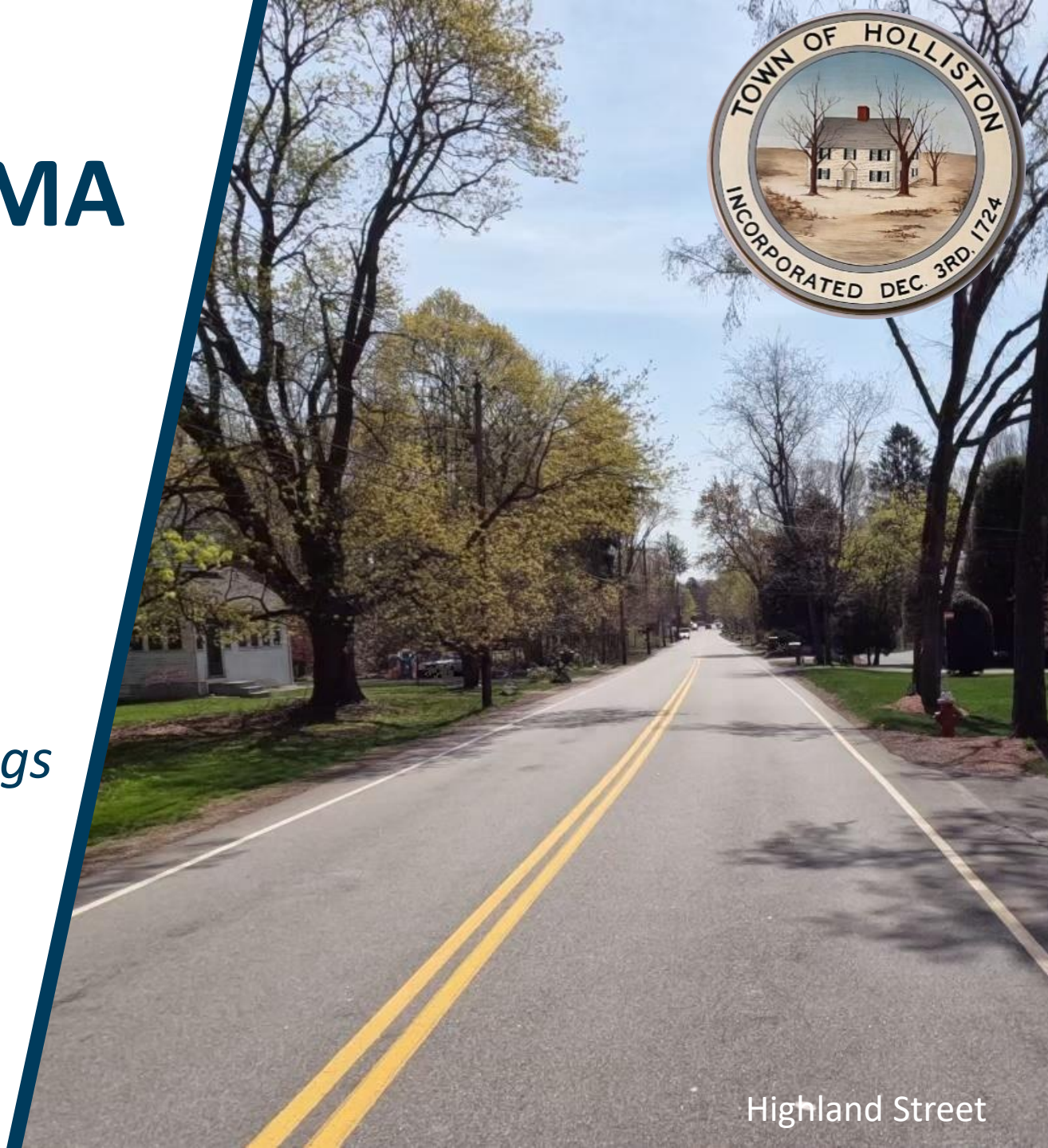
Town of Holliston, MA

Pavement Management Program

Summary of Findings

July 17, 2023

BETA



Highland Street

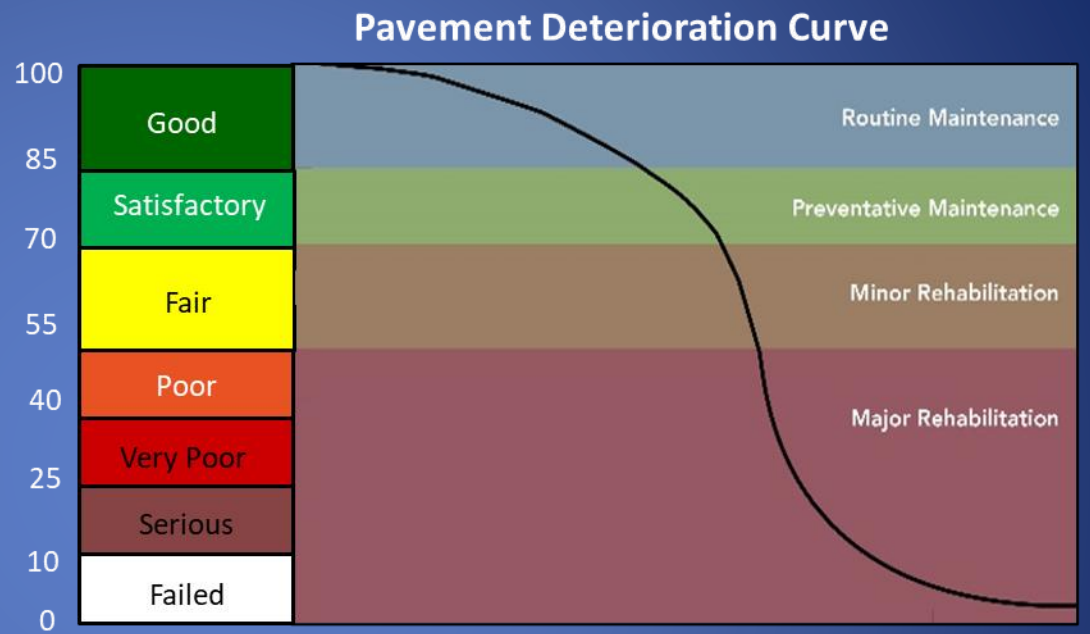
Benefits of Pavement Management

- Protects a community's investment by maximizing the life span of the roadway network
- Provides the ability to plan-ahead and predict budgetary needs (minimize costs while maximizing value)
- Apply the appropriate treatment at the correct location and time
- ***Provides foundation for decision making***

