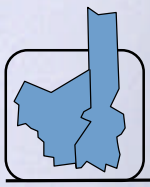
Non-State Federal Aid Highways

PAVEMENT CONDITION RATINGS

2008



Herkimer and Oneida Counties

Introduction

In 2008 the Herkimer-Oneida Counties Transportation Study (HOCTS), completed the twenty-first year of pavement condition rating of the Non-State Federal-Aid Highway System in Herkimer and Oneida Counties. Road condition data collected in 2008 was used as the base data file for road segment scoring. Additionally, the NYSDOT Local Highway Inventory (LHI), updated annually, provides an inventory of data on locally owned roads including, traffic volumes, pavement conditions, functional class, lane mileage, and other information. The LHI data is incorporated into a formula that sets funding levels for the states Consolidated Local Streets and Highways Improvement Program (CHIPS). The information contained within this report compliments data collected by the New York State Department of Transportation (NYSDOT) for the state Touring System. Together they comprise a complete report of the condition of the Federal-Aid Highway System in Herkimer and Oneida Counties, as well as aid in the production of functional-class mapping of the entire Federal-Aid Highway System statewide.

This report provides pavement condition ratings for the non-State Federal-Aid Highway System for 2008. This information can assist municipalities in planning maintenance and capital needs. A local municipality Pavement Management System (PMS) should minimally consist of a pavement condition survey and a needs estimating process. This information will also assist NYSDOT in the preparation of project reports, and will aid HOCTS in the understanding of the financial needs that will be required to maintain the federal system. The information is also used by the municipalities to help determine which roads to pave.

The scoring for this report occurred in October of 2008. Scoring for 2005 was performed during June and July of 2005 and the results are included in the summary tables.

Data Preparation & Methodology

This was the sixth year that the road scoring process was performed using an automated system. Digital road map files were displayed on a laptop computer used to identify current location and record surface conditions with designated distress features. This method was used throughout the scoring process. This method simplified data entry and greatly improved the efficiency and speed of the scoring process. Preparation for the road scoring had been completed prior to the initiation of fieldwork in order to establish a reasonably efficient driving route that would minimize backtracking. All non-State roads within the Federal-Aid Urban area to be scored were highlighted, and labeled. Maps displaying the non-State Federal Aid Highway System for Herkimer and Oneida Counties can be found on the enclosed CD. Each day's activities were carefully scheduled in advance to determine which roads would be scored. The survey was conducted using a two-person team, a driver and a scorer.

Segmentation and Scoring Methodology Change:

The scoring considered the pavement from “white line to white line” on the roads and did not include the shoulders. The roads were segmented at every intersection and the pavement in the wheel path was observed. The actual scoring no longer uses an averaging technique along segments, but rather employes an on-the-fly editing of segments where significant changes in

pavement condition are observed. A more detailed description of these techniques is detailed in the following paragraphs.

The segmentation of the road network greatly influences the need, or lack thereof, for averaging pavement scores while collecting field observations. Ultimately this affects the overall accuracy of the data collection and resulting analysis. In years prior to 2005, staff used the NYSDOT road segmentation as described in their sufficiency files. These segments were static even if the pavement condition changed throughout the segment. During the field collection, staff used an internally developed road centerline file which breaks the roads at every intersection and municipal boundary as coded in the E911 master addressing files. This is very helpful in that road work being scored almost always correlates with a road intersection or municipal boundary. This results in scores that are more representative of the actual segment.

When it is necessary to break an existing segment, the scorer employes real-time GPS tracking capability designed by HOCTS GIS staff. If a long segment of pavement changes condition the scorer creates a segment break at that point and makes a new segment reflecting the actual score for each segment. In addition, the GPS is used for navigating to and from the scoring locations. The real-time graphic on the screen displays position and direction of travel at all times.

Pavement condition is determined by scoring the area that is within the wheel path of the road. Any cracking, faulting or other pavement failure issues identified within the wheel paths of the road defines the road condition. Conditions outside the white lines or cracks not in the potential wheel paths do not affect the scoring. This is consistent with NYSDOT's methodology. Staff were trained in Albany at a NYSDOT course using actual photographs of pavement to develop consistent scoring.

