



# Town of Plaistow, NH 2016 RSMS Update & Existing Conditions Summary

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**BETA**

December 6, 2016

# 2016 RSMS OVERVIEW

The Town completed a comprehensive update of the Pavement Management System database to reflect current pavement conditions.

The proposal from BETA Group, supported a re-evaluation of 36 Town Accepted and 17 State roadway miles in Plaistow, included in the current Pavement Management database, consistent with the Town's current list of accepted roadways and the NHDOT Road Inventory File.

BETA developed a series of Reports and GIS maps that depict pavement condition by RSR, along with recommended repair strategies



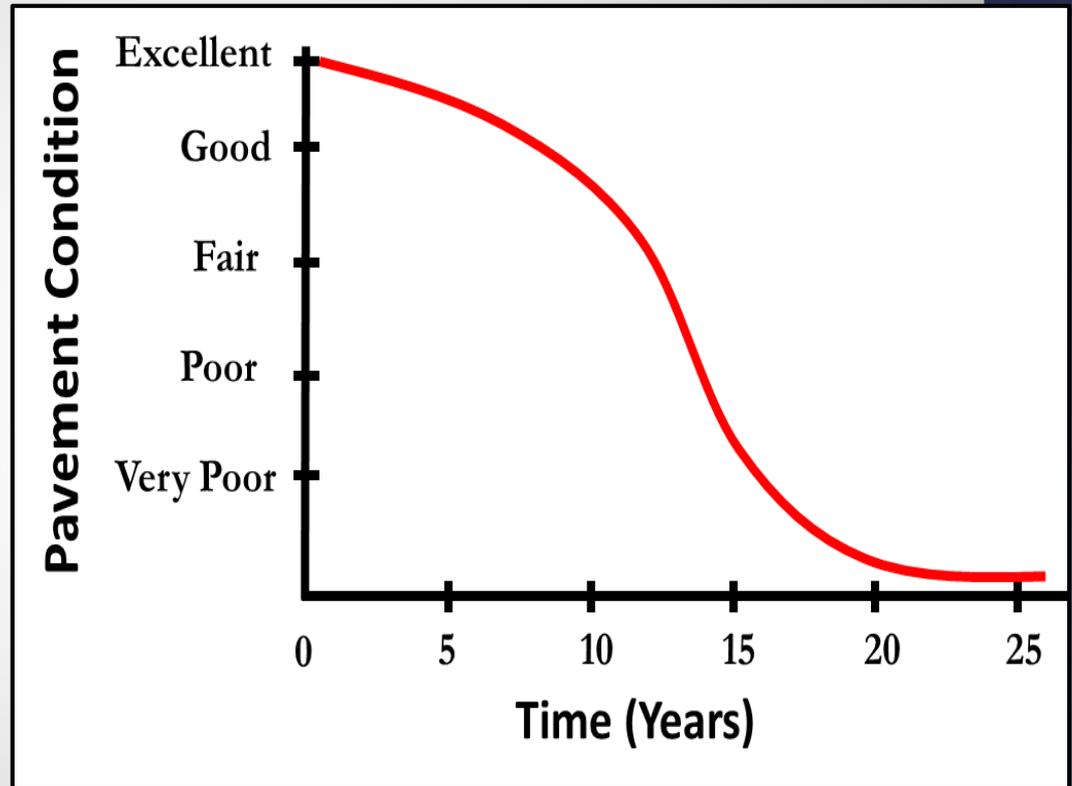
# GUIDING PRINCIPALS TO PLAISTOW'S RSMS:

- ◉ Use Funding as Efficiently As Possible
- ◉ Keep good roads maintained
- ◉ Prioritize roads based on Traffic Importance and Condition Assessment
- ◉ Make repair decisions based on road condition surveys
- ◉ Avoid “Worst-First” Methodology
- ◉ Avoid arbitrary repair selection
- ◉ Prepare multi-year road maintenance plan



# BENEFITS OF ROADWAY MANAGEMENT

- Asset Management & Forecasting Tool
- It is more cost effective to keep good roads in good condition
- Selecting the right repair at the right time
- Provides the framework for both short and long-range planning



