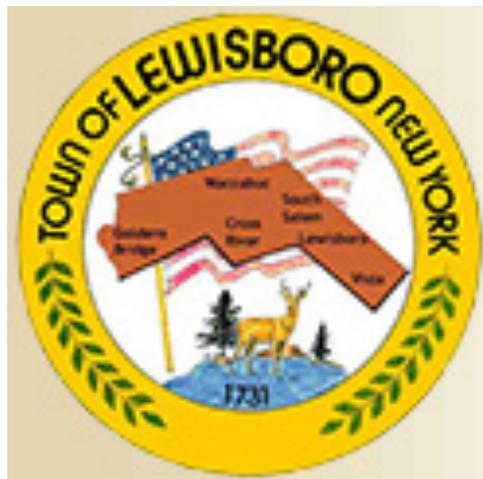


Cornell Local Roads Program

Town of Lewisboro

2013



Meghan Collins
Lewisboro Highway Department
11 Main St
South Salem, NY 10590

Table of Contents

Introduction

Assessing the Roads

Recording Findings and Assigning Repairs

Conclusions and Recommendations

Map of Roadway Sections

Appendix A: Sample Condition Survey Sheet

Appendix B: List of Repair Types and Definitions

Appendix C: Detailed Breakdown of Repair Costs

Appendix D: 5 Year Improvement Plan

Introduction

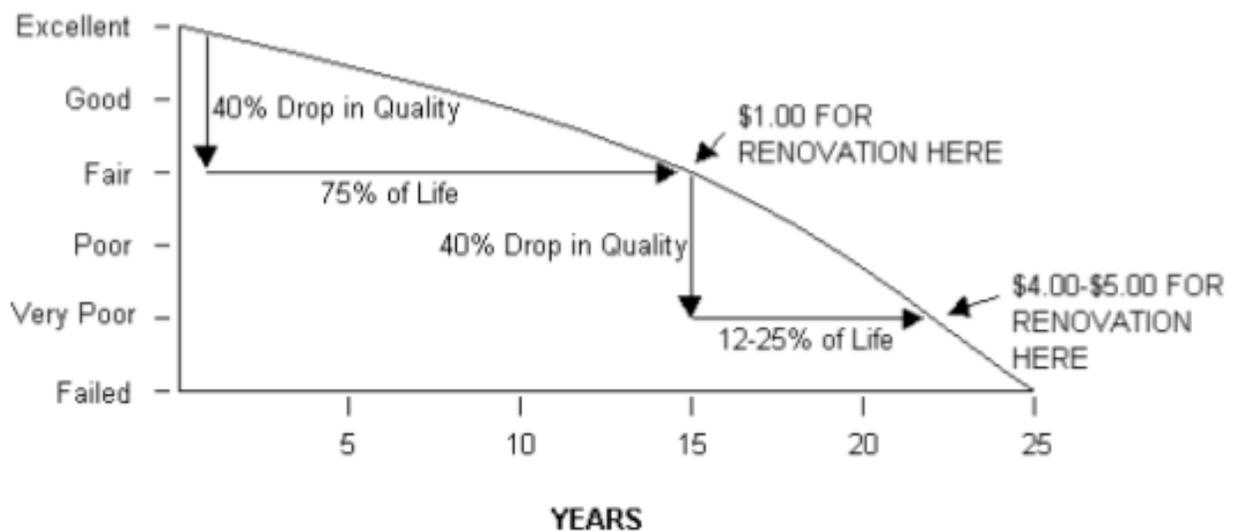
The Cornell Local Roads Program (CLRP) was designed by civil engineers at Cornell University to assist local municipalities in not only maintaining the quality of their roads, but improving their quality in a fiscally difficult environment as well. This program enables municipalities to develop a strategy to keep the good roads good while simultaneously improving the condition of the poor roads in the most cost-effective way possible.

The basic process includes the following tasks:

1. Take an inventory of the pavement network
2. Visually assess the condition of the network using the guideline outlined by CLRP
3. Develop maintenance and rehabilitation alternatives that can be applied to the network in order to restore the quality of the roads
4. Assign repair alternatives to each road in the network
5. Prioritize repair and maintenance needs and develop an organized strategy to accomplish road quality goals
6. Generate five-year report and budget to carry out repairs and maintenance of roads

Prior to beginning this process, CLRP interns and representatives from the municipalities involved in the program attend a training session held by Cornell Local Roads Program at Cornell University. Joe Posadas, the highway foreman, and I attended this training for the Town

of Lewisboro. This four-day workshop covered the criteria of a good road, the types of damage a road can suffer, repair alternatives, and how to implement Cornell Asset Management Program - Road Surface (CAMP-RS). The basic theory of CAMP-RS is that a road in good condition costs less to maintain than a road in bad condition. As seen in the figure below, the quality drops 40% after the first 75% of a road's serviceable life has expired. At this point, the road transitions from excellent condition to fair condition, and the road will begin to deteriorate at an even quicker rate. As the road deteriorates beyond fair condition, the cost to repair it increases accordingly.



For example, a road in fair condition would cost \$1 to fix while a road in poor to very poor condition will cost \$4-5 to fix. With this in mind, the most cost effective strategy is to maintain the quality of the good roads while simultaneously improving the condition of the bad roads.

The CLRP Workshop mainly focused on how to implement the program within a municipality and complete the tasks outlined above. This included discussions on how to assess the damage suffered by a road and what are the probable causes behind each type of damage. The instructors then explained how to best address these issues, assign repairs to the road, and compute the costs of making these repairs.

