NEW DURHAM ROAD SURFACE MANAGEMENT SYSTEM REPORT

This report was completed by the Town of New Durham in collaboration with the Strafford Metropolitan Planning Organization. Road Surface Management System assessments were completed in the town in June 2017, and the forecasting report was finalized in 2019.*

*The extended time between the assessment and forecasting was due to technology upgrades and complications out of the control of SRPC and New Durham staff. The town worked diligently with SRPC to ensure that a meaningful product was the result of this project despite the circumstances

AUTHORS

Stefanie Casella, Regional Planner
Formatting: Shayna Sylvia, Communications and Outreach Planner

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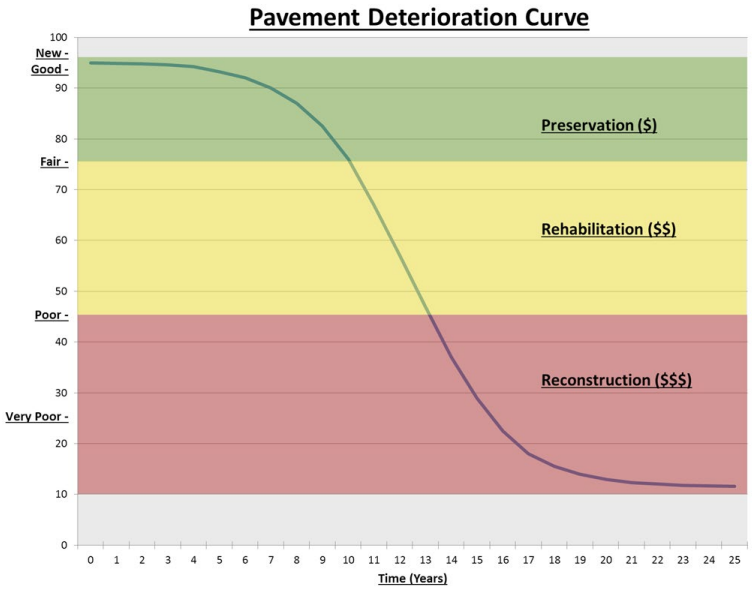
The Road Surface Management System

In partnership with the New Hampshire Department of Transportation (NHDOT) and the University of New Hampshire Technology Transfer Center (UNH T2), the Strafford Regional Planning Commission (SRPC) conducts the Road Surface Management Systems (RSMS) assessments and forecasting. As part of the Statewide Asset Data Exchange System (SADES), the RSMS tool is used to assist municipalities in asset management planning by providing current road conditions, predicting future road conditions, and developing a maintenance schedule and budget for future years. Training is conducted by UNH T2 and held annually at the NHDOT offices in Concord, NH. The RSMS program is broken up in to the two-phases found below.

Phase One

In Phase One, current road conditions are assessed and scored. Local roads are identified and divided into quarter mile segments and each segment is driven and assessed via a windshield survey. The segment conditions are recorded with tablets using the Esri ArcCollector application and scored according to road surface distresses and severity. The road condition is represented by a score called the Pavement Condition Index, also known as a PCI score. This score runs on a scale from one to 100 and gives the staff a measurable value to gauge improvements, maintenance, and deteriorations. A perfect road with no distresses would receive a PCI score of 100, with the score at the time of assessment referred to as the Initial PCI score.

Quality Assurance/Quality Control (QAQC) measures are taken to ensure all roads segments are assessed consistently and conditions are accurately represented. Each segment is then sent to municipal staff for approval and a local knowledge review rating. These ratings consist of frost heaving, importance, and relative traffic volume. Once the QAQC is complete and local knowledge ratings are assigned, the data is loaded into the SADES Forecasting software where the PCI scores are generated. For more information on the assessment parameters please see the RSMS Assessment handbook[1].



Phase Two

Phase Two uses the PCI scores, derived from Phase One, to guide the maintenance planning and budgeting. During this phase, SRPC works very closely with municipal staff to find the best treatment options for the town's road network needs. When the data is uploaded to the SADES software, the segments are analyzed individually.

Road Maintenance Condition and Treatment Thresholds

Technique	PCI Range	Road Condition	Treatments
Preserve	95-100	Excellent	Crack Seal/ Fog Seal
Preserve	75-96	Good	Sand seal/ chip seal/ microsurfacing
Preserve	75-96	Good	ARSAM/ Cape seal/ Shim and chip seal
Rehabilitate	45-75	Fair	Bonded wearing course/ Thin HMA
Reconstruction	10-45	Poor	Mill and HMA/ In-place Recycling
Reconstruction	0-10	Failing	Full Reconstruction

1 The RSMS handbook is distributed during the annual data collection training facilitated by UNH T2 staff. The 2019 collection manual can be found in the Appendix.

Each segment is given treatment options and modeled to show how the PCI score will deteriorate over time. The PCI score is broken down by year and given a steady degradation rate to account for annual wear and tear of the road surface. By visualizing road deterioration, the town can estimate when treatments will be needed, how much it will cost, and how long it will be effective for.

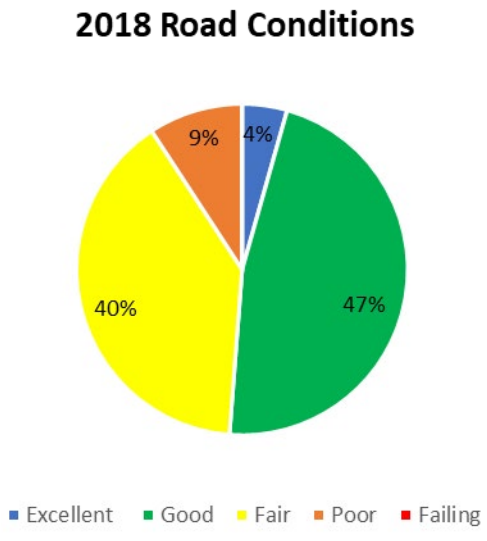
New Durham Road Surface Management System

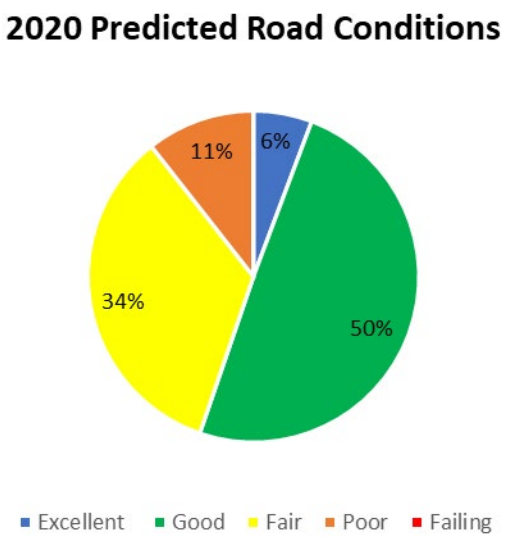
Under the New Hampshire Department of Transportation (NH DOT) Unified Planning Work Program (UPWP), SRPC conducted the first round of RSMS—Phase 1 and Phase 2 – at no cost to the town. Phase 1 road surveys were conducted in June of 2017, with forecasting taking place during the early months of 2019. The extended time between the assessment and forecasting was due to technology upgrades and complications out of the control of SRPC and New Durham staff. The town worked diligently with SRPC to ensure that a meaningful product was the result of this project despite the circumstances. Town Administrator Scott Kinmond, Road Agent Don Vachon, and Public Works Administrative Assistant Karen Kehoe worked closely with SRPC staff to update the road condition changes that took place during the project pause and create a forecasting schedule that worked best for the Town of New Durham.

