



2018

**Town of Cheshire Massachusetts  
Road Management Report**



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**Presented to  
Mark Webber  
Cheshire Town Administrator**

Respectfully Submitted by:  
Blair J Crane / Cheshire Highway Superintendent



# Town of Cheshire Massachusetts - Highway Department

## Paved Road Evaluation

### **1. Report Objective:**

To document the current condition of the Town of Cheshire's paved road infrastructure, provide inventory data and a tentative priority list with estimated costs for repair.

Provide a basis for recommendations to the Board of Selectman, Town Advisory Board and the governing legislative body who are the residents of the Town of Cheshire.

To assist the Board of Selectman in making decisions on planning and prioritizing projects based on estimates as well as other important factors such as traffic and roadway significance.

### **2. Introduction:**

The Town of Cheshire currently maintains a total of approximately 40 miles of paved roadway, which does not include arterial roadways maintained by the State of Massachusetts, Department of Transportation.

The current Highway Superintendent was appointed to the position in April of 2017. Due to lack of historical unbiased data, the current Highway Superintendent began the process of digitally evaluating the condition of all paved roadways within the town in order to estimate the cost of repairing and maintaining the current roadway infrastructure in its current condition. The evaluation was then used in conjunction with outside sources to further assess and prioritize potential yearly road infrastructure projects and improvements.

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### **3. Methodology:**

#### **3.1 Road Inventory:**

Road inventory data was gathered by onsite computer calculations produced by StreetScan LLC in cooperation with Northeastern University to accurately account for the length of roadways, points of road intersections known to be utilized for sectioning road repairs and to provide detailed asphalt condition data.

#### **3.2 Roadway Initial Evaluation:**

After reviewing the StreetScan data, all roads were then evaluated by the Cheshire Highway Superintendent along with outside sources and placed into 3 categories:

- Category 1 roads signify no improvement proposed for the next 7 years, with the cost of crack sealing calculated to preserve the road for another 5 or more years if appropriate and applicable.
- Category 2 roads will require the application of shim and overlay courses of asphalt pavement with minor additional repairs.
- Category 3 roads will require reconstruction which involves roadway base repair and drainage improvement.

From this assessment, the Highway Superintendent with the assistance of StreetScan data, was able to calculate the cost of each road to repair based on the roads current condition recorded during the summer of 2017.

#### **3.3 Roadway evaluation based on traffic volume and significance.**

The highway Superintendent then evaluated each roadway based on traffic volume and significance ( i.e. homes, businesses, detour routes from arterial roadways etc....) as the digital data is computer generated, unbiased and does not take these factors into account.

#### **3.4 Cost Calculation:**

The cost of the repairs were calculated by taking into account the current condition as documented in the initial evaluation of paved roads. The calculations examined the condition and the cost to repair from the current condition to restored condition. The cost estimates used standards

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as set by the Massachusetts Department of Transportation and the Federal Government when projecting road construction costs.

### 4.0 Discussion

#### 4.1 General Condition Evaluation

##### Category 3 Roads

Category 3 roads are identified as needing reconstruction which involves roadway base repair and drainage improvement. Identification involved a rating of the ePCI (equivalent Pavement Condition Index) data provided by StreetScan LLC as well as observations by the Cheshire Highway Superintendent.

Roads **highlighted by bold type** are considered “Roads of Significance” for the town based on traffic and / or economic impact.

Road	ePCI	Road	ePCI
Jenks Road	22	Greylock Road	38
<b>Ingalls Road</b>	<b>24</b>	Berkshire Drive	38
Stafford Hill Road	26	Maple Drive	39
Ingalls Crossing	30	Notch Road	40
Pleasant View Drive	32	Fiske Street	41
<b>Outlook Avenue</b>	<b>32</b>	Yorkshire Drive	42
<b>West Mountain Road</b>	<b>36</b>	Hutchinson Lane	42
Stewart White Road	37	<b>Depot Street</b>	<b>43</b>
Stonehenge Road	37	<b>State Route 116</b>	<b>44</b>

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### Category 2 Roads

Category 2 roads are identified as needing resurfacing which involves shim & Overlay courses. These roads may also require ditch and/or culvert maintenance as well.