Proactive vs. *Reactive*

Program Goals & Objectives

- ✓ Conduct Pavement Condition Assessment
- ✓ Understand Roadway Conditions & Needs
- ✓ Evaluate Repair Strategies & Benefits
- ✓ Establish Estimated Backlog of Improvements
- ✓ ***Develop Prioritized Plan***



CIP Tool

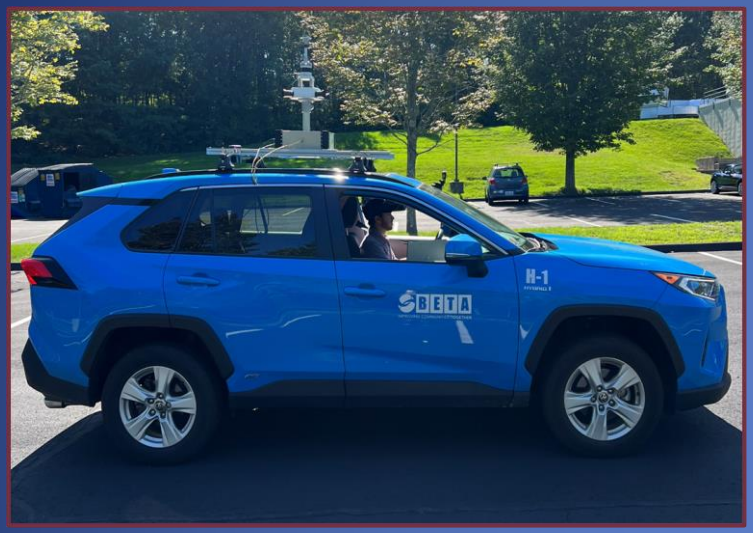
BETA

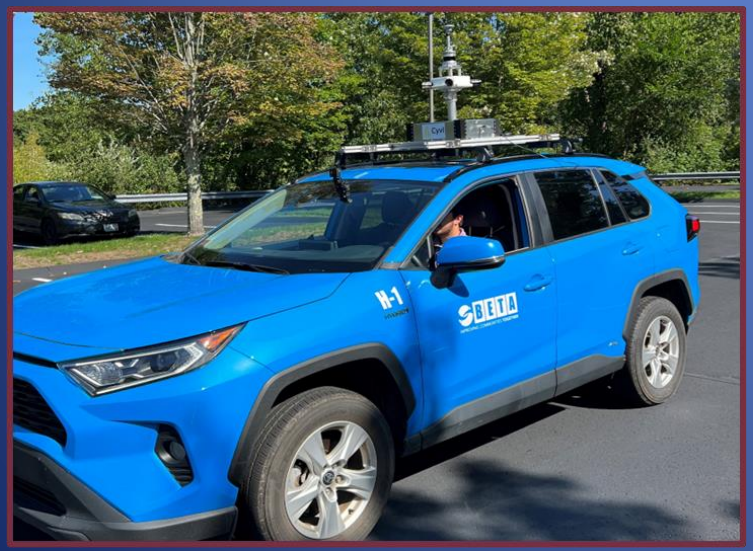
Five-Step Project Approach

1. System Set-up & GIS Mapping
2. Pavement Inspection Program
3. Existing Conditions Analysis
4. Planning & Prioritization
5. System Deployment & Training

Pavement Inspection Program

Automated Approach





***LiDAR Technology*:**

- Data Captured in April 2023
- Pavement distresses identified utilizing a LiDAR sensor which generates 0 - 100 Road Surface Rating (RSR)
- High resolution photographs located every 20’ are available for viewing via BETA’s ArcGIS Online based platform

BETA

System Configuration & Mapping

Roadway Profile

Roadway Type	Miles
Town Accepted	Asphalt: 91.78 Gravel: 0.19
Private	Unknown: 3.02
State	Asphalt: 4.85
Town Unaccepted	Asphalt: 2.85 Gravel: 0.74 Unknown: 6.97
Total	110.40

