



South Carolina
Department of Transportation



U.S. Department
of Transportation

**Federal Highway
Administration**



CLEMSON
UNIVERSITY

South Carolina
Department of Transportation
P. O. Box 191
Columbia, SC 29202-0191

A WORKFORCE DEVELOPMENT PROGRAM FOR THE SC DOT

**Final Report
Report No. FHWA-SC-05-03**

**Nadim M. Aziz
Clint H. Isbell
Melissa H. Marcus
Melodie M. Miles
Dennis G. Tesolowski**

**Department of Civil Engineering
Clemson University
Clemson, SC 29634**

July 2005

Technical Report Documentation Page

1. Report No. FHWA-SC-05-03		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle A Workforce Development Program for the SC DOT				5. Report Date 20 July 2005	
				6. Performing Organization Code	
7. Author(s) Nadim M. Aziz, Clint H. Isbell, Melissa H. Marcus, Melodie M. Miles, and Dennis G. Tesolowski				8. Performing Organization Report No.	
9. Performing Organization Name and Address Department of Civil Engineering, Clemson University, 110 Lowry Hall, Clemson, SC 29634				10. Work Unit No. (TRAIS)	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address SC Department of Transportation, P. O. Box 191, Columbia, SC 29202-0191				13. Type of Report and Period Covered	
				14. Sponsoring Agency Code	
15. Supplementary Notes "A Workforce Development Program Model" includes a workforce development program handbook, policies and career path progression for maintenance employees. (184 pages)					
16. Abstract <p>Given the implementation of early retirement incentive programs, technological improvements, and the need to strategically determine which positions are necessary, workforce development and/or succession planning has become crucial in the current workplace. The focus of this project was to development a workforce plan for the South Carolina Department of Transportation (SCDOT) specifically focusing on the maintenance area of the department.</p> <p>To provide a comprehensive study and proposal, the process incorporated a literature review, an evaluation of practices at the SCDOT and other DOT's, career ladder development for the classification series of Trades Specialists I-V, and prototype position descriptions.</p> <p>An initial literature review revealed that the SCDOT is correct in the assessment that the roles and responsibilities of DOTs are changing more rapidly today then ever before with emerging technologies and the task of equating the right number of people with the right skills, experiences, and competencies in the right jobs at the right time. Therefore the focus and significance of this project was based on the ability of this organization to be successful by being able to project future workforce needs and take steps to assure that this workforce is in place. This project was a conceptual design that incorporated the potential for a progressive system of advancements based on acquisition of skills, abilities and demonstration of competencies. The project focused on the maintenance employees of the department. The result was a Workforce Development Program that integrated the needs of the department with an opportunity for advancement for employees.</p>					
17. Key Words Workforce Development. Maintenance Employees Career Paths.			18. Distribution Statement No restrictions. This document is available to the public through the National Technical Information Service, Springfield, VA 22161.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. Of Pages 209	22. Price

TABLE OF CONTENTS

LIST OF TABLES 3

LIST OF FIGURES 4

INTRODUCTION 5

 OBJECTIVES 5

BACKGROUND AND LITERATURE REVIEW 7

ANALYSIS OF CURRENT WORKFORCE..... 17

 SUMMARY OF CURRENT SCDOT MAINTENANCE WORKFORCE..... 17

 AGE PROFILE AND TERI STATISTICS EVALUATION 20

 SALARY ANALYSIS 21

 PROJECTION OF FUTURE WORKFORCE 23

WORK PLAN..... 29

 SCDOT STRATEGIC PLAN 29

 SCDOT MISSION AND VISION STATEMENTS 30

 WORKPLACE DEVELOPMENT PROGRAM VISION AND MISSION STATEMENTS 31

 WORKFORCE DEVELOPMENT PROGRAM GOALS 31

 WORKFORCE DEVELOPMENT PROGRAM OUTCOMES 32

 PROPOSED CONCEPTUAL DESIGN..... 34

 METHODOLOGY & ANALYSIS 35

ANALYSIS, CONCLUSIONS AND RECOMMENDATIONS 41

 SURVEY RESULTS AND ANALYSIS..... 41

 SUMMARY CONCLUSIONS, AND RECOMMENDATIONS 46

LITERATURE CITED 49

APPENDIX A: MEETING MINUTES: DISTRICT ENGINEERS 51

APPENDIX B: SURVEY RESPONSES: MAINTENANCE EMPLOYEES 61

APPENDIX C: STATE DOT COMPARISON/REVIEW OF DOT OUTSOURCING..... 197

LIST OF TABLES

TABLE 1. SC DEPARTMENT OF TRANSPORTATION MAINTENANCE WORKFORCE (APRIL 2003)..... 18

TABLE 2. RETIREMENT ELIGIBILITY OF SCDOT MAINTENANCE EMPLOYEES..... 21

TABLE 3. AVERAGE MONTHLY SALARY (\$) BY STATE (2003)..... 22

TABLE 4. COMPARISON OF SOUTH CAROLINA SALARIES WITH SELECTED STATES 23

TABLE 5. SURVEYS RECEIVED BY DISTRICT AND CLASSIFICATION 41

LIST OF FIGURES

FIGURE 1. DELEGATED SCDOT MAINTENANCE POSITIONS.....	18
FIGURE 2. VACANT/FILLED POSITIONS	19
FIGURE 3. DOT AGE PROFILE.....	20
FIGURE 4. PERCENT RETURN OF SURVEYS	42

CHAPTER I

INTRODUCTION

The administration within the South Carolina Department of Transportation (SCDOT) recognized the need to develop a system of productive and well-trained employees that are capable of meeting the challenges of the department. An initial literature review revealed that the SCDOT is correct in the assessment that the roles and responsibilities of DOTs are changing more rapidly today than ever before with emerging technologies and the task of equating the right number of people with the right skills, experiences, and competencies in the right jobs at the right time. Therefore, the focus and significance of this project was based on the ability of this organization to be successful by being able to project future workforce needs and take steps to assure that this workforce is in place. This project was a conceptual design that incorporated the potential for a progressive system of advancements based on acquisition of skills, abilities and demonstration of competencies. The project focused on the employees of the Maintenance Division of the department. The result was a Workforce Development Program that integrated the needs of the department with an opportunity for competent employees to advance.

Since there were multiple areas to address in the overall development of such a process, the focus of this project addressed workforce needs through a process of developing a “workforce planning” model and program implementation.

Objectives

The primary objective of this research was to develop a “workforce planning” process and prepare a workforce plan for the South Carolina Department of Transportation. The project was carried out in phases. The first phase required an extensive literature search to determine what other organizations, especially DOTs, have experienced in the area of workforce planning.

In addition, a career ladder systems approach was developed for the (OHR Classifications) Trades Specialists I-V.

The first phase focused on benchmarking information and process/model development/utilization. The second phase focused on career ladders that were developed along with any documentation necessary about the approach that was used. Ultimately, as the phases of this workforce planning effort were completed, a customized workforce plan was developed tailored to the needs of SCDOT.

The process consisted of a thorough review of literature, a comparison of workforce planning including training of other DOTs, a review of other state DOTs with similar program types, development of career ladders for the classification series of Trades Specialists I-V, (comprised of timelines, specific training, OJT requirements, etc.), and prototype position descriptions.

This project was conducted with the intent to make direct and indirect contributions related to the following:

- An understanding of the need for workforce planning and restructuring including management of "human capital",
- Continued development of top leadership support for workforce planning efforts, and continued formal communication efforts,
- A formal assessment of what has previously been accomplished in the area of workforce planning, and the establishment of a cross-functional team through this project

CHAPTER II

BACKGROUND AND LITERATURE REVIEW

According to the Transportation Research Board (TRB), surface transportation made up approximately eight percent of the U.S. gross domestic product and about 18% of average U.S. household expenditures in 2001. A TRB study to investigate transportation agencies and how they may “strategically alter human resource activities” recommended that training was identified as a priority, more federal program funds should be available for use by state and local transportation agencies for the purpose of education and training activities, and the U.S. Department of Transportation should undertake an initiative that works toward innovation associated with practices in human resources, training, retention and management of personnel. Similarly, the committee recommended that transportation agencies should partner with universities, institutes, etc. in order to better meet training and workforce needs, and that leaders in transportation must make human resources a strategic part of the organization.

Given this information, workforce planning is one of the most important issues for organizations today. The task of actually implementing workforce planning is discouraging because it is so difficult to define (Sullivan, 2002). According to Sullivan (2002), workforce planning is a systematic, fully integrated organizational process that involves proactively planning ahead to avoid talent surpluses or shortages. It is based on the premise that a company can be staffed more effectively if it forecasts its talent needs as well as actual supply of talent that is or will be available. Research has shown that when companies are more efficient and plan ahead, managers can be provided with the right number of people, with the right skills, in the right place, and at the right time, avoiding layoffs or panic hiring (Sullivan, 2002). Workforce

planning similarly incorporates organizational needs within an established timeframe regarding knowledge, skills, and experience required to accomplish the job (Horkan & Hoefler, 2000). Studies show that developing a workforce plan ensures that an organization has the resources to deliver promised services to its customers in a timely and quality manner. Workforce plans facilitate change management and contribute to improved people management. Workforce planning also allows for smarter decisions and better long-term investments (Delahoussaye, et al, 2002).

The Duke Power Company felt compelled to create a new workforce planning process to enable itself to compete and succeed in a deregulated utility environment. Duke Power CEO, William Grigg believed that a strategic, integrated workforce planning process would compliment business plans and guarantee that the company has the appropriate people, skill sets, and performance culture to realize those business plans (Labbs, 1996). As a result of the creation and implementation of a workforce plan specifically created for the needs of Duke Power, the company is now able to broaden the competency base and build skill sets of the organization. Additionally, through the process, Duke Power was able to identify gaps in the human resources systems process which has led to the implementation of a compensation benefits structure review, and updating its executive exchange process, and its training-and-development agendas (Laabs, 1996)

There has been a great deal of discussion about the federal government's aging workforce, changing missions, and redefining of work processes due to information technology (Shiplett, 2000). The Senate Subcommittee on Oversight of Government Management report "The Crisis in Human Capital" estimates that 32% of the federal workforce will be at retirement age by 2004, and another 21% will be eligible to retire. This totals 53% or 900,000 employees

that the federal government will soon have to replace or find other alternatives for doing business (FHWA-Domestic Scan, 2003). In addition, the federal government has focused little attention on the development of its employees in previous years (Shiplette, 2000). In the past, individuals were recruited, credentials were assessed, and they were hired to do a particular job. Federal agencies now see the importance in linking strategic missions with the credentials of its employees. A workforce plan, along with other initiatives have been developed to address the concerns of the federal government as well attempt to improve performance while increasing tax payer's return on investment.

State governmental agencies are attempting to develop a strategy to address future personnel needs and meet their overall objectives as well. Cayer (1996) argues that without such assessment, agencies and their managers will have difficulty maintaining a highly productive workforce (Selden et al, 2001). Currently, there is relatively very little effort being put into workforce planning. However, research results show that some state agencies are delegating authority for personnel functions to agencies and managers, shifting their human resource missions to being more proactive and collaborative with agencies, and adopting performance management systems that integrate organizational and divisional goals (Selden et al., 2001).

Specifically, workforce planning has been ingrained in Illinois state government culture since the mid 1950s when the personnel code was amended requiring the personnel bureau to "conduct research and planning regarding the total manpower needs of all its offices" (Selden et al., 2001). Both Illinois and New Jersey have established systems that share responsibility between the central personnel office and agencies. Only a few other states such as North Carolina and Washington, have vertically integrated workforce planning with state and agency strategic planning. Slightly more states have a horizontally integrated workforce plan with other

human resources functions such as recruitment, selection training, and development. It has been argued that these states and other agencies like them will be better equipped to confront rapid changes in the labor market and state environment (Selden et al., 2001).

State Departments of Transportation (DOTs) are also being faced with workforce and organizational issues. The DOTs understand that an effective, efficient and safe transportation system is critical to the economic growth and the quality of life for all Americans. However, the current workforce that has been involved in the planning, designing, operating, and managing the system is at risk as a disproportionate number of transportation workers approach retirement (FHWA-Domestic Scan, 2003). The Office of Personnel Management reports that 30.9% of the workforce, 52.7% of managers & supervisors, and 65% of Senior Executives will be eligible to retire in the next five years (OPM-Workforce Planning desk Aid, 2003). The Federal Highway Administration reports similar figures, and estimates that 45% of its workforce will soon be eligible for retirement (FHWA-Domestic Scan, 2003). Clearly this problem exists for state, local, and private industries as well as state DOTs. In addition, State DOTs are experiencing a loss of talent to a private sector of transportation companies. This requires DOTs to gain a new skill set needed to meet new technology demands and increase its competitive edge. Thus two of the primary issues faced by state DOTs are recruiting and retaining employees as identified by the New Mexico State Highway and Transportation Department study of human resources practices (FHWA-Domestic Scan, 2003). The study also identified other components that will be critical to developing the state DOT plans for the future. They are workforce needs, career awareness, succession planning, workforce development, recruitment, retention, and program effectiveness.

Workforce Needs

Defining, developing and retaining a diverse workforce that can deliver a technologically advanced transportation system to meet the demands for increased capacity, mobility, and safety is becoming increasingly difficult. A disproportionate number of experienced and competent workers are retiring from service. As a result, employers are faced with increased competition for skilled workers without new and innovative planning models and developmental policies needed to attract and retain a competent, productive workforce. It is suggested that DOTs should develop a systematic approach to determining current and projected workforce needs to assure development, administration, and maintenance of an efficient, effective and safe transportation network (FHWA-Studies/Research, 2003).

Career Awareness

There is a lack of understanding and appreciation of transportation career opportunities and the contribution transportation makes to society and the economy. Efforts to educate individuals of the value of transportation are often so sporadic, one-time events that lack cohesive strategy and do not involve the necessary partnerships, commitment and outreach needed for effectiveness. To increase student knowledge in transportation and the transportation profession DOTs can use education outreach initiatives, media campaigns, and career awareness developmental plans (FHWA-Studies/Research, 2003).

Succession Planning

As state DOTs lose a large number of senior executives with lengthy experience, there is a remaining void to be filled. Preparing younger or less experienced individuals to take on the challenges of senior management is becoming a priority in a number of organizations. Thus, training and professional development have taken on a higher priority with more resources

dedicated to those efforts (FHWA-Studies/Research, 2003). The Minnesota Department of Transportation (Mn/DOT) initiated a formal succession-planning program in the mid-1990s. The program is an executive-level process designed to develop and/or externally recruit employees to support targeted leadership positions. Currently in its third iteration, the succession-planning initiative uses a competency-based, developmentally driven executive staffing model to identify a talent pool of successors who can move into crucial positions without unnecessary operational disruptions. The program has directly influenced more than 20 senior executive management appointments. The Mn/DOT succession-planning program has become a standard for successful succession planning, and several other state transportation agencies are using it as the model for developing their own programs (FHWA-Innovative Practice, 2003).

Workforce Development

Workforce development is often a collection of individual, unrelated activities that lack cohesiveness and may not consider worker needs for a challenging and rewarding environment or provide workers with a sense of organization mission and contribution. It is important for state DOTs to establish an environment that assures workers are challenged, employees have the necessary skill enhancement opportunities, their clear career paths and succession planning in place, employees are rewarded and recognized for their contributions, and the needs of work and family are balanced (FHWA-Studies/Research, 2003).

In the mid-1990s, several task forces and peer reviews recommended that the California Department of Transportation (Caltrans) establish and implement modern project management processes and tools to improve the Department's capital project delivery. In 1994, Caltrans issued the first version of the Department's Capital Outlay Support (COS) Standard Work Breakdown Structure (WBS). The WBS defines capital project work content in terms of 491

discreet products and activities involved in a state highway project. Caltrans then assessed the knowledge and skills necessary to achieve them. Based on activities identified in the WBS and the Department's Strategic Plan, Caltrans then initiated the Long-Term Training Plan for Capital Projects, a blueprint for ensuring its 11,000+ capital projects employees can accomplish the 491 WBS deliverables (FHWA-Innovative Practice, 2003).

In Louisiana, most Louisiana Department of Transportation and Development (DOTD) engineers have degrees in civil engineering, but few pursue advanced degrees. These engineers recognize that additional training in specialty areas of transportation would improve their technical skills and make them more valuable as employees, but few are willing to commit to a two-year, research-oriented MS degree. To counter this situation, the Louisiana DOTD is working with six universities to develop a one-year Master of Civil Engineering Professional Degree. The program is designed to provide DOTD engineers—and their private sector counterparts — more in-depth knowledge in selected specialty areas within civil engineering (FHWA-Innovative Practice, 2003).

Recruitment

There is a lack of qualified candidates for professional and support positions and a need to effectively convey the message of value, contribution and benefits of a transportation career. It is often very difficult to compete with the pay and benefits of private sector companies (FHWA-Studies/Research, 2003). The New York State Department of Transportation (NYSDOT) uses an enterprising outreach program to redefine the image of public employment and position the Department as a place where young engineers can do meaningful work. The program combines aggressive on-campus recruiting for new employees, outreach to professional partners and the public, and a sophisticated series of videos that highlight employees' commitment to excellence.

The effort is designed to give a face and a name to the NYSDOT. An additional innovative program to attract employees to transportation agencies is the Kentucky Transportation Cabinet Scholarship Program which is a cooperative partnership between the Department of Highways and the University of Kentucky system to promote engineering and provide trained transportation personnel to work for the Cabinet (FHWA-Innovative Practice, 2003).

Retention

Salaries are often not competitive with like position pay scales. Career and professional development activities should be innovative so that employees feel that they have a sense of purpose and a future in the organization (FHWA -Studies/Research, 2003). The Maine Department of Transportation (MDOT) was concerned about the number and nature of complaints and grievances related to co-worker behavior and low levels of respect in the workplace. Training addressed some areas, but the Department felt that too many complaints of too serious a nature were getting too high up into MDOT. The Department contracted with a mediation firm, which through surveys, interventions, and facilitation, developed and conducted a pilot program to help managers, supervisors, and work crews “draw the line” on unacceptable workplace behavior. At the end of the pilot, each Division work crew identified its unique norms and behaviors. Each crew also wrote a “crew credo,” which all members signed. The framed credos hang in each Division crew location, and members often cite the credos when orienting new employees or addressing internal disputes. More importantly, co-worker behavior has improved (FHWA-Innovative Practice, 2003).

Program Effectiveness

It is critical to the initial and on-going success of workforce planning and development to assess effectiveness of component and overall program efforts. The need for activity and

program improvements cannot be identified and implemented without a comprehensive review of current efforts. An organized and structured evaluation of the program will help assure the efficient use of agency resources and provide the greatest opportunity to administer an effective Workforce Planning and Development Program (FHWA-Studies/Research, 2003).

Workforce planning is an important activity that will enable state DOTs to determine the workforce needs for tomorrow's success, compete in today's market, bridge knowledge gaps, and achieve maximum organizational effectiveness (OPM-Workforce Planning Desk Aid, 2003). A systematic approach to workforce planning can facilitate more efficient and accurate alignment of the workforce needs of state DOTs to meet its organizational goals, commitments and priorities. If done well, the result can be more effective utilization of employees, which will increase the overall effectiveness of DOT. Systematic workforce planning can help organizations implement cross-organizational placement and retraining as alternatives to reduction-in-workforce actions, do a better job of career counseling and development, training or retraining, and recruiting (USDOT-Workforce Planning Guide, 1999).

(This page intentionally left blank)

CHAPTER III

ANALYSIS OF CURRENT WORKFORCE

This chapter examines overall maintenance employees of the SCDOT workforce including other DOT age profiles. Statistical analysis includes distributions by class code, demographic information, and TERI statistics evaluation. This information is especially important as an initial snapshot profile of the SCDOT is evident. The following is a brief summary statistics of the SCDOT employees:

- Average Number of Years of Service: 29.5
- Average Level of Education: 10.6
- 48.9 percent of the Maintenance workforce have educational levels equal to or greater than high school. Of those, 53.0 percent have 30 or more years of service.

Summary of Current SCDOT Maintenance Workforce

Concerns to SCDOT are evident as this model addresses the issues of competencies, training, performance, and pay. Specifically, Table 1 includes a breakdown of SCDOT Maintenance Workforce. Maintenance employees comprise over 60 percent of SCDOT positions. As indicated in Table 1, the Trades Specialist II classification comprises over 50 percent of SCODT Maintenance positions with 1718 delegated positions for this class code. Specific adjustments and recommended requirements are included as a major portion of the workforce development plan.

Table 1. SC Department of Transportation Maintenance Workforce (April 2003)

Title	Classification	Band/Level	Percent of Maintenance Staff
Equipment Operator I	KD35	1D	0.03
Equipment Operator II	KD40	2B	1.22
Equipment Operator III	KD45	3A	0.062
		3C	0.06
Mechanic I	KD05	2E	1.34
Mechanic II	KD10	3E	0.06
Mechanic III	KD15	4A	5.42
		4D	0.59
Trades Specialist V	KC50	5A	2.15
		5C	0.93
		5E	0.19
Trades Specialist IV	KC40	4A	4.33
		4C	8.54
		4D	0.47
Trades Specialist III	KC30	3B	16.42
		3C	1.81
Trades Specialist II	KC20	2A	0.53
		2B	32.62
		2C	0.03
		2E	20.72
Trades Specialist I	KC10	1D	1.81
		1E	0.16

The distribution of the delegated maintenance positions are presented in Figure 1. Specifically, the entire Trades classification (2884 delegated positions) comprises 90 percent of the Maintenance workforce and is therefore given more focus in this project. The remaining 10 percent includes SCDOT Mechanics (242 delegated positions), and Equipment Operators (45 delegated positions). The KC20 classification, Trades Specialist II, claims the highest number of maintenance employees (1718). Of the 2884 delegated positions for the Trades classifications, 2493 of these positions are currently filled, while 384 of these positions are vacant as illustrated in Figure 2.

Figure 1. Delegated SCDOT Maintenance Positions

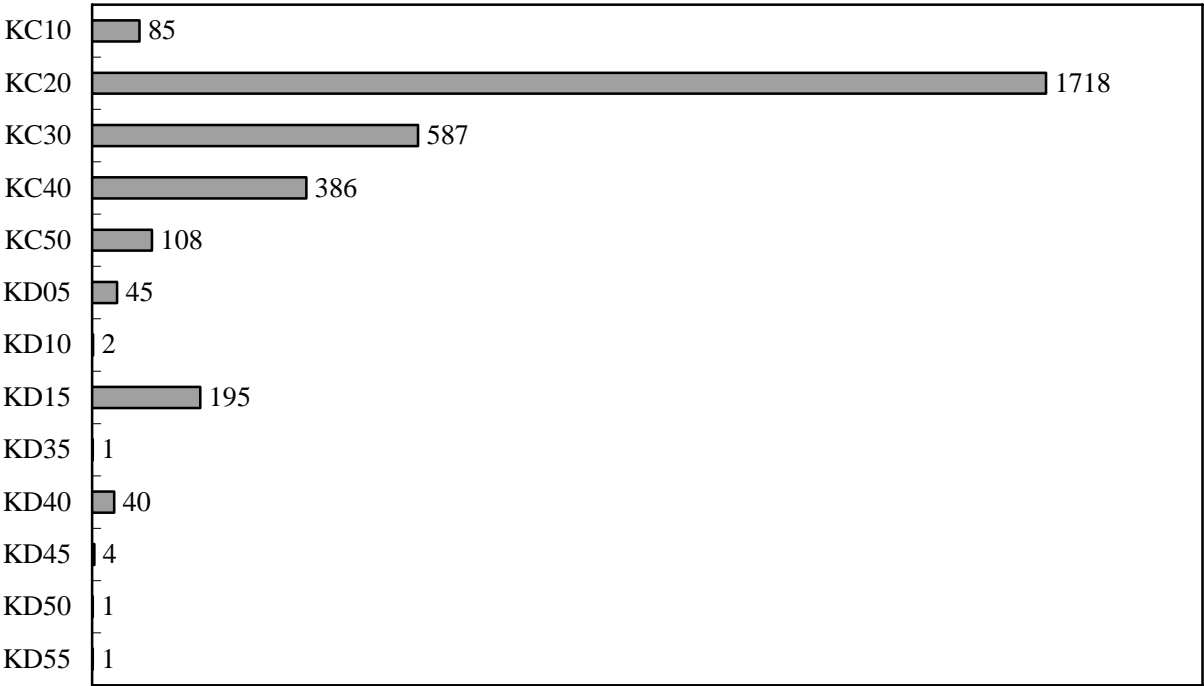
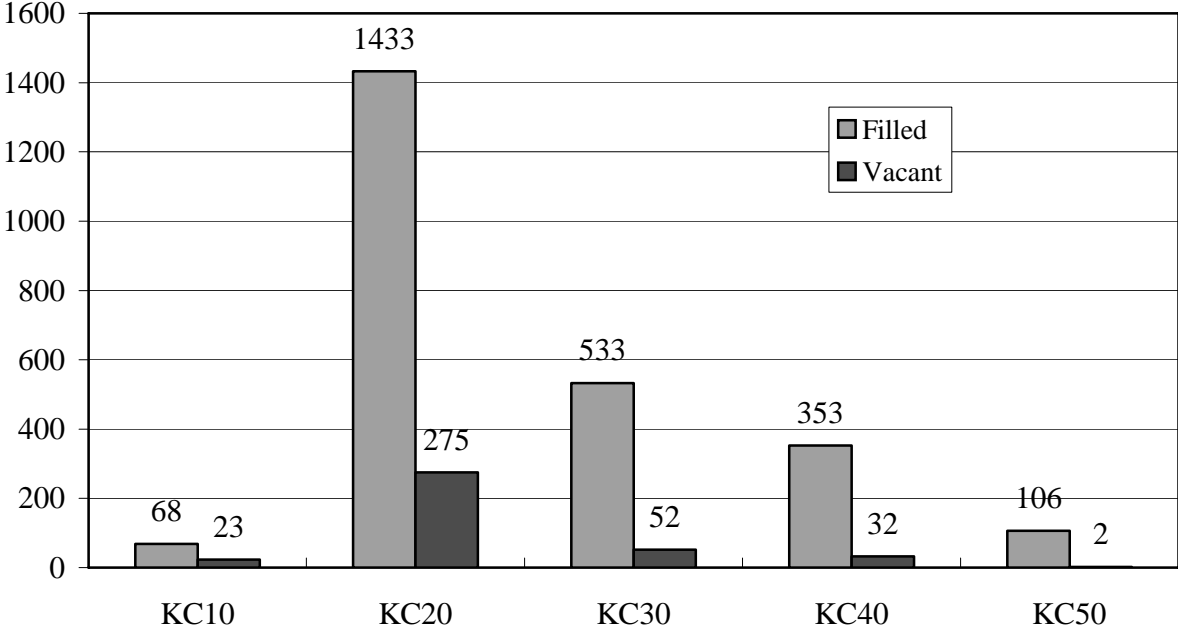


Figure 2. Vacant/Filled Positions as of Fall 2003



Age Profile and TERI Statistics Evaluation

The U.S. Department of Transportation reported an increase in the average age of DOT employees from 44.7 in FY 1999 to 46.2 in FY 2003. Figure 3 shows the national DOT age data and indicates significant decreases in the age groups below 40. Only 10.8 percent of the national DOT workforce is in the lowest three age groups while 36.5 percent is in the top three age groups. The leading edge of the Baby Boomer generation turns 58 years old in 2004, and the average age of all USDOT retirees in 2003 was 58. This means that a large percentage of the USDOT workforce will be eligible to retire within the next few years.

Figure 3. USDOT Age Profile

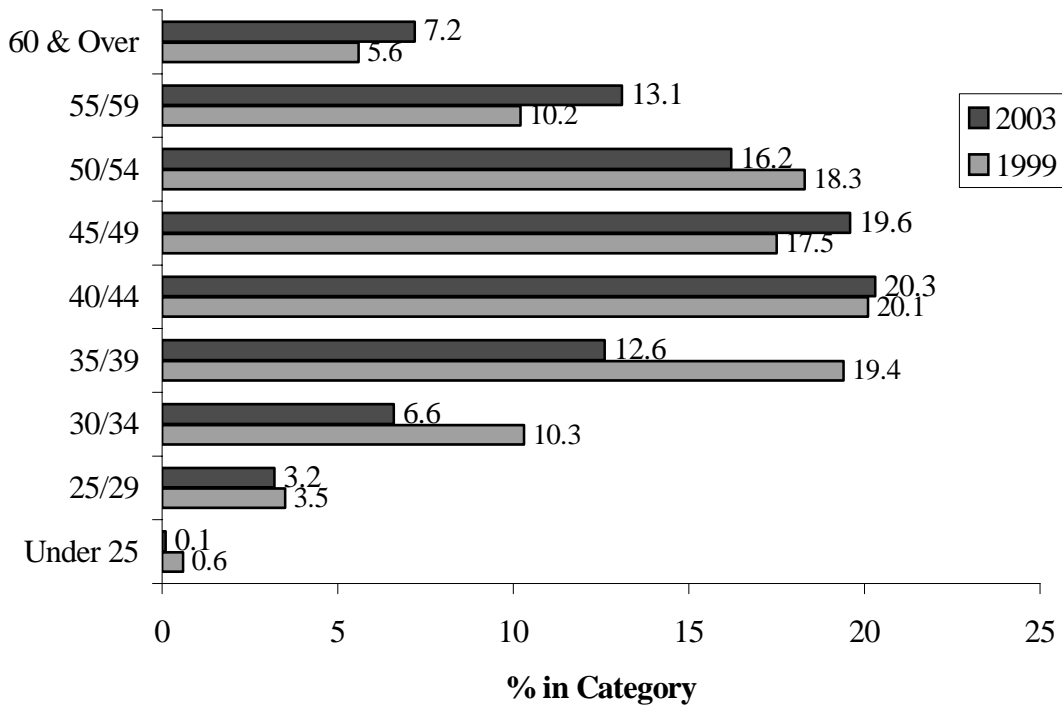


Table 2 indicates the percentage of employees in maintenance positions at the SCDOT that will be eligible for full or early retirement within the next 5 years. These employees represent 35 percent of the entire SCDOT workforce. Additionally, 376 individuals in the Trades classification will be eligible for full retirement in 5 years, while 263 will be eligible for early retirement. Twenty-seven percent Trades Specialist III, 25 percent of Trades Specialist IV, 23 percent of Trades Specialist V, and 18 percent of Trades Specialist II classifications will be eligible for retirement. Of those persons who have entered the TERI program, the average length of time remaining is 2.72 years.