# COMPREHENSIVE PROJECT APPROACH

1. Roadway Inventory & GIS Mapping

2. Field Inspection Program

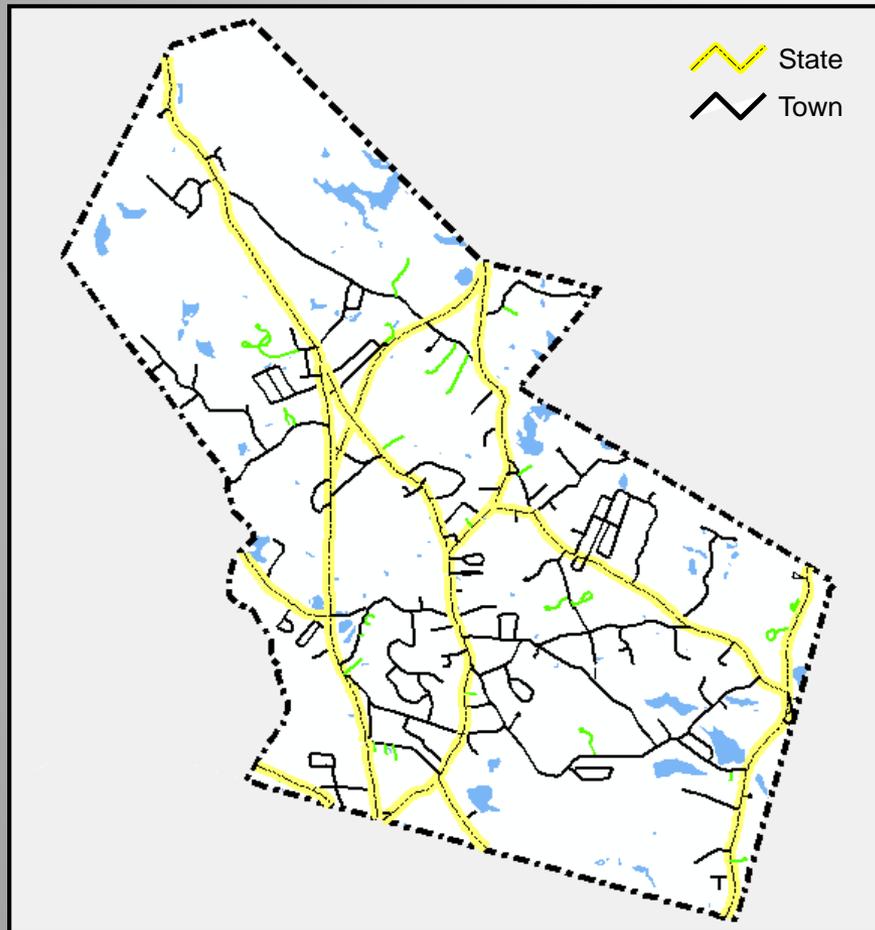
3. Existing Conditions Summary

4. Capital Improvement  
Planning

5. System Updates & Re-Inspections

# ROADWAY INVENTORY & GIS

## PLAISTOW ROADWAY PROFILE



Type	Miles
Town Accepted*	35.77
State	16.70
Private	4.49
<b>Total</b>	<b>56.96</b>

\*Includes 0.02 Miles of Gravel Roads

### State Routes:

- Route 125
- Route 121
- Route 121A
- Route 108
- Danville Rd
- East Rd
- Elm St
- Granite St
- Kingston Rd
- North Ave
- Palmer Rd
- Sweet Hill Rd

\*Approximate Value of Town Roadways per GASB Standards = ~\$22 Million



# ROAD SURFACE RATING (RSR)

## PAVEMENT INSPECTION FORM

**Roadway Inspection**

### Inspection Form

**Location**

GIS ID: 83  
Street Search: CHANDLER AVENUE  
Segment Name: CHANDLER AVE  
From Street: MAIN ST  
To Street: GARDEN RD

**Status**

Owner: Town  
Acceptance Status: Accepted  
DOT Owner: Local  
DOT Acceptance Status: 0  
Inspection Area: 1

**RSR**

RSR: 73  
Refresh RSR  
Historic RSR

**Roadway Inspection**

Inspector: BETA  
Inspection Date: 10/24/2016  
Pavement Material: BC  
Length Feet: 2,372.56  
Length Miles: 0.45  
Width: 25.00

**Other Data**

Existing Crack Seal: No  
Delamination: No  
Longitudinal Joint: No

**Striping Data**

Centerline: Yes  
Edgeline Odd: Yes  
Edgeline Even: Yes

**Distress Data**

Distress	Severity	Extent (%)
Linear Cracking:	Moderate	30
Alligator Cracking:	Moderate	20
Potholes:	None	0
Edge Cracking:	Moderate	10
Patching:	None	0
Roughness:	None	0
Drainage:	None	0
Rutting:	None	0

**Curb Data**

Odd Curb Type: CC Berm  
Even Curb Type: None  
Avg. Reveal: 4

**Sidewalk Data**

Exists Odd Side: No  
Exists Even Side: No  
Material Odd Side: None  
Material Even Side: None

**Notes**

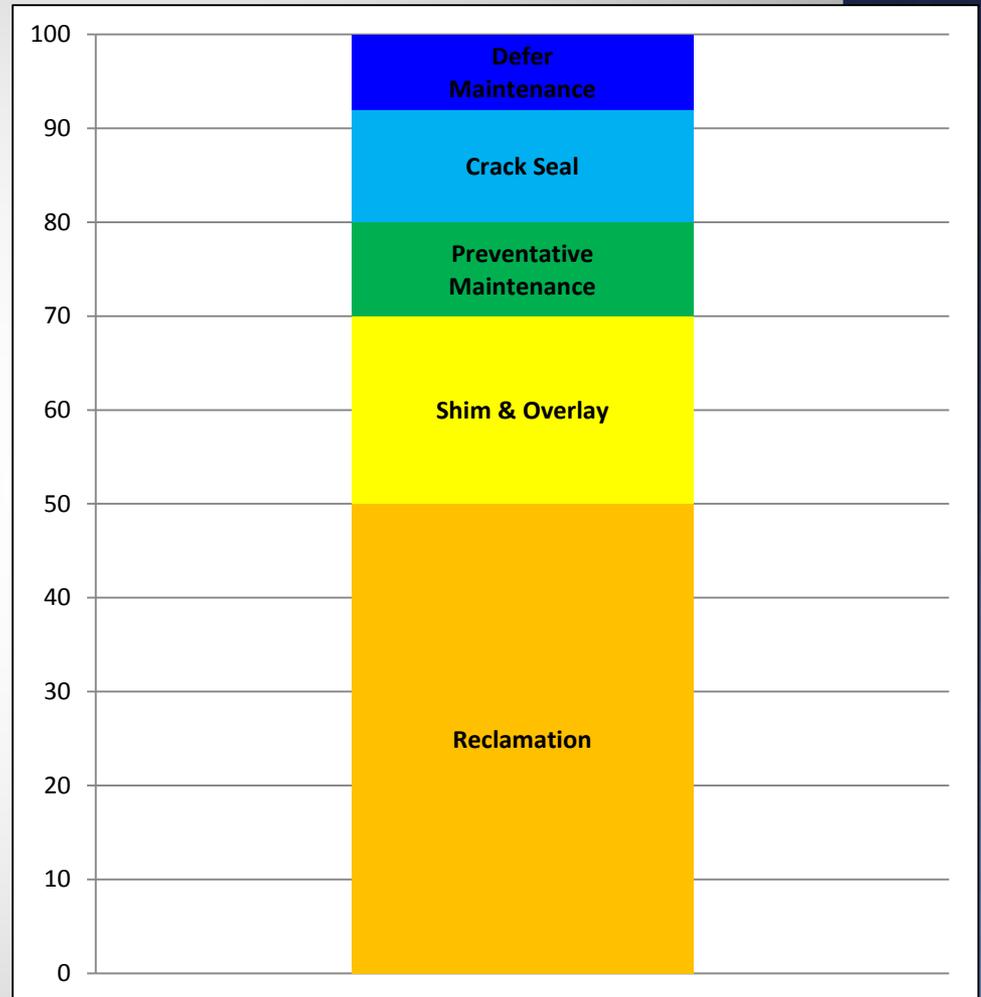
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Record: 14 of 28 of 327 | Unfiltered | Search