Paved Roadways Inspected By BETA

BETA

Pavement Inspection Program

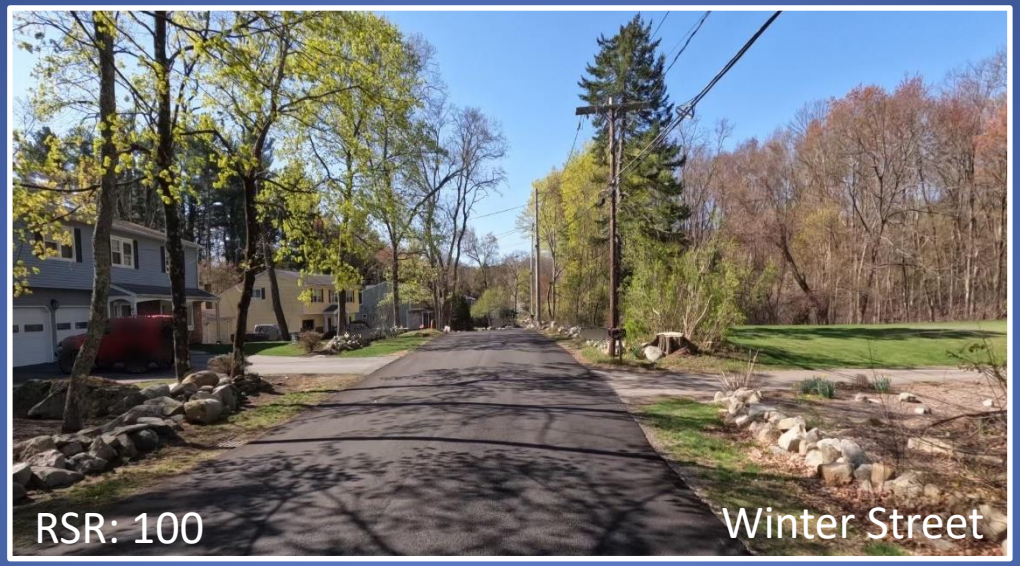
Repair Bands & Conditions

Repair Band	RSR Range	Repair Band Description	Repair Method Examples
Defer Maintenance	**92–100**	**Excellent Condition** – Pavement needs no immediate repairs or maintenance.	- N/A
Routine Maintenance	**80-92**	**Good Condition** – Pavement may need crack sealing/fog sealing or minor localized repairs.	- Crack Sealing - Fog Sealing - Rejuvenators
Preventative Maintenance	**65-80**	**Fair Condition** – Pavement surface needs a surface seal or thin overlay	- Chip Seal - Microsurfacing - Shim & Overlay
Minor Rehabilitation	**50-65**	**Poor Condition** – Pavement surface structure needs added strength for existing traffic. Typically, an overlay or mill & overlay for these roads.	- Mill & Overlay - Cold In-Place Recycling (RSR) - Level & Overlay
Major Rehabilitation	**0-50**	**Deficient Condition** – Typically, the base layers of the pavement need to be rebuilt. The implementation of a reclamation or full depth reconstruction is needed.	- Reclamation - Reconstruction - Full Depth Reclamation (FDR)

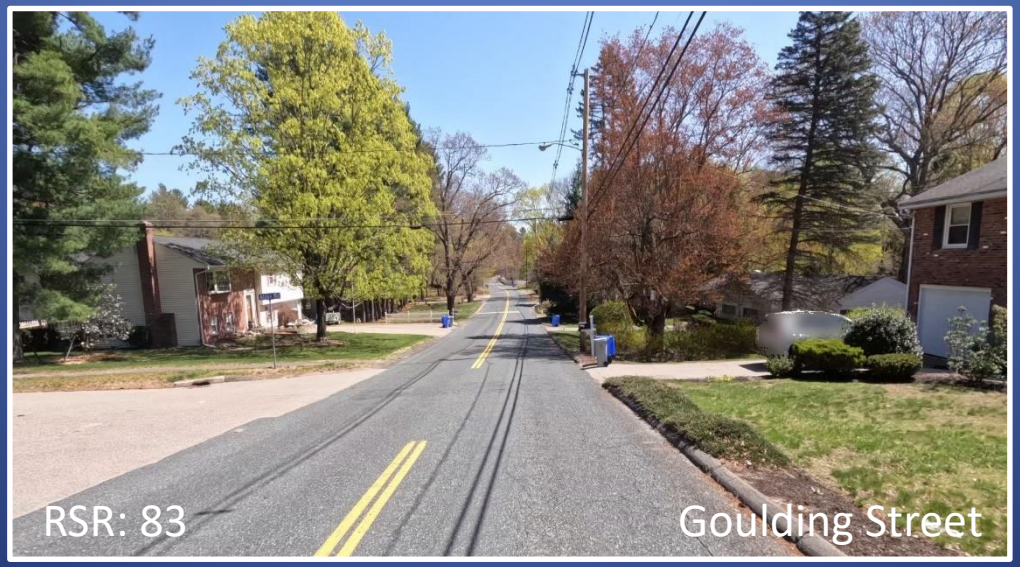
BETA

Roadway RSR– Representative Examples

(Good)



Defer Maintenance



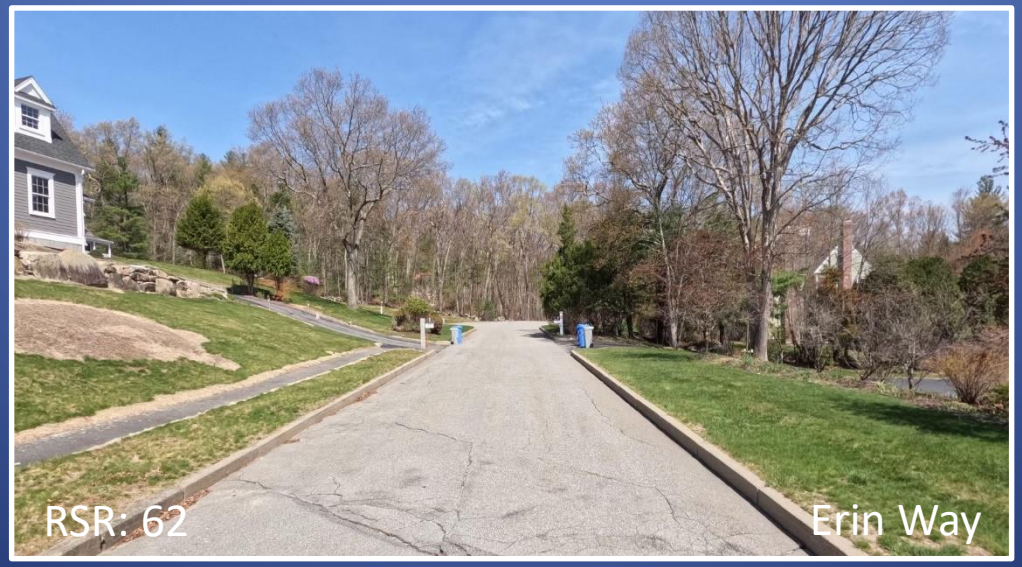
Routine Maintenance

BETA

Roadway RSR– Representative Examples

(Fair)