Table 2. Retirement Eligibility of SCDOT Maintenance Employees

Title	Classification	Percent of Maintenance Staff	Percent of SCDOT Staff
Equipment Operator III	KD45	1	0.3
Equipment Operator II	KD35	1	0.3
Mechanic III	KD15	5	1.9
Trades Specialist V	KC50	23	8.0
Trades Specialist IV	KC40	25	8.8
Trades Specialist III	KC30	27	9.3
Trades Specialist II	KC20	18	6.1

Salary Analysis

The summary of the salary survey for various trades positions conducted by AASHTO in 2003 are presented in Table 3. SCDOT salaries are below the national average. The average weighted monthly salary for Highway Maintenance Supervisors was \$3306 while the SCDOT's average salary for this comparable position is \$2871, which is 13 percent below the national weighted average. Likewise, South Carolina's average monthly salary for other surveyed positions such as highway maintenance worker, heavy equipment operator, mechanic supervisor, and equipment mechanic, all fall between 10 and 16 percent below the national weighted averages.

Table 3. Average Monthly Salary (\$) by State (2003)

	Hwy Maintenance Supervisor	Hwy Maintenance Worker	Heavy Equipment Operator	District Mechanic Supervisor	Equipment Mechanic
National Low	1705	1304	1411	1808	1198
National Mean	3306	2161	2453	3417	2769
National High	7127	3470	4548	7127	4648
Alabama	3188	1794	2781	3180	2743
Alaska	4192	3388	3646	4163	3678
Arkansas	4278	1542	5538	3856	2114
California	3833	2776	3330	4406	3654
Colorado	3943	3101	3407	4922	3675
Delaware	2563	2248	2248	3188	2107
Georgia	2836	1768	2410	2995	2318
Hawaii	4345	2215	2887	3483	2862
Idaho	3298	2099	---	3456	2506
Illinois	4444	---	---	---	---
Indiana	2391	1677	2120	2413	1685
Iowa	4902	2845	---	---	3198
Kansas	3397	1985	2454	3274	2373
Kentucky	3568	1747	2782	3219	3713
Louisiana	3392	1761	2522	3388	1740
Maine	2800	1600	2120	3274	2745
Maryland	3549	2260	3135	3615	2566
Massachusetts	4210	2307	2926	3302	3063
Michigan	4065	2924	2924	4257	3614
Minnesota	4316	3182	3552	4682	3680
Mississippi	2782	1696	2130	2694	2287
Missouri	3273	2195	2509	3516	2723
Montana	3049	2552	2633	3741	2839
Nebraska	2906	2258	2258	3690	2573
New Jersey	4495	2922	3486	4283	3503
New Mexico	3122	1787	2497	2973	2214
New York	3495	2359	2790	6806	3367
North Carolina	3546	1643	1643	3266	2593
North Dakota	3076	2097	2631	3272	2548
Ohio	3508	2519	2998	3508	2715
Oklahoma	2890	1972	2240	3375	2651
Oregon	3298	2760	3126	---	3340
Pennsylvania	3057	1846	2565	3107	2419
Rhode Island	2678	2257	2394	2681	2665
South Carolina	2871	1932	2248	3064	2322
South Dakota	3188	2003	---	3015	2416
Tennessee	2134	1661	2291	2291	1907

Texas	3919	2188	2804	3553	2576
Utah	3412	1968	2518	3655	2770
Vermont	3195	2465	3399	4320	2785
Virginia	2989	2347	3174	3074	2554
Washington	3925	3039	3383	5322	3727
West Virginia	2855	1936	2309	3472	2216
Wisconsin	5840	---	---	6787	2857
Wyoming	2943	2464	2691	4518	3547

Table 4 illustrates the percent of the national weighted average salary for states neighboring South Carolina. Most states in this region fall below the national weighted averaged in each job category with the exception of North Carolina and Alabama. South Carolina average monthly salaries represent a range of 84 percent to 91 percent of the weighted national average.

Table 4. Comparison of South Carolina Salaries with Selected States

	Hwy Maintenance Supervisor	Hwy Maintenance Worker	Heavy Equipment Operator	District Mechanic Supervisor	Equipment Mechanic
National Weighted Mean (\$)	3306	2161	2453	3417	2769
Alabama	96%	83%	113%	93%	99%
Georgia	86%	82%	98%	87%	84%
North Carolina	107%	76%	67%	96%	94%
South Carolina	87%	89%	91%	90%	84%
Tennessee	65%	77%	93%	67%	69%

Projection of Future Workforce

Many changes will face the future workforce of the SC DOT such as retirement and a rapidly aging workforce. Strategic hiring becomes essential in the implementation of the program. Six focus areas were identified as critical that must be considered for workforce development. The primary classifications include workforce needs, career awareness, recruitment, workforce development, retention, and program effectiveness.

1. Workforce Needs

Objective: To develop a systematic approach to determining current and projected transportation profession workforce needs to assure the development, administration and maintenance of an efficient, effective and safe transportation network.

Issue: Developing and retaining a diverse workforce that can deliver a technologically advanced transportation system to meet the demands for increased capacity, mobility and safety is becoming increasingly difficult. A disproportionate number of experienced and competent workers are retiring from service. As a result, employers face increasing competition for skilled workers without the benefit of new and innovative policies and programs needed to attract and retain a competent, efficient and productive workforce.

Strategies for Change:

- Agency Commitment
- Strategic Plan/Workforce Plan
- Needs Assessment Methodology
- Workforce Plan Development
- Program Evaluation

The current workforce status is contained in the previous section.

2. Career Awareness

Objective: To increase student knowledge in transportation and that the transportation profession is a challenging and rewarding career choice.

Issue: There is a lack of understanding and appreciation among students of transportation career opportunities and the contribution transportation makes to society and the

economy. Efforts to educate individuals of the value of transportation are often sporadic, one-time events that lack a cohesive strategy and involve the necessary partnerships, commitment and outreach needed for effectiveness. As the workforce development plan is implemented, attention should be provided in the area of career awareness. Such programs indicate creativity and a willingness to address internal issues, which are extremely relevant in career choices. Incorporation and program experience with partnerships and/or interns provide an excellent opportunity for recognition of this program and the work involved.

3. Recruitment

Objective: To find and select an appropriate number of qualified candidates for the variety of professional discipline and support positions.

Issue: There is a lack of qualified candidates for professional and support positions and a need to effectively convey the message of value, contribution and benefits of a transportation career. For public agencies, it is often more difficult to compete with private sector company pay and benefits.

Strategies for Change:

- Agency Commitment
- Recruitment Plan
- Compensation
- Entry Level Program
- Mid-Career Program
- Partnership Development
- Program Evaluation

Similarly, the workforce development program may be utilized as a positive and unique attribute in the recruiting and retention process.

4. Workforce Development

Objective: Establish an environment that: assures workers are challenged; provides employees with the necessary skill enhancement opportunities; includes clear career paths and succession planning; recognizes and rewards employees; and balances the needs of work and family.

Issue: Workforce development is often a collection of individual, unrelated activities that lack cohesiveness and may not consider worker needs for a challenging and rewarding environment or provide workers with a sense of organization mission and contribution. Major issues have arisen in the overall development of the program. As indicated, several areas of concern have been indicated by the employees most affected. Specific concerns have been stated by the management and administration of the SCDOT. This final product takes concerns of both the employee and administrators into account with the result being a structural and consistent program for advancement and performance.

5. Retention

Objective: Establish a work environment that will assure retention of a qualified, competent and motivated workforce that will provide for a return on agency investment, enhance institutional knowledge, assure employee satisfaction and a continuing contribution to the agency's mission and goals.

Issue: Salaries are often not competitive with like position pay scales. Career and professional development activities should be innovative so that employees feel that they have a sense of purpose and a future in the organization. Employees' work schedules

should balance family interests with work requirements. Innovation is important, but the overall plan must include the opportunity to provide a program that addresses the issues at hand and ultimately provide a program that will gain approval at the State level.

6. Program Effectiveness

Objective: Assure that all aspects of the Workforce Planning and Development Program are evaluated and incorporated into a process for improvement.

Issue: It is critical to the initial and on-going success of workforce planning and development to assess the effectiveness of component and overall program efforts. The need for activity and program improvements cannot be identified and implemented without a comprehensive review of current efforts. An organized and structured evaluation of the program will help assure the efficient use of agency resources and provide the greatest opportunity to administer an effective Workforce Planning and Development program. Finally, as previously indicated consistency is a primary component in the implementation of this program. Consistency will provide an avenue to maximize efficiency of productivity, cost effectiveness and program adaptation.

(This page is intentionally left blank)

CHAPTER IV

WORK PLAN

SCDOT Strategic Plan

The South Carolina Department of Transportation (SCDOT) is charged with the responsibility of systematically planning construction, maintenance, and operation of the state highway system and providing mass transit services. SCDOT is responsible for managing the fourth largest state owned highway system in the nation.

Key Strategic Goal for Present and Future Years¹

SCDOT is transitioning to an updated Strategic Plan, which will allow focus on what is referred to as “Four Rocks.” Below are the key strategic goals for present and future goals.

- Increase safety on South Carolina’s transportation systems and within SCDOT
- Improve the quality, efficiency and appearance of the state highway system
- Improve and expand the multi-modal transportation system in South Carolina
- Enhance and implement integrated financial and project management systems
- Improve employee skills, their work environment, and provide opportunities
- Improve management of SCDOT property, equipment and technology
- Provide the highest level of customer service

The “Four Big Rocks” are to (1) Increase safety and maintenance on South Carolina’s transportation system and within the agency; (2) Excel in customer service, internally and externally; (3) Use resources wisely and efficiently; and to (4) Improve employee development for all employees.

¹ *Annual Accountability Report 2003-2004*. South Carolina Department of Transportation.

The development of a workforce development program serves to support the established values of the South Carolina Department of Transportation through the development of methods to obtain new competencies and knowledge throughout the maintenance workforce. This was accomplished through the evaluation of position descriptions and in consultation with district engineers for the agency.

SCDOT Mission and Vision Statements

SCDOT Vision:²

“Public trust: earn it, keep it!”

SCDOT Mission:³

The mission of the SCDOT is to provide a safe and efficient transportation system for the state of South Carolina. SCDOT builds and maintains roads and bridges as well as provide mass transit services to the citizens of the state.

SCDOT Values:⁴

The values subscribed to by all members are described using the acronym RIGHT Team. As a member of the SCDOT team, I do things the RIGHT way!

Respectful and supportive of others

Integrity at all times

Good at what I do, because I am competent and knowledgeable

Honest and fair in all my actions

Teamwork through communication

SCDOT Business Requirements⁵

1. Wise and efficient management and use of resources
2. Quality customer service
3. Trained and motivated work force
4. Improved safety
5. Perform quality work in a timely manner

² *Strategic Plan: Update 2002-2003*. South Carolina Department of Transportation.

³ *Strategic Plan: Update 2002-2003*. South Carolina Department of Transportation.

⁴ *Strategic Plan: Update 2002-2003*. South Carolina Department of Transportation.

⁵ *Strategic Plan: Update 2002-2003*. South Carolina Department of Transportation.

Workplace Development Program Vision and Mission Statements

Workforce Development Program Vision

The development of a progressive workforce development program. The development of a static program serves only to address current workforce needs. The vision of the final product is to develop a product that has the ability and flexibility to function in a dynamic environment as the workforce of the South Carolina Department of Transportation changes as does the State of South Carolina.

Workplace Development Program Mission:

Development of a program that incorporates all employee levels and bands into a systemized, yet adaptive, curriculum of promotion and improved compensation based on the acquisition of skills, knowledge and abilities.

The development of the knowledge, skills and abilities will initially be developed through an established curriculum. As the program proceeds, there will be the ability to work other methods into the program so as to adapt to upcoming changes in the workforce and for the South Carolina Department of Transportation.

Workforce Development Program Business Requirements:

1. An understanding of the need for workforce planning and restructuring including management of "human capital",
2. Continued development of top leadership support for workforce planning efforts, and continued formal communication efforts,
3. A formal assessment of what has previously been accomplished in the area of workforce planning, and
4. The establishment of a cross-functional team.

Workforce Development Program Goals

SCDOT Goals as related to Workforce Development Program⁶ - Improve employee skills, their work environment and provide opportunities and develop and deploy a workforce development planning process.

1. To establish salary policies of pay that compensate for the work performed, provide incentive for personal performance and growth, consistently reward good job

⁶ *Strategic Plan: Update 2002-2003*. South Carolina Department of Transportation.

performance, promote teamwork and offer flexibility to meet the challenge of a dynamic environment.

2. Managers and supervisors must be incorporated into the equitable pay program by providing concise guidelines and consistent criteria for salary advancement.
3. Provide some control over advancement by rewarding the acquisition of knowledge, skills and abilities.
4. Eliminates the needs for uncertainty in the reclassification process by clearly defining objective criteria for advancement.
5. Requires active participation in order to achieve promotions and associated compensation.
6. Provides a serial movement process to ensure proper skills, knowledge, and abilities are achieved.

Workforce Development Program Outcomes

Listed below are the outcomes and benefits of implementing a workforce development program

- Identification of a current workforce
- Identification of specific future workforce needs
- Determination of a cost structure in order to meet future workforce needs
- Prototype position descriptions for future workforce needs
- Matching of employees and skills to job requirements
- Matching of environmental and demographic considerations to employees and requirements
- Incorporation of committee and task force objectives in order to meet the workforce plan
- Ensures that an organization has the resources to deliver promised services to its customers in a timely and quality manner.
- Facilitates the management of change and contributes to better people management.
- Allows smarter decisions and better long-term investments.

Primary Implementation Events

- Management Training (as necessary)
- Employee Orientation
- Employee/Manager Meetings
- Budget Allocations
- Effective Date for Implementation
- Appeals Process

Eligibility Requirements

An employee must have satisfactorily completed the requirements of the probationary period as specified by the State Office of Human Resources in order to participate in the Workforce Development Program.

Salary Increase Restrictions

Only one (1) increase may be awarded in the timeframe as specified by the Workforce Development Program with the exception of temporary salary adjustments. The amount of the increase will be based in a percentage calculation. Any increases awarded to employees within the same classification, band and level will be calculated similarly.

When demonstrated duties, KSA's, minimum T&E, and other requirements of the position have been met as specified on the requirement sheet, the title and associated information will be changed accordingly.

Proposed Conceptual Design

The overall concept behind this project is summarized below as a proposed conceptual design.

- 1 Informally eliminate the utilization of Trades Specialist I** (Highway Maintenance Worker I). Benefits of this include a reduction in the segmentation of tasks to be performed while encouraging a team concept. Similarly, when analyzed, the differences between the TSI and II do not appear significant but do represent a difference in compensation levels.

- 2 Define Salary Range of Job Titles.** Though the State has established pay bands, there is still some flexibility, with State approval, to incorporate levels within each band. Such steps provide a mechanism to increase compensation without requesting a reclassification assuming the employee has met the requirements of the workforce development program.

- 3 Establish criteria for step increases within each band.** The criteria would include potential pay based on knowledge as well as professional development, personal characteristics, OJT, and an evaluation process. There is also potential to utilize the current bonus system for temporary performance of duties in a higher classification.

- 4 Establish criteria for movement beyond the band system.** The criteria would include potential pay based on knowledge as well as professional development, personal characteristics, OJT, and an evaluation process. There is also potential to utilize the current bonus system for permanent performance of duties in a higher classification. Permanent assignment, through means of reclassification, requires that a vacancy be available.

Methodology & Analysis

TASK A: Strategic Direction

As part of the project it was vital that the strategic plan of the organization be incorporated as an ongoing process. Since this process recognized thinking strategically about the future and how to get there, it included the activities from aligning the organization behind clear long-term goals as well as organizational and personal incentives, allocating resources, and developing the workforce to achieve the desired outcomes and included methods for measuring success in meeting the mission objectives. These issues were addressed in the following subtasks.

Subtask A.1: Introduction, Literature Review, and DOT Comparison

Subtask A.2: Vision, Mission, Values and Objectives

Subtask A.3: Organizational Structure

Subtask A.4: Business Process Reengineering

Subtask A.5: Measures for Organizational Performance

The determination of related state DOTs were addressed through an initial questionnaire provided as Appendix E. Similarly, follow-up included on-line research, telephone conversations, and email contacts resulting in specifically related shared information from various State offices. The information is included as Appendix F.

Vision, Mission, Values, and Objectives were further developed with the assistance of online information from the SCDOT as well as printed materials provided by that office.

TASK B: Workforce, Skill Gaps and Workforce Analysis

The second step of the Workforce Planning involved analyzing the current workforce and then comparing workforce needs against available skills. Initial information was provided in

documentation submitted by the South Carolina Department of Transportation. In order to better identify supply, demand, and discrepancies the following information and data sources were utilized.

- The Central Personnel Data File (CPDF): CPDF is an information system that supports statistical analyses of Federal personnel management programs. CPDF is composed of two primary data files which contain documents of employees at a specific time and documents of personnel actions such as appointments, promotions, separations, etc. CPDF coverage is limited to Federal civilian employees.
- Current Population Survey (CPS): CPS is the U.S. Government's monthly survey of unemployment and labor force participations. The survey provides statistics on the employment status of the population and related data , which are compiled and maintained by the Bureau of Labor Statistics (BLS). The CPS provides a comprehensive body of information on the employment and unemployment experience of the population, classified by age, sex, race, Hispanic origin, marital status, educational attainment, and veteran status. Data on employed persons includes the class of worker, industry, occupation, union status, hours of work, full or part-time status, and earnings. Additional detail is available on the duration of unemployment, reason for unemployment, and methods used to find employment.
- U.S. Census Data (2000 and 1990): The Bureau of the Census conducts a full headcount of the U.S. population every ten years and produces a variety of demographic data. Preliminary 2000 Census data should be available, as well as 1990 Census data. Census data has detailed information by occupation, race and national origin, gender, and salary for all levels of geographic area. This can be extremely useful in workforce planning because it

Identifies geographic locations for targeted recruiting.

Subtask B.1: Introduction and Documentation

Subtask B.2: WFA, Comparisons and Revisions - Central Personnel Data File

Subtask B.3: WFA, Comparisons and Revisions - Current Population Survey
Information

Subtask B.4: WFA, Comparisons and Revisions - U.S. Census Data

TASK C: Action Plan

The purpose of developing a workforce action plan is that it provides methodology and processes by which organizations implement their strategic plans, address their skills imbalances, and outline a concrete strategy to ensure that they have a ready and continuous supply of highly skilled, competent workers.

A workforce action plan is a natural follow-up to strategic planning. Because the strategic plan assists the organization in identifying where we are, where we are going, and how we are going to get there, the workforce action plan outlines specific tasks and actions needed in order to achieve the goals and objectives. Specifically, the action plan addressed the following questions:

- What human resources do I need to have in order to meet the performance objectives of the organization?
- Once I have the employees on board, how do I develop them?
- What strategies should we use to retain them?

Subtask C.1: Introduction

Subtask C.2: Outline for Workforce Action Plan

Subtask C.3: Workforce Plan Prototypes

Subtask C.4: Re-addressing Skill Gaps

Subtask C.5: Workforce Planning Program, Cost Structure and Approvals

Subtask C.6: Goals Re-visited

Subtask C.7: Communications Strategy

Subtask C.8: Evaluation

TASK D: Implementation

Implementation of the project included the transition of the paper process to the workforce including meetings, communication processes, training programs, OJT, etc., and actual adherence to the requirements of the program as approved by the SCDOT and OHR.

Subtask D.1: Introduction

Subtask D.2: Implementation Outline

Subtask D.3: Marketing

Subtask D.4: Targeting and Recruiting

Subtask D.5: Recruiting and Training

Subtask D.6: Retention Strategies

Subtask D.7: Organizational Assessments

TASK E: Monitoring, Evaluation and Revision

The fifth step is the monitoring, evaluation, and revision of the program and associated processes. This process incorporates measuring the effectiveness of the workforce action plan and answers the question:

"Were the recruiting, hiring, selection, career development, and/or retention strategies in the workforce plan effective (as implemented)?"

Though this is the final step of the process it should not be considered a last step, but rather part of the continuous planning cycle. Upon the completion of Step 5 agency representatives continue the process and return to Step 1.

ADDITIONAL TASKS: Survey development and distribution

In an effort to validate current workforce practices, procedures, current position descriptions, and job tasks, scheduled visits and interviews were conducted with each of the SCDOT District Engineers and support staff. Each District Engineering Administrator (DEA) was encouraged to invite the Resident Maintenance Engineer along with other personnel who may provide input in the planning process. Preliminary questions and confirmations of visits were made with each of the DEAs approximately 1 week prior to the meetings. The information received from these interviews is included in Appendix A.

Additionally, task analysis surveys were distributed to all Maintenance Employees in order to gain a better understanding of the current workforce and training initiatives. This survey allowed us to analyze each of the maintenance positions to better determine the types of job tasks that are currently being used and the types of training required. Surveys, along with instructions for completion were sent to each of the DEAs for distribution to each of their employees. In order to accommodate individuals with limited reading ability, the DEAs were asked to assist those individuals in the completion of the survey by reading the questions aloud. DEAs were

also provided with pre-paid return FedEx labels to return the surveys upon completion. The information received from these surveys is included in Appendix B.

CHAPTER V

ANALYSIS, CONCLUSIONS AND RECOMMENDATIONS

Survey Results and Analysis

A total of 1998 surveys were collected from all seven districts. Table 5 represents the details of the return data on the task analysis surveys, and Figure 4 shows the percentage of responses by classification.

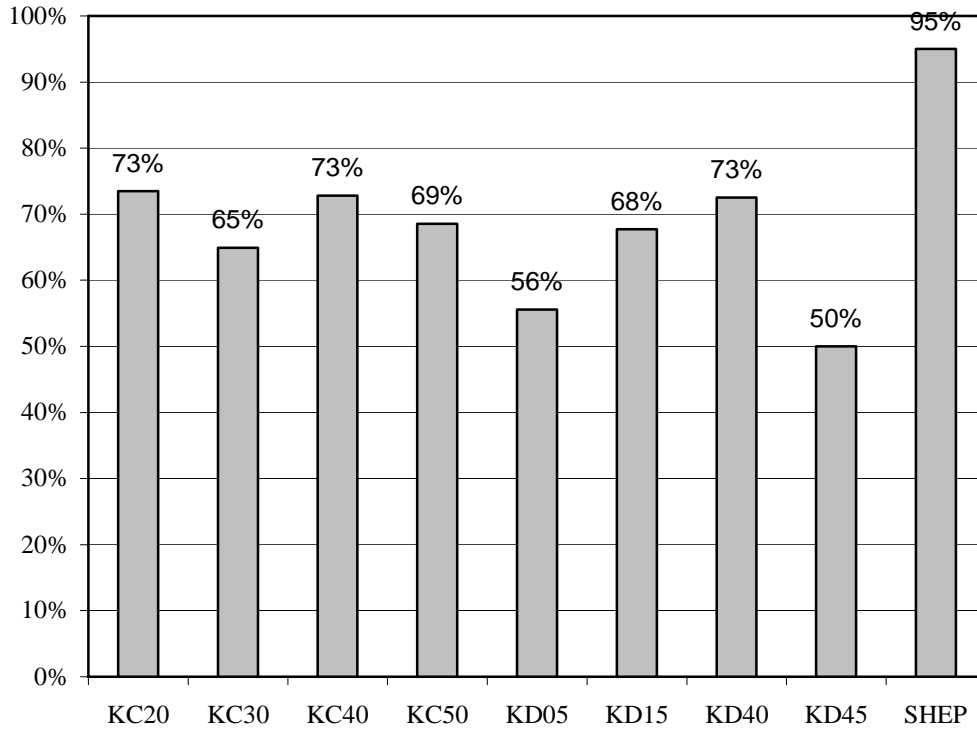
Table 5. Surveys Received by District and Classification

	District 1	District 2	District 3	District 4	District 5	District 6	District 7	Total
Trades Specialist II	277	113	160	140	227	173	172	1262
Trades Specialist III	91	38	37	68	88	17	42	381
Trades Specialist IV	57	18	42	40	53	40	31	281
Trades Specialist V	10	5	7	12	2	13	15	74
Mechanic I	10	0	6	2	3	4	0	25
Mechanic III	10	21	15	18	30	20	18	132
Equipment Operator II	0	0	0	0	11	18	0	29
Equipment Operator III	0	0	0	0	2	0	0	2
SHEP	4	0	14	10	15	7	0	50
Total	459	195	281	290	431	292	278	2226

To analyze the survey information, data were manually entered into a SAS program, which is a statistical package used to analyze statistical information. Due the large response rate, additional assistance was required to enter the survey data. Six undergraduate students were

assigned to assist during a 2-week period to complete this task. Accuracy of the data was strictly monitored for quality control.

Figure 4. Percent Return of Surveys



The results of the surveys are presented below. Additional results can be found in Appendix B.

Trades Specialist II

Results from the survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed.

A total of 1198 responses were received regarding requests for additional training. Backhoe and forklift training were prevalent across all districts. Computer classes were requested among districts 1, 4, 5, and 6. District 1 training requests included CDL, Basic Motor

Skill, Boom Mower, Brick Layer, Welding classes. The responses from this district also indicate the need to learn operation of more equipment, cross training for other positions, driver, bus operator, low boy sweeper, and track hoe. Additionally, more training in herbicide, slope mower, traffic control, OJT, videos, classes pertinent to tasks, and motor grader were listed. Districts 3, 4 and 7 indicate the need for training on motor graders and backhoes. District 6 indicated responses in pothole patching, and heavy equipment.

Trades Specialist III

Results from the survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed.

A total of 352 responses were received regarding requests for additional training. Backhoe and forklift training were prevalent across all districts. Computer classes were requested among districts 1, 4, 5, and 6. District 1 training requests included CDL, Basic Motor Skill, Boom Mower, Brick Layer, Welding classes. The responses from this district also indicate the need to learn operation of more equipment, cross training for other positions, driver, bus operator, low boy sweeper, and track hoe. Additionally, more training in herbicide, slope mower, traffic control, OJT, videos, classes pertinent to tasks, and motor grader were listed. Districts 3, 4 and 7 indicate the need for training on motor graders and backhoes. District 6 indicated responses in pothole patching, and heavy equipment.

Trades Specialist IV

Results from the survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed.

A total of 280 responses were received regarding requests for additional training. Computer training was prevalent among districts 1, 5, 6 and 7. District 1 training request

included training on asphalt/concrete, drainage structure, new equipment operation, operator training, and maintenance engineering. Additionally, more training in, human resources, leadership development and the Spanish language were listed. District 2 indicated the need for training on motor graders, as did District 6. District 6 also listed request for training on other heavy equipment such as the bulldozer, track hoe, and crane. Districts 5, 6, and 7 all indicated the need for supervisor training, and management procedures.

Trades Specialist V

Results from the survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed. However, the responses also indicate some review for a more structured type of training environment when possible.

Computer training was prevalent among districts 4, 5, and 7, with District 7 having a broader range of training offerings to include CPR, flagger instruction, concrete inspection and customer service. Similarly district 7 also included backhoe, procurement, alcohol and environmental/mechanical offerings. Results from District 6 indicated training in supervision, foreman, HR, EPMS, procurement, and HMMS in addition to electrical, braking systems, transmissions, drivelines and safety. District 5 offerings predominately included Step 21, herbicide and computer training. For District 4, training included supervision, foreman, HR, EPMS, procurement and computer classes. Training for District 3 included SWIPES, STARS, HMMS, vehicle repair and foreman training. District 2 included training for herbicide, mechanical, electrical, hydraulics, transmissions and drivelines. District 1 provided access to the following: supervision, HR, OSHA, computer, HRM II, leadership, procurement, report/memo writing, customer service and Microsoft in addition to asphalt, computer, OSHA and traffic control.

Mechanic I

Responses regarding additional duties are provided as Table 2. No responses were obtained from Districts 2 and 7. Three of 8 questions indicate that additional training is necessary. Results from the remainder of survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed.

Mechanic III

Responses regarding additional duties are provided as Appendix C. Results from the survey responses indicate that the majority on training occurs through on the job opportunities. Unlike other survey results many of the responses indicated the need for additional training. Those individual responses are included in the chart. The responses also indicate some review for a more structured type of training environment when possible.

Equipment Operator II

All responses were obtained from employees in Districts 5 and 6. Results from the survey responses indicate that the majority of training occurs through on the job opportunities and that a primary response was that no additional training was needed.

Equipment Operator III

All persons occupying the Equipment Operator III classification are located in District #5. Results from the survey responses indicate that the majority of training occurs through on the job opportunities and that a primary response was that no additional training was needed.

Incident Responders

Responses regarding additional duties are provided as Table 2. The majority of responses were received from District 3, 4, and 5 and that the primary title was Incident Responder. With regard to the survey questions, responses to 15 of the 43 questions indicated that no training had been received. In 25 of 43 questions, results indicated that the majority of training had taken place through on the job methods. Additionally, responses to 3 of the 43 questions indicated a virtual tie between no training received and on the job training provided and that a primary response was that no additional training was needed.