The procedure used to rate the roads is documented in the Pavement Condition Rating Manual developed by the NYSDOT. The General Guidelines for Sufficiency Scoring are listed below:

1.	Scoring represents an average of conditions throughout the entire scoring section.
2.	Scoring is across all lanes of roadway where possible.
3.	A dominant distress is only noted when appropriate.
4.	If a section has sealed cracks, last years score is used. Credit is given to patched areas only if 1 inch or more material has been applied.
5.	Patched spalls are still noted as spalling.
6.	Where grader or skin patching has been done, the unimproved portions are scored.
7.	If patching exists on all lanes, last years score is used. Credit is given to patched areas only if 1 inch or more material has been applied.
8.	Bridge decks and utility cuts are ignored when rating.
9.	Widening drop-off cannot occur on curbed sections.
10.	Longitudinal cracking of 20% or more shall be considered "general "alligator cracking.

Source: NYSDOT Pavement Condition Rating Manual

The Pavement Conditions Rating Manual uses two rating scales, which together are used to classify highway sections into five general treatment categories. A segment of pavement is rated from 1 (very poor with severe distress features), to 10 (excellent). Highways under construction are rated a 99. The actual score is determined by matching the observed condition of a pavement segment with photographs in the manual until the approximate condition level of the pavement is found. The photographs show typical distress features with specific information to help determine the appropriate rating. A NYDOT chart describing the surface rating scale with associated treatment category is shown below:

Condition	Scale	Frequency	Distress	Treatment	Cost
Excellent	9-10		None	None	No Cost
Good	8	Infrequent	Very Slight	Preventative Maintenance	Min. Cost
Good	7	Infrequent-Occasional	Slight	Preventative Maintenance	Min + Cost
Fair	6	Occasional-Frequent	Moderate	Corrective Measures	Mod. Cost
Poor	5	Frequent	Mod – Severe	Rehabilitation	High Cost
Poor	4	Frequent	Severe	Rehabilitation	High + Cost
Very Poor	1-3	Very Frequent	Very Severe	Reconstruction	Max. Cost

The scale points were selected by NYSDOT based on the general treatments required by the highway represented in each photograph. There are three photographic scales, one each for rigid (Portland Cement Concrete), overlaid (asphalt overlaid on rigid), and flexible (full depth asphalt) pavement structures. The scored road surface is defined as the wearing course of the pavement structure. The road base is defined as the material supporting the surface, including the lower portion of the pavement and sub-pavement material. The road is also scored by observing distress symptoms at the road surface and comparing them to distress features in the manual. Distress symptoms are defined as cracks or other abnormality observable at posted speeds, which will trigger a treatment category different than the treatment category based on the surface rating alone. A table of dominant distress definitions and their associated codes that were used follows:

CD Disk of Report and Maps

Included with this report is a CD with the report narrative and maps of the following areas: Herkimer County, Oneida County, Herkimer Valley Area, Rome Area, Utica Area and Verona Area. Each map is in PDF format, can be zoomed in or out and printed. Colored lines define and describe the conditions of the non-State Federal Aid System. The pavement scores are color coded: Red, poor; Orange, fair; Blue, good; and Green, excellent. The line style shows the distress observation. The pavement score is also displayed on each line segment.
The maps can also be found on the HOCTS web site, http://www.hocts.org

Distress Features Definitions

Rigid Pavements

FA-	Faulting is the vertical displacement of abutting slabs at transverse joints creating a "step" formation in the pavement surface. Faulting can be seen by looking through the rear view mirror or by viewing the pavement out the rear window of the vehicle.
SI, SG -	Spalling may occur at PCC joints or at mid-slab. Joint spalling is the cracking, breaking, or chipping of slab edges at the PCC joints usually resulting in fragments with feathered edges. Mid-slab spalling is the loss of surface material generally caused by wear and the improper placements of construction mesh SI, is for isolated spalling, and SG for general spalling.

Overlaid Pavements

AI, AG –	Alligator cracking is defined as interconnected or interlaced cracks forming a series of small polygons resembling an alligators hide. AI is assigned for isolated alligator cracking, and AG is assigned for general (>20%) alligator cracking.
WD -	Widening drop-off occurs when PCC slabs are overlaid with asphalt which extends beyond the slab edges to widen the road. The asphalt may crack at the slab edge and cerate a vertical displacement.