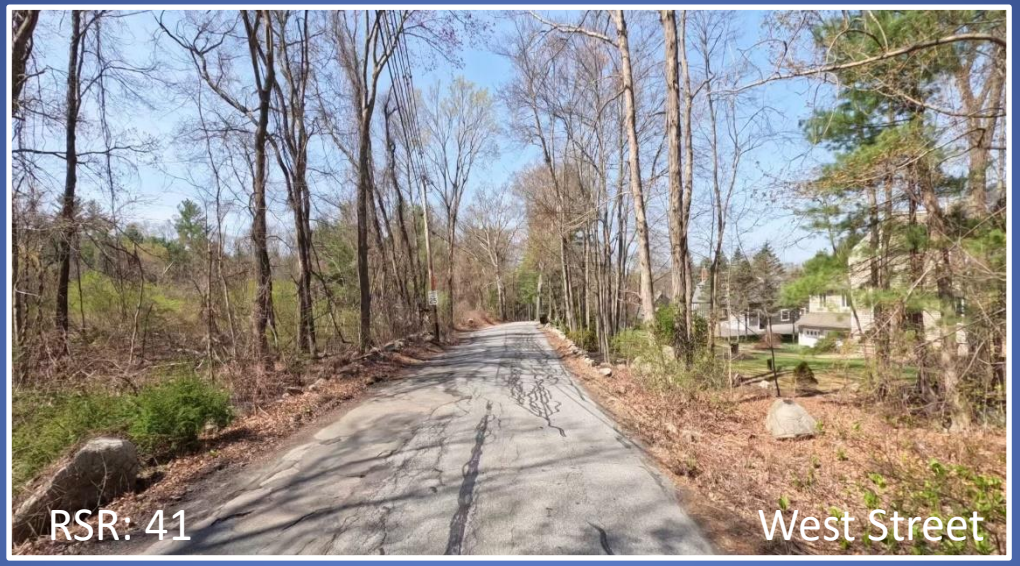
Preventative Maintenance



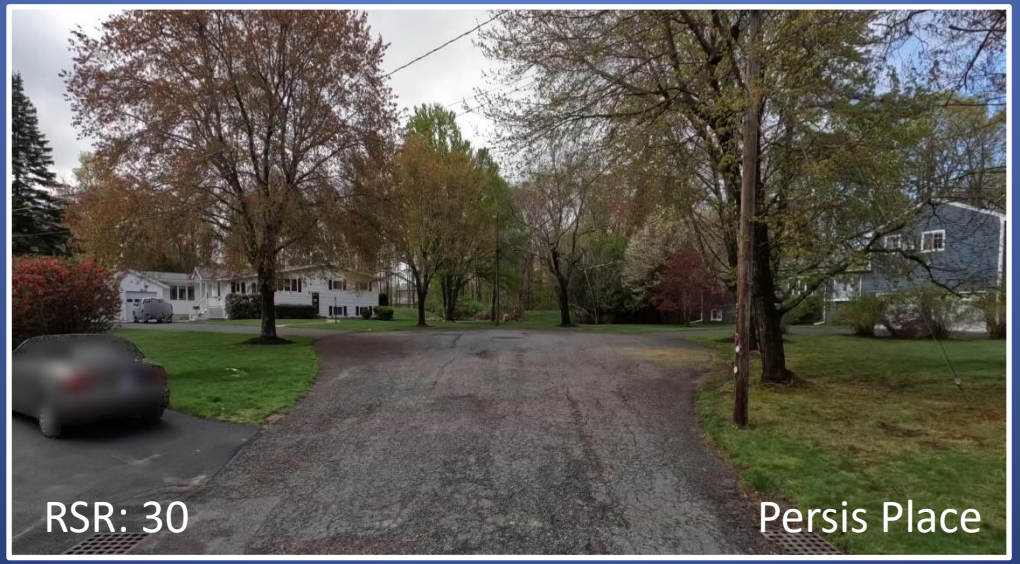
Minor Rehabilitation

BETA

Roadway RSR– Representative Examples
(Poor)



Major Rehabilitation



Major Rehabilitation

BETA

Existing Conditions Analysis

Estimated Costs of Improvements (Accepted)					
Repair Method	***Average Unit Cost ($/SY)***	***Length (Miles)***	***Square Yards***	***Percent Repair***	***Estimated Cost***
Major Rehabilitation	$48.00	4.15	57,731.30	4.52%	$2,771,102.39
Minor Rehabilitation	$18.00	21.53	339,824.03	23.46%	$6,116,832.60
Preventative Maintenance	$9.50	33.01	482,785.63	35.97%	$4,586,463.46
Routine Maintenance	$1.00	23.21	328,006.11	25.29%	$328,006.11
No Maintenance Required	$0.00	9.88	135,024.54	10.76%	$0.00
Total		**91.78**	**1,343,371.61**	**100%**	***$13,802,404.56**