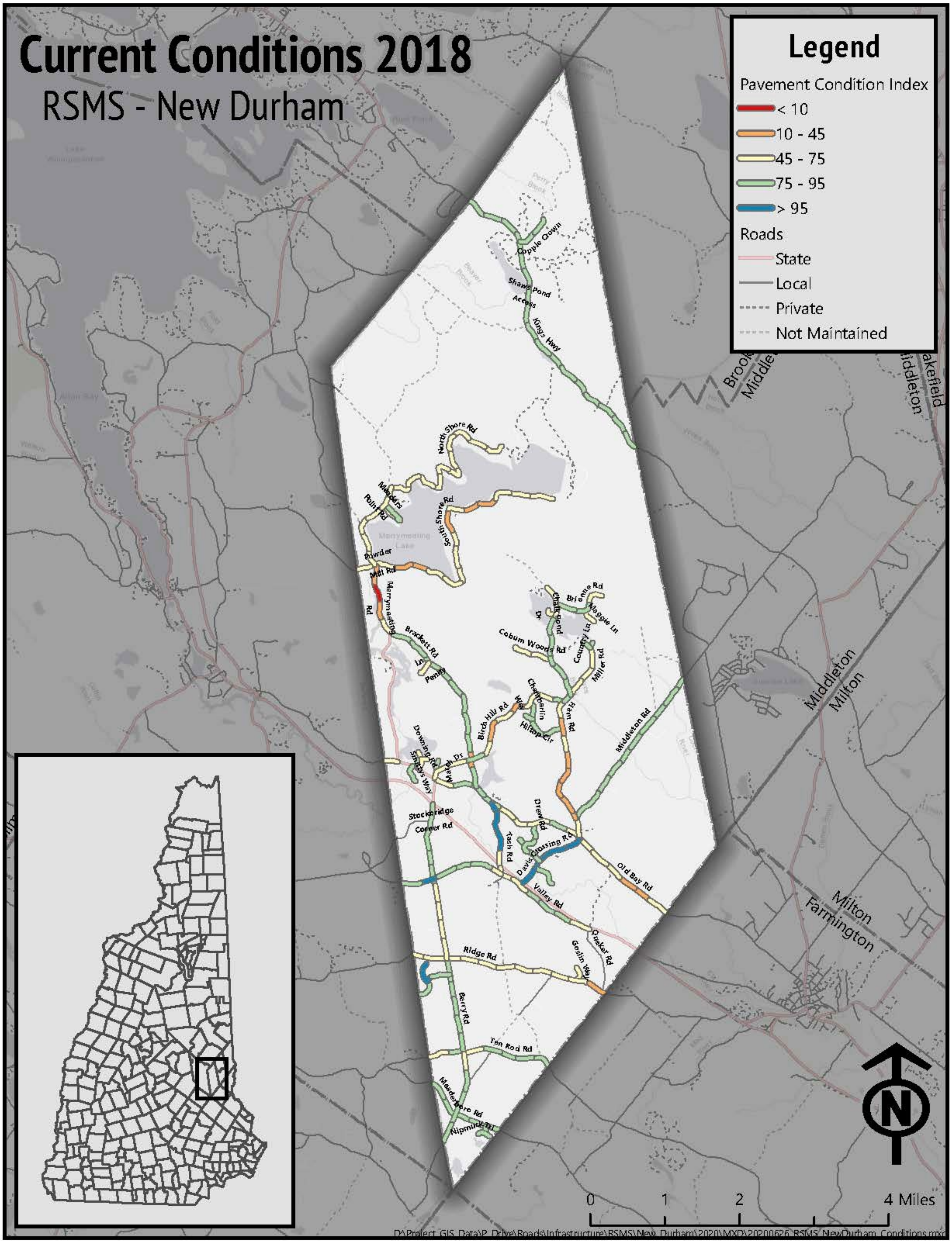
Existing Road Conditions and Forecasting Analysis

After the initial PCI scores were generated, the condition rating had to be adjusted to reflect current day conditions. In this case, where the assessments where conducted two years earlier than the forecasting, road conditions had to be updated to reflect the current road conditions at the time of forecasting. To do this, SRPC generated the baseline scores (based on the original assessments) then added two years' worth of predicted road deterioration to the scores and the road maintenance that had taken place within those years. From here, the scores were used to generate condition maps that were reviewed by town staff. Staff then identified roads that did not appear consistent with the predicted deterioration rate and used a modified survey, created by SRPC, to account for the road surfaces that had not aged at the predicted rate. After all the condition updates and roads had accurate PCI ratings, town staff met with SRPC for a series of forecasting meetings.

New Durham has approximately 51.7 total miles of town-maintained roads. At the time of forecasting, approximately 4% were in excellent condition (PCI score: 95 and up), 47% were in good condition (PCI Score: 75-95), 40% were in fair condition (PCI Score: 45-75), and 9% were in poor condition (PCI Score: 10-45). None of the roads in New Durham were considered failing (PCI Score: 10 or below).






Current Conditions 2018
RSMS - New Durham
Legend
Pavement Condition Index
< 10
10 - 45
45 - 75
75 - 95
> 95
Roads
State
Local
Private
Not Maintained
Copple Crown
Shaws Pond Access
Kings Hwy
North Shore Rd
South Shore Rd
Meaders Point Rd
Powder Mill Rd
Merrymeeting Rd
Brackett Rd
Penny Ln
Brienne Rd
Chalk Pond Dr
Maggie Ln
Coburn Woods Rd
Country Ln
Miller Rd
Chamberlain Way
Birch Hill Rd
Hilltop Cir
Ham Rd
Middleton Rd
Downing Rd
Smiths Way
Stockbridge Corner Rd
Drew Rd
Tash Rd
Davis Crossing Rd
Old Bay Rd
Valley Rd
Ridge Rd
Goslin Way
Quaker Rd
Berry Rd
Ten Rod Rd
Nipmuck Trl
Middleton
Milton
Farmington
0
1
2
4 Miles
N

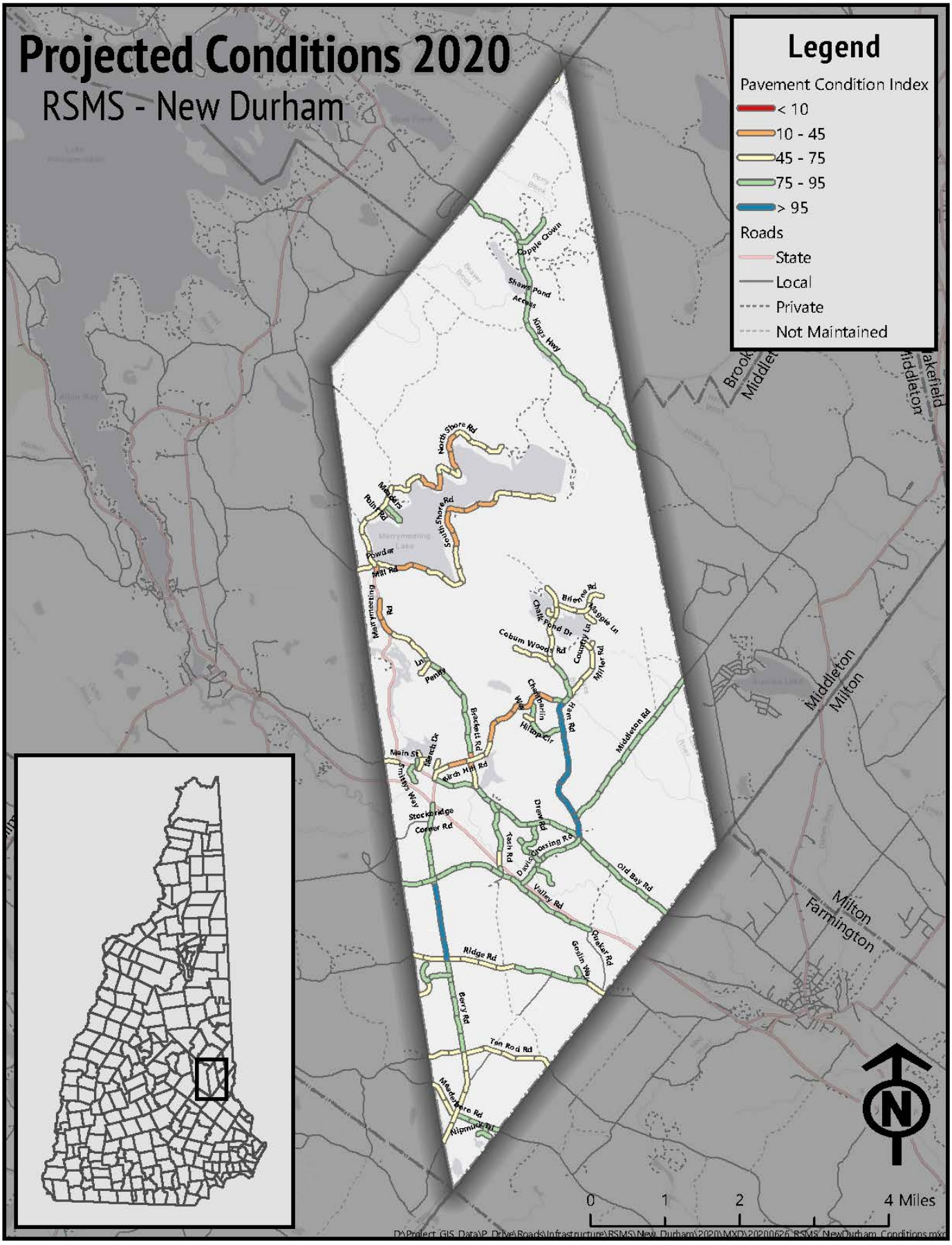
Final Maintenance Schedule and Budgeting Information

The table below details the final budget and maintenance schedule for the Town of New Durham. For more information on budgeting and road specific treatments, please see Appendix A.