- Calculate Road Surface Rating (RSR) based on existing distresses
- Ratings are 0 to 100 (Worst to Best)
- Line striping, curb and sidewalk information identified

# CURRENT MAINTENANCE & REPAIR METHODS

- Defer Maintenance - \$0 SY
- Routine Maintenance - \$0.50 SY
  - Crack Sealing
  - Patching
- Preventative Maintenance - \$6.00 SY
- Shim and Overlay - \$12.00 SY
- Reclamation/Reconstruction - \$24.00 SY



\* Please note that unit prices reflect curb to curb improvements only

# EXISTING CONDITIONS SUMMARY - TOWN ACCEPTED ROADWAYS

## BREAKDOWN BY REPAIR METHOD\*

Backlog Summary				
Repair Method	Length (Miles)	Square Yards	Percent Repair	Estimated Cost
<i>Reclamation</i>	2.25	35,151	6.3%	\$843,629
<i>Shim and Overlay</i>	8.02	119,719	22.4%	\$1,436,630
<i>Preventative Maintenance</i>	6.11	96,445	17.1%	\$578,672
<i>Crack Seal</i>	9.49	140,149	26.5%	\$56,059
<i>Defer Maintenance</i>	9.88	160,856	27.6%	\$0
<b>Total</b>	<b>35.75</b>	<b>552,320</b>	<b>100.0%</b>	<b>\$2,914,990</b>
<b>NETWORK RSR:</b>	<b>79.62</b>			



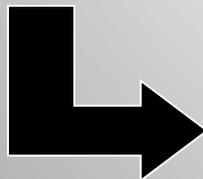
**Backlog = Approx. \$2.91 Million**

# EXISTING CONDITIONS SUMMARY

## STATE ROADWAYS

### BREAKDOWN BY REPAIR METHOD\*

Backlog Summary				
Repair Method	Length (Miles)	Square Yards	Percent Repair	Estimated Cost
<i>Reclamation</i>	0.06	1,323	0.4%	\$31,743
<i>Shim and Overlay</i>	3.75	86,141	22.5%	\$1,033,686
<i>Preventative Maintenance</i>	2.24	41,080	13.4%	\$246,482
<i>Crack Seal</i>	3.54	62,379	21.2%	\$24,952
<i>Defer Maintenance</i>	7.11	196,275	42.6%	\$0
<b>Total</b>	<b>16.70</b>	<b>387,197</b>	<b>100.0%</b>	<b>\$1,336,863</b>
<b>NETWORK RSR:</b>	<b>82.50</b>			



**Backlog = Approx. \$1.33 Million**

# FUNCTIONAL CLASSIFICATION

## BETA Pavement Management Program

*FHWA Functional Classification Guidelines, Concepts, Definitions, and System Characteristics, US Department of Transportation, Federal Highway Administration, 2000*

