

BRIDGE & PAVEMENT CONDITION MANAGEMENT SYSTEM (BPCMS)

Final Report



2001-2002 UPWP



Report Prepared by:

Syracuse Metropolitan Transportation Council

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Onondaga County

Final Report

April 2002

2001-2002 Unified Planning Work Program

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Executive Summary

2002 Bridge and Pavement Condition Management System

Introduction

A Pavement Management System (PMS) is a systematic method for tracking and addressing pavement conditions. Similarly, a Bridge Management System (BMS) is a method for tracking and addressing bridge conditions. A Bridge Management System exists for New York State, and individual Pavement Management Systems currently exist in the City of Syracuse, Onondaga County, and New York State. The goal of this project is to combine all of the data from the various jurisdictions into one management system that is linked to a Geographic Information System (GIS). By combining all of the condition ratings into a GIS format, data can be mapped, analyzed, presented and accessed in a most useful manner. In future reports, the data will also be compared to past years, which will allow trends to be identified. This report, the second annual report, will continue to establish the benchmark to base evaluation of future Bridge and Pavement Management Reports.

All maps included in this report were compiled utilizing the New York State Department of Transportation (NYSDOT) base map system. The NYSDOT digital Geographic Information Systems files are the basis of the calculations in this report. Through the process of putting all of the bridge and pavement condition rating data into GIS, a database has been built that is available to all SMTC member agencies. Previously, there was not a single report or database that included all bridge and pavement conditions for Onondaga County. Therefore, this report and the data files are significant because of the accessibility to condition rating data through GIS.

Data Compilation

The data in this report is being presented, but has not been significantly analyzed. This is only the second annual Bridge and Pavement Condition Management System Report that has been completed to date. A trend analysis will not be completed until the third annual report.

Pavement ratings in this report are represented in two groups. The first group includes all federal-aid eligible and all non federal-aid eligible roads that are owned by the City of Syracuse, Onondaga County or New York State. The second group includes only federal-aid eligible roads for each jurisdiction within Onondaga County. This year, local federal aid eligible roads were also included in the analysis. Previously, this data was not available. All City of Syracuse, local federal aid eligible, Onondaga County, and New York State roads included in this report have been rated on or converted to the NYSDOT system. Additionally, state and local bridges in Onondaga County are rated by the NYSDOT on a state bridge condition rating scale.

The pavement condition rating data reported on throughout this report is based on ***linear centerline*** miles of roads, not lane miles of roads.

Closing

As this is the second Bridge and Pavement Management Report, no comparisons were made to conditions from past years. In future reports, the benefit of comparing bridge and pavement conditions will be significant. The first trend analysis will be completed in the third annual report, as trends will not be statistically significant with only two years of data.

It is recommended that this report is included on the SMTC's UPWP each year. Upon completion of consecutive reports, the ability to analyze the collected data will be beneficial to the SMTC and its member agencies.

The NYSDOT has determined rating goals for roads and bridges under their jurisdiction. It is recommended that the county, city and local jurisdictions complete the same type of goal. To facilitate this, the SMTC will hold meetings in the next program year with the appropriate agency representatives.

This year, condition rating data for local federal aid eligible roads was collected for local jurisdiction roads within Onondaga County. Next year, it is recommended that the portion of Oswego County Roads that are included in the MPO area also be rated.

The presentation of data in this report is more accurate than the first annual report. Through improving the base GIS data and streamlining the condition ratings, the numbers and percentages in this report are more precise. In order to continue with this accuracy, various minor problems with the current data should be improved for next year.

Finally, at the close of last year's project, it was recommended that the bridge and pavement conditions be compared to state and federal conditions. This report does compare bridge and pavement conditions to Region 3 and New York State conditions. The comparison of bridge and pavement conditions between federal and state/local is not made in this report because the NYSDOT bridge rating system is used for programming purposes by all SMTC member agencies. Additionally, there is no federal pavement rating system that is separate than the NYSDOT rating system for all highways. At this time, the SMTC has not made correlations between the federal scale and the NYSDOT scale. It is recommended that the appropriate comparisons continue for future reports.

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Introduction

A Pavement Management System (PMS) is a systematic method for tracking and addressing pavement conditions. Similarly, a Bridge Management System (BMS) is a method for tracking and addressing bridge conditions. A Bridge Management System exists for New York State (which includes both state and local bridges), and individual Pavement Management Systems currently exist for the City of Syracuse, Onondaga County, and New York State. The goal of this project is to combine all of the data from the various jurisdictions into one management system that is linked to a Geographic Information System (GIS). By combining all of the condition ratings into a GIS format, data can be mapped, analyzed, presented and accessed in a most useful manner. In future reports, the data will also be compared to past years, which will allow trends to be identified. This report, the second annual report, will continue to establish the benchmark to base evaluation of future Bridge and Pavement Management Reports.

All maps included in this report were compiled utilizing a derivation of the New York State Department of Transportation (NYSDOT) base map system. The NYSDOT digital Geographic Information Systems files are the basis of the calculations in this report. This is the second Bridge and Pavement Condition Management System that has been completed by the Syracuse Metropolitan Transportation Council (SMTC). The 2000 data represented in this report is not compared with previous data to determine the improvement or degradation of the bridges and pavement conditions in the Metropolitan Planning Organization (MPO) study area because an accurate trend analysis cannot be completed with only two years of data. Thus, the data in this report is presented, but not analyzed. The data in this report will be used as a baseline for future comparisons, which will begin in the third annual report.

The pavement condition rating data reported on throughout this report is based on *linear centerline* miles of roads, not lane miles of roads. A linear centerline mile of road illustrates a continuous line of pavement that is based on the data describing the center of the length of pavement. For example, an interstate road has approaches in two opposite directions, as well as multiple lanes in each direction. The number of miles based on the number of lanes for each approach is not calculated. Instead, the road centerline length, disregarding the number of lanes and direction, is calculated. This calculation is a *linear centerline* mile of pavement.

The New York State Department of Transportation calculates pavement ratings based on linear lane miles. Therefore, the NYSDOT may have different calculations than the results in this report (for example, total miles by jurisdiction, percentages of poor or excellent pavement, etc.) For the NYSDOT official linear lane mile totals, please refer to the NYSDOT Highway Mileage Chart for Onondaga County.

Pavement ratings in this report are represented in two groups. **The first group includes all federal-aid eligible and all non federal-aid eligible roads that are owned by the City of Syracuse, local jurisdictions (federal-aid eligible roads only), Onondaga**

County or New York State. The second group includes only federal-aid eligible roads for each jurisdiction within Onondaga County.

All City of Syracuse, Onondaga County, and New York State roads included in this report have been rated on or converted to the NYSDOT system. Example pictures of each of these ratings are included in Appendix A. The overall surface ratings are categorized by the following:

Pavement Condition Rating Chart

<u>Rating</u>		<u>Condition Description</u>
U	Under Construction/No Data	Not rated due to on-going work, or no data was available.
1-5	Poor	Distress is frequent and may be severe. These sections are flagged by the NYSDOT for further investigation and possible action.
6	Fair	Distress is clearly visible.
7-8	Good	Distress symptoms are beginning to show.
9-10	Excellent	No pavement distress.

Source: New York State Department of Transportation

The New York State Department of Transportation 2000-2001 Highway Sufficiency Rating Manual for Region 3 and the NYSDOT Pavement Rating System contain further information on the pavement rating system used in New York State.

I. Bridges

State and local bridges in Onondaga County are rated by the NYSDOT on a scale of 1 to 7. The scale uses a weighted formula that accounts for several structural components of the bridge. Bridges with a condition rating less than 5 are deemed as being in a deficient state. They are candidates for rehabilitation work, replacement or even perhaps closure. Priority deficient bridges are those that have a condition rating of less than 3.0, or a condition rating between 3.0 and 4.0 with an Average Annual Daily Traffic (AADT) of over 4,000. Priority deficient bridges are given priority funding over deficient bridges. A deficient or a priority deficient rating does not mean a bridge is unsafe. Within the deficient rating category, certain bridges are categorized as priority deficient. Therefore, a priority deficient bridge is also considered to be a deficient bridge. The pie graphs displaying the bridge information illustrate this concept (Attachments 4, 5 and 6). Each graph shows the non-deficient and no data percentage, as well as the deficient percentage. The deficient percentage is then separated into deficient and priority deficient sub-categories. The corresponding chart (Attachment 3) displays the number and percentages of the deficient, priority deficient, non-deficient, and no data categories. The chart does not combine the priority deficient and deficient sub-categories into one overall deficient category.

Appendix B lists all bridge ratings for the entire study area. Attachment 1 is a map that represents all bridge condition rating types in Onondaga County, and Attachment 2 is also a map that represents all bridge condition rating types in the City of Syracuse. A total of 534 bridges have been rated with condition ratings. Attachment 3 shows the total number of bridges by type of rating within the study area. Attachment 4 categorizes the 534 bridges by jurisdiction and by type of rating, and Attachment 5 illustrates the total bridges rated the MPO area.

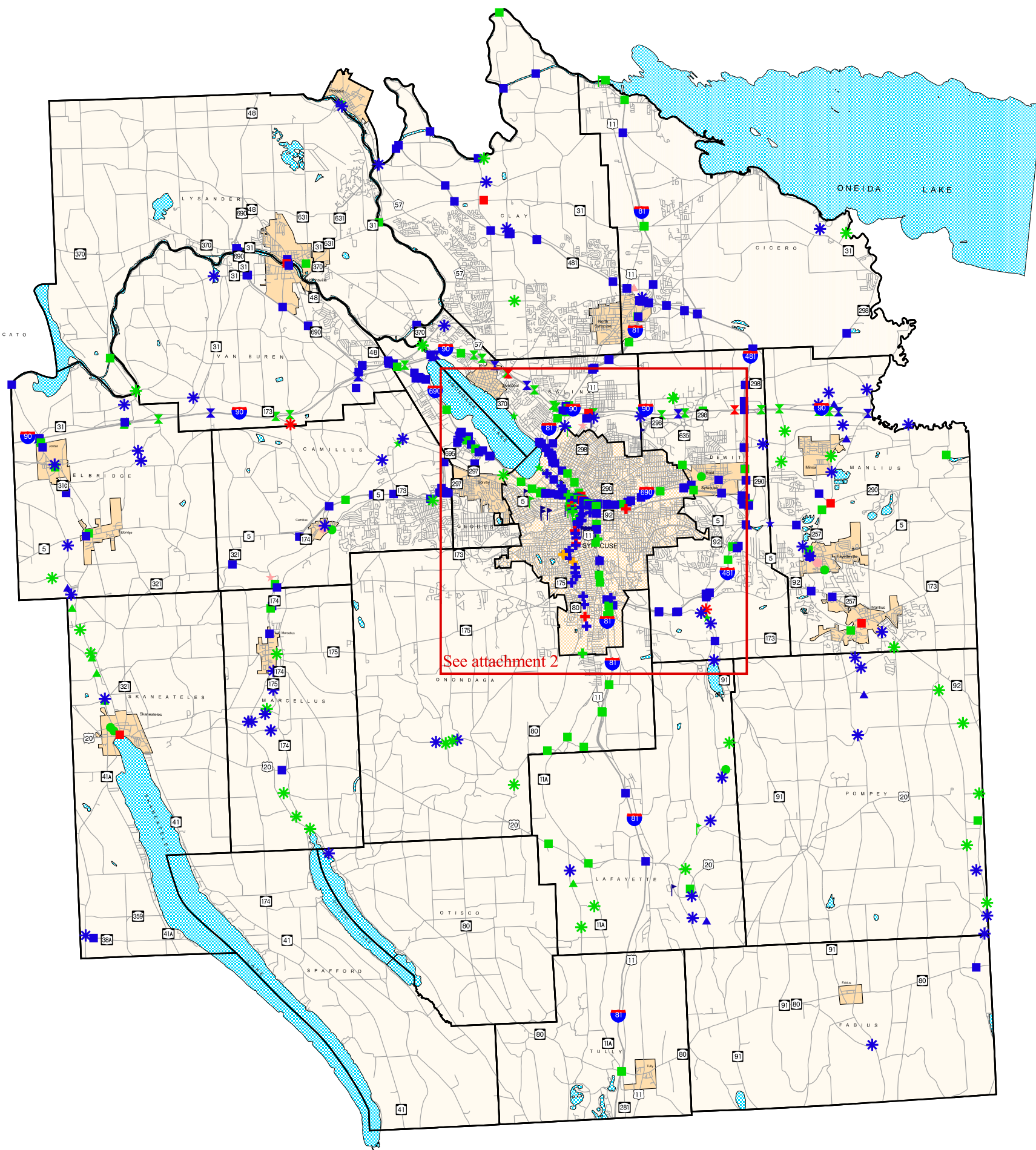
Additionally, Attachment 6 represents the MPO area, Region 3 area, and state averages for all rated bridges by type of rating. There are 19,693 total state bridges with a rating, and the average condition rating (not including no data) of these bridges is 5.268. There are 1413 total Region 3 bridges, with an average condition rating (not including no data) of 5.122. These calculations were completed by the SMTC using data provided by the Structures Division of the NYSDOT. In comparison, the bridges in the SMTC MPO area, in Region 3 and across the state all have similar percentages of no data (all were 1%) and priority deficient bridges (SMTC area: 4%, Region 3 and statewide: 3%). Region 3 has the highest percentage of deficient bridges at 40%, while New York State follows closely at 35% with the SMTC MPO area at 31%. There were no comparisons made to federal bridge conditions because the federal bridge condition rating scale is not similar to the New York State scale.

Overall, the City of Syracuse has the highest percentage of priority deficient bridges (14%). All other jurisdictions have between 7% and 2% priority deficient bridges, except for bridges under village jurisdiction, railroads bridges and unknown bridges, which have no priority deficient bridges.

The Villages in Onondaga County have the highest percentage of deficient bridges (75%). The jurisdiction with the lowest percentage of deficient bridges is the railroad (19%) and New York State DOT bridges (28%).

The railroad bridges in Onondaga County have the highest percentage of non-deficient ratings (77%). All other jurisdictions have between 70% and 25% non-deficient bridges.

The NYSDOT goal is to have 84.2% of state bridges and 74.5% of local bridges non-deficient by the year 2015. According the bridge condition ratings calculated by the SMTC, the state bridges were 65.5% non-deficient in 2000, and the local bridges were 62.3% non-deficient in 2000.



