

Recruitment and Retention of Highway Maintenance Workers

Final Report



research for winter highway maintenance

Western Transportation Institute

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16. Abstract The objective of this project was to investigate strategies state departments of transportation (DOTs) can employ to overcome challenges related to recruitment and retention of plow drivers and other highway maintenance workers. The project outcomes include two deliverables: a concise guide of innovative but practical ways for DOTs to recruit and retain a highly proficient, productive, versatile, and committed roadway maintenance workforce; and a more detailed final report containing all information captured in this effort. This final report includes case studies in several categories: recruitment programs (creating supplemental workforce with existing staff, partnerships with departments of corrections, and using social media for recruitment and public engagement); retention strategies (creating a positive workplace culture, employee benefits and incentive programs, promotion and leadership programs, employee training programs, and succession programs and mentoring); recruitment and retention for underserved communities; recruitment and retention of the next generation; and capturing information to improve your program (mentoring programs and check-ins with staff; surveys, focus groups, and interviews; and exit interviews). While there is no one-size-fits-all solution for recruitment and retention challenges, the project documented numerous strategies that a DOT can consider to strengthen recruitment and retention. Since many of these changes require long-term commitments by an agency, the strategy section is supplemented with tools and ideas to facilitate and manage deployment, including an outline of steps for implementation. Key findings from this research effort are provided, including overarching guidance and best practices as well as numerous research needs related to recruitment and retention of highway maintenance workers.					
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Recruitment and Retention of Highway Maintenance Workers

Final Report

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EXECUTIVE SUMMARY

The objective of this project was to investigate strategies state departments of transportation (DOTs) can employ to overcome challenges related to recruitment and retention of plow drivers and other highway maintenance workers. The project outcome is a concise guide of innovative but practical ways for DOTs to recruit and retain a highly proficient, productive, versatile, and committed roadway maintenance workforce. (See [Recruitment and Retention of Highway Maintenance Workers: Case Studies and Recommendations](#).) To achieve this goal, the research team conducted an extensive literature search and identified many recent reports, journal articles, conference papers and presentations, and new articles confirming that this is a timely issue and a priority need in the transportation sector. Key literature search documents include reports related to recruitment and retention challenges and conference proceedings that describe recent efforts made by state DOTs to overcome these challenges. The amount of literature available highlighted that recruitment and retention challenges are well-established, but strategies to overcome these challenges (including data on their effectiveness) are less documented.

Researchers conducted surveys to identify recruitment and retention strategies for highway maintenance workers specifically engaged in snow and ice control. Four surveys were created to gather feedback from a variety of viewpoints including state and local winter maintenance managers, human resources managers, winter maintenance workers, and private contractors. A total of 154 survey responses were collected from across the United States; respondents represented more than 28 states and 3 private contractors. These survey responses highlighted several key topics; interviews were used to capture additional information about these issues. Using this information, the team created 13 case studies to support state DOTs in overcoming recruitment and retention challenges, which addressed the following topics:

- Recruitment Programs
 - Creating Supplemental Workforce with Existing Staff
 - Partnerships with Departments of Corrections
 - Sharing Your Story – Using Social Media for Recruitment and Public Engagement
- Retention Strategies
 - Creating a Positive Workplace Culture
 - Employee Benefits and Incentive Programs
 - Promotion and Leadership Programs
 - Employee Training Programs
 - Succession Programs and Mentoring
- Underserved Communities Recruitment and Retention – Successful Examples
- Recruitment and Retention of the Next Generation
- Capturing Information to Improve Your Program
 - Mentoring Programs and Check-ins with Staff
 - Surveys, Focus Groups, and Interviews
 - Exit Interviews

Each case study provides an overview of the topic, strategies to consider for implementation, and successful examples. While there is no “one size fits all” solution for recruitment and retention

challenges, the project documented numerous strategies that a DOT can consider to strengthen recruitment and retention, including:

- Changing the culture within organizations to recognize and support generational differences.
- Succession planning to reduce loss of knowledge as the older generation retires and to create a pipeline for younger generations to step into leadership positions.
- Revising job descriptions and compensation to reflect desirable and livable wages.
- Revising classification structure.
- Expanding and supporting training.
- Developing and employing recruitment strategies that include targeting specific groups.
- Developing marketing and outreach strategies to improve the image of operations work.
- Utilization of social media and other outreach tools to improve marketing of job opportunities.
- Employing efforts focused on growing the pipeline.
- Improving and expanding communication within the organization to identify issues and create countermeasures.

Since these changes will require long term commitments by an agency, the strategy section is supplemented with tools and ideas to facilitate and manage deployment, including an outline of steps for implementation.

Key findings from this research effort also provide overarching guidance and best practices:

- Work closely with your Human Resources department as they can help support recruitment and retention efforts.
- Work with what you have and can offer – learn what benefits are available, what they are worth, and make these known as a recruitment and retention tool for potential and existing employees.
- Training and mentorship programs in agencies help support the growth of the employee, the sharing of knowledge, and create future leaders in your agency.
- Mentorship programs can provide a method for succession planning by allowing senior staff to pass down experience while developing the next generation of leaders within an agency.
- Career ladder programs provide a clear method to ensure consistent training and skills necessary to obtain a position. These types of programs can allow motivated employees to “choose their own destiny” upon entering the agency.
- Work within your agency to encourage/allow all who are interested to take advantage of career progression ladder promotions, and to receive the earned salary and title changes. This may require changing policies to allow many individuals of similar job classification at the facility/organization.
- Work with local unions to develop and implement changes in training, training requirements, and career ladder progressions that are tied to salary and title changes, which will encourage the best possible candidates to apply for promotions.

This project also identified numerous research needs related to recruitment and retention of highway maintenance workers. These range from identifying strategies to build flexibility into an agency, to creation of employee satisfaction surveys, to improving workplace morale.

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INTRODUCTION

The Western Transportation Institute (WTI) conducted this research project on behalf of Clear Roads and Minnesota Department of Transportation (MnDOT) to capture information on highway maintenance employee recruitment and retention efforts at local and state transportation organizations. One objective of this project was to investigate the challenges faced by state DOTs in the recruitment and retention of plow drivers and other highway maintenance workers and to identify the factors that explain why some employees pursue a position with a DOT, why some leave, and why some remain with an agency over time. A second objective was to identify and highlight case studies of successful strategies employed by various organizations to improve recruitment and retention outcomes, as well as ongoing difficulties and lessons learned.

The purpose of this project was to provide a comprehensive, easy-to-use guide on successful recruitment and retention strategies that can be implemented by agencies. Although basic information on wages and benefits was captured, it is often difficult for agencies to significantly increase wages; therefore, the research team focused on identifying significant employment factors that are within an agency's control. The project outcome is a concise, comprehensive guide of innovative but practical ways for Departments of Transportation (DOTs) and Departments of Public Works (DPWs) to recruit and retain a highly proficient, productive, versatile, and committed roadway maintenance workforce.

This report summarizes all of the project methods, tasks, and findings. The guide for DOTs has also been published as a standalone document called [Recruitment and Retention of Highway Maintenance Workers: Case Studies and Recommendations](#).

METHODS

Literature Review

The research team conducted a literature review to identify workforce development challenges and strategies to address recruitment and retention challenges in the transportation industry. While the effort focused on highway maintenance professionals, the team reviewed literature from similar sectors like public transportation and road construction. These sectors face similar challenges, and agencies can learn from and adopt their strategies to fit the highway maintenance workforce. Databases used to gather relevant information included: Transportation Research Information Database (TRID), Google Scholar, ISI Web of Science, Montana State University Library, and similar sources.

Surveys

Four unique surveys were developed using Qualtrics, a web-based survey tool. The surveys were developed for: 1) Transportation organization human resource managers, 2) Maintenance managers, 3) Maintenance workers, and 4) Private maintenance contractors. These surveys aimed to capture information on highway maintenance employee recruitment and retention efforts at local, state, and national transportation organizations.

The surveys were distributed on July 14, 2020 to the Clear Roads Technical Panel and members' states, the Snow & Ice Listserv, the American Public Works Association (APWA), the Transportation Research Board (TRB) Winter Maintenance Committee and Maintenance Fleet and Equipment Committee, the National Association of Towns and Townships (NATaT), the National Association of County Engineers (NACE), the National Local Technical Assistance Program (LTAP), the Snow & Ice Management

Association (SIMA), the Accredited Snow Contractors Association (ASCA), and relevant LinkedIn groups. The surveys were also shared with contacts of the research team members and the Clear Roads Technical Panel. All surveys were closed on September 21, 2020. A total of 154 survey responses were collected from across the U.S.

Interviews

Information gained from the literature review and survey responses were used to define potential interview topics and contacts. The list of topics and interviewees was submitted to the project panel for review and comments. Panel members identified additional interview topics and contacts.

Fifteen (15) interviews were conducted from December 2020 through February 2021. Interviews consisted of one to two-hour phone calls with interviewees. Questions were tailored to each interview topic but generally aimed to understand the recruitment and retention programs or strategies, agency job classifications, employee benefits, and concerns noted by the interviewee's agency. [Note that in some instances (e.g., Maine DOT and Ohio DOT), the survey questionnaire was used to guide interview discussions. These survey responses were not added to the survey results, instead they are summarized in the interviews.] Table 1 provides a list of interviewees' names, organizations, and interview topics, and a link to each interview summary (click on Name of interviewee to link to the interview summary).

Case Studies

Information gained from the literature review, survey responses, and follow-up interviews was used to develop the case studies on employee recruitment, employee retention, workplace culture, innovative and creative solutions, use of bonuses, and apprenticeship and mentorship programs. The Clear Roads TAC was able to review and provide feedback on potential case study topics. Based on this feedback, thirteen (13) case studies were developed of varying depth and length.

Developed Case Studies are also provided in [Recruitment and Retention of Highway Maintenance Workers: Case Studies and Recommendations](#).

Recommendations

Information gained from the literature review, survey responses, follow-up interviews, and case studies was then synthesized to develop recommendations to support recruitment and retention for organizations and agencies. Recommendations address useful training topics for winter maintenance managers, operators, and human resource staff. They also suggest methods to capture information on successes and lessons learned within their organization and programs, so that agencies can learn from the experience of employees in order to improve future practices.

Recommendations are also provided in [Recruitment and Retention of Highway Maintenance Workers: Case Studies and Recommendations](#).

The following sections of this report describe high level summaries of these research efforts.

Table 1. List of interviewees, their organizations, and interview topics.

Name	Organization	Interview Topics
Susan Baillargeon	Front Range Community College, CO, Director; Associate of Applied Science in Highway Maintenance Management	AAS degree in Highway Management
Ken Flore	Michigan DOT, Statewide Transportation Maintenance Worker Program Coordinator	Partnership with Dept. of Corrections, recruitment efforts
Neal Glatt	Grow the Bench	Technical training, employee focused leadership and development
Jeremiah Hutchinson	Maine DOT, Human Resources	Pay incentives, recruitment strategies, benefits packages
Maura Kelly	Portland State University, Assoc. Prof. of Sociology	Oregon highway construction workforce development program, diversity
John Klostermann and Arielle Swift	Dubuque, IA, Public Works Director and Assistant Director	Apprenticeship program, recruitment
Doug McLaughlin	Ohio DOT, Training Supervisor	County Management Training Program (CMT), mentorship program
Matt Morreim	Department of Public Works, St. Paul, MN	Recruitment and retention at local road agency
Denise Osmond and Raeann Schmitcke	North Dakota DOT, Human Resources	Leadership Development Journey Program, Dept of Corrections, Minority Recruitment, Be Smart Program
Robert (Bob) Pallo and Scott Lucas	Ohio DOT, Office of Maintenance Operations	Employee Benefits; Highway Technician Series; Succession Planning
Bryan Pickworth and Kevin McCarthy	Farmington Hills, MI, Road Maintenance Supervisor	Benefits programs, staffing changes, job fairs, recruitment programs
Amanda Regnier	Idaho Transportation Dept., Training & Development Program Supervisor	Horizontal Career Paths, recruitment, retention
Phill Sexton	WIT Companies	Private sector and local agency recruitment and retention, employee satisfaction
Jim Turcan	Cornerstone Partners	Private winter maintenance operations, recruitment, retention
Tyler Weldon, Kevin Macvittie, John "Sage" David, John Lorme, Tom Aguilar, Jamie Yount	Colorado DOT, Maintenance and Operations Personnel	Training, AAS Program in Colorado, Career Tracks, Employee Incentives
Marc Valenti	Town of Lexington, MA, Dept. of Public Works, Manager of Operations	Generational differences, benefits, concerns
Scott Zorno	High Country Spray Systems	Private winter maintenance operations, recruitment, retention

LITERATURE REVIEW SUMMARY

The literature review identified 49 documents related to workforce development challenges and strategies to address these challenges in the transportation industry. Twenty-nine (29) of these documents were published within the last five years suggesting that this is a priority need and timely issue in many transportation sectors. This literature review identified many ongoing workforce development challenges faced in the transportation industry including generational differences, upcoming retirements, emerging technologies, knowledge and skills gaps, and forecasting needs. Potential strategies to address these challenges included promoting recruitment and retention, knowledge retention and succession planning, examining wages and benefits, promoting diversity, outsourcing or contracting, performance management, and asset management. The literature shows that there is no “one size fits all solution” to the workforce challenges faced by the transportation industry; instead a variety of methods have been utilized including the creation of career pathways, on-the-job training programs, mentorship programs, unique training tools including online and virtual reality, and strategies to promote the benefits of entering the transportation industry.

The full literature review is provided in [Appendix A](#). The literature review is organized in two main sections: Challenges and Strategies. It provides summaries of each document along with the title, reference, web link, and keywords for easy reference and later use.

SURVEY RESULTS

Survey Summary

Overall, 154 survey responses were collected from across the US (Figure 1). The following sections provide a summary of responses for each of the four unique surveys developed. Detailed survey responses can be found in [Appendix B](#), and the survey instruments can be found in [Appendix C](#).

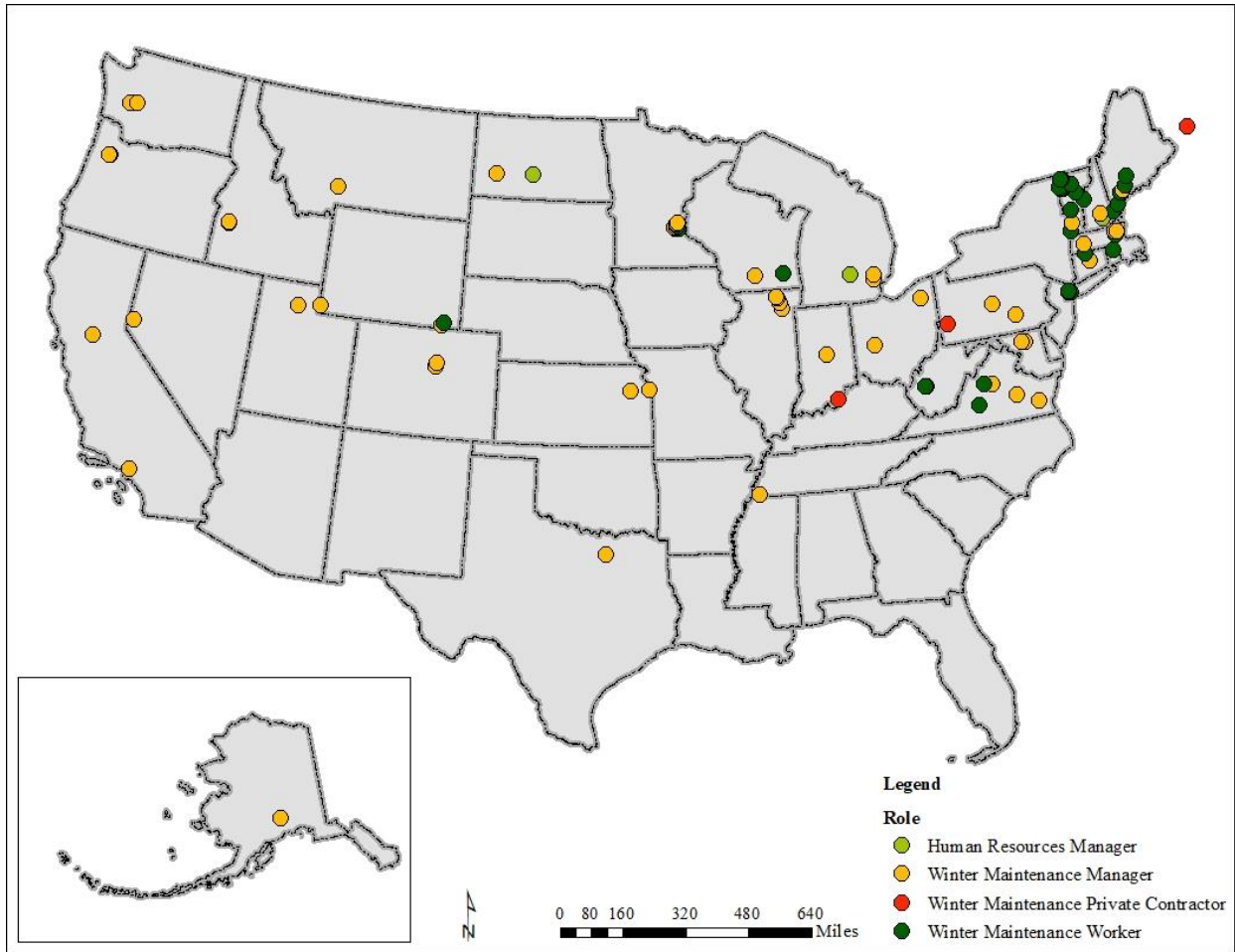


Figure 1. Survey Respondent Locations

Human Resources Manager Survey

For the Human Resources (HR) survey, nine survey responses were collected from five state departments of transportation (DOTs) (Figure 2). [Note that the information requested from HR departments by this survey required significant effort on their part. For this reason, we are satisfied that five states were willing and able to provide responses.]



Figure 2. HR Manager Respondent Locations

Agency Information

HR managers reported that highway maintenance workforces consist primarily of full-time, permanent employees, with part-time, year-round and seasonal employees making up a much smaller share of the workforce. Over half (62.5%) of the respondents experienced a shortage of workers during the 2019-2020 winter season. Respondents reported a wide range of vacant highway maintenance positions at their agencies during the 2019-2020 winter season. The total number of vacant highway maintenance positions ranged from 0 to 200. The average job vacancy duration was 52 calendar days.

Most respondents (77.8%) noted that their agency was willing to hire employees who did not have a commercial driver’s license (CDL), stating that policies related to CDL often required these employees to obtain one within a specified period of time post hire.

Most agencies (71.4%) had unionized highway maintenance workers. The respondents noted that in general, as highway maintenance employees moved up in the job classification scale from entry level to managerial positions the pay increased, and the total number of employees authorized for the position decreased. There tended to be fewer employees that had maxed out the pay scale in managerial positions when compared to entry level positions.

All respondents offered their full-time, permanent employees paid sick leave, paid holidays, medical insurance, dental insurance, life insurance, eye care, overtime pay, holiday pay, wellness exams, and bereavement leave. Paid vacation time, state or other public pension plans, paid military leave, and shift differentials were also common (reported by 85.7% of respondents).

Recruitment

All respondents indicated they use social media, employment websites like LinkedIn or Indeed, state job posting websites, and job fairs to get the word out about available job opportunities within their agency.

Considering recruitment strategies, all respondents stated that they marketed employee benefits programs, and most (85.7%) marketed career ladder or advancement opportunities and used positive messaging about the work and/or workplace culture. Respondents were asked which strategies they found to be most successful to recruit new employees; many noted that word of mouth and marketing using positive messaging about the workplace and work culture were most effective.

Most respondents (85.7%) had focused recruitment strategies that targeted high school graduates, military veterans, women, minorities, and underserved populations. Specific targeted recruitment strategies included programs to introduce young children to transportation fields and programs to encourage high school and college age students to consider DOT careers such as involvement in local college and career fairs. Programs targeting underserved communities were mentioned, as well as partnerships with the local Department of Corrections (DOC) to recruit inmates pending release.

Respondents noted recent changes to their recruitment efforts; an increased focus on student recruitment was common, as well as embracing technology changes and social media to reach a wider audience.

Retention

Respondents were asked to rank the level of difficulty their agency had in retaining highway maintenance workers on a scale from 1 (none) to 5 (significant). Answers ranged from 2 to 4 with an average of 2.7.

None of the respondents stated having issues retaining employees aged 50 and older. By contrast, employees aged 30 and younger and women of all ages were a struggle to retain for just under half of the agencies, and employees 31-49 and minorities were a struggle to retain for just under one third of the agencies.

Most respondents conducted exit interviews with their employees. Questions like “Why are you leaving your position?” and questions related to supervision, new employee orientation, and safety were found to be most insightful.

Excluding retirement, all respondents noted that the most common reason that DOT employees were leaving was to pursue a career change outside of the organization. Most respondents (83.3%) were also losing employees due to a job change within the organization; competition from the private sector for similar jobs; competition from the county, city, or other public sector agencies for similar jobs; and compensation/benefits. It was less common for respondents to lose employees due to relocation, lack of professional development/training opportunities, lack of opportunities for promotion/ career advancement, and inability to pass a USDOT CDL physical.

HR managers reported using retention strategies such as employee recognition and/or service year awards and promotions, succession planning, and career ladders. Cross training and job enhancement were also commonly used retention strategies.

Most respondents (85.7%) tracked employee turnover.

Recent changes to retention efforts included the development of a Leadership Development Journey program that provides employees with opportunities to learn new talents and skills. Other changes mentioned included embracing changes in technology and social media to reach a larger audience, offering flexible scheduling and focusing on work/life balance.

When asked to describe obstacles to implementing their agency retention plan, respondents indicated they faced roadblocks with unions and bargaining agreements, as well as challenges with pay increases and benefits programs as these were controlled by the state government. Additional obstacles included civil service requirements and managers who are unwilling to change strategies.

COVID-19

Due to the COVID-19 pandemic, agencies have faced new or expanded requirements to maintain employees' safety and health, as well as challenges recruiting employees due to a hiring freeze, layoffs, or reduction in hours. More than half (57.1%) of respondents stated that their agency was currently in a hiring freeze or undergoing layoffs, furloughs, reduction in hours, or pay cuts.

All respondents mentioned efforts to keep employees socially distanced, including altering shift schedules or alternating shifts, as well as policies requiring the use of masks and increasing cleaning and sanitation protocols. Additional COVID-19 policies mentioned included temperature checking employees and protocols for quarantining employees that have tested positive or have been in close contact with someone who has tested positive.

Winter Maintenance Manager Survey

The Winter maintenance manager survey had a total of 101 responses from 28 states across the U.S. from local, county, and state agencies (Figure 3).

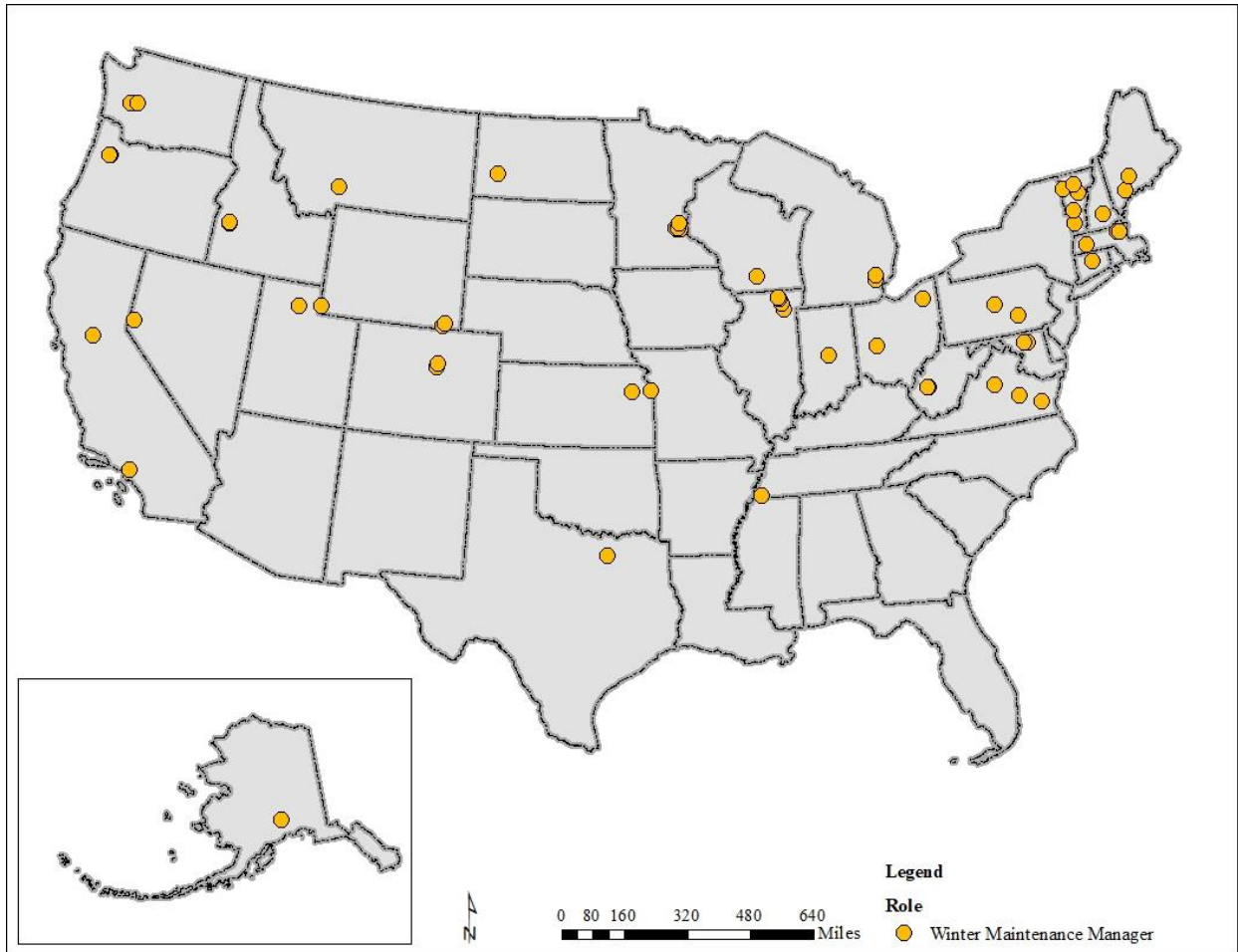


Figure 3. Winter Maintenance Manager Respondent Locations

Respondents were asked to provide information on the job classification mix (full-time, part-time, etc.) of their winter maintenance staff during the 2019-2020 winter season. Full-time employees made up the majority of the winter maintenance staff with an average of 99 employees. Part-time, year-round employees made up the smallest portion of winter maintenance staff with an average of just three employees.

Job vacancies tended to be low (less than 20 vacant job positions). Vacancy duration ranged from just one week to 2 years. The average vacancy duration was 73 days. One respondent specifically mentioned that the agency’s vacancies for temporary workers are longer (a few months) when compared to vacancies for full-time positions (one month).

Operations

Respondents noted the winter season tended to start around mid-October to mid-November and end late-March to mid-April. Average snowfall varied widely, from less than an inch to 600 inches. The average annual snowfall among respondents was approximately 64 inches.

The average number of activation events ranged from 0 to over 100. Many respondents mentioned that the number of events requiring activation varies depending on geography and from season to season.

Respondent jurisdiction size varied widely; population size ranged from just 300 people to over 6.5 million. The average population size among the respondents was 386,027 people.

Lane miles within jurisdictions ranged from 42 to 45,000 miles with an average of 2,735.1 miles.

