

## CHAPTER 9



*Photo :Route 9 in Williamsburg, MA*

### PAVEMENT

#### **A. REGIONAL EFFORTS AND PROCESS**

A Pavement Management System (PMS) is a systematic process that collects and analyzes roadway pavement information for use in selecting cost-effective strategies for providing and maintaining pavements in a serviceable condition. The role of PMS is to provide an opportunity to improve roadway conditions and make cost-effective decisions on maintenance priorities and schedules.

The regional PMS involves a comprehensive process for establishing the network inventory and project histories, collecting and storing the pavement distress data, analyzing the data, identifying the network maintenance activities and needs and integrating the PMS information in the metropolitan and statewide planning processes. The roadway network covered by the regional PMS includes all urban and rural Federal-Aid highways of the 43 cities and towns in the region.

The “PAVEMENT *View*” software developed by Cartegraph Systems was used to generate an Overall Condition Index (OCI) for each inventoried roadway segment using the pavement distress data collected by PVPC. OCI is measured from 0 to

100, with 100 being an excellent or perfect condition and zero being failure or impassable condition. The OCI values generated are grouped into OCI category ranges which are defined depending on the type and functional class of each segment. PVPC incorporates 5 default repair categories:

- Reconstruction of Collectors and Arterials
- Rehabilitation
- Preventive maintenance
- Routine maintenance
- No action

Reconstruction involves the complete removal and replacement of a failed pavement section which includes reclamation. The rehabilitation of pavements includes the work necessary to restore the pavement to a condition that will allow it to perform satisfactorily for several years. Preventative maintenance activities are those which are performed at planned intervals to protect and seal the pavement. Routine maintenance activities are those which are taken to correct a specific pavement failure or area distress.

## **B. EXISTING CONDITIONS**

The PVPC staff surveyed approximately 1,280 miles of federal-aid eligible roadways in the Pioneer Valley region which was divided into 2,479 roadway segments. Pavement distress data was collected for the entire Surface Transportation Program (STP) roadway network and select National Highway System (NHS) roadways. The average OCI for the surveyed roadways in the region is rated at 76, which indicates that majority of the roadways are in a good condition. The average OCI information by community is depicted in Table 9-1.

The OCI generated by PAVEMENT *View* was used to establish pavement condition categories of “Excellent”, “Good”, “Fair”, “Poor”, and “Failed” using the OCI ranges provided in Table 9-2.

**Table 9-1 – Average OCI by Community**

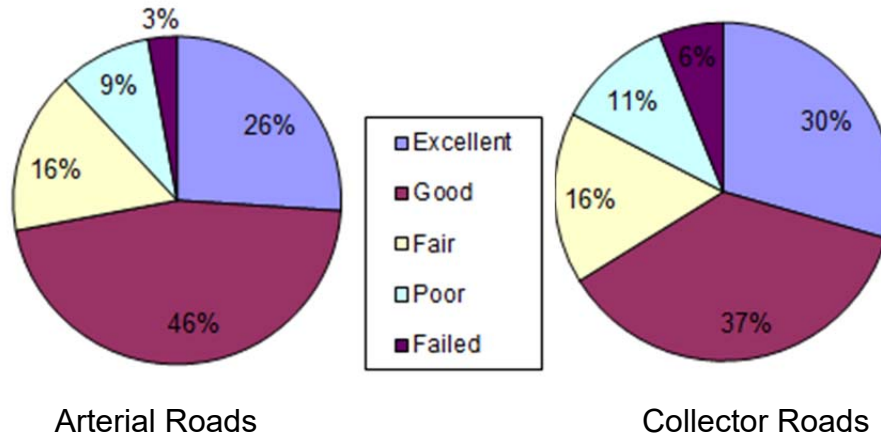
<b>Community</b>	<b>Arterial Miles</b>	<b>Collector Miles</b>	<b>Federal Aid Miles</b>	<b>Average OCI 2020</b>	<b>Average OCI 2016</b>
Agawam	24.47	26.18	50.65	85	67
Amherst	16.32	34.15	50.47	65	58
Belchertown	26.22	20.63	46.85	79	74
Blandford	8.47	7.87	16.34	68	68
Brimfield	11.58	13.56	25.14	87	83
Chester	8.058	0.00	8.058	76	84
Chesterfield	7.71	9.29	17.00	88	81
Chicopee	17.84	43.23	61.07	88	74
Cummington	12.95	7.77	20.72	72	71
East Longmeadow	8.31	23.304	31.61	84	73
Easthampton	4.25	25.79	30.04	58	68
Goshen	5.401	3.71	9.11	76	71
Granby	7.72	14.117	21.83	67	85
Granville	8.803	6.94	15.74	60	76
Hadley	17.41	21.439	38.85	65	85
Hampden	0.00	12.64	12.64	84	84
Hatfield	0.00	14.687	14.69	76	83
Holland	0.00	11.45	11.45	69	77
Holyoke	16.25	46.97	63.22	87	54
Huntington	11.227	7.06	18.29	75	72
Longmeadow	3.26	15.79	19.05	88	74
Ludlow	24.47	11.68	36.15	75	68
Monson	8.64	22.95	31.59	54	83
Montgomery	0.00	5.197	5.20	74	83
Northampton	50.81	15.7	66.51	78	68
Palmer	15.59	30.73	46.32	58	87
Pelham	5.795	6.02	11.82	94	71
Plainfield	0.00	11.893	11.89	60	39
Russell	9.45	4.75	14.2	60	78
South Hadley	15.39	13.84	29.23	68	74
Southampton	0.00	17.17	17.17	65	88
Southwick	14.14	12.66	26.8	60	77
Springfield	42.08	116.52	158.60	84	62
Tolland	5.66	0.00	5.66	99	77
Wales	0.00	8.03	8.03	60	44
Ware	13.36	19.77	33.13	66	85
West Springfield	7.51	28.64	36.15	86	60
Westfield	19.21	48.57	67.78	82	62
Westhampton	0.00	21.08	21.08	73	71
Wilbraham	5.79	28.25	34.04	78	85
Williamsburg	8.11	11.20	19.31	73	74
Worthington	10.32	6.48	16.80	64	84
<b>Average OCI</b>				<b>75.8</b>	<b>71.1</b>