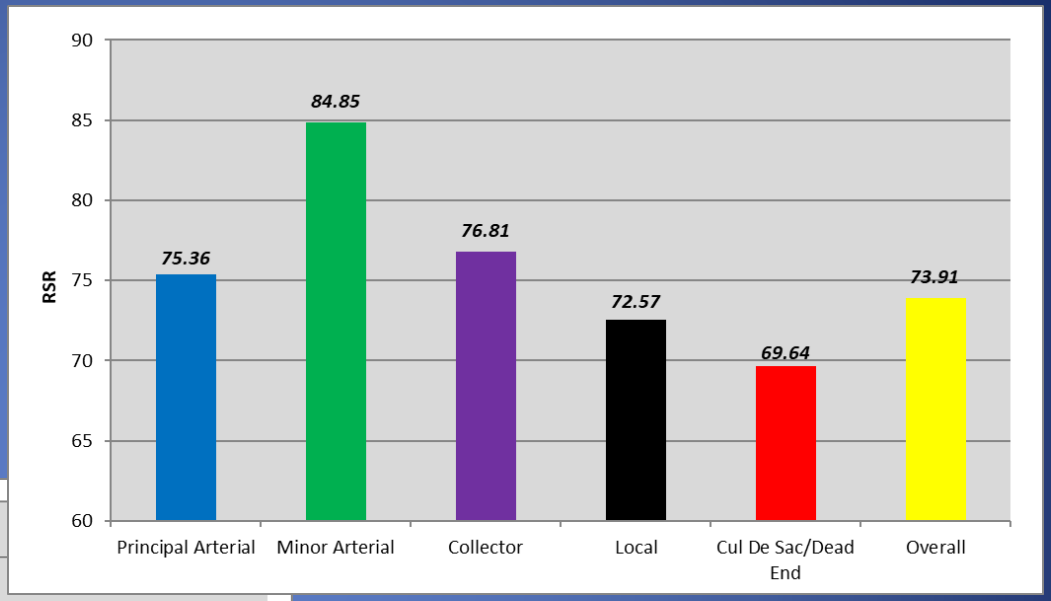
Network Rating = 73.91

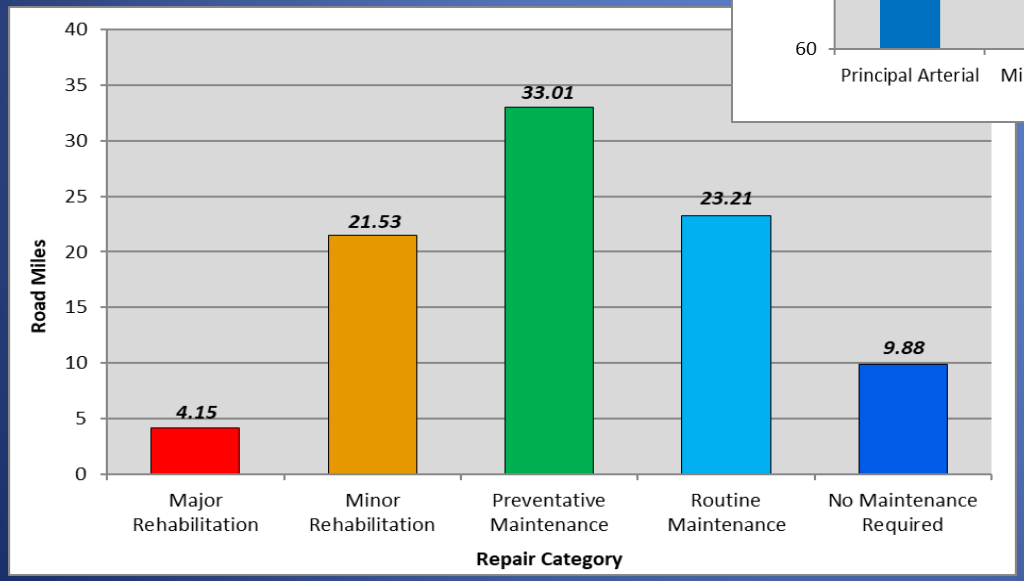
*Based on curb-to-curb improvements only, does not include sidewalk, curb ramp or utility improvements. Estimated costs as shown are for planning purposes only and do not reflect fluctuations in liquid asphalt or other pavement mix components