When asked about the types of facilities maintained, around 40% of respondents indicated they maintain parking lots and around 50% indicated they maintain rest areas.

The most common shift arrangement for winter maintenance workers was a 12-hour shift, with 54% of respondents using this shift arrangement. A few respondents used 10-hour shifts. Some respondents noted that their snow duty shifts can range from 8 to 16-hours (and even close to 24/7) during a storm.

Recruitment

Roughly half of the respondents had experienced a shortage of winter maintenance workers during the 2019-2020 winter season. On average, the shortage represented 18.2% of the workforce.

Most respondents (72.3%) believed that their pay scale was not competitive enough with the private sector. However, when comparing the results of this survey with the private contractor survey, the pay scales are comparable: state DOTs reported pay scales of \$15 to \$27 per hour for entry level positions, while private agencies reported pay scales of \$15 to \$20 per hour. Additionally, state DOT respondents struggled with finding candidates with requisite minimum skills or experience levels (60.6% of respondents) and with their pay scale being less competitive than other public sector jobs.

When asked what they would like to do differently to attract good candidates for winter maintenance positions, higher or more competitive pay was the most common answer. Some respondents mentioned expanding their outreach and others mentioned making the hiring process quicker.

Retention

Most respondents (63.8%) stated that they had some difficulty retaining workers and 18.1% of respondents stated that they had a significant amount of difficulty retaining workers.

Exit interviews can provide valuable information on why employees leave an agency. Most respondents (73.1%) stated that they were conducting exit interviews, which were administered by a human resources employee or by the employee's direct supervisor. Questions like "*Why are you leaving?*" or "*Would you recommend employment here?*" were insightful. Additional questions related to their manager/supervisor and how the agency could do better as an employer also provided valuable information.

The most common reason employees were leaving was due to competition from the private sector for similar jobs (70.8% of respondents). Respondents also reported that workers were leaving to pursue a career change both outside the organization (53.9% of respondents) and within the organization (44.9% of respondents).

Most respondents (78%) used employee recognition and/or service year awards to help retain good employees. Many respondents (63.4%) were also using cross-training or job enhancement programs. When asked for their most successful retention strategies, respondents listed a number of successful strategies including pay and benefits programs, career pathways/ladders, and training programs.

CDL

Most respondents (92.6%) are providing training for new hires to obtain and/or upgrade a CDL, with 52.9% of respondents indicating that their agency did provide funding for CDL renewals. One respondent mentioned that the CDL program had helped expand the applicant pool.

Winter Maintenance Worker Survey

A total of 41 winter maintenance workers from 12 states responded to this survey (Figure 4).



Figure 4. Winter Maintenance Worker Respondent Locations

Most respondents (92.7%) were from a State DOT District, with the remaining respondents from a Municipal Agency or Other agency. The respondents who worked for another agency noted that they worked for I-81, no additional information was provided. Most respondents (61.9%) were working a coverage area that was both rural and urban. Respondents covered a variety of job titles; common job titles included apprentice, maintenance worker, journeyman worker, master worker, and transportation worker.

Most respondents were male (95.2%) and were white (88.1%). There was a good mix of respondent age groups. The most common age group was 48-55 years old (31.0% of respondents), followed by 41-47

years old and 56-62 years old (23.8%), and the combined age groups of 25-40 represented 19%. No respondents were in either the youngest or oldest age groups (18-24 years old and 68 years and older).

92.9% of respondents reported they had graduated high school or had some other form of post-secondary education or training. Approximately 14% of respondents had received post-secondary education - either an Associate's Degree (AA) or a Bachelor's Degree (BA/BS). Approximately 14% of respondents had military specialty school training, and 9.5% had completed trade school.

Most respondents (95.2%) had a CDL. Among those who had a CDL, most respondents (82.1%) had a Class A CDL. The remaining respondents had a Class B CDL. One respondent had both a Class A and Class B CDL. Many respondents (61.5%) had received their CDL prior to their current employment.

Most respondents (80%) did not have Federal hiring preference due to service in the military or volunteer programs.

On average, respondents had been with their current organization for 11 years. Most had been in their current position for over a year with an average of over four years in their current position. Those respondents who had been with their current organization the longest, also tended to be in their current position the longest. Most respondents (76%) had been promoted or reclassified since they were originally hired.

For 37% of respondents, winter maintenance was a second or post-retirement career.

Most respondents (66%) were union members.

Just over half of respondents (56.1%) found their current position through word of mouth, which corresponds to winter maintenance managers and HR managers who stated that word of mouth was their most successful recruitment method. Respondents had also found their jobs through agency websites, employment websites, and workforce centers.

Most respondents enjoy the benefits (82.5% of respondents) and job security (70% of respondents) that highway maintenance work provides. Many respondents (42.5%) said that the type of work is what attracted them to highway maintenance. Many respondents mentioned that they enjoy plowing and working with equipment, and they take pride in their work to ensure that the public can travel safely. Other respondents mentioned that they enjoy working with their team or crew and that they get to be home with their family at night. Others mentioned enjoying other aspects of the job, including addressing different obstacles each day, flexibility, and working alone.

Most respondents (87.8%) had received safety training at their agency. Other common trainings included technical training (61% of respondents) and supervisory/leadership training (58.5%). Three respondents stated they had received another type of training, which included mechanical, pesticide, and welding trainings. When asked which trainings were most helpful in their current position, a wide variety of trainings were listed from equipment training, to OSHA, to technical trainings. Some respondents felt that supervisory and leadership trainings were the most helpful.

Few respondents (10%) had left a job in the transportation sector in the last five years. Among these respondents, the reasons for this departure included schedule, pay, moving, or switching careers to the State DOT (from a local transportation agency).

A few respondents (10%) had recently returned to the transportation sector. The reasons for returning to the transportation sector included transferring from truck driving, enjoying the job, and starting a new position.

Respondents listed a variety of things that they liked the least about their job, ranging from the schedule to agency politics. Respondents also listed that they did not enjoy the lack of communication, lack of training opportunities, paperwork, and dealing with extreme situations at times.

When asked why they stay in their job, many respondents reported that they enjoyed what they do including that they took pride in their work or enjoyed the challenge. Others enjoyed the benefits and retirement plan. Some respondents listed job security as the reason why they stay.

Moving to a different area and winning the lottery were common answers for why respondents would leave their current organization. Five respondents stated other reasons why they would leave, which included working environment, coworkers, and senior maintenance staff.

Many respondents believe others leave their agency due to better pay or benefits elsewhere (84.2%), as well as better working conditions or schedules (60.5%). Six respondents (15.8%) listed other reasons why they think others leave their agency, which included negative treatment from coworkers, personality conflicts, scheduling issues, and regulations.

When considering steps an agency can take to improve job satisfaction, most respondents (81.6%) wanted to see an increase in their pay. Merit-based pay and improved facilities or equipment were also common answers (over 40%). Few respondents listed that mentoring opportunities or improving workplace diversity would increase job satisfaction.

Most respondents stated that they would recommend employment at their organization (56.8%) or that they would recommend employment but with reservations (29.7%). When asked to describe the reservations, respondents mentioned that prospective employees would need to be flexible with their schedule, should have the ability to handle politics, and should be forewarned about initial pay. For those who did not recommend employment at their agency, reasons included limitations in work-life balance due to the schedule required, budget restrictions, and issues with managers.

When asked to share any additional thoughts or information on their experience as a winter maintenance worker or if they had suggestions to improve recruitment or retention of employees, pay was by far the most commonly mentioned issue. While many respondents seemed to enjoy and take pride in what they do, they believed the pay was too low and is most likely the reason why people do not apply for these types of jobs.

Private Contractor Survey

For the private contractor survey, the research team only received three responses from two US states and one Canadian province (Figure 5). [Note that significant additional effort went into reaching private contractors and requesting responses to this survey, with very limited success. While not the focus of this research effort, private contractors represent an important group that has not yet been adequately captured in this survey.]



Figure 5. Private Contractor Respondent Locations

Respondent companies had a variety of main business purposes including highway maintenance, distribution of deicing products, and excavation. Two respondents noted that 25% of their business was contracted snow removal. One respondent noted that none of their business was contracted snow removal. Those that were conducting snow removal were contracted by the state or with a locality.

Both respondents that were contracting for snow removal noted that they had faced a shortage of qualified snow removal workers during the 2019-2020 winter season. One noted that this shortage had caused the company to lose business over the last three years.

Respondents with a snow removal workforce had a small number of employees, less than 15. These were mostly people who were employed directly with the company and were full-time, year-round staff with an hourly pay ranging from \$15 to \$20 per hour.

Recruitment and Retention

Respondents noted challenges recruiting, hiring, and retaining employees due to applicants that had poor or unsuitable prior employment and that lacked the requisite minimum skills/experience levels.

Respondents reported implementing successful recruitment strategies such as competitive benefits packages that included free gym memberships and providing employees with new equipment.

Two respondents (66.7%) noted that they had some difficulty retaining qualified snow removal employees, primarily due to termination for unsatisfactory performance and absenteeism.

Only one respondent was using exit interviews to understand why employees were leaving the company. This respondent found questions related to the treatment of employees by their direct supervisor to be the most helpful.

INTERVIEW SUMMARIES

Susan Baillargeon

Interview with Front Range Community College

January 27, 2021

Theme: AAS degree in Highway Management

The Associates in Applied Science (AAS) Highway Management degree program was created by Front Range Community College (FRCC) in collaboration with the Colorado Dept of Transportation (CDOT), the Colorado American Public Works Association chapter, the Colorado Local Technical Assistance Program (LTAP), American Traffic Safety Services Association (ATSSA), National Highway Institute (NHI), American Association of State Highway and Transportation Officials (AASHTO), Colorado Asphalt Pavement Association (CAPA), and Transportation Curriculum Coordinating Council (TC3). The program officially began in 2019.

The AAS in Highway Management is a two-year, 60 credit-hour degree designed to prepare highway maintenance employees to pursue management positions in highway maintenance. Students develop skills in project management, planning, supervision, communication, and team building. It prepares students for potential promotion to supervision and mid-level management positions. The AAS program elective courses can fall under: highway engineering, materials and structures, equipment operations and management, incident and emergency management and weather events, and environmental. The full curriculum is provided below.

Of note, this is not a training program for persons with no experience in this field; rather, it is for current employees of municipal and county public works departments, state departments of transportation, and federal, special districts/ authorities or other organizations that are responsible for maintenance of roadways.

All courses are offered online and not restricted to Colorado residents. In fact, there are several students from other states, though most (about 50%) are from CDOT. [Program make up: 23 state DOT employees from 6 different states, 14 Public Works employees from 3 different states, 2 private industry employees from Colorado, 1 airport (DIA) employee.] The program is now in its fourth semester and has 47 students.

Currently, the typical students are males, 30-50 years old. Their experience ranges from a few years to more than 10 years working in roadway maintenance. Some students can transfer previous college credit towards the general education and management courses. To Susan's knowledge, no agency has made attendance in or completion of the AAS program a requirement for promotion, though most of the students' agencies support their employees' participation through tuition reimbursement or allowing "class time and work" during work hours. However, the students generally consider obtaining the AAS as a career enhancer. Likewise, participation in the program may indirectly be a "positive" for retention.

The goal was to not "reinvent the wheel," so the AAS program provides credit for obtaining a CDL and courses like Occupational Safety and Health administration (OSHA), TC3, ATSSA, NHI, approved DOT trainings, and LTAPs (such as Road Scholar offerings). [NOTE: During the interview Dave Bergner informed Susan of the training and certification courses for Work Zone Traffic Safety, Signs and

Markings, Street Lighting and Traffic Signal Technicians offered by International Municipal Signal Association, and he recommended that these courses be accepted for credit. He also suggested that she consider the Certified Public Manager program courses as well.] This prior learning assessment (PLA), the process of evaluating knowledge and skills learned already and awarding college credit, has helped to fast track many of the students in the program. The current cost for the program is \$21,800 (in state) and typical employer assistance is about \$5,800. It takes students about 4 years to complete the program while they are working. When PLAs apply to students, the costs and time are significantly reduced (Figure 6).

PROGRAM COMPLETION SCENARIOS (ESTIMATES SUBJECT TO CHANGE)		
Entry-Level Maintenance Worker (no relevant experience)	Cost to Complete Program	Time to Complete Program
Entry-Level Maintenance Worker (no relevant experience)		4 years
• No employer financial assistance	\$21,800 (\$27,000 out-of-state)	
• Employer financial assistance	\$5,800 (\$8,000 out-of-state)	
Experienced Maintenance Worker		2 years
• No employer financial assistance	\$13,100 (\$16,000 out-of-state)	
• Employer financial assistance	\$3,400 (\$5,000 out-of-state)	

Figure 6. Summary of typical costs, employer financial assistance, and estimated completion time.

There have been some conversations about creating an entry-level certificate program for high-school students to promote interest in maintenance as a career. FRCC is considering developing a four-year Bachelors program in Highway Maintenance.

A full program description and list of courses is available on the [Highway Maintenance Management AAS webpage](https://frontrange.smartcatalogiq.com/Current/Catalog/Program-Information/My-Academic-Plans-MAPS/Business-and-Information-Technology/Highway-Maintenance-Management/Highway-Maintenance-Management-Associate-of-Applied-Science) of Front Range Community College.

(<https://frontrange.smartcatalogiq.com/Current/Catalog/Program-Information/My-Academic-Plans-MAPS/Business-and-Information-Technology/Highway-Maintenance-Management/Highway-Maintenance-Management-Associate-of-Applied-Science>)

FIRST SEMESTER

Course	Title	Credits
HWY 101	Intro to Highway Maintenance & Operations	3
MAN 128	Human Relations in Organizations	3
MAN 226	Principles of Management	3
MATH	MAT 107 or Higher or MAT 108	3
ENGLISH	ENG 121/131	3
Total Credit Hours:		15

SECOND SEMESTER

Course	Title	Credits
<u>MAN 116</u>	Principles of Supervision	3
<u>MAN 224</u>	Leadership	3
<u>MAN 241</u>	Project Management in Organizations	3
<u>GEN EDU</u>	CIS 118/155	3
<u>GEN EDU</u>	COM 115/125	3
Total Credit Hours:		15

THIRD SEMESTER

Course	Title	Credits
<u>MAN 230</u>	Corporate Ethics & Social Responsibility	3
<u>GEN EDU</u>	COM 220 or POS 125	3
<u>HWY 100</u>	Highway Maintenance & Operations Safety	1
<u>HWY 105</u>	Traffic Control	2
<u>HWY 110</u>	Highway Asset Management	1
<u>HWY 115</u>	Pavement Preservation	2
<u>HWY 255</u>	Highway Maintenance Leadership	4
Total Credit Hours:		16

FOURTH SEMESTER

Course	Title	Credits
<u>ELECTIVE</u>	HWY 210 or Any Highway AAS Degree Elective*	3
<u>ELECTIVE</u>	HWY 210 or Any Highway AAS Degree Elective*	3
<u>ELECTIVE</u>	HWY 210 or Any Highway AAS Degree Elective*	3
<u>ELECTIVE</u>	HWY 210 or Any Highway AAS Degree Elective*	3
<u>CAPSTONE</u>	HWY 288/289	2
Total Credit Hours:		14

TOTAL CREDIT HOURS: 60

Ken Flore

Interview with Michigan DOT

February 11, 2021

Theme: Partnership with the Department of Corrections

Training programs with the Department of Corrections (program goals, activities to date, number of participants, etc.)

Ken is the Statewide Program Coordinator for MDOT. He oversees all training for maintenance employees and organizes the winter operations classes. He works with all new hires that come through winter operations and need to learn how to plow snow with their DOT equipment. MDOT does not help employees get CDLs now, although they used to. Ken worked at DOC as a corrections officer so is familiar with the system.

Getting qualified candidates is an issue for the DOT and the agency is constantly short staffed.

The DOC has a Vocational Village program (https://www.michigan.gov/corrections/0,4551,7-119-33218_75514---,00.html) (see video and other information on the website), located in Jackson, MI (largest walled prison in the state) and Ionia, MI in one of the smaller minimum security prisons in the middle of the state.

The Vocational Village Programs include training in welding, computer numerical controlled machining, carpentry, plumbing, electrical, tree trimming, computer coding, masonry and concrete, CDL and Forklift operations, and automotive technology. Program participants earn state and national industry recognized certifications. The program takes advantage of both the classroom and shop learning environments. Everyone in the program lives together. Evening programs focus on cognitive learning to aid in successful transition from prison. The program focuses on training prisoners based on their aptitude and desires to learn the jobs/trades that are in demand in the counties where they will be released. The DOC partners with the Michigan Works agencies and the state's talent investment program to identify the labor market needs, which in turn determines the training needs and offerings. The DOC actively works with the business community, inviting company representatives to come see the Vocational Village in action, meet the program participants, and conduct job interviews. The Vocational Village Program was developed by the Michigan DOC in 2016 and continues to grow and be successful.

In the last two years there have been conversations between the DOC and DOT about shortages of DOT plow drivers and a lack of qualified applicants (without CDL), so DOT and DOC looked at adding to the CDL course information to serve the needs of the DOT. The Jackson, MI Vocational Village facility hired a full time CDL instructor, who was a long-haul driver and instructor, and he now trains the program participants. The CDL program acquired two snowplow driving simulators that are used in the training program to support the needs of the DOT and local counties.

To qualify for the Vocational Village Programs prisoners must be:

- Within one year of release/exit date,
- A level 1 prisoner, located at a low/minimum security prison,
- Model citizens, with no tickets due to poor behavior, and
- Able to complete the program, which is 6-9 month long.

The program is structured so that the prisoners have all of their classroom work and testing done when they leave on parole or max out of their sentences. Then, all they need to do is take the driving test to complete the CDL and DOT program. For the Michigan DOT, the Vocational Village Programs provide the supplemental workforce needed in winter months. (**Supplemental Materials:** Vocational Village Fact Sheet (Figure 7)).

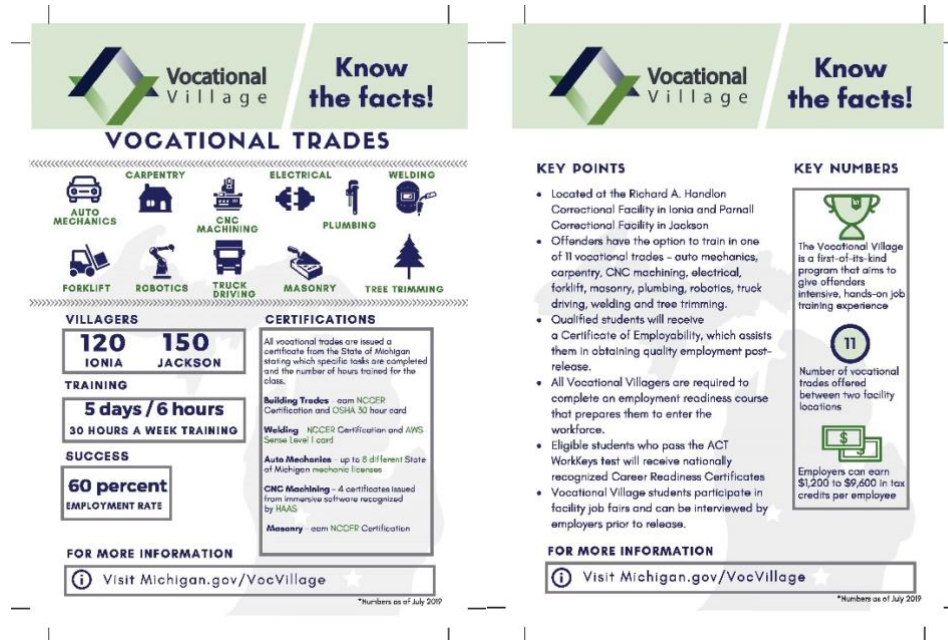


Figure 7. Vocational Village Fact Sheet

Most prisoners are from the Detroit area, but the Detroit DOT Maintenance Facility has a small staff with few shortages. Instead, the DOT needs help filling positions in the southwest part of Michigan, which has a large workforce and the greatest number of unfilled jobs. To encourage the program participants to work elsewhere, the state provides participants with an apartment and other assistance for a certain amount of time to help them transition to a new location.

Michigan DOT has 384 full time Transportation Maintenance Worker (TMW) employees, at 33 garages statewide. From October through April, the DOT doubles the number of staff, hiring seasonal workers to fill its needs. This seasonal shortage is why the DOT sees a great benefit from hiring from the Vocational Village Program to get new workers started in the TMW work force. The DOT conducts interviews and fully vets each applicant regardless of where they come from.

Ken and other training staff members had planned to go into the prison to lead the classroom portion of the Winter Operations School. This would occur approximately every 6 months, then the prisoners could work with MDOT or a county, and have a certificate to use when they apply for jobs. Unfortunately, the COVID pandemic hit, so the program was stopped. The prisons have been closed to visitors, so all trainings have stopped. There has not yet been a shift to conduct the DOC CDL TMW trainings virtually.

As a result, the DOT has not benefited yet from the Vocational Village Program. Ken is not sure about a path forward due to COVID limitations. The Governor of Michigan had said the state may open up

starting in May, 2021, but it is likely it will be closer to January 2022 before many agencies return to “normal” operations.

Other Topics

The MDOT Winter Operations School is still offering training to DOT staff because it is mandated by the state, and plow drivers are essential front-line workers. However, normally there would be 100-150 attendees each session, but this year there were only 60. Some of these were MDOT engineers and other staff that currently have CDLs and stepped up to help with winter operations.

Michigan DOT is also always lacking electricians. Even with high unemployment rates in Michigan, the agency cannot attract enough job applicants.

In Michigan plow drivers are essential works/first responders and were getting vaccinated until the state ran out vaccines. The vaccine is not mandatory, and the vaccines were only accepted by 50% of workers at the initial DOT shed they were made available to.

Additional Suggestions

An ongoing issue is that the Michigan DOT pays a lower salary than what long haul truckers make. Once a CDL is in hand, the individual needs to see the DOT as a desirable place to work to offset the lower pay. A Tri-Area trucking company and the Michigan Department of Natural Resources have a program that helps drivers obtain a CDL for \$2600 (a significant cost savings). This is an option the DOT is looking into.

Michigan is also considering a program implemented in Minnesota. Minnesota DOT has created a supplemental winter workforce using existing employees, such as secretaries, engineers, and others. The DOT helps these staff get their CDL, and then when needed the agency calls an “all hands on deck” to handle larger winter events. While Michigan DOT has discussed this, no action has been initiated to develop it yet.

Michigan DOT is also talking about bringing back a policy to allow hiring of individuals without a CDL and then getting them trained on the job. The agency would craft some contract language that would require these employees to work with DOT for a minimum amount of time (such as one year), and if they left before, they would have to pay back the DOT for the cost of getting their CDL and CDL fees.

[Neal Glatt](#)

Interview with Grow the Bench

February 23, 2021

Themes: Consultant, technical training, employee focused leadership and development

Resources

Neal Glatt suggested using resources, such as Gallup documents and tools, to identify and support issues that are important to employees, for example incentives other than pay .

There are numerous studies and research projects on this subject, including one through Gallup, [Analytics & Advice About Everything That Matters \(gallup.com\)](#). Key points include:

- The path of success and the implementation is very well researched, proven and affordable

- How do employees feel about the organization they are working for?
- Do they have clarity? Do they see how their services contribute and have value?
- Engagement directly relates to retention.

Recruitment

To improve recruitment, it is essential to understand what folks really want:

- What makes a job good?
- Learning and growth...are we providing this and are we advertising this?

These recruitment questions can also be used to enhance retention.

Additional recruitment suggestions include:

- Using outcome driven recruitment versus simply listing job responsibilities or skills can be an effective approach.
- Values have evolved and they need to be considered in the recruitment and retention processes. In particular, younger generations have different
- Highway managers need to understand psychological benefits and convey them in job advertisements

Neal forwarded a number of resources to research team members and offered to meet with them virtually to further discuss.

Supplemental materials : [State of American Workplace, Gallup, 2017](#)

Jeremiah Hutchinson

Interview with Maine DOT

December 1, 2020

Themes: Pay Incentives; Recruitment Strategies; Benefits Packages

Pay Scale/Incentive Pay

Geographically, Maine Department of Transportation (DOT) faces different challenges throughout their state. In Southern Maine, there is more competition for jobs between the public and private sector when compared to Northern Maine. Maine DOT added a stipend to its base pay to address recruitment issues. For most of the state, this resulted in additional pay of approximately \$2 per hour and in Southern Maine it resulted in additional pay of approximately \$3 per hour. This stipend was found to be helpful for recruiting winter maintenance workers.

As part of a collective bargaining agreement, another change was the addition of a winter maintenance allowance. About two years ago, this allowance was implemented to provide additional pay for each week a winter maintenance worker is available to plow. This allowance started at \$50 per week but was increased to \$100 per week in 2019. The workers receive this pay at the end of the winter season. If they leave the DOT before the end of the winter season, they receive no allowance, so this has created an incentive for workers to stay on through the winter season when it is critical to keep skilled staff available to plow roads. With a typical winter season running from early November to the beginning of April, this can be a substantial amount of money that the workers earn. To be eligible for the winter maintenance allowance a worker must have the required certifications, including a snow fighter certification acquired through Maine DOT and a commercial driver's license (CDL). They must also be available to plow that week (not out on workers compensation, vacation, etc.). Most of Maine DOT's workers are eligible for this allowance, with a few exceptions including new employees that have not been certified to operate a plow. The allowance program is currently available to the transportation worker (TW) series, which includes plow drivers and crew leaders.

Transportation Worker Series Progression/Training

Winter maintenance workers are hired within the transportation worker job series at Maine DOT. This job classification has eight steps and three classifications (TW I to TW III). To progress to the next step in the TW series, a worker must complete specific tests, which are offered four times a year. Typically, there is a written test with a proctor and an equipment test. Once workers pass the test, they are reclassified to the next step in the TW series and receive their new course list. It typically takes approximately 1.5 to 2 years to complete. Maine DOT offers trainings during working hours with employees receiving up to 3 days of paid training time per year. If employees want or need additional training time, they may need to complete it on their own time. So far, the DOT has not received requests for trainings from people outside the organization.

After workers complete the TW series, they have the option to move on to the transportation leader (TL) or transportation supervisor (TS) series. These job classifications are competitive and require a worker to apply when jobs are posted.

CDL

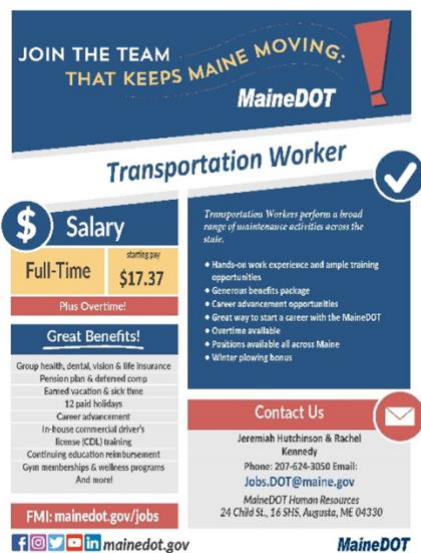
Maine DOT will hire workers without a CDL. Maine DOT offers in-house training and allows employees to use their equipment to train and test for a CDL. Maine DOT will pay for workers to take their CDL and the licensing requirements once; if they fail, subsequent attempts become their financial responsibility. Progressing to step 3 in the TW series requires that workers have their Class A CDL.

