



Wisconsin Highway Maintenance Workforce Survey 2017

Q1. Thank you for participating in this important survey!

Your responses to the questions that follow will help the Midwest Transportation Workforce Center (MTWC) at the University of Wisconsin-Madison develop a career pathway for skilled careers in Highway Maintenance.

Your responses are confidential and will not be associated with you, personally. Results will be reported in aggregate form. Your participation is voluntary and you may skip any questions. However, your responses are crucial for our study to be successful. We estimate that it takes 30 minutes to complete this survey. You can take the survey all at once or in parts. Simply close the browser to exit the survey. Later, you can click the link to access it from where you left off.

If you have any questions or issues with the survey, please contact **Maria Hart** at maria.hart@wisc.edu.

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Q2. What type of organization do you work for?

- County
 - City
 - Village
 - Town
 - State Department of Transportation
 - Private Highway Maintenance Contractor
-

Q3. Highway Maintenance Jobs in Your Organization

In this section, we want to learn about employment statistics and job titles used in your organization for the various levels of highway maintenance workers.

For this survey we have identified 4 levels of workers:

- Level 1 - Entry
 - Level 2 - Intermediate
 - Level 3 - Senior
 - Level 4 - Supervisor (Project Manager, Superintendent or Administrator)
-

Q4.

Level 1 - Entry

Level 1 highway maintenance work typically requires graduation from high school, or GED or equivalent experience. They work under close supervision and perform routine equipment operations and physical labor activities. They may operate equipment such as dump trucks, front-end loaders, tractors, motor graders, high reach excavators, and the support equipment such as air compressors, oil distributors, and pneumatic tools.

Does your organization employ Level 1 workers?

- Yes
- No
-

Q5.

In your organization, what job title is associated with the Level 1 worker?

For example: Highway Maintenance Worker 1

Q6.

Does a private sector contractor provide Level 1 highway maintenance duties for your organization?

- Yes
- No
-

Q7.

Please indicate contractor(s) organization name.

Q8.

Does a public sector organization provide Level 1 highway maintenance duties for your organization?

- Yes
- No
-

Q9.

Please indicate public sector organization name.

Example: Rusk County

Q10.

Some organizations have a combined or cross-trained workforce.

Do you have other job classifications, such as Diesel Mechanic 1, that perform Level 1 highway maintenance duties in your organization?

Yes

No

Q11.

Are any of these other job classifications required to perform highway maintenance duties?

Yes

No

Q12.

Please tell us what other job classifications are required to perform highway maintenance.

Q13.

Do any other job classifications within your organization volunteer to perform highway maintenance duties?

Yes

No

Q14.

Please tell us the other job classifications from which workers may volunteer to perform highway maintenance duties.

Q15. In 2016, what was the total number of employed, permanent, full-time positions for **#{q://QID126/ChoiceTextEntryValue}** in your organization?

Q16.

In 2016, did you hire seasonal workers to perform Level 1 duties?

Yes

No

Q17.

During the winter season, about how many FTE Level 1 seasonal highway workers does your organization usually hire?

Q18.

During the summer season, about how many FTE Level 1 seasonal highway workers does your organization usually hire?

Q19. **Level 2 - Intermediate**

Level 2 highway maintenance work typically requires graduation from high school or GED or equivalent experience. This level also requires one to two years of experience operating heavy equipment and performing roadway maintenance. They work under moderate supervision and operate multiple gasoline and diesel powered construction equipment such as heavy bulldozers and power shovels as well as related heavy construction equipment exceeding four tons.

Does your organization employ Level 2 workers?

Yes

No

Q20.

In your organization, what job title is associated with the Level 2 worker?

For example: Highway Maintenance Worker 2

Q21.

Does a private sector contractor provide Level 2 highway maintenance duties for your organization?

Yes

No

Q22.

Please indicate contractor(s) organization name.

Q23.

Does a public sector organization provide Level 2 highway maintenance duties for your organization?

 Yes No

Q24.

Please indicate public sector organization name.

Example: Rusk County

Q25.

Some organizations have a combined or cross-trained workforce.