BETA

Existing Conditions Analysis

RSR Distribution by Functional Class

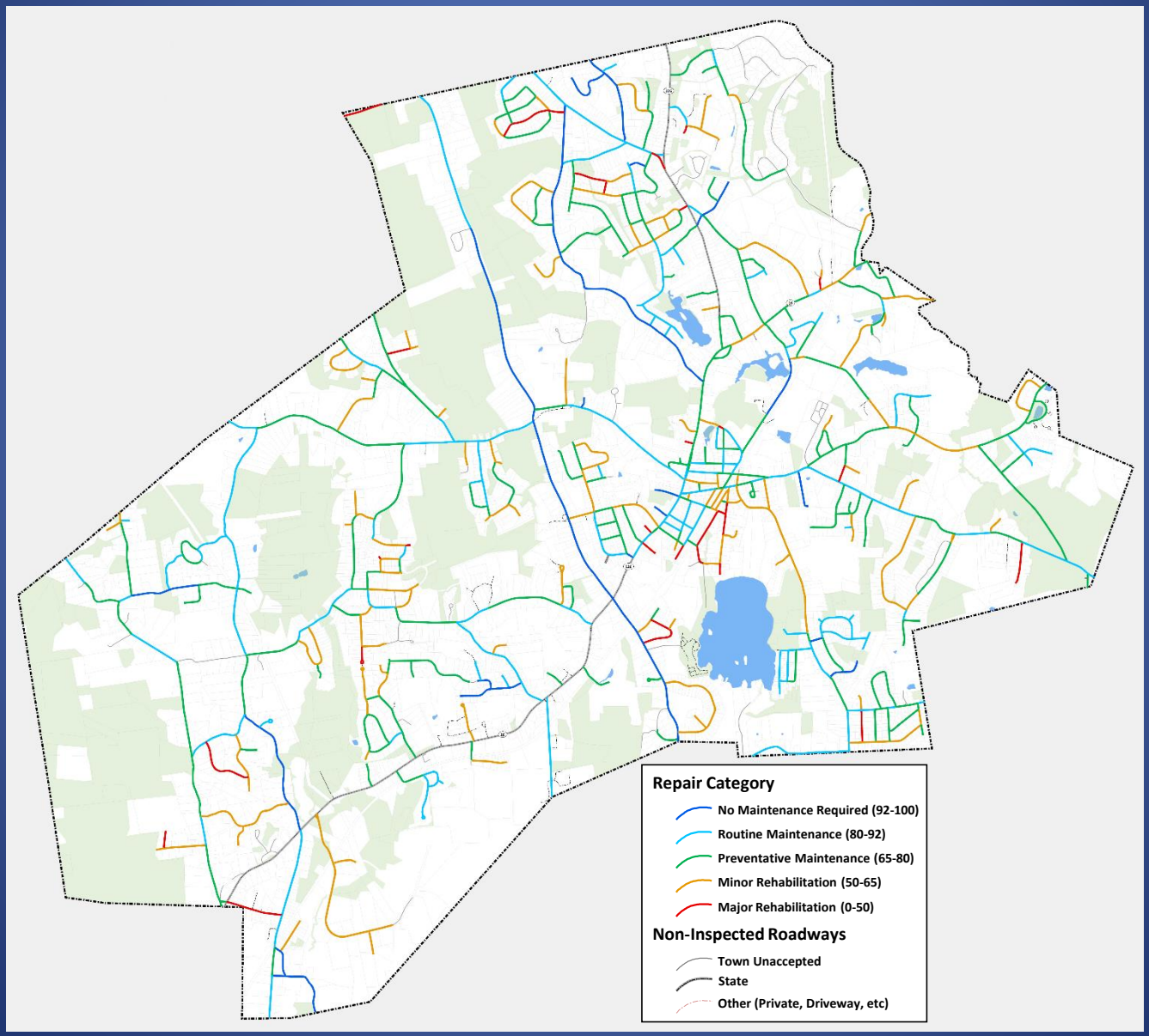




Miles of Road By Repair Band Analysis

Existing Conditions Analysis

Pavement Condition Map



ManageMyRoads Platform

Town of Holliston, MA

ManageMyRoads by BETA

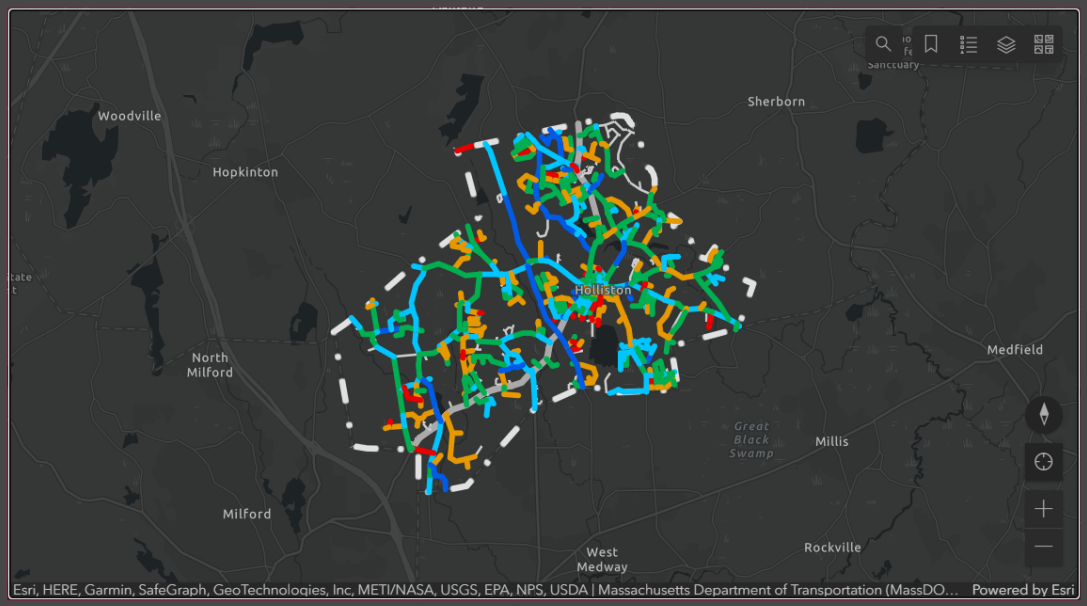
BETA

Est. Cost of Improvements
13.80M

Centerline Miles
91.78

Square Yards
1.34M

Roadway Repair Categories (Miles)



Street Segments Sorted Alphabetically

Street Name	Street Segment	From Street	To Street	Length	Miles	Width	Repair Method	RSR	Be
ADAM WHEELER LANE	ADAM WHEELER LN-01	GOULDING ST	TRACY LYN RD	177.08	0.03	24.00	Preventative Maintenance	71	
ADAM WHEELER LANE	ADAM WHEELER LN-02	TRACY LYN RD	HOLLY LN	470.37	0.09	24.00	Minor Rehabilitation	63	
ADAM WHEELER LANE	ADAM WHEELER LN-03	HOLLY LN	CUL DE SAC	324.71	0.06	24.00	Preventative Maintenance	65	
ADAMS STREET	ADAMS ST-01	HANLON ROAD	DRIVEWAY #734	1,101.63	0.21	20.00	Preventative Maintenance	77	
ADAMS STREET	ADAMS ST-02	DRIVEWAY #734	GORWIN DR	1,572.45	0.30	20.00	Routine Maintenance	81	
ADAMS STREET	ADAMS ST-03	GORWIN DR	MARSHALL ST	2,878.10	0.55	20.00	Preventative Maintenance	76	
ADAMS STREET	ADAMS ST-04	MARSHALL ST	POND VIEW RD	1,808.21	0.34	18.00	Preventative Maintenance	80	

Alphabetical | RSR | CBV

Road Network Rating
73.91
Last Updated: 6/30/2023

Repair Category
- No Maintenance Required
- Routine Maintenance
- Preventative Maintenance
- Minor Rehabilitation
- Major Rehabilitation