Assessing the Roads

I assessed the condition of each road in the Town of Lewisboro using the guidelines outlined by the CLRP Workshop. As per the request of Peter Ripperger, the highway superintendent, only the paved roads owned by the town were considered. The highway department records provided inventory for the roads. This information included a Road Identification Number (RIN) for each section of road, the length of the road section, the average width of the roads, the level of traffic the road experiences, and its level of importance.

All roads were methodically evaluated as asphalt roads in each of the postal zip codes within Lewisboro: Cross River, Goldens Bridge, Lake Katonah, South Salem, Vista, and Waccabuc. Each road was traveled and assessed using a vehicle provided by the Highway Department. An assessment form was used to evaluate and document the following types of damage: drainage, roughness, longitudinal/transverse cracking, alligator (spider) cracking, edge cracking, potholes/patching, rutting, and bleeding/raveling. Each type of damage present was rated in extent, severity or both with a ranking of low, medium, or high. A sample of the assessment form used is available in Appendix A.

Recording Findings and Assigning Repairs

After all the above data was collected, it was inputted into the Road Surface Management System program installed on one of the Highway Department computers. The program takes all data from the inventory and the visual assessment and assigns a repair category, a priority value, and a Pavement Condition Index (PCI).

The repair category is assigned using a series of decision trees related to the types of damage found on the road. The decision trees consider the type, severity, and extent of a distress and recommend a repair category based on this information. The repair categories include the following: crack repairs, patching, surface treatment, drainage work, overlay, rehabilitation, and reconstruction.

The priority value gives a level of importance to a road based on the repair category assigned to it, the level of traffic, and the level of importance. Higher priority is given to roads that require drainage work, crack repairs, and patching while lower priority is given to defer maintenance, reconstruction, and rehabilitation. The higher numbers indicate a road with higher priority.

The PCI is an indication of the existing condition of the road. A road starts off with a score of 100, and for each of type of damage a certain value is subtracted from 100. The roads with higher scores are in better condition; however the highest score a road can achieve is a 94.

Once all of this information has been assigned, the program user must decide upon the repair type for each individual road. Joe Posadas and I collaborated to determine each repair type. With the Mr. Posadas's experience with the roads and my knowledge of the most recent condition of the roads, we were able to decide on a plan of action for each road.

Appendix B lists the road repairs that were applied and their costs. The Highway Department mostly hires outside firms to complete its blacktop work so costs of the repairs are based on quotes received by contractors (The Gorman Group and NYBIT). While some assigned repairs include drainage work, the cost for drainage is not factored into these estimates because drainage costs differ from road to road. All of this information was inputted into the RSMS program along with a suggested annual repair budget of \$480,000.

The final step in completing the Cornell Local Roads Program was to finalize an improvement plan for the next five years. This plan includes a prioritized list of roads that we believe should be taken care of in the next five years, with specific budget years assigned to each road. This five-year improvement plan can be found in Appendix D.

Conclusions and Recommendations

The roads in the Town of Lewisboro have suffered severe damage throughout the years. With the current limited budget, many roads haven't been maintained beyond drainage work and pothole patching in many years. However, these kinds of repairs are often only temporary fixes that do not address the major issues a road faces. As stated earlier, the longer a road is left without maintenance, the more it will cost to rehabilitate. For example, it is far less expensive to repair cracks and microsurface a road when it is in fair condition than it is to reconstruct a road when it is in poor condition.

Lewisboro has a wide range of roads in varying conditions and a limited budget for repairs. The best strategy in dealing with this kind of situation is to prioritize the roads based on the principle of keeping the good roads good while rehabilitating the poor roads. The plan developed with the help of the CAMP-RS program focuses on the next five years with a budget of \$480,000. The following table shows the expected miles to be completed each year.

2014	5.87 miles
2015	3.48 miles
2016	3.15 miles
2017	4.86 miles
2018	5.13 miles

There are a total of 85.32 miles of paved road. Every road, except for a select few that have been paved in recent years, needs some form of repair. Following this plan, 32% of the roads will be repaired to good condition within the next five years. By following this plan, the town can begin to return all the roads with severe damage to the quality of the roads with

minimal damage. In this way, all roads will eventually be caught up and brought to a standard that will be less costly to maintain. We recommend that the town follows this plan and continues to update and modify it annually as experience is gained. In order to ensure the long term success of this program we suggest that one of the town's employees be trained to use the CAMP-RS program and that the roads be reevaluated at least every five years. A road's condition can change significantly over the course of five years and it is important to keep their status current within the program. The high level of success that can be achieved entirely depends on the town's active participation in updating and utilizing the program consistently. With regular use, this method of evaluating roads and developing repair strategies will vastly improve the quality of the Town of Lewisboro's road network.

Appendix A: Sample Condition Survey Sheet

Road Name:

	Extent	Severity
Drainage	N/A	
Roughness	N/A	
Long/Trans Cracking		
Alligator Cracking		
Edge Cracking		
Potholes/Patching		N/A
Rutting		
Bleeding/Raveling	N/A	

Appendix B: Repair Types and Associated Costs

List of Repair Types and Definitions

SF – square foot

Crack Repair (\$0.136/SF)

- Filling cracks with crack sealer

Crack Repair & Microsurfacing (\$0.699/SF)

- Filling cracks with crack sealer and then applying a 3/8” thick microsurface layer
- Used on roads with cracking, raveling, or rutting
- Minimal change to pavement elevation and curb reveal

Patch Mill & Fill (\$0.48/SF)

- Parts of road with severe cracking are milled up and removed
- Milled out material is replaced with new asphalt plant mix

True & Level w/ 1” Overlay (\$0.545/SF)

- Smooths out imperfections in road (true & level)
- 1” hot mix placed on top
- NOTE: the cost of True & Level depends on the road. This estimate is solely the cost of the 1” Overlay.