Do you have other job classifications, such as Diesel Mechanic 2, that perform Level 2 highway maintenance duties in your organization?

 Yes No

Q26.

Are any of these other job classifications required to perform highway maintenance duties?

 Yes No

Q27.

Please tell us what other job classifications are required to perform Level 2 highway maintenance.

Q28.

Do any other job classifications volunteer to perform Level 2 highway maintenance duties?

 Yes

No

Q29.

Please tell us the other job classifications from which workers may volunteer to perform Level 2 highway maintenance duties.

Q30.

In 2016, what was the total number of employed, permanent, full-time positions for **#{q://QID128/ChoiceTextEntryValue}** in your organization?

Q31.

In 2016, did you hire seasonal workers to perform Level 2 duties?

Yes

No

Q32.

During the winter season, about how many FTE Level 2 seasonal highway workers does your organization usually hire?

Q33.

During the summer season, about how many FTE Level 2 seasonal highway workers does your organization usually hire?

Q34.

Level 3 - Senior

Level 3 highway maintenance work typically requires graduation from high school or GED or equivalent experience, plus four or more years of full-time experience in roadway maintenance. They work under limited supervision. They function as a crew leader for staff specializing in highway maintenance services and assist in the coordination of planning work schedules, providing leadership and guidance to crews, coordinating maintenance operations in the field, monitoring work performed, compiling crew work statistics, and documenting crew activities.

Does your organization employ Level 3 workers?

Yes

No

Q35.

In your organization, what job title is associated with the Level 3 worker?

For example: Highway Maintenance Worker 3

Q36.

Does a private sector contractor provide Level 3 highway maintenance duties for your organization?

Yes

No

Q37.

Please indicate contractor(s) organization name.

Q38.

Does a public sector organization provide Level 3 highway maintenance duties for your organization?

Yes

No

Q39.

Please indicate public sector organization name.

Example: Rusk County

Q40.

Some organizations have a combined or cross-trained workforce.

Do you have other job classifications, such as Diesel Mechanic 3, that perform Level 3 highway maintenance duties in your organization?

Yes

No

Q41.

Are any of these other job classifications required to perform highway maintenance duties?

Yes

No

Q42. Please tell us what other job classifications are required to perform Level 3 highway maintenance.

Q43.

Do any other job classifications volunteer to perform Level 3 highway maintenance duties?

Yes

No

Q44.

Please tell us the other job classifications from which workers may volunteer to perform Level 3 highway maintenance duties.

Q45.

In 2016, what was the total number of employed, permanent, full-time positions for \${q://QID132/ChoiceTextEntryValue}s in your organization?

Q46. In 2016, did you hire seasonal workers to perform Level 3 duties?

Yes

No

Q47. During the winter season, about how many FTE Level 3 seasonal highway workers does your organization usually hire?

Q48. During the summer season, about how many FTE Level 3 seasonal highway workers does your organization usually hire?

Q49. Level 4 - Supervisor

Level 4 highway maintenance work typically requires graduation from high school or GED plus experience equal to five or more years of full-time experience in highway/roadway maintenance, highway construction work, or highway materials inspection work. They are top-level supervisors of maintenance functions and supervise multiple locations within an assigned area of operations. They are often assisted by a Level 3 worker.

Does your organization employ Level 4 workers?

- Yes
- No

Q50. In your organization, what job title is associated with the Level 4 worker?

For example: Superintendent

Q51. Does a private sector contractor provide Level 4 highway maintenance duties for your organization?

- Yes
- No

Q52. Please indicate contractor(s) organization name.

Q53.

Does a public sector organization provide Level 4 highway maintenance duties for your organization?

- Yes
- No

Q54. Please indicate public sector organization name.

Example: Rusk County

Q55. Some organizations have a combined or cross-trained workforce.

Do you have other job classifications, such as Diesel Mechanic 4, that perform Level 4 highway maintenance duties in your organization?

- Yes
 No
-

Q56.

Are any of these other job classifications required to perform highway maintenance duties?

- Yes
 No
-

Q57. Please tell us what other job classifications are required to perform Level 4 highway maintenance.