### Functional Classification Descriptions

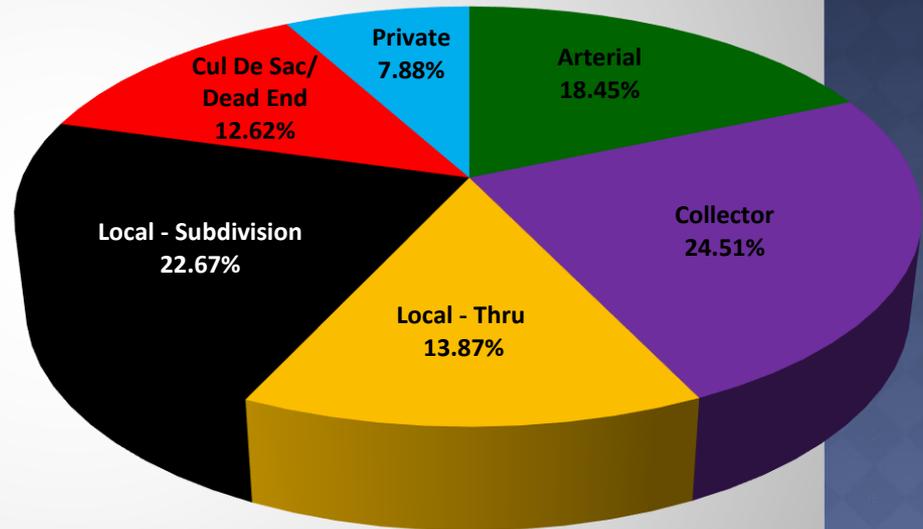
Class Code Short	Description	Adjusted ADT
<b>Limited Access Principal Arterials</b>		20,000
AR	These arterials provide the greatest level of regional mobility with all connections between these roadways and other transportation facilities (other roadways or parking lots serving land use) provided by high-speed ramps. Interstates, freeways, and tollways would fall into this category. Vehicular speed limits generally fall between 65 M.P.H and 45 M.P.H. depending on the design of the roadway and density of development. According to the MassHighway Development & Design Guide, these roads must be designed to speeds between 50 and 75 M.P.H. To maintain these higher speeds, these roadways require grade separation with all crossing roadways or rails, and mostly carry two lanes of traffic in each direction, although there are exceptions in Massachusetts along a portion of State Route 2 and US 6, where the roadways have one lane in each direction. These roadways serve as the primary connectors between cities, regions, and bordering states.	
<b>Full Access Principal Arterials</b>		10,000
AR	These arterials provide a lower level of regional mobility than limited access principal arterials, but provide the highest level of mobility for roadways with driveway access, unsignalized intersections, and signalized intersections. Vehicular speed limits vary between 25 M.P.H. in urban areas to as high as 55 M.P.H. in rural areas. In the more rural areas of the state (Berkshire and Franklin Regions), these roadways serve as the primary connection between cities, regions, and bordering states. These roadways support major shopping areas, high density residential developments, regional hospitals, and other regional scale developments serving high volumes of traffic.	
<b>Full Access Minor Arterials</b>		5,000
AR	These arterials provide a lower level of regional mobility than principal arterials, by linking towns and cities together. These roadways can provide the highest level of mobility through rural areas without principal arterials, while providing important connections between the principle arterial and collector network in urban areas. Vehicular speeds vary between 25 M.P.H. in urban areas to as high as 55 M.P.H. in rural areas. These roadways support intra county level shopping centers, moderate residential development, and travel through many urban town centers.	
<b>Major Collectors</b>		2,500
CO	These roadways provide service to any areas of the state not serviced by arterials and service land use of a regional importance such as schools, parks, and smaller scale retail use. Vehicular speeds vary between 25 M.P.H. in urban areas to as high as 55 M.P.H. in rural hinterlands. In many rural municipalities, these roadways travel through many town centers.	
<b>Minor Collectors</b>		1,250
CO	These roadways collect traffic from the local roadway network and distribute them to the major collector or arterial system. In addition, these roadways provide service to smaller municipalities and link to important small scale land use serving the local community. Vehicular speed limits range between 25 M.P.H. in the urban areas to as high as 50 M.P.H. in the rural hinterlands.	
<b>Local Roadways</b>		500
LO	These roadways provide the second lowest level of mobility by accessing adjacent land use, serving local trip purposes, and connecting to higher order roadways. Vehicular speed limits range between 15 M.P.H. in urban centers to 40 M.P.H. in the rural hinterlands.	
<b>Local Roadways - Cul -De - Sac/Dead End</b>		250
LO/CS/DE	These roadways provide the lowest level mobility through functioning as a primary access to properties rather than having a transport or through function. Vehicular speed limits range between 15 M.P.H. in urban centers to 25 M.P.H. in the rural hinterlands.	



# FUNCTIONAL CLASSIFICATION ANALYSIS

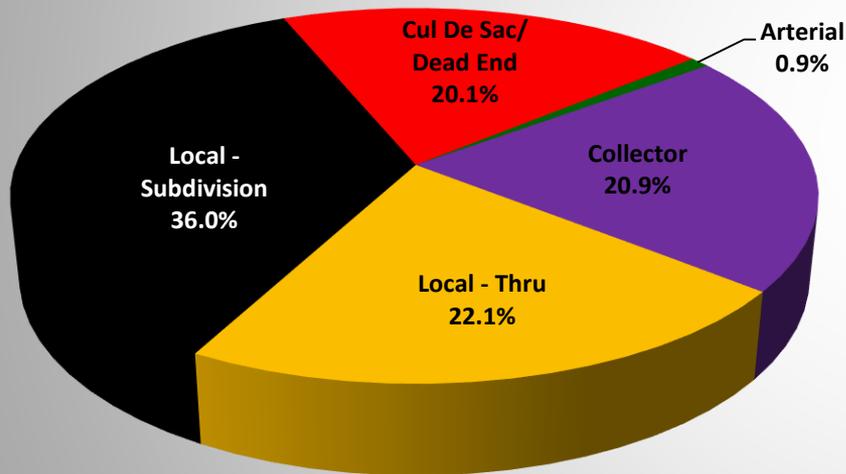
## TOWN ACCEPTED & STATE ROADWAYS\*

Functional Class	Length (Miles)
Arterial	10.51
Collector	13.96
Local – Thru Street	7.90
Local – Subdivision	12.91
Local – Cul De Sac/Dead End	7.19
Private (Not Classified)	4.49
<b>TOTAL:</b>	<b>56.96</b>



# FUNCTIONAL CLASSIFICATION ANALYSIS

## TOWN ACCEPTED ROADWAYS ONLY



Functional Class	Length (Miles)	Est. Backlog Cost	Average RSR	Target RSR
Arterial	0.33	\$83,960	65.91	80-90
Collector	7.48	\$153,391	89.73	80-90
Local – Thru Street	7.90	\$558,680	79.46	75-80
Local – Subdivision	12.87	\$1,483,183	77.89	70-75
Local – Cul De Sac/Dead End	7.19	\$635,776	76.84	70-75
<b>TOTAL:</b>	<b>35.77</b>	<b>\$2,914,990</b>	<b>79.62</b>	<b>80</b>