1.5” Overlay (\$0.817/SF)

- 1.5” hot mix is placed on top of existing pavement

Cold In-Place w/ Overlay (\$1.343/SF)

- Recycles and rehabilitates existing pavement
- Recycling equipment mills up existing pavement and rejuvenates with asphalt emulsion and cement and applies it in one pass
- Thin overlay is placed on top as seal
- Used on roads with surface fatigue, cracking and irregularities, wheel rutting, bleeding, raveling
- Restores pavement surface and cross section
- Improves pavement’s ability to remain resilient to fatigue and low-temperature cracking

Appendix C: Detailed Breakdown of Repair Costs

Additional repairs regarding drainage will need to be made to a road in most cases before a major repair is conducted. The extent of drainage work necessary varies from road to road and should be assessed prior to completing any major project. The same applies to roads that requires true and leveling. These preliminary repairs are part of preparing a road for a major repair, and their costs are not included in the following estimates.

Crack Repairs

Estimate for 1 mile at 20 feet wide from New York Bituminous Products

Description	Estimated Quantity	Units	Unit Price	Extended Price
Joint & Crack filler/ Sealer	600	Gallons	\$16.32	\$9,792.00
Crack Filler/Sealer Adjustment (7/1/13)	600	Gallons	\$(0.0080)	\$4.80
Traffic Control – Two Way	600	Gallons	\$7.62	\$4,572.00

Total based on estimated quantity: \$14,359.20

Crack Repair & Microsurfacing

Estimate for 1 mile at 20 feet wide from New York Bituminous Products

Description	Estimated Quantity	Units	Unit Price	Extended Price
Crack Repair				
Joint & Crack filler/ Sealer	600	Gallons	\$16.32	\$9,792.00
Crack Filler/Sealer Adjustment (7/1/13)	600	Gallons	\$(0.0080)	\$4.80
Traffic Control – Two Way	600	Gallons	\$7.62	\$4,572.00
Microsurfacing				
Microsurfacing Type II, F1	212	Tons	\$265.034	\$56,187.21
Microsurfacing Adjustment	212	Tons	\$8.832	\$1,872.38

(7/1/13)				
Traffic Control - Two Way	212	Tons	\$(0.184)	\$(39.01)
Roller W/ Operator	1	Day	\$1,480.00	\$1,480.00

Total based on estimated quantity: \$73,859.78

Patch Mill & Fill

Estimate is \$0.48 per square foot of patched area from CLRP database

True & Level w/ 1" Overlay

Estimate for 1 mile of road at 20 feet wide from the Gorman Group

Thickness	Total ft ³	Tons/ft ³	\$/ton	Total
1"	8,800	0.074	\$88.90	\$47,891.68

Total based on estimated quantity: \$47,891.68

1.5" Overlay

Estimate for 1 mile of road at 20 feet wide from the Gorman Group

Thickness	Total ft ³	Tons/ft ³	\$/ton	Total
1.5"	13,200	0.074	\$88.90	\$86,837.52

Total based on estimated quantity: \$86,837.52

Cold In-Place w/ Overlay

Estimate from the Gorman Group for 1 mile of road 22 feet wide

Depth of Cut	Square feet	\$/SF	Total
4"	105,600	\$1.335	\$141,836.00

Total based on estimated quantity: \$141,836.00

CAMP-RS Budget Report
 Report generated on 08/06/2013

Priority Weighting Factors:

Repair Importance Traffic PCI
 1 1 1 1

Annual 480000

Report shows all sections

RIN	Name	From	To	Length	Traffic	Imp	PCI	Repair Category	Repair Type	Repair Cost Value	Priority	Budget Year
V19-1	Kitchawan Rd 1	Rt 123	Old Church La	0.54	4	4	39	Drainage Work	Drainage w/ Cold In Place	84242	138	1
V19-2	Kitchawan Rd 2	Old Church La	line	0.82	4	4	38	Rehab	Cold In Place w/ Overlay	127923	34	1
V06	Conant Valley Rd	Rt 123	town line Lower	0.7	4	4	61	Drainage Work	Drainage w/ Cold In Place	109203	132	1
K31-2	Todd Road 2	Butternut Lane	Lakeshore	1.54	4	4	92	Crack Repairs	Crack Repairs	24329	76	1
K31-1	Todd Road 1	Rt 121	Butternut Ln Lambert	0.83	4	4	92	Crack Repairs	Crack Repairs	13113	76	1
C02	Avery Rd	Rt 35	Ridge	0.3	3	3	87	Patching	Crack Repairs	4740	68	1
S20-1	Cross Pond Rd	Ridgefield Ave	Dogwood La	0.55	3	3	57	Drainage Work	Drainage w/ Cold In Place	85802	120	1
K04	Butternut Ln	Todd Rd	end	0.33	2	3	79	Surface Treatments	Crack Repairs & Microsurfacing	26795	45	1
S26	Harbor Pl	Sabbathday Hill	end	0.15	2	2	92	Crack Repairs	Crack Repairs	2370	60	1
W05	Kings Grant Way	Chapel Rd	end	0.11	2	2	94	Defer Maintenance	Do Nothing	0	15	1
W12	Powder Hill Rd	Redcoat La	end	0.09	2	2	84	Surface Treatments	Crack Repairs & Microsurfacing	7308	42	2
V43	Split Rock Rd	Conant Valley Rd	end	0.4	2	2	82	Surface Treatments	Crack Repairs & Microsurfacing	32479	42	2
S44	Pine Hill Dr	Boutonville Rd	end	0.68	3	3	64	Rehab	Cold In Place w/ Overlay	106082	34	2
S36	Main St	Spring St	Boway St	1.77	4	4	81	Patching	Crack Repairs & Microsurfacing	143717	72	2
V48	Tri-Brook Dr	Elmwood Rd	end	0.61	3	3	48	Reconstruct	Cold In Place w/ Overlay	95162	16	2
V46	Timberwood Pl	Tri-brook Dr	end	0.61	2	2	58	Reconstruct	Cold In Place w/ Overlay	95162	12	2
W11	Post Office Rd	Mead St	Bouton Rd	1.77	3	4	70	Rehab	Cold In Place w/ Overlay	276126	38	3

