



City of Northampton Pavement Management Report

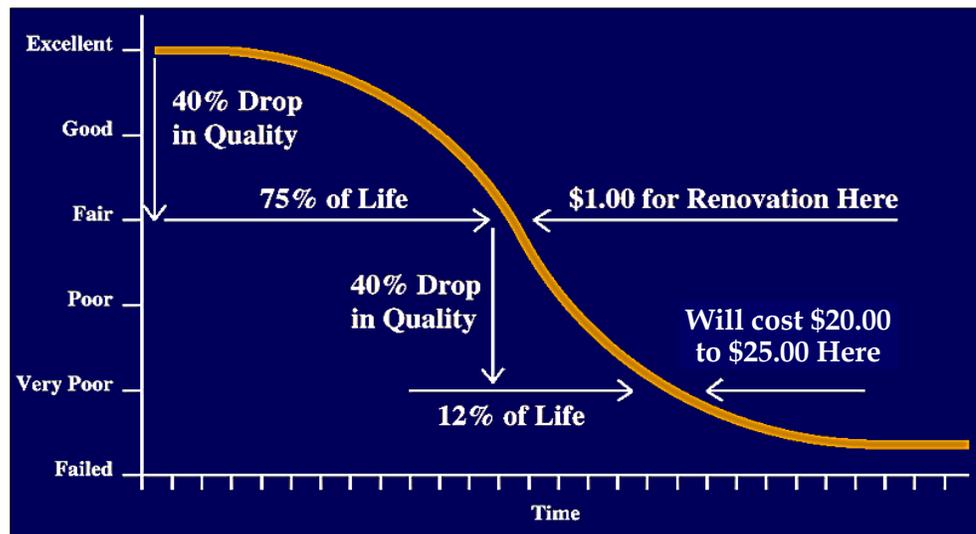
2012

Background

In 1999, the Town of Northampton Public Works Department conducted a study to measure the quality of the pavements in the City. That study developed a database of pavement conditions that can be used as a tool to help develop the City's annual road program and to project the future overall pavement conditions in City under various roadway funding scenarios. Since 2001, Vanasse Hangen Brustlin, Inc. (VHB) has assisted the City in updating this database by re-evaluating pavement conditions on 25 percent of the roadways annually. The following report summarizes the current pavement conditions in Northampton.

Pavement Condition Index Defined

Pavement Condition is measured in terms of a Pavement Condition Index (PCI) on a scale of 0 to 100. A PCI of 0 would indicate a road that would be impassible, while a PCI of 100 would indicate a pavement in perfect condition. Pavements deteriorate gradually from an initial PCI of 100, until reaching a critical point at which routine of preventive maintenance must be performed to prevent the pavement from deteriorating further, such that a more expensive treatment, such as an overlay or base rehabilitation is necessary. The following graphic describes this process.



In 2001 the average PCI in the City of Northampton is was 80. In the past 10 years, it has dropped to 69. This loss in condition city-wide indicates while the City has used its dollars wisely, the budget allocated for pavement repairs has been insufficient to maintain the good condition found in 2001.