Next Steps

New Durham has requested a second round of assessments and forecasting to take place during the 2020 data collection season. Phase One will include windshield surveys to verify or update road conditions and deterioration. Phase Two will update the forecasting to account for past maintenance as well as schedule future maintenance. SADES RSMS plan updates and assessments are recommended to take place every five years. SRPC staff encourage municipal staff to keep detailed digital records of past road maintenance as well as future needs to be incorporated into and documented in report updates. Below is a map of predicted road condition for the year 2020 according to the standard PCI degradation rate.

Annual Cost by Repair						
Repair	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Asphalt Rubber SAM	$0	$0	$149,893	$71,156	$158,243	$90,555
Chip Seal	$38,565	$50,863	$0	$0	$0	$0
Crack Seal (Major)	$20,547	$19,947	$26,300	$0	$18,717	$16,951
FDR & Cold Mix (4")	$0	$0	$0	$419,078	$0	$0
FDR w/ Asphalt Stabilization and HMA (3")	$0	$0	$0	$0	$197,402	$0
HMA Overlay (1")	$223,102	$0	$159,275	$0	$0	$0
HMA Overlay (1.25")	$46,423	$0	$0	$0	$0	$0
HMA Shim (3/4" avg)	$167,327	$0	$119,456	$0	$0	$0
Milling / HMA (1.5")	$0	$0	$0	$0	$133,914	$373,648
Total	$495,963	$70,811	$454,923	$490,233	$508,276	$481,154


Projected Conditions 2020
RSMS - New Durham
Legend
Pavement Condition Index
< 10
10 - 45
45 - 75
75 - 95
> 95
Roads
State
Local
Private
Not Maintained
Middleton
Milton
Milton
Farmington
Kings Hwy
North Shore Rd
South Shore Rd
Powder Mill Rd
Merrymeeting Rd
Coburn Woods Rd
Middleton Rd
Main St
Birch Hill Rd
Stockbridge Corner Rd
Drew Rd
Old Bay Rd
Valley Rd
Ridge Rd
Quaker Rd
Ten Rod Rd
0
1
2
4 Miles
N

Appendices

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Appendix A - Analysis Detail Report - Repair Detail by Year (Alphabetized)

Repair Detail by Year					
Year	Street	Order ID	Repair	Miles Treated	Cost
2017	Berry Rd	6	Crack Seal (Major)	0.25	$1,746
2017	Berry Rd	6	Chip Seal	0.25	$7,458
2017	Berry Rd	7	Crack Seal (Major)	0.25	$1,748
2017	Berry Rd	7	Chip Seal	0.25	$7,470
2017	Berry Rd	8	Crack Seal (Major)	0.25	$1,748
2017	Berry Rd	8	Chip Seal	0.25	$7,470
2017	Berry Rd	9	Crack Seal (Major)	0.25	$1,748
2017	Berry Rd	9	Chip Seal	0.25	$7,470
2017	Berry Rd	10	Crack Seal (Major)	0.29	$2,036
2017	Berry Rd	10	Chip Seal	0.29	$8,698
2017	Birch Hill Rd	10	HMA Overlay (1.25")	0.13	$8,406
2017	Birch Hill Rd	11	HMA Overlay (1.25")	0.12	$7,681
2017	Birch Hill Rd	12	HMA Overlay (1.25")	0.25	$15,469
2017	Birch Hill Rd	13	HMA Overlay (1.25")	0.24	$14,867
2017	Brackett Rd	1	Crack Seal (Major)	0.25	$1,747
2017	Chamberlin Way	1	Crack Seal (Major)	0.25	$1,748
2017	Chamberlin Way	2	Crack Seal (Major)	0.25	$1,748
2017	Chamberlin Way	3	Crack Seal (Major)	0.30	$2,077
2017	Ela Mill Rd	1	Crack Seal (Major)	0.34	$2,259
2017	Kings Hwy	1	HMA Overlay (1")	0.25	$12,460
2017	Kings Hwy	1	HMA Shim (3/4" avg)	0.25	$9,345
2017	Kings Hwy	2	HMA Overlay (1")	0.25	$12,460
2017	Kings Hwy	2	HMA Shim (3/4" avg)	0.25	$9,345
2017	Kings Hwy	3	HMA Overlay (1")	0.25	$13,043
2017	Kings Hwy	3	HMA Shim (3/4" avg)	0.25	$9,783
2017	Kings Hwy	4	HMA Overlay (1")	0.25	$13,053
2017	Kings Hwy	4	HMA Shim (3/4" avg)	0.25	$9,790
2017	Kings Hwy	5	HMA Overlay (1")	0.25	$13,063
2017	Kings Hwy	5	HMA Shim (3/4" avg)	0.25	$9,797
2017	Kings Hwy	6	HMA Overlay (1")	0.25	$13,063
2017	Kings Hwy	6	HMA Shim (3/4" avg)	0.25	$9,797
2017	Kings Hwy	7	HMA Overlay (1")	0.25	$13,043
2017	Kings Hwy	7	HMA Shim (3/4" avg)	0.25	$9,783
2017	Kings Hwy	8	HMA Overlay (1")	0.25	$13,043
2017	Kings Hwy	8	HMA Shim (3/4" avg)	0.25	$9,783
2017	Kings Hwy	9	HMA Overlay (1")	0.25	$13,043
2017	Kings Hwy	9	HMA Shim (3/4" avg)	0.25	$9,783

Repair Detail by Year					
Year	Street	Order ID	Repair	Miles Treated	Cost
2017	Kings Hwy	10	HMA Overlay (1")	0.25	$13,043
2017	Kings Hwy	10	HMA Shim (3/4" avg)	0.25	$9,783
2017	Kings Hwy	11	HMA Overlay (1")	0.25	$13,043
2017	Kings Hwy	11	HMA Shim (3/4" avg)	0.25	$9,783
2017	Kings Hwy	12	HMA Overlay (1")	0.25	$13,063
2017	Kings Hwy	12	HMA Shim (3/4" avg)	0.25	$9,797
2017	Kings Hwy	13	HMA Overlay (1")	0.25	$13,063
2017	Kings Hwy	13	HMA Shim (3/4" avg)	0.25	$9,797
2017	Kings Hwy	14	HMA Overlay (1")	0.25	$13,043
2017	Kings Hwy	14	HMA Shim (3/4" avg)	0.25	$9,783
2017	Kings Hwy	15	HMA Overlay (1")	0.25	$13,063
2017	Kings Hwy	15	HMA Shim (3/4" avg)	0.25	$9,797
2017	Kings Hwy	16	HMA Overlay (1")	0.25	$13,053
2017	Kings Hwy	16	HMA Shim (3/4" avg)	0.25	$9,790
2017	Kings Hwy	17	HMA Overlay (1")	0.30	$15,456
2017	Kings Hwy	17	HMA Shim (3/4" avg)	0.30	$11,592
2017	Nipmuck Trl	1	Crack Seal (Major)	0.19	$1,251
2017	Squam Rd	1	Crack Seal (Major)	0.10	$691
Total for Year 2017				**13.59**	**$495,963**
2018	Davis Crossing Rd	1	Crack Seal (Major)	0.25	$1,718
2018	Davis Crossing Rd	1	Chip Seal	0.25	$7,342
2018	Davis Crossing Rd	2	Crack Seal (Major)	0.25	$1,722
2018	Davis Crossing Rd	2	Chip Seal	0.25	$7,358
2018	Davis Crossing Rd	3	Crack Seal (Major)	0.25	$1,720
2018	Davis Crossing Rd	3	Chip Seal	0.25	$7,347
2018	Davis Crossing Rd	4	Crack Seal (Major)	0.25	$1,717
2018	Davis Crossing Rd	4	Chip Seal	0.25	$7,336
2018	Tash Rd	8	Crack Seal (Major)	0.25	$1,890
2018	Tash Rd	8	Chip Seal	0.25	$8,076
2018	Tash Rd	9	Crack Seal (Major)	0.25	$1,890
2018	Tash Rd	9	Chip Seal	0.25	$8,076
2018	Tash Rd	10	Crack Seal (Major)	0.16	$1,247
2018	Tash Rd	10	Chip Seal	0.16	$5,329
2018	Valley Rd	1	Crack Seal (Major)	0.25	$1,806
2018	Valley Rd	2	Crack Seal (Major)	0.25	$1,891
2018	Wentworth Rd	1	Crack Seal (Major)	0.25	$1,803
2018	Wentworth Rd	2	Crack Seal (Major)	0.35	$2,544
Total for Year 2018				**4.43**	**$70,811**