Roadway Network
- Private
- State
- Town

Town Boundary

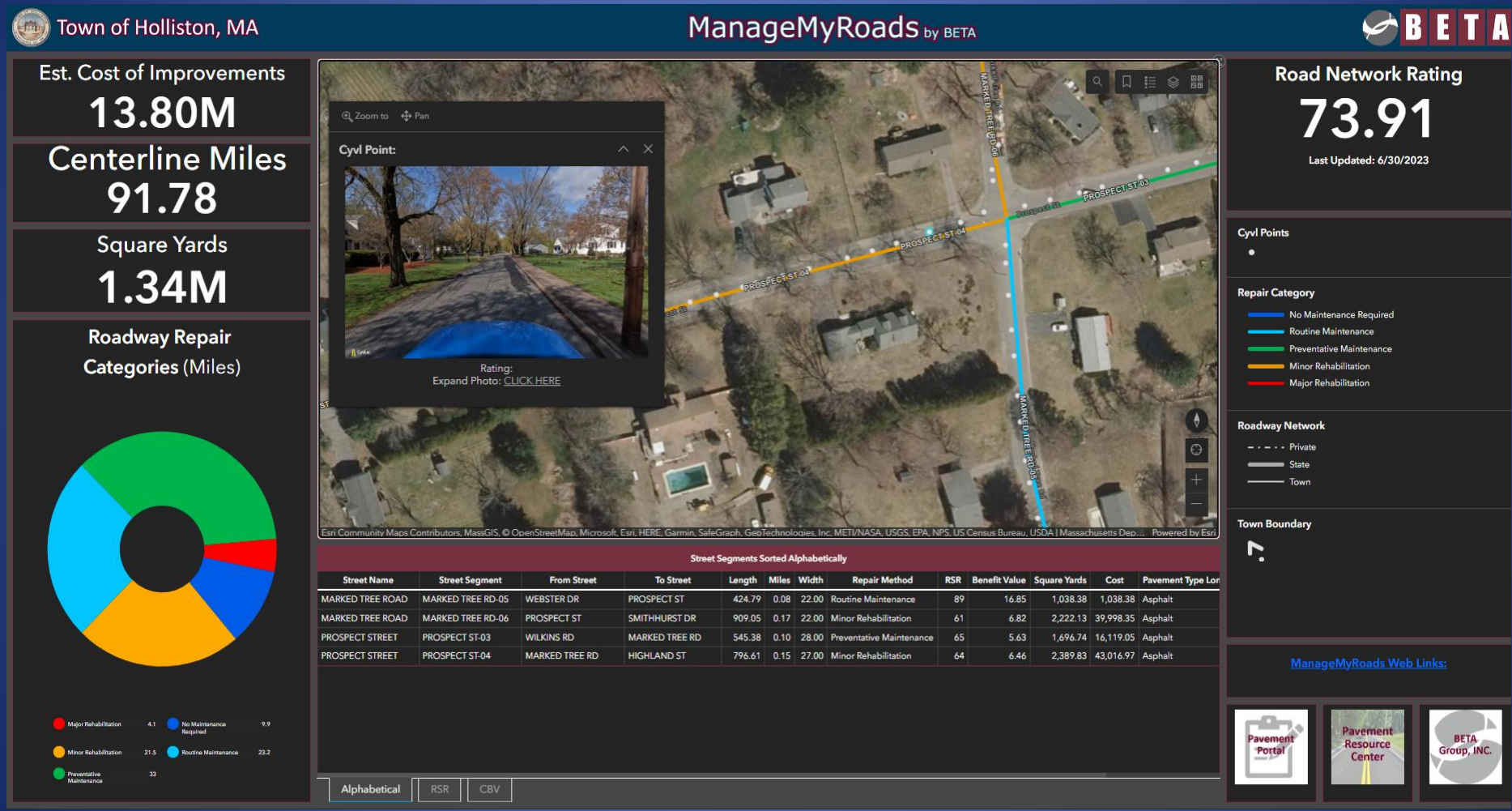
ManageMyRoads Web Links:

Pavement Portal | Pavement Resource Center | BETA Group, INC.

BETA

TOWN OF HOLLISTON INCORPORATED DEC 1ST 1724

ManageMyRoads Platform



Street Segments Sorted Alphabetically

Street Name	Street Segment	From Street	To Street	Length	Miles	Width	Repair Method	RSR	Benefit Value	Square Yards	Cost	Pavement Type Lor
MARKED TREE ROAD	MARKED TREE RD-05	WEBSTER DR	PROSPECT ST	424.79	0.08	22.00	Routine Maintenance	89	16.85	1,038.38	1,038.38	Asphalt
MARKED TREE ROAD	MARKED TREE RD-06	PROSPECT ST	SMITHHURST DR	909.05	0.17	22.00	Minor Rehabilitation	61	6.82	2,222.13	39,998.35	Asphalt
PROSPECT STREET	PROSPECT ST-03	WILKINS RD	MARKED TREE RD	545.38	0.10	28.00	Preventative Maintenance	65	5.63	1,696.74	16,119.05	Asphalt
PROSPECT STREET	PROSPECT ST-04	MARKED TREE RD	HIGHLAND ST	796.61	0.15	27.00	Minor Rehabilitation	64	6.46	2,389.83	43,016.97	Asphalt

Next Steps

Capital Planning & Prioritization

Present Findings → **Define Needs** → **Multi-Year Plan**

Capital Improvement Planning Timeline

Collaborate
BETA works with Community to gather initial ideas.

Analyze
Review ideas & prioritize roadways

Draft
Develop plan with funding estimates & prioritized projects.

Formalize
Present draft plan for comments & review.

Adopt
Finalize modifications & present plan for community use.

BETA

Next Steps
Capital Planning & Prioritization

Analysis Considerations

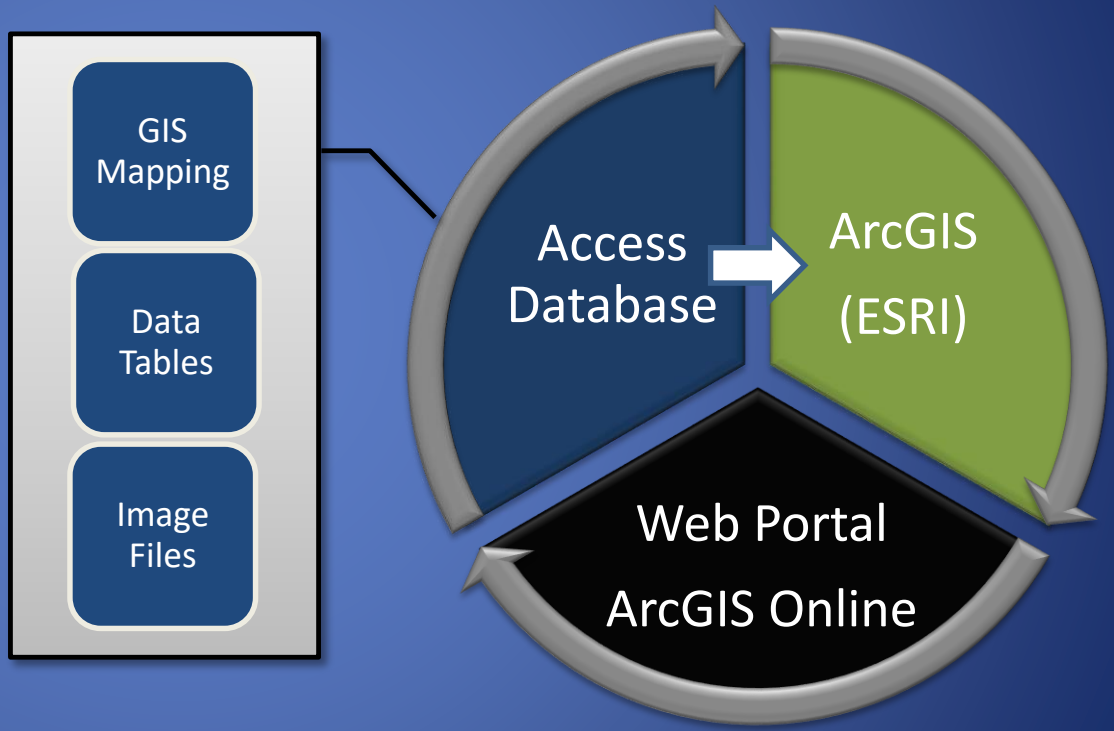
Roadway Condition (Good, Fair, Poor)
Roadway Functional Classification
Repair Costs
Life Improvement
Sub-Surface Utilities (Gas, Water, Sewer)
Sidewalks & Curb Ramps
Geographic Location/Proximity