### Projected RSR:

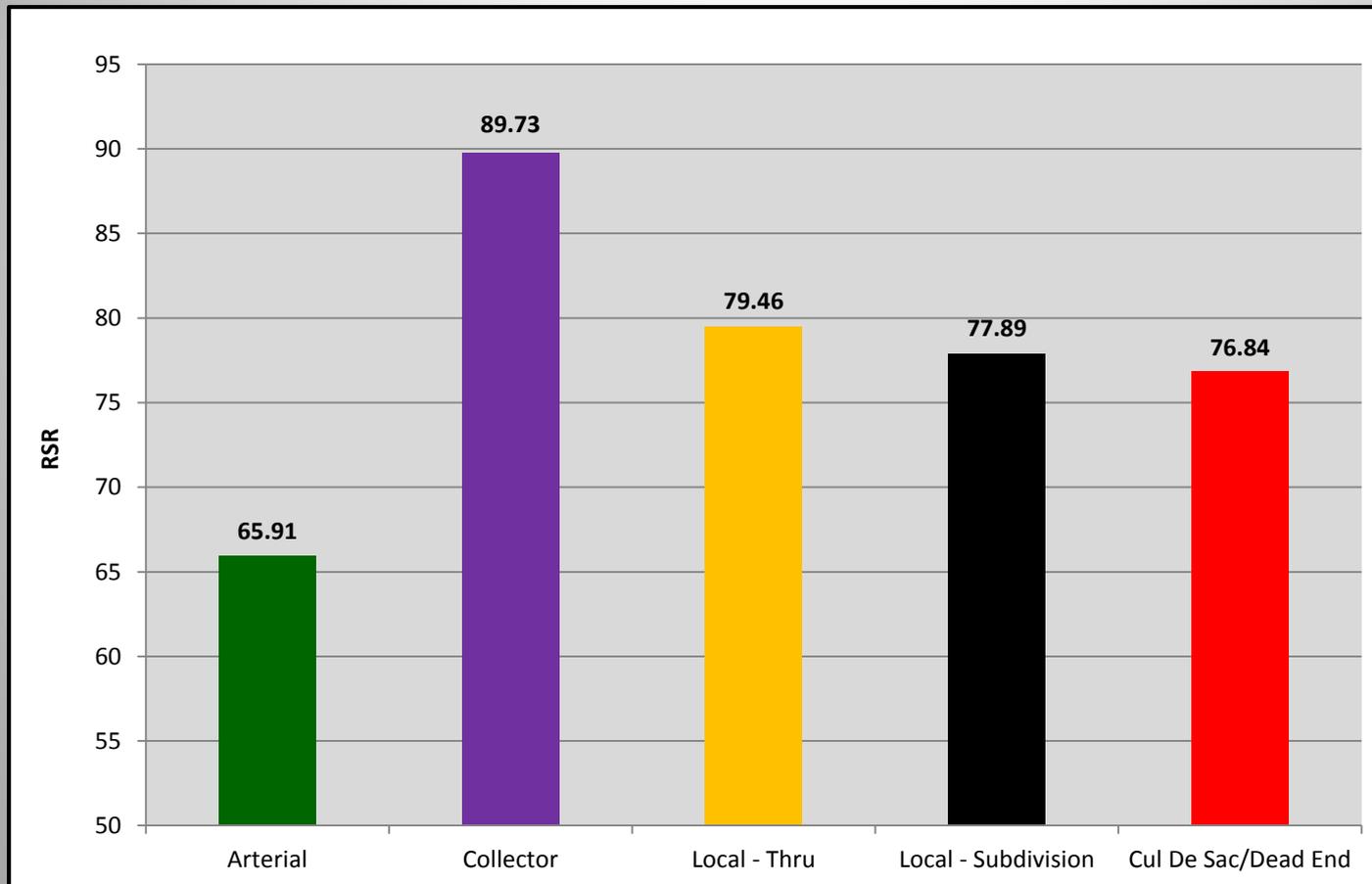
January 1<sup>st</sup>: 79.5

July 1<sup>st</sup>: 78.5



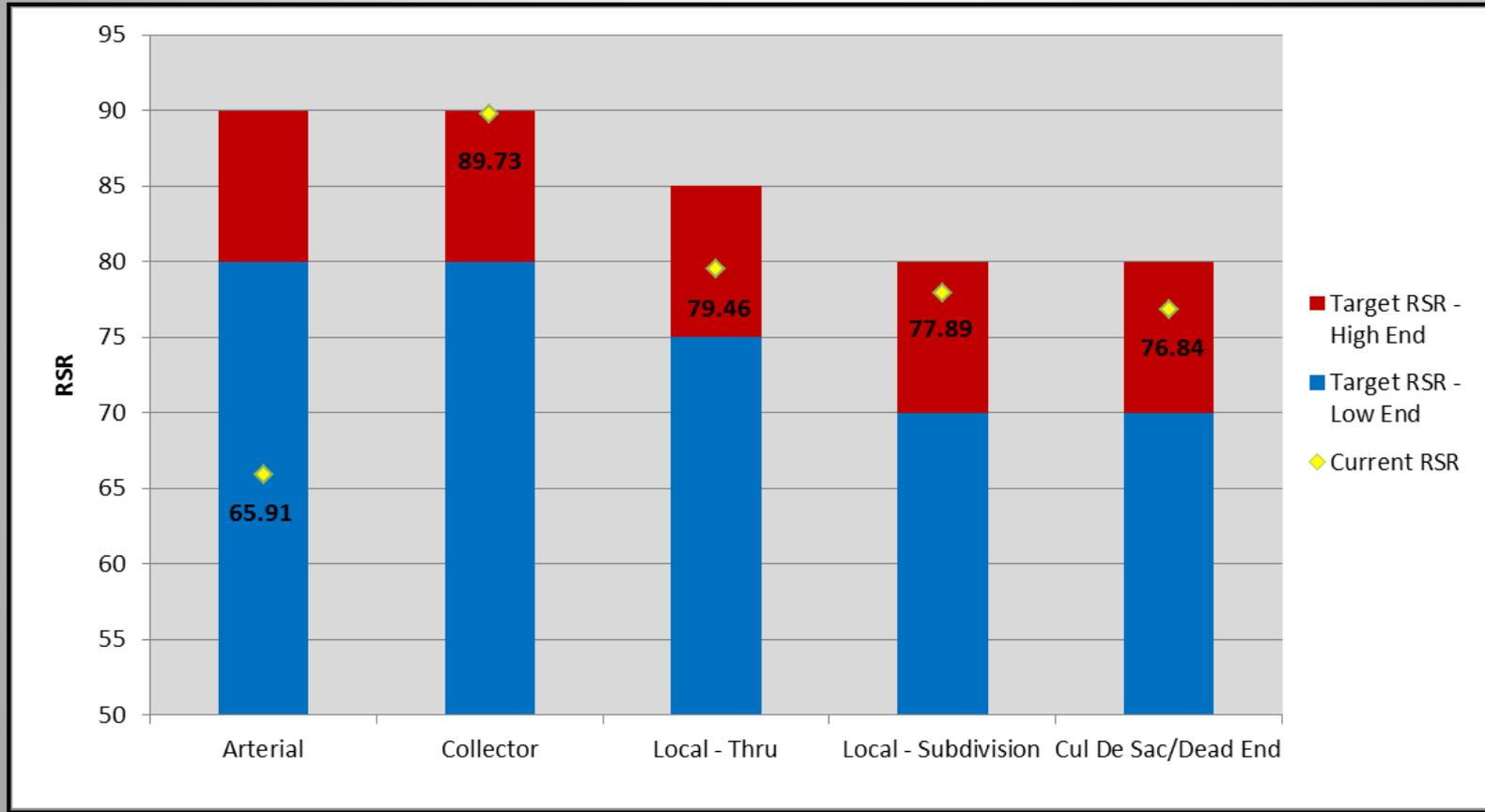
# FUNCTIONAL CLASSIFICATION ANALYSIS

## ROAD SURFACE RATING (RSR) PRESENTED