Repair Detail by Year					
Year	Street	Order ID	Repair	Miles Treated	Cost
2019	Berry Rd	11	Crack Seal (Major)	0.25	$2,039
2019	Berry Rd	12	Crack Seal (Major)	0.25	$2,038
2019	Berry Rd	13	Crack Seal (Major)	0.25	$2,039
2019	Berry Rd	14	Crack Seal (Major)	0.25	$2,039
2019	Goslin Way	1	Crack Seal (Major)	0.20	$1,566
2019	Old Bay Rd	1	Asphalt Rubber SAM	0.25	$17,990
2019	Old Bay Rd	2	Asphalt Rubber SAM	0.25	$17,241
2019	Old Bay Rd	3	Asphalt Rubber SAM	0.25	$16,478
2019	Old Bay Rd	4	HMA Overlay (1")	0.25	$13,260
2019	Old Bay Rd	4	HMA Shim (3/4" avg)	0.25	$9,945
2019	Old Bay Rd	5	HMA Overlay (1")	0.25	$13,270
2019	Old Bay Rd	5	HMA Shim (3/4" avg)	0.25	$9,953
2019	Old Bay Rd	6	HMA Overlay (1")	0.25	$13,270
2019	Old Bay Rd	6	HMA Shim (3/4" avg)	0.25	$9,953
2019	Old Bay Rd	7	HMA Overlay (1")	0.25	$13,270
2019	Old Bay Rd	7	HMA Shim (3/4" avg)	0.25	$9,953
2019	Old Bay Rd	8	HMA Overlay (1")	0.25	$12,638
2019	Old Bay Rd	8	HMA Shim (3/4" avg)	0.25	$9,479
2019	Old Bay Rd	9	HMA Overlay (1")	0.25	$12,638
2019	Old Bay Rd	9	HMA Shim (3/4" avg)	0.25	$9,479
2019	Old Bay Rd	10	HMA Overlay (1")	0.25	$13,260
2019	Old Bay Rd	10	HMA Shim (3/4" avg)	0.25	$9,945
2019	Old Bay Rd	11	HMA Overlay (1")	0.25	$13,260
2019	Old Bay Rd	11	HMA Shim (3/4" avg)	0.25	$9,945
2019	Old Bay Rd	12	HMA Overlay (1")	0.25	$13,270
2019	Old Bay Rd	12	HMA Shim (3/4" avg)	0.25	$9,953
2019	Old Bay Rd	13	HMA Overlay (1")	0.25	$13,270
2019	Old Bay Rd	13	HMA Shim (3/4" avg)	0.25	$9,953
2019	Old Bay Rd	14	HMA Overlay (1")	0.25	$13,270
2019	Old Bay Rd	14	HMA Shim (3/4" avg)	0.25	$9,953
2019	Old Bay Rd	15	HMA Overlay (1")	0.28	$14,597
2019	Old Bay Rd	15	HMA Shim (3/4" avg)	0.28	$10,948

Repair Detail by Year					
Year	Street	Order ID	Repair	Miles Treated	Cost
2019	Ridge Rd	1	Crack Seal (Major)	0.25	$1,862
2019	Ridge Rd	2	Crack Seal (Major)	0.25	$1,862
2019	Ridge Rd	3	Crack Seal (Major)	0.25	$1,949
2019	Ridge Rd	4	Crack Seal (Major)	0.25	$1,863
2019	Ridge Rd	5	Crack Seal (Major)	0.25	$1,863
2019	Valley Rd	3	Crack Seal (Major)	0.25	$1,949
2019	Valley Rd	4	Crack Seal (Major)	0.25	$1,949
2019	Valley Rd	5	Crack Seal (Major)	0.25	$1,952
2019	Valley Rd	6	Crack Seal (Major)	0.17	$1,328
2019	Valley Rd	7	Asphalt Rubber SAM	0.25	$16,478
2019	Valley Rd	8	Asphalt Rubber SAM	0.25	$15,741
2019	Valley Rd	9	Asphalt Rubber SAM	0.25	$16,491
2019	Valley Rd	10	Asphalt Rubber SAM	0.25	$16,491
2019	Valley Rd	11	Asphalt Rubber SAM	0.25	$16,491
2019	Valley Rd	12	Asphalt Rubber SAM	0.25	$16,491
Total for Year 2019				**11.67**	**$454,923**
2020	Berry Rd	11	Asphalt Rubber SAM	0.25	$17,792
2020	Berry Rd	12	Asphalt Rubber SAM	0.25	$17,779
2020	Berry Rd	13	Asphalt Rubber SAM	0.25	$17,792
2020	Berry Rd	14	Asphalt Rubber SAM	0.25	$17,792
2020	Ham Rd	1	FDR & Cold Mix (4")	0.25	$52,473
2020	Ham Rd	2	FDR & Cold Mix (4")	0.10	$22,447
2020	Ham Rd	3	FDR & Cold Mix (4")	0.26	$56,513
2020	Ham Rd	4	FDR & Cold Mix (4")	0.21	$45,768
2020	Ham Rd	5	FDR & Cold Mix (4")	0.23	$50,100
2020	Ham Rd	6	FDR & Cold Mix (4")	0.22	$48,309
2020	Ham Rd	7	FDR & Cold Mix (4")	0.22	$46,352
2020	Ham Rd	8	FDR & Cold Mix (4")	0.25	$51,877
2020	Ham Rd	9	FDR & Cold Mix (4")	0.22	$45,238
Total for Year 2020				**2.95**	**$490,233**
2021	Birch Hill Rd	1	FDR w/ Asphalt Stabilization and HMA (3")	0.25	$65,734
2021	Birch Hill Rd	2	FDR w/ Asphalt Stabilization and HMA (3")	0.25	$65,834

Repair Detail by Year					
Year	Street	Order ID	Repair	Miles Treated	Cost
2021	Birch Hill Rd	3	FDR w/ Asphalt Stabilization and HMA (3")	0.25	$65,834
2021	Brackett Rd	8	Crack Seal (Major)	0.25	$2,077
2021	Brackett Rd	8	Asphalt Rubber SAM	0.25	$17,563
2021	Brackett Rd	9	Crack Seal (Major)	0.25	$2,076
2021	Brackett Rd	9	Asphalt Rubber SAM	0.25	$17,550
2021	Brackett Rd	10	Crack Seal (Major)	0.34	$2,790
2021	Brackett Rd	10	Asphalt Rubber SAM	0.34	$23,591
2021	Brienne Rd	1	Crack Seal (Major)	0.25	$1,890
2021	Brienne Rd	1	Asphalt Rubber SAM	0.25	$15,979
2021	Brienne Rd	2	Crack Seal (Major)	0.25	$1,983
2021	Brienne Rd	2	Asphalt Rubber SAM	0.25	$16,765
2021	Brienne Rd	3	Crack Seal (Major)	0.27	$2,117
2021	Brienne Rd	3	Asphalt Rubber SAM	0.27	$17,895
2021	Coburn Woods Rd	1	Crack Seal (Major)	0.25	$1,889
2021	Coburn Woods Rd	1	Asphalt Rubber SAM	0.25	$15,967
2021	Coburn Woods Rd	2	Crack Seal (Major)	0.30	$2,282
2021	Coburn Woods Rd	2	Asphalt Rubber SAM	0.30	$19,293
2021	Maggie Ln	1	Crack Seal (Major)	0.20	$1,613
2021	Maggie Ln	1	Asphalt Rubber SAM	0.20	$13,641
2021	South Shore Rd	1	Milling / HMA (1.5")	0.25	$26,783
2021	South Shore Rd	2	Milling / HMA (1.5")	0.25	$26,783
2021	South Shore Rd	3	Milling / HMA (1.5")	0.25	$26,783
2021	South Shore Rd	4	Milling / HMA (1.5")	0.25	$26,783
2021	South Shore Rd	5	Milling / HMA (1.5")	0.25	$26,783
Total for Year 2021				**6.72**	$508,276
2022	Berry Rd	6	Crack Seal (Major)	0.25	$2,043
2022	Berry Rd	6	Asphalt Rubber SAM	0.25	$17,275
2022	Chamberlin Way	1	Asphalt Rubber SAM	0.25	$17,301
2022	Chamberlin Way	2	Asphalt Rubber SAM	0.25	$17,301
2022	Chamberlin Way	3	Asphalt Rubber SAM	0.30	$20,552
2022	Merrymeeting Rd	6	Milling / HMA (1.5")	0.23	$28,170
2022	Merrymeeting Rd	7	Milling / HMA (1.5")	0.24	$29,528