Summary Conclusions, and Recommendations

Based on the above, career paths were developed for the highway maintenance workers, equipment operators, and mechanics. The career path designated for highway maintenance workers was divided into four classifications (KC20, KC30, KC40, KC50), with three levels (A., B, C) for each. The equipment operator career path was designed with four classifications (KD35, KD40, KD45, KD50), and no additional levels. Similarly, the mechanic career path was designed with four classifications (KD05, KD10, KD25, KC40), and no additional levels.

Included with the career path forms are necessary requirements, training and competencies required to move from levels and/or bands. These can be found in the Workforce Development Program Model along with program policies and procedures.

Specifically, the results of the surveys indicate that a formalized approach to both training and advancement is necessary. The results of the surveys combined with responses from initial discussions indicate concern regarding equity across and among classifications. To address these issues the workforce development program was developed.

Implementation of the actual program will require attention to detail regarding program costs and required time/promotional requirements. Past experience indicates a need for strict monitoring of program costs associated with both training and pay changes. Furthermore, time requirements and adequate performance and behavioral requirements are strongly recommended in order to ensure competencies as developed in the program model.

Discussions have also included the issue of gap analysis. It will be necessary for employees in the specified classifications be adopted into the new program model, a specific gap analysis is not necessary. A strict monitoring of costs, time requirements, and performance expectations are recommended methods for addressing any issues that may initially be included in a gap analysis. As workers are transitioned into the new program, the workforce structure will remain the same. The primary difference will be consistent transition into progressive titles, levels and bands.

Further recommendations include the recognition for adaptation of the program as implementation proceeds. As adaptations are made it is necessary to ensure that consistency among classifications remains in effect. Lessening of requirements may serve to create morale and additional pay issues this program was initially developed to resolve.

This model is an initial development. It is recommended that any final changes be incorporated and then a specified time period be established for implementation and evaluation. At the completion of the evaluation period will be the appropriate time to consider any necessary changes. Credibility in the program will be best continued through a consistent application of requirements for all requirements, established method and timeframe for program evaluation, and opportunity for input by the affected employees. The initial program outcomes, as previously mentioned, have been incorporated and provide the basis to the program structure.

(This page intentionally left blank)

LITERATURE CITED

- Cayer, J.N. (1996). *Public personnel administration in the United States* (3rd ed.). New York: St. Martin's Press.
- Delahoussaye, M., Ellis, K., and Bolch, M. (2002). Measuring corporate smarts: Faced with empirical evidence that significant investment in workforce leads to increased shareholder value, what CEO would dare cut the training and development budget? *Training*, 39(8), 20-33.
- Federal Highway Administration. (n.d.). Transportation Workforce Development- Domestic Scan. Retrieved May 28, 2003, from <http://www.nhi.fhwa.dot.gov/transworkforce/domestic.asp>
- Federal Highway Administration. (n.d.). Transportation Workforce Development- Studies/Research. Retrieved May 28, 2003, from <http://www.nhi.fhwa.dot.gov/transworkforce/studies.asp>
- Federal Highway Administration. (n.d.). Transportation Workforce Development- Innovative Practice. Retrieved May 28, 2003, from <http://www.nhi.fhwa.dot.gov/transworkforce/innovative.asp>
- Horkan, N., Hefer, E. (2000). Workforce planning at DOT. *The Public Manager*, 29(1), 13.
- Laabs, J.J. (1996). Duke's newest power tool. *Personnel Journal*, 75(6), 44-50.
- Office of Personnel Management. (n.d.). Workforce Planning desk Aid. Retrieved June 3, 2003 from <http://opm.gov/workforceplanning/WFP-desk%Aid.htm>
- Office of Personnel Management. (n.d.). The Federal Workforce Planning Model-Step 3 of 5. Retrieved June 3, 2003 from http://opm.gov/workforceplanning/WFPModel_Step_3.htm

Selden, S.C., Ingraham, P.W., Jacobson, W. (2001). Human resource practices in state government: Findings from a national survey. *Public Administration Review*, 61(5), 598.

Shiplett, M.H. (2000). Introduction: Workforce planning and human capital. *The Public Manager*, 29(1), 3.

Sullivan, J. (2002). Workforce planning: Why to start now. *Workforce*, 81(11), 46-50.

The Workforce Challenge. Transportation Research Board of the National Academies, Washington, D.C., 2003

U.S. Department of Transportation. (1999). *Workforce Planning Guide*. Sullivan, J: Author.

Appendix A: Meeting Minutes: District Engineers

**Minutes for Meeting with Columbia District Office #1
South Carolina Department of Transportation**

Date: Friday, April 16, 2004

Time: 10:30am - 12:00

Participants: Jim Cagney, District 1 Administrator
Wanda Prince, Human Resource Manager

Discussion focused on current and future workforce trends related to the maintenance division of the SCDOT. The Clemson SCDOT Team shared the intent and direction of the Workforce Planning Project with the District #1 representatives. Discussion centered on the following:

1. Review of current maintenance workforce in District #1.

- Similar to the other districts, the Columbia District does not hire maintenance workers at the Trades Specialist I level, although they do have a couple of individuals still employed at that level.
- The district normally has quite a few active applications on hand.
- District #1 usually experiences contrasting turnover rates with a high turnover rate in Richland County and a low turnover rate in Lee County.
- Approximately 60% of the maintenance workers in District #1 keep a second job due to the low wages.

2. Future work-related issues that will affect the process of hiring competent personnel in the Trades Specialist positions.

- The district needs to become more comfortable with managing contracted work that has been outsourced.
- In general, the district needs to implement additional on-the-job training opportunities across all levels of the Trades Specialist positions.
- District #1 has an aggressive outsourcing plan.

3. Discussion focused on current practices and future needs related to the various types of training that are available for maintenance workers.

- District #1 is concerned about the need to reward maintenance workers for successfully completing various training programs.
- The district is concerned about when maintenance workers will be able to participate in various types of training within the four levels or bands.
- Like other districts, District #1 has many skilled maintenance workers who have quite a lot of longevity with the district. How will it be determined whether or not these workers will be expected to participate in training with equipment that they have already demonstrated competence with and if they are determined to be competent will they receive any financial reward that is connected to the training.

4. Discussion of the need to conduct a task analysis survey with all of the maintenance workers in all districts of the SCDOT.

- The district representatives agreed to work with their foremen/supervisors in order to facilitate the administration of the task analysis instrument to each of the maintenance workers.
- The Clemson SCDOT Team will send each District Engineering Administrator enough copies of the task survey instruments to have one survey completed by each maintenance worker

**Minutes for the Meeting with Greenwood District Office #2
South Carolina Department of Transportation**

Date: Thursday, April 15, 2004

Time: 2:00 - 3:30pm

Participants: Phillip Brooks, District 2 Administrator Dusty Turner, Asst District 2 Maintenance Engr
Luther Padgett, RME, Edgefield Randy Day, RME, Abbeville
Mark Dezurik, DME, Greenwood Darrell Porterfield, EA, District 2
Tommie Parker, RME, McCormick Billy Lybrand, CE, District 2
Steve Coleman, DMCHE, District 2 Steve Dorn, RME, Saluda
Jamie Johnston, RME, Newberry Michael Jones, RME, Laurens
Phillip Garner, RME, Greenwood Clint Isbell, Clemson, SCDOT Project
Dennis Tesolowski, Clemson, SCDOT Project

Discussion focused on current and future workforce trends related to the maintenance division of the SCDOT. The Clemson SCDOT Team shared the intent and direction of the Workplace Planning Project with the District #2 representatives. Discussion centered on the following topics:

1. Review of the current maintenance workforce in District #2.

- District #2 has phased out the Trades Specialist I level, although they still have a couple of individuals who are working at that level.
- The district is providing more equipment training programs.
- Approximately 50% of the maintenance workers have to keep second jobs due to the low wages.
- Outsourcing of work began about 6 - 8 years ago. Outsourcing is continually being increased in an effort to complete the necessary work.
- Inequities between construction and maintenance were discussed.
- The point was raised that the SCDOT is willing to pay a maintenance employee as little as \$15K per year and expect them to operate a \$70K piece of equipment and then wonder why the equipment gets torn up.

2. Future work-related issues that will affect the process of hiring competent personnel in the Trades Specialist positions.

- The point was made that DOT's in other states provide financial rewards for maintenance workers who successfully complete training related to their jobs.
- The need was expressed for making it possible for maintenance workers to receive raises as they progress through each pay band.

3. Discussion focused on current practices and future needs related to the various types of training that are available for maintenance workers.

- The need was expressed for the SCDOT to deal with the inequities between the construction and maintenance divisions.
- There is a need for further training related to monitoring and evaluating outsourced work.

4. Discussion of the need to conduct a task analysis survey with all of the maintenance workers in all districts of the SCDOT

- Various participants in this meeting agreed to work with their foreman/supervisors in an effort to assist them in the process of having the maintenance workers respond to a task analysis survey.
- The Clemson SCDOT Project Team will send each District Engineering Administrator enough copies of the task survey instruments to have one survey completed by each maintenance worker.

**Minutes for Meeting with Greenville District #3
South Carolina Department of Transportation**

Date: Monday, April 19, 2004

Time: 10:30 - 11:30am

Participants: Cyril Busbee, District 3 Administrator
Wofford Green, District Mechanical Engineer
Jeffrey L. Zettle, District Maintenance Engineer
Clint Isbell, Clemson, SCDOT Project
Dennis Tesolowski, Clemson, SCDOT Project

This was the second meeting with Greenville District #3. The first meeting occurred on Wednesday, October 29, 2003. Both meetings were focused on current and future workforce trends related to the maintenance division of the SCDOT. Discussion centered on the following topics:

1. Further review of current maintenance workforce in District #3.
 - More than 50% of the maintenance workers in District #3 have to maintain second jobs due to low wages.
 - District #3 has a 13% vacancy rate. They find it very difficult to hire and maintain qualified employees as maintenance workers.
2. Future work-related issues that will affect the process of hiring competent personnel in the Trades Specialist positions.
 - The district is concerned about providing training and certification in all areas related to operating heavy equipment.
3. Discussion focused on current practices and future needs related to the various types of training that are available for maintenance workers.
 - District #3 has recently begun Motor Grader training.
 - The district is certainly concerned with the need to provide financial incentives related to the various types of training. Apparently, a state-wide proposal is being considered to make some of these financial rewards a reality.
 - Outsourcing is continually increasing, which is creating a greater need to prepare more maintenance workers to monitor and inspect contracted work.
4. Discussion of the need to conduct a task analysis survey with all of the maintenance workers in all districts of the SCDOT.
 - Cyril Busbee and his staff agreed to work with their foremen/supervisors and to have them assist the maintenance workers that are under their supervision with filling-out a task analysis instrument.
 - The Clemson SCDOT Project Team will send each District Engineering Administrator enough copies of the task survey instruments to have one survey completed by each maintenance worker.

**Minutes for Meeting with Chester District Office #4
South Carolina Department of Transportation**

Date: Wednesday, April 14, 2004

Time: 3:00 - 4:30pm

Participants: Stan Bland, District #4 Engineering Administrator
Van Eargle and other District Representatives
Clint Isbell, Clemson, SCDOT Project
Dennis Tesolowski, Clemson, SCDOT Project

Discussion focused on current and future workforce trends related to the maintenance division of the SCDOT. The Clemson SCDOT Team shared the intent and direction of the Workforce Planning Project with the District #4 representatives. Discussion centered on the following topics:

1. Review of current maintenance workforce in District #4.
 - District #4 has phased out and does not hire maintenance workers at the Trades Specialist I level.
 - The District finds it quite difficult to hire maintenance workers in York and Cherokee Counties since there are many better paying jobs available in neighboring Charlotte area.
 - Traditionally there had to be a 10% vacancy rate in order to hire new maintenance workers.
 - District #4 like all of the districts has a vast majority of their Trades Specialist II (TS-2s) clustered in the 2B and 2E levels; apparently this situation evolved when the state shifted from 50 pay grades to 10 pay grades in 1995
 - Outsourcing continues to be expanded in order to be able to complete the necessary work.
 - Approximately 50% of the maintenance workers must keep second jobs due to low wages with the SCDOT.
2. Future work related issues that will affect the process of hiring and maintaining competent personnel in the Trades Specialist positions.
 - Currently maintenance workers at the Trades Specialist III level cannot be financially rewarded for completing certification training Motor Grader and Back Hoe operators, etc.
 - There is a significant need for a Career Path System that includes "meaningful" steps in conjunction with conditions and merit.
 - Trade Specialist IVs are at a financial maximum once they have advanced to the top of the 4th band.
 - Employees may become disgruntled with their wages, however the vast majority of maintenance workers "like" working for the SCDOT.
 - Apparently there is a high correlation between worker's compensation claims and turnover rates; worker's comp costs increase with higher turnover rates.
 - Long-term employees are safer and they perform work more effectively.
3. Discussion focused on current practices and future needs related to the various types of training that is available for maintenance workers.
 - The district is continuing to attempt to motivate maintenance workers to complete various certification programs, such as Motor Grader and Back Hoe operators, even though there are not any financial rewards for successfully completing the training.
 - There is a need for certification training related to inspecting outsourced work.
4. Discussion of the need to conduct a task analysis survey with all of the maintenance workers in all districts of the SCDOT.

- Stan Bland and his staff agreed to work with their foremen/supervisors and to have them assist the maintenance workers that are under their supervision to fill-out a task analysis instrument.
- The Clemson SCDOT Project Team will send each District Engineering Administrator enough copies of the task survey instruments to have one survey completed by each maintenance worker.

**Minutes for Meeting with Florence District Office #5
South Carolina Department of Transportation**

Date: Wednesday, April 14, 2004

Time: 11:00am - 12:30pm

Participants: Dennis Townsend, District 5 Administrator
Bob Bean, District Maintenance Engineer
Clint Isbell, Clemson, SCDOT Project
Dennis Tesolowski, Clemson, SCDOT Project

Discussion focused on current and future workforce trends related to the maintenance division of the SCDOT. The Clemson SCDOT Team shared the intent and direction of the Workforce Planning Project with the District #5 representatives. Discussion centered on the following topics:

1. Review of current maintenance workforce in District #5.
 - District #5 has phased out and does not hire maintenance workers at the Trades Specialist I level, although the district does still have a couple of employees who are classified at this level.
 - The district experiences a high turnover rate in Horry County due to the great demand for employees in the construction industry and a relatively low turnover rate in Marlboro County due to the high unemployment rate.
 - There is a trend toward outsourcing since the district is experiencing a shortage of manpower, equipment and money.
 - District #5 is now outsourcing 100% of its mowing.
 - 50% of the maintenance workers keep second jobs due to low wages.
2. Future work-related issues that will affect the process of hiring competent personnel in the Trades Specialist positions.
 - Greater numbers of maintenance workers have to obtain second jobs in order to maintain a satisfactory cost of living.
 - Currently maintenance workers are not financially rewarded for completing training.
 - There appears to be inequity between the construction and maintenance divisions. Employees in the construction division can receive more financial incentives for completing various learning experiences and/or training.
3. Discussion focused on current practices and future needs related to the various types of training that is available for maintenance workers.
 - The district is trying to train selected maintenance workers to monitor and inspect work that has been outsourced.
4. Discussion of the need to conduct a task analysis survey with all of the maintenance workers in all districts of the SCDOT.
 - Dennis Townsend and Bob Bean agreed to work with their foremen/supervisors and to have them assist the maintenance workers that are under their supervision to fill-out a task analysis instrument.
 - The Clemson SCDOT Project Team will send each District Engineering Administrator enough copies of the task survey instruments to have one survey completed for each maintenance worker.

**Minutes for Meeting with Charleston District Office #6
South Carolina Department of Transportation**

Date: Monday, April 5, 2004

Time: 10:30am - 12:00 NOON

Participants: Robert Clark, District 6 Administrator
Cal Murray
Mike Black
Clint Isbell, Clemson, SCDOT Project
Dennis Tesolowski, Clemson, SCDOT Project

Discussion focused on current and future workforce trends related to the maintenance division of the SCDOT. The Clemson SCDOT Team shared the intent and direction of the Workplace Planning Project with the District #6 representatives. Discussion centered on the following topics:

1. Review of current maintenance workforce in District #6.
 - District #6 has phased out and does not hire maintenance workers at the Trades Specialist I level.
 - Trend toward outsourcing various work functions within the maintenance division.
 - Trend toward outsourcing will increase the need for Trade Specialists who are certified as inspectors.
 - Turnover ratio is high for Trade Specialist II, especially in Beaufort County which has a 40% turnover rate.
 - The DOT supplies Trade Specialists with uniforms, boots, etc.
 - District #6 is somewhat unique due to the need for Bridge Operators and Bridge Operator Supervisors.
2. Future work-related issues that will affect the process of hiring high-quality personnel in the Trade Specialist positions.
 - There is a continuing need for maintaining good benefits and relatively flexible work schedules.
 - Approximately 50% of the maintenance workers have to keep second jobs in order to maintain a desired financial quality of life.
 - Salaries (hourly wages) need to be adjusted; maybe the starting salary for Trade Specialist II maintenance workers should be raised to the current starting salary for "Band 03".
 - One of the major reasons that the District is doing more outsourcing is simply to enable it to finish the necessary work.
3. Discussion focused upon current practices and future needs related to the area of certification which include:
 - Flagger; CDL; Basic, Intermediate and Advanced Work Zone; First Aid; Welding; Herbicide; Mow Grading; etc.
4. Discussion of the need to conduct a task review survey with eminence workers in all districts of the SCDOT.
 - Robert Clark suggested that he have his foremen/supervisors meet with the maintenance workers that are assigned to work with each of them and have the assist the maintenance workers with responding to the task survey instruments.
 - The Clemson SCDOT Project Team will send each District Engineering Administrator enough copies of the task survey instruments to have one survey completed for each maintenance worker.

**Minutes for Meeting with Orangeburg District Offices #7
South Carolina Department of Transportation**

Date: Friday, April 16, 2004

Time: 8:30 - 9:30am

Participants: S. Dean Campbell, District 7 Administrator
JoAnn Woodrum, District Maintenance Engineer
Lettie C. Fralick, Human Resource Manager

Discussion focused on current and future workforce trends related to the maintenance division of the SCDOT. The Clemson SCDOT Team shared the intent and direction Of the Workforce Planning Project with the District #7 representatives. Discussion centered on the following topics:

1. Review of current maintenance workforce in District #7.

- The district does not hire maintenance workers in to the Trades Specialist I positions; however, they do still have several workers in this pay band.
- They are currently experiencing a 5 - 6% vacancy rate.
- The district has a turnover rate of approximately 5 - 6%.
- At least 50% of the maintenance workers must keep second jobs due to the low wages.
- Many of the maintenance workers qualify for food stamps.
- The district finds it difficult to get qualified applicants; many applicants are not able to pass the drug test.
- The district is doing a limited amount of outsourcing; they are primarily outsourcing the interstate mowing.

2. Future work-related issues that will affect the process of hiring competent personnel in the Trades Specialist positions.

- The district is being encouraged to outsource more work, such as chip work and centerline painting.
- When the district outsources mowing, they have determined that it may cost them nearly twice as much money.
- It was mentioned that AGC does the crane operator training. A major problem associated with this is that AGC tries to hire the best maintenance workers away from the district.

3. Discussion focused on current practices and future needs related to the various types of training that are available for maintenance workers.

- A concern was expressed about how the SCDOT would handle employees who are already highly skilled with several years of experience operating a certain machine or piece of equipment.

4. Discussion of the need to conduct a task analysis survey with all of the maintenance workers in all districts of the SCDOT.

- The district representatives agreed to work with their foremen/supervisors in order to facilitate the administration of the task analysis instrument to each of the maintenance workers.
- The Clemson SCDOT Project Team will send each District Engineering Administrator enough copies of the task survey instruments to have one survey completed by each maintenance worker.

Appendix B: Survey Responses: Maintenance Employees



**Workforce Development Program
Task Analysis
Trades Specialist II**

District	1	23.45%
	2	9.51%
	3	8.76%
	4	11.44%
	5	19.11%
	6	12.35%
	7	15.27%

Position Title Trades Specialist II

5 years	6.35%
4 years	5.60%
3 years	5.01%
1 year	4.76%
2 years	4.09%

Length of time in current position

Length of time employed with SCDOT

5 years (6.35%), 3 years (5.35%), 4 years (5.35%), 6 years (4.01%), 8 years (3.59%), 9 years (3.43%)

Instructions: Carefully read the job tasks listed in column A. In column B, indicate how often you perform each task by circling the appropriate letter. Next indicate in column C what type of training you have received in order to perform this task. If you have not received training to perform a particular task, circle *None*. Finally, in column D, please circle yes or no depending on whether you feel you need more training to complete the task.

ALL RESULTS EXPRESSED AS PERCENTAGES (%).

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
1	I flag traffic during road repairs to control flow of traffic to protect workers, general public and equipment.	N 7.49 R 13.87 S 44.26 O 34.38	NONE 8.29 OJT 54.01 CLASS 33.60 VIDEO 1.96 CBT 0.89 OTHER	Y 24.2 N 75.71
2	I operate a 5 to 10 yard standard dump truck, and flatbed trucks for hauling materials such as asphalt, limestone, dirt, soil, cement, pipe, construction materials and debris.	N 12.45 R 13.91 S 31.33 O 42.32	NONE 4.13 OJT 71.10 CLASS 8.55 VIDEO 0.84 CBT 0.74 OTHER 4.65	Y 23.27 N 76.73
3	I assist in the erection and placement of signs and signposts, the repair of damaged signs and the painting of signposts and bridge handrails.	N 41.32 R 26.09 S 21.64 O 10.95	NONE 41.57 OJT 51.54 CLASS 3.26 VIDEO 1.21 CBT .75 OTHER 1.68	Y 34.44 N 65.47

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
4	I operate a combination tractor mower (sickle/rotary) in cutting right-of-way and shoulders.	N 60.39 R 11.04 S 12.32 O 16.25	NONE 52.11 OJT 42.28 CLASS 2.65 VIDEO 0.88 CBT 0.29 OTHER 1.77	Y 35.99 N 63.91
5	I operate a tractor mounted sweeper broom in cleanup operations.	N 56.93 R 17.16 S 21.89 O 4.02	NONE 52.34 OJT 43.20 CLASS 1.87 VIDEO 0.31 CBT 0.73 OTHER 1.56	Y 36.66 N 63.34
6	I operate a chemical sprayer, hand mounted, to spray around signs, bridges, guardrails, fences, ditches, etc. to control grass and weeds where mowers cannot cut.	N 71.71 R 10.15 S 13.24 O 4.90	NONE 65.49 OJT 28.07 CLASS 2.82 VIDEO 1.01 CBT 0.60 OTHER 2.01	Y 39.45 N 60.55
7	I operate a chain saw in cutting trees on right-of-way.	N 22.61 R 21.65 S 39.22 O 16.52	NONE 21.55 OJT 60.54 CLASS 7.84 VIDEO 3.54 CBT 0.84 OTHER 5.69	Y 36.22 N 63.78

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
8	I perform manual labor in building catch basins, pouring concrete for curbs and raised medians, laying pipes for driveways and other drainage structures, repairing shoulders, clearing right-of ways and repairing bridges	N 32.62 R 17.12 S 31.51 O 18.75	NONE 31.36 OJT 62.71 CLASS 1.98 VIDEO 0.75 CBT 0.66 OTHER 2.54	Y 40.22 N 59.78
9	I operate a standard dump truck with snowplow attachment and sand spreader to remove snow and ice from highways and bridges.	N 25.60 R 20.56 S 36.69 O 17.15	NONE 25.05 OJT 66.64 CLASS 3.88 VIDEO 1.48 CBT 0.65 OTHER 2.31	Y 39.06 N 60.94
10	I conduct and document pre-operation vehicle/equipment inspection.	N 15.77 R 6.82 S 14.15 O 63.26	NONE 16.51 OJT 72.26 CLASS 6.57 VIDEO .09 CBT 1.00 OTHER 2.55	Y 24.26 N 75.65

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
11	I operate a sprayer, spraying tack ahead of paver in paving operations.	N 76.29 R 11.17 S 9.54 O 3.01	NONE 68.94 OJT 26.37 CLASS 1.83 VIDEO 0.51 CBT 0.81 OTHER 1.53	Y 40.39 N 59.61
12	I operate an asphalt kettle-patching machine in minor road repairs.	N 65.35 R 12.80 S 15.49 O 6.36	NONE 59.77 OJT 35.11 CLASS 2.4 VIDEO 0.73 CBT 0.52 OTHER 1.46	Y 38.86 N 61.04
13	I operate and maintain electric/gas powered tools in various phases of roadway maintenance.	N 37.74 R 18.96 S 30.26 O 12.96 0.09	NONE 34.32 OJT 57.81 CLASS 3.07 VIDEO 1.25 CBT 0.67 OTHER 2.88	Y 35.77 N 64.04
14	I operate power tools breaking out sidewalks and curbs for driveway construction and other concrete or asphalt pavement repair jobs.	N 48.47 R 18.14 S 24.54 O 5.76	NONE 43.86 OJT 49.57 CLASS 2.28 VIDEO 0.67 CBT 0.57 OTHER 3.04	Y 36.59 N 63.22

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
15	I repair and replace delineators on interstate routes, primary routes and secondary routes	N 72.42 R 9.71 S 12.84 O 5.03	NONE 67.65 OJT 27.55 CLASS 1.84 VIDEO 0.51 CBT 0.51 OTHER 1.94	Y 38.16 N 61.84
16	I assist in the placement of pavement markings such as stop bars, arrows, crosswalks and railroad crossings or thermoplastic according to state specifications.	N 67.96 R 12.97 S 14.09 O 4.90	NONE 62.70 OJT 32.66 CLASS 1.71 VIDEO 0.50 CBT 0.40 OTHER 2.02	Y 40.29 N 59.61
17	I perform other related job duties as requested or assigned by supervisor.	N 50.17 R 19.25 S 23.17 O 7.41	NONE 0.10 OJT 46.81. CLASS 47.40 VIDEO 1.96 CBT OTHER	Y 34.80 N 65.01
18	I assist in the replacement or repair to steel guardrail requiring me to be able to work with small tools and to be physically able to dig holes for guardrail posts, etc.	N 61.03 R 13.50 S 19.15 O 6.32	NONE 59.14 OJT 34.24 CLASS 1.26 VIDEO 0.39 CBT 0.29 OTHER 4.67	Y 23.27 N 76.73

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
19	I clean, paint and make minor repair to buildings, water systems, sewage disposal systems and picnic facilities as necessary to keep facilities in acceptable appearance and condition. This would include mopping, vacuuming, waxing, buffing floors, washing windows, and changing bulbs as needed.	N 84.48 R 4.46 S 6.09 O 4.97	NONE 79.13 OJT 16.22 CLASS 2.07 VIDEO 0.52 CBT 0.52 OTHER 1.55	Y 30.04 N 69.86
20	I assist at gashouse maintaining daily and monthly inventory readings of fuel pumps.	N 35.91 R 18.35 S 32.96 O 12.78	NONE 40.63 OJT 52.55 CLASS 1.92 VIDEO 0.38 CBT 0.58 OTHER 3.94	Y 25.95 N 73.86
21	I perform manual labor as necessary in maintaining the grounds of SCDOT facilities, including new planting, and maintaining existing plantings.	N 58.52 R 12.82 S 17.04 O 11.62	NONE 54.66 OJT 40.02 CLASS 2.11 VIDEO 0.50 CBT 0.80 OTHER 1.91	Y 36.20 N 63.71

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
22	I prepare and maintain periodic reports regarding work performed, materials used and the use of the facility.	N 17.30 R 14.80 S 36.75 O 31.15	NONE 19.83 OJT 75.83 CLASS 2.12 VIDEO 0.74 CBT 0.46 OTHER 1.01	Y 25.41 N 74.50
23	I clean rest room facilities and perform ground maintenance at roadside rest areas.	N 14.48 R 18.94 S 43.53 O 23.05	NONE 24.84 OJT 70.45 CLASS 1.11 VIDEO 0.55 CBT 0.46 OTHER 2.59	Y 14.84 N 85.16
24	I repair potholes and base surface failures on roadway using hand tools such as shovel, pick, rake and asphalt lute to level asphalt as needed.	N 26.72 R 16.17 S 34.47 O 22.64	NONE 27.81 OJT 67.52 CLASS 1.92 VIDEO 0.46 CBT 0.55 OTHER 1.74	Y 29.49 N 70.42

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
25	I remove litter, debris and dead animals from roadway and right-of-ways.	N 19.30 R 14.69 S 30.83 O 35.18	NONE 20.00 OJT 71.96 CLASS 3.29 VIDEO 0.55 CBT 0.64 OTHER 3.56	Y 26.79 N 73.12
26	I assist in the installation of driveways, using hand tools, hand tamp, place aggregates, remove mailboxes and reinstall and help place large sections of pipe.	N 62.92 R 9.36 S 15.11 O 12.53	NONE 56.00 OJT 39.86 CLASS 1.77 VIDEO 0.30 CBT 0.49 OTHER 1.57	Y 38.94 N 61.06
27	I operate a tandem ten-wheel dump truck, 5 to 10 yard standard dump truck for hauling materials such as asphalt, limestone, dirt, soil, cement, pipe, construction materials and debris.	N 56.37 R 16.28 S 18.70 O 8.56 0.09	NONE 49.58 OJT 42.12 CLASS 4.94 VIDEO 0.42 CBT 0.74 OTHER 2.21	Y 50.97 N 49.03
28	I operate boom mowers, tilting frame slope mowers and bat wing mowers.	N 53.67 R 18.62 S 18.44 O 9.27	NONE 52.20 OJT 44.20 CLASS 1.30 VIDEO 0.20 CBT 0.30 OTHER 1.80	Y 33.56 N 66.34