Flexible Pavements

AI, AG -	Alligator cracking is defined as interconnected or interlaced cracks forming a series of small polygons resembling an alligator hide. AI is assigned for isolated alligator cracking, and AG is assigned for general (>20%) alligator cracking

Source: NYSDOT Pavement Condition Rating Manual

Condition Rating Description

Score	General Condition	Condition Rating Description	
		Surface	Distress Features
10	Excellent	There are no visual deviations from a smooth surface. Pavement recently constructed, reconstructed, or overlaid within the last two years.	The riding quality is excellent with no indication of any subsurface shifting. Includes facilities constructed within the last two years.
9	Excellent	Pavement should have no cracks or patches. Flexible pavement recently resurfaced within the past year or two. Overlay pavements may show evidence of some hairline reflection cracking. Rigid pavement joints functioning properly.	Riding quality is excellent, with no indication of subsurface problems. Facilities reconstructed or rehabilitated within the last two years are included in this category.
8	Good	Pavement gives an excellent ride and exhibits infrequent signs of surface deterioration. Flexible pavements begin to show very slight evidence of raveling, cracking, and wheel track wear. Rigid pavements begin to show very slight evidence of surface deteriorating such as cracking, joint spalling, or scaling. Overlay pavements show evidence of very slight refection cracking.	Pavement shows infrequent evidence of base or sub-base deteriorating. Flexible pavements show evidence of very slight longitudinal cracking in wheelpaths. Rigid pavements show evidence of very slight displacement and pumping. Overlay pavements show evidence of non-joint reflection cracking.
7	Good	Pavement gives a good ride but show infrequent to occasional signs of surface deterioration. Flexible pavements show very slight evidence of joint spalling, scaling , or minor, cracking. Overlay pavements show evidence of slight refection cracking and multiple cracking at reflection cracks.	Roadway show infrequent to occasional signs of rupture and displacement caused by roadbed movement. Flexible pavements may show slight evidence of rutting and wheelpath cracking. Overlay pavements show evidence of non-joint reflection cracking. Rigid pavements show evidence of very slight displacement and pumping, faulting, and base-related cracking. Overlay pavements show slight evidence of longitudinal cracking.
6	Fair	Riding quality is noticeably inferior to new pavements, showing infrequent to occasional signs of distress. Surface defects of flexible pavements may include moderate rutting, cracking, and raveling; patch is apparent. Overlay pavements show evidence of slight moderate cracking and raveling along cracks.	Roadway shows infrequent to occasional signs of distress caused by roadbed movement or inadequate roadbed support. Flexible pavements show evidence of moderate rutting and moderate cracking. Rigid pavements show evidence of moderate pumping, faulting, and base related cracking. Overlay pavements show evidence of reflection cracking and surface distortion.
5	Poor	Riding quality is noticeably inferior to new pavements, but may be tolerable for high speed traffic. Surface defects of pavements are the same as under the 6 rating but are more severe.	Roadway show occasional signs of distress caused by roadbed movement. The types of distress are the same as under the 6 rating but are more severe for rigid and overlay pavements.

Condition Rating Description

Score	General Condition	Condition Rating Description	
		Surface	Distress Features
4	Poor	Pavements have deteriorated to a point where resurfacing is required. Drivability, even at slow speeds, is impaired. Surface defects on flexible pavement include severe rutting, cracking, raveling, and patching. Surface defects or rigid pavements include severe joint spalling, cracking, scaling and patching. Overlay pavements show evidence of severe surface delamination.	Roadway shows frequent to occasional signs of distress caused by roadbed movement/inadequate roadbed support. Flexible pavements show signs of severe rutting and alligator cracking Rigid pavements show evidence of severe corner and diagonal cracking caused by loss of foundation material under the slab. Severe pumping and faulting is also evident. Overlay pavements show evidence of severe reflection cracking and surface distortion (faulting).
3	Poor	Pavements have deteriorated to a point where resurfacing is required immediately. Flexible pavements show evidence of severe and frequent scaling, joint spalling, faulting, cracking and patching. Overlay pavements show evidence of severe and frequent surface delamination. Rigid pavements show signs of frequent and severe joint spalling, cracking and scaling.	Roadway shows frequent signs of severe rutting and alligator cracking and pavements displacement. Rigid pavements show evidence of severe faulting and cracking. Overlay pavements show evidence of frequent rupture and displacement resulting in motorist discomfort.
2	Very Poor	Pavement is in extremely deteriorated condition and may require complete reconstruction. Motorists experience discomfort and travel speeds will decrease.	Roadways are in extreme deteriorated condition and may require reconstruction. Flexible, rigid and overlay pavements show evidence of frequent rupture and displacement resulting in motorist discomfort.
1	Very Poor	Pavement is extremely deteriorated condition and in need of immediate action. These facilities are considered impassable at posted speeds.	Roadways are in extremely deteriorated condition and are in need of immediate correction. These facilities air considered impassible at posted speeds.