Pay Scale

The TW 1 pay scale starts at approximately \$16.80 per hour for most of the state. In Southern Maine starting pay is \$18.25 per hour. Starting pay in Southern Maine is slightly higher due to a higher cost of living and more competitive job market. At each of the 8 steps in the TW series, employees receive a salary increase. They also receive an increase for each year of gained experience at the DOT, regardless of their progress through the training series. The TW 3 position pay tops out at \$20.17 per hour plus the \$2 per hour stipend mentioned previously.

Recruitment

Maine DOT has utilized a number of recruitment opportunities including advertisements on websites, free job boards like Indeed, and social media. Over the last few years, Maine DOT switched to an online application system, which can make it more difficult for some applicants. The agency still offers paper applications to those who request one. Recently Maine DOT increased its use of social media, for example advertising jobs on its Facebook page. One of the drawbacks is they have received negative feedback, such as comments on Facebook mostly geared towards the pay. After receiving the negative feedback on social media, the DOT switched gears to promote job opportunities by focusing on the benefits that workers receive. The DOT is currently working on job posters and Facebook campaigns for rural towns in Northern Maine that will highlight the benefits package offered by the state (see Figure 8). The DOT believes that while private contractors may pay a little more for starting wages, they may not be providing the same benefits.



The job poster is titled "JOIN THE TEAM THAT KEEPS MAINE MOVING. MaineDOT Transportation Worker". It features a blue and white color scheme with a red exclamation mark icon. The poster is divided into several sections: "Salary" (Full-Time starting pay \$17.37, plus overtime), "Great Benefits!" (listing group health, pension, vacation, etc.), "Contact Us" (Jeremiah Hutchinson & Rachel Kennedy, phone: 207-624-3050, email: Jobs.DOT@maine.gov), and "FMI: mainedot.gov/jobs". Social media icons for Facebook, Instagram, YouTube, and LinkedIn are at the bottom left, and the MaineDOT logo is at the bottom right.

JOIN THE TEAM THAT KEEPS MAINE MOVING.
MaineDOT

Transportation Worker

Salary
Full-Time starting pay **\$17.37**
Plus Overtime!

Great Benefits!
Group health, dental, vision & life insurance
Pension plan & deferred comp
Earned vacation & sick time
12 paid holidays
Career advancement
In-house commercial driver's license (CDL) training
Continuing education reimbursement
Gym memberships & wellness programs
And more!

Contact Us
Jeremiah Hutchinson & Rachel Kennedy
Phone: 207-624-3050 Email: Jobs.DOT@maine.gov
MaineDOT Human Resources
24 Child St., 16 SHS, Augusta, ME 04330

FMI: mainedot.gov/jobs

[f](https://www.facebook.com/mainedot) [i](https://www.instagram.com/mainedot) [y](https://www.youtube.com/mainedot) [in](https://www.linkedin.com/mainedot) mainedot.gov **MaineDOT**

Figure 8: Maine Job Poster

Benefits highlighted in the advertisement include winter allowance (\$100/week); boot allowance (\$150/year); phone allowance; annual merit increase/COL increase; medical, dental, vision benefits/insurance; retirement program; 12 paid holidays; continued education/training; and overtime.

Other Incentives – Phone Allowance/Boot Allowance/Overtime

Workers receive a phone allowance of approximately \$13 per month. This is an old benefit that was to compensate for workers needing to have a landline for call ins, but also applies to help cover costs of personal cell phones used to communicate while on the job or for call ins.

Maine DOT provides some gear to employees including jackets, gloves, and hardhats. The agency also offers a boot allowance of \$150 per year.

Winter maintenance workers at the DOT have a standard M-F (7:30 am – 3:30 pm) schedule. Any work outside of those hours is time and a half so plow drivers have the opportunity to earn overtime pay.

Wage Compression

The transportation leadership (TL) roles at the DOT do not receive the same incentives as those in the transportation worker (TW) series. This has resulted in wage compression between the worker series and the leadership series. The DOT is currently working to resolve this issue to incentivize workers to move into leadership roles.

[Maura Kelly, Associate Professor of Sociology, Portland State University](#)

Interview with Portland State University

January 26, 2021

Themes: Diversity

Oregon Highway Construction Workforce Development Program

The Oregon Highway Construction Workforce Development program has invested in programs and supportive services aimed at promoting recruitment and retention of a more diverse workforce within the highway construction trades. The program was jointly initiated by the Oregon Department of Transportation (ODOT) and Oregon Bureau of Labor and Industries (BOLI). The program was launched in 2010, and Maura Kelly has utilized apprentice data, phone surveys of apprentices, qualitative interviews, and job site interviews starting in 2011 to provide an ongoing evaluation of the program. **Supplemental material:** [2020 Evaluations of the Highway Construction Workforce Development Program](#).

How this program started

Public agencies are funding construction trades jobs, but jobs are predominantly going to white males (which is only a segment of the population they serve). There was a desire to increase the diversity of highway construction trades workers using public funds to support the initiative. One issue with recruitment is that 90-95% of apprentices come into the field based on a referral from an existing apprentice. There is a tight referral network based on “who you know” and that tends to be white and male. Some agencies and apprenticeship program try to offer incentives for referrals to expand the tight referral environment.

Most/least successful recruitment measures

People love to engage with schools (most fun way to do outreach), but there is not a lot of data to show how much impact this has on career choices down the line. Job fairs are also commonly used and there is some anecdotal evidence that people find their way into the trades through job fairs, but no firm numbers. Marketing can be very costly, and the impact is hard to measure. Oregon Tradeswomen does advertise on bus stops and billboards, and they use more diverse photos of people in the trades, but it is hard to measure impact.

Pre-apprenticeship programs are easier to track. Key partners have been Oregon Tradeswomen (who specifically conduct outreach to women) and Constructing Hope (which builds pathways for people coming out of prison, <https://www.constructinghope.org/>). Pre-apprenticeships have been shown to provide a small boost for men of color, but the biggest boost has been with women (20% of women apprentices come from a pre-apprenticeship program).

Just showing up at a job site can be intimidating without prior experience. Pre-apprenticeship programs provide preparatory information on what to expect at the job site, address expectations and strategies regarding harassment, provide basic skills training (construction math, safety certifications, etc.) and equipment, and make the transition easier.

Most/least successful retention measures

The ODOT/BOLI highway construction workforce development program was launched over concerns regarding lack of retention of apprentices in the highway trades. Start-up costs in the first year can cause some apprentices to drop out if they don't have the finances to invest in good boots and other gear. The trades experienced heavy loss of first-year apprentices. The idea of the program was to provide some support to ensure all apprentices had basic needs to help keep them on the road to completion and success. Addressing small financial challenges by providing some funds proved helpful. Evaluation of the program over the past 10 years shows that this approach does work. By providing a little support, agencies can improve retention rates (especially among women of all ethnic groups, and some groups of men).

The program also provided non-financial support/mentoring. This was fairly informal, but there was a point of contact within the program who would meet with apprentices, go help them buy boots, and have informal conversations with them on topics such as why good boots were important, why persistence in the trades is important, and more. The BOLI data identified 4 people receiving "official" non-financial support, but interview data revealed 20 people who reported receiving non-financial support. Having that informal point of contact for assistance proved really helpful to many apprentices. Program evaluation data showed that mentoring and decision-making support was also helpful to apprentices and an effective part of the program. **People who received both the financial and non-financial "wrap-around" support that connected them to other services did the best.** While the current program does not provide complete "wrap-around" support, it is close and a step in the right direction.

The program additionally provided limited "hardship" funds of \$1000 to cover transportation costs and other expenses during a transition period on the job. Especially for formerly incarcerated people and

those coming out of poverty, many of whom have no other source of financial support until they receive their first paycheck, this support can be critical.

Overall, evaluation data showed that **non-financial help had the greatest effect on retention, followed by support to acquire job-ready items (boots, gear, etc.)**, even though that tends to be a one-time option. They saw less of an effect on retention of providing short-term travel/gas assistance (probably because it represents an ongoing need). The impact of providing childcare support was inconclusive (probably due to irregular schedules that don't correspond to standard daycare hours).

All of these recruitment strategies require a consistent funding stream to be effective.

General Strategies for other agencies

It might be helpful for agencies to develop a checklist of potential challenges workers are facing and the potential programs, strategies, etc. that can help address the challenges. Check in with workers periodically using the checklist to identify potential strategies to identify why people might be considering leaving and to identify what can be fixed or potential solutions. Turnover is costly to an agency, reaching out to folks to assist them when they are still just thinking about leaving is important – often these issues can be addressed before they leave an agency.

Green Dot for Trades Bystander Intervention Program

Maura Kelly has also been involved in evaluating **workplace climate improvement** programs for women and minorities on the highway construction job site, in particular the [Green Dot for Trades bystander intervention program](#). Green Dot for trades is a bystander intervention program designed to reduce harassment on construction job sites. This training program provides workers with strategies to intervene to address harassment on the job and proactive strategies to prevent harassment.

How this program got started

In 2013, the industry began hosting focus groups about construction workplace harassment. Just in the last year, the industry has really begun to mobilize around promoting respectful workplaces. Some recent hate crimes pushed contractors to address the issues of everyday discrimination/harassment on job sites. Groups started with a “safe from hate” pledge that has now become a “Safe from Hate” alliance with regular meetings of stakeholders who work to address jobsite culture issues. Green DOT was the first time a program had been rolled out to address on-the-job harassment. The program focuses on staff training (what does harassment look like? What should you do about it when you see it?) and bystander intervention. It trains workers on how to respond when they witness harassment at work.

Early evidence indicates that these programs can be effective at changing jobsite behavior. There was improvement at locations where it was implemented. However, people were still experiencing harassment (averaging 7 reports/month) so more needs to be done.

A similar program developed by ANEW (Apprenticeship and Nontraditional Employment for Women, <https://anewaop.org/>) looks more promising because it is more comprehensive and includes education, bystander intervention, a third-party hotline, and review of internal structures (e.g. company policies

and procedures). This program is being implemented in Seattle as a RISE Up pilot but has not been formally evaluated yet (<https://www.sgs-riseup.org/>).

Both program pilots have been voluntary. To broaden implementation, it may be necessary to mandate these programs in contracts (similar to how safety requirements have been incorporated into contracting processes).

Oregon has dedicated funds every year to its highway workforce development program and respectful workplace trainings. ODOT appears to be committed to moving these pilots forward to incorporate Rise Up into its job sites soon.

General strategies for agencies

Most managers don't want harassment on the job site, but that commitment doesn't always trickle down through the hierarchy. Harassment policy may not be implemented or enforced by mid-level managers, superintendents, foreman, and journeymen. They have job security but don't always share high level values of the company. To implement change, a commitment to respectful workplaces must extend throughout a company or organization. Upper management needs to clearly articulate expectations of employees and mandate certain behaviors at work.

Jobsite discrimination has a negative impact on retention. For example, women and minorities often are assigned menial and repetitive jobs. As a result, they are not learning the "skilled" part of the trade and are more likely to leave. Workers experiencing discrimination are much more likely to leave. Investment is made in each worker so turnover is expensive. There is a financial reason to retain workers, which can be used to justify the cost of retention-focused programs.

Additional Recruitment/Retention Suggestions

It might be worthwhile to look at what current workers are doing in the off season to identify potential additional pools for recruitment. Is there a natural pipeline of workers between seasonal winter/summer jobs? If pools identified are predominantly made up of white men, are there other pools that could be targeted? It may be necessary to focus on identifying diverse pools of potential workers for recruitment.

Reaching out to Veterans is another potential pool of workers – only about 5% of construction workers in Oregon are Veterans. This would be a diverse and often already trained pool of potential applicants.

John Klostermann

Arielle Swift

Interview with City of Dubuque, IA

February 26, 2021

Themes: Apprenticeship Program; Recruitment

Typical Winter Operations

For the City of Dubuque, IA, winter operations run from November 15th through April 1st. Average snowfall is 43 inches, in about 22 yearly events. The City has a population of 59,000 and treats roughly 590 lane miles; it is responsible for managing bus stops, City facilities, and state right-of-way sidewalks only (not all sidewalks).

Staff

Typically, the City of Dubuque, has a staff of around 35 people to assist with snow and ice operations. The City runs two 12-hour shifts (day and night) which remain in place for the entire season (employees on day shift stay on day shift). These are full-time, year-round staff. In addition, the City has one auxiliary employee from the parks department who will assist with winter maintenance operations during the winter season.

Plow operators receive shift differentials depending on the shift worked and on-call pay when they are on-call over the weekends (during the weekdays, being on-call is considered part of their schedule).

During the 2020-2021 winter season, the City faced a shortage of employees going into the winter season and a hiring freeze due to COVID. The department was able to fill gaps by pulling in people from the engineering department and other public works employees who do not normally plow (for example, signal technicians).

The City has recently struggled with a knowledge gap after many retirements. Instead of competition with the private sector, the public works department loses people to other departments that offer more regular schedules or better pay.

The City has a career ladder progression for winter maintenance employees (Table 2). Raises are step-based depending on the number of years employed. Entry level positions at the City do require a commercial driver's license (CDL), though depending on the applicant pool the City will hire candidates without a CDL under the stipulation that they need to obtain one by the winter season. Currently the City does not offer reimbursements to obtain a CDL.

Table 2. City of Dubuque Job Classifications (Winter Maintenance)

Position	Hourly Starting Pay	Hourly Maximum Pay
Utility Worker	\$23.08	\$25.83
Equipment Operator I	\$23.55	\$26.40
Equipment Operator II	\$24.06	\$27.03
Foreperson	\$25.50	\$28.97

One area of concern for the City is retention of mechanics. The City has strong competition from the private sector for these positions due to higher wages. The City offers a better benefits package, so it is exploring ways to promote the larger picture of earnings with benefits, which could be beneficial.

Recruitment

During the 2020-21 winter season, the City was in a hiring freeze due to COVID. Normally the maintenance department recruits employees using websites like APWA, Indeed, newspapers, and Iowa Workforce Development. If the department has a small pool of applicants, it will expand efforts as needed.

Staff do not currently attend career fairs but are working to create a “career subscription box” to conduct outreach with local schools. These subscription boxes can be sent to local high schools and community colleges and are full of classroom activities that can teach students about the job opportunities available at the City. The City is working with various departments including engineering, public works, and parks to create different subscription boxes that will teach students about the various careers available.

In addition to the subscription boxes, the City has a job shadow program for students interested in a career at the City, as well as an apprenticeship program (see description below).

The public works department has started working with the public information office to help create social media posts like “transformation Tuesdays” in which the department posts a picture of a road before and after maintenance. The office also shares videos that show the day-to-day activities at public works to help open people’s eyes to what they do and job opportunities that are available.

Apprenticeship Program

The City of Dubuque has recently launched its apprenticeship program, and the first apprentice has just finished the first year of the program. This program is registered through the state department to provide on-the-job skills in public works. The program lasts two years and provides a mix of classroom work and on-the-job duties. The current apprentice likes the variety of work available in the program; during the program the apprentice assists with daily operations in the public works department so each day can be different. Duties range from snow and ice control to concrete and asphalt maintenance, to repairing guard rail. In addition to learning maintenance and construction skills, the apprentice was able to obtain a CDL. The apprentice is also required to be a college student; the current apprentice attends courses half-time at the Northern Iowa Community College.

Upon completion of the program, the apprentice is not guaranteed a job at the City but does receive a certificate of completion and a wide variety of on-the-job experience to take into a career.

Suggestions for Different Approaches

To create a positive workplace environment, the public works department tries to find ways to bring fun back into road maintenance jobs, such as by hosting employee picnics or other events. Staff members have worked to build those relationships and camaraderie among the team. Additionally, one of the interviewees said she likes to take every opportunity to get out there and learn about what staff do in

the field. This has helped to create camaraderie from the top down, and it has helped to improve the visibility of women in management positions. She believes this will help to improve recruitment of women into public works careers in the future.

Supplemental information: [Appendix D](#) – Dubuque Apprenticeship Education Outline

Doug McLaughlin

Interview of Ohio DOT Training Supervisor and Program Manager County Management Training Program
March 16, 2021

Themes: Mentorship Program

The Ohio DOT offers a County Management Training Program (CMTP), which is a 6-month program from May thru October that covers various areas related to Highway Maintenance. A key part of the CMTP program is the mentorship program, which provides employees the opportunity to build relationships and network with others across the agency who continue to support and offer help throughout their career. Overall, the program allows folks to develop their skill set for a career path in highway work.

The CMTP originated around 2009 through a collective effort with Training and the Operations Staff. They have no hard data to benchmark outcomes; however, there are numerous accounts of staff member who moved up through the program and progressed to being active mentors to others, especially within Districts or their own regions.

Due to COVID the in-person training program was suspended as well.

Supplemental Material: The following CMTP program materials are provided in [Appendix D](#) – Ohio DOT CMTP Program Materials

- CMTP Program Brochure
- CMTP Mission Statement
- 2018 CMTP Course Schedule
- How I want to be coached & mentored form

Matt Morreim

Interview of Dept. of Public Works, St. Paul, MN, Street Maintenance Manager
February 24, 2021

Themes: Recruitment and retention at local road agency

Winter Maintenance Operations

For the St. Paul, MN Department of Public Works, the winter operations season unofficially starts around October 15 when staff starts getting some salters ready. The department receives heavy equipment for the winter season on November 15th. The “winter schedule” typically begins on Thanksgiving weekend or the weekend after. The department transitions out of the winter schedule in late March but no later than April 1st. The heavy equipment is usually rented until March 15th, but the vendor is flexible if there is still availability.

Average annual snowfall is 50 inches. Typically, there are 20-30 winter events and 3-5 snow emergencies. The department serves a population of 300,000. There are 56 square miles in the jurisdiction, with 1,900 lane miles (873 center line miles). The department also maintains city-owned pedestrian and bike facilities. Winter maintenance operations are staffed using three 8-hour shifts.

Staff Shortages

The department is short on employees. It uses two different hiring cycles in spring and fall. Depending on turnover, the department needs to do these cycles twice if needed. When the department hires in early December, the employees start in late January, which is not ideal because it is mid-winter and the new staff needs to come up to speed.

Staff Departures

The main reasons for staff departures are retirement and resignations. The department used to lay off 10+ people a year but discontinued this practice. The layoffs made employees feel insecure about their jobs, and they would look elsewhere. The department has a 1-year probationary period and uses it strictly to address issues with new employees. There are usually only about 1-2 people a year that are let go in the probationary period.

A few years ago, the department modified the hiring process to reach better candidates. There is no residence requirement for employees.

50% of people that have left or resigned have asked to come back. Overall, the department retains staff well. Employees have flexible schedules, the ability to work overtime and make 20% more with overtime pay, and other benefits that help retain staff.

Where Employees Live

Most employees come from the Twin City region. Some come from Minneapolis and Wisconsin, which is not far from St. Paul. Only 20% of staff live in St. Paul, which is much less than 10+ years ago.

Applicant Recruitment

Starting 6-7 years ago, there was a big dip in the number of applicants recruited from advertising on traditional channels. The department uses paid advertisements, social media, Facebook, job websites, League of Minnesota Cities (governmental work job postings), and the City Jobs website. The City Jobs website is more commonly used; applicants can sign up for automatic updates for different job types and notifications.

The department has been trying new things. For CDL positions, the department plans to do a billboard where there is a lot of semi-truck traffic in the metro area. It has moved away from using newspaper advertisements. Operators and snowplow drivers do not use LinkedIn. LinkedIn is more effective for technical positions. There is active recruitment in diverse areas on non-English radio stations – there are large Hmong and Spanish speaking populations in the area. The department has successfully hired approximately 10 employees a year from this approach. This method has been especially successful for filling the training positions, which do not require CDL and instead offer on the job training and CDL on the job.

The agency had a goal of bringing in a more diverse candidate pool and to attain a workforce that is at least 20% diverse. There has been more success in the Trainee program, no CDL required, than with on-

the-job training where they get these skills and then get hired on in a skilled position. The last trainee hire was February 2020 (pre-COVID), and the program is currently on hold due to COVID.

The agency continually has more retirements and so there is always a need for more employees.

Impact of Attaining CDL on the job

For the trainee positions who earn their CDL on the job, the department has been successful in retaining these staff. These trainees are typically only a few years into the program.

Effective Recruitment

The department has a local outreach program that has been helpful, with a recruitment method that includes an open house after the initial outreach event. People come in and apply for the jobs on the computers in the office. They get to see the facilities, and staff get to meet the new prospects. It has been successful at reaching potential applicants that might not have computer access at home.

Competition for Applicants

There is competition for CDL jobs in the trucking industry. Minnesota has a short construction season. Road construction employees work 14-16 hours a day in spring, summer, and fall, and then are laid off in the winter. These positions do not offer the year-round stability or set hours the winter maintenance operations jobs offer. So, construction is only appealing to people who want seasonal work.

Pay Rates

Two main job titles and pay rates are available:

- Street service worker (plow drivers): \$25.25 /hr (~75 staff)
- Heavy equipment operator (HEO): \$29.50 /hr
- Trainee: \$16.50 /hr, pushing to increase to \$20+ /hr. They do everything a service worker does, minus CDL. (Through training, the department invests \$3000-\$4000 invested in each employee.)
- Supervisors: 12 supervisors, for a total staff of about 100
- Temporary/seasonal workers: only 1-2 each year

Pay is fairly competitive, and employees can work overtime, as well as earn pay premiums for various jobs (e.g. night shift 6% premium) – so there are ways to earn more. However, there are not bonuses. All full-time staff qualify for benefits and the workforce is unionized.

Filling Plow Driver Shifts

Some plow drivers are full-time employees pulled from traffic and sewer departments. The agency has also pulled three people from design to help plow with the smaller 1-ton vehicles. It has started pulling in recent retirees as temporary employees, who only work during large plow/salting operations. Last winter, the agency tried it with two retirees. They have to be out of work for 1 month to qualify and then come back as a temporary employee. They need to do a drug test and physical to get rehired. They can be drug tested at any time, and they are only called in for large operations.

Minnesota has legalized medical marijuana, but there is no exemption for CDL drivers. The agency doesn't require a DOT medical card for staff.

Retention Efforts

The work environment keeps people on staff; the agency is reasonable with leave, and many employees don't want to work more than 40 hours a week. The work schedules are flexible around holidays, especially summer holidays. The department pauses operations around key holidays to support staff and morale. Contract changes are under consideration to incentivize on call pay. The department is negotiating this (aka, Seasonal disruption pay)) to increase responses to on call requests.

When there is a lot of work, the department is stricter with leave. It provides Heavy Equipment Operator training in house to get employees bumped up in duties and pay. All staff get to try new things, and the managers work to pair staff to keep things happy, harmonious, and productive. There is not a lot of flexibility available with pay/financial incentives.

Retention is good; there is lots of overtime (OT) potential plus premium pay for more difficult jobs, such as night shift and "tacking" (crack sealing). Most employees feel that the department offers a good organization, equipment, supervisors, facilities, and equal opportunity.

Advance Notice of Operations

The department has a day and night shift. To bridge the 24 hours during events, managers will keep the day people later and have night shift come in early. If a large event (8-12+ inches) occurs on a weekend, the department will send an alert that the event may be coming and staff should be ready to be called in. Otherwise, the office typically sends out notification 4-12 hours in advance (all based on forecast accuracy). Weekend crews are kept small, so it is likely this would happen on the weekends with a large storm forecasted. [The department uses Everbridge, a web-based tool, to notify employees to come in. It was first used for emergency management. Users can leave a message or send out message to groups, and it allows for a set number of responses. The system reaches staff via text, voice message, or email, but some employees still have home phones (which is a challenge).]

Reasons for Staff Departures

Some employees feel that they did not have opportunities for advancement. There is a large group of supervisors without a lot of turnover, therefore not a lot of advancement opportunity. The department is based in a large city with bad roads, so the staff have to do a lot of pothole patching, which is hard work. Newer employees may leave due to shifts they don't like, like night shifts. Day and night shifts are based on seniority, so newer staff are almost always assigned to night shift. (Some people prefer nights – few cars, etc. There are about 10-15 staff who really like it and they get the 6% pay increase.). Some may leave because of low pay. However, the benefits are good, and some employees don't realize the value of benefits.

Exit Interviews

Human Resources (HR) conducts exit interviews, or sometimes the supervisors. HR provides feedback from exit interviews. The feedback from HR includes everything mentioned above, or more because sometimes employees do not speak up about issues until they leave.

Recruitment Suggestions

Increasing the budget for recruitment would help. It is a highly competitive environment for CDL jobs, and the department would like to be able to pay \$1-2 more an hour. For outreach, it is important to convey that it is a desirable job, so recruiters try to lay out some of the benefits. The benefits offered are

better than most public agencies in real dollars. The department is working on communicating this to HR to use in recruiting. Putting more emphasis on benefits may make the jobs look more appealing.

Benefits Offered

- PERA Retirement Association – city and counties in Minnesota, pension system, retirement match for some unions.
- Health savings plan, post-retirement health plans, and sick leave

Denise Osmond

Raeann Schmitcke

Interview with North Dakota DOT

February 9, 2021

Themes: Leadership Development Journey Program, Dept of Corrections, Minority Recruitment, Be Smart Program

Notes from Survey Response

“We created a program, called **Be Smart**, where we go into **elementary and high schools** to talk about defensive driving and careers with NDDOT. This is successful because we are putting the idea of working for us in their head when they are young. We also take part in community **touch a truck events** where we see a lot of kids excited to sit in a snowplow. We have held our own **community fairs** to have the public come sit in a snowplow. We take a snowplow to the ND State Fair for 10 days. The events where we have the equipment there for the public to see have all been very successful. **Recruiting at college and high school career fairs goes over well for other positions but not as well for the highway maintenance workers.** We have started **working with the prison to talk with current inmates that are ready to be released.** We have not seen success with this yet but hope to in the future.”

Be Smart Program

The Be Smart outreach program targets elementary and high school students. This program was created years ago in one DOT district by an equipment operator as a way to get students interested in roadway safety, equipment, and DOT activities. For the elementary school aged students, the DOT created a coloring book that the districts can hand out with crayons. Operators at the DOT have created a PowerPoint to use during outreach; this presentation is tweaked for each district so operators can upload photos to share their local context. The presentation covers roadway safety topics such as seatbelt safety, never pass a snowplow, and summer vs. winter driving. For the elementary school students, this presentation is kept local and high level, whereas for high school students it is much more in depth. The Be Smart program tries to hit home with the local connections. For the older students, the presenters will show images of a crash, construction zone incidents, summer vs. winter driving challenges, and that road safety is for everyone. Driver’s education instructors in the summer can request that operators bring a snowplow. Students are able to get in the plow and see how all the technology works, including learning about line of sight and what a snowplow operator can see from the driver’s seat. The driver’s education instructors are great at reaching out and partnering with the DOT.

Denise started the “bring your kid to work day” program where kids can get a tour of the DOT headquarters office and state capitol. They watch presentations from various DOT personnel – including videos of a DOT pilot flying through a storm. The program is well liked, and the DOT is looking to move the program to a virtual option due to COVID.

Denise has received feedback from parents that their children have learned and shared information on the importance of wearing a seatbelt or to never pass a snowplow.

In 2015 North Dakota DOT became involved in [Vision Zero](#). As a part of these efforts, the DOT has partnered with the Department of Public Health and the State Highway Patrol with the goal of zero roadway fatalities. Vision Zero is discussed at the schools; this goal can be difficult to communicate but when you ask a student how many fatalities are acceptable the answer is always zero.

Many of these programs were offered pre-COVID, with plans to restart them when in-person activities can resume.

Denise shared a Flickr account (Poppy Mills, local photographer):

<https://www.flickr.com/photos/nddot/albums> - There are photos from the Transportation Expo, Winter Weather, and Driving Skills for Life folders. Photographs from these events are shared via social media and the state DOT website.