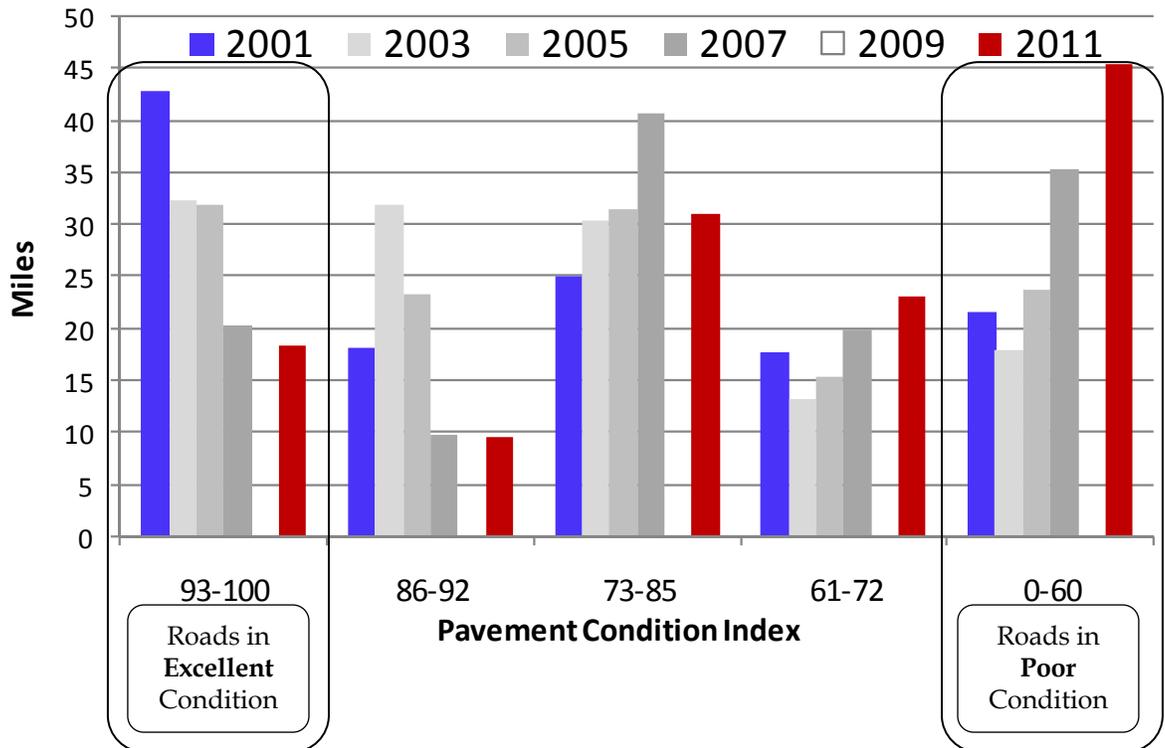
PCI in Context

The following table provides a guide to the pavement repair treatments and the general PCI ranges in which they are appropriate for use.

Table 1 - Treatment Band Descriptions

Treatment Band	PCI	Description
Do Nothing	92-100	Excellent condition – pavement is in need of no immediate maintenance.
Routine Maintenance	86-92	Very good condition – pavement may be in need of crack sealing or minor localized repair.
Preventive Maintenance	73-85	Good condition – pavement surface may be in need of more extensive crack sealing and localized repair
Structural Improvement	60-72	Fair condition - Pavement surface structure is in need of added strength for existing traffic. The typical repair for these roads is to overlay or mill and overlay.
Base Rehabilitation	0-60	Poor condition – typically, the base layers of the pavement need to be rebuilt. The typical repair for these roads is reclamation, but full reconstruction may be needed.

The graph below shows the trend in Northampton’s roadways expressed in the treatment bands described above. **Over the past 10 years, the number of road in excellent has halved while the mileage of roads in poor condition has more than doubled.**



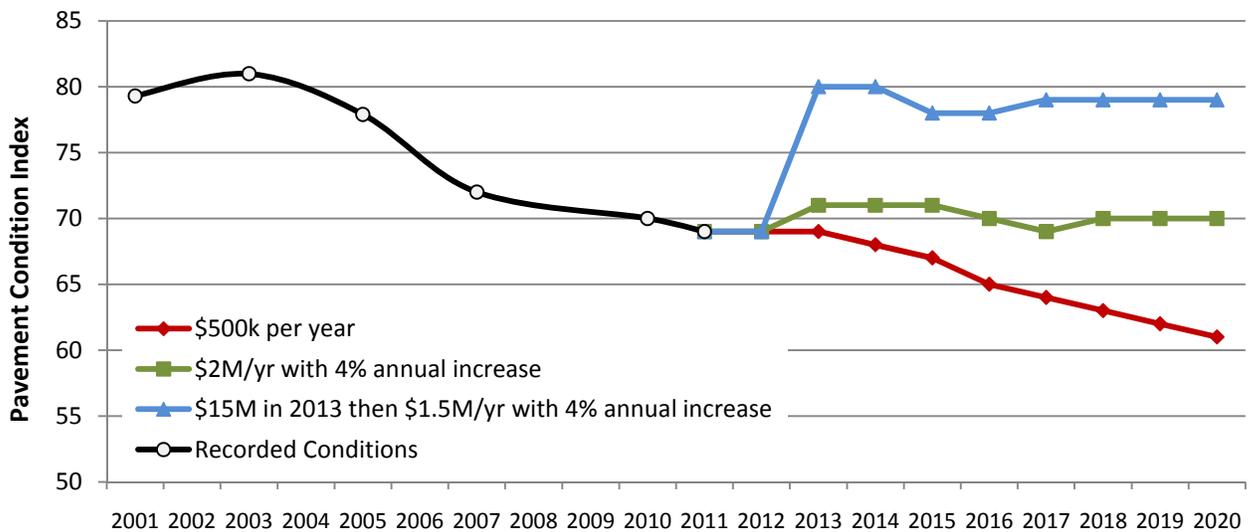


Future Condition Modeling

Below is an analysis that was conducted using the specialized pavement management software that the City uses for its Pavement Management System. The software was used to model the future condition of Northampton’s pavements in terms of network-wide average PCI. The model shows how the PCI is likely to change over the next ten years under three different funding scenarios. The three funding scenarios that were analyzed are:

- Historic - \$500,000 per year for 5 years – approximating the recent average road funding level in Northampton.
- Maintain PCI – the funding level estimated to keep the average condition near today’s level over the next ten years. This total annual funding level is estimated to be \$2 million, which should be adjusted to match inflation annually (estimated at 4 percent).
- Back to 2001 - A funding level that will improve the overall average conditions over the next ten years is a \$15 million bond in 2013 to bring the condition back to its level 10 years ago followed by \$1.5 million per year – also adjusted for inflation – to maintain the condition.

The chart below graphically describes the results of the analysis:



VHB recommends that the City increases the annual roadway budget to stem the significant loss in condition over the past 10 years. Northampton should use a variety of routine and preventive maintenance treatments as well as overlay and rehabilitation treatments in its annual road program to maintain - or preferably improve - the roadway conditions in the coming years. Allowing the roadway network to slip even a few more points will cost the City significantly more than it spends today to maintain the network *at that lower PCI*.