comparative analysis of pay scales, it is now roughly in the middle of wage levels for southeastern state DOTs. The survey was completed in-house, with a full-time professional working solely on the project for six to nine months and others providing assistance.	

APPENDIX D

**PRESENTATION MATERIALS USED AT AASHTO ANNUAL MEETING DECEMBER 10, 2000
IN CEO ROUNDTABLE**

Can State DOTs Avoid a Workforce Crisis?

Overview

Across the country, state DOTs are faced with an unprecedented wave of impending retirements, hitting hardest in management levels. At the same time, new technologies available to help state DOTs meet the ever-increasing congestion and management demands require individuals who possess new skills to make that technology work. And, because the economy is so bountiful and transportation projects are in high gear across the nation, the exodus of public agency transportation workers to private firms is significant.

How are states dealing with these issues -- which have the potential of collectively producing a major workforce crisis? Roundtable participants will be presented with a quick review of what state DOTs are doing to address the most significant talent and brain drain ever experienced. While some programs deal with retirement head-on, such as the Florida Deferred Retirement Option Program that buys the state five more years to work on the issue, others are geared to filling the voids created by retirements; attracting new employees with new skill sets; and proactively seeking to retain employees, some reshaping organizations for better efficiency and responsiveness to employees and DOT customers. AASHTO member CEOs will be presented with information on these issues, specifically including succession plan efforts and a wide-range of training programs. The 1999 state DOT staffing plan survey noted that each DOT has at least one workforce program it deems innovative. Roundtable participants are asked to share these innovative programs, especially in the priority topics of recruitment, retention, succession planning, and training.

Moderator: *Pete Rahn, Secretary, New Mexico State Highway and Transportation Department*

Resource: *Cinde Weatherby-Gilliland, Texas Transportation Institute, Arlington, Texas*

AASHTO Board of Directors Roundtable Discussion #2

Can State DOTs Avoid a Workforce Crisis?

NCHRP Project 20-24 (14)

◆ Managing Change in State Departments of Transportation

◆ Panel Chair: Mary Peters

◆ Other State DOT CEOs on Panel:

Thomas F. Barry, Jr., Dwight M. Bower, E. Dean Carlson, James C. Codell, III, Dan Flowers, Elwyn Tinklenberg, Thomas R. Warne, James Weinstein, Parker F. Williams

Topic 5: Innovations in Workforce Strategies

- Scan by Cinde Weatherby Gilliland, Texas Transportation Institute

- Preliminary scan results to stimulate roundtable discussion being led by Pete Rahn, Secretary, New Mexico State Highway and Transportation Department

Why is there a problem?

- Significant numbers of retirement-eligible employees – especially in senior ranks

- Competition for employees – with private sector and other public agencies

- Increased needs for new skill sets to meet new technology demands

- Increased funding and work load

How are state DOTs responding?

◆Recruitment and retention initiatives

◆Succession planning programs

◆Internal professional development programs and partnerships with other entities

Recruitment & Retention

◆ Updated hiring practices (decentralization, changes in testing, greater outreach)

◆ Salary incentive programs

◆ Increased/improved communications with employees

◆ "Employee satisfaction" programs

Succession Planning

♦ Formal policies/programs for developing leaders

♦ Development of workforce data

♦ Institutionalizing succession planning in the organization

♦ Increased cross-training

♦ Commitment to continuing process

Professional Development

♦ Individualized training evaluations and personalized professional development plans

♦ Career ladder advancements tied to training

♦ Cooperative agreements with universities, others

♦ Increased internal educational capabilities

Succession Planning

◆ Program developed by Minnesota DOT

◆ NJ DOT using Mn/DOT example

◆ Top leaders personally involved/committed

◆ Targeted/focused

◆ Leadership core competencies: leadership, business knowledge, people management, individual values, quality focused management

Innovative Education Program

♦ Louisiana Dept. of Transportation & Development cooperation with six universities

♦ One-year masters degree program in civil engineering

♦ Emphasis on application not research

Issues for Discussion

- Difficulties in changing hiring practices and incorporating incentives

- Employee demands for more flexibility

- Too few graduating civil engineers and information technologists in the worker pool

- A less-experienced, shorter-tenured work force

- Increased customer demands

Issues for Discussion

♦ Change management when reorganizing or incorporating new approaches

♦ Linking workforce policies to strategic objectives

♦ Lack of tools and data for knowing workforce or forecasting staffing requirements