BY FUNCTIONAL CLASSIFICATION



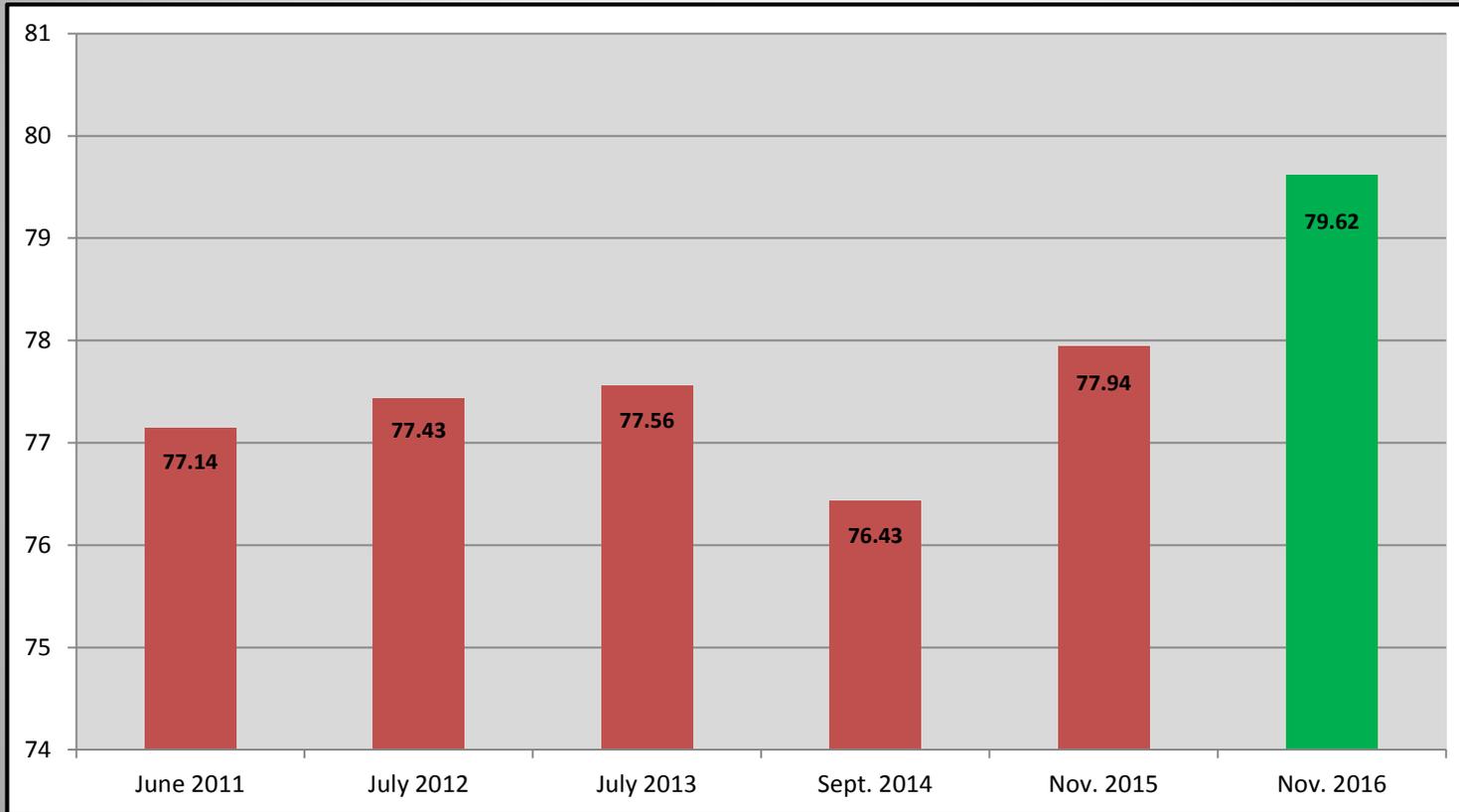
# FUNCTIONAL CLASSIFICATION ANALYSIS

## TARGET RSR RANGE ANALYSIS



# RSR ANALYSIS

## HISTORICAL RSR COMPARISON\*



# ROADWAY HISTORY TRACKING