Overall Results

There were 344 miles of Non-State Federal Aid roads scored in Herkimer and Oneida Counties for 2008. Of the 344 miles, 74 miles are located in Herkimer County and 270 miles are located in Oneida County.

About 94% of the total non-state system for 2008 was in good to excellent condition. The percentage of roads in good condition increased to 76% in 2008 from 74% in 2005, while roads in excellent condition decreased from 19% in 2005 to 18% in 2008. Roads in fair condition remained the same for 2008 at 5%. Poor roads decreased from just over 1% in 2005 to less than 1% in 2008.

The 2008 Herkimer County surface conditions were as follows: 28% excellent, 70% good, 2% fair, and less than 1% poor. In Herkimer County the roads that had good to excellent conditions scores increased to 98%. The percentage of fair roads decreased from 6% to 2% in 2008. Roads in excellent, fair and poor condition decreased while roads in good condition showed an increase.

The 2008 Oneida County surface conditions were as follows: 15% excellent, 78% good, 6% fair, and <1% poor. In Oneida County the percentage of poor and fair roads remained relatively the same. Roads in good condition increased to 78% and excellent condition decreased from 17% in 2005 to 15% in 2008.

Table 1

Summary of Miles by Condition 2008

SURFACE CONDITION					
	Poor	**Fair**	**Good**	**Excellent**	**Total Miles**
Herkimer County					
Surface	<1	1	52	21	74
Oneida County					
Surface	2	17	211	41	270
Herkimer & Oneida Counties					
Surface	2	18	263	62	344

NOTE: Mileage has been rounded.

Table 2

Herkimer and Oneida Counties

Percentage of Surface

Year	Poor	Fair	Good	Excellent
2001	22%	14%	36%	28%
2002	26%	14%	36%	23%
2005	1%	5%	75%	19%
2008	**<1%**	**5%**	**76%**	**18%**