Other Tools to Engage with the Community

At the State Fair or at Be Smart events, DOT staff allow folks to “sign the snowplow blade.” The DOT then uses a sealant to coat the plow blade so the names last through the winter season. The Valley City District participates in parades and dresses up the plow with Christmas lights. The DOT is aware of safety concerns but strongly encourages support at local events.

The DOT puts on “Touch a Truck” events at local and state fairs where members of the public can get into the plow and see the technology. For these events, the DOT will bring the tow plow which is always a point of discussion for the adults. The size of the equipment always makes an impression. Denise will use these events to help recruit and always brings an operator or subject matter expert to any event.

Events are always tied to the state DOT mission to “safely move people and goods” and reinforce the concept that when working at the DOT everyone has an impact on that mission.

Quantifying Recruitment Efforts

NDDOT used to have a metric to measure success of recruitment and safety improvements. The new program doesn’t allow for this data to be captured. Now it is all done by Raeann and Denise from memory and based on the list of the schools and events they attended.

Reaching candidates

NDDOT uses the KX Net (job posting web service) careers page and targets potential candidates from across all of ND, SD, MT, MN, and other nearby states. NDDOT has seen a lot of success with this job posting site, often receiving over 1,500 applicants annually.

Denise is a member of the Young Professionals network (<https://ypnetwork.org/>), an organization outside of her DOT job, and as a part of this she sets up programs and presentations that often promote the DOT and opportunities. The target group is high school level. Stepping Up is one such program where DOT staff members will go into high schools and talk about their career interests and will present on opportunities at the DOT.

Tangible Outreach Materials

- *Presentation*
- *Coloring Books*
- *Snow Plow – can go into and take pictures (Social Media posts)*

High School Outreach

The DOT is involved with the Health, Trade, and Tech Fair held at North Dakota State University (NDSU). This career fair is held in coordination with public school junior and senior high school students. Over 2,000 students attend annually. For 3-4 hours students can speak with employers; they are given instructions and a list of questions to ask employers depending on their career interests. The kids talk with employers and report back. This helps to connect students with potential employers. Usually 100 employers are involved each year, of which the DOT is one of them. The DOT sets up a booth space and brings drones and a thermal imaging camera to show students how the DOT utilizes technology. These discussions are often eye opening for students. This is one of Denise's favorite events. This event takes place every December but due to COVID it did not happen in 2020. There are plans to move the event to a virtual platform.

Metrics used to track the success of this event are similar to those used for the Be Smart program. Anecdotally, a recent career fair attendee interviewed with the DOT and was hired the next day.

Community College/College Outreach

NDDOT tries to go to as many college and university career fairs as possible. The recruiters typically focus on schools with an engineering program to help fill engineering positions, specifically civil, at the DOT. They have also targeted schools with diesel mechanic programs to help fill fleet or equipment technician positions. The DOT attends career fairs in both the fall and spring, but often finds the spring career fair to be more impactful as that is when students are more likely to be looking for a job.

Denise and other DOT staff try to maintain connections at the local colleges and universities through serving on academic advisory boards and other forums. Schools will ask if NDDOT will come and talk to students about careers, offer resumé critiques, conduct mock interviews, discuss professionalism in the workplace, and describe workforce expectations. Due to COVID everything has moved to a virtual platform, and Denise believes this has improved outreach to students. Now the students are seeking them out, so the presentations are being attended by people who are there because they are interested.

College and Post-graduate Internship Program

NDDOT has an internship program available in all eight districts statewide. Each district receives \$50,000 bi-annually to hire an intern. It is up to the district to determine what type of intern and expertise are

needed and then hire an intern based on these district-level needs. This year, the DOT is using cost savings to fund additional internship positions. The department was able to hire its first biology intern for the environmental program at the DOT. The DOT can hire interns without a degree as long as they are enrolled in a college or university program during the upcoming fall. The DOT has more internships than ever this year and provides a wide range of internship programs ranging from materials and research to planning. A recent planning department intern was brought on to support a newly hired economist. This intern will work on how to better communicate with the public. The DOT takes pride in the internship program and providing on the job experience to students.

Department of Corrections Outreach

Governor Burgum strongly supports reform of inmates and new ways to integrate former inmates back into society and professional career fields. The State worked to make inmates on work release eligible for state jobs. This was done by removing questions on job applications that asked about former convictions/felonies. This way an applicant's past cannot influence the hiring process and when conducting a background check the state cannot disqualify an applicant based on prior convictions. This creates an inviting environment where applicants are not judged before coming through the door. This program was just getting started when COVID hit, so outreach to the correctional facilities has slowed.

Pre-COVID, the driver's license division program was of most interest to inmates. The division went to correctional facilities to talk about career opportunities and the real ID program. Outreach materials to the DOC inmates are focused on the real ID program, how to obtain a driver's license and CDL, and opportunities to work for the state. This program was driven by inmates' interest in getting a CDL. Denise has been in contact with the DOC to see if it is possible to do virtual outreach events. The current DOT human resources director previously worked at DOC as a parole officer, so she is very passionate about the program.

Similar programs have worked well in the private sector, but this is just getting started at the state level. One example is the ND State Capitol cafeteria, which is a huge hiring agency for inmates in the work release program or after they are out. Specifically, in Bismarck, ND, there is a lot of competition for jobs, so unfortunately it is unlikely that former inmates will get the job because of the large applicant pool. Generally, the state is working to change the mindset that state jobs are not for inmates and hopes to resume and expand these efforts in the future.

The DOT uses work of mouth to track the success of the program. Program managers do not want any employees feeling judged, and they want everyone to have a fair shot at their job.

To ensure program safety, the DOT tries to have two people attend these outreach events at the DOC. This may include two HR professionals or often the HR person will meet an operator or engineer from the local district.

CDL

The DOT discusses obtaining a CDL during many outreach events. To obtain a CDL a person must complete an online portion of the application, which includes a written knowledge exam, and take a skills test (Class B). The DOT will hire individuals who have completed the knowledge portion of the CDL

(Class B) exam, then will allow that worker to use DOT equipment to complete the skills test in order to obtain a full CDL. This program has been a great perk for new employees.

Internal Retention Programs

Retention of staff at NDDOT has ebbed and flowed over the years. The DOT has had a [Leadership Development Journey program](#) for around two years and is beginning to see success from the program now. When the program began, everyone at the DOT was encouraged to sign up. The program currently has around 150 members (out of around 1,000 employees). The state took notice of the program and developed a Leadership program called [Leadership Everywhere](#). The Leadership Everywhere program has a manager path and an employee path. The program consists of 10 TED courses. Upon completion of this program, attendees receive a certificate. Overall, this program has been more popular; it encourages champions and leaders within the leadership program.

The state of North Dakota has brought in speakers and partnered with Gallup to conduct employee surveys. The surveys provide meaningful information that is then applied by state agencies. The DOT is trying to focus on job engagement versus satisfaction. Overall survey response numbers were low for both job satisfaction and engagement, so the DOT is working on how to tease out each element and the influence of each to job satisfaction. In the past, these survey results were not shared with employees; now the DOT is working with Gallup to show survey results to employees and take action based on the findings. The goal is to show employees that the DOT is listening and will invest time and money in its employees. For example, in the past the DOT heard that there were few opportunities for trainings, so it is working to schedule more training opportunities. With COVID, most trainings have moved to virtual and are offered for free; this has helped to increase access.

The DOT does pay staff to complete trainings. The department will bring in outside presenters, such as a recent training on happiness in the workplace. Some trainings do occur at night, but these can be recorded and made available to staff during working hours.

For in-person training the DOT pays for all staff travel costs. Each office has training dollars to spend. The offices typically send two employees to AASHTO events each year. Managers determine who can most benefit from the training and send them. They also send employees to Leadership trainings within the state, and the executive office at the DOT pays for these. As long as there is funding for travel to trainings, staff will continue to benefit from this.

Minority Outreach

Native Americans are the key demographic group targeted by NDDOT outreach programs. The DOT has an Equal Employment Opportunity (EEO) directive and reports employment numbers to the Federal Highway Administration annually. Due to the locations of tribal lands in the state, the DOT has a limited number of Native Americans in maintenance or equipment/operations fields. To address this, the DOT focused on communities where there are more opportunities. Outreach included sharing job opportunities through local movie theater ads, newspapers, Bismarck Online classified ads, and through job services at the DOT.

The DOT set up specific job fairs to allow people to come explore the DOT and learn about careers. Additionally, the department does extensive social media outreach. During large winter events the DOT will send out pictures of the road conditions to promote working at the DOT. “If you want to see these roads open sooner, come work for us.” During a recent 3-day road closure from a storm event, the DOT posted photos to social media; these posts were picked up by local TV news and radio and the DOT benefited from some free advertising for these job openings. The department also uses TV and radio ads for jobs and to promote career fairs.

NDDOT attends a Tribal Engagement Summit. Additionally, for tribal outreach, the DOT works with local middle and high schools, and community colleges to do career fairs and hand out recruitment packets. There is always a lot of enthusiasm at the middle school and high school tribal fairs. The DOT gets a lot of questions about long term jobs, retirements, and benefits. The DOT focuses on sharing information about all job opportunities – pilots, lawyers, mechanics, operator, engineers, and more to cater to everyone’s interests.

Women in the Workplace

At the NDDOT, women typically go into engineering positions. The positions that women fill most frequently do not always align with key hiring needs. The department has at least one female maintenance crew member within each district. Denise will bring a female engineer or equipment operator to career fairs and has found this to have a huge impact, allowing students to see women in all positions at the DOT. The NDDOT also has a weeklong work study partnership program that allows students to learn about different jobs. This program provides high school kids with exposure to different jobs and local district level tours of DOT facilities.

The DOT uses the Statewide EEO metrics to track success of equity and diversity in the workplace. These metrics are tracked annually and reported to the DOT Civil Rights division and then reported to FHWA.

Other Outreach Efforts

The DOT is currently working to get at least one vehicle wrapped to advertise DOT careers.

Supplemental Materials: [Appendix D](#) - North Dakota DOT Recruitment Packet & Leadership Program Power Point

Robert (Bob) Pallo

Scott Lucas

Interview with Ohio DOT

December 4, 2020

Themes: Employee Benefits; Highway Technician Series; Succession Planning

Staff Overview

Bob is a Highway Management Administrator at Ohio Department of Transportation (ODOT). He oversees staff in six counties (Ashtabula, Mahoning, Portage, Stark, Summit, and Trumbull). Within each county there is a manager or transportation administrator who manages local staff. Within Bob’s district

there are three urban counties with Summit County being the most urban. The district has approximately 30 garages and outposts and approximately 250 staff. Three counties reside within the snowbelt. Ashtabula County receives the most snowfall in the area.

Recruitment Issues

New employees are coming to the DOT with a very broad range of previous experience, including car dealerships, family business, road construction, and more. Many come to the DOT looking for better job security or benefits.

In some of the more urban counties, the county governments pay workers more than what ODOT offers to Highway Technicians. This is a challenge for ODOT.

Pay Scale

ODOT has a highway technician (HT) worker classification series. A HT 1 starts at approximately \$18.05 per hour. ODOT has found the HT series to be beneficial and those who are within the series tend to stay with ODOT. The people who they lose tend to have just started and have not worked through the series yet; they are often leaving for a pay bump to around \$20 per hour.

Mechanics

ODOT is losing mechanics (4-5 over the last few years) to the private sector (Ohio Edison, Columbia Gas, etc.). The mechanics are leaving the DOT for \$10 to \$15 per hour raises. This has created a position that is hard to fill. There have been recent talks of creating a new diesel technician series at the DOT, similar to the HT series, to help retain mechanics.

Highway Technician Program

The HT program has multiple stages during which employees complete courses and obtain certifications of progress. Employees are allowed a maximum of six classes in their first year, which is the probation period for new hires. The DOT also offers truck and loader school which is a two-week training where employees learn how to operate a dump truck, chainsaw, chipper, loader, and snowplow. Employees also learn about roadway safety. Employees are highly trained when they come out of the HT program. HT 2 employees are American Concrete Institute (ACI) certified. Upon completion of the HT series, employees are making close to \$25 per hour.

Organization Benefits

The HT series has really helped to retain workers. If workers have the initiative, they quickly become crew leaders and if they are motivated, they can get through the series fast.

Once a worker hits HT 2, they are required to complete 520 hours of construction experience. These workers are transferred from maintenance to construction to fast track them through those required hours. It then falls back on them to get the remaining training and classes to qualify for an HT 3 position. This cross training brings a lot of knowledge back to the maintenance division.

Benefits

Ohio DOT used to offer employees a certificate or list of all their benefits annually. In District 4, a similar certificate is provided to workers to show the benefits of progressing through the HT series, but this is not offered statewide. This was also used as a reminder to employees of available benefits.

Workers receive a boot credit. This is available to most job classifications on the maintenance side. They also have an annual t-shirt credit for high visibility t-shirts, and once workers are off probation, they get a high visibility jacket or coat. Mechanics at the DOT also receive a tool allotment.

The union offers tuition reimbursement for education and training on anything related to their position description. The DOT has fully embraced workers utilizing this benefit and has had one highway technician complete civil engineering school and become a Professional Engineer.

Common Concerns

The DOT has a quality of work-life survey that employees complete annually (though this was not completed in 2020 due to COVID). Results of this survey found that employees have several common concerns, including a lack of staffing (caused in part by downsizing at the DOT over the years), staff size, bad managers, interpersonal issues, and pay scale.

Snow and ice operations are the DOT's signature activity so when there's not enough people, workers can often run multiple routes and can become disgruntled and overworked. This is also a health and safety issue.

Recommendations for Recruitment/Retention – Succession Planning

Workers within the HT series control their own destiny at the DOT. This program requires motivated people who want to move through that series. There have been personal success stories at the DOT (Bob started at the DOT as a highway worker and used education reimbursements offered by the state to become a PE). Bob works with the highway workers coming off the probationary period to talk to them about available opportunities within the organization. He has found it helpful to share his story and to discuss the opportunities available to workers at the DOT.

The DOT offers a management apprenticeship program (MAP) that allows workers to shadow a manager and learn EIMS (Equipment, Inventory, Materials) and KRONOS (a capital management tool). When managers go on vacation or are otherwise out of the office, they forward their cellphone to these workers and they get to be an acting manager for the week/weekend. Workers do have to ask to participate in this program; some have run with it and have become overall better employees who fully understands what a manager does day-to-day.

Additionally, the DOT has a "becoming a supervisor someday" (BOSS) training that is offered to employees and managers. They receive training on how to manage employees and deal with interpersonal relationships.

Generally, the DOT is in constant succession planning. There have been recent efforts to ramp up how managers are treated and to reward them financially. If a manager does district-wide projects and goes

above and beyond, they are rewarded for that. The DOT saw the need to reward both sides - workers and managers.

Recruitment Strategies

The DOT is just recently coming out of a hiring freeze from COVID. The department uses the seasonal hiring program to help identify permanent staff. Social media is also used to advertise jobs.

The DOT has an apprentice program where workers can go through an internal CDL training to help obtain their CDL. This program does not guarantee a job upon completion, so often participants will look to the municipalities for jobs.

District 4 sees higher turnover in the more urban counties because there is more competition with other employers. In more rural areas this is less of an issue. The DOT has seen some employees transfer to other counties once they have their foot in the door. Pay among the counties can become competitive if the urban counties pay more. There is the concern that employees will transfer there and leave more rural areas struggling to find employees.

The District does not recruit differently among the counties. Recruitment of employees often involves the DOT attending job fairs and having managers go into high schools and technical schools to show off equipment and discuss opportunities at the state. At technical schools, the recruiters try to target programs where students are learning a trade.

The DOT has a recruitment program for disadvantaged neighborhoods, a veteran recruitment program, and a department of corrections program that helps former offenders get a CDL and work at the DOT. In more rural areas, recruiting a diverse workforce can be a challenge.

Commitment Document

Recently the DOT created a Challenge/Commitment Document for staff. Workers sign this document committing to work for the Team. This document helped to create a team mindset among employees and commits them to help each other. The document has helped to create buy-in with new hires at the DOT. So far, management and the highway technician staff have signed this document.

[Bryan Pickworth](#)

Kevin McCarthy

Interview with Farmington Hills, MI

February 25, 2021

Themes: Benefits Programs; Staffing Changes; Job Fairs; Recruitment Programs

Staff

The City of Farmington Hills, MI has laborer positions (Laborer 1 – Laborer 2), operator positions (Operator 1 – Operator 3), and supervisory positions. Laborers can come to the agency without a CDL, and the City will train those in Laborer 2 positions to obtain a CDL. When an operator position opens up, they are eligible to apply. Operators are required by the local union to have a CDL.

During the 2020-2021 winter season, the City lost employees to retirement, which left a shortage of employees with a CDL who could operate heavy equipment. In this case, the City only looked to hire people who already had a CDL to immediately fill that need within the agency. Generally the City has struggled to find good candidates who have a CDL *and* plowing experience.

The city activates plowing operations when they have 4 inches of snow. In this case, laborer positions will plow using pickup trucks with a plow blade, and operator positions will plow using a more traditional snowplow. In instances when more people are needed, the City can bring in auxiliary staff from the mechanical and engineering divisions. These auxiliary staff operate pickup trucks with a plow blade similar to the laborers. For auxiliary employees, their main job requirements take priority, so while assisting with plowing operations they are always just a radio call away in case they are needed back at the shop.

The City previously tried to use contractors for winter maintenance activities (plowing) but found that they lacked knowledge of the local road system. By offering overtime pay, the City found it could do it more efficiently in-house.

Recruitment

The City is involved in numerous recruitment activities. Primarily, jobs are posted through the agency website and job sites like Indeed. The My Career Quest Job Fair is used to recruit high school students and upcoming graduates into seasonal positions. This job fair is part of efforts from the Governor's Office to promote skilled labor as a viable career choice. The career fair typically takes place in the fall but with COVID it did not happen in 2020. The budget allows for up to 13 seasonal employees but the City has had seasonal employee leave because of a lack of full time opportunities.

On the western side of Michigan, the American Public Works Association (APWA) has hosted a summer camp and a boot camp for students. During the summer camp, high school students come in for two weeks and learn about skilled trade jobs available within public works. The boot camp is a similar program available to college aged students; attendees come into a Department of Public Works and learn on the job skills so that they can enter the field. The local APWA chapter has been involved with planning a technician or public service program at Grand Rapids Community College.

The City has worked to recruit from underrepresented populations. Four of the road employees are women, which had initially been a large cultural change at the City, but now has been accepted. Bryan believes that hiring the first woman worker helped to open the door for the other three, because it helped show that women can be represented in these jobs. As the equipment for maintenance has improved, the image that these jobs are just for men has slowly begun to change. At the City, there is no glass ceiling for women, and pay rates are equitable: if a woman is hired as an Operator I she is paid the same as all other Operator I positions.

To improve recruitment, Bryan would like to see a dedicated staff member who is focused on recruitment. There are good relationships with the City of Farmington Hills and its sister cities, so Bryan would like to see a program similar to the APWA bootcamp set up locally to help create a larger pool of potential applicants.

Programs like the boot camp, touch a truck events, and other outreach activities have helped people see what the plow operators do, and in turn have helped to promote the job.

Retention

Employees are trained on good equipment, and the City always strives to promote from within. Additionally, the City keeps an open-door policy for communications and conducts annual reviews. These strategies help to retain good employees. Around 2003-2004, the city modified its pension program so older employees who were grandfathered in on the previous pension program have more of an incentive to stay on to keep their pension. Younger employees have their retirement funds invested in a 401k, which has made it easier for them to leave. After the recession of 2008-2009, city employees haven't seen many raises, and with pensions and benefits changes this has made careers at the City less attractive to some.

For the people who do come into the maintenance division, most stay because they enjoy the job and the hours. Over time, it has become more and more difficult to fill positions. The City has been able to "sell" the job to some based on the hours (7 am – 3 pm with no weekends unless they are activated for a snow event).

The City works to create a positive workplace culture. Before COVID, the teams would have potluck safety meetings and similar events.

Pay Scale and Benefits

Starting pay for a laborer (entry level position) is approximately \$18 per hour. Pay starts around \$20 per hour for heavy equipment operators and around \$30 per hour for supervisor positions. The starting pay is roughly \$2 per hour less than the private sector in the region, which has made recruitment difficult. However, the City has had employees leave and come back due to better benefits in the public sector.

Raises at the City are step based, not merit based. The City offers a boot allowance as well as uniforms and winter clothing every year.

Training

The City promotes workers through the Public Service Institute and the Road Scholar programs. Currently they have two employees in the Road Scholar program, which is a 3-year program that provides fundamentals of road safety, maintenance, management, and exposure to other topics relevant to transportation careers. An employee who wants to be promoted to a supervisory position must complete the Michigan Public Works Institute. This program costs around \$1,200 per year per employee. Employees have also attended and participated in the Winter Maintenance Supervisor and Winter Maintenance Operator courses at the APWA Snow Conference.

In addition, the APWA Winter Maintenance and Operator Conference was in Michigan recently. The City shuttled employees back and forth each day so that they were able to attend that conference.

[Amanda Regnier](#)

Interview with ITD about the Horizontal Career Paths

January 20, 2021

Themes: Horizontal Career Paths, recruitment, retention

Horizontal Career Paths

The Idaho Transportation Department (ITD) started horizontal career paths (HCPs) about 6 years ago, which revised how employees got pay raises. HCPs help to retain employees and ensure that everyone meets the same expectations. The department first implemented these paths with maintenance workers (the largest group of workers in ITD).

There are four HCP programs now:

- Technical transportation operations (TTO) – snowplow, on the ground employees, etc.
- Foreman
- TTE (design and construction)
- Engineers

ITD is working to get another path pushed through for mechanics (waiting on approval process now). The goal is to improve retention of mechanics. There has been some push back on creating more HCPs because they tend to lump people together, but this program has shown to improve retention. ITD has been looking at additional incentive programs; for example, the districts now have tools available for employees, so they no longer need to bring in their own.

When the HCPs were first rolled out, the greatest challenge was having everyone in the agency go through the full program no matter how long they had been in the agency. This was required in order to ensure there was consistency across all employees. This was met with some resistance, but now the people who were resistant are more supportive of the program because they saw pay increases with each step:

- \$14.50 starting pay, whereas Step 1 in the HCP program starts at \$15.35. Recently they created a \$2 pay increase for the bottom level step up to \$17+. This has created a lot of incentive for doing that program

See Supplemental Information documents ([Appendix D](#)) for TTO, TOTL, TESL, and TTE that provide information on compensation, requirements, and other components.

ITD meets annually (around June) to consider if program changes are needed. Changes are only made once per year in order to reduce confusion related to career path requirements. Generally, people are on board now; employees have the option to opt out, but few choose to. Employees are paid for trainings, which are offered quarterly during worktime. ITD sees little push back on the program now; employees see the value of the program.

Construction and Design HCP divisions have now merged together. This helped to utilize resources more efficiently and helped employees see the benefits of understanding each side.

Each HCP is a successful standalone program. Despite some initial resistance, now staff are asking and seeking out next trainings.

ITD has two full-time equipment trainers. They were hired based on a cost analysis that compared outsourcing vs in-house trainers. ITD decided to hire two internal people to deliver training. The

department pays for travel, and the trainers can be deployed at any time vs. trying to contract and schedule individual training programs. Overall, this has helped to reduce travel. One trainer can travel to the district vs. 10 people traveling to a training. In addition, each district has different snowplows and equipment, so it also allows for training to be flexible.

ITD tries to deliver trainings by October so new employees are ready for winter. Trainings are scheduled a year in advance, so employees can plan for them.

Impacts of HCPs on the Workplace

It took a couple of years for the program to show impacts on employee culture. In the last year the workers who completed Step One got a \$2/hr pay increase. This helped show employees that ITD was investing in their development, and they became more invested in the program.

Up until 1.5 years ago there was still some push back, but now there has been enough learning and knowledge gained from the program. Getting the program off the ground took some time and was the most difficult part.

Initially, participation was required but now employees can opt out. However, new hires to ITD see the value/benefits of the program.

Program promotion and awareness

As new staff are hired at ITD, they are made aware of their HCPs programs and how they can progress through them. They are provided all documents for HCPs. It is also listed in the job description.

Lessons Learned during Program Implementation

- Document exactly what you want
- Don't make changes multiple times a year
- Define the process clearly to avoid confusion
- Listen to employees
- Start small, you can always expand later
- Have an internal training team who manage these staff to deliver the required training. Utilize TC3 for online training/track trainings.
- Teach people how to use the online training management system.
- Expose employees to the "other side of the house." Through TTO step 3, employees can do team assessment, equipment certifications, and more. This gives them an opportunity to see themselves in a career in the organization. Provide them with the tools needed in their current role and expose them to positions in other divisions. This has opened up broader job opportunities for employees.
- Sell the program as a positive. Why is it good? Why are we doing it? Explain to new employees the value of the program.
- Define clear expectations and what employees will get from HCPs.
- Consistency has been most valuable to keep people invested in this program – ITD remains consistent in what it offers and how it is delivered.

CDL

CDL regulations are changing, so will need to be monitored.

Benefits for highway worker staff

ITD has a boot program and provide vests/winter clothing. There are a lot of benefits that come with the job.

Survey of Employee Expectations

ITD started implementing a survey to investigate employee expectations (see [Appendix D](#) – ITD Supplemental Information: Program Delivery Survey Results 2020).

From the survey, ITD management has learned that several things are important to employees and trainers: being open and flexible to input on training timing, supporting staff, listening to what trainings employees need/want, and being flexible to how the training fits with their schedule. New trainings have been added based on staff suggestions. ITD has provided training that wasn't specifically required by ITD but was requested by employees. ITD has had partner organizations come in for specific trainings. Additionally, trainings have been added to their career paths based on employee suggestions and since they fit in to their job requirements, ITD approved them. ITD is focused on listening to what is working and what is not working. This has helped to promote buy-in from top to bottom and from the bottom up. The more buy-in attained at every level, the more successful the program will be. This has helped to set a clear standard of what is expected at the DOT.

Goal Setting

ITD is focused on identifying and helping employees achieve individual goals.

Safety standards

Safety is an expectation. ITD does safety trainings and follows OSHA requirements.

ITD just rolled out new vests with X's on the back as part of a new campaign ("If you see the X's, their back is to you.")

ITD rolled out a new program to certify people on equipment. Two trainers were hired to help deliver consistent training to ITD district employees. ITD partnered with the local college to create the program. Each step has more advanced and specific safety trainings. Every employee is required to obtain certification within the first step (dump truck) and through to step 3 (snow blowers, graders, etc.). This program was rolled out three years ago. Employees who want to operate equipment must go through the ITD certification program. This ensures that employees are trained consistently and that they understand ITD's expectations. This has resulted in improved roadway and worker safety. ITD has seen a huge demand for those trainings, and they have been integrated into the HCP program.

Unexpected Training Requests

Management was surprised by the number of requests for trainings for new equipment roll-outs. Even people who have been operating equipment for a while have wanted this; there is no resistance anymore to the training program.

Completion Times

The typical time to complete one step in the HCP program is one year. June 15th (end of the fiscal year) is the cut off to meet requirements to progress to the next step. Employees who are hired in January are unlikely to meet the requirements by that cutoff date and will need to wait until the next year. This is done to make things simple for Human Resources to complete required paperwork and track necessary trainings for employees.

The only exception is for engineers. When engineers pass their PE license, they receive a PE pay raise right away, but they still need to meet the other requirements to progress to their next step.