City Bridges
 + Non Deficient
 + Deficient
 + Priority Deficient
 + No Data

Onondaga County Bridges
 * Non Deficient
 * Deficient
 * Priority Deficient
 * No Data

State Bridges
 ■ Non Deficient
 ■ Deficient
 ■ Priority Deficient
 ■ No Data

Thruway
 X Non Deficient
 X Deficient
 X Priority Deficient
 X No Data

Towns
 ▲ Non Deficient
 ▲ Deficient
 ▲ Priority Deficient
 ▲ No Data

Villages
 ● Non Deficient
 ● Deficient
 ● Priority Deficient
 ● No Data

Railroad Bridges
 ▴ Non Deficient
 ▴ Deficient
 ▴ Priority Deficient
 ▴ No Data

Unknown
 ★ Non Deficient
 ★ Deficient
 ★ Priority Deficient
 ★ No Data



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Bridge Ratings in Onondaga County Bridge & Pavement Condition Management System

0 2 4 Miles

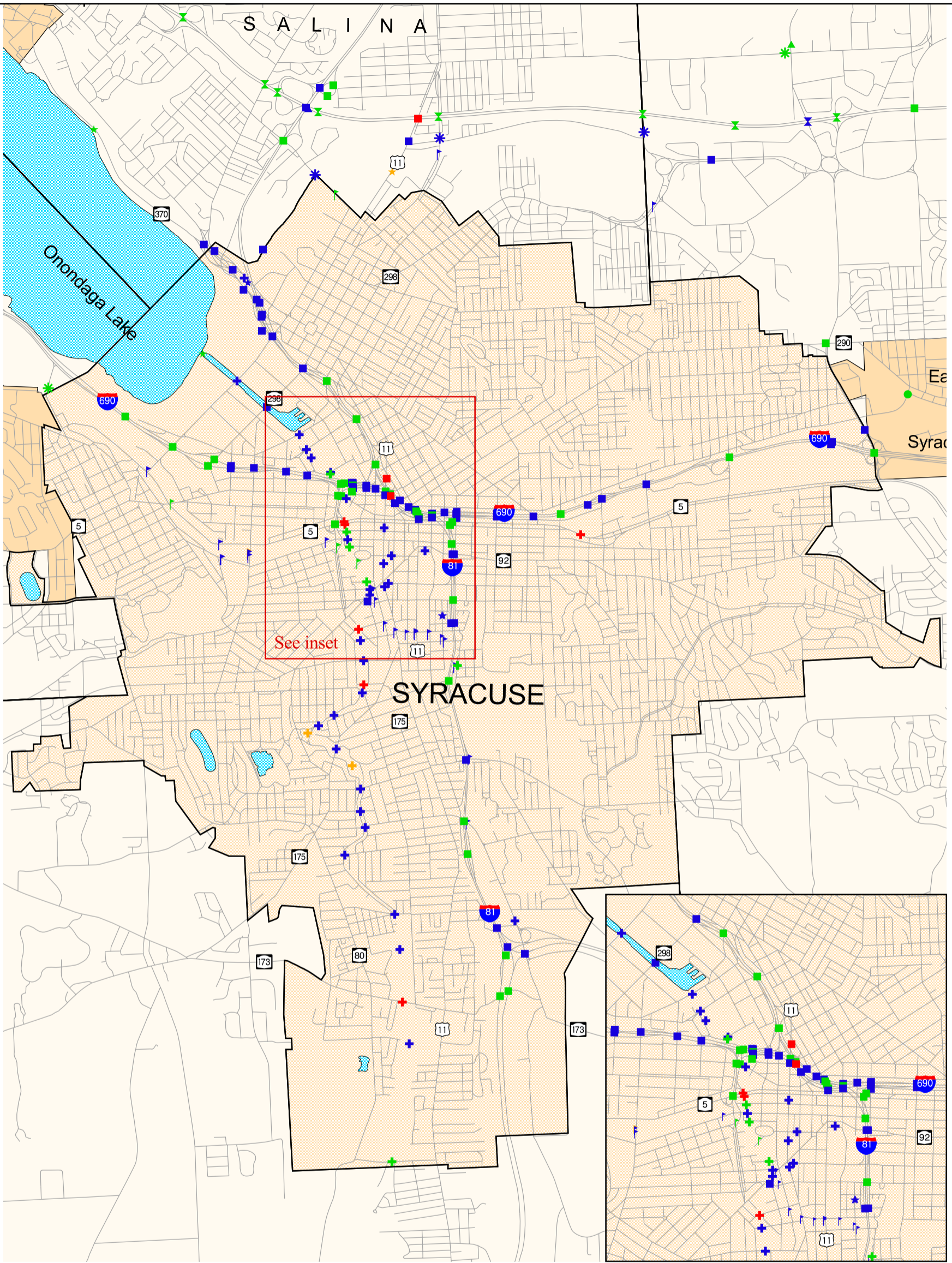
Attachment 1



□ Towns
 ■ Villages
 ■ Lakes
 — Roads

Basemap Copyrighted by NYSDOT
 Data Sources: SMTC, NYSDOT, 1999
 Prepared by SMTC, 02/2002

This map is for presentation purposes only. SMTC does not guarantee the accuracy or completeness of this map.



City Bridges
 + Non Deficient
 + Deficient
 + Priority Deficient
 + No Data

Onondaga County Bridges
 * Non Deficient
 * Deficient
 * Priority Deficient
 * No Data

State Bridges
 ■ Non Deficient
 ■ Deficient
 ■ Priority Deficient
 ■ No Data

Thruway
 x Non Deficient
 x Deficient
 x Priority Deficient
 x No Data

Towns
 ▲ Non Deficient
 ▲ Deficient
 ▲ Priority Deficient
 ▲ No Data

Villages
 ● Non Deficient
 ● Deficient
 ● Priority Deficient
 ● No Data

Railroad Bridges
 † Non Deficient
 † Deficient
 † Priority Deficient
 † No Data

Unknown
 ★ Non Deficient
 ★ Deficient
 ★ Priority Deficient
 ★ No Data



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Bridge Ratings in City of Syracuse Bridge & Pavement Condition Management System

0 0.5 1 Miles

Attachment 2



This map is for presentation purposes only. SMTC does not guarantee the accuracy or completeness of this map.

Towns
 Villages
 Lakes
 Roads

Basemap Copyrighted by NYSDOT
 Data Sources: SMTC, NYSDOT, 1999
 Prepared by SMTC, 02/2002

Attachment 3

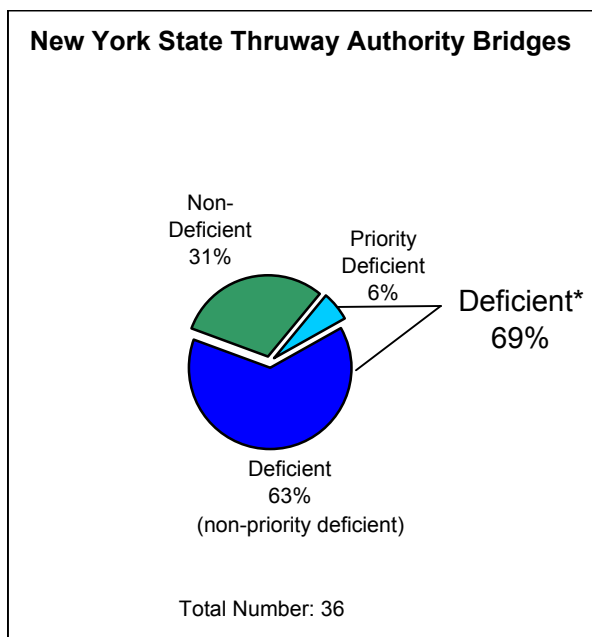
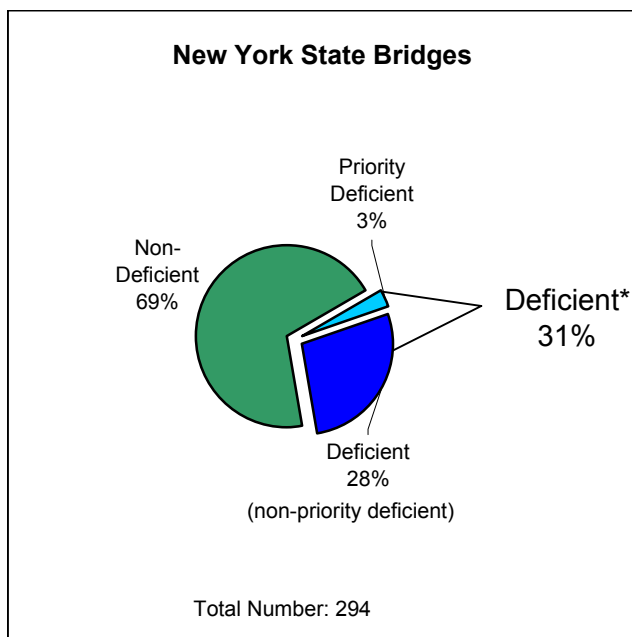
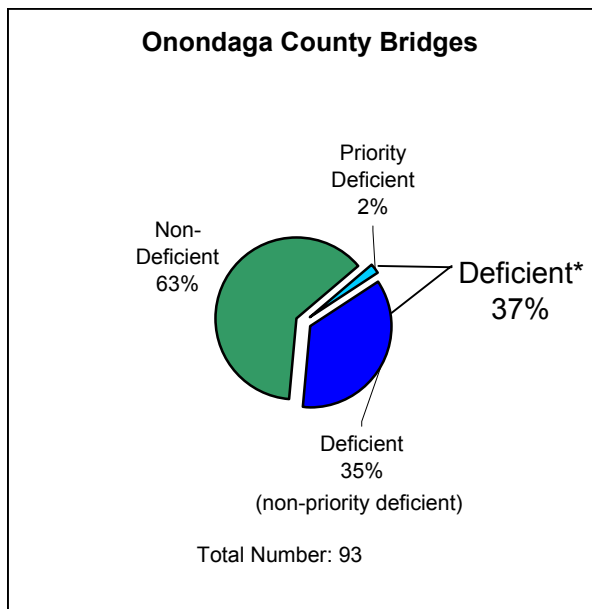
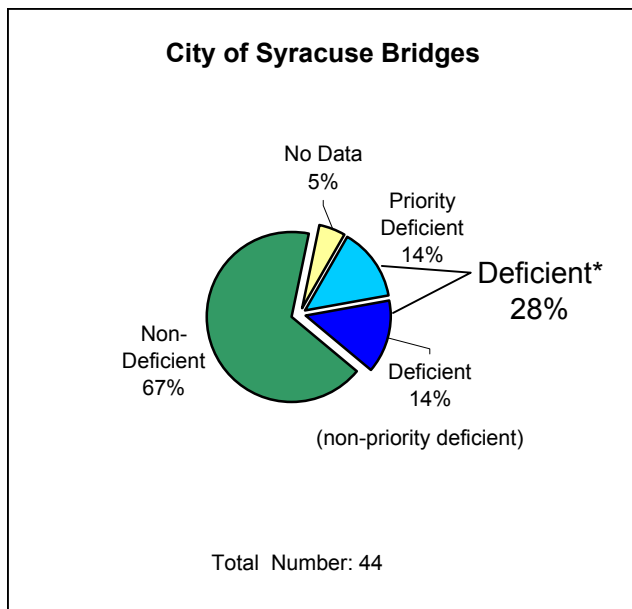
Bridge Jurisdiction and Ratings

Bridge Jurisdiction	Total Number of Bridges	Number of Deficient Bridges* (non-priority deficient)	Percent of Deficient Bridges* (non-priority deficient)	Number of Deficient Bridges*	Percent of Deficient Bridges*	Number of Priority Deficient Bridges	Percent of Priority Deficient Bridges	Number of Non-Deficient Bridges	Percent of Non-Deficient Bridges	No Data	Percent of No Data
City of Syracuse	44	6	14%	12	28%	6	14%	30	68%	2	5%
Onondaga County DOT	93	33	35%	35	37%	2	2%	58	62%	0	0%
New York State DOT	294	81	28%	89	31%	8	3%	205	70%	0	0%
New York State Thruway Authority	36	23	64%	25	70%	2	6%	11	31%	0	0%
Towns in Onondaga County	15	7	47%	8	49%	1	7%	7	47%	0	0%
Villages in Onondaga County	8	6	75%	6	75%	0	0%	2	25%	0	0%
Railroad	31	6	19%	6	19%	0	0%	24	77%	1	3%
Unknown	13	5	38%	5	38%	0	0%	6	46%	2	15%
Total	534	167	31%	186	35%	19	4%	343	64%	5	1%

*A deficient rating includes all bridges rated as deficient as well as all priority deficient bridges.

Attachment 4 Part I*

Bridge Ratings by Jurisdiction



Deficient

Deficient (non-priority deficient)

Priority Deficient

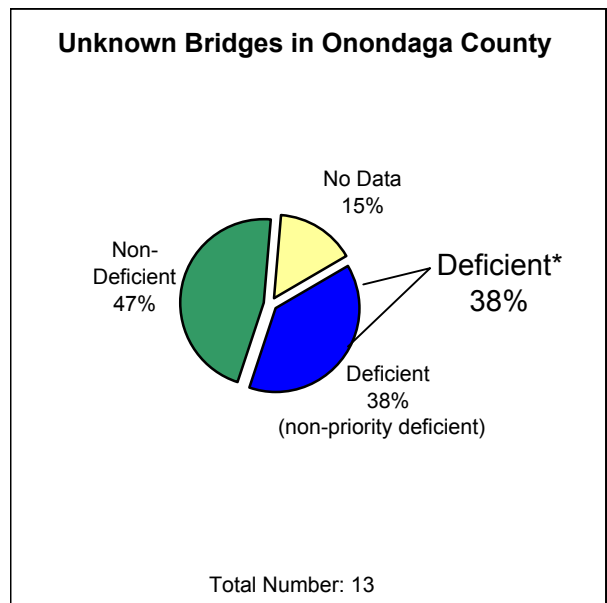
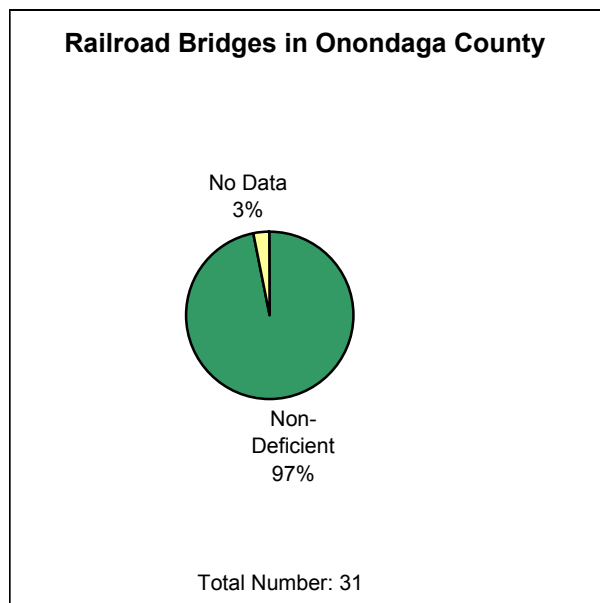
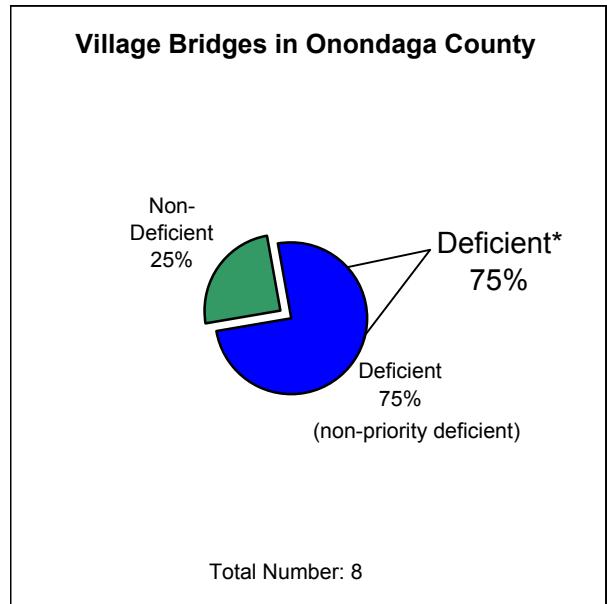
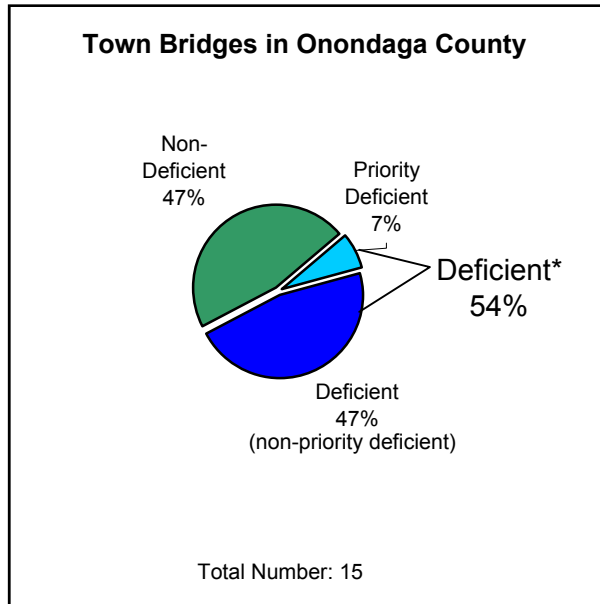
Non-Deficient

No Data

*A deficient rating includes all bridges rated as deficient as well as all priority deficient bridges