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
29	I operate a backhoe in cleaning ditches and placing pipe.	N 45.89 R 16.78 S 26.63 O 10.70	NONE 42.28 OJT 53.31 CLASS 1.92 VIDEO 00.38 CBT 0.38 OTHER 1.73	Y 32.92 N 66.89
30	I replace missing signs and damaged signs, erect new signs, and paint and repair old signs.	N 33.19 R 17.49 S 34.22 O 15.10	NONE 32.28 OJT 60.82 CLASS 4.20 VIDEO 0.37 CBT 0.28 OTHER 2.05	Y 40.86 N 59.04
31	I operate self-propelled steel wheel and pneumatic rollers, to compact and solidify fill material.	N 78.26 R 7.99 S 9.71 O 4.04	NONE 72.65 OJT 23.67 CLASS 1.63 VIDEO 0.71 CBT 0.41 OTHER 0.92	Y 36.88 N 62.92
32	I operate front-end loader in the loading of materials needed for maintenance operations, e.g. earth materials, clay, sand and aggregate.	N 55.50 R 15.03 S 22.42 O 7.04	NONE 52.54 OJT 43.05 CLASS 1.47 VIDEO 0.88 CBT 0.78 OTHER 1.27	Y 35.14 N 64.86

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
33	I operate a tack truck, maintaining tack at correct temperature for spraying roadway in preparation of patching and/or paving.	N 50.00 R 50.00 S O	NONE 50.00 OJT 50.00 CLASS VIDEO CBT OTHER	Y 100 N 0.00
34	I operate a pipe washer in cleaning driveway and cross line pipes.	N 70.60 R 9.74 S 15.91 O 3.75	NONE 64.30 OJT 31.99 CLASS 1.27 VIDEO 0.21 CBT 0.74 OTHER 1.48	Y 36.44 N 63.46
35	I operate a street sweeper (motorized) to sweep and clean roads.	N 83.53 R 5.40 S 8.51 O 2.56	NONE 77.54 OJT 18.54 CLASS 1.85 VIDEO 0.55 CBT 0.76 OTHER 0.76	Y 41.20 N 58.80
36	I operate a tractor mounted rotary ditching machine	N 74.94 R 8.96 S 10.94 O 5.17	NONE 69.70 OJT 26.92 CLASS 1.43 VIDEO 0.41 CBT 0.41 OTHER 1.02	Y 37.05 N 62.95

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
37	I apply paints and maintain traffic pavement markings, paint and erect barricades, fabricate and erect secondary road markers, stop line, crosswalks and turn arrow markings	N 54.23 R 17.88 S 23.18 O 4.70	NONE 51.56 OJT 43.68 CLASS 1.75 VIDEO 0.58 CBT 0.58 OTHER 1.85	Y 35.80 N 64.20
38	I operate compressors, concrete mixers, jack hammers mechanical aggregate spreader, mud jack, asphalt kettle, culvert cleaner and asphalt booster in patching operations.	N 73.95 R 10.63 S 10.37 O 5.06	NONE 67.75 OJT 28.89 CLASS 1.63 VIDEO 0.61 CBT 0.31 OTHER 0.81	Y 39.64 N 60.26
39	I operate the AMZ patching machine which is use for paving, patching repairs to base and pavement on roads, driveways, crossovers, turn lanes, parking areas and bridge approaches.	N 73.12 R 11.43 S 12.03 O 3.41	NONE 66.63 OJT 28.16 CLASS 2.30 VIDEO 0.90 CBT 0.60 OTHER 1.40	Y 51.95 N 47.95
40	I operate a small motor grader in grading, machining shoulders, spreading and leveling materials in order to insure proper drainage of roadway.	N 60.56 R 12.23 S 20.53 O 6.67	NONE 56.74 OJT 38.66 CLASS 1.70 VIDEO 0.60 CBT 0.60 OTHER 1.70	Y 39.63 N 60.37

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
41	I function as a lead worker in a small crew (2-3 workers) engaged in minor patching operations to roads and driveways.	N 83.91 R 6.19 S 5.84 O 4.07	NONE 77.36 OJT 17.49 CLASS 3.22 VIDEO 0.21 CBT 0.54 OTHER 1.18	Y 39.92 N 60.08
42	I operate a herbicide truck and devices.	N 84.32 R 4.78 S 7.09 O 3.81	NONE 79.11 OJT 14.39 CLASS 4.00 VIDEO 0.54 CBT 0.54 OTHER 1.41	Y 28.72 N 71.18
43	I supervise inmates in conducting labor-intensive highway maintenance projects.	N 79.47 R 7.59 S 9.32 O 3.62	NONE 73.43 OJT 23.01 CLASS 1.46 VIDEO .063 CBT 0.52 OTHER 0.94	Y 36.02 N 63.88
44	I assist in the positioning, driving and cutting of creosoted timber bridge pilings and setting of bridge caps and spans.	N 83.52 R 5.87 S 7.42 O 3.19	NONE 80.45 OJT 16.37 CLASS 1.38 VIDEO 0.74 CBT 0.11 OTHER 0.96	Y 36.07 N 63.73

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
45	I perform bridge maintenance repairs to fender systems, wedges, drop latches, gears, and shafts and bearings.	N 45.87 R 10.84 S 21.17 O 22.12	NONE 43.52 OJT 51.38 CLASS 1.47 VIDEO 0.39 CBT 0.88 OTHER 2.36	Y 35.90 N 63.90
46	I perform preventive maintenance on equipment as outlined in equipment specifications.	N 53.06 R 17.74 S 22.65 O 6.55	NONE 51.53 OJT 44.24 CLASS 0.99 VIDEO 0.59 CBT 0.79 OTHER 1.87	Y 29.92 N 69.79
47	I clean, paint, and repair buildings and equipment.	N 16.23 R 12.33 S 32.20 O 39.24	NONE 18.67 OJT 76.78 CLASS 1.82 VIDEO 0.46 CBT 0.55 OTHER 1.73	Y 35.41 N 64.59
48	I perform duties using manual labor, in such maintenance tasks as clearing of right-of-ways, cleaning drainage ditches, repairing shoulders, patching potholes, making base repairs, repair to bridges, paving driveways, and laying sideline/cross line pipe.	N 66.67 R 33.33 S O	NONE 50.00 OJT 50.00 CLASS VIDEO CBT OTHER	Y 33.33 N 66.67

List other tasks that you perform: (SEE ATTACHMENT, Table 1)

List other training you received while in your current position: (SEE ATTACHMENT, Table 2)

List other training you would like to have offered to you: (SEE ATTACHMENT, Table 3)

Table 6. Additional Duties

<i>Instructions: List other tasks that you perform:</i>
<ul style="list-style-type: none">- All tasks.- All types of maintenance and equipment and welding- All tasks are covered- Also keep up with sign inventory and order signs and posts as needed- AMZ- Answer the phone; monitor radio- Any type of signage in county; supervise mowing crew- Anything I get asked.- Anything needs to be done.- Anything that is asked by my supervisor.- Anything the boss says.- Asphalt driver; repair potholes- Assist in office and with daily reports.- Assist supervisor with daily reports; acts as lead in foreman's absence- Back dump truck for chip and seal operations- Backhoe- Backhoe- Backhoe and motor grader operator; act as lead man- Backhoe training and use of paving machine- Backhoe truck- Backhoe, boom truck, lowboy truck, and trailer- Backhoe, lowboy power; full depth patching, paving small lanes- Backhoe, running roll- Backhoe, motor grader, both dump trucks, 5-yard tandem chainsaw bulldozer- Barcode signs- Barcode signs and posts; inventory of signs- Bar-coding- Bar-coding- Basic SCDOT- Belt loader, front loader- Belt loader, steel wheel roller- Boom truck- Bridge repair; snow and ice removal; carpentry work, bridge guard rail repair- Big and small roller, backhoe, front-end loader, tractors- Bucket trucks; install signals; electrical maintenance- Building steel frames- Bush hog, spreader; rake asphalt; drive truck for foreman.- Buzz bar, chainsaw; slope mowing; haul equipment- CDL training- CDL, mower operator- Central sign shop

- Chain saw; perform manual labor; remove snow and ice
- Change signs; put barcodes on signs
- Chip sealing roads
- Clean and mow yard; keep MSDS files; inventory supplies
- Cut grass and bushes on right-of-way, shoulder and highway
- Cut grass and trim and cut trees
- Dig out bad spots in the road; pave roads; drive truck, use hand tools
- Drainage box building; plumbing and carpenter work; water-proof materials
- Drive dump truck
- Drive truck
- Drive, operator
- Forklift, small track hoe
- GPS, barcode signs, traffic control
- Haul dirt, asphalt, etc.
- Herbicide
- Lead man under the supervisor
- Load and haul equipment, drive truck, fill cans
- Maintain and record parts and supplies
- Make signs; drive truck
- Mechanic work
- Minor repairs to equipment and vehicles; inspections
- Most of it was circled yes
- Moving, patching
- None
- Operate bridge, lay seed, destroy damns
- Operate backhoe, dump truck
- Operate bucket truck, sign truck, forklift, loader, herbicide; use hand tools
- Operate tractor with tiller attached
- Repair signs, pavement markings; traffic control; sign barcode
- Repair water line; out ice machine in; build barricades
- Run dozers, broom, little track hoe
- Sandblaster
- Set up traffic control
- Supervise crew with herbicides; maintain equipment and inventory
- Traffic control; pavement markings
- Clear dirt
- We do what we have to do to get the job done
- Welding, cutting torch
- Whatever is required of me.
- Whatever they tell us
- Chain saw, generator power equip., driving trucks w/comp., mech. Repair
- Check fire extinguishers/check first aid kits/run mileage (daily)
- Chip seal operation, jet vac for county
- Chipping limbo?

- *Chipping brush*
- *Clearing right-of-way, ditching crew (patching pipes, mixing mortar)*
- *Complete work request, keep mowing reports, check customer complaints*
- *Computer to put in time schedules & hunt work orders*
- *CPR instructor*
- *Crane operator*
- *Crew leader, daily work reports, sign inventory*
- *Cut grass w/ 10/15ft mower, put in driveways, flag traffic, pull shoulder*
- *Cut grass.*
- *Cut right of way, patching hole, drive dump truck, pick up litter*
- *Cut trees and pick-up trash*
- *Cutting grass along the highway.*
- *Defensive driving, flagging, CPR, first aid*
- *Drive forklift. Run warehouse.*
- *Drive service truck that hauls fuels and oils.*
- *Drive tractor trailer*
- *Drive tractors on mowing crews*
- *Drive truck-crew cab, weed eater, pick up trash*
- *Drive utility truck, keep machines fueled,*
- *Drive ways road patch*
- *Drive 5 yard, patch, install driveways, work on beaver dams'*
- *Driver*
- *Driveways, paving, patching potholes.*
- *Drove 18 wheeler, dump truck*
- *Erect and maintain.*
- *Everything required on the job.*
- *Experience as crew leader*
- *Over the inventory of fire extinguisher.*
- *Fill in for supervisor, do HMMS, snow/ice removal ,tree removal...*
- *Fill in when supervisor is out*
- *Fix damaged bridges, clear bridges, paint concrete surface/as needed*
- *Flagging, roller, drive truck, shovel, tap*
- *Flagging, run fire yard truck, dump truck, AMZ, and broom tractor*
- *Font end leader, backhoe, bat wing mowers*
- *Gas house warehouse, mail and supply*
- *Global positioning*
- *GPS for road man holes*
- *Grease backhoe, flag, drive*
- *Handle HMMS, daily work reports, sign inventory, GPS, DMI*
- *Haul dirt with dump truck, repair signs.*
- *Hand and paint crew, sign crew, ditching crew, warehouse work*
- *Hauling dirt to help build up the road. Repair and replace bridges.*
- *Help other people. Put down pipe.*
- *Help run crew after foreman and asst. Foreman,*

- *Help move furniture for SCDOT staff*
- *Herbicide, combination tractor mower, service truck on snow/ice*
- *HMMS daily computer work, daily reports for supervisor, lead man*
- *HMMS, first aid, CPR class instructor, belt loader*
- *I have my CDL*
- *I use bucket truck, track loader*
- *I work the Athey loader.*
- *I've help with patchwork also, rock seal.*
- *Inventory (bar code) highway beautification*
- *Input of sign/assembly inventory, monthly environmental audit, stockpile mthly*
- *Install driveways, Machine, patching, brake repair*
- *Inventory, barcode signs*
- *Lane closures on interstate.*
- *Lead backhoe*
- *Lead mow*
- *Loading dirt w/loader, cleaning pipe ends, fixing/cutting shoulders/ditches*
- *Low boy track truck, mobile crane, sign crew*
- *Maintain carpentry, plumbing work, computer tasks, crew leader in absence*
- *Mail carrier*
- *Maintenance. Work on building & ground, bobcat machine, run/operate bulldoze*
- *Maintenance on dump trucks and motorgrader, athy loader, debris to landfill*
- *Maintain install and inventory Signs in stock/roadway, change traffic bulbs, etc*
- *Maintain and plant flower pots*
- *Maintain position as admin spec.*
- *Manufacturing road signs*
- *Motor grader, front end loader, truck loader, backhoe, fork lift, roll*
- *Motorgrader, backhoe, athey loader, forklift, packer roller, dump truck*
- *Move motor grader, backhoe*
- *Move/haul equipment, backhoe, milling machine, motor grader as needed*
- *Moving*
- *Mow grass, flag, follow truck in snow & ice*
- *Mow grass, cut right-of-ways, slope mowing ditch*
- *Mowing crew leader. Grading dirt rds. Slap mower. Motor grader*
- *Mowing, cut tree, catch basin, potholes, paint roads, flogger, herbicide*
- *Mowing, cut trees, plant grass, remove tree debris, pickup litter*
- *Mowing, cutting trees, picking up trash*
- *Mowing, right of way*
- *Need more time on gradeall and backhoe*
- *None*
- *None*
- *Operate backhoe, steel wheel roller, excavator, 5-10 yard dump truck*
- *Often barcode signs*
- *Operate bucket loader and dump truck.*
- *Operate buzz bar.*

- Operate large motor grader, excellent equipment operator
- Operate patch truck full time.
- Operate road patcher
- Operate 5-yard dump truck, install pipe for driveways, patch potholes
- Operate: backhoe, bull dozer, front end loader, crane
- Operating at they loader
- Operating backhoe, track hoe, tree climbing
- Operator backhoe.
- Operate tandem, chipper, backhoe, motor grader, loader, etc.
- Other related duties
- Paperwork
- Patch and pick 1045/trash
- Patching crew, paperwork, digging/stabilizing
- Patching, cleaning
- Pick litter/debris, traffic control, patch potholes, haul debris
- Pick litter/debris, traffic control, patch potholes, haul derbies
- Picking up trash
- Picking up trash on interstate
- Placed/repaired signs, pavement markings, complete weekly time sheets
- Plant flowers
- Plant wild flowers
- Planting flowers
- Pot hole patching, paper work
- Put paper work in the computer.
- Roller, motor grader, ditch digger
- Running back in motor grader.
- Remove high shoulders, clean pipes
- Repair pot hole, backhoe, dump truck, roller
- Right-way off tree? Roads
- Road closing?
- Run most all the equipment, no motor grader, but everything else
- Run 8 yd track during surface treatment?
- Running chipper, front in loader
- Setting barriers for Harley & memorial weekend(s)
- Planting and maintaining flowers and trees
- Shoulder mower, slope mower
- Sign crew/repair/replace, repair pot holes, mowing w/tractor
- Sign inventory
- Slope mower
- Slope mower, lowboy, backhoe, truck driver
- Steel rolling, backhoe, 10-yard dump truck.
- Supervise & run three inmate crews
- Trockhed operator, lowboy tuck/trailer driver
- Temp - jet vac operator.

- *Too many to list.*
- *Track loader*
- *Tractor truck dump & lowboy*
- *Tractor: till right way before pull shoulders at they car load easier*
- *Traffic control for all crews, lane closer on i85*
- *Traffic control. Hauling equipment. Paving.*
- *Traffic lights, shoulder flashers, bucket truck, electrical maintenance.*
- *Trim trees on r/w, help maintain i-20, where needed*
- *Truck driving and flagging.*
- *Truck driver slot motor chainsaw tractor driver*
- *Use aerial buckets to construct and repair traffic signals*
- *Use chain saw, laid pipes, drive truck*
- *Volvo backhoe.*
- *Work with hmms, sign inventory, daily work reports, gps instrument, dmi*
- *Welcome center inspector, fill in front office, special projec*
- *Welding, cutting w/a torch*
- *Whatever I'm asked to do.*
- *Work on equipment*
- *Work with chipper*
- *Working w/the least amt. Of pay*
- *Yard in SCDOT Shop*

Table 7. Training Received in Current Position

<i>Instructions: List other training you received while in your current positions</i>				
<u>Training Type</u>	<i>Frequency</i>		<u>Training Type</u>	<i>Frequency</i>
<i>Asphalt</i>	<i>1</i>		<i>Highway Maintenance</i>	
<i>Backhoe</i>	<i>45</i>		<i>HMMS</i>	<i>1</i>
<i>Forklift</i>	<i>23</i>		<i>AMZ</i>	<i>5</i>
<i>Bus hogging</i>	<i>1</i>		<i>Gradall</i>	<i>3</i>
<i>Work zone</i>	<i>50</i>		<i>Chain saw</i>	<i>1</i>
<i>Motor grader</i>	<i>56</i>		<i>Heat stress</i>	<i>10</i>
<i>Lowboy</i>	<i>5</i>		<i>Dump truck</i>	<i>2</i>
<i>Flagging</i>	<i>60</i>		<u>Chemical</u>	<i>1</i>
<i>Defensive driving</i>	<i>25</i>		<u>spraying</u>	<i>1</i>
<i>CPR</i>	<i>28</i>		<i>None</i>	<i>718</i>
<i>Leadership</i>	<i>5</i>		<i>Boom Mower</i>	<i>63</i>
<i>Herbicide</i>	<i>7</i>		<i>Computer</i>	<i>2</i>
<i>Bar-coding</i>	<i>3</i>		<i>Tandem truck</i>	<i>26</i>
<i>Paint Machine</i>	<i>1</i>		<i>First Aid</i>	<i>1</i>
<i>Traffic Control</i>	<i>12</i>		<i>Front-end loader</i>	<i>37</i>
<i>Pavement markings</i>	<i>1</i>			

Table 8. Training Requests

Instructions: List other training you would like to have offered to you				
<i>Training Type</i>	<i># requests</i>		<i>Training Type</i>	<i># requests</i>
<i>Backhoe</i>	85		<i>Lowboy</i>	1
<i>Computer</i>	17		<i>CPR</i>	9
<i>Motor grader</i>	77		First Aid	1
<i>Broom truck</i>	2		<i>Blueprint</i>	1
<i>Bucket truck</i>	1		<i>Flagging</i>	6
<i>Bulldozer</i>	1		<i>Crane</i>	7
<i>Carpenter</i>	3		<i>Front-end loader</i>	56
<i>Welding</i>	7		<i>Brick laying</i>	3
<i>Steel wheel roller</i>	1		<i>Track hoe</i>	28
<i>Hydraulic brakes</i>	3		<i>Surveying</i>	1
<i>Heavy equipment</i>	5		<i>Herbicide truck</i>	4

Summary

Results from the survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed.

A total of 1198 responses were received to requests for additional training. Backhoe and forklift training were prevalent across all districts. Computer classes were requested among districts 1, 4, 5, and 6. District 1 training requests included CDL, Basic Motor Skill, Boom Mower, Brick Layer, Welding classes. The responses from this district also indicate the need to learn operation of more equipment, cross training for other positions, driver, bus operator, low boy sweeper, and track hoe. Additionally, more training in herbicide, slope mower, traffic control, OJT, videos, classes pertinent to tasks, and motor grader were listed. Districts 3, 4 and 7 indicate the need for training on motor graders and backhoes. District 6 indicated responses in pothole patching, and heavy equipment.

Training requested according to district is as follows:

<u>District 1:</u>	Any Motor grader Front-end loader Bridge work CDL Tractor mower Leadership Herbicide Computer	Backhoe Cross training Maintenance repairs Crane Track hoe Supervisor Welding Brick laying
<u>District 2:</u>	Any Forklift Lowboy Computer	Backhoe Motor grader Track hoe Supervisor
<u>District 3:</u>	Any Motor grader Front-end loader Forklift Welding	Backhoe Sweeper Flagging Computer Bobcat
<u>District 4:</u>	Any Motor grader Equipment Buzz bar Computer Blueprints Ditches	Backhoe Lowboy Broom tractor Slope mower Crane Concrete finishing Tractor
<u>District 5:</u>	Any Motor grader	Backhoe Forklift

Brick mason	Plumbing
Carpenter	Computer
Electronics	Equipment Operation
Flagger	Heavy equipment
Herbicide	Track hoe
Front-end Loader	Ditching
Steel Wheel roller	Supervisor

<u>District 6:</u>	Any	Backhoe
	Motor grader	Forklift
	Bucket truck	Front-end loader
	Bush hog	Computer
	Hazmat	Step 21
	Hydraulic Brakes	Electrical
	Boom truck	Surveying
	Crew leadership	

<u>District 7:</u>	Any	Bulldozer
	Backhoe	Motor grader
	Front-end loader	Chemicals
	Herbicide truck	

Recommendation: Establish certifications to address broad training and elective options to address needs of respective districts.



**Workforce Development Program
Task Analysis
Trades Specialist III**



<u>District</u>	1	25.57%
	2	10.79%
	3	3.41%
	4	19.31%
	5	15.63%
	6	18.47%
	7	6.82%

2 years	6.82%	3 years	8.24%
4 years	7.10%	5 years	7.95%
6 years	5.97%	8 years	6.82%
10 years	8.24%		

Position Title	<u>Trades Specialist III</u>	100%	Length of time in current position	<u>10 years</u>	8.24%
<u>Length of time employed with SCDOT</u>	10 yrs. (3.98%); 11 yrs. And 12 yrs. (3.13%); 13 yrs. And 18 yrs. (3.69%); 14 yrs. And 16 yrs. (5.11%); 5 yrs. And 17 yrs. (4.55%); 15 yrs. (4.83%); 17 yrs. (4.55%); 4 yrs. (3.98%)				

Instructions: Carefully read the job tasks listed in column A. In column B, indicate how often you perform each task by circling the appropriate letter. Next indicate in column C what type of training you have received in order to perform this task. If you have not received training to perform a particular task, circle *None*. Finally, in column D, please circle yes or no if you feel you need more training to complete the task.

ALL RESULTS EXPRESSED AS PERCENTAGES (%).

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
1	I operate large motor graders in ditching, shoulder operations, grading and machining roads, driveway installation or snow and ice removal.	N 35.47 R 13.08 S 29.94 O 21.51	NONE 30.27 OJT 59.52 CLASS 6.46 VIDEO 0.34 CBT 1.02 OTHER 2.38	Y 51.23 N 48.07
2	I operate a combination front-end loader and backhoe to clean out drainage ditches and to install sideline and cross line pipe.	N 27.78 R 13.74 S 28.07 O 30.41	NONE 24.83 OJT 59.60 CLASS 9.60 VIDEO 1.66 CBT 0.66 OTHER 3.64	Y 42.67 N 57.00
3	I operate a motor grader mounted bush-hog for cutting and clearing grass, brush, shrubs, and trees from right-of-way.	N 64.93 R 11.59 S 14.49 O 8.99	NONE 57.20 OJT 36.90 CLASS 1.48 VIDEO 2.58 CBT 0.37 OTHER 1.48	Y 40.15 N 59.85

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
4	I function as a driver and/or backend operator on large centerline paint machine.	N 88.56 R 2.64 S 3.52 O 5.28	NONE 81.78 OJT 13.57 CLASS 1.94 VIDEO 0.39 CBT 0.78 OTHER 1.55	Y 34.10 N 65.90
5	I operate an asphalt distributor (driver and backend) in roadway bituminous re-treatment work to seal cracked surfaces and restore life to road surfaces.	N 68.25 R 13.06 S 12.76 O 5.93	NONE 61.60 OJT 34.22 CLASS 1.52 VIDEO 0.38 CBT 0.76 OTHER 1.52	Y 37.02 N 62.98
6	I operate a tractor-trailer to transport heavy motorized equipment.	N 56.30 R 14.37 S 18.18 O 11.14	NONE 48.74 OJT 40.43 CLASS 4.69 VIDEO 0.72 CBT 0.36 OTHER 5.05	Y 42.60 N 57.04
7	I operate a dragline track hoe in ditching operations, driving piling, laying precast bridge slabs and placing of pipe.	N 83.38 R 5.93 S 6.53 O 4.15	NONE 76.92 OJT 18.08 CLASS 1.92 VIDEO 1.15 CBT 0.38 OTHER 1.54	Y 40.70 N 59.30

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
8	I serve as crew leader directing crew in small trailer type striping operations, placing crosswalks, stop bars, railroad crossing markings and miscellaneous pavement markings.	N 73.24 R 8.82 S 10.88 O 7.06	NONE 66.42 OJT 27.99 CLASS 2.61 VIDEO 0.37 CBT 1.12 OTHER 1.49	Y 38.11 N 61.89
9	I serve as crew leader when crew is dispersed; may direct mowing operations and herbicide spraying.	N 70.80 R 6.78 S 13.86 O 8.55	NONE 61.99 OJT 32.10 CLASS 2.21 VIDEO 1.11 CBT 1.11 OTHER 1.48	Y 37.17 N 62.45
10	I serve as crew leader performing various duties within a section of county such as patching roadway surfaces, construction and repair of bridges and constructing driveways.	N 37.83 R 15.25 S 26.69 O 20.23	NONE 33.11 OJT 60.41 CLASS 2.39 VIDEO 2.39 CBT 0.34 OTHER 1.37	Y 46.44 N 53.56
11	I serve as crew leader and perform skilled manual labor in grading, setting forms and pouring and finishing concrete for curbs, gutters, sidewalks, driveways, hand rails, slabs, construction of catch basins and drop inlets.	N 55.98 R 16.33 S 20.12 O 7.58	NONE 50.34 OJT 43.45 CLASS 3.10 VIDEO 0.69 CBT 0.34 OTHER 2.07	Y 45.45 N 54.20

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
12	I serve as supervisor on a sign erection crew (routine signing) in a small county or as an assistant sign crew supervisor in a large county, metropolitan area or county with interstate responsibilities.	N 80.00 R 4.71 S 7.06 O 8.24	NONE 71.91 OJT 23.22 CLASS 2.62 VIDEO 0.75 CBT 0.75 OTHER 0.75	Y 37.83 N 62.17
13	I operate heavy-duty excavator in cleaning side ditches, trenching for pipeline, laying pipe and loading trucks with filled material.	N 57.69 R 9.76 S 19.53 O 13.02	NONE 50.74 OJT 41.54 CLASS 4.41 VIDEO 0.74 CBT 0.37 OTHER 2.21	Y 43.84 N 56.16
14	I supervise a crew of inmates performing mowing, litter removal, dead animal removal and right-of-way clearing.	N 75.52 R 8.66 S 9.55 O 6.27	NONE 71.05 OJT 24.81 CLASS 2.63 VIDEO 0.38 CBT 1.13 OTHER	Y 25.28 N 73.96
15	I operate a large backhoe for cleaning ditches.	N 34.72 R 12.76 S 26.11 O 26.41	NONE 26.53 OJT 61.56 CLASS 7.82 VIDEO 1.02 CBT 0.34 OTHER 2.72	Y 43.01 N 56.99

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
16	I operate a motorized street sweeper, lowboy, loader, gradall and asphalt patch truck.	N R 100 S O	NONE OJT CLASS VIDEO CBT OTHER	Y N
17	I operate the Jet Vac system to flush dirt and debris from pipes and other drainage systems.	N 53.55 R 13.91 S 23.67 O 8.88	NONE 46.52 OJT 48.72 CLASS 2.56 VIDEO 0.73 CBT 1.47 OTHER	Y 41.48 N 58.52
18	I operate vacuum type highway sweeper truck in sweeping and cleaning state roadways, including curb and gutters.	N 65.79 R 13.74 S 14.91 O 5.56	NONE 55.68 OJT 38.83 CLASS 3.30 VIDEO 0.37 CBT 0.73 OTHER 1.10	Y 39.11 N 60.89
19	I operate large centerline paint machine, keep machine and lines clean, load paint and glass beads onto paint machine, and paint pavement markings.	N 82.03 R 6.96 S 9.28 O 1.74	NONE 75.95 OJT 19.85 CLASS 1.15 VIDEO 1.15 CBT 1.91 OTHER	Y 33.97 N 66.03

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
20	I set up traffic control according to SC MUTCD Standards to warn motorists of roadwork ahead.	N 93.00 R 1.46 S 3.21 O 2.33	NONE 85.21 OJT 9.73 CLASS 1.56 VIDEO 1.17 CBT 2.33 OTHER	Y 28.29 N 71.71
21	I assume foreman's duties and responsibilities during his absence.	N 10.09 R 10.95 S 36.02 O 42.94	NONE 9.49 OJT 62.03 CLASS 25.95 VIDEO 0.95 CBT 0.63 OTHER 0.95	Y 52.43 N 47.57
22	I perform resurfacing treatment.	N 25.00 R 14.02 S 38.11 O 22.87	NONE 21.32 OJT 75.00 CLASS 1.84 VIDEO 0.74 CBT 0.74 OTHER 0.37	Y 41.70 N 58.30
23	I perform other job related duties, including on call for after hour emergencies	N 12.86 R 16.29 S 44.00 O 26.86	NONE 12.97 OJT 79.11 CLASS 3.80 VIDEO 1.27 CBT 0.63 OTHER 2.22	Y 31.94 N 68.06