Q58.

Do any other job classifications volunteer to perform Level 4 highway maintenance duties?

- Yes
 No
-

Q59. Please tell us the other job classifications from which workers may volunteer to perform Level 4 highway maintenance duties.

Q60. In 2016, what was the total number of employed, permanent, full-time positions for **#{q://QID130/ChoiceTextEntryValue}s** in your organization?

Q61. In 2016, did you hire seasonal workers to perform Level 4 duties?

- Yes
 No
-

Q62. During the winter season, about how many FTE Level 4 seasonal highway workers does your organization usually hire?

Q63. During the summer season, about how many FTE Level 4 seasonal highway workers does your organization usually hire?

Q64. Total Number of Highway Maintenance Staff

For the last calendar year 2016, what was the total number of full-time, permanent employees in the highway maintenance section of your organization?

Include Levels 1-4 and other staff beyond Level 4. Do not include clerical staff.
Please enter 0 to indicate that your organization does not have a highway maintenance staff.

Q65. Total Number of DOT Highway Maintenance Staff

For the last calendar year 2016, what was the total number of full-time, permanent employees in the highway maintenance section of your Region or Bureau?

Do not include clerical staff. Occupations within highway maintenance may include policy/planning analyst, highway maintenance engineer, landscape architect, GIS technician, surveyor, etc.

Q66. Vacancies

In the last calendar year 2016, how many vacancies did your organization experience for Levels 1-4 ?

Q67. DOT Vacancies

In the last calendar year 2016, how many vacancies did your organization experience in your highway maintenance section of your Region or Bureau?

Do not include clerical staff. Occupations within highway maintenance may include policy/planning analyst, highway maintenance engineer, landscape architect, GIS technician, surveyor, etc.

Q68. This year, in 2017, how many-full time, permanent positions will your organization need to fill for Levels 1-4?

Q69. This year, in 2017, how many-full time, permanent positions will your organization need to fill in your highway maintenance section of your Region or Bureau?

Do not include clerical staff. Occupations within highway maintenance may include policy/planning analyst, highway maintenance engineer, landscape architect, GIS technician, surveyor, etc.

Q70. 2016 Salaries

These next questions are about pay range and actual salaries for Levels 1 though 4 workers in the year 2016 in your organization.

Q71. Pay Range - Annual Salary

In 2016, what were the lowest and highest possible salaries, regardless of whether an employee is receiving the salary?

Example: 29000

	Lowest possible annual salary	Highest possible annual salary
<input type="text" value="{q://QID126/ChoiceTextEntryValue}"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="{q://QID128/ChoiceTextEntryValue}"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="{q://QID132/ChoiceTextEntryValue}"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="{q://QID130/ChoiceTextEntryValue}"/>	<input type="text"/>	<input type="text"/>

Q72. Pay Range - Hourly Wage

In 2016, what were the lowest and highest possible hourly wages, regardless of whether an employee is receiving the salary?

Example: 15.00

	Lowest hourly wage	Highest hourly wage
<input type="text" value="{q://QID126/ChoiceTextEntryValue}"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="{q://QID128/ChoiceTextEntryValue}"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="{q://QID132/ChoiceTextEntryValue}"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="{q://QID130/ChoiceTextEntryValue}"/>	<input type="text"/>	<input type="text"/>

Q73. Actual 2016 Salaries

In 2016, what were the actual lowest and highest salaries, paid to a current, full-time employee in your organization?

	Lowest actual annual salary	Highest actual annual salary
#{q://QID126/ChoiceTextEntryValue}	<input type="text"/>	<input type="text"/>
#{q://QID128/ChoiceTextEntryValue}	<input type="text"/>	<input type="text"/>
#{q://QID132/ChoiceTextEntryValue}	<input type="text"/>	<input type="text"/>
#{q://QID130/ChoiceTextEntryValue}	<input type="text"/>	<input type="text"/>

Q74. Actual Average Salaries

The actual average is the sum of the salaries for all employees reported in a particular classification divided by the same number of employees.

In 2016, what was the actual average salary for each level in your organization?