Attachment 4
Part II*

Bridge Ratings by Jurisdiction



Deficient

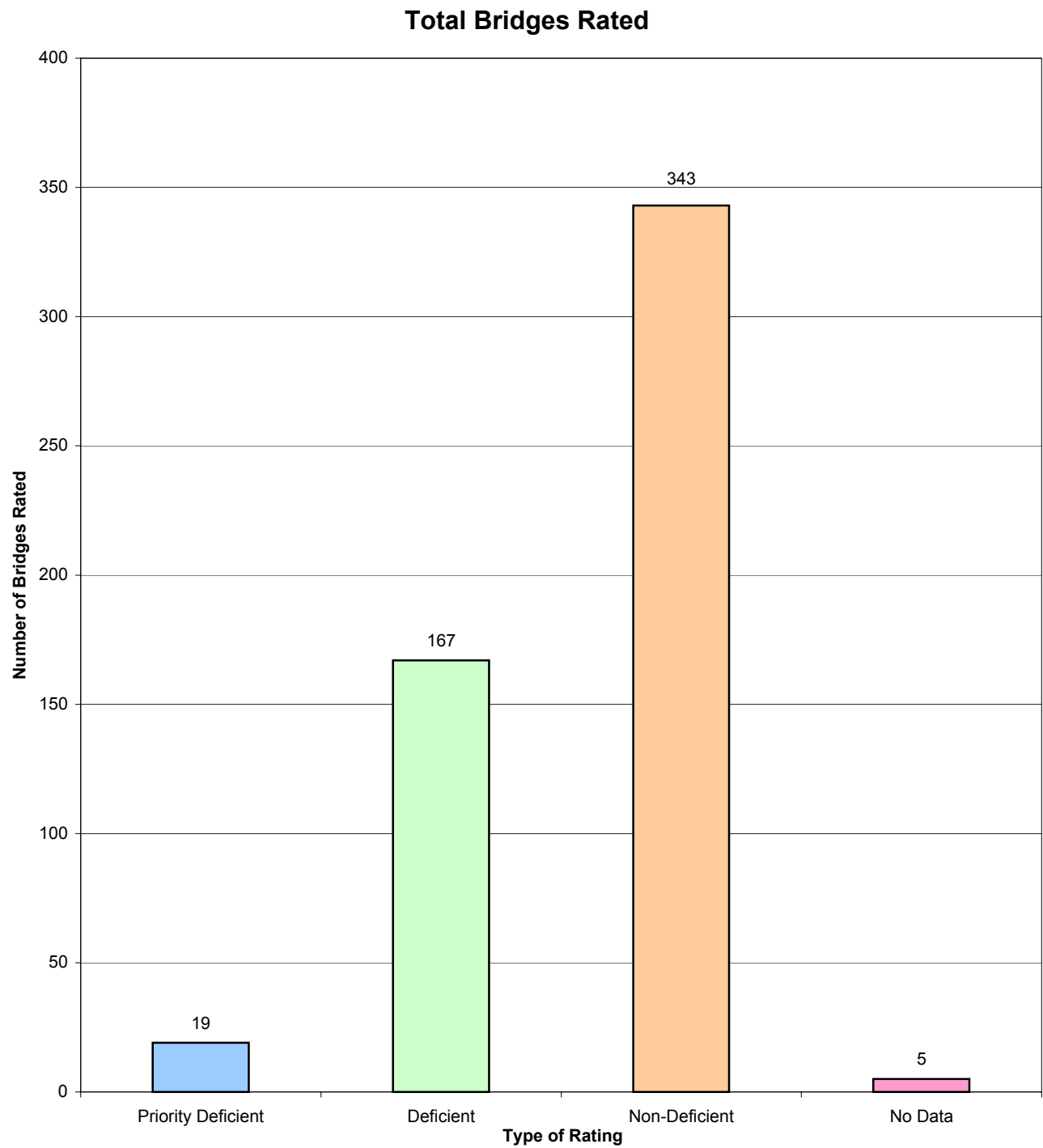
■ Deficient (non-priority deficient)

■ Priority Deficient

■ Non- Deficient

■ No Data

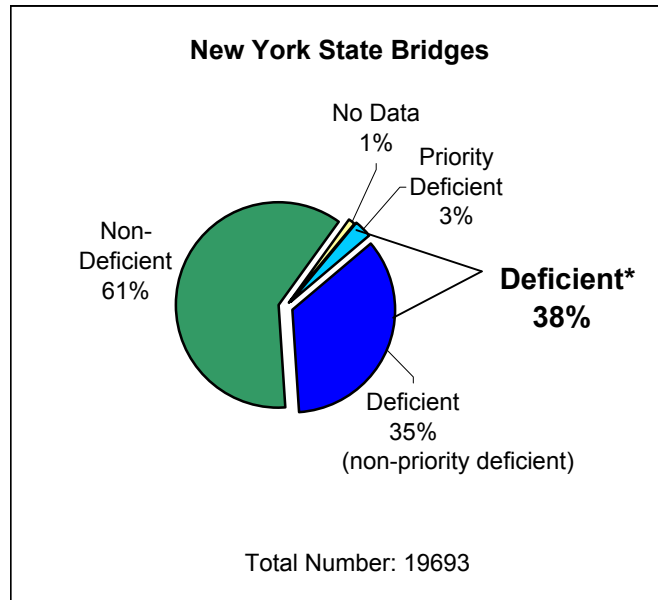
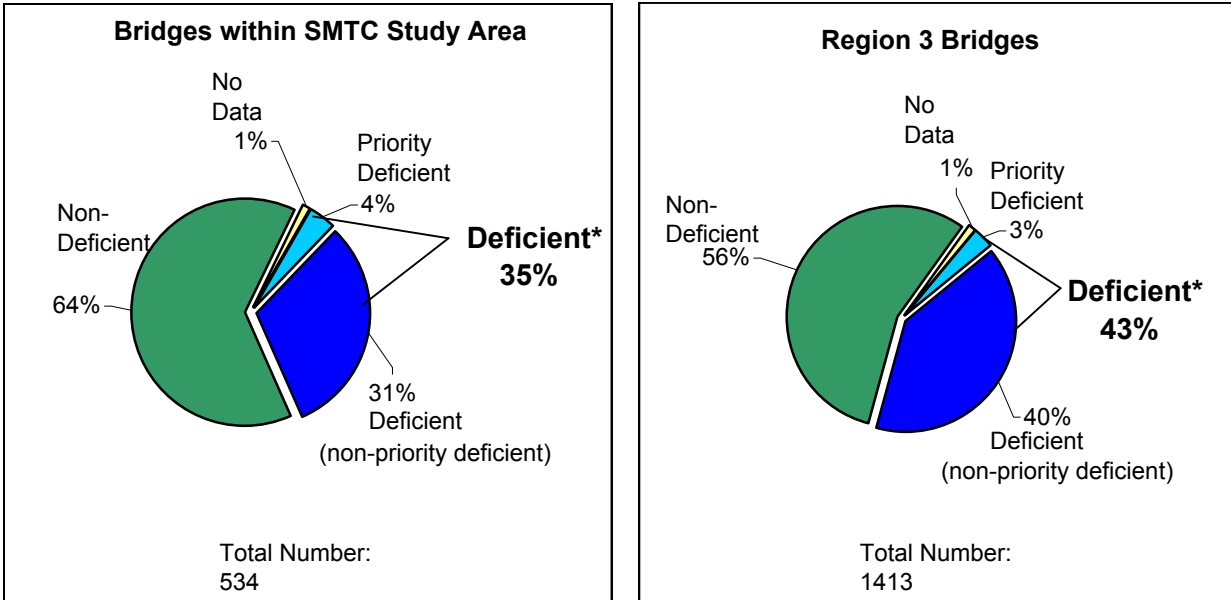
*A deficient rating includes all bridges rated as deficient as well as all priority deficient bridges



*The total number of priority deficient bridges are also counted in the deficient rating.

**A deficient rating includes all bridges rated as deficient as well as all priority deficient bridges.

Comparison of MPO, Region 3 and New York State Bridges



Deficient

■ Deficient (non-priority deficient)	■ Non- Deficient
■ Priority Deficient	■ No Data

*A deficient rating includes all bridges rated as deficient as well as all priority deficient bridges

II. Pavement

The jurisdictions of the City of Syracuse, Onondaga County, the New York State Department of Transportation and the New York State Thruway Authority each complete a pavement management system on a yearly basis. The rating scale used for each of these jurisdictions is based on or converted to the NYSDOT scale, as described in the introduction.

In this report, there are tables and charts that correspond with two categories of roads. **The first category includes all rated roads, both federal-aid eligible and non federal-aid eligible, within the SMTC study area.** Although local jurisdictions do not have a pavement management system to rate their roads, the NYSDOT rated all of the town and village local federal aid eligible roads in Onondaga County using the NYSDOT rating scale. Last year, town and village local federal-aid eligible roads were not included in the presented data. Including the data this year is an expansion of the first Bridge and Pavement Report. Through including town and village local federal aid eligible road ratings, more municipalities may be aware that they have potentially eligible TIP projects. This data is presented in the following pages under the sections of City of Syracuse Pavement Ratings, Local Federal Aid Eligible Pavement Ratings, Onondaga County Pavement Ratings, and New York State Pavement Ratings.

The second category of roads that presents data through tables and charts are all federal-aid eligible roads under the jurisdictions of the City of Syracuse, local federal-aid eligible, Onondaga County, and New York State. This data is presented in the following pages under the section of Federal-Aid Eligible Pavement Ratings.

All average pavement ratings presented in this report are based on the segments of road that have a rating of 1-10. If the segment did not have a rating (“no data”), it was not included when the calculation of the mean was determined.

A. City of Syracuse Pavement Ratings

Approximately 4,000 blocks under the jurisdiction of the City of Syracuse are individually rated according to the NYSDOT overall pavement rating scale. NYSDOT scores all touring routes in the City of Syracuse, most of which are owned by the City. The data is based on linear centerline miles of roads calculated by the SMTC utilizing the SMTC’s Geographic Information System.

Attachments 7, 8, 9, 10, and 11 all represent information collected for all federal-aid eligible and non federal-aid eligible roads from the pavement management system for the City of Syracuse. Additionally, Appendix C is a listing of each of the individually rated blocks within the city.

Attachment 7 indicates the following:

- Approximately 424 centerline miles of road in the City were rated

- 7% of the roads were not rated
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of roads, 38%, were classified as “good”
- The City roads are in fair condition, based on the NYSDOT pavement rating scale. The average rating for the City roads is 6.5

B. Local Federal Aid Eligible Pavement Ratings

All town and village roads under local jurisdiction that are functionally classified as a principal arterial, minor arterial, collector or minor collector in Onondaga County were rated by NYSDOT on the NYSDOT scale, as described in the introduction. See Attachment 31 for a map of the functional classification of each town and village local federal aid eligible road. This is the first year the local federal aid eligible roads are rated. The data is based on linear centerline miles of roads calculated by the SMTC utilizing the SMTC’s Geographic Information System.

Attachments 7, 8, 9, 10, and 11 all represent information collected for all federal-aid eligible roads from the pavement management system for the local jurisdictions. Additionally, Appendix D is a listing of the local federal aid eligible roads that were rated in Onondaga County.

Attachment 7 indicates the following:

- Approximately 52 centerline miles of local federal aid eligible roads are rated
- 0% of the roads were not rated
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of roads, 47%, were classified as “fair”
- The local federal aid eligible roads are in fair condition, based on the NYSDOT pavement rating scale. The average rating for the local roads is 6

C. Onondaga County Pavement Ratings

The roads under the jurisdiction of Onondaga County DOT are rated using the PMSL scale, which is based on the county’s Surface Condition Rating Manual. Various components of the roadway are calculated to produce a Surface Distress Index (SDI) score. Although the SDI is calculated in a different method than the NYSDOT based rating scale, the SDI results are also based on a 1 –10 score. The SDI is very similar to the NYSDOT pictures, descriptions and distress conditions. For purposes of this report, SDI and NYSDOT rating scale are interchangeable because of the strong correlation between the two scales. The data is based on linear centerline miles of roads calculated by the SMTC utilizing the SMTC’s Geographic Information System.

Attachments 7, 8, 9, 10, and 11 all represent information collected for all federal-aid eligible and non federal-aid eligible roads from the pavement management system for Onondaga County. Additionally, Appendix E is a listing of all of the roads rated in and owned by Onondaga County.

Attachment 7 indicates the following:

- Approximately 809 centerline miles of Onondaga County roads are rated
- 12% of Onondaga County roads were not rated
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of roads, 64%, were classified as “excellent”
- The county roads are in good condition, based on the NYSDOT pavement rating scale. The average rating for the county roads is 8.4

D. New York State Pavement Ratings

All roads under New York State DOT jurisdiction were rated on the NYSDOT scale, as described in the introduction. The data is based on linear centerline miles of roads calculated by the SMTC utilizing the SMTC’s Geographic Information System.

Attachments 7, 8, 9, 10, and 11 all represent information collected for all federal-aid eligible and non federal-aid eligible roads from the pavement management system for New York State. Additionally, Appendix F is a listing of all of the roads rated in and owned by New York State DOT.

The first annual report (2001) combined the New York State pavement ratings with the New York State Thruway Authority pavement ratings. Therefore, the total centerline miles for New York State roads are approximately 30 miles less in the second annual report (2002). This change was made to more accurately present the pavement condition ratings information.

Attachment 7 shows the following:

- Approximately 415 centerline miles of New York State DOT roads are rated
- 1% of the state roads were not rated
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of roads, 47%, were classified as “good”
- The state roads are in good condition, based on the NYSDOT pavement rating scale. The average rating for the state roads is 7.2

The New York State DOT GIS files that were utilized in the calculations of the state roads included a route and milepost GIS layer. In analyzing the data it was discovered that in multiple locations, the same road was rated twice due to the road being represented by two different state routes. In this overlap situation, the two routes have the same ratings. An example of this situation is a portion of road in the Town of DeWitt that

is labeled as both NYS Route 5 and NYS Route 92. This road has two route numbers, and therefore two ratings. This situation will be adjusted in the third annual report.

In Attachment 23, a comparison was completed between the New York State jurisdiction roads in the MPO area, Region 3 and on all New York State roads. The MPO area has 21% excellent roads, while Region 3 has 1% and the state has 7% excellent roads. Additionally, Region 3 has 26% good roads, 55% fair, and 18% poor roads, while the state has 23% good roads, 57% fair, and 13% fair roads. The MPO area has 47% good roads, 28% fair and 3% poor roads. No federal comparisons were made due to the difference in condition rating scales.

E. New York State Thruway Authority Pavement Ratings

The New York State Thruway is rated on the NYSDOT scale, as described in the introduction. The data is based on linear centerline miles of roads as calculated by the SMTC utilizing the SMTC's Geographic Information System.

Attachments 7, 8, 9, 10, and 11 all represent information collected for all federal-aid eligible and non federal-aid eligible roads from the pavement management system for New York State Thruway Authority. Additionally, Appendix G is a listing of all of the roads rated in and owned by New York State Thruway Authority.