**Table 9-2 – Pavement Condition Range by Functional Class**

	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>	<u>Failed</u>
<b>Arterial</b>	>89.5	>69.5 and <=89.5	>48.5 and <=69.5	>25.5 and <=48.5	<=26.5
<b>Collector</b>	>88.5	>68.5 and <=88.5	>47.5 and <=68.5	>24.5 and <=47.5	<=24.5

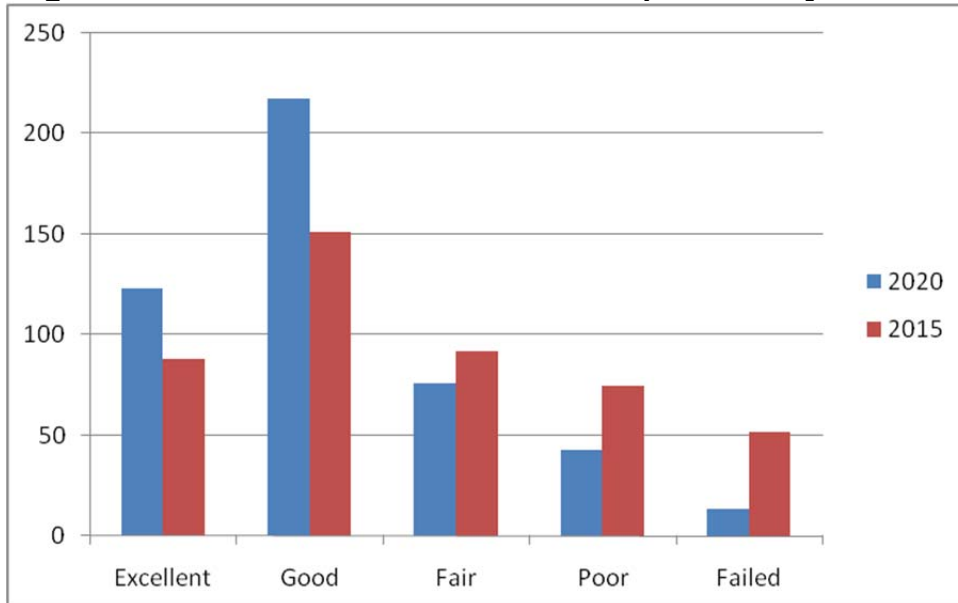
The results indicate that most of the region’s surveyed federal-aid eligible roadways are in good condition. Figure 9-1 shows the region’s pavement condition graphically by functional class. As shown, the region’s arterial and collector roadways follow a similar pattern with regards to pavement condition. The region’s surveyed federal-aid roadways consist of 473 miles of arterial and 818 miles of collector roadways.

**Figure 9-1 – Pavement Condition of the Region’s Arterial and Collector Roadways**



Figures 9-2 and 9-3 show a comparison of the number of miles of existing surveyed roadways by pavement condition to the last time the RTP was updated for the arterial and collector roadways respectively. Figure 9-2 is indicative of pavement repair action taken on the arterial roadway segments which require major rehabilitation and whose condition cannot deteriorate much further resulting in more roadway segments in excellent or good condition. Figure 9-3 is indicative of application of improvement funds to be directed towards the cost effective repairs that improve and/or maintain the segments which are salvageable resulting in more miles of excellent condition and keeping up with miles of good or fair condition.

**Figure 9-2 – Arterial Road Condition Comparisons by Miles**



**Figure 9-3 – Collector Road Condition Comparisons by Miles**