Chart 1

Herkimer and Oneida Counties

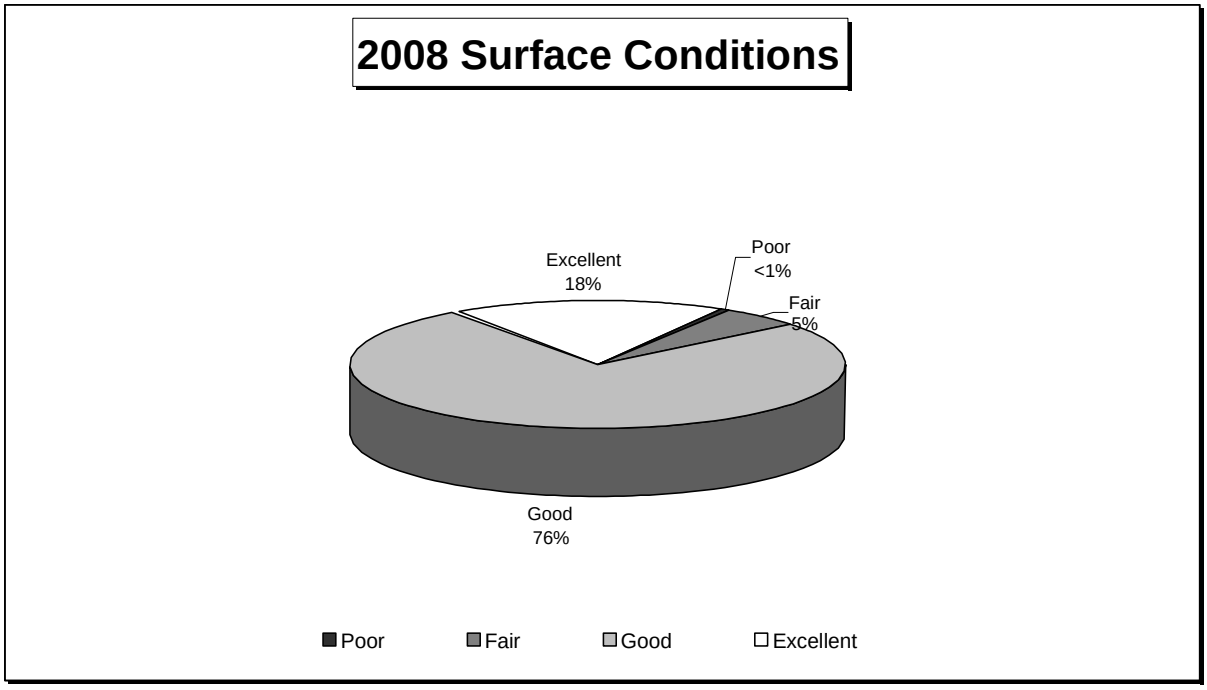


Table 3

Herkimer and Oneida Counties

Surface Condition by Miles

Year	Poor	Fair	Good	Excellent
2001	69	44	110	88
2002	80	43	110	72
2005	4	16	245	63
2008	**2**	**18**	**263**	**62**

Chart 2

Herkimer and Oneida Counties

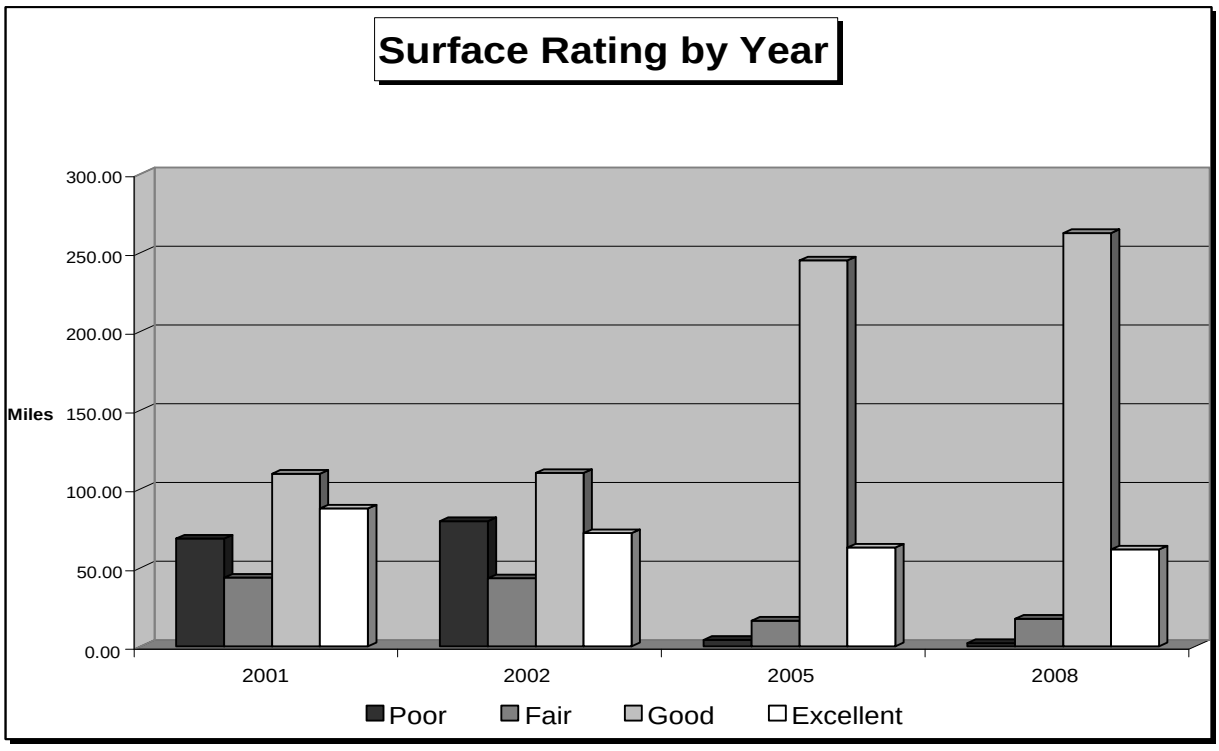


Table 4

Herkimer County

Percentage of Surface

Year	Poor	Fair	Good	Excellent
2001	21%	4%	23%	52%
2002	18%	7%	33%	42%
2005	1%	6%	64%	29%
2008	**<1%**	**2%**	**70%**	**28%**