Road	ePCI	Road	ePCI
<b>East Main Street</b>	<b>45</b>	Daniels Terrace	55
Fisher Hill Road	46	Richardson Street	55
<b>Dublin Road</b>	<b>49</b>	<b>Fales Road</b>	<b>56</b>
Shadowland Cove Road	49	Meadowview Drive	57
<b>Devonshire Drive</b>	<b>50</b>	Briggs Drive	58
Arnold Court	52	<b>Henry Wood Rd</b>	<b>58</b>
Railroad Street	52	Flaherty Road	59
<b>Crest Drive</b>	<b>53</b>	Sand Mill Road	60
Reservior Road	53	Wilshire Drive	60
<b>Fred Mason Road</b>	<b>54</b>	Main Street	62
Hampshire Drive	54	Farnums Causeway	<b>67</b>

### Category 1 Roads

Category 1 roads are identified as roads requiring no major improvement for the next 8 years with the cost of crack sealing, pothole and ditch maintenance calculated to preserve the road for an additional 5 years if appropriate and applicable.

Road	ePCI	Road	ePCI
Church Street	71	<b>Windsor Road</b>	<b>80</b>
Lanesborough Rd	71	Furnace Hill Road	80
Main Street	72	Curran Road	82
Mallard Cove Road	72	Eastview Drive	83
East Main Street-I	<b>73</b>	Prospect Street	88
Dean Street	78	<b>Wells Road</b>	<b>92</b>

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### 4.2 Cost Calculation

The calculation of cost was derived from general standards recommended by the State of Massachusetts and the Federal Government.

The cost was calculated by using the following parameters:

- Default Road Width = 24 feet
- Square Yards in a mile = 14,080
- Tons of Hot Mix Asphalt in a mile at 2" = 1,576 Tons
- Standard Rate of \$75.00 per ton for asphalt was used in the calculations to follow. The fluctuation of commodities such as oil, can cause changes to the cost of asphalt during a project.

<b>Process</b>	<b>Total Cost Per Mile</b>
Crack Seal	\$12,000
Chip Seal	\$66,035
Shim and Overlay	\$97,680
Reclaim and Repave	\$248,652
Reconstruction and Repair	\$333,132

Once the total cost for pavement placement was calculated, the total was then multiplied by 10% to consider any additional contingencies for projects under \$250,000 and not classified for reconstruction or reclaiming and repaving. Projects that were under \$250,000 were routinely projects for crack sealing and shim & overlay; where engineering, design and other improvements, such as culvert replacements are not normally needed.

If the total cost for pavement application totaled above \$250,000 or was classified for reconstruction or reclaiming & repaving, the total cost was then adjusted by 20% as is common practice. Industry standards recommend the addition of 15%-22% for projects to take into account engineering, design and to account for the cost of modifications to the roads during the reconstruction process.

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Note: Estimates do not take into account any additional costs associated with the replacement of water or electrical utilities.

### **5.0 Finding:**

Through this evaluation, the Highway Superintendent has been able to calculate the overall cost for the Town of Cheshire to repair the roadway infrastructure minus arterial roadways maintained by the State of Massachusetts, Department of Transportation. The cost to repair the roads in their current condition is \$6,757,963 for the placement of pavement alone at \$75.00 per ton, as calculated in the price per mile indicated in section 4.3. Adding in the engineering and other cost contingencies calculated as explained in the previous section, the total overall cost estimate to repair the approximately 40 paved miles of roadway increased to \$8,765,078.