V23	Laurel Hollow Rd	Split Rock Rd	end	0.1	1	1	81	Surface Treatments	Cold In Place w/ Overlay	15601	36	3
W08	Make Peace Hill	Redcoat La	end	0.3	2	2	83	Overlay	Crack Repairs & Microsurfacing	24359	42	3
W13	Rampart Pass	Mead St	Redcoat La	0.2	3	3	88	Crack Repairs	Crack Repairs & Microsurfacing	16240	68	3
G04	Billingsley Trail	Rt 138	end North and	0.35	2	2	65	Drainage Work	Drainage w/ Cold In Place	54602	90	3
K24	Sawgrass Dr	Increase Miller Rd	South Ct	0.09	2	2	74	Overlay	1.5" Overlay	8542	48	3
K22	North Ct	Sawgrass Dr	end	0.11	1	1	86	Surface Treatments	T&L 1" Overlay	6964	39	3
K26	South Ct	Sawgrass Dr	end	0.08	1	1	80	Overlay	T&L 1" Overlay	5065	36	3
K06	Cornwall Ct	Increase Miller Rd	end	0.3	2	2	70	Rehab	Cold In Place w/ Overlay	46801	26	3
K03	Brady Ln	Todd Rd	end Pound Ridge	0.15	2	2	62	Drainage Work	Drainage w/ Cold In Place	23401	108	3
K15	Increase Miller Rd	Rt 138	line	0.87	4	4	64	Rehab	Cold In Place w/ Overlay	135723	38	4
V07	Deepwell Farm Rd	Shady La	end	0.39	2	2	54	Reconstruct	Cold In Place w/ Overlay	60842	14	4
G23	Manor Dr	Rt 138	Deertrack La	0.32	4	3	65	Rehab	Cold In Place w/ Overlay	49921	36	4
G13	Deertrack La	Manor Dr	end	0.37	2	2	51	Reconstruct	Overlay	57722	14	4
K01	Big Rock Loop	Outpost	end	0.1	1	1	48	Drainage Work	Drainage w/ Overlay 1.5"	9491	90	4
V53	West Rd	Rt 123	town line	0.63	4	4	79	Patching	Crack Repairs & Microsurfacing	51154	72	4
V10-1	Elmwood Rd 1	Rt 123	Wakeman Rd	0.66	4	4	83	Patching	Crack Repairs & Microsurfacing	53590	72	4
C06	Gideon Reynolds Rd	Lambert Ridge	Rt 121	0.75	3	3	89	Patching	Crack Repairs & Microsurfacing	60897	68	4
S54	Truesdale Lake Dr	Lakeshore Dr	Boway Rd	0.77	2	3	70	Drainage Work	Drainage w/ Cold In Place	120123	120	5
S49	Salem La	Truesdale Lake Dr	Truesdale Lake Dr	0.42	2	2	76	Patching	Cold In Place w/ Overlay	65522	56	5
S50	Scotts Lane	Bouton Rd	end	0.32	2	2	63	Rehab	Cold In Place w/ Overlay	49921	30	5
S34	Longview Rd	Scotts Lane	end	0.2	2	2	61	Rehab	Cold In Place w/ Overlay	31201	30	5
W09-1	Mead St	Rt. 35	Chapel North Salem	1.37	4	4	90	Crack Repairs	Crack Repairs & Microsurfacing	111239	76	5
W09-2	Mead St	Chapel Rd	border	1.07	4	4	86	Crack Repairs	Crack Repairs & Microsurfacing	86880	76	5
K12	Forest Range	end	end	0.12	1	1	52	Drainage Work	Drainage w/ Overlay 1.5"	11389	108	5