Training Enrollment

For any step, an employee can take any training series even if it is in the next step (and regardless of the cut-off date). Employees who need the training can get priority for certain classes. Using the course management software, ITD can set up which groups can register for a training first, then if it doesn't fill the department opens it up to others. ITD learned from experience on this; classes were getting filled too quickly by highly motivated folks who did not necessarily need the class immediately, so they needed to help foster/create spaces for employees who were not registering as quickly.

COVID impacts to HCP

Prior to COVID, ITD offered all trainings in-person but now the trainings are offered online. All trainings were shifted to online by June 2020. ITD uses Microsoft Teams, which has allowed the department to open up training statewide. ITD will likely continue to utilize online training. Additionally, ITD has started to record the training sessions for those who are unable to attend at a scheduled time.

In April 2020, ITD had a program delivery conference. This conference typically has multiple breakout sessions. During a normal in-person conference only so many people can attend. This year, since it was online, people could attend all breakout sessions if they desired (28 total), and they were also recorded. A total of 1,800 people attended. COVID gave ITD the opportunity to try some things differently.

Focus of Conferences

The conferences are primarily for design and construction staff. ITD holds these annually to discuss changes in standards and share lessons learned. The department brings in outside agencies for training. ITD saw a lot of success from going online and was able to switch to a virtual platform within 30 days.

Supplemental Information ([Appendix D](#) - ITD Supplemental Information):

- Program Delivery Survey Results 2020
- Equipment Operator Training Program 2020 – Dump truck, snow plows, loaders, backhoe, mini excavator, motor grader
- TTO Training Requirements 2020, Step 1
- TOTL Training Requirements 2021, Steps 1, 2, and Continuing Education
- TESL Training Plan 2021
- Transportation Technician, Engineering (TTE) Training Plan 2021, Steps 1, 2, 3

Additional Resources

- https://www.youtube.com/watch?v=PnTg_ZiPiFY
- <http://wrtwc.org/news/2017/idaho-transportation-departments-horizontal-career-paths-produce-impressive-results/>
- https://apps.itd.idaho.gov/Apps/MediaManagerMVC/transporter/2017/081817_Trans/081817_TESLstory.html
- https://apps.itd.idaho.gov/apps/MediaManagerMVC/transporter/2016/070816_Trans/070816_TOTL.html

Phill Sexton

Interview with WIT Companies

March 10, 2021

Themes: Private winter maintenance operations, local agency recruitment and retention, employee satisfaction

The main business (WIT) involves consulting and a co-op snow removal and landscape company, as well as involvement with other snow removal contractors. About half, 50%, of the work is with the co-op, and of this about 60% is snow. The renewal of the snow portion is much higher than the landscaping and where most of the profit is coming from.

The consulting side works to help small communities realize improved efficiencies, and through this the owners have developed good relationships with the workers. The workers have expressed that they are the backbone of the operation but do not realize any of the benefits of these savings. They question - what are they getting out of this? Can they create some sort of incentive program to reward or share the benefits with the workers? Based on WIT's experience working with municipal workers, the owner believes these workers leave public sector jobs 1) because the incentives are continuing to decline as the private sector is willing to pay more up front, 2) entry level municipal workers who leave, many times also leave because they are frustrated with the pace at which decisions are made, 3) municipalities almost always only increase pay based on years worked rather than for exceeding expectations.

Recruitment

The most successful tool is a referral especially from existing employees, the second may be Facebook (FB). There are other recruiting tools but the personal connection and those created from FB have offered the most results. Within the co-op, there are designated liaisons who actively solicit for new employees and are paid an incentive for successful candidates.

Most recently it has become easier to hire during the snow season. It appears that there are more seasonal workers. The benefits provided through COVID did negatively impact the number of folks available; in some instances, other incentives and cash for labor have been used to not jeopardize unemployment status. On the flip side, COVID may have helped with outdoor work because folks do not want to be indoors.

Pay and Benefits

Pay for entry level snow removal operators in the co-op is based on nationwide markets and ranges from \$15 to \$18 per hour with a pay differential for snow work. Because of this most employees make more than \$20 per hour.

There is ample opportunity for employees to move up the career ladder; however, there is a shortage of those wanting to actually move up. There are many stories of those who start out low and evolve to running the company.

Benefits in the private sector for entry level are not as common, however many of the workers are more interested in the hourly rate as opposed to the value of the benefits. This may reflect the overall culture of the workforce. Sometimes this is seen in smaller government agencies as well.

Retention

The co-op pays an hourly rate and tracks the time throughout the year. Employees have the potential to earn an additional 3 hours' worth of pay for every hour worked in the season, if they are reliable and dependable. This is paid out at the end of the season based on the company's profits. This incentive is defined very clearly up front for all employees.

The number one issue continues to be culture and morale. In other words, employees are not necessarily just concerned about money, but also about how they are treated and how they feel about the company they work for and the job they do. Do folks want to be there? Do they feel a sense of stability? Are they learning? Are they being fairly compensated? Culture continues to be an issue in most any workforce and folks are not wanting to show up to work every day to a place where they hate spending time. It is noticeable when the workforce and communication shuts down, often this occurs when the boss walks in the room.

Regarding worker retention, base pay only comes into play in the beginning. After some time, it becomes - are they being paid enough to be there? Are they being compensated fairly for everything you are asking them to do? Are there incentives? Are there opportunities to exceed expectations and opportunity to be compensated for it (in addition to overtime)?

Comparing a private landscape company to a Department of Public Works (DPW) – the landscape company is usually always growing and needing a larger workforce and the DPW is not. When you are not a growing organization, there are limited opportunities for promotion. The DPW can be somewhat stagnant and move at a very slow pace in the decision-making processes. When workers leave government work for the private sector, it is most likely because they have no incentives to stay with the government. In the private sector the culture is a bit different due to both training opportunities and the differences in the disciplinary process. Under the current situation it is feast or famine and many times new employees are not well vetted.

For both public and private winter operations, the success of the individual is not being measured. Success is subjective and many employees do not get feedback on whether they are considered good employees or not (and why). WIT consulting services has worked with companies to develop a performance matrix that identifies benchmarks to allow employees to move upward, to move from a level 1 to a level 2 and so on. Specifics are identified for each level and the requirements to move up.

This approach creates an environment where everyone has the opportunity to move up and the organization has to allow employees to actually move up.

To gauge how employees are doing and feeling about the organization and their work, WIT shares the following “Rounding Questions” with leaders to use to check in with their staff:

- What is working well?
- What has been challenging to you?
- How can I / we be helpful?
- Do you have the resources and support you need?
- Is there anyone who has been particularly helpful to you?

The key is to ask the questions, honestly and openly listen to the responses, and then actually follow up on the answers and/or suggestions. By asking these simple questions, management can check in with their employees and communicate to them that they are valued.

Exit interviews

Most often folks just leave without providing a reason why they are leaving. Moreover, if an exit interview is possible, it often does not occur. It is not a common practice in the private sector.

[Jim Turcan](#)

Interview with Cornerstone Partners

February 16, 2021

Themes: Private winter maintenance contracted operations, recruitment, retention

Workforce

DOTs have indicated they were concerned about loss of staff to private contractors. Jim suggested that the DOT staff may be misinformed. Jim can attest to the fact that he has no staff members who used to work for the DOT, and that the stability, job security, and benefits offered by the DOT are perks that the private contractors cannot offer or match. His perspective is that government workers, especially state DOT Winter Maintenance operations employees, love their jobs and they worry about who will take their place when they retire. That DOT staff take their jobs seriously. The private contractors cannot afford to hire these employees away due to wages and benefit comps (public vs. private), at least in the Chicago area. As a private contractor it would be difficult to lure folks away from government jobs as they do not offer similar benefits.

Jim’s workers are primarily in-house landscape maintenance staff, supplemented by a smaller percentage of seasonal workers laid off from other seasonal trades such as asphalt, concrete, and earth excavating. Jim’s company looks for and partners with contractors who are shut down in the winter (landscaping, car washes, excavators, farmers, asphalt/concrete, etc.). For the seasonal employees, their maximum hours of eligible work or maximum pay rate need to be discussed with their full-time employer so as to not interrupt any labor agreements or restrictions they may have in place. About 80% of his winter staff also work for him in the summer doing landscaping, or work for other companies, and 20% are from other seasonal industries mentioned above.

Jim has observed that for younger employees there is a lack of attachment to the work. The adrenaline rush and love for working in the snow environment that is found in the older workforce, is not the same for the younger generation. Often the highly competent and skilled younger workers are looking for their next career move “up the ladder” and where they can go in the company after only 1-2 seasons in the field (more discussion of how they help staff grow in the company is provided later).

The Hispanic workforce has a large presence in his area and provides a large percentage of the labor force. The U.S. Department of Labor has the H1B and H2B government funded work visa programs that promote work in specific areas - H1B is primarily agriculture, H2B is primarily manufacturing and landscaping (typically summer seasonal work). Jim’s company chooses to not focus on hiring H2B visa holders due to constraints the program puts on hiring and pay of other staff. For example, H2B visa holders must have a starting pay of about \$15.34 (2020 rate) and if an employer has even one HB2 visa holder on the books, no one else at the company can make less than this. Other issues that led Cornerstone Partners (CPHort) to not participate in the H2B program include requirements related to recruitment costs, housing/transportation costs, expenses in training with no guarantee of the same seasonal workers returning in the future, unpredictability of the H2B program funding, availability caps set on Visas, and very late timing for arrival of H2B employees; leading to little to no time to properly train before field placement.

Work shortages have been an issue in the greater Chicago area over the past couple of years and Jim has had issues with competitors trying to hire away (poach) their workers. In addition to this, the COVID stimulus packages are further impacting the number of workers. Folks can stay home and get paid as much collecting unemployment as they did while working. There is also a lot of competition for jobs with large manufacturers and distribution warehouses in the greater Chicago area. They also offer reliable hours during a normal workday (8am- 5pm) instead of night or early morning shifts, competitive pay, benefits, and a warm working environment.

To stay competitive, Cornerstone Partners offers staff:

- Premium pay rates that increase with experience and longevity at the company
- Bonus payouts, divided into 3 incremental payouts, for any staff member with 100% attendance when called in.

These efforts have significantly helped to keep staff and create loyalty to the company. CPHort has been offering the bonuses for three years. When it was started, Jim offered his staff either guaranteed 20 hours of work a week or the \$500 bonus, and they chose the bonus. He is very pleased with how the incentive program is working as a motivator to keep landscape (summer season) staff fully engaged and employed during the winter for snow and ice operations.

Organizational Basics

Cornerstone Partners’ main business is landscaping (76%), plus snow removal (24%).

For recruitment, laborers (sidewalk clearing staff who run a shovel, snow blower, etc.) are the hardest to find. CPHort has established relationships with local weather dependent companies, such as full-service car washes, that are closed during winter storm events, and can work with CPHort during snow events.

Cornerstone Partners offers the following pay scale rates for the area. A standard laborer with no experience, such as a labor to clear sidewalks earns— [REDACTED] per hour. A small equipment operator

(skid steer, wheel loader, etc.) earns [REDACTED] per hour. Increases are progressive based on time at the company, with a 3% raise after two years based on performance, and a 6% raise after three years. The company requires these staff to take the Snow & Ice Management Association (SIMA) training and testing. A Standard Class Licensed employee earns up to [REDACTED] per hour, and an employee with a CDL earns [REDACTED] per hour maximum.

Semi-truck work is contracted out; the company uses its summer dirt haulers. In the past during salt shortages, it has used local farmers to haul salt from Michigan, when needed.

Employee Issues

The most common worker issues are complaints of not enough work, until there is too much work. This stems from the need to guarantee a consistent paycheck to employees.

As for management Issues, CPHort pays its employees a premium which directly increases overhead and cost of doing business. Insurance premiums can be higher too if the specific work tasks are more dangerous. During snow candidate job interviews, CPHort has been asked if it can pay in cash because competitors often pay in cash, and that is an immediate red flag that ends the interview. He has seen competitors hire workers as sub-contractors (who often are underinsured and uneducated to the requirements of being a subcontractor). These subcontractors often use their own personal vehicles and do not realize the personal liability they are taking on.

Benefits and Trainings Offered to Staff

CPHort offers its workers SIMA education and financial planning seminars. Illinois law, through the Department of Employment Security, allows the employer to require a limited number of unpaid trainings hours per week while staff are still collecting unemployment benefits. Jim uses this an opportunity keep all staff trained on cutting edge practices and key policies including various maintenance and safety training sessions, sexual harassment training, and related programs. CPHort provides coffee and donuts, and it is a way to keep the employees engaged and connected during slow times or the off season. The employees use this as an opportunity to network and stay connected with each other.

CPHort also offers full time salaried staff the following benefits: medical, dental, vision, IRA profit sharing retirement plan, and a discounted group rate for life insurance.

Career Path Efforts to Support Motivated Staff

Satisfying the career path for the younger generation is a challenge. Many of the younger employees gravitate toward the technology - brine making, transporting, driving liquid applicators; but they can also help with traditional snow duties when needed. One specific staff member who is highly motivated runs the brine maker now, built some mechanical improvements, ships the brine out, and really has taken on a large part of the snow control program.

COVID concerns

Management was concerned with COVID during the winter season and the potential impact to employees. So far, the company has been lucky and only had one employee out during winter who was quarantined and luckily did not expose anyone else.

Suggestions for improvement of recruitment and retention

In private contracting, good pay, bonuses, loyalty, and training assist with recruitment and retention.

Jim and CPHort participate in career fairs and outreach to look for good candidates and heighten awareness of “Get into the Trades.” The members of Associated Builders & Contractors partner with companies especially for snow and ice management to help support this initiative when their trade may be in the “off season” over winter. Many young people are not aware of the trades and the associated needs. Trade schools and trade fairs (including college level) have competitions to promote a well-qualified workforce. For example, the National Association of Landscape Professionals (NALP) really focuses on Get into the Trades, career paths in the trades, and competitions to encourage universities and colleges to get students interested in the trades (NALP apprenticeship program: <https://www.landscapeprofessionals.org/Apprenticeship>). Specifically, NALP offers National Collegiate Landscaping Competitions with financial awards to winning schools (<https://www.landscapeprofessionals.org/NCLC> scholarships - <https://www.landscapeprofessionals.org/LP/careers/LP/Foundation/Scholarships.aspx>). These programs allow for relationship building and internships with students. This practice is less common in the snow and ice industry. There are no industry standards for recruitment for snow and ice career paths. Jim suggests that this is something SIMA and ASCA should lead and pursue.

Marc Valenti

Interview with the Town of Lexington, MA

February 26, 2021

Themes: Generational Differences; Benefits; Concerns

Staff

For snow and ice operations, the Town of Lexington, MA has approximately 50 employees, including both rank and file personnel and supervisory personnel. The Town also has contracted services that include labor and equipment. All employees are under the Department of Public Works.

During the 2019-2020 winter season, the Town did not see any staff shortages outside of the norm. Managers are currently in the process of creating a new contract for union staff to improve retention. Previously, the Town faced a recurring problem when the department would hire on maintenance workers, train them including helping them get a CDL and equipment certifications, and then the workers would leave. Through the new union contract the Town removed what was previously the entry level position (laborer/truck driver), and now employees start at the heavy equipment operator level. This resulted in an increase in starting pay. Additionally, the contract puts stipulations in place that if a worker leaves employment with the town within the first two years, then the worker will have to reimburse any license expenses (CDL, hoisting license, etc.) paid by the Town.

Heavy equipment operators start out at \$22.53 per hour (or roughly \$47k per year). Every year employees receive a step raise of approximately 3 percent. Heavy equipment operators max out at \$26.20 per hour (or roughly \$55.5k per year). The Town does have to compete with the private sector, in particular because prevailing wage work in the area (which is issued by a governing authority) has mandated wages around the \$60 to \$70 per hour range for heavy equipment operators. Private sector non-prevailing wage work starts at around \$30 to \$40 per hour for heavy equipment operators.

With a competitive job market, the Town has found that turnover can be a problem. The Town has seen issues with workers leaving at the first signs of adversity, particularly within the last four years. This has been attributed to generational differences.

Benefits

The Town offers a competitive benefits package including health insurance, dental, eye care, and the state pension program. The Town of Lexington manages its own pension program locally. This program has remained well-funded when compared to other communities in the state that have a state-managed pension program. If the Town's pension fund ever falls below 50 percent liquidity of funds, then the state will step in to take over management of funds.

Employees are provided with personal protective equipment and a uniform budget. Employees receive uniform gear including shorts, pants, shirts, winter gear, and rain gear, and a \$250 boot allowance annually.

In addition, employees are provided with overtime pay, vacation time, sick time, and personal time. Longevity pay is provided to employees who have remained at the Town for 20 years or more of about \$1,000. Additionally, employees who make it to every snow event get a stipend of \$1,000 at the end of the winter season.

Recruitment

The Town utilizes social media, the agency website, and job sites like Indeed or Monster. Depending on the position level, the job announcements will be posted differently. The Town has found it beneficial to post to job sites like Indeed or Monster for maintenance positions, but for supervisory positions it is more successful to post jobs to the agency website or to association websites.

Retention

The Town encourages continuing education. It has encouraged and made funding available to maintenance employees to attend the local technical assistance program (LTAP) Road Scholar Program. In addition, the Town has a lot of local training programs that are available during normal working hours. The Town has seen challenges with employees who do not want to attend trainings outside of normal working hours without overtime pay. While trainings are not mandatory, generally those who attend trainings are more likely to receive promotions based on merit.

The Town offers a tuition reimbursement program; employees can receive up to 90 percent of their tuition costs reimbursed upon completion of a course that is related to their duties. In order to be eligible for tuition reimbursement the employee needs to receive a grade of C or higher.

Suggestions for Different Approaches

The Town would like to see more efforts or large-scale campaigns that advocate using your hands to work and that not everyone needs to go to college. This change in mindset will be a long-term effort. Efforts like reaching out to students about to graduate high school or in technical colleges would be beneficial. Locally, seniors in high school need to complete a senior capstone project. Private businesses

have worked to make projects available to students. A similar program sponsored by the public works department could be beneficial but would require a lot of time and effort to set up.

Concerns

Massachusetts in general is heavily focused on the technology industry, so it can be difficult to find blue collar workers. There is a concern that in the long-term, the industry will see a loss of maintenance positions due to improvements in automation and the challenge of marketing maintenance work as a viable career choice.

[Tyler Weldon, State Maintenance Engineer](#)

Kevin Macvittie, Maintenance and Operations Training Manager

John “Sage” David, Section 2 Grand Junction, Maintenance Superintendent

John Lorme, Director of Maintenance and Operations

Tom Aguilar, Deputy Maintenance Superintendent

Jamie Yount, Winter Operations Program Manager

Interview with Colorado DOT

February 23, 2021

Themes: Trainings; AAS Program; Career Tracks; Employee Incentives

Career Tracks

The Colorado Department of Transportation (CDOT) has an established career track for transportation maintenance workers (TMW). The department has recently added another step to the program (equipment operator (EO) 3) to provide a step between entry level workers and crew leaders (TMW 1 to TMW 2). The addition of step 3 helped to provide employees with another career step and pay bump before moving into crew leader positions.

One region recently piloted a hybrid cross training program between the maintenance and engineering divisions. This type of program had seen success at the Utah Department of Transportation. In this program, transportation engineers helped with snowplowing during the winter season. The goal was to help fill plows with qualified and well-trained staff. While the program was not a complete failure, overall, many of the engineer technicians did not enjoy the maintenance work. Because of this pushback, the program will not be pursued further.

For many years, CDOT has had a labor, trades, and craft (LTC) program that encourages people with little to no training or related job experience to get on the job training at CDOT, with a priority on receiving their commercial driver’s license (CDL). Historically this was not a popular program because it required creating a full-time position for a new untrained staff member, but with cultural changes in the organization, CDOT has relaxed these requirements and now allows for LTCs to be hired as temporary employees. This has made the LTC program much more appealing to managers and supervisors and has helped open doors for temporary workers who may not otherwise be eligible for an internship to learn on the job skills at the DOT. Building off this, the Human Resources and Civil Rights departments created an offshoot internship program. Currently there is an engineering internship path and a new maintenance internship path. This allows younger candidates with little or no experience, for example

fresh out of high school, to get hired as an intern at CDOT. As interns, they receive on the job training with a priority to obtain a CDL.

For both the LTC and internship programs, CDOT allows participants to use their heavy equipment to train and use in CDL testing. CDOT has its own CDL testers. All CDL training and testing is free to interns and LTCs, which would otherwise cost several thousand dollars to obtain on their own. These temporary positions can last up to 9 months, and after they can be hired on by CDOT. So far, CDOT has promoted four intern trainees to full time TMW 1 on the maintenance internship path. The department is now working to promote these programs statewide.

CDOT Training Offerings

CDOT's Division of Maintenance and Operations Training Services implemented a Training Academy in 1996. New hires attend the Training Academy for two weeks. Trainings cover topics ranging from traffic control to CPR/first aid. Before COVID the Training Academy was an in-person event; it has now moved to a virtual platform.

In addition to the new hire Training Academy, CDOT offers a week of training annually to veteran staff. There are four core training programs: new hires, winter operations, traffic control supervisor, and heavy equipment operator. Topics for the annual training are based on feedback from maintenance district supervisors. Overall, trainings have gone through several iterations over the years in order to remain up to date. CDOT recently has revised the Training Academy to include more hands-on trainings after receiving feedback from employees. The department now aims to offer a roughly 50/50 balance between in-classroom training and hands-on field training. All trainings are conducted on work time.

Since COVID, CDOT has strived to move the previously in-classroom trainings to a virtual format. This has resulted in large cost savings (upwards of \$500,000 over the last year) that CDOT has been able to reinvest back into the program by purchasing simulators and improved training materials. COVID allowed CDOT to take a step back and reinvent its training program offerings. Moving forward, CDOT plans to continue to offer virtual learning opportunities because of the positive feedback from employees who have enjoyed no longer needing to travel long distances to annual training opportunities. Regional training staff will help coordinate and implement the hands-on field trainings for each region to further remove the need for employees to travel to training.

In August, CDOT completed a needs assessment which allowed the training teams to better align trainings to what is needed in the field. One outcome was the development of a more system-wide approach, which allowed the DOT to create learning maps and career progression maps for each job category. Training topics are now directly tied to a career track. The needs assessment resulted in a long list of hot topics to address with training, once CDOT is able to start offering hands-on field trainings again. Additionally, this needs assessment process helped outline CDOT's three-year plan for training offerings with the overall goal of reinforcing the job with the appropriate training.

CDOT has a public facing [webpage](#) that shares training information and requirements with CDOT employees.

Other Trainings or Use of In-house Knowledge

In addition to the training academy and other training opportunities offered directly by CDOT, employees participate in the National Highway Institute's [Maintenance Leadership Academy](#) (MLA), which is an intensive training program that covers topics ranging from leadership to communications to asset management and pavement preservation. This program costs roughly \$3,000 per employee and lasts three months. This program is offered annually; CDOT typically sends 30 employees each year but recently has worked to help NHI retool portions of the program in exchange for additional training slots. CDOT plans to send 90 employees this year.

CDOT offers other trainings through its [Office of Learning and Development](#) including leadership training, which coaches employees in leadership positions and teaches supervisory skills and communications skills. This training is required for some supervisory positions. The [Office of Employee Development](#) also provides state level compliance trainings and other necessary employee trainings (such as cyber security, [transportation engineering program](#), and active shooter).

The TIMS (Traffic Incident Management) training is part of a national effort to reduce secondary crashes that result from an initial incident. The data suggests that if incident responders can clear minor incidents (not involving fatalities or drugs/alcohol) in a short amount of time, it will greatly reduce the occurrence of a secondary crash as a result of traffic backups. CDOT conducts classroom training (2 hour and 4-hour classes), coupled with hands on training at a CDOT TIMS track where staff actually stage car wrecks, tractor trailer rollovers, and other incidents to practice moving those crashes off the roadway using snowplows, supervisor vehicles with push bars, and other resources.

In addition, CDOT has employees that serve on national committees and help with the creation of national training programs including the AASHTO TC3 and similar programs.

Bringing CDOT Research into Practice

Currently, CDOT has dozens of active and completed research efforts. The department is working to help bring the findings from these efforts to the front lines and in the hand of practitioners, which will serve as training opportunities.

The CDOT Research program is directly involved with Colorado Local Technical Assistance Program (LTAP), so CDOT stays up to date with new projects through LTAP.

Front Range Community College Highway Maintenance Management Associate Degree Program

CDOT works with the Front Range Community College's (FRCC) [Highway Maintenance Management Associate Degree program](#). This relationship has helped to inform the degree program of current CDOT training needs, which helps to support CDOT staff in the program. The program is still fairly new, but CDOT does have roughly 15 employees in the first cohort (started Fall 2019) with roughly 15 more in the second cohort. Employees who participate in the FRCC program are eligible for tuition reimbursement (up to \$2,500 per year). In addition, CDOT has worked with the college to crosswalk CDOT trainings to required courses for the degree. If employees have completed courses through CDOT, they can receive college credit which has helped fast track some employees through the program and has the added benefit of saving them money. This program has worked to legitimize CDOT's training programs.

While the FRCC program is still new, CDOT already sees the program as a benefit because it provides employees with a degree that they can take with them in the future. One supervisor at CDOT is slated to graduate in spring 2021. Overall, CDOT has found this program to be beneficial and will likely start to see results within the next year or two.

Recently the Colorado LTAP moved from the University of Colorado Boulder and is now housed at the FRCC. This has helped to support both the AAS program and LTAP in terms of training, supporting participants in the program, and other activities.

Common Employee Concerns

One of the common reasons for employee turnover is morale. Winter maintenance is a difficult job. Moving in-person trainings to a virtual format will likely be a boost to morale, because employees will no longer have to be away from home for a week. Additionally, the cost savings of moving to virtual has allowed CDOT to reinvest in their employees' futures through other programs.

In addition to morale, pay is a big challenge. Winter maintenance is a demanding position that requires long hours. CDOT has recently had crew leaders leave for construction positions that were offering higher pay. In some regions of Colorado, CDOT has had to compete with oil field jobs.

There is currently a housing boom in Colorado. Real estate is selling fast due to COVID, with many people leaving cities to move to small mountain towns. This means that construction jobs are in demand and likely pay more than CDOT. In addition, there are more people using the roads who may have a higher expectation of road condition during winter and a lack of winter driving experience.

Benefits/Pay Incentives

CDOT provides employees with a good benefits package which includes the typical medical, dental, and vision benefits. In addition, employees are provided a \$350 allowance for uniforms and can choose what mix of uniform clothing they need (shirts, hoodies, winter gear, rain gear, pants, etc.). Employees receive a \$170 per year boot allowance. CDOT provides employees with personal protective equipment, including a benefit for prescription safety eyewear.

In addition to gear allowances, employees are eligible for tuition reimbursement for any trainings or certifications that are related to their job. CDOT provides on-the-job training for employees to receive their CDL including CDL upgrades. Any education or training programs that are related to their job are eligible for tuition reimbursement.

Due to the recent housing boom, CDOT has started to provide employees with a project pay increase particularly in critical corridors with a high cost of living. On the I-70 corridor, which is a high-volume corridor near Denver with multiple resort communities, resident employees receive \$200 per month during the winter season (roughly October 31 to May 31). Employees who travel to work on I-70 during the winter season receive \$150 a work week, plus per diem and hotel rooms covered by CDOT. The additional level of service required at Vail Pass and the Eisenhower Tunnel justifies this extra cost. Also, staff in certain areas throughout the state get a housing stipend depending on the overall cost of living. These amounts are reassessed every two years, and in the past, have been determined based on school district median salary of teachers.