BETA

Next Steps

System Deployment & Maintenance

- Training Program
- Update data as improvements are completed
- Monitor and update actual costs
- Re-assess roadways every 3-5 years
- **System Support**



ManageMyRoads Platform
(For City Use Only)

BETA

Town of Holliston, MA

Pavement Management Program

Thank you

Highland Street

Concluding Remarks

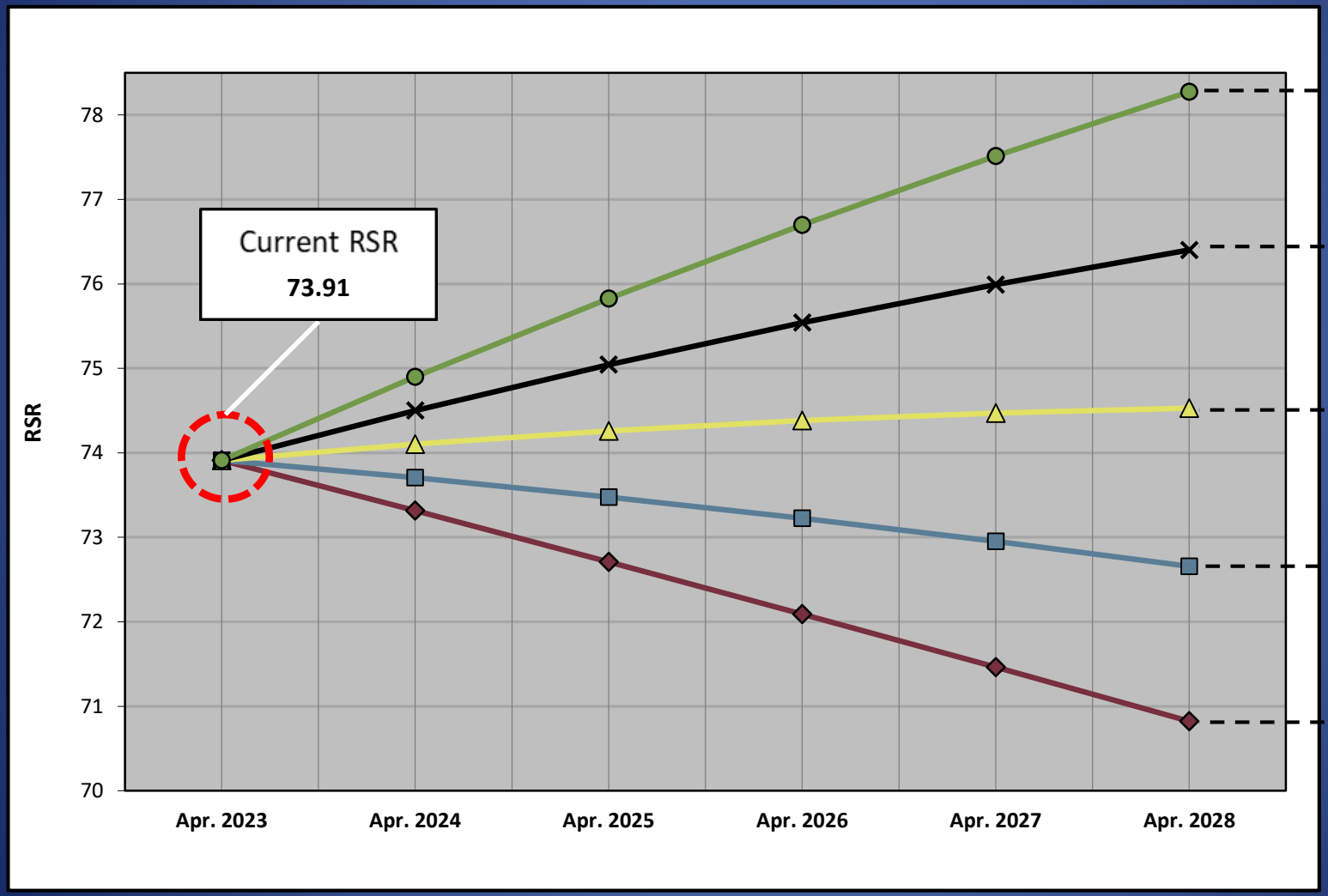
1. **Comprehensive Inventory** has been created for Town Accepted roads, their condition, & the most effective way to prioritize maintenance and repairs.

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

Forecast Modeling

5-year Forecast – Balanced Model



Estimated Amount Per Year*

- $2.5M
- $2.0M
- $1.5M
- $1.0M
- $510K

*Please Note: Unit pricing accounts for curb-to-curb improvements only; does not include any drainage, sidewalk, ADA, gravel sub-base or utility improvements.

BETA