S37	North Lake Circle	Twin Lakes Rd	Twin Lakes Rd	0.22	2	2	92 Crack Repairs	Crack Repairs	3476	60	5
S20-2	Cross Pond Rd	Dogwood La	Pound Ridge line	1.41	3	3	76 Patching	Crack Repairs & Microsurfacing	114487	64	6
C08	Hunts La	Adams Hill Rd	end	0.23	2	2	87 Patching	Cold In Place w/ Overlay	35881	60	6
S15	Carol La	Scenic Dr	end	0.07	2	2	90 Crack Repairs	Crack Repairs & Microsurfacing	5684	60	6
G30	Park Rd	Wild Oaks Rd	end	0.19	2	2	87 Patching	Crack Repairs & Microsurfacing	15428	60	6
W03	Five Ponds Dr	Chapel Ct	end	0.24	2	2	92 Crack Repairs	Crack Repairs	3792	60	6
G05	Brady Farm Rd	Rt 138	Todd Hill Cr	0.2	2	2	92 Crack Repairs	Crack Repairs & Microsurfacing	16240	60	6
S35	Lower Salem Rd	Bouton Rd	end	0.71	2	2	94 Do Nothing	Do Nothing	0	15	6
V49	Upland Ct	Puddin Hill Rd	end	0.12	2	2	88 Crack Repairs	Crack Repairs & Microsurfacing	9744	60	6
V36	Scenic Rd	Puddin Hill Rd	end	0.28	2	2	90 Crack Repairs	Crack Repairs & Microsurfacing	22735	60	6
W01	Chapel Ct	Chapel Rd	end	0.21	2	2	92 Crack Repairs	Crack Repairs & Microsurfacing	17052	60	6
S32	Lakeview Rd	Oscaleta Rd	Cover Rd	0.28	2	3	81 Patching	Crack Repairs & Microsurfacing	22735	60	6
K18	Lower Lakeshore	Upper Lakeshore	Todd Rd	0.34	2	2	90 Crack Repairs	Crack Repairs & Microsurfacing	27607	60	6
G39	Wright Rd	Brundidge Rd	Cornel Rd	0.12	2	2	90 Crack Repairs	Crack Repairs & Microsurfacing	9744	60	6
S07	Blueberry La	Rt 123	end	0.12	2	2	92 Crack Repairs	Crack Repairs & Microsurfacing	9744	60	6
S24	Fay La	Ridgefield Ave	end	0.15	2	2	90 Crack Repairs	Crack Repairs & Microsurfacing	12180	60	6
V05	Colonel Ferris Dr	Smith Ridge Rd	end	0.26	2	2	89 Patching	Crack Repairs & Microsurfacing	21111	60	6
V24	Ledgewood La	Col. Ferris	end	0.29	2	2	92 Crack Repairs	Crack Repairs & Microsurfacing	23547	60	6
K14	Holly Hill Ln	Mt. Holly Rd	end	0.61	2	2	90 Crack Repairs	Crack Repairs	9637	60	6
K21	Mt. Holly Road East	Mt. Holly Road	end	0.54	2	2	88 Crack Repairs	Crack Repairs & Microsurfacing	43846	60	6
S10-1	Boutonville Rd 1	Rt 35	Rainbow Hill	0.13	3	4	71 Overlay	Crack Repairs & Microsurfacing	10556	57	6
V16	Journeys End Rd	Hillcrest Ct	town line	0.18	2	2	82 Patching	Cold In Place w/ Overlay	28081	56	6
G29	Park Ave	Old Bedford Rd	end	0.1	2	2	82 Patching	Crack Repairs & Microsurfacing	8120	56	6
K10	East Mountain	Deer Field	Skytop Dr	0.13	1	1	87 Crack Repairs	Crack Repairs	2054	52	6
K29	Sunset Drive	East Mountain	Skytop Drive	0.11	1	1	90 Crack Repairs	Crack Repairs & Microsurfacing	8932	52	6

V20	Lake Kitchawan Dr	Mill River Rd	end	1.1	2	2	81	Crack Repairs	Crack Repairs & Microsurfacing	89316	56	7
V28	Millstone La	Smith Ridge Rd	end	0.15	2	2	80	Patching	Micro w/ crack seal	12180	56	7
V31	Puddin Hill Rd	Rt 123	town line	0.17	4	4	87	Drainage Work	Crack Repairs & Microsurfacing	13804	132	7
K32-1	Todd Rd N	Todd Rd	Rt 138	0.31	2	2	84	Patching	Cold In Place w/ Overlay	48361	56	7
V11	Glen Dr	Rt 123 Lake Kitchawan	Laurel Rd	0.64	4	3	58	Overlay	Cold In Place w/ Overlay	99842	54	7
V12	Grandview Rd	Rd	Kitchawan Dr	0.53	3	3	66	Overlay	1.5" Overlay	50299	54	7
G38	Wild Oaks Rd	Fairmount Rd	Rt 22	0.21	3	4	86	Overlay	Crack Repairs & Microsurfacing	17052	54	7
K25	Skytop Road	East Mountain	Sunset Drive	0.07	1	1	92	Crack Repairs	Crack Repairs & Microsurfacing	5684	52	7
G26	Nash Rd	Rt 22 Gideon Reynolds	town line	0.39	2	2	75	Drainage Work	Drainage w/ Cold In Place	60842	120	7
C12	Silkman Ln	Rd	end	0.1	1	1	92	Crack Repairs	Crack Repairs & Microsurfacing	8120	52	7
G24	Meadow St	Park Ave	end	0.11	1	1	92	Crack Repairs	Crack Repairs & Microsurfacing	8932	52	7
C05	Fairview Ct	Lambert Ridge	end	0.1	1	1	90	Crack Repairs	Crack Repairs & Microsurfacing	1580	52	7
G22	Mandia La	Park Ave	end	0.02	1	1	87	Patching	Crack Repairs & Microsurfacing	1624	52	7
G27	North St	Old Bedford Rd	end	0.21	1	1	87	Crack Repairs	Crack Repairs & Microsurfacing	17052	52	7
V30	Old Orchard Rd	Elmwood Rd	Deer Run Rd	0.23	2	2	79	Overlay	Cold In Place w/ Overlay	35881	51	7
S29	Ida La	Cross Pond Rd	end	0.11	1	1	81	Patching	Crack Repairs & Microsurfacing	8932	48	7
S45	Ridgefield Ave	Rt 35	Pound Ridge Line	1.5	4	4	79	Surface Treatments	Crack Repairs & Microsurfacing	121794	54	8
V51	West La	Rt 123	Spring	0.63	4	4	79	Overlay	Cold In Place w/ Overlay	98282	54	8
S09	Bouton St	Gilbert St	Gilbert St	0.31	2	2	72	Overlay	Crack Repairs & Microsurfacing	25171	48	8
S30	Indian La	Bouton St	end	0.23	2	2	68	Overlay	Crack Repairs & Microsurfacing	18676	48	8
S47	Sabbathday Hill	Rt 124	Pine Hill Dr	0.6	3	3	83	Surface Treatments	Crack Repairs & Microsurfacing	48718	48	8
S27	Howe St	Gilbert St	end	0.25	2	2	70	Overlay	Crack Repairs & Microsurfacing	20299	48	8
V26	Lorraine Rd	Glen Rd	end	0.15	3	3	76	Overlay	Crack Repairs & Microsurfacing	12180	48	8
S33	Laurie La	Boutonville Rd	end	0.28	2	2	69	Drainage Work	Drainage w/ 1.5" Overlay	26573	96	8