## ROADWAYS REPAIRED DURING 2016 CONSTRUCTION SEASON

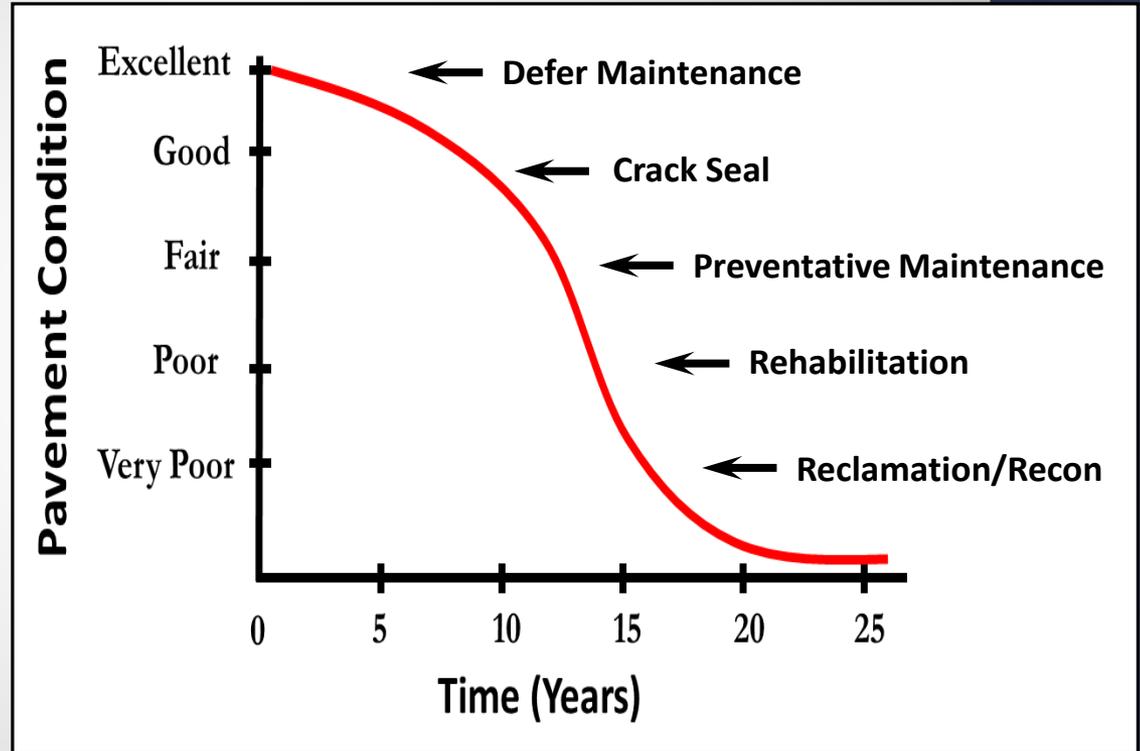
- Auburn Street
- Barker Street
- Brentwood Street
- Culver Street
- Dalton Street
- Lower Road
- Lynwood Street
- Middle Road
- Upper Road