Attachment 7 shows the following:

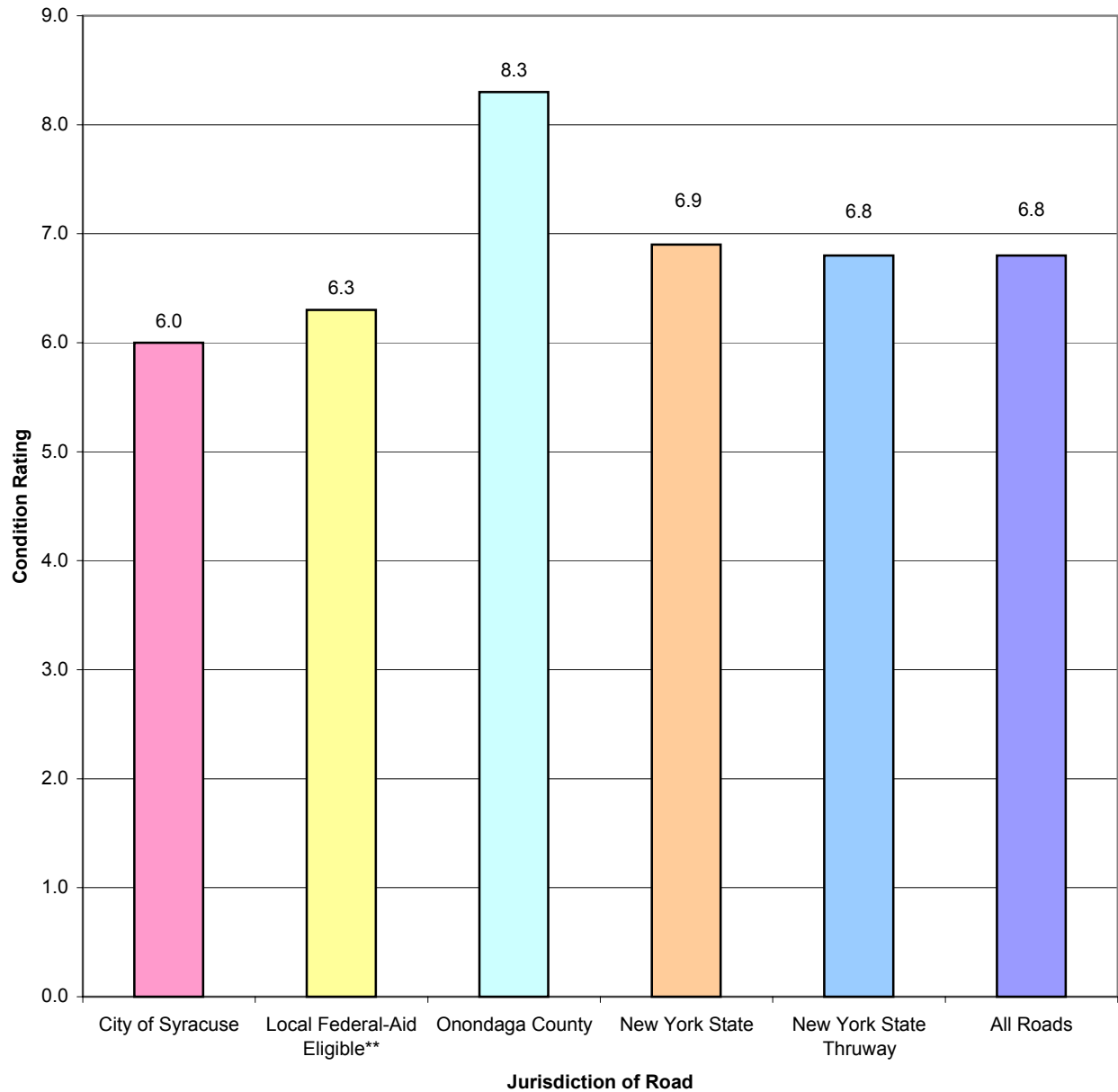
- Approximately 28 centerline miles of New York State Thruway Authority roads are rated
- 1% of the state roads were not rated, due to construction
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of roads, 95%, were classified as “good”
- The thruway roads are in good condition, based on the NYSDOT pavement rating scale. The average rating for the thruway roads is 7

Attachment 7
Pavement Ratings for All Roads in Onondaga County

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads by Jurisdiction	Average Rating
City of Syracuse				6.0 (Fair)
Excellent	177,988	33.7	8%	
Good	846,688	160.4	38%	
Fair	517,208	98.0	23%	
Poor	545,765	103.4	24%	
No Data	153,570	29.1	7%	
Total	2,241,218	424.5	100%	
Local Federal-Aid Eligible				6.3 (Fair)
Excellent	26,785	5.1	10%	
Good	71,325	13.5	26%	
Fair	128,568	24.3	47%	
Poor	48,047	9.1	17%	
No data	0	0.0	0%	
Total	274,724	52.0	100%	
Onondaga County				8.3 (Good)
Excellent	2,717,492	515	64%	
Good	738,756	140	17%	
Fair	268,676	51	6%	
Poor	484,461	92	11%	
No Data	61,414	12	1%	
Total	4,270,800	809	100%	
New York State				6.9 (Fair)
Excellent	463,702	87.8	21%	
Good	1,021,201	193.4	47%	
Fair	622,996	118.0	28%	
Poor	65,966	12.5	3%	
No Data	18,622	3.5	1%	
Total	2,192,488	415.2	100%	
New York State Thruway				6.8 (Fair)
Excellent	0	0.0	0%	
Good	138,256	26.2	95%	
Fair	5,754	1.1	4%	
Poor	0	0.0	0%	
No Data	0	0.0	0%	
Under Construction	1,109	0.2	1%	
Total	145,119	27.5	100%	
All Roads				6.8 (Fair)
Excellent	3,385,966	641.3	37%	
Good	2,816,226	533.4	31%	
Fair	1,543,202	292.3	17%	
Poor	1,144,239	216.7	13%	
No Data	233,607	44.2	3%	
Under Construction	1,109	0.2	0%	
Total	9,124,348	1728.1	100%	

*All data for federal-aid eligible and non federal-aid eligible roads, excluding local roads, calculated by total centerline length

Average Pavement Ratings for All Roads by Jurisdiction



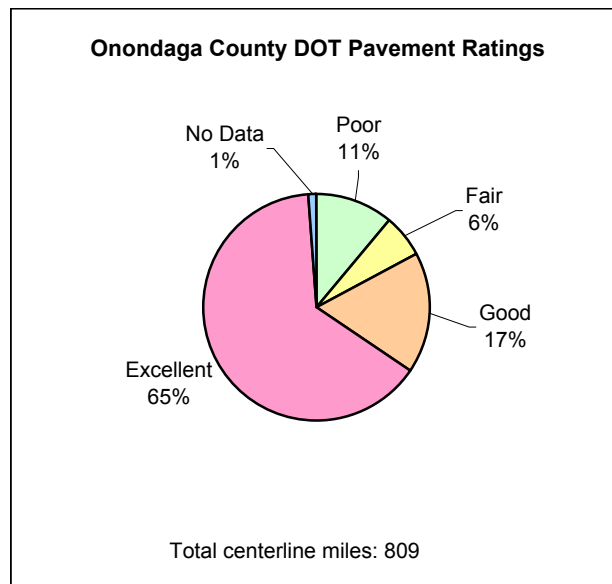
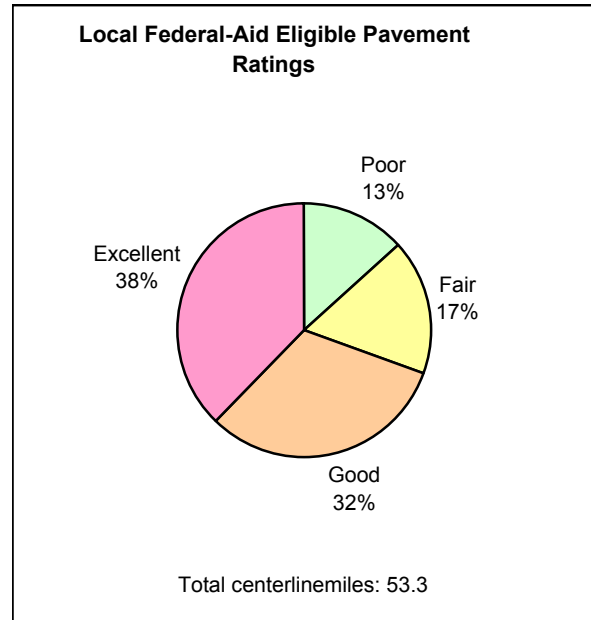
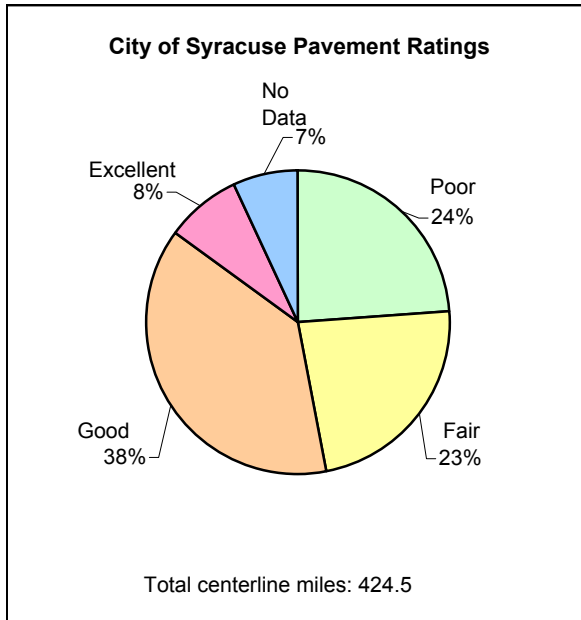
*Calculations based on all Federal-Aid Eligible and Non Federal-Aid Eligible roads measured by total centerline length

**The only local roads rated are local federal-aid eligible roads. No other local roads are included in the analysis of all rated roads

***Scale of Condition Rating (1-5: Poor) (6: Fair) (7-8: Good) (9-10: Excellent)

Attachment 9
Part I*

Pavement Ratings for All Roads by Jurisdiction



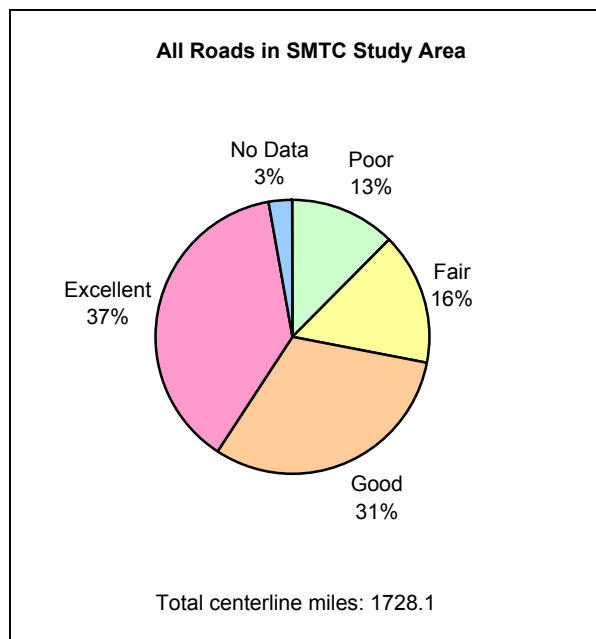
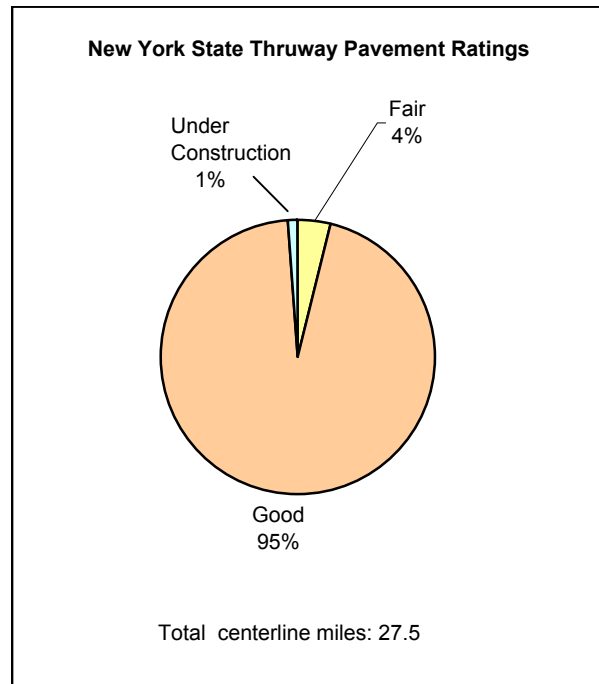
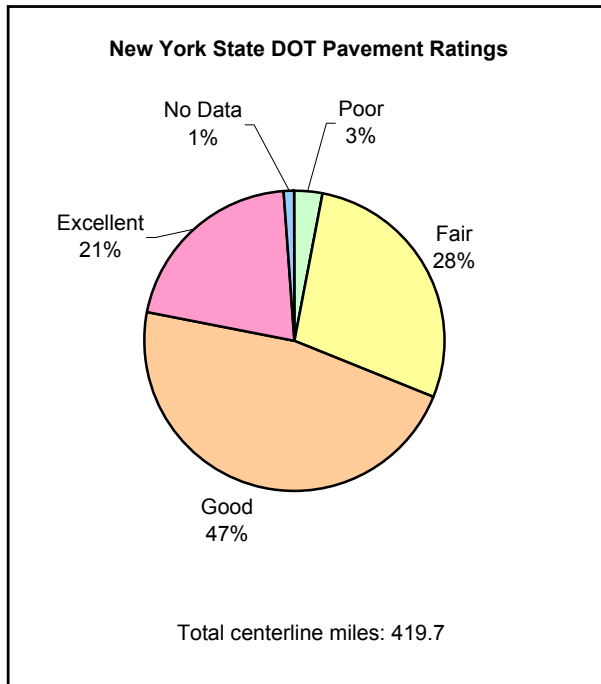
Excellent Good Fair Poor No Data

*All Federal-Aid Eligible and Non Federal-Aid Eligible roads excluding local roads, calculated by total centerline length in miles of road

**The only local roads rated are local federal-aid eligible roads. No other local roads are included in the analysis of all rated roads

Attachment 9
Part II*

Pavement Ratings for All Roads by Jurisdiction



Excellent Good Fair Poor No Data

*All Federal-Aid Eligible and Non Federal-Aid Eligible Roads excluding local roads, calculated by total centerline length in miles of road



All Rated Roads*

- Excellent
- Good
- Fair
- Poor
- No Data



All Rated Roads in Onondaga County* Bridge & Pavement Condition Management System

100 Clinton Square
126 North Salina Street, Suite 100
Syracuse, New York 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

0 2 4 Miles

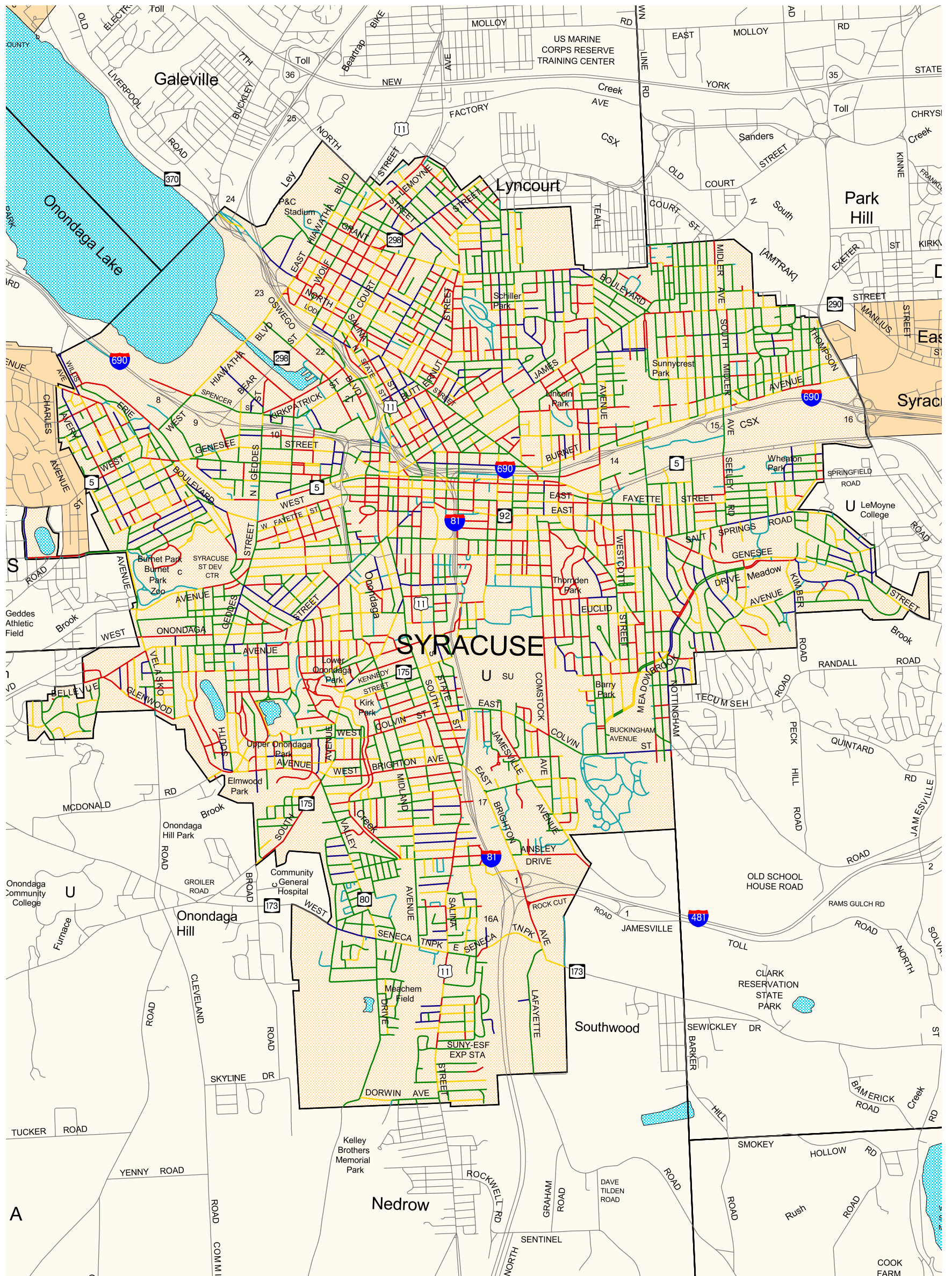
Attachment 10

- Towns
- Villages
- Lakes
- Unrated Roads

Basemap Copyrighted by NYSDOT
Data Sources: SMTC, NYSDOT, 1999
Prepared by SMTC, 02/2002

*Including all federal-aid eligible and non federal-aid eligible roads

This map is for presentation purposes only. SMTC does not guarantee the accuracy or completeness of this map.