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
24	I operate a tandem dump tuck, in hauling maintenance and construction materials such as concrete pipes, asphalt, limestone, dirt, soil, cement, pipe, dirt, coquina, etc.	N 24.64 R 20.00 S 38.55 O 16.81	NONE 20.60 OJT 62.79 CLASS 13.29 VIDEO 1.66 CBT 0.33 OTHER 1.33	Y 38.21 N 61.79
25	I operate a forklift in loading and unloading maintenance and construction materials and supplies.	N 53.03 R 17.00 S 17.87 O 12.10	NONE 44.88 OJT 49.47 CLASS 3.53 VIDEO 1.06 CBT 1.06 OTHER	Y 34.63 N 65.37
26	I operate boom mowers, slope mowers and/or bat wing mowers in roadside and right-of-way clearing operations as necessary.	N 74.42 R 9.01 S 11.34 O 5.23	NONE 65.40 OJT 30.80 CLASS 2.28 VIDEO 0.38 CBT 0.38 OTHER 0.76	Y 38.02 N 61.98
27	I operate slope mower with a Buzz Bar attachment in limbing operations on highway right-of-ways.	N 87.86 R 4.34 S 6.366 O 1.45	NONE 81.82 OJT 14.02 CLASS 1.89 VIDEO 0.38 CBT 0.76 OTHER 1.14	Y 33.72 N 66.28

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
28	I operate crane in bridge erection and repair, setting drainage structures, and loading materials.	N 11.14 R 17.14 S 48.57 O 23.14	NONE 13.35 OJT 82.30 CLASS 1.55 VIDEO 1.24 CBT 0.62 OTHER 0.93	Y 38.73 N 61.27
29	I operate truck mounted plows and sand spreaders in snow and ice removal as necessary.	N 67.84 R 14.62 S 13.74 O 3.80	NONE 59.19 OJT 36.03 CLASS 2.21 VIDEO 1.10 CBT 0.37 OTHER 1.10	Y 38.72 N 61.28
30	I supervise and construct catch basins, drop inlets, and junction boxes for drainage.	N 75.07 R 7.92 S 9.68 O 7.33	NONE 68.34 OJT 27.41 CLASS 2.70 VIDEO 0.39 CBT 0.77 OTHER 0.39	Y 36.50 N 63.50
31	I supervise a sign erection crew responsible for the installation of new roadway signs and replacement of existing signs.	N 87.06 R 5.29 S 6.18 O 1.47	NONE 82.61 OJT 13.44 CLASS 2.77 VIDEO 0.40 CBT 0.40 OTHER 0.40	Y 29.37 N 70.24

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
32	I serve as Section Shed Supervisor in a small county or rural area.	N 55.02 R 10.03 S 21.58 O 13.37	NONE 48.35 OJT 47.62 CLASS 2.20 VIDEO 0.73 CBT 0.37 OTHER 0.73	Y 33.96 N 66.04
33	I supervise crews in cleaning sideline and outfall ditches.	N R S O 100	NONE OJT CLASS 100 VIDEO CBT OTHER	Y N 100
34	I instruct crew members daily in safety practices such as flagging operations, wearing safety equipment, vehicle safety, or when working with hazardous material and waste.	N 30.72 R 13.62 S 26.38 O 29.28	NONE 23.75 OJT 58.19 CLASS 15.38 VIDEO 1.34 CBT 0.67 OTHER 0.67	Y 45.92 N 54.08
35	I supervise a crew in mowing and clean-up operations.	N 66.96 R 10.53 S 14.62 O 7.89	NONE 60.29 OJT 36.10 CLASS 1.44 VIDEO 1.08 CBT 0.36 OTHER 0.72	Y 31.99 N 68.01

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
36	I supervise crew in filling washouts and placing riprap.	N 44.93 R 12.75 S 32.46 O 9.86	NONE 38.28 OJT 58.97 CLASS 1.38 VIDEO 1.38 CBT OTHER	Y 32.38 N 67.62
37	I inspect roads for potholes and safety hazards.	N 34.40 R 13.99 S 32.65 O 18.95	NONE 33.33 OJT 63.00 CLASS 2.67 VIDEO 0.33 CBT 0.67 OTHER	Y 35.71 N 64.29
38	I supervise crew in the laying and marking of plastic stop lines and crosswalks.	N 84.96 R 4.72 S 7.08 O 3.24	NONE 78.08 OJT 18.85 CLASS 1.92 VIDEO 0.38 CBT 0.38 OTHER 0.38	Y 32.30 N 67.70
39	I supervise paint crew in stripping traffic lines, crosswalks and stop lines.	N 87.94 R 3.82 S 5.00 O 3.24	NONE 83.53 OJT 14.12 CLASS 1.18 VIDEO 0.78 CBT 0.39 OTHER	Y 31.13 N 68.87

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
40	I function as driver and/or backend operator of large centerline paint machine as needed.	N 91.50 R 2.93 S 2.64 O 2.93	NONE 87.55 OJT 10.04 CLASS 1.20 VIDEO 0.40 CBT OTHER 0.80	Y 27.78 N 72.22
41	I supervise crew in general repair and maintenance of buildings and grounds.	N 56.72 R 14.33 S 22.39 O 6.57	NONE 53.24 OJT 42.09 CLASS 2.52 VIDEO 0.72 CBT 0.36 OTHER 1.08	Y 31.64 N 68.36
42	I review time sheets, evaluate subordinates and recommend personnel actions including promotions, transfers, and disciplinary measures.	N 72.78 R 10.06 S 10.95 O 6.21	NONE 66.54 OJT 29.28 CLASS 3.04 VIDEO CBT 0.76 OTHER 0.38	Y 41.60 N 58.40
43	I conduct safety inspections on all assigned vehicles and equipment.	N 25.88 R 8.24 S 24.41 O 41.47	NONE 23.76 OJT 68.32 CLASS 4.62 VIDEO 0.99 CBT 0.99 OTHER 1.32	Y 41.75 N 58.25

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
44	I supervise seeding of slopes and shoulders.	N 69.94 R 10.13 S 14.56 O 5.38	NONE 64.52 OJT 33.47 CLASS 1.21 VIDEO CBT 0.40 OTHER 0.40	Y 32.27 N 67.73
45	I produce daily records of work performed and materials used, records such as HMMS and the maintenance requests and complaint forms.	N 41.62 R 8.67 S 24.28 O 25.43	NONE 37.83 OJT 48.68 CLASS 11.18 VIDEO 0.33 CBT 1.64 OTHER 0.33	Y 48.82 N 51.18
46	I review vehicle maintenance record and report needed maintenance.	N 36.63 R 11.05 S 25.87 O 26.45	NONE 37.15 OJT 57.29 CLASS 3.47 VIDEO 0.35 CBT 0.35 OTHER 1.39	Y 38.46 N 61.54
47	I supervise right-of-way clearing and herbicide spraying to control undesirable vegetation growth.	N 78.36 R 6.14 S 10.53 O 4.97	NONE 72.28 OJT 23.22 CLASS 2.62 VIDEO 0.37 CBT 0.37 OTHER 1.12	Y 31.68 N 68.32

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
48	I supervise machining and grading of dirt roads.	N 70.67 R 7.92 S 15.25 O 6.16	NONE 62.36 OJT 32.70 CLASS 2.66 VIDEO 1.14 CBT OTHER 1.14	Y 33.72 N 66.28
49	I supervise repairs to right-of-way fencing.	N 75.53 R 11.78 S 9.97 O 2.72	NONE 71.15 OJT 25.30 CLASS 1.58 VIDEO 0.79 CBT 0.40 OTHER 0.79	Y 24.30 N 75.70
50	I supervise crew engaged in storm damage or ice and snow removal.	N 49.71 R 13.95 S 27.91 O 8.43	NONE 43.17 OJT 53.24 CLASS 1.80 VIDEO 0.72 CBT OTHER 1.08	Y 39.35 N 60.65
51	I supervise in highway beautification, and setting and maintaining shrubbery.	N 68.84 R 10.98 S 15.73 O 4.45	NONE 62.99 OJT 32.28 CLASS 0.79 VIDEO 1.97 CBT 0.79 OTHER 1.18	Y 30.12 N 69.50

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
52	I supervise crew in removing fallen trees from roadway, cutting dead tree on tight-of-way and low hanging limbs over roadway.	N 36.84 R 14.91 S 33.63 O 14.62	NONE 31.25 OJT 63.54 CLASS 2.78 VIDEO 1.04 CBT 0.35 OTHER 1.04	Y 36.04 N 63.60
53	I supervise crack pouring sealing operations.	N 70.97 R 13.49 S 12.61 O 2.93	NONE 63.36 OJT 32.06 CLASS 2.29 VIDEO 0.76 CBT 0.38 OTHER 1.15	Y 32.28 N 67.72
54	I supervise crew engaged in bituminous patching and grading.	N 64.18 R 11.04 S 16.12 O 8.66	NONE 55.89 OJT 40.30 CLASS 2.66 VIDEO CBT 0.76 OTHER 0.38	Y 36.02 N 63.98
55	I investigate complaints of property owners and recommend action to be taken.	N 63.16 R 13.45 S 16.37 O 7.02	NONE 57.35 OJT 38.24 CLASS 1.84 VIDEO CBT 0.37 OTHER 2.21	Y 33.96 N 66.04

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
56	I supervise crew in construction, installation and repair of guardrails.	N 68.34 R 14.50 S 14.79 O 2.37	NONE 61.74 OJT 34.85 CLASS 0.76 VIDEO 0.38 CBT 0.38 OTHER 1.89	Y 36.23 N 63.77
57	I inspect signs for serviceability and safety.	N 59.47 R 10.06 S 17.46 O 13.02	NONE 55.19 OJT 40.00 CLASS 2.96 VIDEO CBT 0.37 OTHER 1.48	Y 32.58 N 67.42
58	I supervise routine installation of sideline and cross line pipes.	N 59.53 R 10.85 S 18.18 O 11.44	NONE 50.75 OJT 43.66 CLASS 2.99 VIDEO 0.75 CBT 0.75 OTHER 1.12	Y 32.83 N 61.17
59	I operate boom mowers, slope mowers, and bat wing mowers in roadside and right-of-way clearing operation as necessary.	N 57.93 R 14.12 S 17.58 O 10.37	NONE 50.72 OJT 46.04 CLASS 1.08 VIDEO 0.36 CBT 0.36 OTHER 1.44	Y 31.02 N 68.98

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
60	I operate a crane in bridge erection and repair, setting drainage structures and loading materials.	N 89.21 R 4.66 S 3.79 O 2.33	NONE 85.60 OJT 11.28 CLASS 1.56 VIDEO CBT 0.39 OTHER 1.17	Y 30.04 N 69.96
61	I devise a schedule for work to be performed by maintenance crew.	N 61.29 R 10.85 S 19.35 O 8.50	NONE 53.43 OJT 41.88 CLASS 2.17 VIDEO 0.72 CBT 0.36 OTHER 1.44	Y 33.95 N 66.05
62	I supervise a maintenance crew patching base and surface failure.	N 60.60 R 12.24 S 22.09 O 5.07	NONE 51.70 OJT 44.53 CLASS 1.89 VIDEO 0.75 CBT OTHER 1.13	Y 34.21 N 65.41
63	I supervise a maintenance crew constructing and paving driveways.	N 58.24 R 11.18 S 18.53 O 12.06	NONE 49.25 OJT 45.90 CLASS 2.61 VIDEO 0.75 CBT OTHER 1.49	Y 38.58 N 61.42

	A	B	C	D
	Task List	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
64	I supervise a maintenance crew in performing bridge repair in such areas as pilings bearings, expansion joints, deck, and guardrail.	N 80.12 R 7.60 S 9.94 O 2.34	NONE 73.28 OJT 24.81 CLASS 0.38 VIDEO CBT 0.38 OTHER 1.15	Y 32.17 N 67.83
65	I supervise a maintenance crew cutting right-of-ways on highways	N 62.72 R 10.40 S 18.21 O 8.67	NONE 55.84 OJT 41.24 CLASS 1.46 VIDEO CBT OTHER 1.46	Y 30.51 N 69.12
66	I perform other job related duties, including being on call for after hour emergencies.	N 30.61 R 11.37 S 37.03 O 20.99	NONE 29.23 OJT 67.96 CLASS 1.76 VIDEO 0.35 CBT 0.35 OTHER 0.35	Y 39.21 N 60.79
67	I supervise and set forms to grade, pour, and finish concrete on driveways, handrails, curb and gutter, sidewalks, and slabs.	N 71.05 R 9.63 S 16.08 O 3.51	NONE 62.92 OJT 32.96 CLASS 1.12 VIDEO CBT 0.37 OTHER 2.62	Y 35.98 N 64.02

List other tasks that you perform: (SEE ATTACHMENT, Table 1)

List other training you received while in your current position: (SEE ATTACHMENT, Table 2)

List other training you would like to have offered to you: (SEE ATTACHMENT, Table 3)

This page intentionally left blank.

Table 9. Additional Duties

Instructions : List other tasks that you perform
<i>Act as foreman in absence</i>
<i>AMZ operator, put in driveways</i>
<i>Backhoe & motor grader</i>
<i>Backhoe, motor grader, dump truck</i>
<i>Backhoe, slope mower, motor grader</i>
<i>Backhoe, track hoe-motor graders, Athey loader, etc.</i>
<i>Backhoe, trucks, tractors, pave driveways, patching, washouts</i>
<i>Build manhole boxes, drainage, cement work on sidewalk, drive a roater</i>
<i>Carpenter work, painting shingles, plumbing</i>
<i>Carpenter work, bridge/guardrail replacement, bridge repair, snow removal</i>
<i>Carpentry work</i>
<i>Central sign shop</i>
<i>Change traffic bulbs, check traffic light controls, maintain sign inventory</i>
<i>Check mowing contracts</i>
<i>Crew leader, operate backhoe/motor grader/other specialty equipment</i>
<i>Cut high shoulders, other road related repairs</i>
<i>Ditching</i>
<i>Drainage crew</i>
<i>Drawbridge maintenance crew, etc</i>
<i>Drive tractor tailor to move equip</i>
<i>Drive truck, motor grader, steel wheel roller</i>
<i>Drive truck, rock seal, replace signs, etc</i>
<i>Edge patching</i>
<i>Foreman duties in his absence</i>
<i>Gas/mileage record, order materials, CPR, first aid instructor.</i>
<i>Help. Asphalt patching, driveways, road/lane closures, flagging, sidewalk</i>
<i>Herbicide sprayer, slopemower, mower operator</i>
<i>Herbicide spraying</i>
<i>In charge when foreman off work</i>
<i>Inmate supervisor, CPR, first aid, flagging</i>
<i>Install driveway</i>
<i>Install/repair sign, paint stop bar--r/r symbols</i>
<i>Lane crew, time sheets in computer, safety cop, help patch holes</i>
<i>Large motor grader, end loader, backhoe, belt loader, serve as crew leader</i>
<i>Large motor graders, dondi ditching</i>
<i>Lead man for crew</i>
<i>Lead person ditching crew, backhoe, motor grader</i>
<i>Mechanic shop, running parts, assist other mechanics</i>
<i>Minor building electrical & plumbing, etc</i>
<i>Motor grader</i>
<i>Motor grader, backhoe</i>
<i>None</i>
<i>Operate track hoe, loader, backhoe, forklift, roller, patching truck, snow pl</i>
<i>Open/close service tickets, requisitions, etc</i>

Operate heavy equip, drive dump truck, finish concrete on sidewalk, fix bas
Operate backhoe & front end loader
Operate backhoe, trackhoe, 5/10 yard truck, patching roads, remove trees
Operate boom truck/bucket to move trees, track loader, clean sidewalk
Operate chain saw, air hammer,
Operate hydraulic cleaning highway right of way
Operate large motor graders when needed and front-end loader
Operate chain saw, air hammer,
Operate hydraulic cleaning highway right of way
Operate large motor graders when needed and front-end loader
Operate movable bridge
Operate paving machine, tack truck, jacks on paving machine, paving work
Operation of road wider, steel wheel rollers, tractor with bush hog
Order supplies, maintain inventory, inspect vehicles
Patch potholes by hand & machine, patching w/ amz
Patch. load. Trucks, ditch. forklift, foreman duties., flagging, driveways
Perform all tasks assigned to me
Perform mechanics and welding on equipment, operate front-end loader/backhoe
Pick up 1045
Preventive maint, gen.mech duties, welding
Rake, shovel hot & cold asphalt
Remove dead animals form road, pick up trash behind prisoners
Repair traffic lights, change bulbs
Set up traffic controlled
Setup and pave large areas of roadway
Shop yard maintenance
Shoveling and mowing roadside
Silk screen, make positives, work sign cam, etc
Site manager, specialize bridge division, etc
Some supervisor. Tasks
Supervise workers & inmates, guard railings, etc
Supervisor, leadman
Truck driver, operate chain saw, weed eater, asphalt?
Use bucket truck to cut trees, work on lights
Welding, cutting with torch

Table 10. Training Received in Current Position

<i>Instructions: List other training you received while in your current position.</i>				
<i>Training Type</i>	<i>Frequency</i>		<i>Training Type</i>	<i>Frequency</i>
<i>Advanced Backhoe</i>	<i>2</i>		<i>Work zone Safety</i>	<i>5</i>
<i>Leadership development</i>	<i>3</i>		<i>Defensive Driving</i>	<i>3</i>
<i>HMMS</i>	<i>11</i>		<i>Crane operation</i>	<i>2</i>
<i>Backhoe</i>	<i>16</i>		<i>Air Brakes</i>	<i>2</i>
<i>Motor grader</i>	<i>4</i>		<i>Driver Improvement</i>	<i>1</i>
<i>Chainsaw safety</i>	<i>7</i>		<i>Traffic Control</i>	<i>4</i>
<i>CPR</i>	<i>7</i>		<i>Welding</i>	<i>1</i>
<i>First-Aid</i>	<i>5</i>		<i>Herbicide</i>	<i>2</i>
<i>Flagging</i>	<i>7</i>		<i>Lubrication</i>	<i>1</i>
<i>Computer</i>	<i>11</i>		<i>Maintenance</i>	<i>1</i>
<i>Flagger Instructor</i>	<i>2</i>		<i>Sign Recognition</i>	<i>1</i>
<i>Foreman</i>	<i>1</i>		<i>Bar-coding Signs</i>	<i>1</i>
<i>Supervisor</i>	<i>3</i>		<i>Preparing Daily</i>	
<i>HR</i>	<i>3</i>		<i>Reports</i>	<i>1</i>
<i>Inspection safety</i>	<i>1</i>		<i>Working around Power</i>	
<i>Slope Mower</i>	<i>1</i>		<i>lines</i>	<i>2</i>
<i>Tar kettle</i>	<i>1</i>		<i>Patching Machine</i>	<i>1</i>
<i>Forklift</i>	<i>7</i>		<i>Brick Laying</i>	<i>1</i>
<i>Boom Truck Operation</i>	<i>3</i>		<i>Mowers</i>	<i>1</i>
<i>Bucket Truck</i>	<i>2</i>		<i>Tractor Mowers</i>	<i>1</i>
<i>CDL</i>	<i>3</i>		<i>None</i>	<i>279</i>
<i>Front-end Loader</i>	<i>4</i>		<i>Bridge Maintenance</i>	<i>1</i>

Table 11. Training Requests

<i>Instructions: List other training you would like to have offered to you</i>				
<i>Training Type</i>	<i># requests</i>		<i>Training Type</i>	<i># requests</i>
<i>Motor grader</i>	<i>13</i>		<i>Supervisor</i>	<i>5</i>
<i>Any</i>	<i>15</i>		<i>Ditching Machine</i>	<i>1</i>
<i>Backhoe</i>	<i>12</i>		<i>Asphalt paver</i>	<i>1</i>
<i>Public Relations</i>	<i>2</i>		<i>Leadership</i>	<i>2</i>
<i>Track hoe</i>	<i>7</i>		<i>Specialty Equipment</i>	
<i>Dump Truck</i>	<i>1</i>		<i>Bridge Erection</i>	<i>1</i>
<i>Welding</i>	<i>2</i>		<i>Traffic Signals</i>	<i>1</i>
Crane Operation	<i>5</i>		<i>Sexual Harassment</i>	<i>1</i>
<i>Concrete Inspection</i>	<i>1</i>		<i>Highly Effective People</i>	<i>1</i>
<i>Computer</i>	<i>15</i>		<i>Foreman Training</i>	<i>3</i>
<i>Heavy equipment Operation</i>	<i>1</i>		<i>HMMS</i>	<i>1</i>
<i>Forklift</i>	<i>1</i>		<i>Record Keeping</i>	<i>5</i>
<i>Lowboy</i>	<i>2</i>		<i>New equipment</i>	<i>1</i>
<i>Electrical Systems</i>	<i>1</i>		<i>Basic Engineering</i>	<i>1</i>
<i>Right-of-Way</i>	<i>1</i>		<i>Herbicide</i>	<i>2</i>

Summary

Results from the survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed.

A total of 352 responses were received to requests for additional training.

District 1:	Backhoe Welder HMMS Cleaning of Right of Way Supervision	Motor Grader Computer Equipment training Permits Track hoe
District 3:	Supervision	
District 4:	Motor Grader Public Relations Traffic Signals	Backhoe Track hoe Computer
District 5:	Herbicide Motor Grader Heavy Equipment	Computer Leadership
District 6:	Motor Grader Computer Electrical	Radio Operation Supervision
District 7:	Motor Grader Computer Supervisor	Backhoe Herbicide HMMS

Backhoe and forklift training were prevalent across all districts. Computer classes were requested among districts 1, 4, 5, and 6. District 1 training requests included CDL, Basic Motor Skill, Boom Mower, Brick Layer, Welding classes. The responses from this district also indicate the need to learn operation of more equipment, cross training for other positions, driver, bus operator, low boy sweeper, and track hoe. Additionally, more training in herbicide, slope mower, traffic control, OJT, videos, classes pertinent to tasks, and motor grader were listed. Districts 3, 4 and 7 indicate the need for training on motor graders and backhoes. District 6 indicated responses in pothole patching, and heavy equipment.

Recommendation: Establish certifications to address broad training and elective options to address needs of respective districts.

(This page intentionally left blank)



**Workforce Development Program
Task Analysis
Trades Specialist IV**

<u>District</u>	1	20.71%
	2	6.43%
	3	13.93%
	4	15.66%
	5	18.21%
	6	13.57%
	7	12.14%

2 years	7.19%
10 years	7.19%
3 years	6.47%
5 years	6.12%

Position Title	Trades Specialist IV	100%	<u>Length of time in current position</u>
-----------------------	----------------------	------	---

Length of time employed with SCDOT 3.60% for each of the following 17 yrs., 20 yrs, 24 yrs; 14 yrs. (5.40%); 16 yrs. (4.68%); 15 yrs. (4.32%); 19 yrs and 23 yrs. (3.96%)

Instructions: Carefully read the job tasks listed in column A. In column B, indicate how often you perform each task by circling the appropriate letter. Next indicate in column C what type of training you have received in order to perform this task. If you have not received training to perform a particular task, circle *None*. Finally, in column D, please circle yes or no if you feel you need more training to complete the task.

ALL RESULTS EXPRESSED AS PERCENTAGES (%).

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
1	I serve as a section shed supervisor in a large county or urban area.	N 69.74 R 2.21 S 4.43 O 23.65	NONE 52.58 OJT 37.63 CLASS 4.64 VIDEO 0.52 CBT 4.12 OTHER 0.52	Y 35.98 N 64.02
2	I supervise the construction and/or fabrication of pre-cast concrete bridges.	N 85.35 R 3.30 S 8.79 O 2.56	NONE 77.13 OJT 19.15 CLASS 1.06 VIDEO 1.06 CBT 1.06 OTHER 0.53	Y 36.36 N 63.64
3	I supervise sewage testing at rest areas/welcome centers, carpentry/plumbing repairs, installation of fixtures and water lines.	N 86.35 R 5.90 S 5.17 O 2.58	NONE 81.36 OJT 15.25 CLASS 0.56 VIDEO 2.82 CBT OTHER	Y 32.60 N 67.40
4	I supervise crew in pouring of concrete sidewalks, curbs and gutters, catch basins and concrete bridges.	N 56.20 R 13.14 S 23.72 O 6.93	NONE 45.71 OJT 48.10 CLASS 3.81 VIDEO 0.48 CBT 0.95 OTHER 0.95	Y 44.65 N 55.35

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
5	I supervise centerline paint crew and machine to include layout work.	N 90.77 R 2.58 S 3.32 O 3.32	NONE 84.18 OJT 13.56 CLASS 2.26 VIDEO CBT OTHER	Y 27.32 N 72.68
6	I supervise and direct routine maintenance centerline striper machine, including repairs on paint and bead guns, transfer and supply pumps, paint heaters, and compressor functions.	N 93.41 R 0.73 S 2.20 O 3.66	NONE 84.97 OJT 12.14 CLASS 1.16 VIDEO CBT 0.58 OTHER 1.16	Y 26.11 N 73.89
7	I supervise and inspect work such as ditching, machining shoulders, patching, laying pipe and paving driveways and entrances.	N 33.82 R 9.82 S 11.27 O 45.09	NONE 25.86 OJT 68.53 CLASS 4.31 VIDEO 0.43 CBT 0.43 OTHER 0.43	Y 38.79 N 61.21
8	I supervise a crew of maintenance workers in digging out and backfilling bad areas in roadways in preparation for resurfacing and skim patching.	N 34.43 R 9.89 S 26.74 O 28.94	NONE 25.76 OJT 68.56 CLASS 4.37 VIDEO 0.87 CBT 0.44 OTHER	Y 40.26 N 59.74

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
9	I supervise a crew performing road alteration construction of turn lanes, changing entrances and exits to highways.	N 61.90 R 18.32 S 16.12 O 3.66	NONE 49.75 OJT 47.72 CLASS 2.03 VIDEO 0.51 CBT OTHER	Y 41.18 N 58.82
10	I supervise repair and strengthening of low and weak spots in roadway surfaces using asphalt-paving machine.	N 53.09 R 15.27 S 17.45 O 14.18	NONE 41.35 OJT 52.40 CLASS 3.85 VIDEO 0.48 CBT 1.44 OTHER 0.48	Y 41.95 N 58.05
11	I supervise leveling and repair on high uneven asphalt spots using milling machine.	N 63.87 R 18.61 S 13.87 O 3.65	NONE 51.98 OJT 42.57 CLASS 2.97 VIDEO 1.49 CBT 0.50 OTHER 0.50	Y 42.57 N 57.43
12	I supervise installation of large storm drain structures.	N 53.68 R 16.18 S 25.00 O 5.15	NONE 41.09 OJT 54.95 CLASS 1.98 VIDEO 1.49 CBT 0.50 OTHER	Y 44.17 N 55.83

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
13	I investigate, recommend and/or take corrective action in connection with damage to SCDOT or private property, which are complex in nature.	N 65.56 R 13.33 S 16.30 O 4.81	NONE 56.41 OJT 42.05 CLASS 1.54 VIDEO CBT OTHER	Y 42.13 N 57.87
14	I prepare claim reports detailing labor, material and equipment cost of repairs.	N 83.27 R 6.69 S 8.18 O 1.86	NONE 78.16 OJT 18.97 CLASS 1.72 VIDEO CBT OTHER 1.15	Y 34.07 N 65.93
15	I supervise maintenance/repairs of concrete and timber bridges to include finders, navigation lights, installation of bridge cribbing and removal of debris and timber from channel.	N 71.16 R 9.74 S 14.61 O 4.49	NONE 59.36 OJT 40.11 CLASS 0.53 VIDEO CBT OTHER	Y 32.11 N 67.89
16	I supervise the maintenance and operation of ferry.	N 96.25 R 0.75 S 1.87 O 1.12	NONE 93.90 OJT 4.88 CLASS VIDEO CBT 0.61 OTHER 0.61	Y 19.88 N 80.12

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
17	I supervise a crew in drawbridge maintenance and repair, and draw bridge operations.	N 96.25 R 1.12 S 2.25 O 0.37	NONE 91.36 OJT 7.41 CLASS VIDEO CBT 0.62 OTHER 0.62	Y 18.34 N 81.66
18	I supervise a crew in the installation of sideline and cross line pipes.	N 40.15 R 12.64 S 20.07 O 27.14	NONE 30.84 OJT 64.49 CLASS 3.74 VIDEO CBT 0.47 OTHER 0.47	Y 34.55 N 65.45
19	I supervise a crew in resurfacing sections of highway, placing of bituminous concrete leveling courses and paving unpaved driveways on highways, roads, and streets to be resurfaced ahead of contractor.	N 49.81 R 13.01 S 21.93 O 15.24	NONE 40.10 OJT 56.93 CLASS 2.48 VIDEO CBT 0.50 OTHER	Y 39.51 N 60.49
20	I supervise a county sign erection crew.	N 84.07 R 3.33 S 4.44 O 8.15	NONE 76.92 OJT 18.13 CLASS 1.10 VIDEO 0.55 CBT 1.65 OTHER 1.65	Y 31.15 N 68.85

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
21	I maintain weekly and monthly reports, time sheets and cost records; recommend personnel actions including promotions, transfers and disciplinary measures; rate employee yearly according to Employee Performance Management System.	N 19.27 R 7.64 S 9.82 O 63.27	NONE 14.63 OJT 65.04 CLASS 14.63 VIDEO 0.41 CBT 4.47 OTHER 0.81	Y 55.14 N 44.86
22	I supervise the preventive maintenance of equipment to insure routine maintenance schedule is followed and to monitor equipment use and wear to prolong equipment life.	N 82.55 R 5.82 S 9.45 O 2.18	NONE 73.37 OJT 23.37 CLASS 0.54 VIDEO 1.63 CBT 1.09 OTHER	Y 25.00 N 75.00
23	I perform welcome center/rest area inspections, inspecting work performed by contractor. I perform minor repairs in welcome centers/rest areas such as plumbing, replacing damaged or broken hand dryers, etc. inside and outside.	N 87.64 R 2.91 S 5.45 O 4.00	NONE 81.11 OJT 15.56 CLASS 0.56 VIDEO 0.56 CBT 1.11 OTHER 1.11	Y 22.28 N 77.72
24	I supervise thermoplastic crew and equipment to include site layout.	N 63.91 R 11.28 S 14.29 O 10.53	NONE 52.25 OJT 43.82 CLASS 2.25 VIDEO CBT OTHER 1.69	Y 31.87 N 68.13