Repair Detail by Year					
Year	Street	Order ID	Repair	Miles Treated	Cost
2022	Merrymeeting Rd	8	Milling / HMA (1.5")	0.22	$26,695
2022	South Shore Rd	6	Milling / HMA (1.5")	0.25	$29,022
2022	South Shore Rd	7	Milling / HMA (1.5")	0.25	$29,022
2022	South Shore Rd	8	Milling / HMA (1.5")	0.25	$27,640
2022	South Shore Rd	9	Milling / HMA (1.5")	0.25	$27,640
2022	South Shore Rd	10	Milling / HMA (1.5")	0.25	$27,682
2022	South Shore Rd	11	Milling / HMA (1.5")	0.25	$27,640
2022	South Shore Rd	12	Milling / HMA (1.5")	0.25	$27,640
2022	South Shore Rd	13	Milling / HMA (1.5")	0.25	$27,640
2022	South Shore Rd	14	Milling / HMA (1.5")	0.25	$27,640
2022	South Shore Rd	15	Milling / HMA (1.5")	0.34	$37,691
2022	Tash Rd	7	Crack Seal (Major)	0.25	$2,144
2022	Tash Rd	7	Asphalt Rubber SAM	0.25	$18,125
2022	Valley Rd	7	Crack Seal (Major)	0.25	$2,142
2022	Valley Rd	8	Crack Seal (Major)	0.25	$2,046
2022	Valley Rd	9	Crack Seal (Major)	0.25	$2,144
2022	Valley Rd	10	Crack Seal (Major)	0.25	$2,144
2022	Valley Rd	11	Crack Seal (Major)	0.25	$2,144
2022	Valley Rd	12	Crack Seal (Major)	0.25	$2,144
Total for Year 2022				**6.58**	**$481,154**
Total for Years 2017-2022				**45.94**	**$2,501,360**

Appendix B - Analysis Detail Report - Repair Detail by Priority (Alphabetized)

Repair Detail by Priority										
Priority	PCI	Street	Order	Length (ft)	Width (ft)	Lanes	Surface Type	Year	Repair	Cost
90.5	38	Ham Rd	2	539	22	2	Paved	2020	FDR & Cold Mix (4")	$22,447
90.5	38	Ham Rd	3	1357	22	2	Paved	2020	FDR & Cold Mix (4")	$56,513
88.5	46	Ham Rd	5	1203	22	2	Paved	2020	FDR & Cold Mix (4")	$50,100
88.25	47	Ham Rd	6	1160	22	2	Paved	2020	FDR & Cold Mix (4")	$48,309
88.25	47	Ham Rd	8	1305	21	2	Paved	2020	FDR & Cold Mix (4")	$51,877
87.75	49	Ham Rd	4	1099	22	2	Paved	2020	FDR & Cold Mix (4")	$45,768
87.25	51	Ham Rd	7	1166	21	2	Paved	2020	FDR & Cold Mix (4")	$46,352
86.25	55	Ham Rd	1	1320	21	2	Paved	2020	FDR & Cold Mix (4")	$52,473
86	56	Ham Rd	9	1138	21	2	Paved	2020	FDR & Cold Mix (4")	$45,238
83.5	38	Old Bay Rd	14	1320	21	2	Paved	2019	HMA Overlay (1")	$13,270
83.5	38	Old Bay Rd	14	1320	21	2	Paved	2019	HMA Shim (3/4" avg)	$9,953
83	40	Old Bay Rd	13	1320	21	2	Paved	2019	HMA Overlay (1")	$13,270
83	40	Old Bay Rd	13	1320	21	2	Paved	2019	HMA Shim (3/4" avg)	$9,953
80.5	78	Maggie Ln	1	1074	21	2	Paved	2021	Crack Seal (Major)	$1,613
80.5	78	Maggie Ln	1	1074	21	2	Paved	2021	Asphalt Rubber SAM	$13,641
79.75	53	Old Bay Rd	11	1319	21	2	Paved	2019	HMA Overlay (1")	$13,260
79.75	53	Old Bay Rd	11	1319	21	2	Paved	2019	HMA Shim (3/4" avg)	$9,945
79.25	83	Davis Crossing Rd	3	1321	20	2	Paved	2018	Crack Seal (Major)	$1,720
79.25	83	Davis Crossing Rd	3	1321	20	2	Paved	2018	Chip Seal	$7,347
79.25	55	Old Bay Rd	15	1452	21	2	Paved	2019	HMA Overlay (1")	$14,597
79.25	55	Old Bay Rd	15	1452	21	2	Paved	2019	HMA Shim (3/4" avg)	$10,948
79	84	Davis Crossing Rd	1	1320	20	2	Paved	2018	Crack Seal (Major)	$1,718
79	84	Davis Crossing Rd	1	1320	20	2	Paved	2018	Chip Seal	$7,342
79	56	Old Bay Rd	12	1320	21	2	Paved	2019	HMA Overlay (1")	$13,270
79	56	Old Bay Rd	12	1320	21	2	Paved	2019	HMA Shim (3/4" avg)	$9,953
78.75	57	Old Bay Rd	10	1319	21	2	Paved	2019	HMA Overlay (1")	$13,260
78.75	57	Old Bay Rd	10	1319	21	2	Paved	2019	HMA Shim (3/4" avg)	$9,945
78	88	Davis Crossing Rd	4	1319	20	2	Paved	2018	Crack Seal (Major)	$1,717
78	88	Davis Crossing Rd	4	1319	20	2	Paved	2018	Chip Seal	$7,336
77.25	91	Davis Crossing Rd	2	1323	20	2	Paved	2018	Crack Seal (Major)	$1,722
77.25	91	Davis Crossing Rd	2	1323	20	2	Paved	2018	Chip Seal	$7,358

Repair Detail by Priority										
Priority	PCI	Street	Order	Length (ft)	Width (ft)	Lanes	Surface Type	Year	Repair	Cost
76	96	Kings Hwy	1	1320	21	2	Paved	2017	HMA Overlay (1")	$12,460
76	96	Kings Hwy	1	1320	21	2	Paved	2017	HMA Shim (3/4" avg)	$9,345
76	96	Kings Hwy	2	1320	21	2	Paved	2017	HMA Overlay (1")	$12,460
76	96	Kings Hwy	2	1320	21	2	Paved	2017	HMA Shim (3/4" avg)	$9,345
76	96	Kings Hwy	3	1319	22	2	Paved	2017	HMA Overlay (1")	$13,043
76	96	Kings Hwy	3	1319	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,783
76	96	Kings Hwy	4	1320	22	2	Paved	2017	HMA Overlay (1")	$13,053
76	96	Kings Hwy	4	1320	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,790
76	96	Kings Hwy	5	1321	22	2	Paved	2017	HMA Overlay (1")	$13,063
76	96	Kings Hwy	5	1321	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,797
76	96	Kings Hwy	6	1321	22	2	Paved	2017	HMA Overlay (1")	$13,063
76	96	Kings Hwy	6	1321	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,797
76	96	Kings Hwy	7	1319	22	2	Paved	2017	HMA Overlay (1")	$13,043
76	96	Kings Hwy	7	1319	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,783
76	96	Kings Hwy	8	1319	22	2	Paved	2017	HMA Overlay (1")	$13,043
76	96	Kings Hwy	8	1319	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,783
76	96	Kings Hwy	9	1319	22	2	Paved	2017	HMA Overlay (1")	$13,043
76	96	Kings Hwy	9	1319	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,783
76	96	Kings Hwy	10	1319	22	2	Paved	2017	HMA Overlay (1")	$13,043
76	96	Kings Hwy	10	1319	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,783
76	96	Kings Hwy	11	1319	22	2	Paved	2017	HMA Overlay (1")	$13,043
76	96	Kings Hwy	11	1319	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,783
76	96	Kings Hwy	12	1321	22	2	Paved	2017	HMA Overlay (1")	$13,063
76	96	Kings Hwy	12	1321	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,797
76	96	Kings Hwy	13	1321	22	2	Paved	2017	HMA Overlay (1")	$13,063
76	96	Kings Hwy	13	1321	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,797
76	96	Kings Hwy	14	1319	22	2	Paved	2017	HMA Overlay (1")	$13,043
76	96	Kings Hwy	14	1319	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,783
76	96	Kings Hwy	15	1321	22	2	Paved	2017	HMA Overlay (1")	$13,063
76	96	Kings Hwy	15	1321	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,797
76	96	Kings Hwy	16	1320	22	2	Paved	2017	HMA Overlay (1")	$13,053
76	96	Kings Hwy	16	1320	22	2	Paved	2017	HMA Shim (3/4" avg)	$9,790