If the town were to do nothing and allowed the roads to deteriorate further into the next maintenance category, the total cost to the town would be an estimate of \$9,461,148 for the placement of pavement at \$75.00 per ton. The total overall cost, including the estimated cost for engineering and the contingencies would then increase to an amount of \$12,271,109, which is a difference of \$3,506,031.



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Individual category assessment was done to evaluate the cost of all three groups. The total cost for each category is as follows:

Current Condition	Total to restore (pavement application @ \$75 per ton)	Engineering & Additional Costs 22%	7.7% Contingency	Total Cost
Cat 1 -Crack Seal/Ditch wk	\$184,183.38	\$40,520.34	\$14,182.12	\$238,885.84
Cat 2- Shim and Overlay	\$5,063,085.37	\$1,113,878.78	\$389,857.57	\$6,566,821.72
Cat 3 - Reconstruction	\$1,510,694.58	\$332,352.81	\$116,323.48	\$1,959,370.87
<b>Total -</b>	<b>\$6,757,963.33</b>	<b>\$1,486,751.93</b>	<b>\$520,363.18</b>	<b>\$8,765,078.44</b>

if allowed to deteriorate	Total to restore (pavement application @ \$75 per ton)	Engineering & Additional Costs 22%	7.7% Contingency	Total Cost
Cat 1 -Crack Seal/Ditch wk	\$257,856.73	\$56,728.48	\$19,854.97	\$334,440.18
Cat 2- Shim and Overlay	\$7,088,319.52	\$1,559,430.29	\$545,800.60	\$9,193,550.41
Cat 3 - Reconstruction	\$2,114,972.41	\$465,293.93	\$162,852.88	\$2,743,119.22
<b>Total -</b>	<b>\$9,461,148.66</b>	<b>\$2,081,452.71</b>	<b>\$728,508.45</b>	<b>\$12,271,109.81</b>

Careful consideration was then taken to carefully choose option recommendations for the Board of Selectman and the legislative body. The options recommended below are based on road quality and are high on the list of projects that should be completed based on travel and road significance.

### Top recommendations for Category 3 Roads:

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
24	Ingalls Road	Reconstruction	\$541,921.36	\$758,689.90	\$216,768.54

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ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
32	Outlook Avenue	Reconstruction	\$465,933.51	\$652,306.91	\$186,373.40

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
36	West Mountain Road	Recon / Rehab	\$691,871.47	\$968,620.06	\$276,748.59
		Total			

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
43	Depot Street	Reconstruction	\$64,895.26	\$90,853.36	\$25,958.10
		Total			

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
44	State Route 116	Reconstruction	\$750,653.41	\$1,050,914.77	\$300,261.36
		Total			

### Top Recommendations for Category 2 Roads:

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
45	East Main Street	Shim & Overlay	\$55,186.48	\$77,261.07	\$22,074.59

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
49	Dublin Road	Shim & Overlay	\$49,675.64	\$69,545.89	\$19,870.25

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
50	Devonshire Drive	Shim & Overlay	\$171,211.60	\$239,696.24	\$68,484.64
		Total			

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### Top Recommendations for Category 2 Roads Continued:

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
53	Crest Dr / Stonehenge	Shim & Overlay	\$112,676.77	\$157,747.47	\$45,070.71

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
54	Fred Mason Road	Shim & Overlay	\$300,534.03	\$420,747.65	\$120,213.61

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
56	Fales Road	Shim & Overlay	\$288,295.53	\$403,613.74	\$115,318.21

ePCI #	Road Name	Repair Recommended	Cost at current Evaluation	Cost if allowed to deteriorate	Savings
58	Henry Wood Road	Shim & Overlay	\$153,718.19	\$215,205.47	\$61,487.28

### Top Recommendations for Category 1 Roads:

Portions of Wells Road and Windsor road will need to be crack sealed over the next 24 months. Crack sealing should be included in the highway budget as an annual occurrence and with a base figure of \$25,000 each year as a preventative measure.

*End Report*