S13	Brook Manor Rd	Post Office Rd	end	0.08	1	2	88 Crack Repairs	Crack Repairs	1264	56	8
K07-1	Deer Field 1	Sunny Ridge	Outpost	0.13	2	2	89 Overlay	1.5" Overlay	12338	45	8
V33	Roads End Rd	Hillcrest Ct	end	0.19	2	2	89 Overlay	Cold In Place w/ Overlay	29641	45	8
V35	Robin Woods La	Robins Ct	end	0.31	2	2	57 Overlay	Cold In Place w/ Overlay	48361	45	8
K02	Big Woods	Upper Lakeshore	Outpost Rd	0.14	1	1	74 Overlay	1.5" Overlay	13287	42	8
S51	Shady Glen Ct	Cove Rd	end	0.04	1	1	84 Surface Treatments	Crack Repairs & Microsurfacing	3248	36	8
V13	Hastings Ct	Silver Spring Rd	end	0.19	2	2	84 Overlay	Cold In Place w/ Overlay	29641	42	9
V15	Hillcrest Ct	Deer Run Rd	end	0.13	2	2	77 Overlay	Overlay	20281	42	9
S52	Spring St	Rt 35	Rt 35	1.58	4	4	81 Patching	Crack Repairs & Microsurfacing	128290	72	4
V47	Tommys La	Rt 123	end	0.33	2	2	82 Surface Treatments	Crack Repairs & Microsurfacing	26795	42	9
S02	Ashwood Rd	Pettit Rd	end	0.23	2	2	75 Surface Treatments	Crack Repairs & Microsurfacing	18676	42	9
W14	Redcoat La	end	end	0.4	2	2	78 Overlay	Crack Repairs & Microsurfacing	32479	42	9
S08	Bouton Rd	Main St	Rt 35	1.2	4	4	73 Rehab	Crack Repairs & Microsurfacing	97436	40	9
S17	Cider Mill Farm Rd	Bouton Rd	end	0.13	1	2	79 Surface Treatments	Crack Repairs & Microsurfacing	10556	39	9
S18	Country La	Hoyt St	Boway Rd	0.07	2	2	73 Overlay	1.5" Overlay	6644	39	9
G11	Cornel Dr	Bundidge Rd	Brundidge Rd	0.13	2	2	72 Overlay	Crack Repairs & Microsurfacing	10556	39	9
S42	Peaceable St	Rt 35	town line	0.22	4	4	59 Rehab	Cold In Place w/ Overlay	34321	38	9
S22	Dogwood La	Cross Pond Rd	end	0.09	1	1	82 Surface Treatments	Crack Repairs & Microsurfacing	7308	36	9
W04	Hilltop Dr	Rt 121	end	0.36	2	2	88 Crack Repairs	Crack Repairs	5688	60	9
V54	Wilton Rd	Silver Spring Rd	town line	0.17	3	2	46 Rehab	1.5" Overlay	16134	36	9
S01	Apple Hill Ct	Bouton Rd	end	0.16	1	2	72 Overlay	Cold In Place w/ Overlay	24961	36	9
S57	Waterview Ct	Cove Rd	end	0.07	1	1	75 Overlay	Crack Repairs & Microsurfacing	5684	36	9
V03	Brookside Trail	Shore Trail	end	0.05	2	2	57 Rehab	1.5" Overlay	4746	24	9
S41	Oscaleta Rd	Main St	end of obligation	1.55	4	4	66 Rehab	Cold In Place w/ Overlay	241805	40	10
V10-2	Elmwood Rd 2	Wakeman Rd	West La	1.68	4	4	78 Patching	Crack Repairs & Microsurfacing	136410	72	10
G09	Cheyenne Ct	Indian Hill Rd	end	0.08	1	1	75 Overlay	Cold In Place w/ Overlay	12481	36	10