	Actual average salary
#{q://QID126/ChoiceTextEntryValue}	<input type="text"/>
#{q://QID128/ChoiceTextEntryValue}	<input type="text"/>
#{q://QID132/ChoiceTextEntryValue}	<input type="text"/>
#{q://QID130/ChoiceTextEntryValue}	<input type="text"/>

Q75. Seasonal Worker Hourly Wage

You indicated that you hired seasonal workers at the following level(s).

In 2016, what were the hourly wages?

Example: 15.10

	What was the lowest possible hourly wage for this level?	What was the highest possible hourly wage for this level?	What was the typical hourly wage offered to seasonal workers at this level?
Level 1-Entry	<input type="text"/>	<input type="text"/>	<input type="text"/>
Level 2-Intermediate	<input type="text"/>	<input type="text"/>	<input type="text"/>
Level 3-Senior	<input type="text"/>	<input type="text"/>	<input type="text"/>
Level 4-Supervisor	<input type="text"/>	<input type="text"/>	<input type="text"/>

Q76. Recruiting Highway Maintenance Workers

This section focuses on issues pertaining to recruitment of all highway maintenance workers, levels 1-4 or entry to supervisor level.

Q77.

Level 1 - Entry

Level 1 highway maintenance work typically requires graduation from high school, or GED or equivalent experience. They work under close supervision and perform routine equipment operations and physical labor activities. They may operate equipment such as dump trucks, front-end loaders, tractors, motor graders, high reach excavators, and the support equipment such as air compressors, oil distributors, and pneumatic tools.

Does your organization experience any problems filling Level 1 positions?

- Yes
- No

Q78.

Level 2 - Intermediate

Level 2 highway maintenance work typically requires graduation from high school or GED or equivalent experience. This level also requires one to two years of experience operating heavy equipment and performing roadway maintenance. They work under moderate supervision and operate multiple gasoline and diesel powered construction equipment such as heavy bulldozers and power shovels as well as related heavy construction equipment exceeding four tons.

Does your organization experience any problems filling Level 2 positions?

- Yes
- No

Q79. **Level 3 - Senior**

Level 3 highway maintenance work typically requires graduation from high school or GED or equivalent experience, plus four or more years of full-time experience in roadway maintenance. They work under limited supervision. They function as a crew leader for staff specializing in highway maintenance services and assist in the coordination of planning work schedules, providing leadership and guidance to crews, coordinating maintenance operations in the field, monitoring work performed, compiling crew work statistics, and documenting crew activities.

Does your organization experience any problems filling Level 3 positions?

- Yes
- No

Q80. **Level 4 - Supervisor**

Level 4 highway maintenance work typically requires graduation from high school or GED plus experience equal to five or more years of full-time experience in highway/roadway maintenance, highway construction work, or highway materials inspection work. They are top-level supervisors of maintenance functions and supervise multiple locations within an assigned area of operations. They are often assisted by a Level 3 worker.

Does your organization experience any problems filling Level 4 positions?

- Yes
 No

Q81. Difficulties filling positions

How difficult is it for your organization to fill Level 1 highway maintenance positions because...

	Not at all difficult	A little difficult	Somewhat difficult	Very difficult	Extremely difficult
... the applicant pool is small?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... there's a stigma associated with highway maintenance?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... applicant pool lacks soft skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... applicant pool lacks relevant work experience?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... applicants do not have a clean driving record?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... applicants do not pass a drug screen?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... applicants have a criminal record?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q82. Is there any other reason that makes it difficult for your organization to fill Level 1 highway maintenance positions?

- Yes
 No

Q83. Please tell us what other reasons make it difficult for your organization to fill Level 1 highway maintenance positions:

Q84. Recruitment Methods

How well have each of the following methods worked for your organization in recruiting Level 1 highway maintenance workers?

	Not at all	A little	Somewhat	Very well	Extremely well
Social Media such as Facebook or Twitter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Postings on your organization's website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Connection to technical college counselors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Veterans organizations or military connections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Connection to high school counselors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wisconsin Workforce Websites such as WorkNET	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Word of mouth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q85. Is there any other method that works well for your organization in recruiting Level 1 highway maintenance workers?