Chart 3

Herkimer County

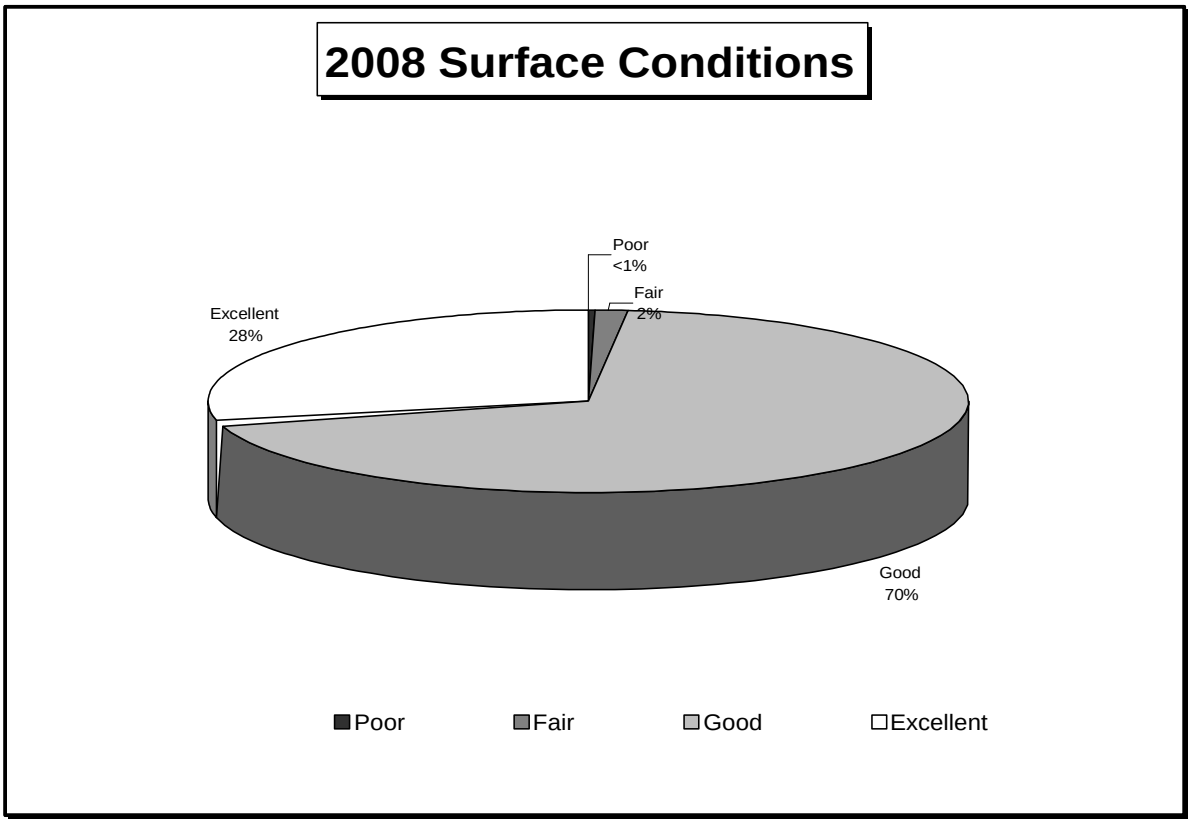


Table 5

Herkimer County

Surface Condition by Miles

Year	Poor	Fair	Good	Excellent
2001	12	2	13	29
2002	10	4	18	23
2005	0	4	37	17
2008	**<1**	**1**	**52**	**21**