Repair Detail by Priority										
Priority	PCI	Street	Order	Length (ft)	Width (ft)	Lanes	Surface Type	Year	Repair	Cost
76	96	Kings Hwy	17	1563	22	2	Paved	2017	HMA Overlay (1")	$15,456
76	96	Kings Hwy	17	1563	22	2	Paved	2017	HMA Shim (3/4" avg)	$11,592
75	72	Old Bay Rd	6	1320	21	2	Paved	2019	HMA Overlay (1")	$13,270
75	72	Old Bay Rd	6	1320	21	2	Paved	2019	HMA Shim (3/4" avg)	$9,953
74.5	74	Old Bay Rd	5	1320	21	2	Paved	2019	HMA Overlay (1")	$13,270
74.5	74	Old Bay Rd	5	1320	21	2	Paved	2019	HMA Shim (3/4" avg)	$9,953
74	76	Old Bay Rd	9	1320	20	2	Paved	2019	HMA Overlay (1")	$12,638
74	76	Old Bay Rd	9	1320	20	2	Paved	2019	HMA Shim (3/4" avg)	$9,479
73.75	77	Old Bay Rd	1	1320	24	2	Paved	2019	Asphalt Rubber SAM	$17,990
73.5	78	Old Bay Rd	7	1320	21	2	Paved	2019	HMA Overlay (1")	$13,270
73.5	78	Old Bay Rd	7	1320	21	2	Paved	2019	HMA Shim (3/4" avg)	$9,953
73	48	Ridge Rd	1	1320	21	2	Paved	2019	Crack Seal (Major)	$1,862
71.5	86	Old Bay Rd	2	1320	23	2	Paved	2019	Asphalt Rubber SAM	$17,241
71	88	Old Bay Rd	4	1319	21	2	Paved	2019	HMA Overlay (1")	$13,260
71	88	Old Bay Rd	4	1319	21	2	Paved	2019	HMA Shim (3/4" avg)	$9,945
71	88	Old Bay Rd	8	1320	20	2	Paved	2019	HMA Overlay (1")	$12,638
71	88	Old Bay Rd	8	1320	20	2	Paved	2019	HMA Shim (3/4" avg)	$9,479
70.5	58	Brackett Rd	1	1319	21	2	Paved	2017	Crack Seal (Major)	$1,747
70.25	91	Old Bay Rd	3	1319	22	2	Paved	2019	Asphalt Rubber SAM	$16,478
69.25	63	Ridge Rd	3	1319	22	2	Paved	2019	Crack Seal (Major)	$1,949
69.25	63	Valley Rd	8	1320	21	2	Paved	2019	Asphalt Rubber SAM	$15,741
69.25	63	Valley Rd	8	1320	21	2	Paved	2022	Crack Seal (Major)	$2,046
69	36	South Shore Rd	11	1320	20	2	Paved	2022	Milling / HMA (1.5")	$27,640
69	64	Valley Rd	1	1321	21	2	Paved	2018	Crack Seal (Major)	$1,806
68.75	65	Berry Rd	14	1320	23	2	Paved	2019	Crack Seal (Major)	$2,039
68.75	65	Berry Rd	14	1320	23	2	Paved	2020	Asphalt Rubber SAM	$17,792
68.75	37	South Shore Rd	12	1320	20	2	Paved	2022	Milling / HMA (1.5")	$27,640
68	68	Berry Rd	12	1319	23	2	Paved	2019	Crack Seal (Major)	$2,038
68	68	Berry Rd	12	1319	23	2	Paved	2020	Asphalt Rubber SAM	$17,779
68	68	Ridge Rd	2	1320	21	2	Paved	2019	Crack Seal (Major)	$1,862
67.75	69	Berry Rd	13	1320	23	2	Paved	2019	Crack Seal (Major)	$2,039
67.75	69	Berry Rd	13	1320	23	2	Paved	2020	Asphalt Rubber SAM	$17,792

Repair Detail by Priority										
Priority	PCI	Street	Order	Length (ft)	Width (ft)	Lanes	Surface Type	Year	Repair	Cost
67.75	69	Valley Rd	6	899	22	2	Paved	2019	Crack Seal (Major)	$1,328
67.25	71	Berry Rd	11	1320	23	2	Paved	2019	Crack Seal (Major)	$2,039
67.25	71	Berry Rd	11	1320	23	2	Paved	2020	Asphalt Rubber SAM	$17,792
67	44	South Shore Rd	3	1320	20	2	Paved	2021	Milling / HMA (1.5")	$26,783
66.75	73	Ridge Rd	4	1321	21	2	Paved	2019	Crack Seal (Major)	$1,863
66.75	73	Ridge Rd	5	1321	21	2	Paved	2019	Crack Seal (Major)	$1,863
66.5	46	South Shore Rd	9	1320	20	2	Paved	2022	Milling / HMA (1.5")	$27,640
65.75	49	South Shore Rd	2	1320	20	2	Paved	2021	Milling / HMA (1.5")	$26,783
65.5	78	Berry Rd	9	1320	21	2	Paved	2017	Crack Seal (Major)	$1,748
65.5	78	Berry Rd	9	1320	21	2	Paved	2017	Chip Seal	$7,470
65.5	78	Valley Rd	7	1319	22	2	Paved	2019	Asphalt Rubber SAM	$16,478
65.5	78	Valley Rd	7	1319	22	2	Paved	2022	Crack Seal (Major)	$2,142
65.25	79	Berry Rd	10	1537	21	2	Paved	2017	Crack Seal (Major)	$2,036
65.25	79	Berry Rd	10	1537	21	2	Paved	2017	Chip Seal	$8,698
65.25	79	Tash Rd	7	1320	22	2	Paved	2022	Crack Seal (Major)	$2,144
65.25	79	Tash Rd	7	1320	22	2	Paved	2022	Asphalt Rubber SAM	$18,125
65	52	South Shore Rd	8	1320	20	2	Paved	2022	Milling / HMA (1.5")	$27,640
64.75	81	Tash Rd	8	1320	22	2	Paved	2018	Crack Seal (Major)	$1,890
64.75	81	Tash Rd	8	1320	22	2	Paved	2018	Chip Seal	$8,076
64.75	81	Tash Rd	9	1320	22	2	Paved	2018	Crack Seal (Major)	$1,890
64.75	81	Tash Rd	9	1320	22	2	Paved	2018	Chip Seal	$8,076
64.75	81	Tash Rd	10	871	22	2	Paved	2018	Crack Seal (Major)	$1,247
64.75	81	Tash Rd	10	871	22	2	Paved	2018	Chip Seal	$5,329
64.75	81	Valley Rd	12	1320	22	2	Paved	2019	Asphalt Rubber SAM	$16,491
64.75	81	Valley Rd	12	1320	22	2	Paved	2022	Crack Seal (Major)	$2,144
64.5	82	Berry Rd	6	1318	21	2	Paved	2017	Crack Seal (Major)	$1,746
64.5	82	Berry Rd	6	1318	21	2	Paved	2017	Chip Seal	$7,458
64.5	82	Berry Rd	6	1318	21	2	Paved	2022	Crack Seal (Major)	$2,043
64.5	82	Berry Rd	6	1318	21	2	Paved	2022	Asphalt Rubber SAM	$17,275
64.5	82	Berry Rd	7	1320	21	2	Paved	2017	Crack Seal (Major)	$1,748
64.5	82	Berry Rd	7	1320	21	2	Paved	2017	Chip Seal	$7,470
64.5	82	Berry Rd	8	1320	21	2	Paved	2017	Crack Seal (Major)	$1,748

Repair Detail by Priority										
Priority	PCI	Street	Order	Length (ft)	Width (ft)	Lanes	Surface Type	Year	Repair	Cost
64.5	82	Berry Rd	8	1320	21	2	Paved	2017	Chip Seal	$7,470
64.5	54	South Shore Rd	10	1322	20	2	Paved	2022	Milling / HMA (1.5")	$27,682
63.25	87	Brackett Rd	9	1319	22	2	Paved	2021	Crack Seal (Major)	$2,076
63.25	87	Brackett Rd	9	1319	22	2	Paved	2021	Asphalt Rubber SAM	$17,550
63.25	87	Brackett Rd	10	1773	22	2	Paved	2021	Crack Seal (Major)	$2,790
63.25	87	Brackett Rd	10	1773	22	2	Paved	2021	Asphalt Rubber SAM	$23,591
63.25	59	South Shore Rd	1	1320	20	2	Paved	2021	Milling / HMA (1.5")	$26,783
62.75	89	Valley Rd	10	1320	22	2	Paved	2019	Asphalt Rubber SAM	$16,491
62.75	89	Valley Rd	10	1320	22	2	Paved	2022	Crack Seal (Major)	$2,144
62.75	89	Valley Rd	11	1320	22	2	Paved	2019	Asphalt Rubber SAM	$16,491
62.75	89	Valley Rd	11	1320	22	2	Paved	2022	Crack Seal (Major)	$2,144
62.25	91	Valley Rd	3	1319	22	2	Paved	2019	Crack Seal (Major)	$1,949
62.25	91	Valley Rd	5	1321	22	2	Paved	2019	Crack Seal (Major)	$1,952
62	92	Brackett Rd	8	1320	22	2	Paved	2021	Crack Seal (Major)	$2,077
62	92	Brackett Rd	8	1320	22	2	Paved	2021	Asphalt Rubber SAM	$17,563
62	64	South Shore Rd	5	1320	20	2	Paved	2021	Milling / HMA (1.5")	$26,783
61	68	South Shore Rd	6	1320	21	2	Paved	2022	Milling / HMA (1.5")	$29,022
61	96	Valley Rd	2	1321	22	2	Paved	2018	Crack Seal (Major)	$1,891
61	96	Valley Rd	4	1319	22	2	Paved	2019	Crack Seal (Major)	$1,949
61	96	Valley Rd	9	1320	22	2	Paved	2019	Asphalt Rubber SAM	$16,491
61	96	Valley Rd	9	1320	22	2	Paved	2022	Crack Seal (Major)	$2,144
60.75	69	South Shore Rd	7	1320	21	2	Paved	2022	Milling / HMA (1.5")	$29,022
60.25	71	South Shore Rd	14	1320	20	2	Paved	2022	Milling / HMA (1.5")	$27,640
59.75	73	South Shore Rd	13	1320	20	2	Paved	2022	Milling / HMA (1.5")	$27,640
59.5	74	South Shore Rd	15	1800	20	2	Paved	2022	Milling / HMA (1.5")	$37,691
58.25	79	South Shore Rd	4	1320	20	2	Paved	2021	Milling / HMA (1.5")	$26,783
57	52	Birch Hill Rd	2	1320	21	2	Paved	2021	FDR w/ Asphalt Stabilization and HMA (3")	$65,834
51.5	74	Birch Hill Rd	1	1318	21	2	Paved	2021	FDR w/ Asphalt Stabilization and HMA (3")	$65,734
51	76	Birch Hill Rd	10	680	22	2	Paved	2017	HMA Overlay (1.25")	$8,406
50.25	79	Birch Hill Rd	13	1260	21	2	Paved	2017	HMA Overlay (1.25")	$14,867