100 Clinton Square
126 North Salina Street, Suite 100
Syracuse, New York 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcempo.org

All Rated Roads in the City of Syracuse*

Bridge & Pavement Management System

Attachment 11

*Including all federal-aid eligible and non federal-aid eligible roads

0 0.5 1 Miles

This map is for presentation purposes only. SMTC does not guarantee the accuracy or completeness of this map.



Basemap Copyrighted by NYSDOT
Data Sources: SMTC, NYSDOT, 1999
Prepared by SMTC, 02/2002

- Roads in the City of Syracuse
- Excellent
 - Good
 - Fair
 - Poor
 - No Data
 - Waterbodies
 - Villages
 - City of Syracuse
 - Town Boundaries
 - Unrated Roads

F. Federal-Aid Eligible Pavement Ratings

Functional Classification codes are given to all federal-aid eligible roads. There are four functional classification codes used in the SMTC study area. They include Principal Arterial, Minor Arterial, Minor Collector and Collector. Arterials provide the highest level of mobility, at the highest speed, for long, uninterrupted travel. Arterials generally have higher design standards than other roads, often with multiple lanes and some degree of access control. Collectors provide a lower degree of mobility than arterials. They are designed for travel at lower speeds and for shorter distances. Collectors are typically two-lane roads that collect and distribute traffic from the arterial system.¹ The minor collectors code applies to rural parts of the SMTC study area. Data for linear centerline length for all functional classification roads (the roads that are federal-aid eligible) under the jurisdiction of the City of Syracuse, Local roads, Onondaga County, New York State, and the New York State Thruway is included in Attachments 12-25.

Attachments 12, 13 and 14 display the total centerline miles of road by rating category in the MPO area. Attachment 12 shows that approximately 116 miles of centerline miles of road under the jurisdiction of the City of Syracuse, 52 miles under local jurisdiction, 385 miles under the jurisdiction of Onondaga County, and 415 under the jurisdiction of New York State, 28 under the jurisdiction of New York State Thruway Authority are federal-aid eligible.

Attachments 28 and 29 show the functional classification code for roads in the MPO study area, and Attachment 31 is a map of the functional classification system in the MPO area. Attachment 32 displays the jurisdiction of each road in the MPO area.

Attachments 15, 17, 19, 21, and 24 and the corresponding charts (Attachments 16, 18, 20, 22, 23, and 25) illustrate the condition of each of the types of functional classifications for each jurisdiction. Attachment 26 is a map of all of the federal aid eligible pavement condition ratings. Attachment 12 illustrates that of all federal-aid eligible roads:

- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of roads in the excellent category, 63%, fall under the County's jurisdiction
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of roads in the poor category, 27%, fall under the City's jurisdiction

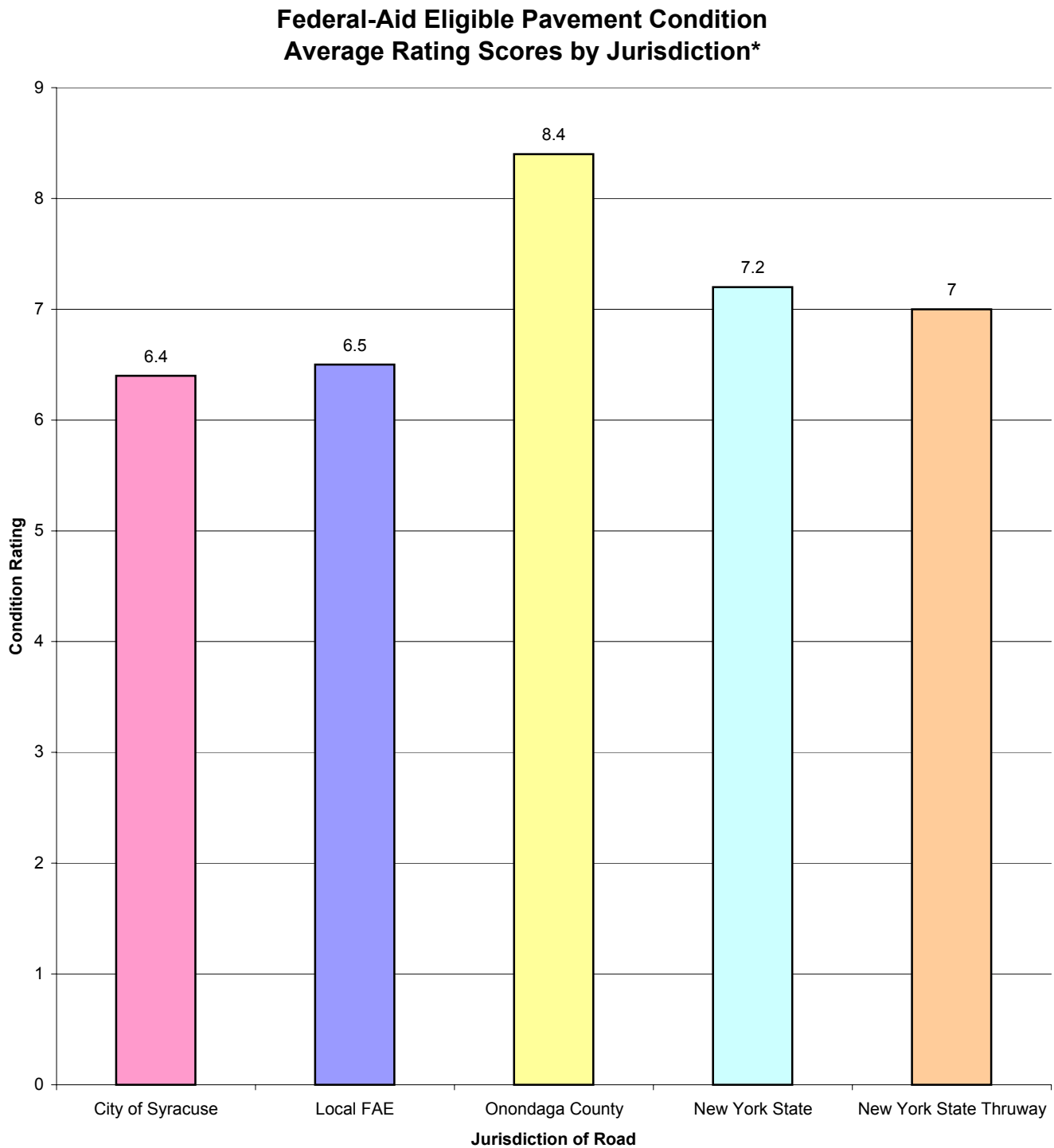
¹ Definitions taken from the Federal Highway Administration's Conditions and Performance Report, Chapter 2

Attachment 12
Pavement Ratings for Federal-Aid Eligible Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads	Average Rating
City of Syracuse				
				6.2 (Fair)
Excellent	49,911	9.5	8%	
Good	190,932	36.2	31%	
Fair	188,405	35.7	31%	
Poor	167,859	31.8	27%	
No Data	16,220	3.1	3%	
Total	613,328	116.2	100%	
Local Federal-Aid Eligible				
				6.5 (Fair)
Excellent	26,785	5.1	10%	
Good	71,325	13.5	26%	
Fair	128,568	24.3	47%	
Poor	48,047	9.1	17%	
No data	0	0.0	0%	
Total	274,724	52.0	100%	
Onondaga County				
				8.4 (Good)
Excellent	1,285,642	243.5	63%	
Good	401,850	76.1	20%	
Fair	134,507	25.5	7%	
Poor	192,849	36.5	9%	
No Data	22,951	4.3	1%	
Total	2,037,800	385.9	100%	
New York State				
				7.2 (Good)
Excellent	463,702	87.8	21%	
Good	1,021,201	193.4	47%	
Fair	622,996	118.0	28%	
Poor	65,966	12.5	3%	
No Data	18,622	3.5	1%	
Total	2,192,488	415.2	100%	
New York State Thruway				
				7.0 (Good)
Excellent	0	0.0	0%	
Good	138,256	26.2	95%	
Fair	5,754	1.1	4%	
Poor	0	0.0	0%	
Under Construction	1,109	0.2	1%	
No data	0	0.0	0%	
Total	145,119	27.5	100%	
All FAE				
				7.1 (Good)
Excellent	1,826,040	345.8	35%	
Good	1,823,564	345.4	35%	
Fair	1,080,231	204.6	21%	
Poor	474,721	89.9	9%	
Under Construction	1,109	0.2	0%	
No Data	57,793	10.9	1%	
Total	5,263,458	996.9	100%	

*Calculations based on total centerline length of road

Attachment 13

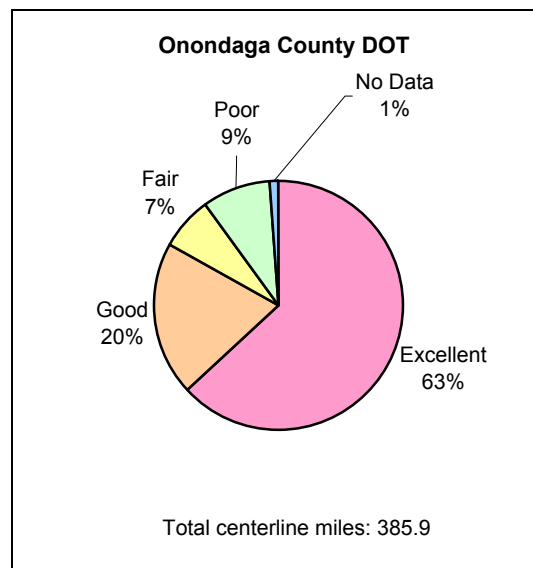
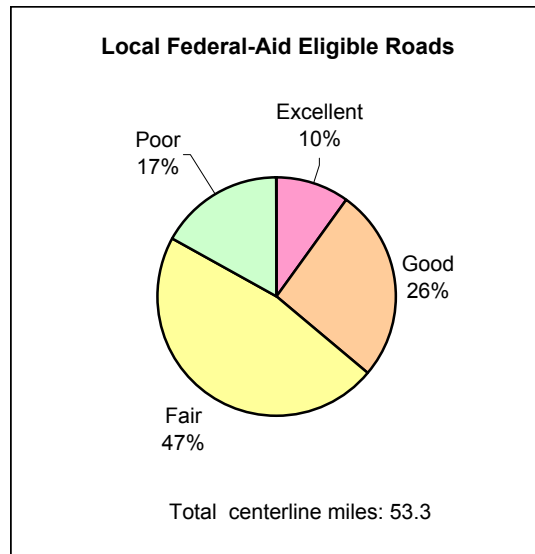
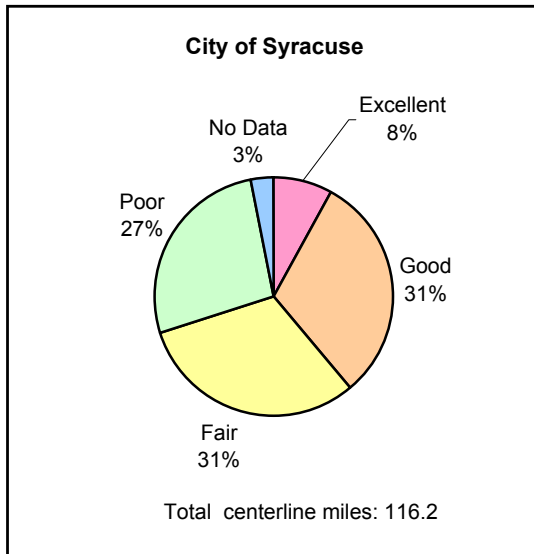