Chart 4

Herkimer County

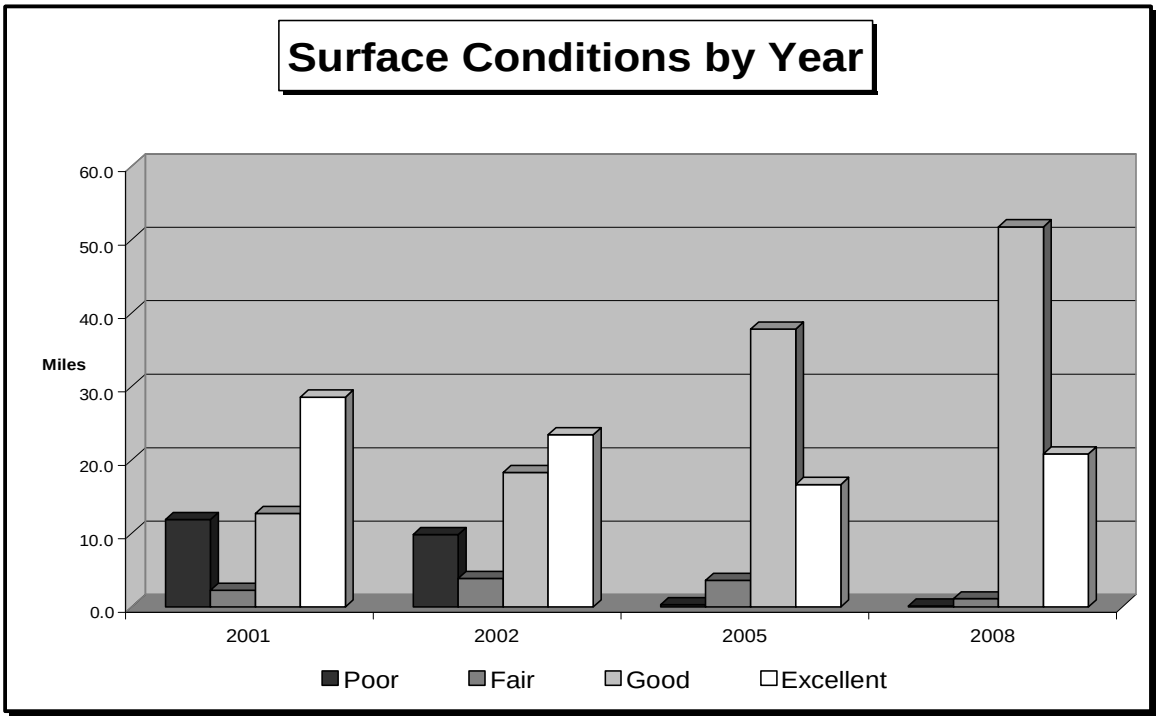


Table 6

Herkimer County

2008 Mileage
Condition by Functional Class

Functional Class	Poor	Fair	Good	Excellent
07 Rural Major Collector	0	<1	29	14
16 Urban Principal Arterial	0	<1	8	4
17 Urban Collector	<1	<1	14	3

Table 7

Herkimer County

2008 Mileage Percentage
Condition by Functional Class

Functional Class	Poor	Fair	Good	Excellent
07 Rural Major Collector	0%	1%	67%	32%
16 Urban Principal Arterial	0%	2%	66%	32%
17 Urban Collector	<1%	2%	81%	16%

Table 8

Oneida County

Percentage of Surface

Year	Poor	Fair	Good	Excellent
2001	22%	17%	38%	23%
2002	27%	16%	36%	19%
2005	1%	5%	77%	17%
2008	**<1%**	**6%**	**78%**	**15%**