Repair Detail by Priority										
Priority	PCI	Street	Order	Length (ft)	Width (ft)	Lanes	Surface Type	Year	Repair	Cost
48	88	Birch Hill Rd	3	1320	21	2	Paved	2021	FDR w/ Asphalt Stabilization and HMA (3")	$65,834
46.25	95	Birch Hill Rd	11	651	21	2	Paved	2017	HMA Overlay (1.25")	$7,681
46.25	95	Birch Hill Rd	12	1311	21	2	Paved	2017	HMA Overlay (1.25")	$15,469
36	76	Chamberlin Way	1	1320	21	2	Paved	2017	Crack Seal (Major)	$1,748
36	76	Chamberlin Way	1	1320	21	2	Paved	2022	Asphalt Rubber SAM	$17,301
33.25	83	Squam Rd	1	548	20	2	Paved	2017	Crack Seal (Major)	$691
32.75	89	Chamberlin Way	2	1320	21	2	Paved	2017	Crack Seal (Major)	$1,748
32.75	89	Chamberlin Way	2	1320	21	2	Paved	2022	Asphalt Rubber SAM	$17,301
32.25	91	Chamberlin Way	3	1568	21	2	Paved	2017	Crack Seal (Major)	$2,077
32.25	91	Chamberlin Way	3	1568	21	2	Paved	2022	Asphalt Rubber SAM	$20,552
31	68	Goslin Way	1	1060	22	2	Paved	2019	Crack Seal (Major)	$1,566
30.25	71	Coburn Woods Rd	1	1320	20	2	Paved	2021	Crack Seal (Major)	$1,889
30.25	71	Coburn Woods Rd	1	1320	20	2	Paved	2021	Asphalt Rubber SAM	$15,967
29.75	73	Coburn Woods Rd	2	1595	20	2	Paved	2021	Crack Seal (Major)	$2,282
29.75	73	Coburn Woods Rd	2	1595	20	2	Paved	2021	Asphalt Rubber SAM	$19,293
29	76	Ela Mill Rd	1	1791	20	2	Paved	2017	Crack Seal (Major)	$2,259
28.25	79	Nipmuck Trl	1	992	20	2	Paved	2017	Crack Seal (Major)	$1,251
28	80	Brienne Rd	3	1409	21	2	Paved	2021	Crack Seal (Major)	$2,117
28	80	Brienne Rd	3	1409	21	2	Paved	2021	Asphalt Rubber SAM	$17,895
27.25	83	Brienne Rd	2	1320	21	2	Paved	2021	Crack Seal (Major)	$1,983
27.25	83	Brienne Rd	2	1320	21	2	Paved	2021	Asphalt Rubber SAM	$16,765
25.5	90	Brienne Rd	1	1321	20	2	Paved	2021	Crack Seal (Major)	$1,890
25.5	90	Brienne Rd	1	1321	20	2	Paved	2021	Asphalt Rubber SAM	$15,979
18.5	86	Wentworth Rd	1	1319	21	2	Paved	2018	Crack Seal (Major)	$1,803
16	96	Wentworth Rd	2	1861	21	2	Paved	2018	Crack Seal (Major)	$2,544
8.25	67	Merrymeeting Rd	7	1282	22	2	Paved	2022	Milling / HMA (1.5")	$29,528
8.25	67	Merrymeeting Rd	8	1159	22	2	Paved	2022	Milling / HMA (1.5")	$26,695
5.25	79	Merrymeeting Rd	6	1223	22	2	Paved	2022	Milling / HMA (1.5")	$28,170

Appendix C - RSMS Protocol

Statewide Asset Data Exchange System (SADES)

Working Data Collection Document

Road Surface Management System (RSMS) Assessment Guide

Partnership with

NH Department of Transportation

NH Regional Planning Commissions

UNH Technology Transfer Center

Data Collection Specifications Guide

This document was established to outline an assessment standard for specified inventory and condition collection criteria for municipal road networks in the state of New Hampshire. All specifications were initially developed by the Technology Transfer Center at UNH (T^2). They were then reviewed by the NH Department of Transportation (DOT).

As a part of the SADES project, all collected data will be compiled into a composite statewide map. This data will then be prepared for redistribution for any interested parties. The data will be available through three outlets: a web application, a web mapping service, and a direct download portal. The initial data compilation, QA/QC, and redistribution will be completed by T^2. Data collection efforts are to be organized by each RPC for their respective jurisdictions. T^2 has an equipment loan program for use by any of the aforementioned entities that need access to GPS field data collection equipment. This equipment is available on a first-come-first-served reservation basis. An outline of the loan program and the available equipment will be distributed by T^2 to all stake-holding parties.

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General User Information

Data will be collected using the ESRI Collector App for the iPad.

Additional recommended equipment for conducting the assessment includes:

Tape Measure
Reflective Vest

A file geodatabase was set up with the following parameters:
Coordinate system: NAD 1983 State Plane New Hampshire FIPS 2800 (US Feet)

If you have questions or concerns about this iPad application or the SADES RSMS Assessment program, please contact the UNH Technology Transfer Center.

Contact Information:

Chris Dowd
SADES Manager
chris@nhsades.com
Office: (603) 862-5489
Mobile: (603) 397-7745

General Information

Date:
User Input Date

Record the date when the road assessment is performed.

Observer/Organization:
User Input

Record the observer(s) completing the assessment as well as the organization for which they are collecting for. Initials and abbreviations are accepted.

Road Name:
User Input

Record the full road name. Unless recording a new road, leave name as is.

Road Alias:
User Input

If municipality uses a different road name than that shown on the map, input here.

Town Name:
User Input

Record the full name of the town. Unless recording a new road, leave name as is.

Surface Type:
Paved
Unpaved

Shoulder Type:
Paved
Unpaved
None

Road Surface Width:
User input number

The width of the road surface measured in feet. If paved, width is from edges of pavement on each side.

Number of Lanes:
User input number

The number of lanes making up the pavement width.

Last Year Surveyed
User input number

If known, input year in which the inventory data was last updated.

Longitudinal/Transverse Cracking

Longitudinal cracks are cracks which run parallel to the roadway centerline. Longitudinal cracks are usually found at construction joints and between lanes.

Transverse cracks run perpendicular to the roadway centerline. Transverse cracks are generally spaced at regular intervals and caused by expansion and contraction of the road surface material.

Long./Trnsv. Cracking Severity:
No Defects
Low
Medium
High

No Defects — The road section has no visible signs of longitudinal/transverse cracking

Low — Hairline cracks with little or no spalling (width of pencil tip)

Medium — Crack widths up to 1/4" in width with some spalling evident (width of pencil)

High — Well-defined cracks filled with foreign material (sand, stones, etc.) Extensive spalling and breakage

Long./Trnsv. Cracking Extent:
Low
Medium
High

Low — The overall length of *longitudinal* cracking is less than 10% of the section length and/or *transverse* cracks are 50' apart.

Medium — The overall length of *longitudinal* cracking is between 10% and 30% of the total section length and/or *transverse* cracks are between 25' and 50' apart.