- Yes
- No

Q86. Please tell us about other recruiting methods that have worked for recruiting Level 1 workers.

Q87. Applicant Pool Skills

How hard are the following skills to find when your organization is hiring Level 1 highway maintenance workers?

	Not at all	A little	Somewhat	Very	Extremely
Teamwork	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all	A little	Somewhat	Very	Extremely
Equipment Operation Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Following Directions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creativity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical and Analytical Thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Problem Solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customer Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication/Interpersonal Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Computer Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading and Using Information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q88.

When your organization is hiring Level 1 highway maintenance workers, how hard is it to find applicants who have...

	Not at all	A little	Somewhat	Very	Extremely
... a clean driving record?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... a CDL permit or license?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... a good attendance record?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... a driver's license?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q89. **Retention**

How much do the following factors contribute to why highway maintenance workers in your organization leave?

	Not at all	A little	Somewhat	Quite a bit	A great deal
Other reasons? Please specify. <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Highway workers are burned out due to excessive overtime hours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all	A little	Somewhat	Quite a bit	A great deal
Lack of career progression/promotion opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managers do not have the skills to foster good working conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work is seasonal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintenance workers can find higher paying jobs using same skill set	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workers find it hard to learn or adapt to equipment innovations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees feel embarrassed. They associate the quality of roads as a reflection of their job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workers prefer a climate controlled environment than working outdoors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of purpose or direction due to disconnect with leadership?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diversity and inclusion issues contribute to why highway maintenance workers leave	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a lack of support services to accommodate workers (i.e. childcare)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entry-level workers are bored with the duties assigned to this level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a stigma associated with highway maintenance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q90. Please tell us more about other challenges your organization has had in finding skilled workers.

Q91. Pathways of Level 1 Workers

We want to learn more about the path that your Level 1 highway maintenance workers have taken to get to their current jobs.

Currently, about how many of the Level 1 workers in your organization have the following kind of experience or education?

	Not at all	A little	Somewhat	Quite a bit	A great deal
Pre-apprenticeship program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Landscaping/grounds crew experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family/farm experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Construction laborer experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No work experience; they come straight from high school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Some technical college/technical college degree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bachelor's degree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Truck driver. Short or long-haul experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q92. Age of Level 1 Workers

How old are the majority of your full-time, permanent, Level 1 workers?

	Age range of level 1 workers
Less than 20 years old	<input type="radio"/>
21-25 years old	<input type="radio"/>
26-30 years old	<input type="radio"/>
31-35 years old	<input type="radio"/>
35-40 years old	<input type="radio"/>
Greater than 41 years old	<input type="radio"/>

Q93. Training of Level 1 Workers

In this section, we want to learn about the training of Level 1 highway maintenance workers.

Q94. How often are your Level 1 workers at your organization trained...

	Never	Rarely	Sometime	Very often	Extremely often
... through conference workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... by on-the-job training (other than apprenticeship)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... in apprenticeship programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... by in-house training before they start the job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... through self-study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... through web-based programs such as webinars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... some other way? Please specify: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... through simulators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q95. Who trains your Level 1 workforce?

	Never	Sometimes	About half the time	Most of the time	Always
In-house staff trainers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional associations/organizations such as APWA, National Highway Institute, LTAP, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other organizations? Please specify: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical colleges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equipment manufacturer representatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q96. Please list the types of in-house training that your organization provides to Levels 1 - 4 workers. These can include safety, flagging, etc.

Q97. In your organization, do you require training for workers to move from Level 1 to Level 2?

- Yes
- No

Q98. Please indicate training your organization requires for workers to move from Level 1 to Level 2.

Training 1	<input type="text"/>
Training 2	<input type="text"/>
Training 3	<input type="text"/>
Training 4	<input type="text"/>
Training 5	<input type="text"/>
Training 6	<input type="text"/>
Training 7	<input type="text"/>
Training 8	<input type="text"/>

Q99. In your organization, do you require training for workers to move from Level 2 to Level 3?