*Calculations based on measurements of total centerline length

**Scale of Condition Rating (1-5: Poor) (6: Fair) (7-8: Good) (9-10: Excellent)

Attachment 14 Part I*

Federal-Aid Eligible Roads by Jurisdiction

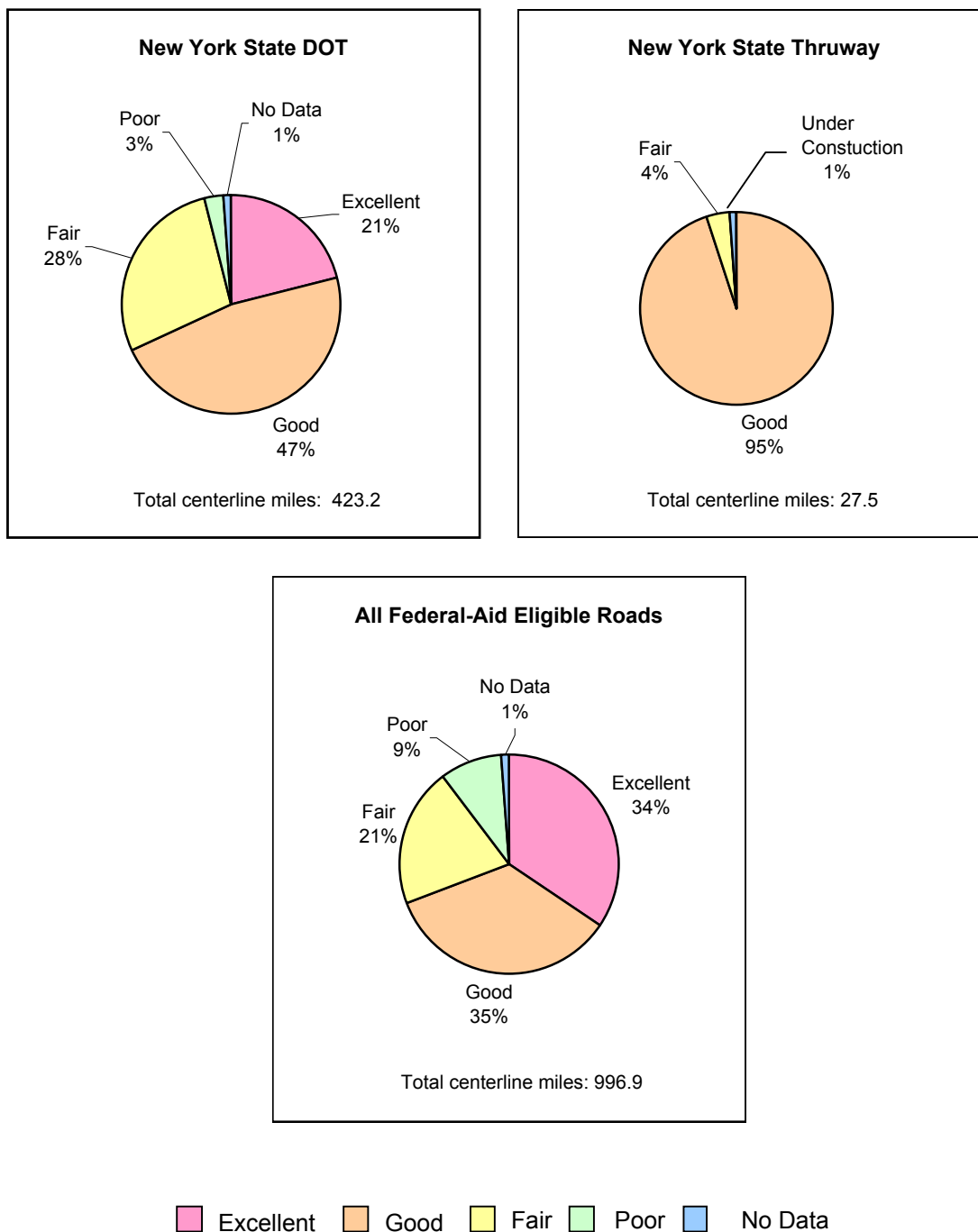


Excellent Good Fair Poor No Data

*Percentages determined by total centerline length in miles of road

Attachment 14 Part II*

Federal-Aid Eligible Roads by Jurisdiction



*Percentages determined by total centerline length in miles of road

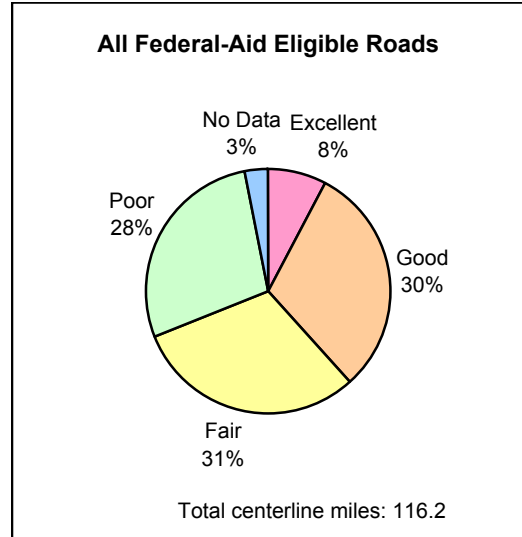
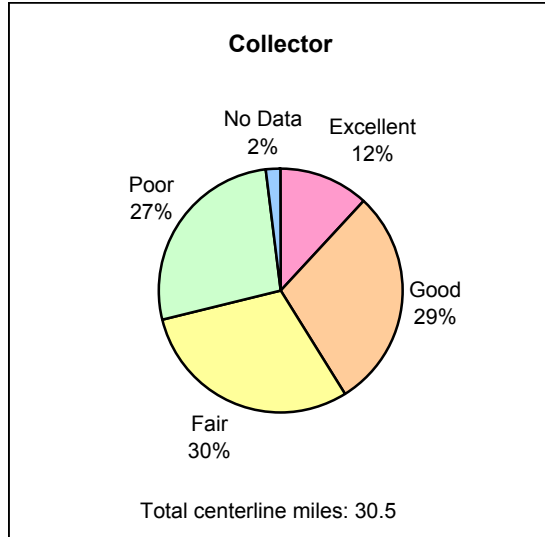
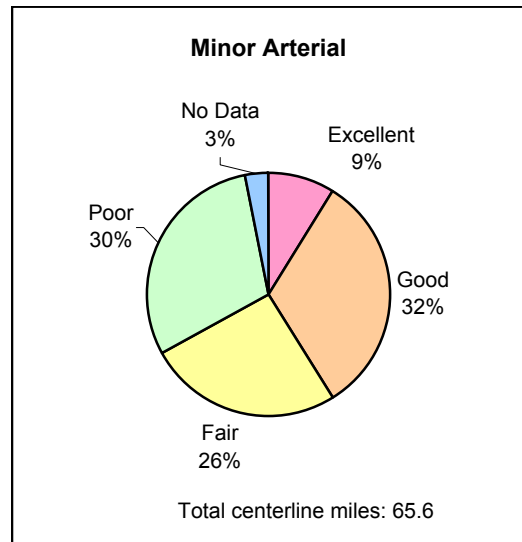
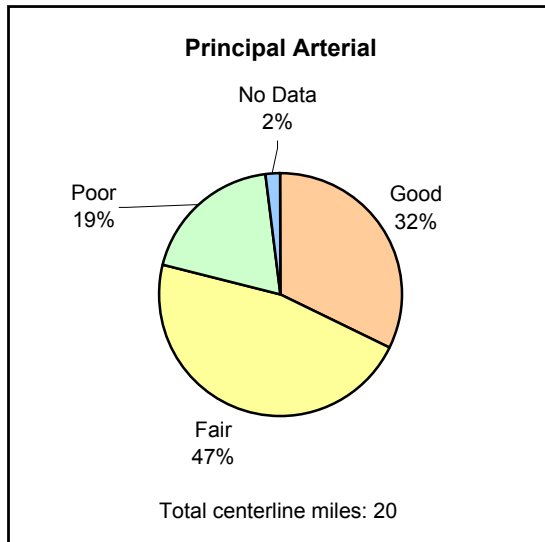
Attachment 15
Pavement Ratings by Functional Classification for City of Syracuse

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
City of Syracuse			
Principal Arterial			
Excellent	356	0.1	0%
Good	33,521	6.3	32%
Fair	48,880	9.3	46%
Poor	20,545	3.9	19%
No Data	2,278	0.4	2%
Total	105,580	20.0	100%
Minor Arterial			
Excellent	30,058	5.7	9%
Good	110,022	20.8	32%
Fair	91,793	17.4	26%
Poor	103,114	19.5	30%
No Data	11,486	2.2	3%
Total	346,472	65.6	100%
Collector			
Excellent	19,498	3.7	12%
Good	47,389	9.0	29%
Fair	47,733	9.0	30%
Poor	44,201	8.4	27%
No Data	2,456	0.5	2%
Total	161,276	30.5	100%
Minor Collector			
Excellent	0	0.0	0%
Good	0	0.0	0%
Fair	0	0.0	0%
Poor	0	0.0	0%
No Data	0	0.0	0%
Total	0	0.0	0%
All Federal-Aid City Roads			
Excellent	49,911	9.5	8%
Good	190,932	36.2	31%
Fair	188,405	35.7	31%
Poor	167,859	31.8	27%
No Data	16,220	3.1	3%
Total	613,328	116.2	100%

*Calculations based on total centerline length of road

Attachment 16

Pavement Ratings by Functional Classification for City of Syracuse Roads*



Excellent Good Fair Poor No Data

*Percentages determined by total centerline length in miles of road

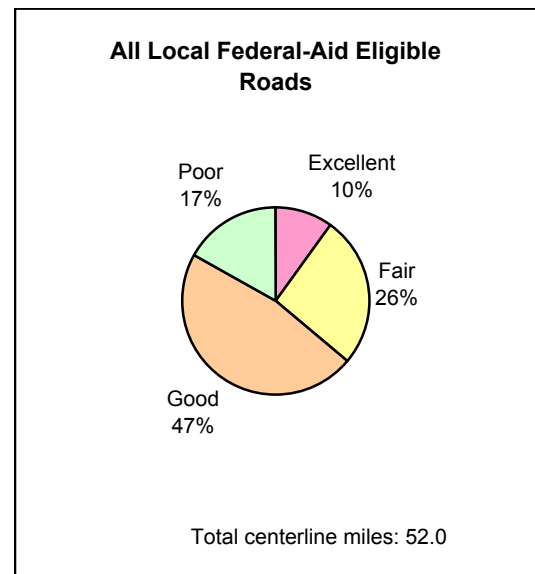
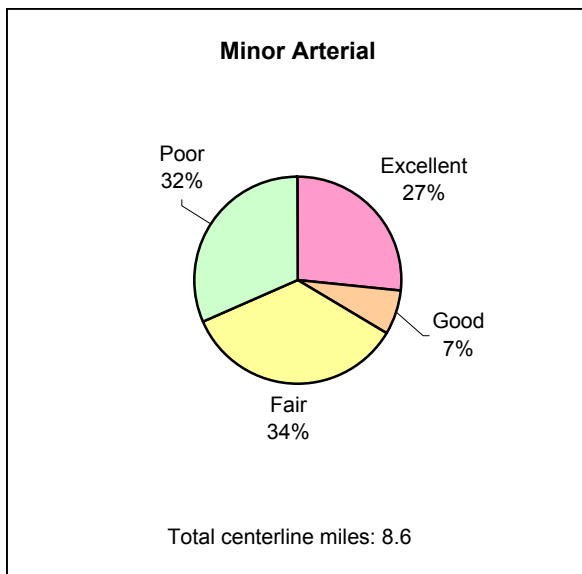
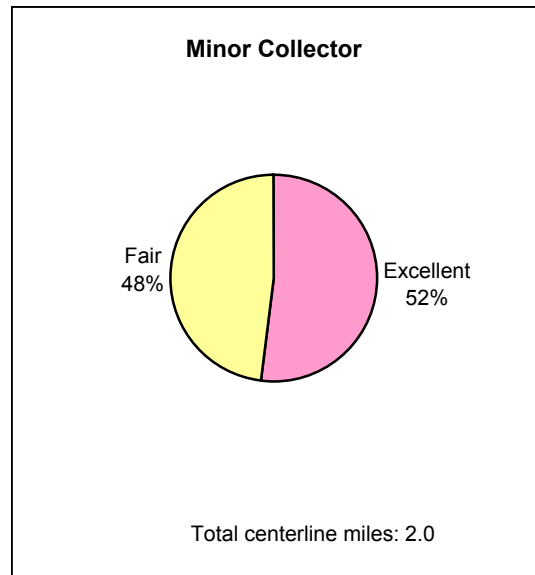
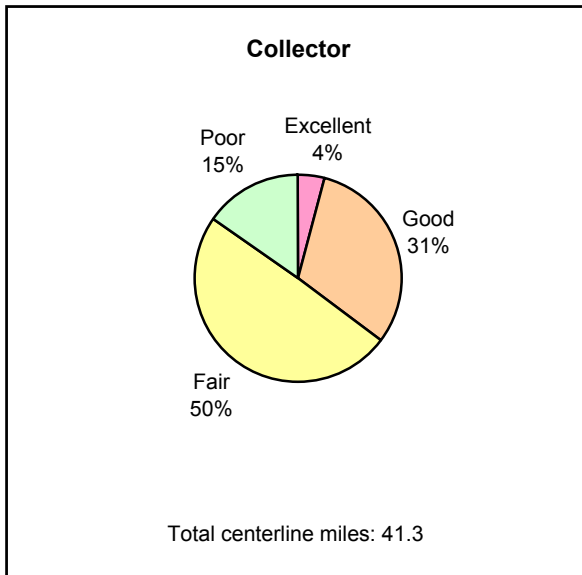
Attachment 17
Pavement Ratings by Functional Classification for Local Federal-Aid Eligible Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
Local Federal-Aid Eligible			
Principal Arterial			
Excellent	0	0.0	0%
Good	0	0.0	0%
Fair	871	0.2	100%
Poor	0	0.0	0%
No Data	0	0.0	0%
Total	871	0.2	100%
Minor Arterial			
Excellent	12,071	2.3	27%
Good	2,957	0.6	7%
Fair	15,922	3.0	35%
Poor	14,267	2.7	32%
No Data	0	0.0	0%
Total	45,217	8.6	100%
Collector			
Excellent	9,264	1.8	4%
Good	68,368	12.9	31%
Fair	106,815	20.2	49%
Poor	33,779	6.4	15%
No Data	0	0.0	0%
Total	218,226	41.3	100%
Minor Collector			
Excellent	5,449	1.0	52%
Good	0	0.0	0%
Fair	4,960	0.9	48%
Poor	0	0.0	0%
No Data	0	0.0	0%
Total	10,410	2.0	100%
All Local Federal-Aid Roads			
Excellent	26,785	5.1	10%
Good	71,325	13.5	26%
Fair	128,568	24.3	47%
Poor	48,047	9.1	17%
No Data	0	0.0	0%
Total	274,724	52.0	100%

*Calculations based on total centerline length of road

Attachment 18

Pavement Ratings by Functional Classification for Federal-Aid Eligible Roads*



Excellent Good Fair Poor No Data

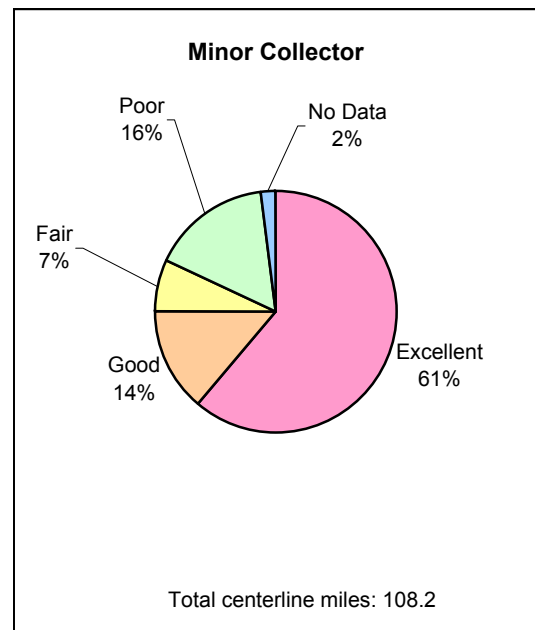
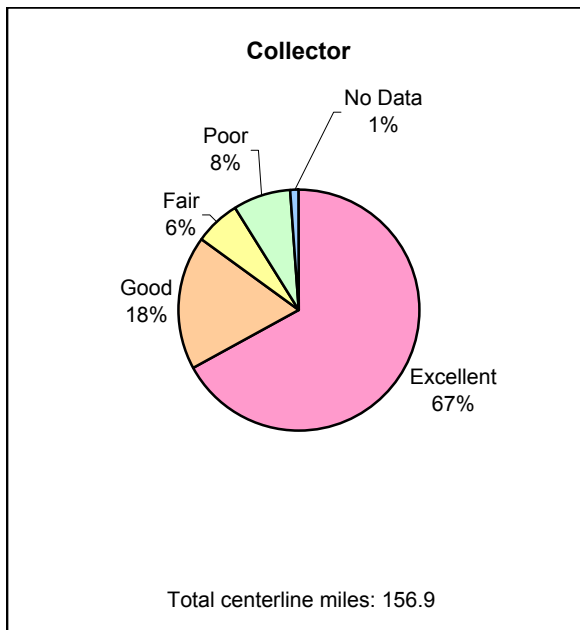
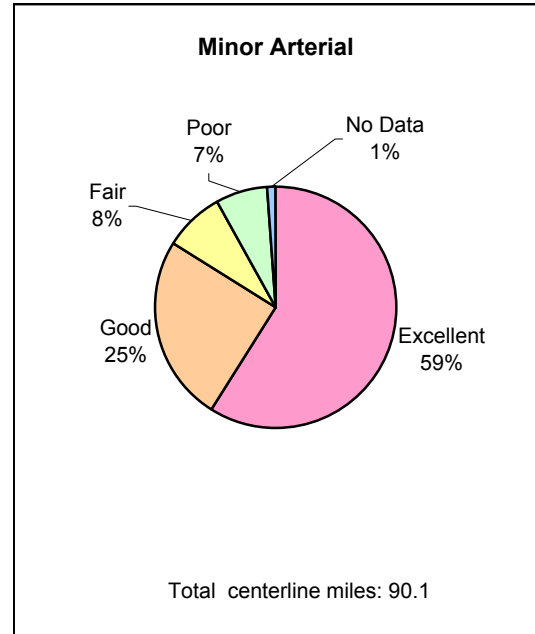
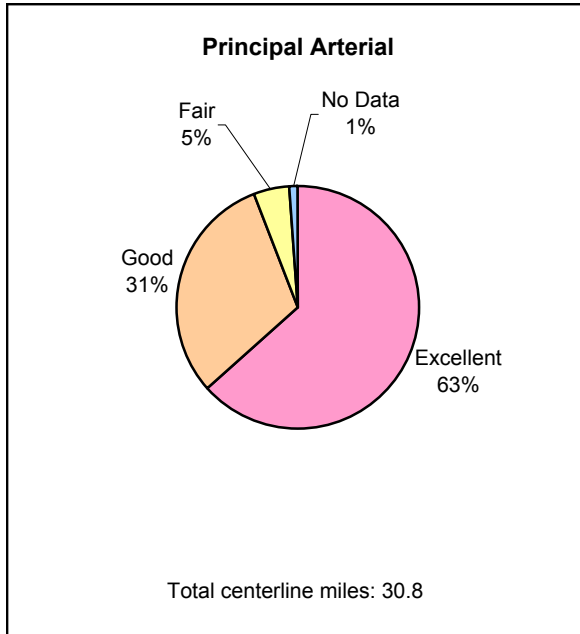
*Percentages determined by total centerline length in miles of road