The previous HR Director had been working to get incentive and retention bonuses approved, but this effort was dropped when this person left CDOT. The timing was tough, with the loss of the HR director and then the onset of COVID. CDOT would like to push for this again. The department hopes to use cost savings to justify these bonuses, such as reduced deicer use, increased efficiency in operations, and other recent savings. As the economy picks up, it has been harder to keep employees and CDOT believes bonuses could help. However, this summer CDOT had the lowest job vacancy rate due to COVID, but the department is gradually having trouble filling jobs as things are getting better.

CDOT would also like to implement a competency-based pay program. The foundational structure is already in place, but CDOT needs to implement it agency-wide.

Scott Zorno

Interview with [High Country Spray Systems: Anti-Icing and Deicing Equipment in Conifer, CO](https://www.highcountryis.com) ([highcountryis.com](https://www.highcountryis.com))

February 23, 2020

Themes: Private company in winter maintenance operations, recruitment, retention

Main business

High Country Spray Systems is a private company that manufactures small size truck sprayers (up to 1230 gal) and associated equipment; however, it started out in snow removal.

Scott Zorno referenced Case Snow and its training academy for the landscape and snow and ice industry. It was developed by Neal Glatt, who has completed research on recruitment, including the “Grow the Bench” online training academy.

His research promotes the position that it is easier to train a person on technical skills than to try and fit a person into a cultural environment. Candidates need to fit the cultural environment and can learn the technical aspects.

Winter maintenance workers shortage

Scott confirmed that it is difficult to find someone with a desire to put forth the effort needed in winter maintenance, and it seems to have gotten more difficult over the past few years.

Pay Scale issues

Scott’s company always paid well enough that folks were glad to be called out. In addition, his company also provided simple benefits, including supplies, allowances, and end of the year parties.

Recruitment efforts

Some employees started when they were in high school. About half of the workforce was found through word of mouth, and employees with higher skill sets were recruited.

Pay/benefits

The company offered an hourly rate, and employees were subcontractors for seasonal snow and ice.

Workforce Issues

The company faced challenges finding employees who consistently showed up for work and had adequate performance in meeting various job requirements.

Advice for recruitment and retention

- Look for attitude and compatibility (integrity) and someone you have confidence in. Check references.
- Build the pipeline through high schools.
- DECA in high school (a business cultivation club) is a good resource. Actively participate in these types of organizations and build relationships and spread information on prospective employees.
- Try to identify where younger prospects are spending time and tie into these activities.

Women and Diversity

Previous employees were found through word of mouth and or by happenstance. Examples of female owners/operators include:

- Jeanie Shenderline – largest commercial snow plowing company in Alaska.
- Lisa Brandt - Truck Driver for Wildfire Support in Colorado.

CASE STUDIES

Recruitment Programs

Recruitment of skilled employees can be a challenge at many transportation agencies, and as more winter maintenance personnel reach eligibility for retirement many agencies have looked to creative recruitment programs to bring on skilled or skill-seeking employees. These programs include creative partnerships to hire from disadvantaged populations and training of supplemental staff during critical events.

Strategies to Consider

- Find skilled and trained job seekers by looking to groups like military veterans.
- Build partnerships with departments of corrections that can provide job skills and career pathways opportunities to recently released inmates while addressing workforce shortages at a DOT.
- Train supplemental staff to provide backup during major winter storm events.
- Create policy for supplemental staff to make responsibilities clear.

Recruitment of Veterans

Overview

Military veterans provide a unique opportunity to recruit employees that already have many transferable job skills and values that can stand out in road maintenance careers, including construction and maintenance experience, valuing comradery, and leadership skills. In fact, nearly 15.5 percent of all veterans enter the construction and maintenance industry (Ellis, 2018).

Case Study

Programs like [Helmets to Hardhats](#) work to connect National Guard, Reserve, and veteran populations with training and employment opportunities within the construction industry. This program was created to assist military personnel with the transition back into civilian life through career training and resources needed to obtain a secure career. Ohio DOT has created a successful [Helmets to Hardhats apprenticeship program](#) which offers paid training and reimbursements and ability to use ODOT equipment to obtain a CDL. Upon completion of the program, employees are eligible to apply for full-time highway technician positions.

Partnerships with Department of Corrections (DOC)

Overview

To find and recruit more qualified candidates, some transportation agencies are opening job opportunities to recently released inmates. These state agencies have worked to partner with state departments of correction (DOC) to address workforce shortages and create education programs to train DOC inmates nearing release on the necessary skills needed for road maintenance positions. In some states, the DOT and DOC are working to modify the CDL course information to better serve the needs of the DOT.

Case Studies

Michigan

The [Vocational Village program](#) (see video and information on the website link) (Figure 9) is located in two correctional facilities in Michigan - Jackson, MI (the largest walled prison in the state) and Ionia, MI (one of the smaller minimum security prisons in the middle of the state). As stated on the DOT website “The Vocational Village is a first-of-its-kind skilled trades training program that aims to provide a positive learning community for prisoners who are serious about completing career and technical education.”

The Vocational Village Programs include training in welding, computer numerical controlled machining, carpentry, plumbing, electrical, tree trimming, computer coding, masonry and concrete, CDL and forklift operations, and automotive technology. Program participants earn state and national industry recognized certifications. The program takes advantage of both the classroom and shop learning environments. Everyone in the program lives together. Evening programs focus on cognitive learning to aid in successful transition from prison. The program focuses on training prisoners based on their aptitude and desire to learn the jobs/trades that are in demand in the counties where they will be released.

To qualify for the Vocational Village Programs prisoners must be:

- Within one year of release/exit date,
- A level 1 prisoner, located at a low/minimum security prison,
- Model citizens, with no tickets due to poor behavior, and
- Able to complete the program, which is 6-9 month long.

The DOC partners with the Michigan Works agencies and the state’s talent investment program to identify the labor market needs, which in turn determines the training needs and offerings. The DOC actively works with the business community, inviting company representatives to come see the Vocational Village in action, meet the program participants, and conduct job interviews. The Vocational Village Program was developed by the Michigan DOC in 2016 and continues to grow and be successful.

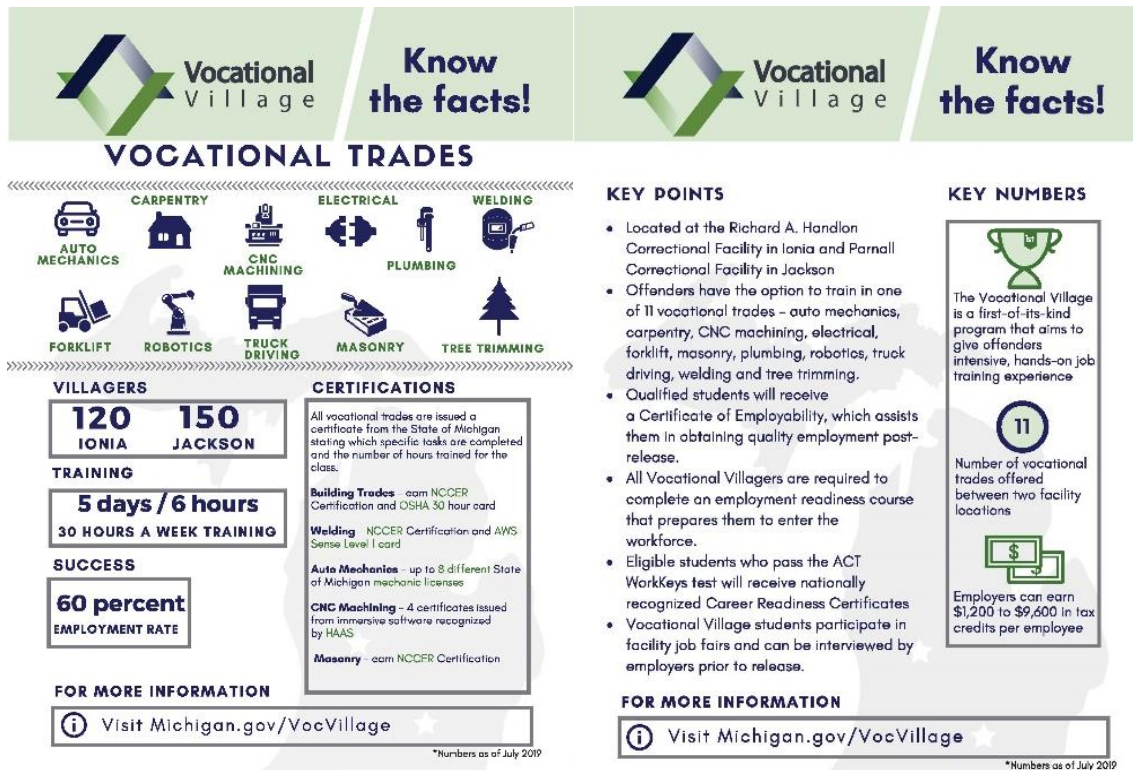


Figure 9. Vocational Village Fact Sheet

Getting qualified candidates is an issue for the DOT and the agency is constantly short staffed. To address this, the DOC and DOT have held conversations over the last two years about shortages of DOT plow drivers and a lack of qualified applicants (i.e. applicants not holding a CDL). The DOT and DOC looked at adding to the CDL course information to better serve the needs of the DOT. The Jackson, MI Vocational Village facility hired a full time CDL instructor who was a long-haul driver and instructor, to train the program participants. The Vocational Village CDL program acquired two snowplow driving simulators that are used in the training program to support the needs of the DOT and local counties.

The program is structured so that the prisoners have all of their classroom work and testing done when they leave on parole or max out of their sentences. Then all they need to do is take the driving test to complete the CDL and DOT program. For the Michigan DOT, the Vocational Village Programs provides the supplemental workforce needed in winter months.

The DOT needs help filling positions in the southwest part of Michigan, which requires a larger workforce and has the greatest number of unfilled jobs. To encourage the Vocational Village Program participants to work in these parts of the state, program participants are provided an apartment and other assistance for a defined amount of time to help them transition to the new location.

Michigan DOT has 384 full time Transportation Maintenance Worker (TMW) employees located at 33 garages statewide. From October through April, the DOT doubles the number of staff, hiring seasonal workers to fill its needs. These seasonal positions are hard to fill and the DOT sees a great benefit from hiring from the Vocational Village Program and getting new workers started in the TMW work force. The DOT conducts interviews and fully vets each applicant regardless of where they come from.

Michigan DOT training staff members had planned to go into the prison to lead the classroom portion of the Winter Operations School. This would occur approximately every 6 months, then the prisoners could work with MDOT or a county and have a Winter Operations certificate to use once released when they apply for jobs. Unfortunately, the program was put on hold due to the COVID pandemic. The prisons have been closed to visitors, so all trainings have stopped. There has not been a shift to conduct the DOC CDL TMW trainings virtually. As a result, the DOT has not yet benefited from the Vocational Village Program, but the DOT plans to move forward with the program when allowed.

North Dakota

Governor Burgum, of North Dakota, strongly supports reform of inmates and new ways to incorporate former inmates back into society and professional career fields. The State worked to make inmates on work release eligible for state jobs. The first step included removing questions on job applications that asked about former convictions/felonies. This way an applicant's past cannot influence the hiring process and when conducting a background check the state cannot disqualify an applicant based on prior convictions. This creates a more inviting environment where applicants are not judged before coming through the door.

Pre-COVID, the driver's license division program was of greatest interest to inmates. The division went to correctional facilities to talk about career opportunities and the [real ID program](#). Outreach materials to the DOC inmates are focused on the real ID program, how to obtain a driver's license and CDL, and opportunities to work for the state. *This program was driven by inmates' interest in getting a CDL.* The current DOT human resources director previously worked at DOC as a parole officer, thus is very passionate about the program. However, the program was just getting started when the COVID pandemic hit, and outreach to the correctional facilities has slowed. The DOT is currently working with the DOC to conduct virtual outreach events.

Similar programs have worked well in the private sector, but this is just getting started at the state level. One example is the ND State Capitol cafeteria, which is a huge hiring agency for inmates in the work release program or post incarceration. Generally, the state is working to change the mindset that state jobs are not for inmates and hopes to resume and expand these efforts in the future.

Fishers, Indiana

The City of Fishers, Indiana created the re-entry initiative through structured employment (RISE) program which aims to "recruit, assist and equip the transitioning workforce of Hamilton County, Indiana in their pursuit to reestablish themselves as productive members of society." This 12-month program provides individuals with on-the-job experience with the City of Fishers, Indiana Department of Public Works, in addition to monthly training opportunities on both job-related skills and soft skills which included financial management and other life skills. Participants are also offered opportunities to complete CDL training. Upon completion of the RISE programs, participants are highly capable, able to maintain steady employment, are eligible to receive a letter of reference from the Mayor, had the opportunity to obtain a CDL, and are eligible for future employment as opportunities become available. The DPW also worked to identify "pro-social role models" within the agency who would partner with RISE participants to provide encouragement and support and were willing to be an example of what a good work ethic looks like within the department.

Legal Considerations

Generally, those with a criminal record are eligible to obtain a commercial driver's license unless they have a qualifying offense under federal laws (felony conviction while operating a motor vehicle, etc.). These requirements may change from state to state.

Examples from our case studies:

Michigan allows a person to obtain a CDL with a felony conviction. However, if you are convicted of a felony while operating any type of motor vehicle it could result in the restriction of your license from a period of one-year up to lifetime depending on the charge.

North Dakota DOT has specific guidelines for obtaining a CDL with prior convictions. North Dakota DOT will not hire a registered sex offender for a CDL role, or anyone that has lost their CDL due to DUI. North Dakota DOT does check driving records to determine if a criminal record should be considered prior to hiring a candidate. Often, it will depend on how long ago it was, and may allow individuals to plead their case.

Creating Supplemental Workforce with Existing Staff

Overview

During larger winter storm events or times when an agency may have staff out on vacation or sick leave, having a supplemental staff who can provide backup can be vital. Supplemental staff could include staff members from mechanical, engineering, or other divisions. These supplemental staff members can be brought in to operate snowplows (if they have a CDL) or a pickup truck with a plow blade (no CDL required).

Case Studies

Minnesota Department of Transportation

Minnesota DOT has created a supplemental winter workforce using existing employees, such as secretaries, engineers, and others. The DOT helps these staff obtain their CDL, and then when needed the agency calls an "all-hands-on-deck" to handle larger winter events. Michigan DOT is now considering this program as well, but no action has been initiated to develop it yet.

City of Farmington Hills, MI

This City of Farmington Hills, MI activates plowing operations when they have four inches of snow. In cases where they need additional plow operators, the City can bring in auxiliary staff members from mechanical and engineering divisions to operate pickup trucks with a plow blade which do not require the employee to have a CDL. For auxiliary employees, their main job requirements always take priority. While they assist with plowing operations, they remain a radio call away if they are needed back at the maintenance shop.

Sharing Your Story – Using Social Media for Recruitment and Public Engagement

Overview

Social media sites like Facebook, LinkedIn, Instagram, and Twitter have provided a platform to reach out and interact with a wider audience and create a relationship with the public. Transportation agencies have used social media to share employee stories, provide real-time updates on maintenance/construction activities or road conditions, and share safety messaging. Social media has also been used to promote job opportunities. In particular, it can help to humanize state employees and promote ongoing activities. Best practice has shown that telling a story can be effective. This can be done through sharing stories from current employees, safety messaging on the importance of winter maintenance, how employees are dispatched, and promoting the science and technology used to create a more sustainable future.



Figure 10: Wisconsin DOT social media posts on winter maintenance operations

Agencies should consider developing a detailed social media policy to provide guidance on official use of any social media outlets. This guidance should include the type of messaging and posts that staff can share, who can post to social media, how to engage with any public comments, and more. This guidance can ensure that an agency keeps consistent messaging and a respectful communication. Many state DOTs have created specific guidance for employee use of official social media accounts. Examples include:

- [Minnesota DOT](#)
- [Ohio DOT](#)
- [Oregon DOT](#)
- [Washington State DOT](#)

Interacting through social media can create additional job burdens, particularly if an agency wants to maintain a consistent and active presence. Some transportation agencies have created job duties specifically focused on communications and social media. For example, Ohio DOT has communication coordinators and Wisconsin DOT has specific social media coordinators. In this case employees would share a story or photos/videos with the coordinator, then the coordinator would handle posting to the social media platform.

Strategies to Consider

- Create a social media policy which provides guidance on who can post to an agency social media site, what can be posted, etc.
- Determine who will serve as the social media liaison – human resources, communication coordinator, etc.
- Listen to feedback in the comments and use this to update outreach efforts.
- Share what type of organization you are, photos and videos of activities you are already doing (whether this be Touch-a-Truck events, a ride along with a plow driver, or a beautiful sunrise). These types of posts can help improve an understanding of what winter maintenance employees do and enhance public perception.
- Get creative! Tell a story, share photos and graphics.
- Look to other state DOTs to get ideas of things to share.



Ohio Department of Transportation
Like This Page · April 1

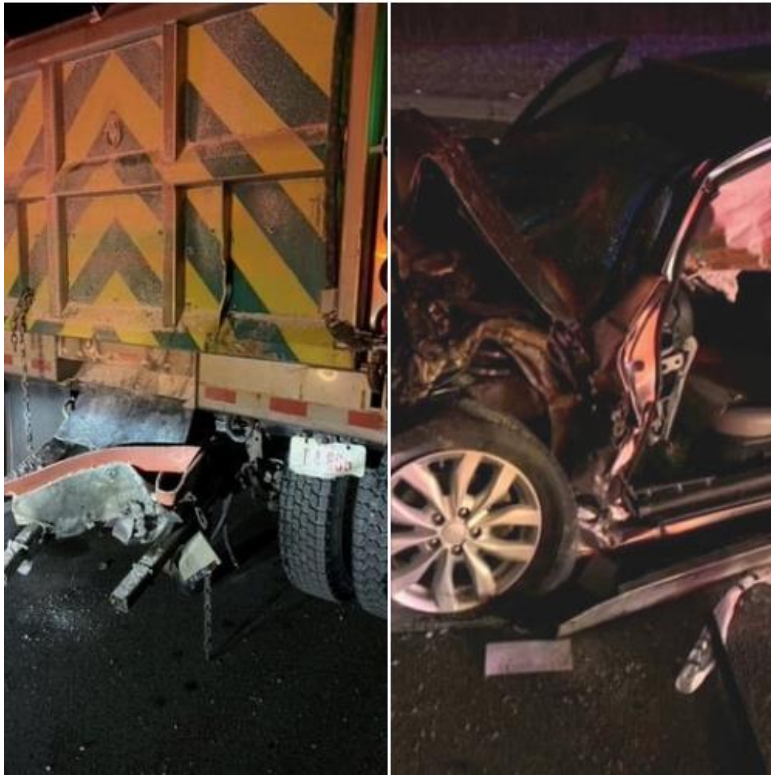
11:30AM We have 200 crews out plowing and treating roadways, mostly in NE Ohio where heavy lake effect snow is falling. This is the view from one on I-480 near Cleveland. Be extra alert for quickly changing conditions in these areas and give us room to work. #ODOTwinter

Kerry Watts, Jeff Holmes and 2 others · Most Relevant · like this

24 Shares · 1 Comment

Ohio Department of Transportation
April 2 at 5:59 AM ·

When you see our crews out, give them room to work, move over, slow down, and pay attention.



Ohio Department of Transportation - Akron / Canton District 4
April 2 at 5:49 AM

This scene is something our drivers know all too well. Last night, our plow truck was treating I-77 in Summit County, when they were rear ended. We've had nearly 50 of our plows hit this snow and ice season. Put down the distractions and drive responsibly!


Figure 11: Sample Social Media posts by the Ohio DOT

Case Studies

Maine Department of Transportation

Maine DOT has recently increased its use of social media in recruitment efforts, including posting job opportunities on its Facebook page. Maine DOT has utilized feedback from Facebook comments to update recruitment efforts to better promote the benefits of working for the DOT. The DOT is currently working on job posters and Facebook campaigns for rural towns in Maine that will highlight the benefits package offered by the DOT (Figure 12).

In addition to using Facebook to post job opportunities, the DOT has used social media to share information on the winter maintenance program, provide road condition updates during winter storms, and promote safety information.



The flyer is titled "JOIN THE TEAM THAT KEEPS MAINE MOVING. MaineDOT" and "Transportation Worker". It features a blue and red color scheme. The "Salary" section shows a starting pay of \$17.37 for full-time, plus overtime. The "Great Benefits!" section lists various perks like health insurance, vacation, and training. The "Contact Us" section provides contact information for Jeremiah Hutchinson & Rachel Kennedy, including a phone number, email, and address. Social media icons and the MaineDOT logo are at the bottom.

JOIN THE TEAM THAT KEEPS MAINE MOVING. MaineDOT

Transportation Worker

Salary

Full-Time starting pay **\$17.37**

Plus Overtime!

Great Benefits!

- Group health, dental, vision & life insurance
- Pension plan & deferred comp
- Earned vacation & sick time
- 12 paid holidays
- Career advancement
- In-house commercial driver's license (CDL) training
- Continuing education reimbursement
- Gym memberships & wellness programs
- And more!

Contact Us

Jeremiah Hutchinson & Rachel Kennedy
Phone: 207-624-3050 Email: Jobs.DOT@maine.gov
MaineDOT Human Resources
24 Child St., 16 SHS, Augusta, ME 04330

FMI: mainedot.gov/jobs

MaineDOT

Figure 12: Maine DOT Job Flyer

Example Posts



February 1 · 🌐

The word we're getting from other state DOTs is that this winter storm is going to be a challenging one. If you do have to go out on the road, please be careful and be patient. The average route for a MaineDOT plow truck takes about 90 minutes to complete, so give yourself plenty of time to get where you're going, and give plow crews plenty of room to operate.



March 10 · 🌐

MaineDOT is hiring entry-level positions statewide! Our Transportation Aide positions are full-time seasonal positions for the summer, and our Assistant Engineer positions are full-time, year-round. FMI on these or our other openings: mainedot.gov/jobs



Figure 13: Maine DOT Social Media posts

North Dakota Department of Transportation

North Dakota DOT has utilized social media in coordination with many of its recruitment programs and to promote an understanding of road maintenance work among the traveling public. As a part of its recruitment efforts, the DOT conducts public outreach to local elementary and high school students as well as Touch-a-Truck events at local fairs. At these events, people are able to get up into a snowplow and see how all the technology works including learning about line of sight and what a snowplow operator can see from the driver’s seat. The DOT uses these events to promote awareness of safety and potential job opportunities to the public. During these events, the DOT will take photos to post to social media to further promote its activities.

In addition to promoting recruitment activities, during large winter events the DOT posts photos of road conditions to promote working at the DOT: “If you want to see these roads open sooner, come work for us.” During a recent 3-day road closure from a storm event, the DOT posted several photos to social media. These posts were picked up by local TV and radio and the DOT received some free advertising from that.

Example Posts



NDDOT snowplow ride along



North Dakota Department of Transportation
March 15, 2019 · 🌐

Driving a snowplow is a no easy feat, but Larry Froelich with the NDDOT makes it look easy! Take a ride in a snowplow and get a glimpse into all that goes into it.

https://www.facebook.com/88374649460/videos/324509058204518/?so=channel_tab&rv=all_videos_card

Figure 14: North Dakota DOT Social Medio post on snowplow operations



Snow Fighter Rescues



North Dakota Department of Transportation

February 14, 2020 · 🌐

Sometimes the winter weather in North Dakota shuts down interstates and other highways across the state. This creates many challenges for NDDOT crews maintaining the roads, especially when there are emergencies and people's lives are on the line.

👍 45

10 Comments 30 Shares

https://www.facebook.com/88374649460/videos/186851549196785/?so=channel_tab&rv=all_videos_card

Figure 15: North Dakota DOT social media post on snowplow crews

City of Dubuque, IA

The public works department at the City of Dubuque has worked with their public information office to create social media posts like “Transformation Tuesdays,” which show a picture of the road before and after maintenance. The office also shares videos that show the day-to-day operations at public works to raise public awareness of what the department does and what job opportunities are available.

Example Posts



www.cityofdubuque.org/snow



City of Dubuque Government

January 25 · 🌐

Snow removal efforts are currently underway to clear streets for safe travel. The City's Public Works Department provides real-time information regarding progress with snow plowing and ice control operations. Follow along using an online snow route progress map at www.cityofdubuque.org/snow. There you can also find winter reminders to make this time of year easier for everyone.

https://www.facebook.com/149196398439486/videos/193901709152820/?so=channel_tab&rv=all_videos_card

https://www.facebook.com/149196398439486/videos/190511799450590/?so=channel_tab&rv=all_videos_card

Figure 16: Dubuque, Iowa social media post features video on snowplow operations

Additional Resources

- AASHTO, Communications Guide for State Departments of Transportation
 - <https://fundingfinance.transportation.org/wp-content/uploads/sites/16/2018/11/Communications-Guide-for-State-DOTs-NCHRP-2017.pdf>
- AASHTO, State DOT Social Media Survey
 - https://communications.transportation.org/wp-content/uploads/sites/2/2018/10/2018-Social-Media-Survey_web.pdf

Successful Retention Strategies

Agencies invest time, money, and resources into each worker, and for this reason turnover is costly to an agency. Employee turnover can result in a loss of knowledge and workforce, which often becomes an issue during critical times (for example: winter storm events). Unfortunately, there is not a “one size fits all solution” to the retention challenges faced by the transportation industry. Instead, a variety of methods have been utilized including the creation of career pathways into the industry, employee training programs, mentorship programs, unique training tools including online and virtual reality, and promotion of the benefits of entering the transportation industry, which are presented in the following case studies.

Creating a Positive Workplace Culture



Positive Workplace Culture

Overview

An organization with a positive workplace culture is one that has created an environment with aligned values and behaviors from the top to the bottom. This positive culture can be cultivated through events that promote employee camaraderie, transparency among managers and employees, promoting a healthy work-life balance, and creating a forum where employees can express grievances or provide suggestions for workplace improvements and can expect management to listen and respond with actions when appropriate. A

key to creating a positive workplace culture is creating an environment where management listens to feedback from their employees and takes direct action in order to address feedback and challenges.

Positive workplace culture is one that has created an environment with aligned values and behaviors from the top to the bottom.

Strategies to Consider:

- Participate in employee events to promote camaraderie in the workplace, such as potlucks.
- Conduct work-life surveys among employees and use the results of these surveys to improve workplace culture for employees.
- Provide flexible schedules during the off-peak seasons.

Case Studies

Ohio Department of Transportation

Ohio Department of Transportation (ODOT) conducts a quality of work-life survey among employees annually. Results of this survey provided numerous recommendations to improve employee experience including *providing additional support to help reduce workload, improving managerial oversight and training, and examining pay scales.*

St. Paul, MN

The City of St. Paul offers a flexible work environment to help retain employees. The agency is reasonable with leave and works to accommodate employees who do not want to work more than 40 hours a week. Work schedules are flexible around holidays, especially summer holidays and the department pauses operations around key holidays to support staff and morale. Contract changes are currently under consideration to incentivize on call pay.

Employee Benefits and Incentive Programs

Overview

Many agencies have offered their employees competitive benefit programs and other incentives. For some agencies, a starting lower base pay compared to the private sector appears to be a recruitment issue. There is a movement to better show the additional benefits and career growth potential to aid in employee recruitment and retention.

Strategies to Consider:

- Promoting employee benefit and incentive programs through an annual certificate or list of available employee benefits. This list can serve to show employees all benefits they are eligible for and the cost/financial value of each benefit.
- Provide employee incentives programs (gear, boot, phone, etc.).
- Provide tuition reimbursements for education and training related to an employee's job description.
- Consider contract language which would require employees to remain within the agency for a specified amount of time if they obtain training paid for by the agency, or if they leave prior to this time frame, they need to pay back the cost of the training.