- Yes
- No

Q100. Please indicate training your organization requires for workers to move from Level 2 to Level 3.

Training 1

Training 2

Training 3

Training 4

Training 5

Training 6

Training 7

Training 8

Q101. In your organization, do you require training for workers to move from Level 3 to Level 4?

Yes

No

Q102. Please indicate training your organization requires for workers to move from Level 3 to Level 4.

Training 1

Training 2

Training 3

Training 4

Training 5

Training 6

Training 7

Training 8

Q103.

Recruiting Workers into the State DOT

We would like to learn more about the highway maintenance staff in your agency. Occupations within highway maintenance may include policy/planning analyst, highway maintenance engineer, landscape architect, GIS technician, surveyor, etc.

Do you currently have a problem recruiting staff into the the Highway Maintenance Section in your organization?

Yes

No

Q104. What three occupations or job classifications are the most difficult to fill?

- 1.
- 2.
- 3.

Q105. Would you consider any of these positions **`\${q://QID172/ChoiceGroup/AllChoicesTextEntry}`** as critical to carrying out the mission of highway maintenance in your organization?

- Yes
- No

Q106. Which occupation, is most critical to carrying out the mission of highway maintenance in your organization?

- `\${q://QID172/ChoiceTextEntryValue/1}`
- `\${q://QID172/ChoiceTextEntryValue/3}`
- `\${q://QID172/ChoiceTextEntryValue/6}`

Q107. What are the skills that make the **`\${q://QID192/ChoiceGroup/SelectedChoices}`** position critical to your organization?

Q108. Applicant Pool Skills in the State DOT

Generally, how hard are the following knowledge, skills, and abilities to find when your organization is hiring highway maintenance staff?

	Not at all	A little	Somewhat	Very	Extremely
Customer Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scenario Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Project Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical and Analytical Thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stormwater Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all	A little	Somewhat	Very	Extremely
Asset Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diversity and Inclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Policy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social Impact Knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GIS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication/Interpersonal Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Regulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Predictive Modeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Performance Measurement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big Data Analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negotiation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Problem Solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creativity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teamwork	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q109. Retention in the State DOT

Do you currently have a problem retaining highway maintenance staff in your Region/Bureau?

- Yes
- No

Q110. Do any of the following factors contribute to why highway maintenance workers in your organization leave?

	Yes	No
Managers do not have the skills to foster good working conditions	<input type="radio"/>	<input type="radio"/>
There is a stigma associated with highway maintenance	<input type="radio"/>	<input type="radio"/>
Other reasons? Please specify. <input type="text"/>	<input type="radio"/>	<input type="radio"/>

	Yes	No
Maintenance workers can find higher paying jobs using same skill set	<input type="radio"/>	<input type="radio"/>
Lack of career progression/promotion opportunities	<input type="radio"/>	<input type="radio"/>
There is a lack of support services to accommodate workers (i.e. childcare)	<input type="radio"/>	<input type="radio"/>
Diversity and inclusion issues	<input type="radio"/>	<input type="radio"/>
Workers find it hard to learn or adapt to equipment innovations	<input type="radio"/>	<input type="radio"/>
Political climate	<input type="radio"/>	<input type="radio"/>
Pursue different careers	<input type="radio"/>	<input type="radio"/>
Lack of purpose or direction due to disconnect with leadership	<input type="radio"/>	<input type="radio"/>
Lack of training	<input type="radio"/>	<input type="radio"/>

Q111. How much do the following factors contribute to why highway maintenance workers in your organization leave?

	Not at all	A little	Somewhat	Quite a bit	A great deal
» Lack of career progression/promotion opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Maintenance workers can find higher paying jobs using same skill set	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Workers find it hard to learn or adapt to equipment innovations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» There is a stigma associated with highway maintenance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Diversity and inclusion issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Managers do not have the skills to foster good working conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all	A little	Somewhat	Quite a bit	A great deal
» Lack of training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Lack of purpose or direction due to disconnect with leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» There is a lack of support services to accommodate workers (i.e. childcare)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Political climate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Pursue different careers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Other reasons? Please specify.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="text"/>					

Q112. Are there any other reasons that makes it difficult for your organization to retain highway maintenance staff?