	A <i>Task List</i>	B <i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	C <i>What type of training did you received to perform this task?</i> OJT = On the Job Training CBT = Computer-based training	D <i>Do you feel you need more training to do this task?</i> Y = Yes N = No
25	I schedule and supervise maintenance crews in the absence of the Resident Maintenance Foreman.	N 19.20 R 6.16 S 12.32 O 62.32	NONE 11.38 OJT 64.63 CLASS 20.73 VIDEO 1.22 CBT 1.63 OTHER 0.41	Y 51.64 N 48.36
26	I supervise and insure a safe work zone for maintenance crew, as in flagging operations, wearing of safety equipment, vehicle safety, or when working with hazardous material and waste.	N 38.41 R 9.06 S 22.83 O 29.71	NONE 25.79 OJT 67.42 CLASS 3.62 VIDEO 1.36 CBT 0.90 OTHER 0.90	Y 41.70 N 58.30
27	I supervise a maintenance crew patching base and surface failures.	N 43.64 R 16.73 S 18.18 O 21.45	NONE 30.66 OJT 66.51 CLASS 2.36 VIDEO CBT 0.47 OTHER	Y 33.49 N 66.51
28	I supervise a maintenance crew cutting right-of-ways on highways.	N 71.54 R 7.87 S 12.73 O 7.87	NONE 57.30 OJT 37.84 CLASS 3.24 VIDEO .054 CBT 0.54 OTHER 0.54	Y 34.20 N 65.80

	A <i>Task List</i>	B <i>How often do you perform this task?</i> N = Never S = Sometimes R = Regularly O = Often	C <i>What type of training did you received to perform this task?</i> OJT = On the Job Training CBT = Computer-based training	D <i>Do you feel you need more training to do this task?</i> Y = Yes N = No
29	I supervise a maintenance crew in performing bridge repair in such areas as pilings, bearings, expansion joints, deck, and guardrail.	N 25.56 R 6.30 S 11.85 O 56.30	NONE 19.33 OJT 74.37 CLASS 4.20 VIDEO CBT 1.26 OTHER 0.84	Y 39.92 N 60.08
30	I devise and implement schedule for work to be performed by maintenance crew.	N 23.53 R 14.34 S 36.76 O 25.37	NONE 14.89 OJT 80.85 CLASS 2.55 VIDEO 0.85 CBT 0.85 OTHER	Y 37.34 N 62.66
31	I supervise and coordinate crew in the removal of snow and ice from roadways and storm damage.	N 79.12 R 5.86 S 7.69 O 7.33	NONE 66.84 OJT 26.74 CLASS 5.35 VIDEO 1.07 CBT OTHER	Y 36.13 N 63.35
32	I direct maintenance crew in herbicide application on highway right-of-ways as needed.	N 11.96 R 12.35 S 21.74 O 53.99	NONE 11.46 OJT 85.77 CLASS 0.79 VIDEO CBT 0.79 OTHER 1.19	Y 38.46 N 61.54

	A	B	C	D
	<i>Task List</i>	How often do you perform this task? N = Never S = Sometimes R = Regularly O = Often	What type of training did you received to perform this task? OJT = On the Job Training CBT = Computer-based training	Do you feel you need more training to do this task? Y = Yes N = No
33	I perform other job related duties, including being on call for after hour emergencies.	N R S O	NONE OJT CLASS VIDEO CBT OTHER	Y N

List other tasks that you perform: (SEE ATTACHMENT, Table 1)

List other training you received while in your current position: (SEE ATTACHMENT, Table 2)

List other training you would like to have offered to you: (SEE ATTACHMENT, Table 3)

Table 12. Additional Duties

<i>Instructions :List other tasks that you perform:</i>
<i>A-1, road widening Backhoe training Colorful spaces, wildflowers, road & bridge closures/detours, DMI calibration Coordinate work for paint & thermal crew, sup. Mowing and changing Foreman over patching crew, patching and some base repairs Grading ditches, repair shoulder, cut trees, replace signs when on call Guard rail repair, full depth patch, ditching, put pipe in Incident responder Install d & w, repair pipe line, repair shoulders, clear trees after storm Install elect equip & power on street lights, sign lights, buildings Investigate and complete work request Litter pickup Litter, animal pick-up Minor building and ground repair, traffic control instructor, night ins None Operate boom/lift trucks, overhead operations sign installation OSHA monthly insp., bi-annual road inspection for county roads Putting up signs, thermoplastic stop bars, RXR, skip lines, keep yard clean Road & drainage inspections, fill-in for RME when absent Road/lane closure/detours, order/hang/inventory signs, operate bucket truck Shoulder work Shoulders and ditches Silkscreen signs, trim and roll sign, fire ext. Inspection, inspect equip. Supervise elec. Repairs, traffic signal install, highway sign street lights Third party CDL testing Traffic signal install/repair maintenance, order stock/supplies for sign shop Traffic signal install/repair, various electrical work on buildings/grounds</i>

Table 13. Training Received in Current Position

Instructions: List other training you received while in current position				
<i>Training Type</i>	<i>Frequency</i>		<i>Training Type</i>	<i>Frequency</i>
<i>Advanced backhoe</i>	<i>3</i>		<i>Laying Asphalt</i>	<i>2</i>
<i>Basic backhoe</i>	<i>6</i>		<i>Driveways</i>	<i>1</i>
<i>Work Zone Safety</i>	<i>8</i>		<i>OSHA</i>	<i>1</i>
<i>Supervisor</i>	<i>6</i>		<i>DEHEX</i>	<i>1</i>
<i>CPR</i>	<i>4</i>		<i>NEC CODE</i>	<i>1</i>
<i>First-Aid</i>	<i>4</i>		<i>CDL</i>	<i>1</i>
<i>Forklift</i>	<i>1</i>		<i>Lockout- Tag out</i>	<i>1</i>
<i>Flagger Safety</i>	<i>2</i>		Shoring and	<i>1</i>
<i>Flagger Instructor</i>	<i>2</i>		Trenching	<i>2</i>
<i>Defensive Driving</i>	<i>1</i>		<i>Leadership</i>	<i>2</i>
<i>Computer</i>	<i>1</i>		<i>development</i>	<i>2</i>
<i>Traffic Control</i>	<i>4</i>		<i>Alcohol and Drugs</i>	<i>2</i>
<i>Traffic Signal Programs</i>	<i>1</i>		<i>Patching/Leveling</i>	<i>2</i>
<i>Foreman</i>	<i>4</i>		<i>Public relations</i>	<i>2</i>
<i>Human relations</i>	<i>1</i>		<i>Herbicide</i>	<i>2</i>
<i>Human Resources</i>	<i>3</i>		<i>HMMS</i>	
<i>None</i>	<i>185</i>		<i>IMSA</i>	

Table 14. Training Requests

<i>Instructions: List other training you would like to have offered to you</i>				
<i>Training Type</i>	<i># requests</i>		<i>Training Type</i>	<i># requests</i>
<i>Installation of Signs</i>	<i>1</i>		<i>Phone Communication</i>	<i>1</i>
<i>Asphalt Concrete Inspection</i>	<i>1</i>		<i>Time management</i>	<i>1</i>
<i>CDL Instructor</i>	<i>1</i>		<i>Programmable Logic</i>	
<i>Surveying</i>	<i>1</i>		<i>Controller</i>	<i>1</i>
<i>Asphalt & excavation</i>	<i>2</i>		<i>Hydraulic Systems</i>	<i>1</i>
<i>Bridge Repair</i>	<i>1</i>		<i>Supervisor</i>	<i>1</i>
<i>Computer Training</i>	<i>1</i>		<i>Boater Safety</i>	<i>1</i>
<i>Traffic Signal Operations</i>	<i>10</i>		<i>Cable and Telephone</i>	
<i>Communication Skills</i>	<i>2</i>		<i>Depth</i>	<i>4</i>
<i>Crane Operation</i>	<i>1</i>		<i>Right-of-Way</i>	<i>1</i>
<i>HR</i>	<i>1</i>		<i>Road Surface Repairs</i>	
<i>Backhoe</i>	<i>2</i>		<i>Shoulder Repairs</i>	<i>1</i>
<i>Motor Grader</i>	<i>1</i>		<i>Concrete Repairs</i>	<i>1</i>
<i>Office Politics</i>	<i>1</i>		<i>Spanish</i>	<i>1</i>
<i>Drainage Structure</i>	<i>4</i>		<i>Time-Keeping</i>	<i>1</i>
<i>Shoulder Pulling</i>	<i>1</i>		<i>Track hoe</i>	<i>1</i>
<i>Engineering</i>	<i>1</i>		<i>Driveway Installation</i>	<i>1</i>
<i>Equipment operation</i>	<i>1</i>		<i>Foreman</i>	<i>1</i>
<i>Leadership development</i>	<i>2</i>		<i>None</i>	<i>230</i>
<i>Public relations</i>	<i>1</i>		<i>PLC</i>	<i>4</i>

Summary

Results from the survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed.

A total of 280 responses were received to requests for additional training.

District 1:	Computer Asphalt/Concrete Drainage structure Operator training Spanish	HR Leadership development New equipment operation Maintenance engineering Video on installing driveways and paving
District 2:	Motor grades	
District 3:	Right of way	Cable line depth
District 4:	Traffic signal related	
District 5:	Computer Management	Supervisor Public relations
District 6:	Computer Supervisor Motor grader Programmable logic controller Boater safety Concrete repairs	Crane operation Heavy equipment training Time management Hydraulic systems Road surface repairs
District 7:	Computer Supervisor Engineering	Upper management procedures Track hoe training

Recommendation: Narrow certification for broad training components. Create small sub certifications to match specific needs.



**Workforce Development Program
Task Analysis
Trades Specialist V**



<u>District</u>	13.51%			
	8.11%			
	8.11%			
	16.22%			
	16.22%			
	17.57%			
	20.27%			
	<hr/>			
				3 years 6.76%
				4 years 9.46%
				10 years 10.89%
				33 years 6.76%
Position Title	Trades Specialist V	100.00%	<u>Length of time in current position</u>	
	<hr/>			
<u>Length of time employed with SCDOT</u>	4.05% for each of the following: 2 yrs., 9 yrs., 11 yrs., 13 yrs., 15 yrs., 16 yrs., 18 yrs., 19 yrs., 21 yrs., 23 yrs., 27 yrs., 30 yrs.; 6 yrs., 22 yrs. and 28 yrs. (5.41%)			
	<hr/>			

Instructions: Carefully read the job tasks listed in column A. In column B, indicate how often you perform each task by circling the appropriate letter. Next indicate in column C what type of training you have received in order to perform this task. If you have not received training to perform a particular task, circle *None*. Finally, in column D, please circle yes or no if you feel you need more training to complete the task.

ALL RESULTS EXPRESSED AS PERCENTAGES (%).

	A <i>Task List</i>	B <i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O=Often	C <i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	D <i>Do you feel you need more training to do this task?</i> Y = Yes N = No
1	I supervise foremen and/or crews in various maintenance activities such as ditching, shoulder work, patching, placement of drainage pipe, and asphalt paving.	N 52.11 R 2.82 S 5.63 O 39.44	None 33.33 OJT 56.14 Class 8.77 Video CBT Other 1.75	Y 29.31 N 70.69
2	I investigate, and/or recommend corrective actions in connection with damage to SCDOT or private property, which are complex in nature.	N 28.57 R 14.29 S 27.14 O 30.00	None 25.49 OJT 62.30 Class 9.84 Video CBT Other 3.28	Y 45.90 N 54.10
3	I assist in preparing various maintenance reports detailing labor, material, and equipment cost of repairs.	N 9.46 R 8.11 S 37.84 O 44.59	None 16.44 OJT 69.86 Class 10.96 Video CBT 1.37 Other 1.37	Y 41.67 N 58.33

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O=Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
4	I review and/or maintain daily, weekly, and monthly reports, time sheets and cost records; recommends personnel actions including promotions, transfers, and disciplinary measures; rates employees yearly according to the Employee Performance Management System	N 2.74 R 2.74 S 19.18 O 75.34	None 2.78 OJT 75.00 Class 16.67 Video CBT 4.17 Other 1.39	Y 52.78 N 47.22
5	I monitor the preventative maintenance program of equipment to insure a routine maintenance schedule is followed and to monitor equipment use and wear to prolong equipment life.	N 8.22 R 4.11 S 17.81 O 69.86	None 12.86 OJT 78.87 Class 4.23 Video CBT 1.41 Other 2.82	Y 34.71 N 64.29
6	I monitor and insure a safe work zone for maintenance crew, as in flagging operations, wearing of personal protection equipment, vehicle safety, and environmental issues.	N 19.44 R 5.56 S 18.06 O 56.94	None 12.50 OJT 60.94 Class 23.44 Video 3.13 CBT Other	Y 47.06 N 52.94
7	I perform other job related duties, including on call for after hour emergencies.	N 8.22 R 16.44 S 45.21 O 30.14	None 16.18 OJT 80.88 Class 1.47 Video CBT Other 1.47	Y 28.79 N 71.21

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O=Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
8	I prepare and monitor scheduling on priority basis routes for routine maintenance and inspection work.	N 33.33 R 4.35 S 24.64 O 37.68	None 29.31 OJT 65.52 Class 5.17 Video CBT Other	Y 33.33 N 66.67
9	I am responsible for inspection of all rights-of-way encroachment permits.	N 80.00 R 10.00 S 5.71 O 4.29	None 73.08 OJT 25.00 Class Video CBT 1.92 Other	Y 34.48 N 66.52
10	I operates engineering level to determine elevations	N 66.18 R 4.41 S 22.06 O 7.35	None 56.86 OJT 41.18 Class Video CBT Other 1.96	Y 38.60 N 61.40
11	I check, compute and verify costs and quantities of labor and materials for various maintenance activities.	N 35.71 R 14.29 S 22.86 O 27.14	None 30.36 OJT 62.50 Class 5.36 Video CBT 1.79 Other	Y 47.54 N 52.46

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O=Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
12	I communicate with local officials, administrators and public investigating field complaints.	N 40.85 R 9.86 S 9.86 O 39.44	None 30.91 OJT 61.82 Class 5.45 Video CBT Other 1.82	Y 36.67 N 63.33
13	I recommend and/or approve requisitions for various supplies, equipment and contract work necessary for various maintenance activities.	N 26.09 R 4.35 S 27.54 O 42.03	None 24.59 OJT 62.30 Class 11.48 Video 1.64 CBT Other	Y 57.14 N 42.86
14	I supervise foremen and/or crews in the removal of snow and ice from roads and bridges and other storm damage.	N 32.39 R 14.08 S 22.54 O 30.99	None 21.05 OJT 75.44 Class 3.51 Video CBT Other	Y 32.76 N 67.24
15	I conduct meetings and training sessions as needed.	N 9.59 R 19.18 S 47.95 O 23.29	None 17.19 OJT 73.44 Class 6.25 Video 1.56 CBT Other 1.56	Y 41.54 N 59.46

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O=Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
16	I assist in the compilation of data and preparation of annual budget.	N 41.43 R 27.14 S 21.43 O 10.00	None 42.11 OJT 54.39 Class 1.75 Video CBT 1.75 Other	Y 45.61 N 54.39

List other tasks that you perform (SEE ATTACHMENT, Table 1):

List other training you received while in your current position (SEE ATTACHMENT, Table 2):

List other training you would like to have offered to you (SEE ATTACHMENT, Table 3):

(This page intentionally left blank)

Table 15. Additional Duties

<i>Instructions: List other tasks that you perform</i>
<ul style="list-style-type: none"> • <i>Act as assistance maintenance engineer in absence of RME; contract inspection</i> • <i>Assist with OSHA compliance; check contractors; night inspections</i> • <i>Enter daily work reports on computer</i> • <i>Environmental inspection; shop safety inspection; order/purchase parts</i> • <i>Environmental/OSHA inspection; equipment repair; technical training</i> • <i>Equipment safety checks; repair rest areas; order stock; mix and gas weld</i> • <i>Help maintain safe work environment; deal with vendors on coast and repair work</i> • <i>Keep maintenance stocked with blades, bolts and other supplies</i> • <i>Maintain monthly environmental reports</i> • <i>Meet with contractor on bridge lighting installation</i> • <i>Monitor contract work for bridges, lighting and traffic signal</i> • <i>Mowing wildflower plots, and colorful spaces</i> • <i>Operate sign CAD/CAM origram, forklift; manufacture signs; handle scrap</i> • <i>Prepare for treatment, paving and full depth patching</i> • <i>Prepare work order; other duties in shop operation</i> • <i>Repair and maintenance of vehicles, equipment, buildings; shop operation</i> • <i>Repair buildings and grounds; repair, design and fabricate equipment</i> • <i>Schedule daily work for shop; order supplies; prepare reports</i> • <i>Section shed supervisor; maintain records for sheds inspection</i> • <i>Shop foreman</i> • <i>Shop foreman; equipment repair</i> • <i>Supervise herbicide, planting operations</i> • <i>Supervise in herbicide application, planting and grassing</i> • <i>Supervise maintenance of DOT vehicle</i> • <i>Maintenance and repair of equipment; oversee operation of fuel pump</i> • <i>Supervise mechanics/shop clerks; purchase parts; safety inspection</i> • <i>Supervise mowing crew, contract mowing, herbicide operations</i> • <i>Supervise preventive maintenance and repairs on all equipment</i> • <i>Supervise repair of guardrails, plumbing, electrical and building maintenance</i> • <i>Supervise shop in repair and maintenance of DOT equipment</i> • <i>Supervise shop operations; maintain and repair SCDOT equipment</i> • <i>Supervise shop operations; order parts; inspect equipment</i> • <i>Whatever comes up</i>

Table 16. Training Received in Current Position

<i>Instructions: List other training you received while in your current position</i>				
<i>Training Type</i>	<i>Frequency</i>		<i>Training Type</i>	<i>Frequency</i>
<i>Asphalt</i>	<i>1</i>		<i>Flagger Instruction</i>	<i>2</i>
<i>Traffic Control</i>	<i>2</i>		<i>Concrete Inspection</i>	<i>1</i>
<i>Computer</i>	<i>6</i>		<i>Customer Service</i>	<i>2</i>
<i>EPMS</i>	<i>3</i>		<i>Electrical Systems</i>	<i>2</i>
<i>SWIPSM Mech</i>	<i>2</i>		<i>Brakes</i>	<i>2</i>
<i>Update</i>	<i>5</i>		<i>Transmissions</i>	<i>2</i>
<i>Procurement</i>	<i>2</i>		<i>Drivelines</i>	<i>2</i>
<i>First Aid</i>	<i>2</i>		<i>Safety</i>	<i>1</i>
<i>CPR</i>	<i>1</i>		<i>HR</i>	<i>4</i>
<i>CDL</i>	<i>6</i>		<i>Environmental/Mechanical</i>	<i>6</i>
<i>Supervisor</i>	<i>1</i>		<i>Staff Development</i>	<i>1</i>
<i>First AF</i>	<i>5</i>		<i>Salvia</i>	<i>1</i>
<i>Maintenance</i>	<i>1</i>		<i>Alcohol</i>	<i>1</i>
<i>Foreman</i>	<i>1</i>		<i>Herbicide</i>	<i>2</i>
<i>Backhoe</i>	<i>1</i>		<i>Pesticide License</i>	<i>1</i>
<i>Confined Space</i>	<i>1</i>		<i>Report/Memo Writing</i>	<i>1</i>
<i>Magnetic Clutch</i>	<i>1</i>		<i>Microsoft</i>	<i>2</i>
<i>HRM III</i>	<i>1</i>		<i>Hydraulics</i>	<i>2</i>
<i>Leadership</i>	<i>1</i>		<i>Operation</i>	<i>1</i>
<i>Development</i>	<i>2</i>		<i>Safety</i>	<i>1</i>
<i>IMSA I & II</i>	<i>3</i>		<i>OSHA</i>	<i>2</i>
<i>IRUM</i>	<i>1</i>		<i>Vehicle Repair</i>	<i>1</i>
<i>STARS</i>	<i>1</i>		<i>None</i>	<i>38</i>
<i>HMMS</i>				
<i>Step 21</i>				
<i>Work Zone Safety</i>				

Table 17. Training Requests

<i>Instructions: List other training you would like to have offered to you.</i>				
<i>Training Type</i>	<i># requests</i>		<i>Training Type</i>	<i># requests</i>
<i>AC Systems Repair</i>	<i>2</i>		<i>Drainage repair</i>	<i>1</i>
<i>Air Brake</i>	<i>1</i>		<i>Electrical</i>	<i>1</i>
<i>Brake Systems</i>	<i>1</i>		<i>Fuel</i>	<i>1</i>
<i>Computer</i>	<i>3</i>		<i>Diesel Equipment</i>	<i>1</i>
<i>EPMS</i>	<i>3</i>		<i>Transmissions</i>	<i>1</i>
<i>Purchasing</i>	<i>2</i>		<i>Heavy Equipment</i>	<i>1</i>
<i>Environmental</i>	<i>1</i>		<i>Repair</i>	
<i>Any training is a plus</i>	<i>1</i>		<i>Engineering</i>	<i>3</i>
<i>Any training</i>	<i>1</i>		<i>Vehicle Repair</i>	<i>1</i>
<i>concerning shop</i>			<i>HR</i>	<i>1</i>
<i>operations</i>	<i>1</i>		<i>Supervisor</i>	<i>1</i>
<i>Leadership/Stress Mgt</i>	<i>1</i>		<i>Step 21</i>	<i>2</i>
<i>Mgt/Financial</i>	<i>1</i>		<i>Hydraulic Systems</i>	<i>1</i>
<i>More Mechanical</i>	<i>1</i>		<i>Boater Safety</i>	<i>1</i>
<i>Train</i>	<i>1</i>		<i>Site Mgt</i>	<i>1</i>
<i>Motor Grader</i>	<i>1</i>		<i>Prog Logic Control</i>	<i>1</i>
<i>Public Mgr</i>	<i>1</i>		<i>IMSA Level III</i>	<i>1</i>
<i>STARS</i>	<i>1</i>		<i>Welding</i>	<i>1</i>
<i>Motivation</i>			<i>Certification</i>	
<i>Initiative</i>			<i>Manufacture</i>	<i>1</i>
			<i>training</i>	

Summary

Results from the survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed. However, the responses also indicate some review for a more structured type of training environment when possible.

Computer training was prevalent among districts 4, 5, and 7, with District 7 having a broader range of training offerings to include CPR, flagger instruction, concrete inspection and customer service. Similarly district 7 also included backhoe, procurement, alcohol and environmental/mechanical offerings. Results from District 6 indicated training in supervision, foreman, HR, EPMS, procurement, and HMMS in addition to electrical, braking systems, transmissions, drivelines and safety. District 5 offerings predominately included Step 21, herbicide and computer training. For District 4, training included supervision, foreman, HR, EPMS, procurement and computer classes. Training for District 3 included SWIPES, STARS, HMMS, vehicle repair and foreman training. District 2 included training for herbicide, mechanical, electrical, hydraulics, transmissions and drivelines. District 1 provided access to the following: supervision, HR, OSHA, computer, HRM II, leadership, procurement, report/memo writing, customer service and Microsoft in addition to asphalt, computer, OSHA and traffic control.

Training requested according to district is as follows:

<u>District 1:</u>	Computer Public mgr Step 21 Initiative	Procurement STARS Motivation
<u>District 2:</u>	Any training concerning shop operations	
<u>District 3:</u>	AC repair Engineering Supervision	Heavy equipment repair Vehicle repair
<u>District 4:</u>	Any training Computer EPMS Procurement Environmental Fuel Diesel Equipment Transmissions	HR Supervision Engineering Step 21 Electrical AC Systems Brake Systems
<u>District 5:</u>	Drainage repair Mechanical	Management/financial
<u>District 6:</u>	Computer	Hydraulics

Boater Safety Site Management
Prog Logic Control IMSA III
Welding certification

District 7: Air Brake Computer
 Leadership Stress management
 Motor grader Engineering
 Training from equipment manufacturers

Recommendation: Consistency to the level possible with some flexibility to address specific training needs of each district.

(This page intentionally left blank)



**Workforce Development Program
Task Analysis
Mechanic I**

District	1	40.00%
	2	0.00%
	3	24.00%
	4	8.00%
	5	12.00%
	6	16.00%
	7	0.00%

1 year	8.00%
4 years	12.00%
5 years	12.00%
6 years	8.00%

Position Title Mechanic I – 25

Length of time in current position 6 years 8.00%

Length of time employed with SCDOT 12 years (12.00%), 14 years (12.00%), 4 years (8.00%), 5 years (12.00%), 6 years (12%)

Instructions: Carefully read the job tasks listed in column A. In column B, indicate how often you perform each task by circling the appropriate answer. Next indicate in column C what type of training you have received in order to perform this task. If you have not received training to perform a particular task, circle *None*. Finally, in column D, please circle yes or no depending on whether you feel you need more training to complete the task.

ALL RESULTS EXPRESSED AS PERCENTAGES (%).

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
1.	I perform repairs on state equipment of simple or medium complexity.	N 0.00 R 0.00 S 12.50 O 87.50	None 4.17 OJT 91.67 Class 4.17 Video 0.00 CBT 0.00 Other 0.00	Y 66.67 N 33.33
2.	I maintain a safe work area and ensure all work is done within OSHA compliance.	N 0.00 R 0.00 S 4.00 O 96.00	None 4.35 OJT 73.91 Class 17.39 Video 4.35 CBT 0.00 Other 0.00	Y 50.00 N 50.00
3.	I assist technician performing welding to bridges during constructions and/or repairing vehicle chassis.	N 29.17 R 20.83 S 37.50 O 12.50	None 36.36 OJT 63.64 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 69.57 N 30.43
4.	I am responsible for properly filling out daily timesheets along with job sheet information, charging out daily time to appropriate job tasks.	N 4.00 R 0.00 S 4.00 O 92.00	None 4.00 OJT 88.00 Class 4.00 Video 0.00 CBT 0.00 Other 4.00	Y 16.67 N 83.33

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
5.	I assist technicians by laying out all tools, equipment, and materials necessary for each job.	N 20.83 R 4.17 S 25.00 O 50.00	None 31.82 OJT 68.18 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 17.39 N 82.61
6.	I assist in loading and unloading of supply truck whenever necessary.	N 0.00 R 0.00 S 52.00 O 48.00	None 4.35 OJT 82.61 Class 13.04 Video 0.00 CBT 0.00 Other 0.00	Y 16.67 N 83.33
7.	I operate tire changer, changing tires of various sizes.	N 12.00 R 8.00 S 32.00 O 48.00	None 12.50 OJT 79.17 Class 0.00 Video 4.17 CBT 0.00 Other 4.17	Y 37.50 N 62.50
8.	I perform other related duties as required by the supervisor.	N 0.00 R 0.00 S 4.00 O 96.00	None 9.52 OJT 90.48 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 39.13 N 60.87

List other tasks that you perform (SEE ATTACHMENT, Table 1):

List other training you received while in your current position (SEE ATTACHMENT, Table 2):

List other training you would like to have offered to you (SEE ATTACHMENT, Table 3):

Table 18. Additional Duties

List other tasks that you perform:
<i>All kinds of repair on all equipment Change tires, do pm, replace parts on equipment, weld and do r Change wheel seals & brakes on air system. Some hydraulic sys Check waste oil tank level, pump asphalt Clean shop, pump fuel, pick up parts, oil changes Installing and removing transmission, engines, or whatever i a Involved in purchasing and delivering vehicle parts & tools Keep up with DEHC and OSHA forms each month Maintain traffic signals, navigation lights in inter-coastal waterway None Repairing equipment that is broken (road calls) Service calls when necessary Weld, operate fuel truck, simple hydraulic work Welding, electrical troubleshooting</i>

Table 19. Training Received in Current Position

<i>Instructions: List other training you received while in your current position</i>				
<i>Training Type</i>	<i>Frequency</i>		<i>Training Type</i>	<i>Frequency</i>
<i>Hydraulics</i>	<i>6</i>		<i>Air conditioning</i>	<i>3</i>
<i>Air brakes</i>	<i>6</i>		<i>Bucket truck</i>	<i>1</i>
<i>Electrical</i>	<i>3</i>		<i>Forklift</i>	<i>6</i>
<i>Air systems</i>	<i>1</i>		<i>Loader</i>	<i>2</i>
<i>First Aid</i>	<i>3</i>		<i>Welding</i>	<i>2</i>
<i>Lock out/tag out</i>	<i>1</i>		<i>CPR</i>	<i>1</i>
<i>OJT</i>	<i>2</i>		<i>OBD</i>	<i>2</i>

Table 20. Training Requests

<i>Instructions: List other training you would like to have offered to you.</i>				
<i>Training Type</i>	<i># requests</i>		<i>Training Type</i>	<i># equests</i>
<i>Adjust valves and injectors</i>	<i>1</i>		<i>Transmissions</i>	<i>3</i>
<i>ASE Automotive</i>	<i>2</i>		<i>Air conditioning</i>	<i>4</i>
<i>Diesel tune up</i>	<i>1</i>		<i>Vehicle computers</i>	<i>2</i>
<i>Diesel power strokes</i>	<i>1</i>		<i>Engine</i>	<i>1</i>
<i>Electrical</i>	<i>5</i>		<i>Air brakes</i>	<i>2</i>
<i>Welding</i>	<i>4</i>		<i>Everything</i>	<i>1</i>
<i>Mechanic updates</i>	<i>1</i>		<i>Hydraulics</i>	<i>2</i>
<i>None</i>	<i>12</i>		<i>Equipment operation</i>	<i>1</i>

Summary

Responses regarding additional duties are provided as Table 2. No responses were obtained from Districts 2 and 7. Three of 8 questions indicate that additional training is necessary. Results from the remainder of survey responses indicate that the majority on training occurs through on the job opportunities and that a primary response was that no additional training was needed.