Case Studies

Ohio Department of Transportation

Ohio DOT aims to remind its employees of their available benefits by providing an annual certificate or list of benefits.

On top of Ohio DOT's competitive benefits package, employees are offered a boot credit, gear credit, and tool allotment (for mechanics). In addition, the union offers tuition reimbursement for any education or training related to their position description for all positions including management. The DOT has fully embraced workers utilizing this benefit and has had staff complete engineering degrees and become Professional Engineers through this benefits program.

Maine Department of Transportation

In addition to its competitive benefits package, Maine DOT offers winter maintenance employees a *winter maintenance incentive* – which allows plow drivers to earn up to an additional \$100 a week. This incentive was implemented about two years ago to provide additional pay for each week a winter maintenance worker is available to plow. With a typical winter season running from early November to the beginning of April, this can be a substantial amount of money available to workers to earn. The workers receive this pay at the end of the winter season. If they leave the DOT before the end of the winter season, they receive no allowance, so this has created an incentive for workers to remain on through the entire winter seasons when it is critical for the DOT to keep skilled staff. To be eligible for the winter maintenance allowance, a worker must have all the required certificates, including a snow fighter certification acquired through Maine DOT and a CDL. They must also be available to plow that week (not out on worker compensation, vacation, etc.). Most of Maine DOT’s workers are eligible for this allowance, with a few exceptions including new employees that have not been certified to operate a plow.

Maine DOT also offers in-house training and allows employees to use agency equipment to train and test for a CDL. Maine DOT will pay for workers to take their CDL and the licensing requirements one time. If they fail to obtain the license, subsequent attempts become the employee’s financial responsibility. This benefit alone can save employees several thousand dollars for the CDL training course and obtaining a new CDL endorsement.

Additional benefits and incentives offered to employees include a phone allowance; boot allowance (\$150/year); annual merit increase/cost of living increase; medical/dental/vision insurance; retirement; 12 paid holidays; continued education; and overtime pay. In addition, the DOT furnishes employees with necessary gear including jackets, gloves, and hardhats. A list of some of these benefits is provided in Figure 12.

Promotion and Leadership Programs



Overview

Many agencies have created career progression and leadership programs to help retain employees, reward and support career development, and create a consistent knowledge base and skill set across agencies. These career progression and leadership programs often go hand-in-hand with employee training programs, in which an employee is usually required to complete a specific set of trainings prior to moving up the career progression ladder. Each step along the progression program results in a pay increase for the employee, incentivizing them to continue to learn and gain knowledge that is useful on the job. While creating a consistent set of steps for employees, these programs also allow employees to control their destiny within an organization, creating a system that rewards motivated employees.

Strategies to Consider

- Create an easy to understand set of requirements and standards for employee career progression.
- Fully document the benefits of career ladder programs.
- Keep program requirements consistent, only changing requirements as needed (for example: once per year); this reduces confusion surrounding employee expectations.
- Listen to employee feedback on program requirements.
- Start small, you can always expand later.

Case Studies

Idaho Transportation Department

Idaho Transportation Department (ITD) initiated a horizontal career paths (HCPs) program about six years ago. This program revised how employees receive pay raises, with a goal of retaining employees while ensuring that everyone has the same knowledge base and skill set. ITD has four HCP programs:

- Technical Transportation Operations (TTO) – includes snowplow operations, on the ground employees, etc. (Table 3, Figure 17)
- Foreman
- TTE (design and construction)
- Engineers

When the HCP program was first initiated, the largest challenge was getting everyone in the agency to go through the full program. Every employee was required to participate regardless of how long they had been in the agency. This step was required to ensure that there was consistency in training and standards across the agency. While initially met with resistance, employees are now supportive of the program because each step in the program has a pay increase associated with it.

ITD meets annually to consider if the HCPs program needs changes. These changes are made only once per year to reduce confusion related to career path requirements.

Table 3. Technical Transportation Operations (TTO) Career Path

Job Title	Pay Scale	Requirements to Move to Next Step
TTO 1	\$16.50/hr	Completion of job training, classroom training, achievement of team goals/agency goals (example course list provided in Figure 17)
TTO 2	\$19.50/hr	Completion of job training, classroom training, achievement of team goals/agency goals
TTO 3	\$21.04/hr	



TTO Training Requirements, Step 1

Checklist of items to be completed by June 15

REQUIREMENTS			DATE
<i>TRAINING</i>	<i>TYPE</i>	<i>HOURS</i>	
<i>Workplace Training</i>			
Behavioral Styles in the Workplace	Instructor-led	4	
Constructive Culture	Instructor-led	4	
Respectful Workplace	Online	0.5	
<i>Software Systems</i>			
		<i>HOURS</i>	
Technology Boot Camp	Instructor-led	16	
Visalia PowerPoint Presentation	Online	0.5	
<i>Operator Training</i>			
		<i>HOURS</i>	
9.02 Defensive Driving	Instructor-led	3.5	
5.86 Proper Plowing Techniques	Online	1.5	
10.28 General Flagger Training	Instructor-led	3.5	
10.07 Basic Traffic Control	Instructor-led	4	
5.51 Storm 101	Instructor-led	6	
<i>Industrial Safety</i>			
		<i>HOURS</i>	
9.11 First Aid/CPR/AED 2-Year	Instructor-led	4	
5.25 Hazardous Materials Module 1 'Employee Awareness'	Instructor-led	4	
Fall Factors	Online	0.5	
Ladder Safety	Online	0.5	
PPE: Your Last Layer of Protection	Online	0.5	
Powerlift	Online	0.5	
<i>SKILLS TESTING</i>			
		<i>HOURS</i>	
12.01 Loader Certification		20	
12.02 Dump Truck Certification		20	
12.03 Snowplow Certification		40	

LAST REVISION DATE: 6/18/2020. These requirements may be subject to change.

Figure 17. TTO Training Requirements for Step 1

Ohio Department of Transportation

Ohio DOT has a highway technician (HT) program. This program has multiple stages during which an employee must complete courses or obtain certifications to progress (Table 4). Upon completion of the HT program, employees are highly trained including American Concrete Institute (ACI) certified, and they are eligible to earn roughly \$25 per hour.

The HT program has been beneficial in retaining good employees. The program allows employees to “create their own destiny” at the organization. Employees with initiative can quickly work up to crew leadership positions.

Table 4. Highway Technician Career Path

Job Title	Pay Scale	Requirements to Move to Next Step
HT 1	\$18.05/hr	Successful completion of all level 1 training courses and certifications; valid CDL
HT 2		Successful completion of all level 1 and 2 training courses and certifications; 12 months of cross training in construction inspection
HT 3		Successful completion of all level 1, 2, and 3 training courses and certifications; 24 months of construction and/or testing experience
HT 4		Successful completion of all level 1, 2, 3, and 4 training courses and certifications; 24 months construction and/or testing experience
HT 5	\$25.00/hr	

Maine Department of Transportation

Maine DOT hires winter maintenance professionals within their transportation worker (TW) job series. This job classification has eight steps and three classifications (TW I to TW III), with a pay increase upon completion of each step (Table 5). To progress to the next step in the TW series, a worker must complete trainings and pass specific tests which are offered four times a year. This usually involves a written test with a proctor and an equipment test. Once the worker has passed the test, they are reclassified to the next step in the series. It typically takes an employee 1.5 to 2 years to complete the TW I-III series. After completion of the TW series, employees have the option to move on to a transportation leader (TL) or transportation supervisor (TS) series. These job classifications are competitive and require a worker to apply when jobs are posted.

Table 5. Transportation Worker Career Path

Job Title	Pay Scale	Requirements to Move to Next Step
TW 1	\$16.80/hr	Employee must complete specific tests offered four times a year
TW 2		Employee must complete specific tests offered four times a year
TW 3	\$20.17/hr	Employee must apply as openings become available (competitive process)
Transportation Leader Series or Transportation Supervisor Series		

Employee Training Programs

Overview

Employee training programs ensure that employees acquire and retain the knowledge and skills required to complete their jobs. Employee training programs often go hand-in-hand with promotion and leadership programs, where an employee is typically required to complete a number of trainings prior to moving up the career progression ladder.

Strategies to Consider

- Allow flexibility in training opportunities
 - if the topic fits the job description, it is allowable.
 - flexible scheduling
 - reduce non work time required to participate in training to a minimum.
- Consider use of in-house trainers that can travel to a district to train employees versus placing the travel burden upon employees to complete training.
- Utilize online training management systems and conduct trainings as the training management systems change over time to reduce confusion.
- Consider conducting jobsite discrimination and harassment training programs and teach employees how to intervene to address these issues on the jobsite.



Workforce Development

Case Studies

Colorado Department of Transportation Partnership with Front Range Community College

Front Range Community College (FRCC) worked in collaboration with the Colorado Department of Transportation (CDOT), the Colorado American Public Works Association (APWA) Chapter, the Colorado Local Technical Assistance Program (LTAP), American Traffic Safety Services Association (ATSSA), National Highway

Front Range Community College
Associate of Applied Science (AAS)
[highway management degree program](#)

Institute (NHI), American Association of State Highway and Transportation Officials (AASHTO), Colorado Asphalt Pavement Association (CAPA), and Transportation Curriculum Coordination Council (TC3) to create the first Associate of Applied Science (AAS) highway management degree program. This two-year, 60 credit-hour degree program prepares highway maintenance employees to pursue management positions. Students develop skills in project management, planning, supervision, communication, and team building.

All courses are offered online and not restricted to Colorado residents. FRCC allows students to complete a prior learning assessment (PLA), which allows students to receive credits for prior knowledge and skills obtained on the job and from prior college courses completed. For example, the program offers credits for students who obtained a CDL and from courses offered through Occupational Safety and Health Administration (OSHA), TC3, ATSSA, NHI, and other approved DOT trainings. When these prior learning credits are applied, the student can significantly reduce the cost and time to complete the program.

Colorado Department of Transportation

CDOT's Division of Maintenance and Operations Training Services implemented an in-house Training Academy in 1996. This two-week Training Academy is required for all new employees. Trainings cover topics ranging from traffic control to CPR/first aid. With COVID, this training moved to an online platform.

In addition to the Training Academy, CDOT offers four core training programs annually to their employees: new hires, winter operations, traffic control supervisor, and heavy equipment operator. *Topics for these annual trainings are based on feedback from maintenance district supervisors.* CDOT recently revised these trainings to include more hands-on experience after receiving feedback from employees. Since COVID, previously in-classroom trainings have been moved to an online platform; this resulted in large cost savings that CDOT has invested back into their training programs through the purchase of simulators and improved training materials. CDOT plans to continue to offer trainings through an online platform based on positive feedback from employees.

Idaho Transportation Department

As a part of the training requirements for the ITD Horizontal Career Path program, ITD recently hired two full-time equipment trainers. Hiring in-house (compared to outsourcing training) was found to be more cost effective for the department. The department pays for the trainers to travel to the districts instead of having employees travel to a central training location. An additional benefit is that *trainers can be deployed at any time* versus trying to contract and schedule individual training programs. This has helped reduce travel needs and has allowed for more *flexible trainings tailored for each district depending on equipment available.*

Green Dot for Trades Bystander Intervention Program

Jobsite discrimination and harassment have a negative impact on retention of employees. Work evaluating workplace climate improvement programs for women and minorities in highway construction jobs led to the development of the [Green Dot for Trades Bystander Intervention Program](#). The [Green Dot program](#) is designed to reduce harassment on construction job sites and is representative of a growing number of programs aimed at improving workplace climate for women and minorities in highway construction and other trades jobs where they are significantly underrepresented. This training program provides workers with intervention strategies to address harassment on the job and jobsite culture issues. For more information on recruitment and retention of women and minorities in the workforce, see Underserved Communities Recruitment and Retention – Successful Examples.

Succession Programs & Mentoring

Overview

With an increasing number of employees eligible for or near retirement, there are concerns about losing highly knowledgeable employees. Transportation agencies have adopted succession planning to reduce the loss of knowledge in the agency and prepare the next generation of highway maintenance workers and managers. Succession programs can include both formal training and pathways for employees to move into leadership positions. Mentorship programs which allow a senior employee (mentor) to pass along knowledge and experience to other employees (mentee).

Strategies to Consider

- Provide job training or shadowing programs to retain knowledge in the organization before employees retire.
- Start small; mentorship programs can start as small as informal discussions with more senior employees.

Case Studies

Ohio Department of Transportation

For Ohio DOT, succession planning is a part of daily operations. This includes training motivated individuals to be prepared for leadership positions within the organization through two programs: the management apprenticeship program (MAP) and the becoming a supervisor someday (BOSS) trainings.

MAP allows a worker to shadow a manager and learn how to use software tools like Enterprise Information Management System (EIMS) and KRONOS (a capital management tool). When a manager goes on vacation or is otherwise out of the office, MAP participants can become acting managers for the week/weekend. A worker must request to participate in MAP.

BOSS training is offered to both employees and managers. This training teaches employees how to manage employees and interpersonal relationships.

In addition to these training opportunities, the DOT works with employees to share information on other available opportunities within the organization. This includes success stories of individuals who have utilized organization resources to complete degree programs and move up through the ranks within the organization.

North Dakota Department of Transportation

North Dakota DOT has offered a [Leadership Development Journey Program](#) for approximately two years and is beginning to see success from the program. Everyone at the DOT is encouraged to participate in the program, which currently has around 150 active participants (out of 1,000 total employees). The Leadership Development Journey Program allows employees to gain and improve upon job competencies through training opportunities, cross training opportunities, informational interviews, job shadowing, mentorship, workshops, and more. The state took notice of this program and helped develop a leadership program called Leadership Everywhere. This is an internally created program with courses created by the Office of Management and Budget Human Resource Management Systems team. The Leadership Everywhere program includes a manager path and an employee path. The program consists of 10 TED (Technology, Engineering, Design) courses. Upon completion, attendees receive a certificate. This program encourages leaders within the organization and has been popular with employees.

Oregon Department of Transportation/Bureau of Labor and Industries (ODOT/BOLI)

ODOT/BOLI has launched a number of programs to address retention of apprentices in the highway trades. One program includes an informal mentorship program that provides apprentices with a point of contact within the program, who serves as an informal mentor to help them purchase boots, explain the benefits of good gear, and converse on topics related to why persistence in the trades is important, etc. These informal mentorships proved helpful in assisting apprentices and became an effective part of retention efforts.

Underserved Communities Recruitment and Retention – Successful Examples

When discussing innovative but practical ways for DOTs/DWPs to recruit and retain a highly proficient, productive, versatile, and committed roadway maintenance workforce, the focus should be inclusive of all candidates available to contribute to the workforce. A review of data related to the workforce associated with the construction industry and public works arenas provides an overview of the areas of under representation and likewise, the areas of the greatest opportunity for potential growth.

Tapping into the vast number of candidates found within underserved communities and groups, including minorities and women, offers options for solutions to workforce shortages, growing the pipeline, and meeting the current and future needs of the highway maintenance workforce. The American Public Works Association (APWA) indicates that *leadership roles within public works are less than 20% female occupied*. While women comprise 50% of the overall workforce, various sources report women occupy under 10% of the construction industry and of that less than 4% are front line or field staff (US Bureau of Labor and Statistics, National Association of Women In Construction, Occupational Health and Safety). A review of various reports, articles, and blogs (NABTU Diversity Toolkit, OSHA and BigRentz) addressing the issue of why the number of women occupying these roles remains low, identifies commonalities related to recruitment issues:

- Such opportunities are rarely promoted among the female population.
- Lack of presence of female role models in the industry is a deterrent for potential recruits.
- Lack of confidence among potential recruits (related to lack of presence of female role models) prevents pursuit of such roles.

- No audience directed marketing (wherein the face of the typical worker is not female).
- Gender bias of potential employers (“women can’t do this work”).



Figure 18. Info graphic showing some of the issues associated with retention of women in the construction industry workforce. BigRentz, blog, “Women in Construction: The State of the Industry 2021”

The same sources identifying recruitment issues cite common issues related to the lack of retention. One such source, BigRentz, in their blog, “Women in Construction: The State of the Industry 2021,” identified six key issues associated with retention of women in the construction industry workforce (Figure 18). Exclusion, limited advancement opportunities, and discrimination rank high among the factors impairing retention once candidates enter the workforce. Serving as the lone female or minority among a work group creates a natural degree of separation and isolation. Lack of female or minority role models within the environment further elevates such and diminishes confidence amongst the nontraditional workers who are fulfilling such roles. Limited advancement opportunities coupled with discrimination echo the sentiments from the 1980s popular movie “[9 to 5](#)” wherein the depicted office satire of these very elements come to life.

Given the vast workforce shortages, the potential of the untapped market of the underrepresented communities and the above noted recruitment and retention issues, much attention and effort has been drawn to spurring incentives, programs, and guidance toward solutions. These solutions are addressing workforce shortages while simultaneously addressing the many issues of why viable recruits are reluctant to apply or remain employed given the opportunities.

Over the last few years, the trade associations within the U.S. have grown a community of support among the nontraditional trades worker. Women across the country have been finding their voice amongst the male dominated industry, as illustrated in the North America’s Building Trades Unions (NABTU) Committee of Women in the Trades [Diversity Toolkit](#). The Toolkit includes direction for recruiting and retaining diverse apprentices as well as guidance from associations across the U.S. and Canada illustrating the broad brushstroke of engagement and outreach of their efforts. The association’s annual conference, [Tradeswomen Build Nations](#), attracts over 2,000 participants annually from all corners of the country.

Founded in 1961, the National Association of Minority Contractors, NAMC, is the oldest minority construction trade association in the United States. The association represents the interests of millions of skilled minority workers across the country. Through a network of local chapters and in collaboration with strategic and corporate partnerships, NAMC assists members with building capacity by providing access to opportunity, advocacy, and contractor development training. Data available from the association’s website illustrates the 2020 distribution of employees within the construction trade by minority group (Figure 19).

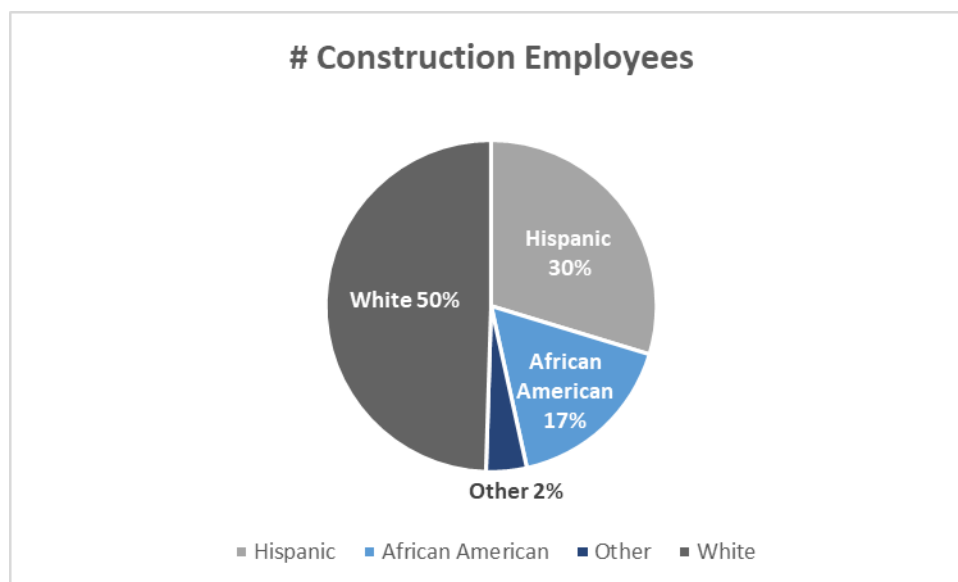


Figure 19. 2020 data provided by National Association of Minority Contractors (NAMC) showing the distribution of employees within the construction trade by minority.

The Conference of Minority Transportation Officials (COMTO) has a 50-year track record as the leading national advocate for employment diversity, inclusion and contracting opportunities in the multi-modal, multi-billion-dollar transportation industry. The organization’s model for success includes a commitment to: *advocate, collaborate, educate, communicate, and innovate*. The organization’s mission is “to eliminate barriers and promote maximum participation for minority individuals, veterans, people with

disabilities and certified MWDBE businesses through leadership training, professional development, scholarship and internship funding, political advocacy, partnership building and networking opportunities.”

Diversity within the workforce is explored in the 2020 National Governor’s Association report [“Registered Apprenticeship Reimagined: Lessons Learned from the American Apprenticeship Initiative.”](#) wherein the goals and outcomes of the U.S. Department of Labor’s \$175 million 5-year American Apprenticeship Initiative (AAI) grant, and related direction for moving forward, were reviewed and evaluated for the identification of lessons learned. Successful program characteristics include:

- Projects prioritized sustainability from inception and created partnerships and resource ecosystems that help programs thrive in the long term.
- Using partnerships helped to incorporate a variety of perspectives and resources that can support programmatic success.
- Establishing simplified processes helped employer partners to engage in registered apprenticeship programs.
- Program structures offered flexibility based on employer feedback, industry demand and apprentice needs.

The public works community is also actively involved in the development of potential countermeasures to address the workforce shortage. The Federal Highway Administration’s (FHWA) recent publication from February 2021, [Identify Train Place: A Playbook to Build Tomorrow’s Highway Construction Workforce](#), created a pilot program to identify, train, and place individuals in highway construction jobs and a playbook to assist agencies in the identification of successful strategies to address pressing highway workforce issues. Lessons learned from pilot participants, as well as the 8-step playbook, are offered to agencies seeking strategies aimed at overcoming workforce shortages. While not specifically aimed at underserved communities or underrepresented groups, the guidance remains applicable to recruitment and retention issues.

Agency DOTs offering internal programs that are focused on women and minority recruitment and retention can be found across the country. Arizona DOT has a program designed to assist economically disadvantaged groups with launching careers in transportation construction, and recently launched its first construction academy training session just for women. While job placement is important to the program, the overall goal is to help recruits see construction as a career and not just a job. Minnesota DOT offers an On-the-Job Training Supportive Services Program as a measure to increase the number of qualified racial and ethnic minorities, women, and disadvantaged individuals in the highway heavy construction trades. Supported in part by federal funding, the program offers a variety of recruitment, training, placement, and retention strategies.

A 2017 New Jersey DOT and FHWA report explored various state agency on-the-job training programs to identify barriers related to recruitment and retention of minorities and women in the highway construction industry and specifically issues related to employment within the union environment. The project identified 24 states offering on-the-job training programs emphasizing *the importance of sound partnerships as a critical element of program success*. Additionally, the research showed that in spite of the obstacles present in the typical union environment, the common denominators of *those who remained employed were a supportive family and/or consistency in mentorship*.

Women affiliated transportation organizations such as [Women in Transportation](#) (WTS) actively promote and support those seeking careers in untraditional roles. As stated on the website, the WTS mission is: “WTS attracts, sustains, connects, and advances women’s careers to strengthen the transportation industry. Our vision is for equity and access for women in transportation. Our programs are leading the way to making that vision a reality.” One such program is the WTS International [Diversity and Inclusion Initiative](#) supporting the organization’s vision for equity and access for women in transportation.

Through the initiatives, programs, and efforts launched to date, there are many lessons learned and take-aways providing sound guidance for moving forward. While many efforts warrant recognition as groundbreaking and forward thinking, there are also a few key considerations that all agencies can embrace regarding the recruitment and retention of underserved communities. The NABTU Committee of Women in the Trades has summarized on many of these in its [Diversity Toolkit](#):

Three Principles of Effective Recruitment

1. Repeated contact with your intended audience
2. Clearly define next steps for them to take
3. Build relationships for trust and word of mouth recruiting

The toolkit further defines actions aimed at successful implementation of these principles and likewise offers suggested actions supporting effective retention of women and minorities:

1. Provide an orientation
2. Create a welcoming job environment
3. Provide opportunities for skills training
4. Provide help for issues of concern
5. Ensure fairness in work types and amounts
6. Foster relationships and mentoring

The Toolkit offers detailed implementation methodologies with guidance on how companies, agencies, and organizations can best move forward.

The US Department of Labor provides direction in the 2018 [Feasibility Study and Evaluation of Non-Traditional Occupation Demonstrations](#) offering recommendations for effectively recruiting women and minorities into non-traditional occupations:

- Use a Multi-Pronged Approach – repetition and gender-themed recruitment
- Customize Recruitment Materials – for target population, training, and regional context
 - Design materials to align with the recruitment theme addressing relevant needs and concerns of women
 - Consider the specific characteristics of the target population as perceptions vary by subgroup
 - Customize recruitment content to the specific industry
 - Consider region-specific influencing factors that may influence the view of non-traditional occupations and the community’s demand for such
- Include Testimonials Specific to the Programs Offered
- Incorporate Personal Follow-up

- Combine Recruitment Efforts with Other Strategies – to address various barriers
- Implement Recruitment Best Practices

Embracing effective recruitment and retention strategies aimed at underserved communities offers enormous potential for meeting the needs associated with the workforce shortage. Inclusion of such strategies within the comprehensive guide of innovative but practical ways for DOTs/DWPs to recruit and retain a highly proficient, productive, versatile, and committed roadway maintenance workforce creates and supports options for successful outcomes.

Recruitment and Retention of the Next Generation

Work by Gallagher and Villwock-Witte (2016) sought to identify challenges and successes in recruiting and retaining millennials at state departments of transportation. A focus group made up of five state DOT human resource managers identified DOTs and the public transportation sector as a potentially attractive career option for young workers because of “job security, opportunities for personal and professional development, flexible schedules, and vacation and work expectations that allow for work–life balance.” Technology and social media usage, organizational mentorship capacity, and an unfavorable public image were acknowledged as shortcomings for the sector.

Mentorship programs and use of social media are key areas where DOTs can invest time and resources to reach the millennial generation.

Successful recruitment strategies identified to attract millennials included maintaining an online presence, using social media, and establishing partnerships with colleges to reach pre-career students both digitally and through face-to-face visits. The importance of internships targeting both high school and college students was also highlighted as an effective mechanism for attracting future applicants.

Providing formal training or informal guidance for staff to understand and mediate intergenerational issues was highly recommended. Managers should recognize the fact that millennials are a highly mobile workforce and generally will spend only 3 to 5 years at an agency. DOTs will therefore need to start planning for shorter employee tenures and develop creative strategies to obtain the best return on investment (e.g. creating an environment that encourages previous staff to return after a period of time spent outside the agency, bringing with them the additional skills they have acquired elsewhere).

The job mobility of millennials stems from the current labor economy, in which flatter, downsized organizations offer fewer opportunities for advancement than in the past. Agencies can mitigate this retention challenge by offering employees more opportunities for skills development and change (even if lateral), for example through job rotations or temporary external assignments.

Successful retention strategies include: providing millennials with robust professional development opportunities, such as job rotations or leadership programs; developing information-sharing mechanisms to enhance organizational engagement; involving young staff in improving agency policies or processes and providing them with rewarding and interesting work; and recognizing performance through monetary or other awards. Many of these strategies do not involve increased pay or formal promotion, but nevertheless serve to demonstrate organizational commitment and investment in the professional growth of promising young staff.

Some workplace attributes found at state DOTs that could hamper the retention of millennials included a lack of commitment by senior staff to mentor newcomers, as well as “unrealistic expectations from hiring managers on the experience and expertise required for vacancies, the sluggishness of DOTs to change, the red tape and delays at government agencies that young enthusiastic workers may find frustrating, and the strong hierarchical structure found at many DOTs.”