Chart 5

Oneida County

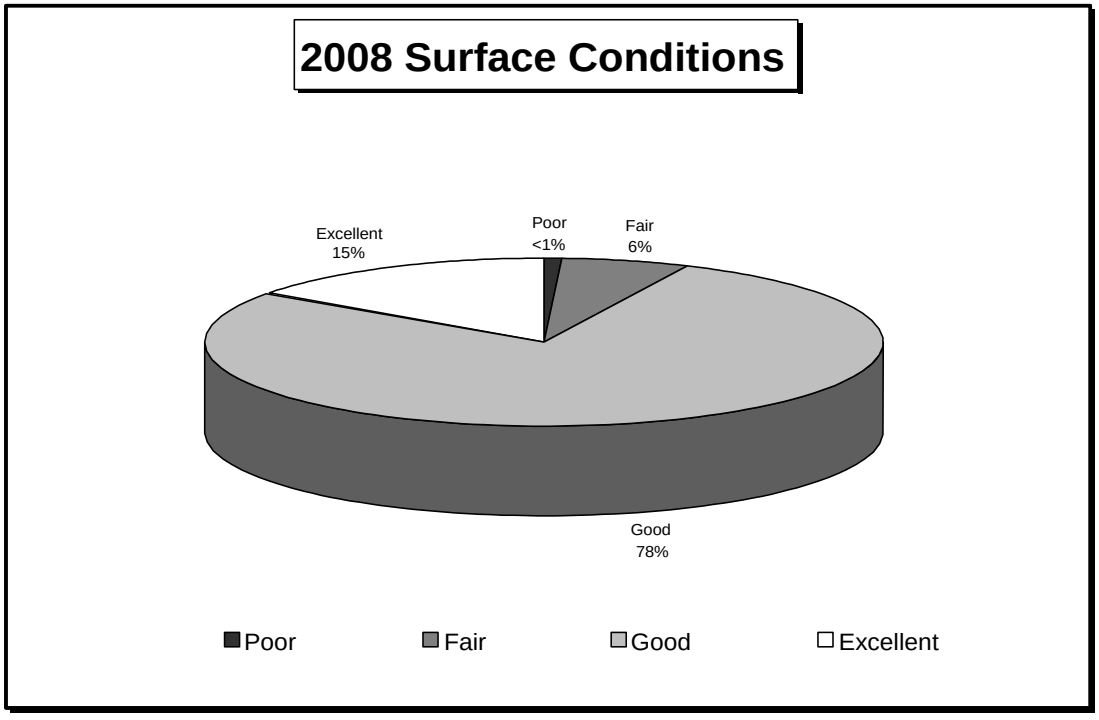


Table 9

Oneida County

Surface Condition by Miles

Year	Poor	Fair	Good	Excellent
2001	57	42	97	59
2002	70	40	92	49
2005	4	13	207	46
2008	**2**	**17**	**211**	**41**

Chart 6

Oneida County

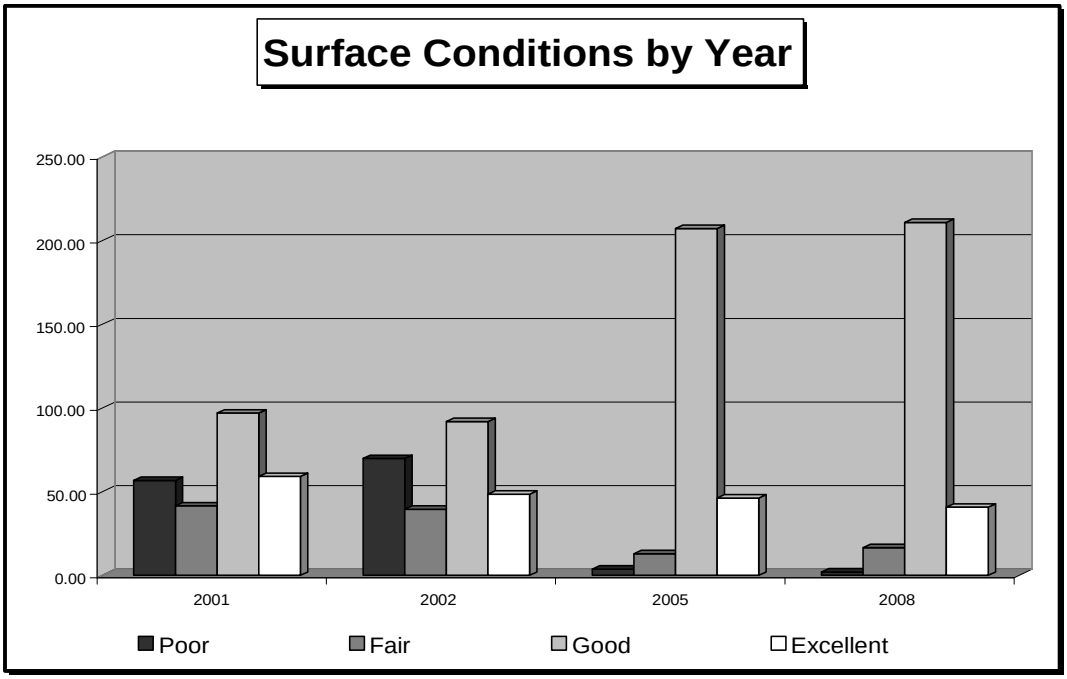


Table 10

Oneida County

2008 Mileage
Condition by Functional Class

	Poor	Fair	Good	Excellent
06 Rural Minor Collector	0	0	<1	<1
07 Rural Major Collector	0	5	40	5
14 Urban Minor Arterial	0	0	12	<1
16 Urban Principal Arterial	0	5	35	12
17 Urban Collector	2	9	123	23

Table 11

Oneida County

2008 Mileage Percentage
Condition by Functional Class

	Poor	Fair	Good	Excellent
06 Rural Minor Collector	0%	0%	23%	77%
07 Rural Major Collector	0%	11%	80%	9%
14 Urban Minor Arterial	0%	0%	98%	2%
16 Urban Principal Arterial	0%	5%	70%	25%
17 Urban Collector	1%	5%	79%	15%