V39	Shore Trail	Lake Kitchawan Dr	end Flintlock Ridge Rd	0.07	1	1	69 Overlay	1.5" Overlay	6644	33	10
G19	Indian Hill Rd	Rt 138		0.8	4	4	92 Crack Repairs	Crack Repairs	12639	76	10
K27	South Mountain Pass	Outpost Rd	end	0.19	1	1	73 Overlay	1.5" Overlay	18032	33	10
K07-2	Deer Field 2	Outpost	end	0.1	1	1	70 Overlay	1.5" Overlay	9491	33	10
C04	Debbie Ln	Rt 35	end	0.26	2	2	61 Drainage Work	Drainage w/ Cold In Place	40561	108	10
G07	Brundidge Rd	Indian Hill Rd	Rt 138	1.24	3	3	67 Rehab	Crack Repairs & Microsurfacing	100683	36	11
V09-1	East St	Rt 123	dirt	1.52	4	4	68 Drainage Work	Crack Repairs & Microsurfacing	123418	120	11
S06	Bisbee Ln	Rt 35	end	0.26	2	2	51 Rehab	Cold In Place w/ Overlay	40561	34	11
G02	Anderson Ln	Rt 22	end	0.14	2	2	60 Drainage Work	Drainage w/ Cold In Place	21841	108	11
S31	Lakeshore Dr	Spring St	Gilbert St	0.74	2	3	72 Drainage Work	Crack Repairs & Microsurfacing	60085	102	11
W15	Rock Shelter Rd	Chapel Rd	end Lower Lakeshore	0.3	2	2	90 Crack Repairs	Crack Repairs Crack Repairs & Microsurfacing	4740	60	11
K30	The Glen	Upper Lakeshore	Lakeshore	0.17	1	1	89 Drainage Work	Crack Repairs & Microsurfacing	13804	96	11
G16	Green St	Andreson La	end	0.07	1	1	41 Drainage Work	Drainage w/ Cold In Place	10921	102	11
V08	Deer Run Rd	Elmwood Rd	end	0.4	2	2	71 Rehab	Cold In Place w/ Overlay	62402	32	11
V44	Spring Hill Rd	Rt 123	West La	0.26	3	2	60 Drainage Work	Drainage w/ Cold In Place	40561	114	11
G32	Railroad Ave	Old Bedford Rd	end	0.2	4	4	92 Crack Repairs	Crack Repairs & Microsurfacing	16240	76	12
V01	Audubon Rd	East St	end	0.22	2	2	68 Rehab	Cold In Place w/ Overlay	34321	32	12
S12	Briscoe Rd	East St	town line	0.12	3	3	43 Drainage Work	Drainage w/ Cold In Place	18721	90	12
S40	Orchard Dr	Twin Lakes Rd	end	0.21	2	2	90 Crack Repairs	Crack Repairs Crack Repairs & Microsurfacing	3318	60	12
S48	Salem Hill Rd	Main St Lake Kitchawan	end	0.28	2	2	66 Rehab	Crack Repairs & Microsurfacing	22735	32	12
V02	Birch Spring Rd	Dr Gideon Reynolds	end Gideon Reynolds Rd	0.07	2	2	32 Drainage Work	Drainage w/ Overlay 1.5"	6644	90	12
C09	Lambert Ridge	Rd		1.3	3	3	87 Patching	Crack Repairs & Microsurfacing	105555	68	12
K11	Flintlock Ridge Rd	Todd Rd	end Lower Lakeshore	0.82	3	3	90 Crack Repairs	Crack Repairs	12955	68	12
K33	Upper Lakeshore	Todd Rd	Lakeshore	0.51	2	3	58 Rehab	1.5" Overlay Cold In Place w/ Overlay	48401	32	12
S56	Waccabuc River La	Rt 35	end	0.26	4	3	74 Rehab		40561	32	12

S10-3	Boutonville Rd 3	Rt 35	Spring St	0.13	3	4	90 Crack Repairs	Crack Repairs & Microsurfacing	10556	72	12
S05	Benedict Rd	Post Office Rd	Oscaleta Rd	0.77	3	4	92 Crack Repairs	Crack Repairs Cold In Place w/ Overlay	12165	72	12
V50	Wakeman Rd	Elmwood Rd	end	0.55	3	3	82 Rehab	Crack Repairs & Microsurfacing	85802	32	12
G14	Fairmount Rd	Rt 138	end	0.51	4	4	88 Crack Repairs	T & L / 1" Overlay	41410	76	12
K16	Lakeview Pass	Sunny Ridge	Big Woods	0.18	2	2	59 Rehab	Crack Repairs Cold In Place w/ Overlay	11396	30	12
S03	Autumn Ridge Rd	Post Office Rd	Benedict Rd end of obligation	0.56	3	3	92 Crack Repairs	Crack Repairs Cold In Place w/ Overlay	8847	68	12
S38	Old Oscaleta Rd	Oscaleta Rd	obligation	0.71	2	2	68 Rehab	Crack Repairs & Microsurfacing	110763	32	13
V42	Soundview Loop	East St	end	0.4	2	2	71 Rehab	Crack Repairs & Microsurfacing	62402	32	13
S19	Cove Rd	Oscaleta Rd	end	0.73	2	3	65 Rehab	Patching > 25% Cold In Place w/ Overlay	40703	32	13
W02	Chapel Rd	Mead St	Rt 121	1.81	4	4	90 Crack Repairs	Crack Repairs Cold In Place w/ Overlay	28594	76	13
C11	Old Shop Rd	Rt 35	Rt 35	0.33	2	2	63 Rehab	Crack Repairs & Microsurfacing	51481	30	13
C01	Adams Hill Rd	Rt 35	Rt 35	0.42	3	3	76 Patching	Patch Mill & Fill: >25% Cold In Place w/ Overlay	23418	64	13
K17	Lois Ln	Todd Rd	end	0.2	2	2	64 Rehab	Crack Repairs & Microsurfacing	31201	30	13
K20	Mt. Holly Rd	Pound Ridge Line Lake Kitchawan Dr	Todd Rd Grand View Rd	0.71	4	4	92 Crack Repairs	Crack Repairs & Microsurfacing	57650	76	13
S46	Ridgeland Rd			0.73	2	2	56 Rehab	Crack Repairs & Microsurfacing	59273	30	13
K19	Merritt Ct	Increase Miller Rd	end	0.12	2	2	71 Rehab	Crack Repairs & Microsurfacing	9744	26	13
W10	Perch Bay Rd	Post Office Rd	end	0.57	2	2	55 Rehab	Crack Repairs & Microsurfacing Cold In Place w/ Overlay	88922	30	14
S14	Captain Lawrence Dr	Bouton Rd	end	0.15	1	2	66 Rehab	Crack Repairs & Microsurfacing Cold In Place w/ Overlay	23401	30	14
V25	Lockwood Rd	East St	Elmwood Rd	1.21	3	3	41 Rehab	Crack Repairs & Microsurfacing Cold In Place w/ Overlay	188764	30	14
G25	Mohawk Trail	Indian Hill Rd	Indian Hill Rd	0.41	2	2	63 Rehab	Crack Repairs & Microsurfacing	63962	30	14
G37	West Meadow St	Wild Oaks Dr	end	0.08	2	2	89 Patching	Crack Repairs & Microsurfacing	6496	60	14
K28	Sunny Ridge	Upper Lakeshore	Deer Field	0.39	2	3	92 Crack Repairs	Crack Repairs & Microsurfacing Cold In Place w/ Overlay	31667	64	14
G15	Green Hill Rd	Rt 22	end	0.3	2	2	56 Rehab	Crack Repairs & Microsurfacing Cold In Place w/ Overlay	46801	30	14
V32	Reservoir Rd	Laurel Rd	end	0.19	2	2	77 Rehab	Crack Repairs & Microsurfacing Cold In Place w/ Overlay	29641	28	14
C03	Boutonville Rd South	Rt 121	end	0.71	2	2	55 Rehab	Crack Repairs & Microsurfacing Cold In Place w/ Overlay	110763	30	15