Capturing Information to Improve Your Program

Capturing information about staff, their needs, and job satisfaction can be as simple as asking and checking in with them periodically, to more formal meetings, surveys and focus groups. These programs work to improve retention of employees by applying feedback to improve programs and employee satisfaction. Additionally, programs like mentorships can provide an avenue for succession planning. The key to these programs is to be transparent with the benefits and how the information captured will be utilized, and to be prepared to address feedback from employees. This chapter will highlight the spectrum of options used by DOTs, local agencies, and in the private sector to capture information to help improve their programs.

Strategies to Consider

- Start small – information can be captured through informal discussions with employees or an occasional check-in; a set list of questions can help to frame these conversations.
- Be willing to listen and respond to employee feedback in a transparent manner.
- Communicate the benefits of any information capturing programs – explaining how the information will be used or applied.
- When conducting exit interviews, consider using an HR representative or an online survey format to make the participant more comfortable with sharing open and honest feedback.

Mentoring Programs (formal and informal) and Check-ins with Staff



Overview

Mentoring programs connect less experienced employees (mentees) with an experienced employee (mentor), either one-on-one or in a group setting. Mentoring programs can improve employee satisfaction, help retain employees, and serve as a good way to succession plan or allow more senior

staff to pass down their knowledge and experience to younger employees. Mentorships can also provide opportunities for younger staff to share experiences and technology knowledge with older staff.

Mentor programs can be formal, structured programs where a mentor is assigned a mentee and they complete specific trainings or other activities, or it can be more informal where a senior staff member is willing to participate in informal discussions or act as a sounding board for others.

Mentoring and informal check-ins with staff can help to support employees when they are struggling or considering leaving the agency and work to strategize and address issues as they grow in the organization. The key to these programs is honestly and openly listening to feedback and responses from employees, and then actually following up on the answers and/or suggestions.

Mentoring programs can be used as both recruitment and retention tools. Many millennials are seeking jobs that provide professional development including apprenticeships, mentorship programs, and leadership training to grow their knowledge base and marketability.

Case Studies

Ohio Department of Transportation, "How I Want to be Coached and Mentored"

As a part of the County Management Training Program (CMTTP) used by Ohio DOT, the following "How I want to be coached and mentored" form is used to aid in communication and information sharing between mentors and mentees.

In one word, the one thing I most need to from a mentor is: _____

Explain: _____

Many things motivate me, but my personal three are:

(Example 1: Opportunities to take the lead)

(Example 2: Developing new skills)

- 1.
- 2.
- 3.

If you mentor me, you can realistically expect me to: _____

In turn, I expect my mentor to: _____

The following professional goals are important to me: _____

I have the following strengths to help me achieve my goals: _____

I could use improvement in the following areas to further help me achieve my goals: _____

Mentors can enhance my performance as well as my progress toward goal achievement in the following ways: _____

Lastly, I think you ought to know that: _____

Check-in Questions

Phill Sexton of WIT shares the following “Rounding Questions” with leaders to use to check in with their staff.

Rounding Questions:

- What is working well?
- What has been challenging to you?
- How can I / we be helpful?
- Do you have the resources and support you need?
- Is there anyone who has been particularly helpful to you?

The key is to ask the questions, honestly and openly listen to the responses, and then follow up on the answers and/or suggestions. By asking these simple questions, management can check in with employees and communicate to them that they are valued.

*Oregon Department of Transportation/Bureau of Labor and Industries (ODOT/BOLI),
Informal Mentorship for Apprenticeship Program*

The [Oregon Highway Construction Workforce Development](#) program has invested in programs and supportive services aimed at promoting recruitment and retention of a more diverse workforce within the highway construction trades. The program was jointly initiated by the Oregon Department of Transportation (ODOT) and Oregon Bureau of Labor and Industries (BOLI). This program provides non-

financial support and informal mentoring to apprentices. The informal mentoring provides a point of contact within the program who meets with apprentices, helps them purchase boots, and engages in informal discussions ranging from the importance of persistence in trades, why having good gear is important, and more. Generally, this mentoring provided an opportunity to check in with employees and identify those who were considering leaving the trades and created potential solutions to address issues.

Surveys, Focus Groups, and Interviews

Overview

Periodic surveys, focus groups, or interviews can provide a more formal method for an agency to gather feedback from employees. These can be utilized to gather information on a range of topics from general employee satisfaction, to feedback on employee trainings, to career path information.

Case Studies

Colorado DOT Use of Focus Groups to Define Training Needs

CDOT used focus group interviews of regional directors, maintenance superintendents, deputy superintendents, and labor, trades, and crafts operations (LTC Ops) personnel to discuss headquarters driven training and regional needs, gather information on job mapping and position-based skills, competencies, and set performance metrics to determine training effectiveness. From these conversation style focus groups, three key findings were identified:

1. Individual course content was developed to address the fundamentals of CDOT maintenance work tasks and job areas.
2. The agency identified larger programs needing attention, including short course development and curriculum design.
3. CDOT identified other needs for Traffic Ops, Fleet, and Specialty trainings, as well as existing trainings that needed to be made more robust.

The outcome of this effort included defined curriculum and training needs, longer term planning for big picture CDOT needs, and specific recommendations to CDOT to support this effort over time. A second outcome was the development of an Evaluation Plan that considered:

- Classroom Sessions (virtual and in-person) standards that employees will need to learn, understand, and take with them into the field.
- Hands-on/Experiential Session used to reinforce classroom sessions and apply in practice in the field.
- Performance Assessment (Endorsement or Certification) is not required but used to assess learner's competency on specific tasks. This may be a knowledge check, a test, or a live exercise in field.

Ohio DOTs use of Employee Satisfaction Surveys

Ohio Department of Transportation (ODOT) conducts a quality of work-life survey among employees annually. Past survey responses have resulted in numerous recommendations to improve employee experience including providing additional support to help reduce workload, improving managerial oversight and training, and examining pay scales.

Idaho Transportation Department

Idaho Transportation Department (ITD) conducts an employee expectations survey. From this survey, ITD management has learned what job characteristics are most important to their employees including *flexible training timing, support staff, training topics of interest*, and more. Based on survey results, ITD has added trainings based on suggestions. ITD has also allowed trainings to be added to an employee's career path as long as they fit within the job description. ITD focuses on listening to what is working and what is not working. This has helped promote buy-in from the top to the bottom and from the bottom up within the organization.

North Dakota Department of Transportation

The state of North Dakota has partnered with Gallup to conduct employee surveys. These surveys provide meaningful information that can be applied by state agencies. The DOT uses these surveys to hone-in on job engagement versus job satisfaction. Currently the DOT is working on how to tease out elements to improve employee satisfaction. Results of these surveys are shared with employees, including actions based on the findings. The goal is to show employees that the DOT is listening to employee feedback and is willing to invest time and money into its employees. For example, the DOT heard that employees wanted more opportunities for training, so it is currently working to schedule additional opportunities. With the COVID pandemic, the agency provided more online training opportunities which tend to allow for more flexibility for scheduling.

Exit Interviews

Overview

While common place in federal, state, and local agencies, exit interviews do not appear to be as widely used by private snow and ice control providers. Exit interviews are typically coordinated and conducted by Human Resources (HR) staff at an agency or by someone in an oversight or management level position. By allowing HR at your agency to conduct exit interviews, you provide an impartial person to ask questions and receive responses. Depending on the reason for their exit from the organization, exiting staff members may not feel comfortable speaking openly and honestly about why they are leaving to a direct manager. Another method to receive open and honest feedback is to offer exit interviews via an online survey.

Exit interviews can provide direct feedback to the organization on what works and what does not for employees. It is important to capture the information from the exit interviews, provide this information/feedback where it can be applied, and create change where actionable and feasible.

One concern raised by many organizations was that some folks will leave an organization and the supervisor(s) did not know anything was wrong or bothering them until they leave. If this is the case, establishing two-way lines of communication is needed – employee to supervisor and vice versa. What is going well? What can be improved? (see section above on Mentoring Programs (formal and informal) and Check-ins with Staff)

RECOMMENDATIONS

State and local transportation agencies continue to struggle to recruit and retain qualified roadway maintenance workers, an issue that has been challenging agencies for the last several decades. The likely causes may be:

- comparatively low starting pay to some public and private organizations,
- the increasing number of retirements among older employees,
- experienced employees leaving for jobs in the private sector or with other public sector employers,
- fewer young people entering the workforce who are aware of or interested in roadway maintenance as a career,
- demographic shifts that reduce populations and thus the candidate pools in some areas,
- reduction of the traditional benefits provided by state and local governments that current and prospective employees may find attractive (such as pensions and job stability), and
- stringent background, physical, CDL, and substance abuse requirements that disqualify or dissuade a number of applicants.

In addition to the listed challenges, mandated snow operations, with unpredictable shifts, long hours, and restrictions on employees' personal lives during winter seasons, exacerbate the recruitment and retention issues public agencies face. These same challenges have also affected private contractors who provide supplemental snow and ice control in many jurisdictions or serve independently for private property owners. Other factors, that do not necessarily apply to all agencies, include obsolete or worn vehicles and equipment, inadequate facilities, poor management and supervisory policies and practices, and/or lack of growth and training opportunities.

Looking Forward - Recruitment and Retention of Highway Maintenance Workers

Agencies should expect the necessity to implement long-term recruitment and retention strategies. This sentiment was echoed by DOT HR departments, where recruitment and retention are a key part of their job and strive to find new and innovative ways to bring in new employees. These efforts require long term commitment and a willingness to adapt with job market changes and workforce needs. The COVID-19 pandemic has allowed for the reevaluation of what workplaces and jobs can be. While this was a topic of discussion in recent years for the roadway maintenance workforce, the pandemic has accelerated the need to develop and implement changes.

Succession Planning

Government agencies need to change the culture within their organizations to recognize and support generational changes. The post-World War II "Baby Boomer" generation is retiring in greater numbers; this cohort spent most of its working years with a mindset towards longevity and loyalty with one employer, and employment that focused on job security, good benefits, and a structured organization. The younger generations have a different perspective. Work-life balance is highly valued, as is a less rigid, top-down management environment. "Lifetime" employment and a pension (which rarely exist anymore) with one organization is not a decisive factor with younger workers. Nor is "paying your dues," waiting for a promotion based more on tenure than merit. Likewise, annual step raises based on merit and performance are highly valued, rather than the historically common raises based on service time.

As the baby boomer generation retires from the workforce, agencies face losing an astronomical amount of experience and knowledge. To help reduce this loss, agencies should look to creating succession plans in order to improve knowledge transfer and to ensure that the next generation of leaders is prepared to enter into these positions. Mentorship programs can be extremely beneficial in providing a method for more senior staff to pass down their years of knowledge and skills to younger staff, while allowing for a process where newer employees can receive feedback in a more informal manner. Additionally, some agencies have implemented leadership training opportunities which allow motivated employees to gain experience and a better understanding of what is required of a manager. (For more information on this see Recruitment and Retention of the Next Generation)

Career Pipelines for the Next Generation

Strong, sustained effort is needed to create a “pipeline” of future workers beginning at the high-school level. There is growing awareness across most sectors that not everyone wants, should or can go to college for a four-year degree. Instead, the construction, manufacturing, transportation, utilities, healthcare, and other industries have a high demand for well-trained and skilled employees. More and more community colleges, in partnership with unions and businesses, are providing certificates and Associate degree programs for prospective and new employees. Similarly, state and local roadway agencies, and organizations such as AASHTO, APWA, IMSA and ITE, need to collaborate with schools to inform students of viable and rewarding careers in the transportation sector, and to ensure that these programs continue to create a pipeline of potential employees with the necessary knowledge and skills needed. (For more information on this see Creating Supplemental Workforce with Existing Staff, Employee Training Programs, Sharing Your Story – Using Social Media for Recruitment and Public Engagement, Underserved Communities Recruitment and Retention – Successful Examples, Succession Programs & Mentoring, Recruitment and Retention of the Next Generation).

Employee Training Programs

Another element in the transformation of the roadway maintenance workforce is the introduction of new materials and methods that require better knowledge of proper handling and application as well as knowledge of relevant health, safety, and environmental regulations. Snow and ice control, roadside vegetation control, pavement resurfacing and repair, traffic markings, stormwater diversion and detention systems and fleet maintenance activities use a wide range of materials, chemicals and specialized equipment; some of these functions require workers to have approved certifications for tasks such as applying herbicides or entering confined spaces. When, where, what and how to properly use various materials for snow and ice control has received more attention in the past several decades. (For more information on this see Employee Training Programs).

Regular structured training on job safety, work zone traffic control, CDL, vehicles, equipment, snow and ice control best practices, pavement construction, maintenance and repair, traffic signs and markings, stormwater systems, roadside vegetation control, and other key topics should be supported by management and sufficiently funded. Workplace diversity and anti-harassment training is equally important. Supervision and leadership training should be offered for those who have demonstrated interest and aptitude.

These changes and emerging issues mean that the maintenance workforce needs more and better training, and this should become a priority for all transportation organizations. Providing a robust training program shows that an agency is willing to invest in their employees. With the COVID-19

pandemic, opportunities for online training opportunities have increased flexibility in training offerings for employees. Offering online training opportunities (when feasible) can allow for flexibility in scheduling a training while reducing the burden for an employee to travel to training.

Career Progression and Career Ladders

Job descriptions and classifications need to be revised to reflect the changing duties, responsibilities, skills, and knowledge within the roadway maintenance field. Technology provides opportunity for more flexibility and versatility among this group of workers. Current maintenance workers are more engaged in using programs such as Maintenance Management tools, Work Order Management, and Asset Management systems on devices such as laptops, tablets, and smartphones.

As job descriptions and requirements are revised, so too must the classification structures. Agencies often group similar jobs within bands to aid in determining wage ranges. Higher hourly rates based on expanded duties, responsibilities, and skills will be a strong incentive for recruiting and retaining valued employees. (For more information on this see Employee Benefits and Incentive Programs, Promotion and Leadership Programs).

Job and classification revisions can be used to create or improve “ladders” for advancement based on acquiring skills, knowledge, certificates, and certifications (Associate and even bachelor’s degrees) in addition to demonstrated proficiency and productivity. Many agencies are unionized; and the cooperation and buy-in from the unions is essential. Outdated civil service rules may need to be updated. Bureaucratic resistance to such changes, including wage scales, can be hard to overcome, but a strong argument can be made by emphasizing the significant changes that have occurred to roadway maintenance positions. (For more information on this see Employee Benefits and Incentive Programs, Employee Training Programs, Promotion and Leadership Programs).

Utilizing Technology Innovations to Improve Job Marketing

Opportunities to target a different audience for recruitment are ripe in transportation. Newer maintenance vehicles, machines, and equipment have more “smart technology”; for example, snow-plow trucks, traffic marking applicators, paving and patching machines, graders and backhoes have digital devices that provide more precise field performance that improve efficiency and productivity. Robotic roadside mowing machines, sweepers, storm sewer cleaning equipment and trenching machines, and even autonomous plow trucks, lane strippers, and work zone safety vehicles are in development and testing. The use of drones is common practice at many DOTs now. The upshot of this technological evolution within roadway maintenance is that the image of the workers / operators is changing, and the emerging image can be utilized to market to new audiences. Improving the perception of roadway maintenance work and organizational culture is key.

This change in perception will require marketing and sharing employee and department experiences with the public. Interestingly, “word of mouth” continues to be the most common recruitment method linked to new hires. Agencies have an opportunity to better understand which recruitment tools are working and which are not, and to better direct funds and effort through data collection and new hire interviews. Increasing opportunities for “word of mouth” could be done through outreach events at local fairs, career days, and similar events. For example, some agencies have utilized “touch a truck” events, which allow the public to see the various technologies used by plow operators and to experience what it is like to operate a plow. Alternatively, many agencies have utilized social media to share

information and stories about their maintenance programs. Posts that share a “day in the life” of a plow driver or explain winter maintenance practices, for example, can provide the public with insight and visibility for these careers. (For more information on this see [Sharing Your Story – Using Social Media for Recruitment and Public Engagement](#)).

[Casting a Wider Net – Improving Diversity](#)

The roadway maintenance workforces are predominantly white males. Agencies have an opportunity to recruit more women and a more diverse workforce. Other groups for targeted recruitment efforts include minorities, military veterans, “second-chance” candidates (those with minor, non-violent criminal records) and people who are seeking a career change. DOTs have begun to offer internal programs that target underserved populations. For example, Arizona DOT has a program designed to assist economically disadvantaged groups with launching careers in transportation construction and has recently launched a construction academy training session targeted toward women. Minnesota DOT offers On-The-Job Training Supportive Services Program which works to increase retention of qualified racial and ethnic minorities, women, and disadvantaged individuals in the highway and heavy construction trades. Additionally, marketing and social media outreach highlighting women, minorities, and other disadvantaged populations on-the-job can go a long way in showing the many people who can fit into this career. (For more information on this see [Underserved Communities Recruitment and Retention – Successful Examples, Partnerships with Department of Corrections \(DOC\)](#)).

[Learn from Your Employees – Using Employee Feedback to Improve Your Program](#)

Improving communication among staff and managers through methods like job satisfaction surveys, exit interviews, and informal mentoring efforts can allow an agency to identify issues and create countermeasures to improve employee retention. Some agencies have implemented work-life balance or job satisfaction surveys to obtain confidential feedback from employees. Exit interviews are often used by state and local transportation agencies, conducted by HR and Managers. While valuable insights can be gained from them, effort could be re-directed to regular periodic discussions with employees, either by department management or human resources or both. These discussions help to identify workplace issues before they become too burdensome, and they generate feedback on program improvements to increase employee engagement and job satisfaction. Of course, there will always be some complaints and gripes that are not practical or feasible to address, but there is also the opportunity to mitigate problems before they become untenable. (For more information on this see [Capturing Information to Improve Your Program, Creating a Positive Workplace Culture](#)).

[Impact of the COVID-19 Pandemic](#)

Beginning in March 2020, the COVID-19 pandemic exacerbated recruitment and retention challenges. For example, some veteran employees chose to take early retirement rather than risk exposure at work to the virus. Some agencies were forced to lay off or substantially reduce working hours for employees, causing many to enroll in unemployment assistance programs. For many, the federal stimulus and unemployment assistance funds made available during the COVID-19 pandemic were more generous than their actual take-home wages, providing a disincentive for many to pursue going back to work once they were able to. For other roadway maintenance employees, these same federal supplemental unemployment and stimulus checks facilitated the decision to stay off the job in order to care for dependents or if they were at high risk of infection or for severe complications from COVID-19.

The onset of the COVID-19 pandemic abruptly caused a devastating shutdown of much of the U.S. economy beginning in March 2020. The catastrophic disruptions affected nearly every sector of the US economy, including governmental operations. Roadway maintenance workers were deemed “essential workers,” and many continued to work under stringent sanitation requirements. However, only the most critical functions, such as snow and ice control, were carried out and other responsibilities were reduced, deferred, or eliminated.

Many state and local transportation agencies imposed measures limiting working hours and staff sizes through furloughs, layoffs, and permanent reductions-in-force (RIF). This was compounded by mandatory quarantines for employees who tested positive for COVID-19 or had close contact with a positive case. These conditions severely reduced operational effectiveness and placed a heavier burden on those able to work.

More than a year later, the U.S. economy is predicted to rapidly expand with increasing tax revenues, alleviating the need for further layoffs or curtailments. While it is too soon to clearly determine the longer-lasting impact of the pandemic on the maintenance workforces, several *assumptions of near-term effects* can be made:

1. Some agencies that implemented layoffs may recall employees. However, agencies may reclassify some formerly full-time positions to part-time or temporary (a trend in the private sector as well) until the long-term outlook is more favorable. As in the aftermath of the Great Recession a decade ago, agencies may follow a similar pattern of permanently eliminating some vacant positions in roadway maintenance and outsource more work.
2. As Federal stimulus payments and supplemental unemployment funding cease in 2021, unemployment requirements will likely return to pre-pandemic practices which include active job searches. This could benefit transportation agencies and create an opportunity for transportation agencies to promote roadway maintenance careers as a viable entry-level job with great benefits to those who are looking to return to work.
3. Agencies will need to improve their recruiting and retention strategies as the competition from the private sector heats up. Case in point: there is a considerable shortage, approximately 25% at this time, of CDL drivers in the trucking industry. Wages are expected to substantially increase to attract more drivers. A number of transportation agencies provide CDL training for new hires. Even before the pandemic, it was common for those with CDLs to leave for the private sector for higher paying jobs. Without change, government agencies will be less able to match those rates and will continue to lose roadway maintenance workers.
4. Passage of an infrastructure bill authorizing billions for road and bridge improvements will likely occur in 2021. If so, dispersal of funds to state and local agencies could begin later in the year. While it has not been determined how much will be used for new roadway construction, replacement, rehabilitation, and preventive maintenance, it is expected that funds will target major roadway repair. This will spur road construction and benefit local, state, and private transportation and maintenance companies.
5. Agencies can encourage employees to get the COVID-19 vaccine, but it is highly unlikely that they can require employees to get vaccinated. However, they may be able to require new candidates to get vaccinated prior to starting employment. What effect this would have on the potential employee pool is unknown.

6. Meanwhile, for the foreseeable future, agencies will continue with some sanitation protocols with some modifications; for example, lessen social distancing rules and no longer requiring masks, provided enough employees are vaccinated.

Key Strategies

Moving forward, improving recruitment and retention in roadway maintenance will require long term commitment by agencies. As the workforce and job market continue to evolve, so should an agency's efforts to recruit and retain employees. Key recommended strategies include:

- Changing the culture within organizations to recognize and support generational changes
- Succession planning to reduce loss of knowledge as the older generation retires and create a pipeline for younger generations to step into leadership positions
- Revisions of job descriptions and compensation to reflect desirable and livable wages
- Classification structure revisions
- Expanding and supporting training
- Developing and employing recruitment strategies that include targeting specific groups
- Developing marketing and outreach strategies to improve the image of operations work
- Utilization of social media and other outreach tools to improve marketing of job opportunities
- Employing efforts focused on growing the pipeline
- Improving and expanding communication within the organization as an effort to identify issues and create countermeasures

How to Get Started

Implementing new recruitment and retention strategies can be daunting, particularly if you do not know where to begin. This section summarizes tools and input to help make this process easier. The following bullets provide general guidance and lessons learned on how to evaluate and improve upon your program's efforts.

- Recruitment
 - Short Term
 - Evaluate your current job marketing efforts
 - Are there additional avenues to increase visibility of job opportunities? Examples: Social media, outreach events (career fairs, etc.)
 - Can you cast a wider net? Examples: Market to more diverse populations or non-traditional groups
 - Have you considered marketing in new ways? Example: Instead of focusing on pay, focus on the benefits package, training opportunities, new technologies, other opportunities in the career
 - Long Term
 - Create pipelines into highway maintenance careers, mentorship programs
- Retention
 - Short Term
 - Create avenues to receive employee feedback and then apply what you learn (e.g. job satisfaction surveys, mentoring, exit interviews)

- Support training opportunities
- Support mentoring programs (formal or informal)
- Long Term
 - Revise job descriptions
 - Create career ladders related to job training, skills, and experience with corresponding step raises
 - Create training programs that can act as a pathway to leadership positions
 - Re-evaluate wage scales

Steps to implement change in organizations can be more easily be achieved when your agency;

- Collaborates – utilize folks within and outside of your agency
- Sets goals – short-term and longer-term goals
- Start small – identify a small, easily achievable change
- Develop a plan – from the top to the bottom
- Make it happen – implement your plan
- Honestly evaluate your successes and lessons learned
- Apply what you have learned

Figure 20 outlines the themes for implementation listed above as steps that can be followed to support implementation of any new practice or technology (Fay and Clouser, 2020).



Figure 20. Steps to Implementation

CONCLUSIONS

Some of the key findings of this project provided overarching guidance and lessons learned that informed the recommendations. Key findings include:

- Work closely with your Human Resources department as they can help support recruitment efforts (job fairs, paint a plow/touch a plow events, recruitment fliers/postings, career fairs, social media posts, etc.) and retention efforts (exit interview responses, employee satisfaction surveys, pay scale and benefits information and resources, etc.).
- Work with what you have and can offer – learn what benefits are available, what they are worth, and make these known as recruitment tools and for existing employees.
- Training and mentorship programs in agencies help support the growth of the employee, the sharing of knowledge, and create future leaders in your agency.
- Mentorship programs can provide a method for succession planning by allowing senior staff to pass down experience while developing the next generation of leaders within an agency.
- Career ladder programs provide a clear method to ensure consistent training and skills necessary to obtain a position. These types of programs can allow a motivated employee to “choose their own destiny” upon entering the agency.
- Work within your agency to encourage/allow all who are interested to take advantage of career progression ladder promotions, and to receive the earned salary and title changes. This may require changing policies to allow many individuals of similar job classification at the organization/facility.
- Work with local unions to develop and implement changes in training, training requirements, career ladder progressions, etc. tied to salary and title changes to encourage the best possible candidates for promotions.

KNOWLEDGE GAPS and RESEARCH NEEDS

While significant effort has been made to improve recruitment and retention efforts for highway maintenance workers, including those from non-traditional or disadvantaged backgrounds, this project highlighted that much work is still needed. Knowledge gaps and recommended additional research are outlined below.

- Research Need #1: How can state and local road agencies build flexibility into their organization?

Many state highway agencies offer rewards and promotion based on longevity in a position. While this has worked historically to provide stable employment with good benefits, it often lacks flexibility. Many younger employees are looking for a reasonable starting wage and flexible hours/work schedules, favoring quality of life. Research is needed to address how agencies can adapt to shorter employment tenures and increase organizational flexibility to meet the changing needs of the labor force.

- Research Need #2: How to create, populate, and sustain (formal and informal) mentorship programs at state and local road agencies?

Formal and informal mentoring programs have been shown to be highly effective recruitment and retention tools. For the millennial generations, access to mentors may attract them to a job. For women or persons of color, having a mentor that “looks” like them may be what keeps them at the job and

allows them to see their potential in the organization. However, many agencies struggle to establish active employee engagement in mentorship programs over the long term. Additional research is needed to determine success factors for mentorship programs in this sector.

- Research Need #3: What standard guidance can be developed for state and local road agencies in the systemic evaluation and identification of feasible pay increases to match cost of living, inflation, and regional/statewide pay at comparable organizations?

Pay rates for maintenance workers appear to be one of the larger recruitment challenges faced by state and local road agencies. The process of working within an agency to increase the pay scale has been described as requiring a herculean effort that often falls short of the proposed pay in the end. The development of standard guidance for evaluating pay rates within local contexts and among peer organizations would help maintenance and human resource managers better make the case for feasible pay increases.

- Research Need #4: What standard guidance can be developed to aid agencies in garnering responses to employee satisfaction surveys (and informal check-ins) and using the information to improve staff morale and retention?

Many state and local agencies report being unaware of employee satisfaction issues until after an employee has left the agency. Some agencies, on the other hand, report improvements in overall employee satisfaction through the use of informal check-ins and periodic formal employee satisfaction surveys. Standard guidance on the development, collection, and use of employee satisfaction surveys or informal interview data would help more agencies improve retention by proactively addressing issues before an employee has left the job.

- Research Need #5: Development of a national level summary of state, local, and comparable private sector maintenance job pay scales and an investigation into the importance of benefits versus pay.

Many state and local agencies reported loss of employees due to pay differences between state, local, and private sector maintenance positions and trucking opportunities. Survey and interview results found that pay differences were often minor between state DOTs and the private sector, but that \$1 dollar an hour more could be enough for a person to leave a job at the state DOT and move to another maintenance position, regardless of whether similar benefits were provided. A deeper look at pay differences and the importance of benefits could help agencies better craft pay scales to attract and retain staff.

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