Training requested according to district is as follows:

<u>District 1:</u>	Electrical Air Conditioning Welding Mechanic updates Any equipment training	Automatic transmission Vehicle Computers ASE Certifications Basic/Advanced Hydraulics
<u>District 3:</u>	Diesel tune-up Engine training Transmission Air conditioning	Welding Valve and injector adjustment Air brakes ASE Certifications
<u>District 4:</u>	None	
<u>District 5:</u>	Hydraulics Electrical	Engines Rear ends
<u>District 6:</u>	Welding	



**Workforce Development Program
Task Analysis
Mechanic III**



District	1	7.58%
	2	15.91%
	3	11.36%
	4	13.64%
	5	22.73%
	6	15.15%
	7	13.64%

1 year	7.58%
10 years	7.58%
2 years	9.85%
6 years	8.33%
8 years	7.58%

Position Title	<u>Mechanic III - 132</u>	Length of time in current position	<u>2 years (8.33%), 15 years (6.82%), 10 years (6.06%), 7 years (6.06%), 14 years (5.30%)</u>
Length of time employed with SCDOT	<u>6 years (5.30%)</u>		

Instructions: Carefully read the job tasks listed in column A. In column B, indicate how often you perform each task by circling the appropriate answer. Next indicate in column C what type of training you have received in order to perform this task. If you have not received training to perform a particular task, circle *None*. Finally, in column D, please circle yes or no depending on whether you feel you need more training to complete the task.

ALL RESULTS EXPRESSED AS PERCENTAGES (%).

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> OJT = On the Job Training CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
9.	I repair and maintain all vehicles and equipment such as engine overhaul, transmission repairs and overhaul, and clutch replacements to both gas and diesel trucks.	N 3.79 R 16.67 S 47.43 O 31.82	None 9.23 OJT 67.69 Class 11.54 Video 0.00 CBT 0.77 Other 10.77	Y 70.00 N 30.00
10.	I perform wiring repairs, brake jobs, and tune ups when required on vehicles.	N 1.52 R 0.00 S 14.39 O 84.09	None 6.15 OJT 69.23 Class 15.38 Video 0.00 CBT 0.00 Other 9.23	Y 94.39 N 35.61
11.	I perform maintenance checks and repairs on hydraulics and air systems on vehicles as needed.	N 0.00 R 3.82 S 22.90 O 73.28	None 3.85 OJT 72.31 Class 19.23 Video 0.00 CBT 0.77 Other 3.85	Y 80.00 N 20.00
12.	I act as crew leader in absence of supervisor.	N 34.85 R 23.48 S 25.76 O 15.91	None 36.97 OJT 51.26 Class 3.36 Video 0.00 CBT 1.68 Other 6.72	Y 58.68 N 40.50

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
13.	I perform electrical and acetylene welding to make repairs or modify parts on trucks and equipment.	N 3.08 R 11.54 S 30.00 O 54.62	None 8.59 OJT 64.84 Class 15.63 Video 0.00 CBT 1.56 Other 9.38	Y 68.99 N 31.01
14.	I perform plumbing and repairs on maintenance buildings and rest areas.	N 31.54 R 27.69 S 38.46 O 2.31	None 45.45 OJT 47.11 Class 2.48 Video 0.00 CBT 0.00 Other 4.96	Y 35.77 N 64.23
15.	I diagnose and make repairs to electrical systems and hydraulic systems to ensure proper and safe operation of dump trucks, pick-up trucks, cars, and equipment.	N 0.00 R 2.31 S 19.23 O 78.46	None 4.62 OJT 73.08 Class 18.46 Video 0.00 CBT 0.00 Other 3.85	Y 76.92 N 23.08
16.	I assist in auto/truck body repairs, when necessary.	N 19.85 R 28.24 S 38.93 O 12.98	None 28.80 OJT 57.60 Class 4.80 Video 0.80 CBT 0.00 Other 8.00	Y 48.03 N 51.18

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> OJT = On the Job Training CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
17.	I rebuild and replace brake systems.	N 0.00 R 4.62 S 40.77 O 54.62	None 2.34 OJT 65.63 Class 21.88 Video 0.78 CBT 0.78 Other 8.59	Y 70.54 N 29.46
18.	I make carburetor adjustments and perform engine tune-up to ensure proper and safe operation of equipment and vehicles.	N 1.54 R 26.15 S 47.69 O 24.62	None 12.31 OJT 66.15 Class 11.51 Video 0.77 CBT 0.77 Other 8.46	Y 62.31 N 37.69
19.	I schedule and perform regular safety and preventive maintenance inspections and repairs.	N 7.58 R 4.55 S 15.91 O 71.97	None 13.85 OJT 73.85 Class 6.92 Video 0.77 CBT 0.00 Other 4.62	Y 55.12 N 44.88
20.	I service and change filters on cars trucks, and equipment.	N 0.00 R 3.03 S 12.12 O 84.85	None 11.36 OJT 73.48 Class 6.82 Video 0.76 CBT 0.00 Other 7.58	Y 39.52 N 60.48

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
21.	I answer service calls in the field to tractor mowers, dump trucks, patrol cars, and equipment.	N 1.52 R 3.79 S 30.30 O 64.39	None 8.33 OJT 79.55 Class 6.06 Video 0.00 CBT 0.76 Other 5.30	Y 46.15 N 53.85
22.	I clean tools, sweep floors, clean-up oils spots and keep shop in an orderly manner.+	N 0.00 R 0.76 S 14.50 O 84.73	None 17.97 OJT 75.00 Class .078 Video 0.78 CBT 0.00 Other 5.47	Y 21.43 N 78.57
23.	I act as supervisor in the absence of Trades Supervisor.	N 40.63 R 21.88 S 25.00 O 12.50	None 40.18 OJT 50.89 Class 2.68 Video 0.89 CBT 0.89 Other 4.46	Y 51.33 N 48.67
24.	I am responsible for diagnosis, repairs and/or replacement of components to automotive, heavy, and light duty equipment.	N 2.27 R 3.79 S 23.48 O 70.45	None 6.98 OJT 72.87 Class 13.95 Video 0.00 CBT 0.00 Other 6.20	Y 70.08 N 29.92

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> OJT = On the Job Training CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
25.	I test, overhaul and/or rebuild engines to include replacing rods, cranks, cams, bearing, bushing, rings, etc, and other parts association with rebuilding gasoline and diesel powered equipment.	N 25.19 R 38.17 S 32.06 O 4.58	None 25.38 OJT 52.31 Class 11.54 Video 0.00 CBT 0.00 Other 10.77	Y 65.65 N 33.59
26.	I repair, rebuild, and/or overhaul fuel injections pump for both diesel and gasoline engines, hydraulic pumps, or lifts.	N 40.91 R 25.76 S 28.79 O 4.55	None 37.30 OJT 45.24 Class 10.32 Video 0.79 CBT 0.00 Other 6.35	Y 72.80 N 27.20
27.	I rebuild rear-end differential assemblies when required.	N 25.76 R 40.91 S 26.52 O 6.82	None 28.80 OJT 54.40 Class 5.60 Video 0.00 CBT 0.00 Other 11.20	Y 66.93 N 33.07
28.	I perform skilled mechanical repairs and maintenance to motors, transmissions, brakes, cooling and electrical systems on automotive and heavy equipment.	N 0.76 R 3.82 S 32.82 O 62.60	None 6.15 OJT 70.00 Class 14.62 Video 0.77 CBT 0.77 Other 7.69	Y 77.69 N 22.31

List other tasks that you perform (SEE ATTACHMENT, Table 1):

List other training you received while in your current position (SEE ATTACHMENT, Table 2):

List other training you would like to have offered to you (SEE ATTACHMENT, Table 3):

This page intentionally left blank.

Table 21. Additional Duties

<i>Instructions: List other tasks that you perform</i>
<p> <i>Ac systems, hydraulics</i> <i>Admin, take calls for roadwork, potholes, tree removal, driveways, et</i> <i>Administrative, make up hydraulic hoses, perform ac work</i> <i>Any kind of repair on any equipment that SCDOT has</i> <i>Any repair job o state dot equipment or facilities</i> <i>Anything my supervisor asks me to do</i> <i>Anything supervisor needs done</i> <i>Anything that I am told to do</i> <i>Anything the boss says</i> <i>Assist in diagnostic and repairs, assist junior mechanics in training</i> <i>Basic hydraulics, air brakes, Allison transmission, electronics</i> <i>Bridge welder, carpenter</i> <i>Bucket truck, boom truck, forklift operator, replace light on signs,</i> <i>Certified welder to build and repair bridges</i> <i>Change & repair tires, spot paint equipment, operate wrecker for towing</i> <i>Change bulbs, clean shop yard, change tires, repair, spreaders, plows</i> <i>Change tires</i> <i>Clean & paint shop, unload supply trucks, stack tires, repair air line</i> <i>Covered in questions</i> <i>Diagnostic and repair ac, welding</i> <i>Dispose of hazardous materials, emergency equipment repair</i> <i>Dispose of hazardous waste, travel to other counties for equipment repair</i> <i>Do all paperwork in shop</i> <i>Fabrication welding</i> <i>Help in stock room when needed, unload truck</i> <i>Help stock parts, assist in receiving parts, repair chain and chainsaw</i> <i>Load and unload vendor trucks, unload supply trucks</i> <i>Maintain alarm sensors, order and issue maintenance supplies</i> <i>None</i> <i>Operate forklift to unload trucks when needed</i> <i>Operate forklift, change tires</i> <i>Paint floor</i> <i>Paint floors & building, hurricane cleanup, backhoe head judge</i> <i>Paint floors & walls, cut grass, seal parking lot, anything asked to do</i> <i>Painting, sanding</i> <i>Perform electrical wiring</i> <i>Pick up parts, road calls</i> <i>Picking up parts and changing tires</i> <i>Pm brake job, electrical system, air brake system, trans service, remove tire</i> <i>Print worksheet for employees in shop</i> <i>Rebuild engines</i> <i>Repair chain saws & weed eater & mowers</i> <i>Repair vehicles, ac & heating systems, repair traffic signals</i> </p>

Safety and CDL training, help with inspection and environment
Small engine repairs, fabricate parts on lathe, band saw & drill press
Small engine repairs, fabricate parts with welder, band saw, drill press
Sometimes remove storm debris
Stop light bulbs, gas house, road maintenance, flagging, clean shop yard, mowing
Tire repair
Troubleshoot & maintain of gas & diesel fuel dispensers, gas computer, fu
Unload trucks, order parts, repair snow plows & spreaders
Unload vendor trucks, order parts, unload supply trucks operate forkli
Weld and fabricate parts
Welding and fabricating
Welding, clutch repair, brakes hydraulics, electrical
Welding, electrical wiring, brakes
Welding, fabricating, and cutting on AMZ, Slope mowers, tractors, load
Welding, pump stations, clean grounds in shop yard, help supplyist
Welding, rebuild hydraulic, clean up shop
Whatever is needed
Whatever needed
Wiring, trouble shooting, fabricating
Work at ferry when in need
Work on bridges
Welding, rebuild hydraulic, clean up shop ,
Whatever is needed
Whatever needed
Wiring, trouble shooting, fabricating
Work at ferry when in need
Work on bridges
Work on draw and turn bridges, work on bridges and buildings, other rep

Table 22. Training Received in Current Position

<u>Instructions: List other training you received while in your current position</u>				
<u>Training Type</u>	<i>Frequency</i>		<i>Training Type</i>	<i>Frequency</i>
A/c	6		Hydraulics	26
Torch safety	1		Hydraulic brakes	1
Brakes	6		Steering & suspension	2
Anti-lock brakes	1		Defensive driving	10
Air brakes	18		Commercial tires	6
CPR	12		Backhoe	11
First aid	14		Transmissions	7
Forklift	10		Fuel injection	14
Welding	10		Electrical systems	10
Computer	4		Flagging	7
Backhoe	1		Tailgate spreader	3
Gasket	2		Engine service & repair	6
<i>Boom mower</i>	1		Work zone safety	1
Bucket truck	1		Blood-borne pathogens	1
Crane	1		DRUG/alcohol	1
Slope mower	2		Fire extinguisher	1
Supervisor	1		Lock out/Tag out	1
Shop foreman	1		Step 21	1
None	58		Equipment updates	1

Table 23. Training Requests

<i>Instructions: List other training you would like to have offered to you.</i>				
<i>Training Type</i>	<i># requests</i>		<i>Training Type</i>	<i># equests</i>
<i>Abs brakes</i>	<i>17</i>		<i>Suspension & steering</i>	<i>2</i>
<i>Hydraulic brakes</i>	<i>2</i>		<i>Fuel injection</i>	<i>4</i>
<i>Anti-lock brakes</i>	<i>2</i>		<i>Leadership</i>	<i>5</i>
<i>Electrical</i>	<i>10</i>		<i>Diagnostics</i>	<i>10</i>
<i>A/C</i>	<i>6</i>		<i>Equip updates</i>	<i>2</i>
<i>Engine tune up</i>	<i>2</i>		<i>Holland tractors</i>	<i>1</i>
<i>Diesel engine</i>	<i>2</i>		<i>Fabrication</i>	<i>2</i>
<i>Hydraulics</i>	<i>18</i>		Torch cutting	<i>1</i>
<i>Welding</i>	<i>27</i>		<i>Wrecker operations</i>	<i>1</i>
<i>HMMS</i>	<i>1</i>		<i>Fuel system</i>	<i>1</i>
<i>Computer</i>	<i>12</i>		<i>Transmissions</i>	<i>6</i>
<i>Computerized vehicle</i>	<i>6</i>		<i>Supervisory</i>	<i>2</i>

Summary

Responses regarding additional duties are provided as Table 2. Results from the survey responses indicate that the majority on training occurs through on the job opportunities. Unlike other survey results many of the responses indicated the need for additional training. Those individual responses are included in the chart. The responses also indicate some review for a more structured type of training environment when possible.

Training requested according to district is as follows:

<u>District 1:</u>	Computer Welding Diagnostic Machine Hydraulics	ABS Brake Systems, Anti-lock brakes Leadership development Repair of computerized equipment Engine
<u>District 2:</u>	Welding Computer Any Hydraulic Fuel Systems ABS brakes	Vehicle specific and system specific training Computer controlled emissions Engine performance Welding Airbag systems Fuel injection
<u>District 3:</u>	Any pertaining to job Hydraulics Engine controls Transmissions HMMS Electrical automotive Differential	Welding A/C Systems Brakes Supervisor Computer Suspension & Steering
<u>District 4:</u>	Welding Hydraulic Computer Fabrication Vehicle computers	Computer diagnosis Transmissions Air brakes Electrical A/C Systems
<u>District 5:</u>	Hydraulic systems Welding Anti-lock brakes Computer Vehicle computer Supervisor	Electrical A/C Advance automotive repairs Engine tune up Air brakes Transmission and Engine overhaul
<u>District 6:</u>	Electrical Computer Welding Leadership	Air brakes Diesel and gas engine Transmissions Hydraulic

	Equipment updates	Fabrication
<u>District 7:</u>	Holland tractors Electrical wiring Diagnostics Fuel injection Wrecker operations Welding	Any available Hydraulics Air brakes updates Transmission overhaul Computer related tractors

Recommendation: Consistency to the level possible with some flexibility to address specific training needs of each district.



**Workforce Development Program
Task Analysis
Equipment Operator II**



District	1	0.00%
	2	0.00%
	3	0.00%
	4	0.00%
	5	37.93%
	6	62.07%
	7	0.00%

1 year	6.90%
3 years	6.90%
4 years	20.69%
5 years	6.90%
6 years	6.90%

Position Title Equipment Operator II - 29

Length of time in current position

6 years 6.90%

Length of time employed with SCDOT 3 years (6.90%), 4 years (17.24%), 6 years (6.90%), 8 years (6.90%)

Instructions: Carefully read the job tasks listed in column A. In column B, indicate how often you perform each task by circling the appropriate answer. Next indicate in column C what type of training you have received in order to perform this task. If you have not received training to perform a particular task, circle *None*. Finally, in column D, please circle yes or no depending on whether you feel you need more training to complete the task.

ALL RESULTS EXPRESSED AS PERCENTAGES (%).

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
29.	I maintain a constant watch for signals from boats and ships.	N 0.00 R 0.00 S 3.57 O 96.43	None 0.00 OJT 92.59 Class 0.00 Video 0.00 CBT 0.00 Other 7.41	Y 0.00 N 100
30.	I operate bridge for passage of boats and ships.	N 0.00 R 0.00 S 6.90 O 93.10	None 0.00 OJT 92.59 Class 0.00 Video 0.00 CBT 0.00 Other 7.41	Y 3.70 N 96.30
31.	I record name, size, direction, number of vessels, and time of passing and weather conditions for all passing boats.	N 0.00 R 0000 S 13.79 O 86.21	None 0.00 OJT 96.15 Class 0.00 Video 0.00 CBT 0.00 Other 3.85	Y 3.70 N 96.30

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
32.	I maintain radio contact with vessels and U.S. Coast Guard.	N 0.00 R 0.00 S 10.34 O 89.66	None 0.00 OJT 96.43 Class 0.00 Video 0.00 CBT 0.00 Other 3.57	Y 0.00 N 100.00
33.	I check navigation and warning lights daily and replace bulbs and reset circuit breakers.	N 0.00 R 6.90 S 17.24 O 75.86	None 0.00 OJT 96.30 Class 0.00 Video 0.00 CBT 0.00 Other 3.70	Y 0.00 N 100.00
34.	I keep bridge roadway clean and remove debris from pilings.	N 0.00 R 3.45 S 24.14 O 72.41	None 0.00 OJT 96.15 Class 0.00 Video 0.00 CBT 0.00 Other 3.85	Y 0.00 N 100.00

List other tasks that you perform (SEE ATTACHMENT, Table 1):

List other training you received while in your current position (SEE ATTACHMENT, Table 2):

List other training you would like to have offered to you (SEE ATTACHMENT, Table 3):

Table 24. Additional Duties

<p><i>Instructions: List other tasks that you perform</i></p> <ul style="list-style-type: none">- <i>Answer Phones and deal with the public, complete paperwork</i>- <i>Answer question from the public on hazards of bridge during emergency</i>- <i>Answer the phone and deal with the public</i>- <i>Assist Admin assistant in day to day operation of the office</i>- <i>Changing navigation and fender light bulbs, cleaning of bridge house</i>- <i>Check the lights, keeping adequate time</i>- <i>Cleaning of bridge house, keeping records</i>- <i>Drive dump truck, passenger van, bus, work with crews that do asphalt</i>- <i>Keep house clean, keep daily reports, deliver supplies to and from bridge</i>- <i>Keep a constant record of emergencies, accidents, and incidents on bridge</i>- <i>Keep bridge house clean</i>- <i>Make sure road traffic is maintained safely while bridge is opened.</i>- <i>None</i>- <i>Replace lights check barrier, make sure gates are working</i> <p><i>Sign crew</i></p>
--

Table 25. Training Received in Current Position

<u>Instructions: List other training you received while in your current position</u>				
<u>Training Type</u>	<i>Frequency</i>		<i>Training Type</i>	<i>Frequency</i>
<i>Flagger</i>	<i>1</i>		<i>Defensive Driving</i>	<i>1</i>
<i>Public Relations</i>	<i>1</i>		Bridge Operation	<i>3</i>
<i>None</i>	<i>23</i>		<i>Occasional workshops</i>	<i>2</i>

Table 26. Training Requests

<i>Instructions: List other training you would like to have offered to you.</i>				
<i>Training Type</i>	<i># requests</i>		<i>Training Type</i>	<i># equests</i>
<i>Any pertaining to position</i>	<i>1</i>		<i>Flagging</i>	<i>1</i>
<i>CDL</i>			<i>First-aid</i>	<i>2</i>
<i>Equipment Operation</i>	<i>1</i>		<i>Bridge operation</i>	<i>1</i>
<i>Water safety</i>	<i>1</i>		None	<i>21</i>
	<i>1</i>		<i>Traffic control</i>	<i>1</i>

Summary

All responses were obtained from employees in Districts 5 and 6. Results from the survey responses indicate that the majority of training occurs through on the job opportunities and that a primary response was that no additional training was needed.

Training requested according to district is as follows:

<u>District 5:</u>	Any	Equipment Operation
<u>District 6:</u>	Flagging	First Aid
	Office work	Water safety
	Traffic control/signaling	Bridge operation
	Computer	CDL

Recommendation: Consistency to the level possible with some flexibility to address specific training needs of each district.



**Workforce Development Program
Task Analysis
Equipment Operator III**



District 1 0.00%
2 0.00%
3 0.00%
4 0.00%
5 100.00 %
6 0.00%
7 0.00%

Position Title	<u>Equipment Operator III - 2</u>	Length of time in current position	<u>20 years 50.00%</u>
			<u>3 months 50.00%</u>
Length of time employed with SCDOT	<u>2 years 50.00%</u>		
	<u>20 years 50.00%</u>		

Instructions: Carefully read the job tasks listed in column A. In column B, indicate how often you perform each task by circling the appropriate answer. Next indicate in column C what type of training you have received in order to perform this task. If you have not received training to perform a particular task, circle *None*. Finally, in column D, please circle yes or no depending on whether you feel you need more training to complete the task

ALL RESULTS EXPRESSED AS PERCENTAGES (%).

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> OJT = On the Job Training CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
35.	I load and unload passengers and vehicles on the self-propelled south Island Ferry that cross the intra-coastal waterway.	N 0.00 R 0.00 S 50.00 O 50.00	None 0.00 OJT 100.00 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 0.00 N 100.00
36.	I secure vehicles on ferry, making sure that all chains, lights , signs and other safety devices are used and are in proper working condition.	N 0.00 R 0.00 S 50.00 O 50.00	None 0.00 OJT 100.00 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 0.00 N 100.00
37.	I assist with daily maintenance on the ferry as needed.	N 0.00 R 0.00 S 50.00 O 50.00	None 0.00 OJT 100.00 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 0.00 N 100.00
38.	I act as a look out for ferry operator while ferry is in operation and when working 3 rd shift at ferry	N 50.00 R 50.00 S 0.00 O 0.00	None 0.00 OJT 100.00 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 0.00 N 100.00

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
39.	I perform other duties as assigned.	N 0.00 R 0.00 S 0.00 O 100.00	None 0.00 OJT 100.00 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 0.00 N 100.00

List other tasks that you perform (SEE ATTACHMENT, Table 1):

List other training you received while in your current position (SEE ATTACHMENT, Table 2):

List other training you would like to have offered to you (SEE ATTACHMENT, Table 3):

Table 27. Additional Duties

<i>Instructions: List other tasks that you perform</i>
<i>None</i> <i>Pump out the ferry when needed</i> <i>Weed eat the required areas</i>

Table 28. Training Received in Current Position

<u>Instructions: List other training you received while in your current position</u>				
<u>Training Type</u>	<i>Frequency</i>		<i>Training Type</i>	<i>Frequency</i>
<i>None</i>	<i>1</i>		<i>Keeping log book</i>	<i>1</i>
<i>Operation of South Island Ferry</i>	<i>1</i>			

Table 29. Training Requests

<i>Instructions: List other training you would like to have offered to you.</i>				
<i>Training Type</i>	<i># requests</i>		<i>Training Type</i>	<i># requests</i>
<i>Flagging traffic</i>	<i>1</i>		<i>CDL</i>	<i>1</i>
<i>Directing traffic</i>	<i>1</i>		<i>Computer</i>	<i>1</i>

Summary

All persons occupying the Equipment Operator III classification are located in District #5.

Results from the survey responses indicate that the majority of training occurs through on the job opportunities and that a primary response was that no additional training was needed.

Training requested according to district is as follows:

District 5: CDL
 Flagging and directing traffic
 Computer



**Workforce Development Program
Task Analysis
SHEP**



District	1	8.00%
	2	0.00%
	3	28.00%
	4	20.00%
	5	30.00%
	6	14.00%
	7	0.00%

	Incident Responders - 40	1 year	20.00%
	Assistant District Traffic Engineer - 1	2 years	26.00%
Position Title	<u>Engineering GeoTech III - 8</u>	3 years	12.00%
		5 years	10.00%
		<hr/>	
Length of time employed with SCDOT	2 years (20.00%), 5 years (14.00%), 6 years (10.00%), 3 years (10.00%), 4 years (8.00%), 1 year (8.00%), 8 years (6.00%)		

Instructions: Carefully read the job tasks listed in column A. In column B, indicate how often you perform each task by circling the appropriate answer. Next indicate in column C what type of training you have received in order to perform this task. If you have not received training to perform a particular task, circle *None*. Finally, in column D, please circle yes or no depending on whether you feel you need more training to complete the task.

ALL RESULTS EXPRESSED AS PERCENTAGES (%).

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> <i>Y = Yes</i> <i>N = No</i>
40.	I supervise subordinates for the PM shift, performing the daily activities of the SHEP program.	N 66.67 R 6.25 S 8.33 O 18.75	None 53.85 OJT 35.90 Class 2.56 Video 0.00 CBT 0.00 Other 7.69	Y 32.50 N 67.50
41.	I supervise subordinates for the AM shift, performing the daily activities of the SHEP program	N 71.43 R 6.12 S 4.08 O 18.37	None 55.26 OJT 36.84 Class 2.63 Video 0.00 CBT 0.00 Other 5.26	Y 32.50 N 67.50
42.	I assess manpower availability and assign incident response activities according to the availability.	N 63.27 R 8.16 S 6.12 O 22.45	None 57.14 OJT 37.14 Class 0.00 Video 0.00 CBT 0.00 Other 5.71	Y 22.50 N 77.50
43.	I travel assigned routes, assisting emergency response agencies during incidents, clearing travel lanes of disabled vehicles and debris, and aiding stranded motorists.	N 6.00 R 2.00 S 10.00 O 82.00	None 0.00 OJT 93.62 Class 2.13 Video 0.00 CBT 0.00 Other 4.26	Y 13.04 N 89.96

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> OJT = On the Job Training CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
44.	I prepare and implement traffic control plans for use during incident response activities.	N 32.65 R 4.08 S 28.57 O 34.69	None 20.93 OJT 67.44 Class 6.98 Video 0.00 CBT 0.00 Other 4.65	Y 31.11 N 68.89
45.	I monitor CCTV camera for the purpose of detecting incidents.	N 53.06 R 8.16 S 18.37 O 20.41	None 47.50 OJT 52.50 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 38.64 N 61.36
46.	I display messages to the motoring public via variable/changeable message signs, highway advisory radios, and dynamic message boards.	N 12.24 R 18.37 S 34.69 O 34.69	None 10.87 OJT 89.13 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 48.94 N 51.06
47.	I notify MAP responders or appropriate response agencies when necessary on incident scene details.	N 31.91 R 14.89 S 29.79 O 23.40	None 23.81 OJT 71.43 Class 2.38 Video 0.00 CBT 0.00 Other 2.38	Y 16.67 N 83.33

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
48.	I assist in the development of traffic diversion routes by reviewing route operations and geometries including traffic signal operations, lane configurations, access points, etc.	N 70.00 R 12.00 S 14.00 O 4.00	None 68.57 OJT 28.57 Class 0.00 Video 0.00 CBT 0.00 Other 2.86	Y 33.33 N 66.67
49.	I oversee preparation of diversion route plans to be used on are freeway systems during incident response activities.	N 80.00 R 12.00 S 6.00 O 2.00	None 77.14 OJT 20.00 Class 0.00 Video 0.00 CBT 0.00 Other 2.86	Y 37.84 N 62.16
50.	I prepare technical reports, summaries and presentation materials on incidents and their impact on traffic conditions.	N 82.00 R 8.00 S 0.00 O 10.00	None 75.68 OJT 18.92 Class 0.00 Video 0.00 CBT 2.70 Other 2.70	Y 38.89 N 61.11
51.	I serve as one of SCDOT's technical representatives at incident debriefings, meetings and public hearings.	N 92.00 R 2.00 S 4.00 O 2.00	None 85.29 OJT 8.82 Class 0.00 Video 0.00 CBT 0.00 Other 5.88	Y 32.35 N 67.65

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
52.	I collect traffic data and conduct field research studies on traffic incidents, traffic operations and roadway geometric.	N 92.00 R 2.00 S 2.00 O 4.00	None 88.24 OJT 8.82 Class 0.00 Video 0.00 CBT 0.00 Other 2.94	Y 29.41 N 70.59
53.	I analyze traffic and incident data using hand calculation method and statistical analysis.	N 94.00 R 2.00 S 2.00 O 2.00	None 88.24 OJT 8.82 Class 0.00 Video 0.00 CBT 0.00 Other 2.94	Y 29.41 N 70.59
54.	I research technical and financial information related to incident management supply and equipment needs.	N 94.00 R 2.00 S 2.00 O 2.00	None 91.18 OJT 5.88 Class 2.94 Video 0.00 CBT 0.00 Other 0.00	Y 32.35 N 67.65
55.	I assist in the development of equipment and supply specifications and cost estimates.	N 94.00 R 2.00 S 4.00 O 0.00	None 90.91 OJT 6.06 Class 0.00 Video 0.00 CBT 3.03 Other 0.00	Y 29.41 N 70.59