- Yes
- No

Q113. Please tell us what other reasons make it difficult for your organization to retain highway maintenance staff.

Q114. Technology Adoption in Highway Maintenance

There are many emerging technologies that new workers will need to learn.

First, which of the following technologies are already in use in highway maintenance in your organization?

	Yes	No
Advanced equipment controls	<input type="radio"/>	<input type="radio"/>

	Yes	No
Internet of Things (IoT) applications - real time, remote monitoring of infrastructure through sensors	<input type="radio"/>	<input type="radio"/>
Geographic Information Systems (GIS)	<input type="radio"/>	<input type="radio"/>
Solar panels in the right of way and facilities	<input type="radio"/>	<input type="radio"/>
AVL Systems - fleet management and dispatching including system programming and operation	<input type="radio"/>	<input type="radio"/>
RWIS - Road weather information systems	<input type="radio"/>	<input type="radio"/>
3D printers	<input type="radio"/>	<input type="radio"/>
Cybersecurity	<input type="radio"/>	<input type="radio"/>
AVL (Automatic Vehicle Location) Systems - devices, vehicle, and equipment	<input type="radio"/>	<input type="radio"/>
Internet of Things (IoT) applications - remote monitoring of environmental habitat	<input type="radio"/>	<input type="radio"/>
Virtual reality	<input type="radio"/>	<input type="radio"/>
Augmented reality	<input type="radio"/>	<input type="radio"/>
Drones	<input type="radio"/>	<input type="radio"/>
Driverless vehicles	<input type="radio"/>	<input type="radio"/>
ITS I2V devices (infrastructure to vehicle)	<input type="radio"/>	<input type="radio"/>
Fiber optics and boxes in ROW	<input type="radio"/>	<input type="radio"/>
Advanced pavement materials for pavement repair	<input type="radio"/>	<input type="radio"/>
Blockchain	<input type="radio"/>	<input type="radio"/>
GIS-based Pavement Management System	<input type="radio"/>	<input type="radio"/>

Q115. You mentioned that the following technologies are not currently used in highway maintenance.

In how many years do you think would the following technologies be used in highway maintenance in your organization?

	Less than five years	Five to ten years	More than ten years
» Drones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Advanced equipment controls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Driverless vehicles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» 3D printers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» AVL (Automatic Vehicle Location) Systems - devices, vehicle, and equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» AVL Systems - fleet management and dispatching including system programming and operation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Geographic Information Systems (GIS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» GIS-based Pavement Management System	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Solar panels in the right of way and facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Cybersecurity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Blockchain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Internet of Things (IoT) applications - real time, remote monitoring of infrastructure through sensors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» RWIS - Road weather information systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Internet of Things (IoT) applications - remote monitoring of environmental habitat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Fiber optics and boxes in ROW	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» ITS I2V devices (infrastructure to vehicle)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Less than five years	Five to ten years	More than ten years
» Advanced pavement materials for pavement repair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Virtual reality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
» Augmented reality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q116. Please tell us about any other technologies that you think highway maintenance workers might use in the future.

Q117. Please provide commentary on new skills that a worker may need in the future.

Q118. **Workforce Challenges**

Thinking about your highway maintenance workforce, what is your biggest challenge?

Q119. **Your Career**

Thinking about your career, please tell us about your pathway to the position you currently have. We are interested in how you were exposed to the field of highway maintenance, what education and training supports highway maintenance, and what previous jobs brought you to this career.

Q120.

Workforce Development Topics

In this section, we explore a number of topics associated with the Highway Maintenance Career Pathway.

Competencies of Highway Maintenance Workers

MTWC is developing a Highway Maintenance Competency Model that reflects the knowledge, skills, and abilities of today's worker. We are also identifying the knowledge, skills, and abilities (KSAs) that may be needed over the next 10-15 years. We are seeking individuals to review this effort for validation purposes.

Are you interested in reviewing a draft of the Highway Maintenance Competency Model and provide comments to us?

- Yes, please include me in this project.
- No, I am not able to participate at this time.