High — The overall length of *longitudinal* cracking is over 30% of the total section length and/or *transverse* cracks are less than 25' apart.

Notes:

1. Spalling refers to the physical relocation and/or displacement of pieces of original pavement
2. Transverse cracks must extend across at least one full lane width to be counted as transverse. Cracks limited to wheel paths, typically alligator cracks, are not included in this category.
3. Multiple cracks within 8" of primary crack are considered as part of the primary crack.

High Severity

Transverse Crack

Longitudinal Crack

Medium Severity

Transverse Crack

Longitudinal Crack

Low Severity

Alligator Cracking

Alligator cracking refers to interconnected crack patterns that resemble alligator skin or chicken wire. Pavement pieces range in size from one to six inches on a side.

Alligator Cracking Severity:
No Defects
Low
Medium
High

No Defects — The road section has no visible signs of alligator cracking.

Low — Crack pattern is just beginning to appear. Cracks have no measureable *width* and no actual pavement separation is found.

Medium — Easily discernible cracking with measureable crack *widths* up to 1/8" and some breakup. Pavement pieces, while loose, are still interconnected.

High — Wide cracking (1/4") has resulted in major pavement breakup with loose pieces actually displaced.

Alligator Cracking Extent:
Low
Medium
High

Low — The *total area* exhibiting alligator cracking encompasses less than 10% of the roadway section

Medium — The *total area* exhibiting alligator cracking encompasses between 10% and 30% of the roadway section

High — The *total area* exhibiting alligator cracking encompasses greater than 30% of the roadway section

Notes:

1. When alligator cracking is the primary distress, it is generally related to traffic loading. As such, alligator cracking will be found primarily in wheel paths.

High Severity

Medium Severity

Low Severity

Edge Cracking

Edge cracking refers to cracks adjacent and/or parallel to the edge of the pavement. While generally confined to the outer one or two feet of pavement, edge cracking can progress into the travel lane.

Edge Cracking Severity:
No Defects
Low
Medium
High

No Defects — The roadway does not exhibit edge cracking.

Low — Cracking evident; however, no breakup. Crack widths <1/8" and confined to 12" from *edge of pavement.*

Medium — Multiple cracking occurring with some breakup. Cracks extend *up to 24" into pavement*.

High — Extensive cracking *beyond 24" into roadway*; breakup. This condition closely resembles alligator cracking

Edge Cracking Extent:
Low
Medium
High

Low — The section length affected by cracking is *less than 10% of the total section length.*

Medium — The section length affected by cracking is *between 10% and 30% of total section length.*

High — The section length affected by cracking is *greater than 30% of the total section length*.

High Severity

Medium Severity

Low Severity

Patching/Potholes

Patching refers to areas where the original pavement has been removed and subsequently replaced but is showing deterioration. Potholes are areas where portions of the road pavement have broken and loss of pavement has resulted in a bowl-shaped depression.

Patching/Potholes Extent:
No Defects
Low
Medium
High

No Defects — No patches showing deterioration or potholes detected in the rated section.

Low — The *total area* of patching showing deterioration is less than 10% of the total section area and/or there are fewer than 5 potholes per 100' section length.

Medium — The *total area* of patching showing deterioration is between 10% and 30% of the total section area and/or there are between 5 and 10 potholes per 100' section length.

High — The *total area* of patching showing deterioration is greater than 30% of the total section area and/or there are more than 10 potholes per 100' section length.

Notes:

1. Edge cracks, spalling of longitudinal/transverse cracks and displacement of alligator cracks are not counted as potholes.

2. Only patches that show deterioration should be evaluated. Good patches should be ignored. Surface area, rather than depth of deterioration, should be used to assess extent.

Patching

Pothole

Drainage

Drainage severities are judged by the ability for run-off to flow from the paved area to a location that does not influence roadway conditions. Visual indicators of drainage problems include accumulation of debris and sand as well as high water marks. Evaluations during or just after a rainfall event can be extremely beneficial.

Drainage Condition:
Good
Fair
Poor

Good — There is no evidence of water accumulation on the pavement surface. Roadway has good crown. Positive drainage can be visually confirmed. Ditches, gutters, and other drainage structures are clear, clean, and functioning.

Fair — There is evidence of occasional water accumulation on the pavement surface. Road crown is minimal. Ditches, gutters, and other drainage structures are functional though probably need maintenance.

Poor — There is evidence of recurring and extensive ponding of water on the pavement surface. Roadway has no crown. Ditches, gutters, and other drainage structures are not functioning or non-existent.

Notes:

Sure signs of poor drainage include:

1. Road shoulders above the edge of pavement;
2. Standing water; and
3. Outwashes or accumulations of sand along the edge of the roadway.

Interview with local knowledge will also help determine areas of poor drainage.

Rutting

Rutting refers to the channel depressions in the wheel paths. Rutting causes water to drain along the road surface rather than drain to the edge of the road.

Rutting Severity:
No Defects
Low
Medium
High

No Defects — No visible rutting in the rated section.

Low — Depth of rut is less than 1".

Medium — Ruts are between 1" and 3" deep.

High — Ruts are greater than 3" deep.

Rutting Extent:
Low
Medium
High

Low — *Less than 10% of the total road surface* is covered by rutting.

Medium — *Between 10% and 30% of the total road surface* is covered by rutting.

High — *More than 30% of the total road surface* is covered by rutting.

Notes:

1. Ruts are caused by a permanent deformation in any of the road layers or subgrade. Ruts result from repeated vehicle passes when the road is soft. Significant rutting can destroy a road.

High Severity

Medium Severity

Low Severity

Roughness

Pavement roughness is defined as irregularities in the roadway surface which adversely affect the comfort of the ride.

Roughness Condition:
Smooth
Noticeably Uneven
Rough
Very Rough

Smooth	Road has *even surface* – ideal for smooth, undisturbed travel. New roads and recent resurfacing generally fall into this category. (There may be minor distortions not noticeable to the typical rider)
Noticeably Uneven	*Noticeable unevenness*, but vehicle may continue safely at the posted speeds. Sags and humps have not yet become hazardous.
Rough	Pavement surface is *very uneven*, causing a safety hazard for vehicles traveling at the posted speed limit.
Very Rough	Surface roughness is *severe*, causing the vehicle to lower speed below posted limit.

Notes:

1. Assessment of roughness should be determined while the survey vehicle is traveling at posted speeds.
2. This category is also a "catch-all" for conditions which are not included in other categories – i.e., corrugations, waves, settlement, etc.

Frost Heave Severity

Pavement roughness is defined as irregularities in the roadway surface which adversely affect the comfort of the ride.

Frost Heave Severity:
None
Low
Medium
Severe

None — Interview with local knowledge does not identify this road segment as being prone to frost heaves.

Low — Interview with local knowledge indicates that this segment is prone to minor frost heave severity, but does not affect vehicle travel.

Medium — Interview with local knowledge indicates that this segment is prone to substantial frost heave severity and is just beginning to affect vehicle travel.

Severe — Interview with local knowledge indicates that this segment is prone to major frost heave severity and clearly affects vehicle travel.

Notes:

This information could come from an interview with local knowledge that is familiar with the areas winter conditions

Frost Heave

Factors

There are two factors that will aid in determining the priority of a road segment during the SADES RSMS Forecasting. Follow the guidelines below to determine these factors.

Traffic Volume:
1
2
3
4
5

This category has been divided into five groups. It's best for the municipality to take the largest volume road and making it a 5 and the lowest volume in town a 1. Input the traffic volume of the particular road segment using the following guidelines:

1 Low
2 *Medium-Low*
3 Medium
4 Medium-High
5 High

Importance:
1
2
3
4
5

Factors that may play a role in determine the importance of a road segment are whether or not there is a school on the road, a hospital on the road, the segment is on an emergency route, or critical service are located on the road. Input the importance of the particular road segment using the following guidelines:

1 Low
2 *Medium-Low*
3 Medium
4 Medium-High
5 High

Notes:

An interview with local knowledge may also help determine both of these factors.

Local Knowledge

It is recommended that the organization responsible for data collection meet with a person with local knowledge (i.e. road agent or DPW director) to discuss areas of concern. Please use the following fields to record information about that meeting.

Interview with Local Knowledge:
Yes
No

Please record whether or not there was a meeting held with a person of local knowledge.

Interview Comments:
User input text (500 ch. max)

Please record any comments or information received from meeting with local knowledge for a particular segment.

Weather Conditions

Weather Condtions:
Sunny/Clear
Overcast/Cloudy
Rain
Snow
Other

If desired, record the weather conditions observed on the day of collection.

General Comments

General Comments:
User input comments (500 ch. max)

Record any comments about the road segment that the collector felt was not covered in the above assessment.