Attachment 19
Pavement Ratings by Functional Classification for Onondaga County DOT Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
Onondaga County			
Principal Arterial			
Excellent	103,768	19.7	64%
Good	49,713	9.4	31%
Fair	7,813	1.5	5%
Poor	0	0.0	0%
No Data	1,293	0.2	1%
Total	162,586	30.8	100%
Minor Arterial			
Excellent	283,051	53.6	59%
Good	117,186	22.2	25%
Fair	37,217	7.0	8%
Poor	32,538	6.2	7%
No Data	5,833	1.1	1%
Total	475,825	90.1	100%
Collector			
Excellent	551,772	104.5	67%
Good	152,650	28.9	18%
Fair	50,872	9.6	6%
Poor	67,926	12.9	8%
No Data	5,040	1.0	1%
Total	828,260	156.9	100%
Minor Collector			
Excellent	347,052	65.7	61%
Good	82,302	15.6	14%
Fair	38,606	7.3	7%
Poor	92,385	17.5	16%
No Data	10,785	2.0	2%
Total	571,129	108.2	100%
All County Federal-Aid Roads			
Excellent	1,285,642	243.5	63%
Good	401,850	76.1	20%
Fair	134,507	25.5	7%
Poor	192,849	36.5	9%
No Data	22,951	4.3	1%
Total	2,037,800	385.9	100%

Attachment 20 Part I*

Pavement Ratings by Functional Classification for Onondaga County DOT Roads

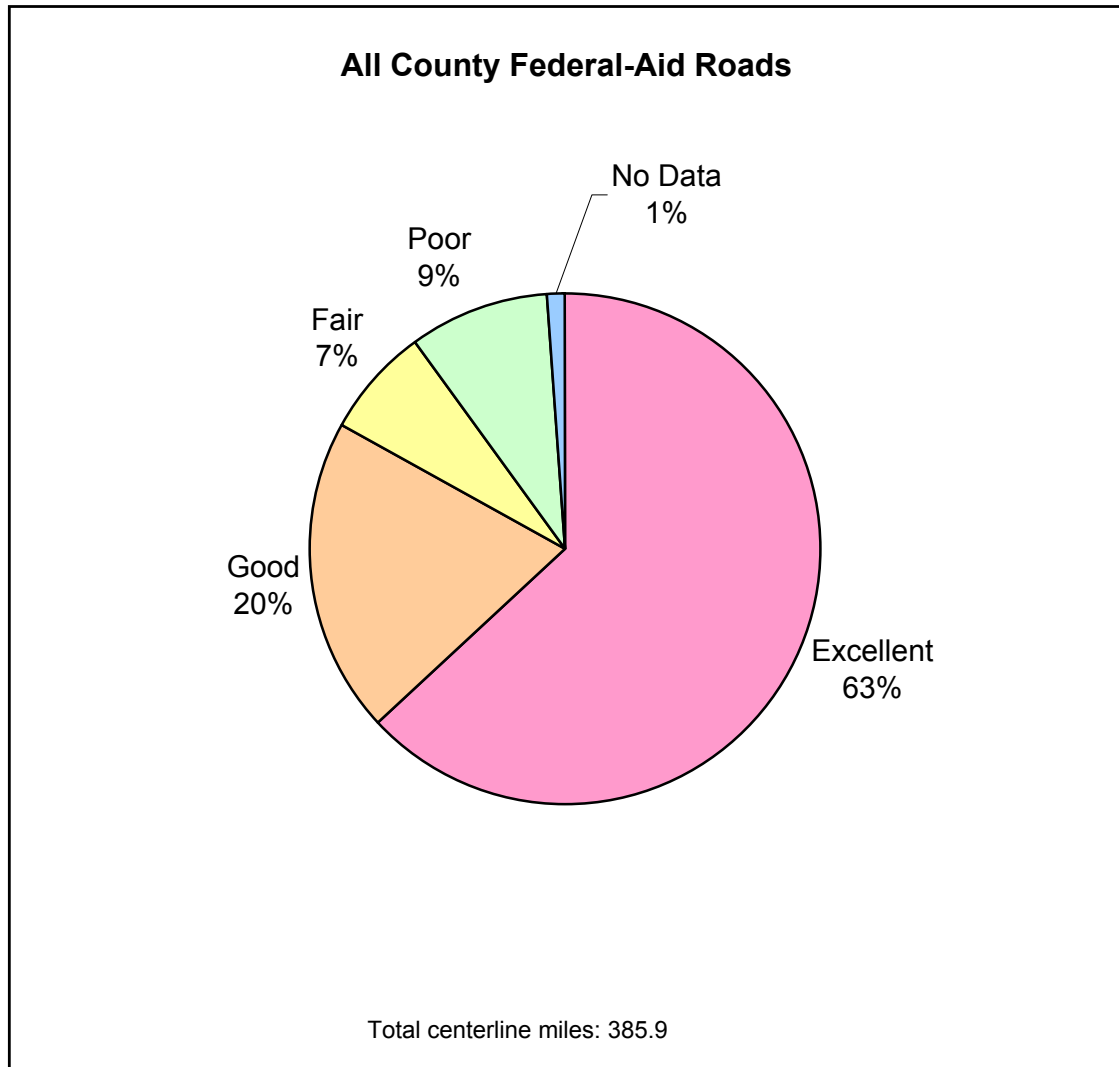


Excellent
 Good
 Fair
 Poor
 No Data

*Percentages determined by total centerline length in miles of road

Attachment 20
Part II*

**Pavement Ratings by Functional Classification for
Onondaga County DOT Roads**



Excellent Good Fair Poor No Data

*Percentages determined by total centerline length in miles of road

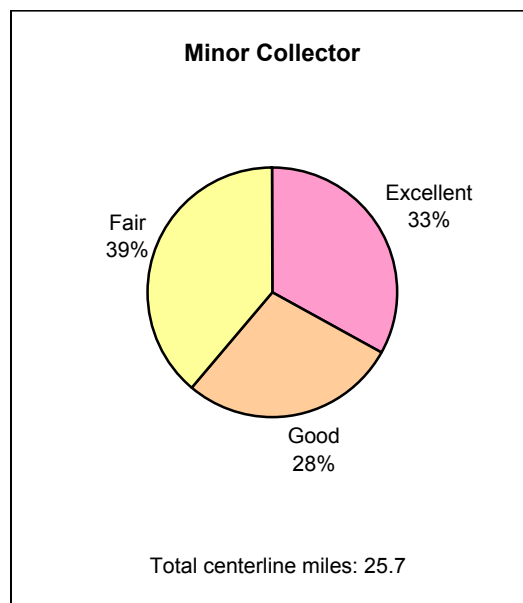
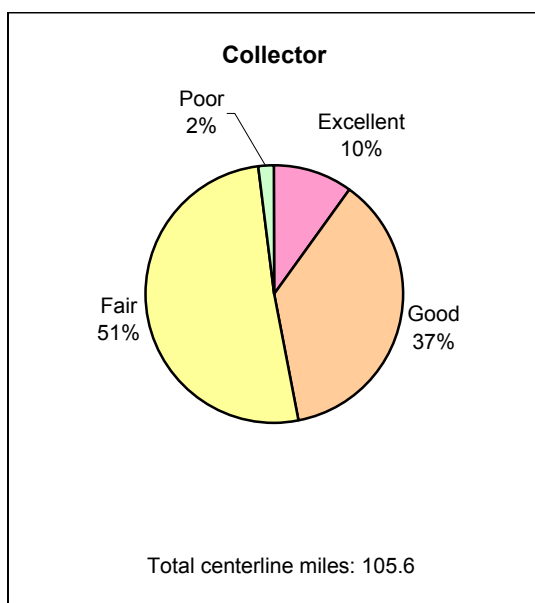
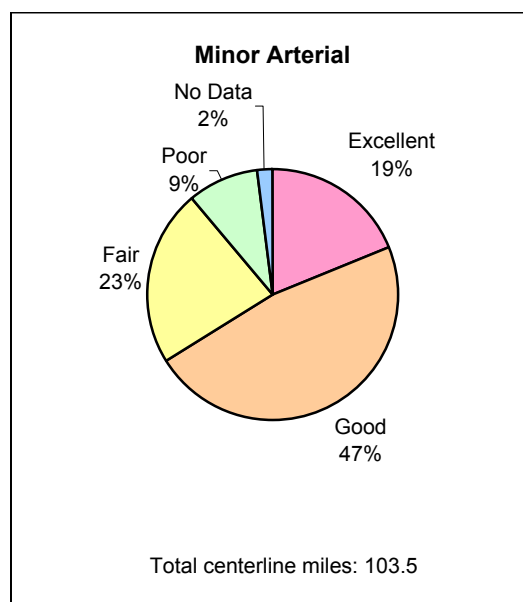
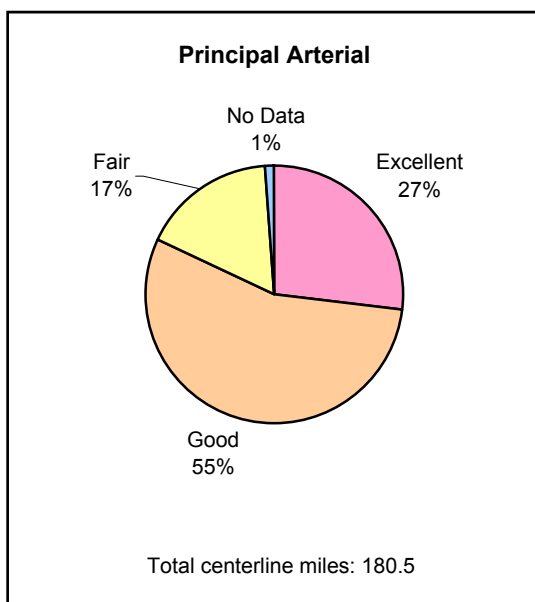
Attachment 21
Pavement Ratings by Functional Classification for New York State DOT Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
New York State			
Principal Arterial			
Excellent	258,184	48.9	27%
Good	522,997	99.1	55%
Fair	162,824	30.8	17%
Poor	2,859	0.5	0%
No Data	6,395	1.2	1%
Total	953,259	180.5	100%
Minor Arterial			
Excellent	104,953	19.9	19%
Good	255,932	48.5	47%
Fair	123,520	23.4	23%
Poor	49,717	9.4	9%
No Data	12,227	2.3	2%
Total	546,349	103.5	100%
Collector			
Excellent	55,533	10.5	10%
Good	204,478	38.7	37%
Fair	283,967	53.8	51%
Poor	13,391	2.5	2%
No Data	0	0.0	0%
Total	557,369	105.6	100%
Minor Collector			
Excellent	45,031	8.5	33%
Good	37,794	7.2	28%
Fair	52,685	10.0	39%
Poor	0	0.0	0%
No Data	0	0.0	0%
Total	135,511	25.7	100%
All State Federal-Aid Roads			
Excellent	463,702	87.8	21%
Good	1,021,201	193.4	47%
Fair	622,996	118.0	28%
Poor	65,966	12.5	3%
No Data	18,622	3.5	1%
Total	2,192,488	415.2	100%