Q121. Apprenticeships

Apprenticeship is a proven model that helps employers retain workers over a period of training so that workers receive a credential. Apprenticeships can be designed to provide up-front training, or apprentices can work part of the week and attend training the rest of the week. Mentorship is one component of apprenticeship. At the end of the apprenticeship, workers are awarded a certificate that is recognized across the country.

In Wisconsin, the Department of Workforce Development awards the certificates. Apprenticeships have been historically popular in the construction sector, lately however, industries such as manufacturing, IT, insurance, and healthcare are developing apprenticeships for entry-level workers, to upskill their current employees, or to provide a credential for programs the employer is already doing such a rotational program, or, on-the-job training. Employers, both public and private sector can sponsor apprentices. In some cases, apprenticeships can count towards a degree.

Many occupations are apprenticeable.

How familiar is your organization with the apprenticeship model?

- Not at all
- A little
- Somewhat
- Very

Extremely

Q122. How interested are workers at your organization in pursuing credentials such as an apprenticeship?

- Not at all
- A little
- Somewhat
- Very
- Extremely
-

Q123. How much do you support developing an apprenticeship for workers in your organization?

- Not at all
- A little
- Somewhat
- Quite a bit
- A great deal
-

Q124. ACT National Career Readiness Certificate

The National Career Readiness Certificate examination assesses an individual's skill level in three areas deemed critical for employability: Reading for Information, Applied Mathematics, and Locating Information. ACT, the organization that developed the college testing standard, researched over 16,000 occupations before developing these three WorkKeys® assessments for the NCRC.

Just as the ACT score indicates the college readiness of all students, the NCRC assesses the career readiness of all students and serves as a reliable predictor for workplace success of any applicant, student or adult. Thousands of private and public employers now ask for or require NCRC scores as part of the application process.

NCRC is awarded at four levels: Platinum, Gold, Silver, and Bronze. Each is an objective validation to employers anywhere in the U.S. that an individual has met or exceeded the necessary foundational skills for a percentage of the 16,000 occupations in the WorkKeys database. For example, a Gold certificate verifies that an individual has the necessary skills for 93% of occupations. An employer may use NCRC scores for baseline applicant screening; hiring and promotion decisions; and targeting employee training and development.

Many human resources offices use WorkKeys® assessments to screen applicants.

Source: Technology Center of Dupage

Have you heard of the National Career Readiness Certificate also known as the NCRC?

- Yes
- No
-

Q125. How interested are workers at your organization in pursuing credentials such as the National Career Readiness Certificate?

- Not at all
- A little
- Somewhat
- Very
- Extremely
-

Q126. How supportive would you be of developing an awareness of the National Career Readiness Certificate in your organization?

- Not at all
- A little
- Somewhat
- Very
- Extremely
-

Q127. The Future of Highway Maintenance

- What will the future transportation corridor look like?
- Will our pavements be storing or generating energy?
- Will sustainability and climate concerns change how we think about our transportation corridors?
- Will the impact of automation create new jobs that require different skills?
- Will the metrics used for transportation move beyond connectivity and pavement quality to health and human impacts to take into account road dust from tires, brake pads, and road surface wear?
- Will future highway decisions be made entirely through a sustainability lens?
- Will the future highway maintenance also maintain other horizontal infrastructure such as telecom?

- Will first responder duties be part of a future skillset?
- The jobs and the skills we may need to have in the future (15 years) may be very different than today.
- Like shared mobility, will the highway maintenance worker be a shared occupation?

There are many scenarios ahead of us.

What type of future are you planning for?

Q128. **Should we rebrand the highway maintenance occupation in the future?**

Yes

No

Q129. **Please share your ideas.**

Q130. **Survey Report**

Are you interested in receiving a survey report?

Yes. Please send me the final report.

No. I am not interested at this time.

Q131. **Contact Information**

Please indicate your name and contact information.

Name

Title

Organization

Address

City

State

Zip Code

Email

Q132. **Thank you for your time.**

For more information on this project visit, <http://mtwc.org/initiatives/highway-maintenance-engineering-career-pathways/>

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