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
56.	I document “SHEP” response activities at each incident scene.	N 6.38 R 4.26 S 14.89 O 74.47	None 7.14 OJT 88.10 Class 2.38 Video 0.00 CBT 0.00 Other 2.38	Y 11.63 N 88.37
57.	I prepare written reports of “SHEP” activities for major incident scenes and inputs all response activities into “SHEP” database.	N 20.00 R 6.00 S 24.00 O 50.00	None 13.95 OJT 83.72 Class 0.00 Video 0.00 CBT 0.00 Other 2.33	Y 25.00 N 75.00
58.	I obtain necessary supplies and equipment for the “SHEP” program.	N 61.22 R 8.16 S 14.26 O 16.33	None 56.76 OJT 35.14 Class 0.00 Video 0.00 CBT 0.00 Other 8.11	Y 13.89 N 86.11
59.	I perform other duties as needed.	N 4.08 R 4.08 S 36.73 O 55.10	None 8.51 OJT 89.36 Class 0.00 Video 0.00 CBT 0.00 Other 2.13	Y 8.70 N 91.30

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
60.	I run errands to retrieve supplies and equipment needed for the SHEP program	N 18.37 R 12.24 S 44.90 O 24.49	None 33.33 OJT 64.29 Class 0.00 Video 0.00 CBT 0.00 Other 2.38	Y 7.14 N 92.86
61.	I perform minor vehicle maintenance.	N 9.09 R 4.55 S 50.00 O 36.36	None 19.51 OJT 70.73 Class 2.44 Video 0.00 CBT 0.00 Other 7.32	Y 10.81 N 89.19
62.	I dispatch SHEP responders and other appropriate response agencies to incident scenes and notify them of incident scene details.	N 32.00 R 10.00 S 30.00 O 28.00	None 27.91 OJT 69.77 Class 0.00 Video 0.00 CBT 0.00 Other 2.33	Y 16.67 N 83.33
63.	I assist in the maintenance of all SHEP and ITS equipment.	N 28.00 R 12.00 S 22.00 O 38.00	None 26.19 OJT 73.81 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 40.48 N 59.52

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
64.	I evaluate traffic control to assure compliance with accepted SCDOT policies and procedures.	N 60.42 R 8.33 S 18.75 O 12.50	None 50.00 OJT 41.67 Class 2.78 Video 0.00 CBT 0.00 Other 5.56	Y 43.24 N 56.76
65.	I read and evaluate real-time traffic data on state of the art computerized equipment to detect and verify incidents and traffic congestions.	N 72.00 R 8.00 S 4.00 O 16.00	None 60.53 OJT 39.47 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 33.33 N 66.67
66.	I assess congestion levels, incident conditions, and I respond accordingly.	N 22.00 R 8.00 S 32.00 O 38.00	None 20.39 OJT 79.07 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 25.58 N 74.42
67.	I coordinate the resolutions of incidents with the Incident Management Engineer, ITS Supervisor and SHEP Supervisor.	N 48.98 R 6.12 S 20.41 O 24.49	None 38.46 OJT 61.54 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 28.21 N 71.79

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
68.	I monitor and transmit radio communications between the TMC, and the State Highway Emergency program (SHEP).	N 16.00 R 4.00 S 10.00 O 70.00	None 14.58 OJT 83.33 Class 0.00 Video 0.00 CBT 0.00 Other 2.08	Y 17.02 N 82.98
69.	I perform field maintenance on the CCTC System, Variable Message Signs (VMS), and Highway Advisory Radios (HAR).	N 52.00 R 10.00 S 20.00 O 18.00	None 45.24 OJT 54.76 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 33.33 N 66.67
70.	I complete various logs and reports pertaining to traffic conditions, incident management, and equipment deployment.	N 94.00 R 2.00 S 4.00 O 0.00	None 90.91 OJT 6.06 Class 0.00 Video 0.00 CBT 3.03 Other 0.00	Y 29.41 N 70.59
71.	I operate copy machine, electronic file system, and facsimile system	N 6.38 R 4.26 S 14.89 O 74.47	None 7.14 OJT 88.10 Class 2.38 Video 0.00 CBT 0.00 Other 2.38	Y 11.63 N 88.37

	A	B	C	D
	<i>Task List</i>	How often do you perform this task? N = Never R = Rarely S = Sometimes O = Often	What type of training did you received to perform this task? OJT = On the Job Training CBT = Computer-based training	Do you feel you need more training to do this task? Y = Yes N = No
72.	Act as SHEP responder when directed by the Incident Management Engineer or his designee.	N 20.00 R 6.00 S 24.00 O 50.00	None 13.95 OJT 83.72 Class 0.00 Video 0.00 CBT 0.00 Other 2.33	Y 25.00 N 75.00
73.	I prepare monthly work schedules for the SHEP responders and ITS monitors	N 61.22 R 8.16 S 14.29 O 16.33	None 56.76 OJT 35.14 Class 0.00 Video 0.00 CBT 0.00 Other 8.11	Y 13.89 N 86.11
74.	I coordinate maintenance and inspection of vehicles, changeable message boards and highway advisory radios.	N 4.08 R 4.08 S 36.73 O 55.10	None 8.51 OJT 89.36 Class 0.00 Video 0.00 CBT 0.00 Other 2.13	Y 8.70 N 91.30
75.	I schedule training for assigned personnel	N 18.37 R 12.24 S 44.90 O 24.49	None 33.33 OJT 64.29 Class 0.00 Video 0.00 CBT 0.00 Other 2.38	Y 7.14 N 92.86

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> OJT = On the Job Training CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
76.	I conduct training and evaluation on specialized equipment, i.e., VMB and HAR, etc.	N 9.09 R 4.55 S 50.00 O 36.36	None 19.51 OJT 70.73 Class 2.44 Video 0.00 CBT 0.00 Other 7.32	Y 10.81 N 89.19
77.	I perform scheduled maintenance on VMS and HAR as assigned	N 32.00 R 10.00 S 30.00 O 28.00	None 27.91 OJT 69.77 Class 0.00 Video 0.00 CBT 0.00 Other 2.33	Y 16.67 N 83.33
78.	I monitor and operate camera, radar, and fog detection and warning equipment.	N 28.00 R 12.00 S 22.00 O 38.00	None 26.19 OJT 73.81 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 40.48 N 59.52
79.	I record TCC activities, operations, and malfunctions.	N 60.42 R 8.33 S 18.75 O 12.50	None 50.00 OJT 41.67 Class 2.78 Video 0.00 CBT 0.00 Other 5.56	Y 43.24 N 56.76

	A	B	C	D
	<i>Task List</i>	<i>How often do you perform this task?</i> N = Never R = Rarely S = Sometimes O = Often	<i>What type of training did you received to perform this task?</i> <i>OJT = On the Job Training</i> CBT = Computer-based training	<i>Do you feel you need more training to do this task?</i> Y = Yes N = No
80.	I operate, inspect, and maintain SMC, HAR, and equipment assigned to SHEP vehicles.	N 72.00 R 8.00 S 4.00 O 16.00	None 60.53 OJT 39.47 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 33.33 N 66.67
81.	I assist in the design of Intelligent Transportation Systems (ITS)	N 22.00 R 8.00 S 32.00 O 38.00	None 20.93 OJT 79.07 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 25.58 N 74.42
82.	I assist in the maintenance of all ITS equipment.	N 48.98 R 6.12 S 20.41 O 24.49	None 38.46 OJT 61.54 Class 0.00 Video 0.00 CBT 0.00 Other 0.00	Y 28.21 N 71.79

List other tasks that you perform (SEE ATTACHMENT, Table 1):

List other training you received while in your current position (SEE ATTACHMENT, Table 2):

List other training you would like to have offered to you (SEE ATTACHMENT, Table 3):

This page intentionally left blank.

Table 30. Additional Duties

<i>Instructions: List other tasks that you perform</i>
<i>Assist broken down motorists</i> <i>Clean bathrooms, move HARS and message boards, fill in on cameras and radio</i> <i>Hurricane evacuation, message boards, month end reports</i> <i>Manage and train incident responders on equipment, coordinate logistics of equipment for emergencies</i> <i>Prepare end of month reports</i> <i>Schedule maintenance on vehicles, make sure they have needed supplies</i>

Table 31. Training Received in Current Position

<u>Instructions: List other training you received while in your current position</u>				
<u>Training Type</u>	<i>Frequency</i>		<i>Training Type</i>	<i>Frequency</i>
<i>Computer</i>	<i>4</i>		<i>Defensive Driving</i>	<i>7</i>
<i>Flagging</i>	<i>4</i>		<i>Work zone safety</i>	<i>6</i>
<i>Radio use</i>	<i>1</i>		<i>CPR</i>	<i>9</i>
<i>First Responder</i>	<i>10</i>		<i>First aid</i>	<i>10</i>
<i>Gas mask</i>	<i>1</i>		<i>Customer Service</i>	<i>1</i>
<i>Hasmouth</i>	<i>1</i>		<i>Fire extinguisher</i>	<i>1</i>
<i>Human resources</i>	<i>2</i>		<i>Micro station</i>	<i>1</i>
<i>None</i>	<i>31</i>		<i>Red cross</i>	<i>1</i>

Table 32. Training Requests

<i>Instructions: List other training you would like to have offered to you.</i>				
<i>Training Type</i>	<i># requests</i>		<i>Training Type</i>	<i># requests</i>
<i>Any</i>	<i>3</i>		<i>Computer</i>	<i>3</i>
<i>Typing</i>	<i>1</i>		<i>Fiber Optics</i>	<i>1</i>
<i>Spanish</i>	<i>1</i>		<i>Management</i>	<i>1</i>
<i>Trouble shooting equipment repair</i>	<i>1</i>		<i>Message boards</i>	<i>1</i>
<i>Sports</i>	<i>1</i>		<i>HARS</i>	<i>1</i>
			<i>None</i>	<i>41</i>

Summary

Responses regarding additional duties are provided as Table 2. The majority of responses were received from District 3, 4, and 5 and that the primary title was Incident Responder. With regard to the survey questions, responses to 15 of the 43 questions indicated that no training had been received. In 25 of 43 questions, results indicated that the majority of training had taken place through on the job methods. Additionally, responses to 3 of the 43 questions indicated a virtual tie between no training received and on the job training provided and that a primary response was that no additional training was needed.

Training requested according to district is as follows:

- District 2: Any training concerning shop operations

- District 3: Any Management Fiber optics

- District 4: Use of message boards and HARS Computer

- District 5: Computer Spanish Typing Sports

- District 6: Trouble shooting and repair of equipment

Appendix C: State DOT Comparison/Review of DOT Outsourcing

Departments of Transportation Comparison

Additionally, a comparison of national DOT's was initially based on the following e-mail.

Greetings from Clemson University:

We are currently in the process of researching the possible existence of workforce development programs (career ladders) that exist within State DOT's. I would appreciate any information you would be willing to share.

The following information would be extremely valuable:

- *Does the career ladder focus on specific areas of the DOT (i.e., maintenance, engineers, etc.)?*
 - *Is there a time requirement for the length of time an employee must be in a certain position? If so, how was it determined?*
 - *What types of evaluation/assessment do you use to ensure readiness for the next level?*
 - *Do you require a vacancy in order to promote an employee that has obtained the skills for the next level?*
- * What problems/benefits have you encountered?*

If necessary, please forward to the appropriate person and/or department. Thank you in advance for your assistance.

Sincerely,

Dr. Melissa Marcus

Responses were received provided the following information:

Arizona

Contact Judy Barrette in our Training Department at 602.712.7613 or jbarrette@dot.state.az.us for information on this subject.

Arkansas

The Arkansas State DOT doesn't really have a career ladder program. We do have a promotional schedule for our civil engineers within their first two years of work, but I wouldn't really call it a career ladder program. The DOT in Arkansas is a constitutionally separate agency from other Arkansas government agencies. I do believe that the other state agencies have a career ladder program in place; however, I have heard that the bonuses dealing with this program have been

currently suspended. Following is some information on that program. For more information, contact Charles Angel at charles.angel@dfa.state.ar.us. We would love to hear the results of your research -- we're wanting to develop some type of program.

SECTION 230.0.0 CAREER LADDER INCENTIVE PROGRAM (CLIP) (July 1, 2003)
(Arkansas Code Annotated §§ 21-5-1101 and 29-20-123) as amended by Act 22 of 2003, First Extraordinary Session

Section 230.1.0

Act 1061 of 1999 establishes the Career Ladder Incentive Program for employees of all state agencies, boards, commissions and institutions of higher education.

Section 230.2.0

Section 1 of Act 1061 states, "The Department of Finance and Administration is authorized to develop and implement a career ladder incentive program for employees of all state agencies, boards, commissions and institutions of higher education covered by the Uniform Classification and Compensation Act (A.C.A. § 21-5-201 et seq.) A career ladder incentive program means a competency based pay system which incorporates pay and performance standards and establishes criteria for competency based promotions and salary adjustments for employees who exhibit effective performance and support the agency/institution goals and objectives.

Section 230.2.1

"Career ladder classification series" means a cluster of hierarchical classes with similar duties and functions that is grouped for professional promotion purposes.

Section 230.2.2

The Chief Fiscal Office of the State, at the end of each fiscal year, shall determine the percentage amount not to exceed eight percent (8%) for bonus payments that may be awarded to employees who satisfy competency based criteria developed by agencies and institutions and approved by the Office of Personnel Management of the Department of Finance and Administration after review by the Legislative Council. The bonus payments shall be awarded as a lump-sum payment, and the payment shall not be construed as exceeding the maximum salary, and shall not be considered salary for the purposes of retirement eligibility. Management or supervisory personnel who fail to complete an annual evaluation of employees under their administrative control shall not be eligible for promotion or salary adjustment bonus payments themselves.

Colorado

CDOT currently does not have any formal "career ladders" in place. It is left up to the employee to determine where they want to take their career and seek the training to meet the qualifications for promotional opportunity. We have tried several times to work on a succession plan, but just have not had the resources.

Delaware

The Public Relations Office would like to thank you for sending your email message. We appreciate you taking the time to send your comments to us. This reply message is to let you know that we have received your email and that we will review your message and respond to you very soon.

Public Relations receives many email inquiries every day on a wide range of issues and topics, including dozens of emails on some days. All email messages, whether they are critical or complimentary, are important to us and they are reviewed in the order they are received. Each email requires a different level of research and response. Please be assured that you will soon receive an email response from the Department. If your email requested specific materials to be mailed, such as a state map, those materials may in some cases be sent to you without an email response.

The Department appreciates emails and all forms of public input. They keep us informed of the public's opinions and concerns with road projects and other transportation issues of importance to all Delaware residents. Thank you for contacting us and providing us with the opportunity to serve you and to address any questions or concerns you may have.

If the situation of your email message requires immediate attention please call the Public Relations Office at 800-652-5600 or 760-2080 between the hours of 8:00am and 5:00pm, Monday through Friday.

Florida

Personnel Office at 850-414-5300.

Brenda Grice, Personnel Resource Management Officer, brenda.grice@dot.state.fl.us

Kim Williams

Central Public Information Office

Florida Department of Transportation

605 Suwannee Street, MS 54

Tallahassee, Florida 32399-0450

(850) 414-4590

Georgia

I am responding on behalf of Mike Johnson in regards to your email sent on workforce development programs (career ladders).

Here at GDOT we have created several career ladder promotions for a numerous of our jobs within the department. Please give me a call at 404-656-5316 to discuss specific information that we can provide in this area in order for me to better prepare relevant information for you.

Illinois

Sent CD outlining entire program.

Louisiana

The following information would be extremely valuable:

Does the career ladder focus on specific areas of the DOT (i.e., maintenance, engineers, etc.)?

LADOTD has a Workforce Development Policy (copy attached) that defines training requirements for its staff. You will notice that it incorporates specific structured training requirements (See Appendices) that cover several different categories of employees. Questions regarding this program should be directed to Mr. Kirt Clement, Training & Technology Transfer Administrator, at (225) 767-9139.

(See Appendix B – Louisiana Policy – Workforce Development)

Is there a time requirement for the length of time an employee must be in a certain position? If so, how was it determined?

LADOTD has a number of job classes that are in an "automatic" career progression (training series) which allow an employee to progress from entry level to cap of that particular series provided structured training/minimum qualification (time in grade) requirements are met, performance is satisfactory and proficiency at the next higher level is clearly demonstrated. There is no time limit on how fast an incumbent must progress. Unfortunately, there are occasions when an employee is unable to progress beyond his/her current level. This is, of course, not the ideal situation. The intent is to have all incumbents successfully progress through to the cap of their respective training series. The attached chart reflects jobs currently covered by the "automatic" career progression in LADOTD. Questions concerning this list may be directed to Vicki Picou, HR Analyst, at (225) 379-1246.

(Appendix A – Louisiana Training Series List)

What types of evaluation/assessment do you use to ensure readiness for the next level?

At a minimum, the annual Performance Planning and Review Rating (performance appraisal), which is generally completed by the employee's first-line supervisor, is the critical tool used to assess an employee's job performance, skills and development. Each rating supervisor may have also established other means by which his/her employees are evaluated to determine readiness for progression to the next level. A careful review of the subject employee's structured training record also comes into play. A copy of LADOTD's policy on PPR's is attached for your convenience. Questions regarding this program may be directed to Stephanie Ortis, HR Mgr., at (225) 379-1289.

Do you require a vacancy in order to promote an employee that has obtained the skills for the next level?

Yes, for positions not included in the "automatic" career progression (training series). However, employees who occupy positions that fall into the "automatic" career progression (refer to above-referenced chart) remain in their same position number.

What problems/benefits have you encountered?

For jobs in the "automatic" career progression, we have the flexibility of filling these at any level to meet the current needs of the respective district/section within the agency. Employees are able to progress (provided they meet all requirements noted above) w/out having to compete for a "promotion." With regard to structured training requirements, regardless of the category the employee falls into, employees are ultimately responsible for their success. Supervisors, however, are also responsible for coaching/managing their employees to succeed. We occasionally have problems in this area where supervisors don't utilize the PPR tool to the fullest extent possible to help employees develop/grow toward advancement. We also occasionally encounter situations where employees who apply for promotions are actually considered the best person for the job; however because they've failed to attain the necessary required training, they're ineligible for consideration. We have mechanisms in place to waive training requirements when failure to attain training is beyond the employee's control.

See Appendix B - Louisiana Policy Workforce Development

See Appendix B - Louisiana Policy Workforce Development – Performance and Review

Missouri

Does the career ladder focus on specific areas of the DOT (i.e., maintenance, engineers, etc.)?

Most of our career areas have entry-level career ladders containing either two or three jobs. These ladders are set up for engineers, engineering technicians, non-engineering professionals (accounting, human resources, etc.), non-engineering technicians (accounting, etc.), and for field maintenance employees. These jobs are below the first level of supervision.

Our process is to bring most new employees in at the entry level and allow them to progress to a senior level (senior maintenance crew worker, senior highway designer, senior account technician, etc.) without having to compete with other employees for these first one or two promotions. Once they have reached a senior level, any further promotions will require employees to compete with other employees. This involves promotions to first line supervision and higher jobs.

Is there a time requirement for the length of time an employee must be in a certain position? If so, how was it determined?

Depending on which ladder, the time required to move up is a minimum of either one year or two years before an employee will be eligible for consideration to be promoted to the next higher job. Some, but not all promotions occur at the one or two-year time. Many promotions take longer due to confirmation of performance and documentation of skill levels achieved.

What types of evaluation/assessment do you use to ensure readiness for the next level?

Our primary evaluation tool is our Performance Management process, which involves measuring each employee in five to seven "competencies". An employee must "meet" or "exceed" expectations to be eligible for promotion within the career ladder. Other variables also play

a role in this assessment, including whether or not an employee has had serious disciplinary problems within the past year, whether or not the employee has caused serious accidents or an excessive number of accidents within the past year, etc.

Do you require a vacancy in order to promote an employee that has obtained the skills for the next level?

A vacancy is not required for these career ladder promotions. To move up higher will require a vacancy, the job must be advertised, and employees compete for the promotions.

What problems/benefits have you encountered?

Our primary problem has been the budget crunch, which most state governments have experienced in the past three or four years. Secondary (and generally minor) problems involve inconsistent application of performance measures and some locations establishing more restrictive guidelines than were established by top management. These secondary problems are not significant, but do require monitoring to ensure locations are keeping their guidelines fairly close.

Montana

Licensing/Permitting Technician

Maintenance Career ladder. This is fairly new. Employee's who enter into the career ladder series are allowed to advance without having to wait for a vacancy and having to go through the selection process.

Series for Engineering Career Ladders

Civil Engineering Specialist

Designers

Engineering Project Technician and Engineering Project Managers

Headquarters Materials Lab Technicians

District Materials Lab Technicians

Field Right-of-Way Agents

1. Does the career ladder focus on specific areas of the DOT (i.e., maintenance, engineers, etc)?

The Department has career ladders for engineering classifications, maintenance classifications, and licensing/permitting technicians.

2. Is there a time requirement for the length of time an employee must be in a certain position? If so, how was it determined?

Each career ladder defines it's own criteria for moving through the advancement policies.

3. What types of evaluation/assessment do you use to ensure readiness for the next level?

Again, each career ladder defines it's own criteria to ensure readiness for the next level.

4. Do you require a vacancy in order to promote an employee that has obtained the skills for the next level?

Employees are allowed to advance through the career ladders by meeting the required criteria at a certain level without a vacancy. Positions that are in the same series but outside of the career ladders do require a vacancy and are advertised.

5. What problems/benefits have you encountered?

A problem we have recently encountered is employees have reached the highest levels of advancement that are allowed in the Civil Engineer Specialist and Design career ladders. Employees are moving from position to position due to vacancy levels, which are outside of the career ladders. Due to this, Engineering is in the process of revising the Civil Engineer Specialist and Designer Advancement Policies to include the next levels. This will allow employees to advance in their current positions and remain in their areas of expertise. One of the benefits of the career ladders is employee morale. Employees who enter into the career ladder series are allowed to advance without having to wait for a vacancy and having to go through a selection process. Another benefit is recruitment. Engineering representatives attend career fairs throughout the state. Promoting the career ladders at the career fairs is very beneficial for recruiting and hiring the best-qualified applicants.

Pennsylvania

I would like to respond to your inquiry regarding workforce development programs and career ladders in PENNDOT. I would like more detail about the type of information you are looking for; additionally, I may not be the person to fully answer your questions but with more information I can direct you to the correct person. I would very much like to talk to you to share any information you may find valuable. I did try to leave a voice mail but was unsuccessful. Please call me at your convenience to discuss PENNDOT's Workforce development program and career ladders in PENNDOT.

Thank you for your interest.

Tennessee

The Tennessee Department of Transportation provides the following response to your January 29, 2004 request.

1. Does the career ladder focus on specific areas of the DOT (i.e., maintenance, engineers, etc.)?

Answer: TDOT uses career ladders that follow job series, which consist of several job classifications, starting with entry-level job classes and working up the career ladder. For example, Highway Maintenance Worker 1 is the entry-level job class in the Hwy Mnt Wkr job series.

2. *Is there a time requirement for the length of time an employee must be in a certain position? If so, how was it determined?*

Answer: Yes, each job classification has a required level of education and/or related work experience. The length of time required was determined by the Tennessee State Department of Personnel's Division of Research.

3. *What types of evaluation/assessment do you use to ensure readiness for the next level?*

Answer: Tennessee State government employment is governed by our State's Civil Service laws. In most cases, the evaluation/assessment process is a rating of the applicant's level of education and work experience related to the job classification that the applicant has applied for and wants to be given employment consideration. In a few cases, the applicant's Civil Service score is based on the score they obtain by taking a performance test.

4. *Do you require a vacancy in order to promote an employee that has obtained the skills for the next level?*

Answer: Yes.

5. *What problems/benefits have you encountered?*

Answer: The employment/promotional process can be very slow and cumbersome. Plus, ratings are based on seniority, i.e. the more work experience you have the higher the score. Therefore, it is more difficult to hire applicants in under represented groups, such as females and minorities.

Texas

Does the career ladder focus on specific areas of the DOT (i.e., maintenance, engineers, etc.)?

Yes, we have many career ladders based on specific functional areas.

Is there a time requirement for the length of time an employee must be in a certain position?

To advance in a career ladder, the minimum requirements (which includes education and job experience) must be met.

If so, how was it determined?

We have developed standard education and year requirements based on job functions.

What types of evaluation/assessment do you use to ensure readiness for the next level?

Readiness for the next level is determined by the immediate supervisor based on the employee meeting the minimum requirements, level of supervision needed and having obtained the

necessary competencies (Knowledge, Skill, and Abilities). This is assessed by the supervisor through observation and validation of the minimum requirements.

Do you require a vacancy in order to promote an employee that has obtained the skills for the next level?

No, we do not require a vacancy.

What problems/benefits have you encountered?

Benefits - having career ladder promotions to aspire to is motivating to employees. Problems - sometime employees think when they meet the minimum requirements that they should be promoted. They do not always understand that the level of supervision they receive and other competencies are also used as determining criteria for career ladder promotions. This is not a big problem but it does come up on occasion.

Utah

The Utah Department of Transportation has "career ladders" in a limited number of job categories. These include: Engineers, Engineering Technicians, and Maintenance employees. In these cases employees are hired at an initial position. After completing certain time requirements (often 2 years) and/or certain education requirements the employee may move to the next higher position in the job family. Future advancement is based on positions being available and candidates competing for the job opportunity.

West Virginia

The State of West Virginia's job classification system, by its very structure, promotes career ladders. We have classification series that range from entry level through supervisory/managerial for various professional, para-professional, administrative, technical, and other areas of work. The number of levels depends on the intricacies of the work being accomplished.

Employees progress through the series based on the level of difficulty at which they are working. In most series an employee can progress from entry level to full performance level as soon as he or she meets the minimum training and experience requirements for full performance. To go beyond full performance, the employee must be performing more specific tasks identified as being associated with the higher level(s). In some cases the assumption of duties might be gradual, while in others there is a specific vacant position for which employees must apply.

We do not have a formal process of training or otherwise preparing employees to move through the career ladder. Eligibility for movement is primarily experience based.

You can view our job classification specifications at the following site:

http://www.wvdot.com/11_WVDOT/employment/jobspecs/specsndxter.htm

DOT Outsourcing

State	Notes	Percent Contracted
Alabama	Design and environmental services	80
Alaska	Construction contract administration Design	10 31
Arizona	Design Construction Management Surveys Mapping Geotechnical Hydraulics Bridge design Environmental	90 30 Almost All 100 67 Almost All 50 100
California	Design and Environmental Services	15
Colorado	Design and Environmental Services	40
Connecticut	Design Construction Inspection	72 61
Delaware	Design Construction Management	60 60
Florida	Project Engineering Construction Design and Environmental Services	70 100 66
Georgia	Design	25
Hawaii	Design and Environmental Services	>50
Idaho	Design Construction Management	67 10
Illinois	Design and Environmental Services	65-80
Indiana	Environment Studies Design Construction Oversight Maintenance ITS Area Construction Construction Inspection Right-of-Way	90 90 10 0 0 100 25 Little
Iowa	Highway Design Bridge Design Project Planning Construction Inspection	62 41 18 25
Kansas	Plans and design for major highway and bridge (1990-1997) Plans and design for major highway and bridge (1998-1999) Plans and design for major highway and bridge (2000-2009) Environmental Construction and reconstruction activities	71 58 70 10 100
Kentucky	Preliminary engineering items	80

State	Notes	Percent Contracted
Louisiana	Design	30
	Environmental	60
Maine	Highway Design	30
	Bridge Design	20
	Construction Engineering	13
Maryland	Plats	90
	Field Surveys	33
	Mapping	100
	Design (\$)	60
	Design (Project)	50
	Construction Inspection	50
	Construction	100
Massachusetts	Design and Environmental Services	50
Michigan	Design and Environmental Services	55
Minnesota	Design and Environmental Services	25-30
Mississippi	Design and Environmental Services	30
Missouri	Highway Design	82
	Bridge Design	16
	Construction Inspection	0
	Miscellaneous	3
Montana	Design and Environmental Services	30-50
Nebraska	Highway Design	35
	Construction Engineering	0
Nevada	Construction Engineering	55
	Preliminary Engineering	78.6
	Right-of-Way Plans and Appraisals	Some
New Hampshire	Design Projects (#)	33
	Design Projects (\$)	63
New Jersey	Design on Project Basis	95
	Construction	30
New York	Design and Environmental Services	50
New Mexico	Signs and Pavement Markings	100
	Logo Program	100
	Construction Management	100
	Environmental, Design and Traffic Studies	40
North Carolina	Design and Environmental Services	50
North Dakota	Construction Engineering Services (State)	20
	Design Services	50
	Design and Construction Engineering (County)	100
Oklahoma	Design Work	70
	Construction Inspection	10
	Bridge Inspections	75
Oregon	Preliminary Engineering	45 (1998)
		39 (1999)
	Construction Engineering	9.6 (1998)
		4.3 (1999)
Puerto Rico	Engineering Services	90
Rhode Island	Design and Environmental Services	95
South Dakota	Design	25

State	Notes	Percent Contracted
	Construction	20
	Environmental	<5
Tennessee	Design Projects	50
	Construction Inspection	100
	Right-of-Way Appraisal Work	60
	Environmental Studies	60
Texas	Preliminary Engineering	51
	Construction Engineering	2
Utah	Design	45
	Pre-Construction	80
Vermont	Design and Environmental Services	60-70
Virginia	Design and Environmental Services	60-70
Washington	Design and Environmental Services	20
West Virginia	Preliminary Engineering Design Services	70
Wisconsin	Design and Construction Engineering Services	50
Wyoming	Design Engineering	15
	Planning	20
	Environmental	80

* The Workforce Challenge. Transportation Research Board of the National Academies, Washington, D.C., 2003, pp. 51-55.

A workforce Development Program for the SCDOT

Total printing cost: \$1,540

Total number of documents: 70

Cost per unit: \$22