K08	Diane Ct	Increase Miller Rd	end	0.26	2	2	65	Rehab	Cold In Place w/ Overlay	40561	30	15
V27	Mill River Rd	Rt 123	Kitchawan Rd	1.22	3	3	73	Rehab	Cold in Place with Overlay	189190	30	15
S16	Church Tavern Rd	Spring St	Spring St	1.51	3	3	72	Rehab	Crack Repairs & Microsurfacing	122606	30	15
G08	Cherokee Ct	Mohawk Trail	end	0.08	2	2	69	Rehab	Cold In Place w/ Overlay	12481	26	15
G33	Shoshone Dr	Brundidge Rd	Indian Hill Rd	0.39	3	3	70	Rehab	Cold In Place w/ Overlay	60842	30	16
V04	Canaan Circle	Silver Spring Rd	end	0.63	2	2	77	Rehab	Crack Repairs & Microsurfacing	51154	28	16
C10	Mark Mead Rd	Rt 35	Rt 35	0.73	2	2	54	Rehab	Cold In Place w/ Overlay	113883	28	16
C07	Howland Dr	Adams Hill Rd	end	0.24	2	2	79	Rehab	Overlay	37441	28	16
V14	Hemlock Rd	Lake Kitchawan Truesdale Lake	Grand View	0.51	2	2	47	Rehab	1.5" Overlay	48401	28	16
S11-2	Boway Rd	Dr	Main St	0.68	2	2	81	Rehab	Crack Repairs & Microsurfacing	55214	28	16
C13	South Wind Dr	Old Shop Rd	end	0.15	2	2	82	Rehab	Cold In Place w/ Overlay	23401	28	16
S28	Hoyt St	Indian La	end	0.6	2	2	70	Rehab	Crack Repairs & Microsurfacing	48718	26	16
V17	Kenfield Rd	East St	end	0.12	2	2	67	Rehab	Cold In Place w/ Overlay	18721	26	16
K23	Outpost	Deerfield	Forest Range	0.19	1	1	62	Rehab	1.5" Overlay	18032	26	16
V18	Kingswood Way	Rt 123	end	0.2	2	2	69	Rehab	Cold In Place w/ Overlay	31201	26	17
S04	Beaver Pond La	Rt 123	end	0.3	2	2	72	Rehab	Crack Repairs & Microsurfacing	24359	26	17
V45	Stonewall Ct	West La	end	0.26	2	2	66	Rehab	Cold In Place w/ Overlay	40561	26	17
V22	Laurel Rd	Lockwood Rd	Lockwood Rd	0.43	2	2	72	Rehab	Cold In Place w/ Overlay	67082	26	17
V37	Serenity Pl	Audubon La	end	0.1	2	2	60	Rehab	Cold In Place w/ Overlay	15601	24	17
V38	Shady La	Rt 123	Elmwood Rd	0.39	4	4	76	Patching	Cold In Place w/ Overlay	60842	72	17
V34	Robins Ct	East St	end	0.11	2	2	61	Rehab	Cold In Place w/ Overlay	17161	24	17
G03	Apache Circle	Indian Hill Rd	Shoshone Dr	0.09	2	2	61	Rehab	Cold In Place w/ Overlay	14041	24	17
G10	Comanche Ct	Indian Hill Rd	end	0.12	1	1	67	Rehab	Cold In Place w/ Overlay	18721	22	17

S25	Gilbert St & Beach	Main St	Bouton St Lake	0.51	3	3	78 Patching	Crack Repairs & Microsurfacing	41410	64	17
V21	Lake Path	Grand View Dr	Kitchawan Dr	0.3	1	1	42 Rehab	Crack Repairs & Microsurfacing	24359	22	17
V40	Silvermine Dr	Elmwood Rd	end	0.64	3	3	56 Reconstruct	Cold In Place w/ Overlay	99842	17	17
V29	Old Church La	Kitchawan Dr	town line	0.15	1	1	53 Reconstruct	1.5" Overlay Cold In Place w/ Overlay	14236	12	17
S53	Stewart Rd	Bouton Rd	end	0.38	2	2	67 Reconstruct	Cold In Place w/ Overlay	59282	13	18
W07	Long Pond Rd	Mead St	end	0.2	2	2	64 Reconstruct	Cold In Place w/ Overlay	31201	12	18
W06	Logging Rd	Long Pond Rd	end	0.22	2	2	56 Reconstruct	Cold In Place w/ Overlay	34321	12	18
G28	Old Bedford Rd	Rt 138	end	0.79	4	3	85 Crack Repairs	Crack Repairs & Microsurfacing	64145	68	18
S55	Twin Lakes Rd	Oscaleta Rd	end	0.9	3	3	90 Crack Repairs	Crack Repairs & Microsurfacing	73077	68	18
G35	Todd Hill Circle	Brady Farm Rd	Brady Farm Rd	0.5	2	2	77 Overlay	Crack Repairs & Microsurfacing	40598	42	18