**Total Cost: \$206,095**



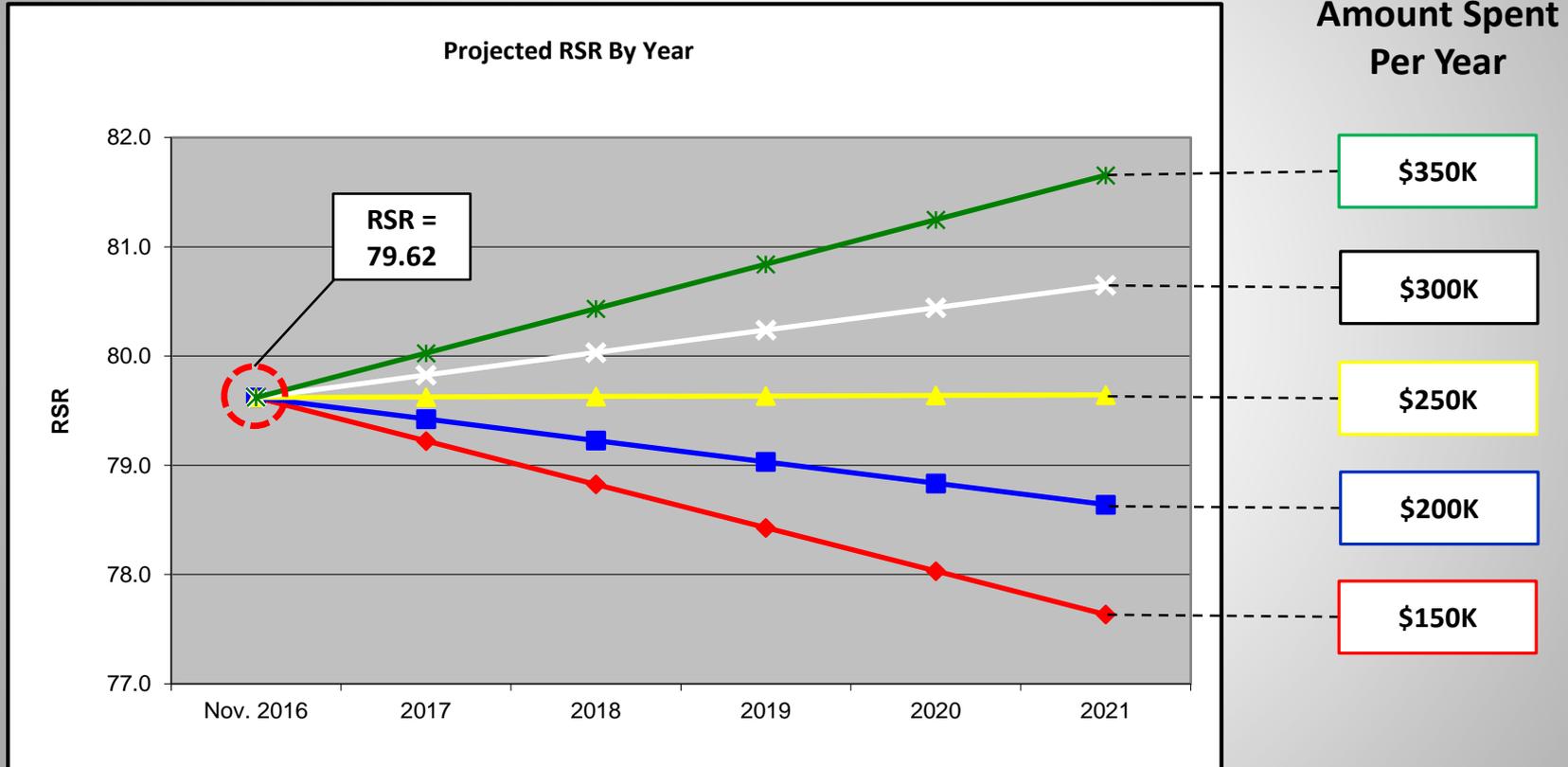
# CIP DEVELOPMENT

- Target RSR & Budget Requirements
- Refine Repair Methods Unit Costs
- Prioritization Strategies (CBV)
- Utility Coordination
- Deterioration Rates



# CIP DEVELOPMENT

## RSR FORECASTING – 5 YEARS



### Roadway Forecast Model Percentage Breakdown:

- Crack Sealing – 15%
- Preventative Maintenance – 30%
- Rehabilitation – 55%



# CONCLUDING REMARKS

1. **Comprehensive Inventory** has been created for all Town roads, their condition, & the most effective way to prioritize maintenance and repairs.
2. **Designed** to better manage limited dollars allocated to road work in Town
3. **Capable** of assessing the different types of repair strategies necessary to maximize the lifecycle of the roads





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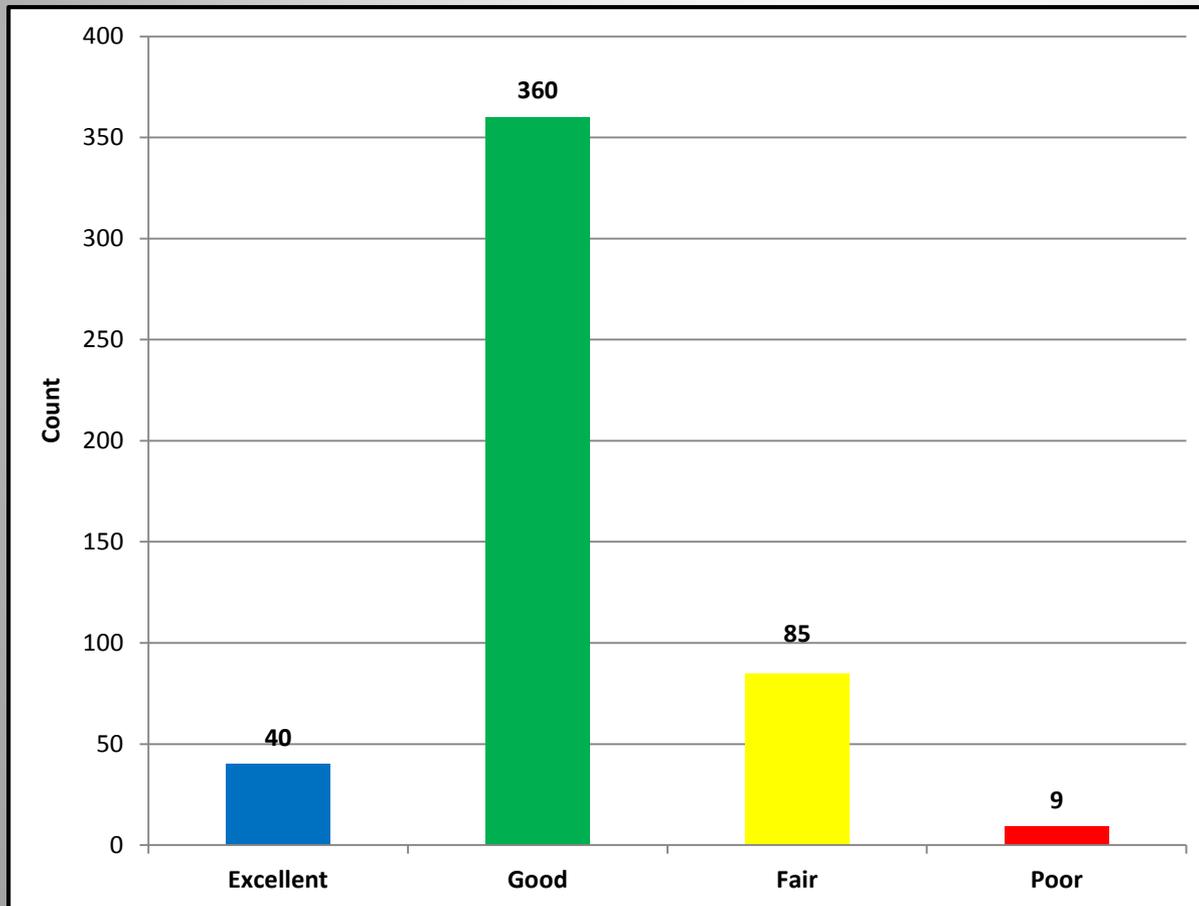
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**BETA**

Thank You

# STORMWATER MANAGEMENT

## Catch Basin Inventory and Condition Summary



Grate Type	Count
D Shaped	1
Double	4
Round	7
Square	482
<b>Total</b>	<b>494</b>