*Calculations based on total centerline length of road

Attachment 22 Part I*

Pavement Rating by Functional Classification for New York State DOT Roads

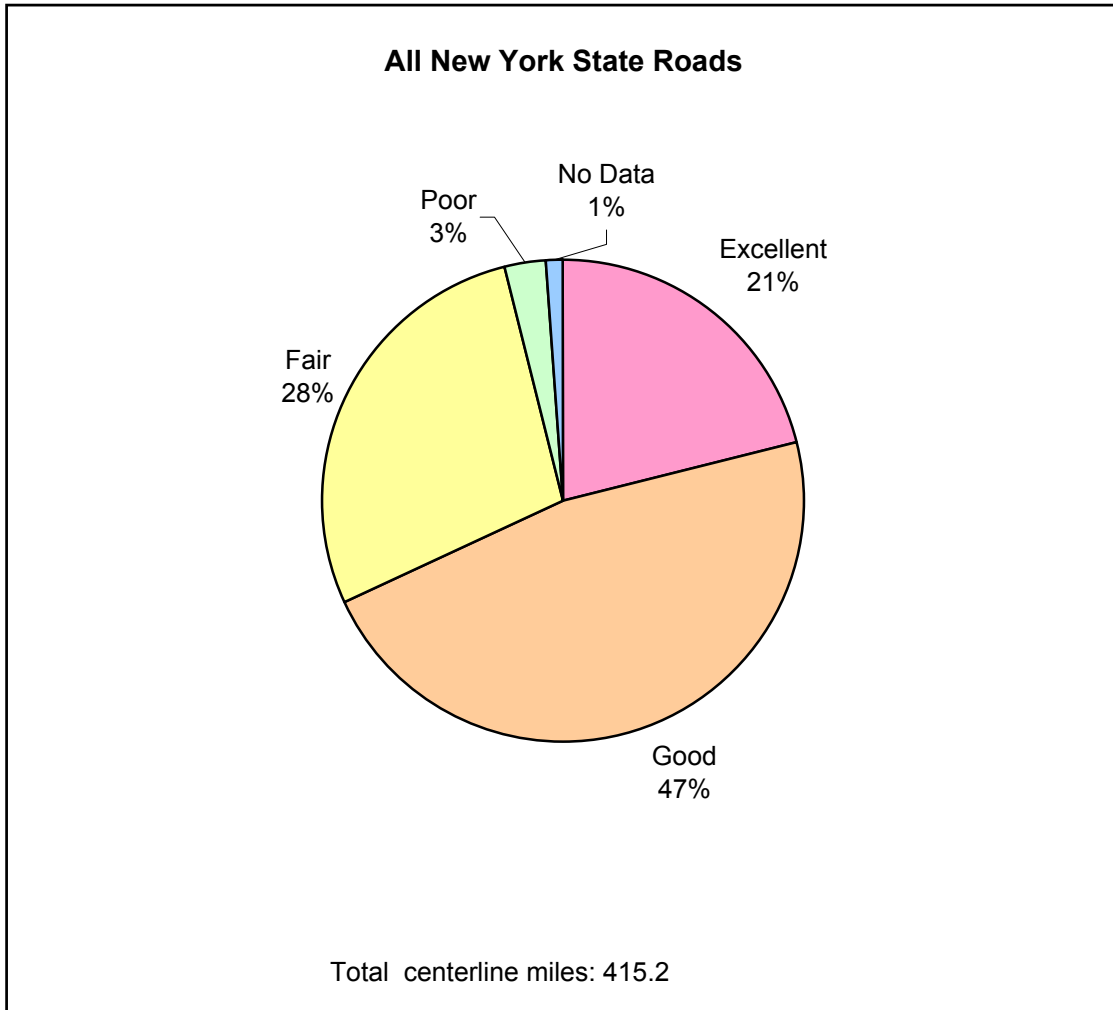


Excellent
 Good
 Fair
 Poor
 No Data

*Percentages determined by total centerline length in miles of road

Attachment 22
Part II*

Pavement Ratings by Functional Classification for New York State DOT Roads

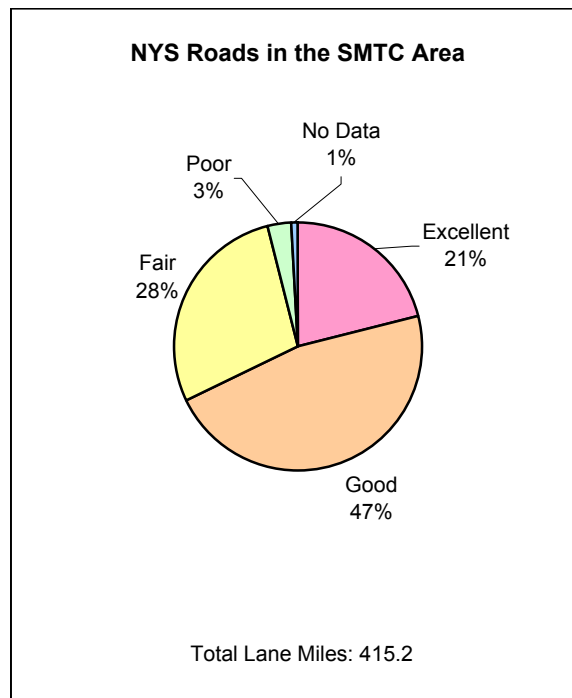
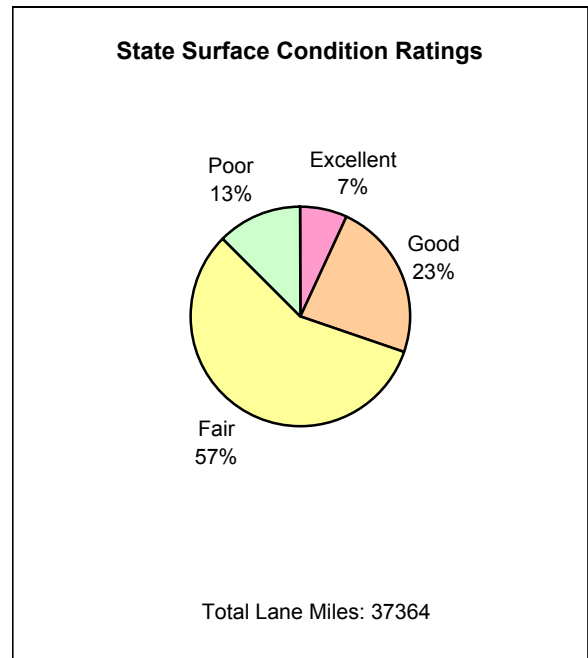
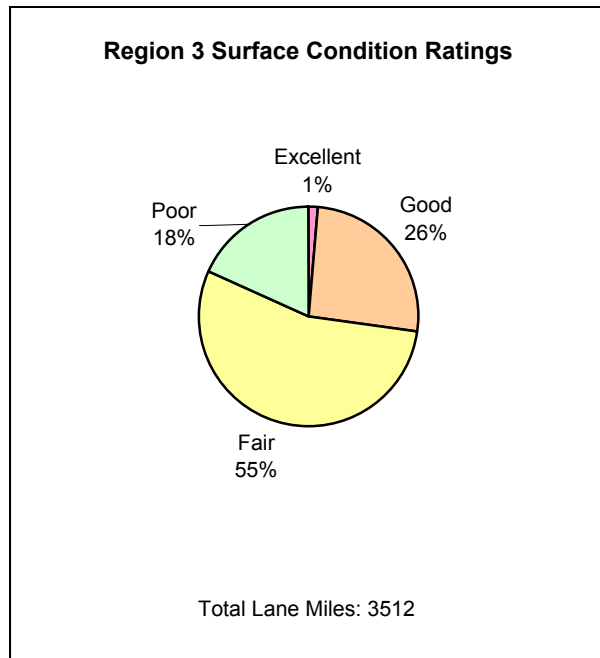


Excellent Good Fair Poor No Data

*Percentages determined by total centerline length in miles of road

Attachment 23

Comparison of State Pavement Ratings



Excellent Good Fair Poor No Data

*Percentages determined by total centerline length in miles of road

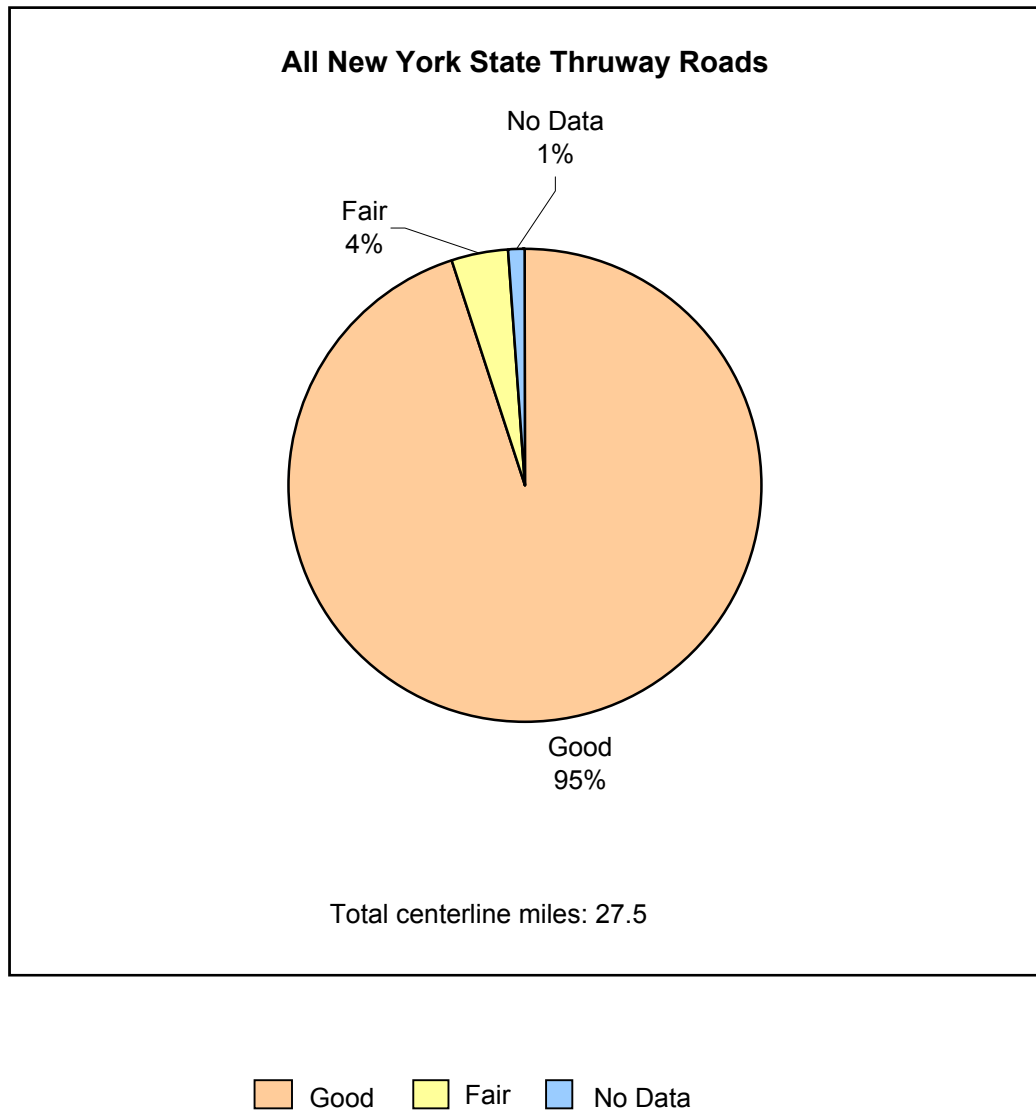
Attachment 24
Pavement Ratings by Functional Classification for New York State Thruway Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
Thruway			
Principal Arterial			
Excellent	0	0.0	0%
Good	138,256	26.2	95%
Fair	5,754	1.1	4%
Poor	0	0.0	0%
No Data	1,109	0.2	1%
Total	145,119	27.5	100%
Minor Arterial			
Excellent	0	0	0%
Good	0	0	0%
Fair	0	0	0%
Poor	0	0	0%
No Data	0	0	0%
Total	0	0	0%
Collector			
Excellent	0	0	0%
Good	0	0	0%
Fair	0	0	0%
Poor	0	0	0%
No Data	0	0	0%
Total	0	0	0%
Minor Collector			
Excellent	0	0	0%
Good	0	0	0%
Fair	0	0	0%
Poor	0	0	0%
No Data	0	0	0%
Total	0	0	0%
All Thruway Federal-Aid Roads			
Excellent	0	0.0	0%
Good	138,256	26.2	95%
Fair	5,754	1.1	4%
Poor	0	0.0	0%
No Data	1,109	0.2	1%
Total	145,119	27.5	100%

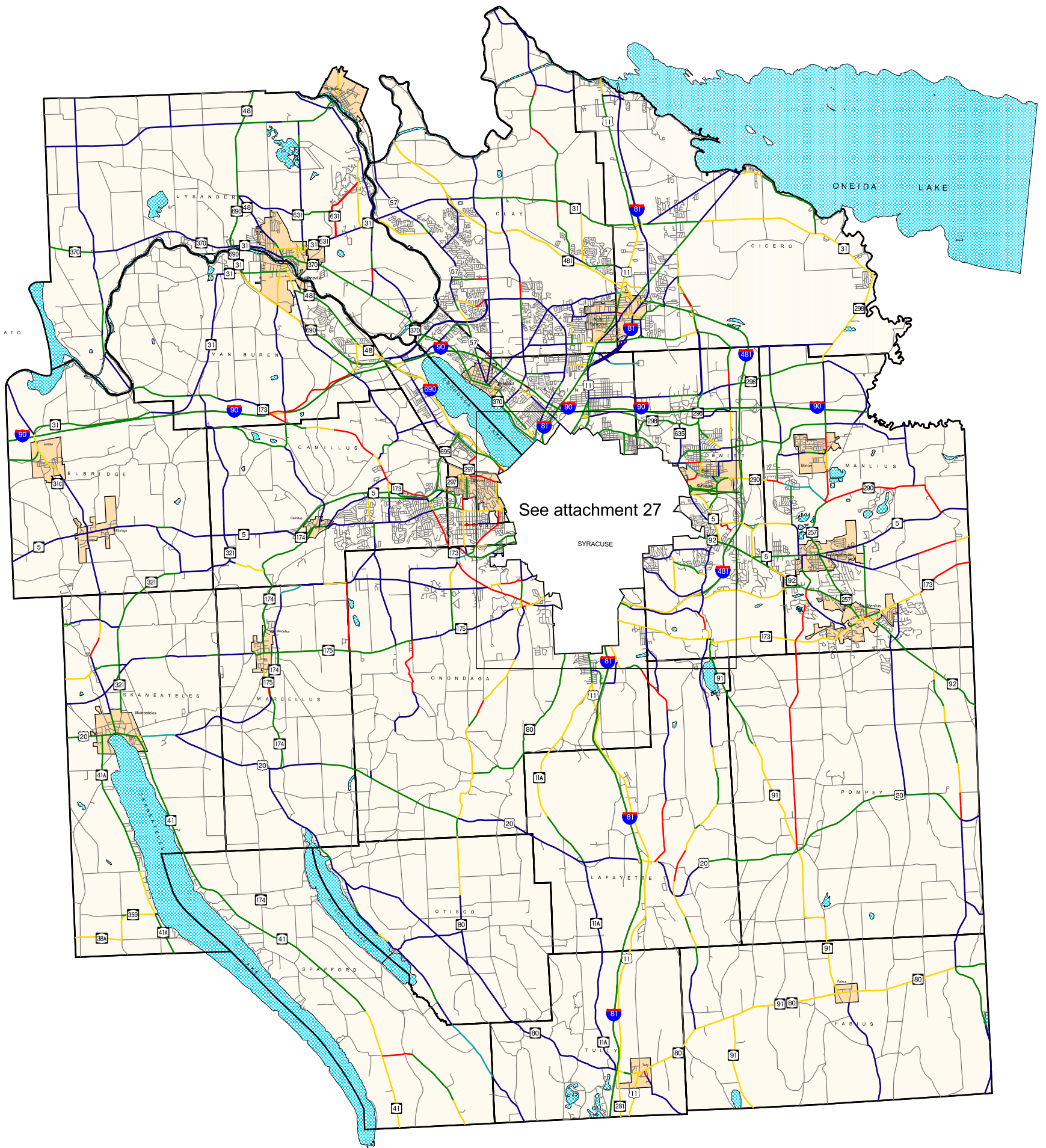
*Calculations based on total centerline length of road

Attachment 25

Pavement Rating by Functional Classification for New York State Thruway Roads*



*Percentages determined by total centerline length in miles of road



All Federal-Aid Eligible Roads*

Excellent

Good

Fair

Poor

No Data

Under Construction

*Including all federal-aid eligible roads that were rated in the jurisdiction of the City of Syracuse, Onondaga County or New York State, the New York State Thruway Authority and all local federal aid eligible roads



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Federal-Aid Eligible Roads* Bridge & Pavement Condition Management System

0 2 4 Miles

Attachment 26



- Towns
- Villages
- Lakes
- Non Federal Aid Eligible Roads

Basemap Copyrighted by NYSDOT
Data Sources: SMTC, NYSDOT, 1999
Prepared by SMTC, 02/2002

This map is for presentation purposes only. SMTC does not guarantee the accuracy or completeness of this map.

Attachment 28
Functional Classification for Federal-Aid Eligible Roads

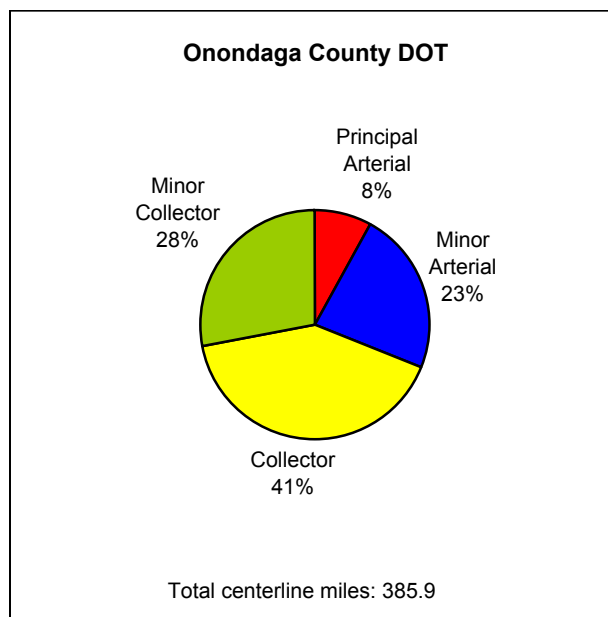
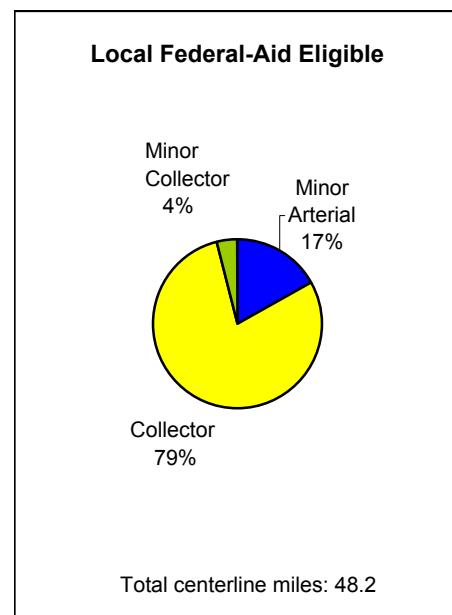
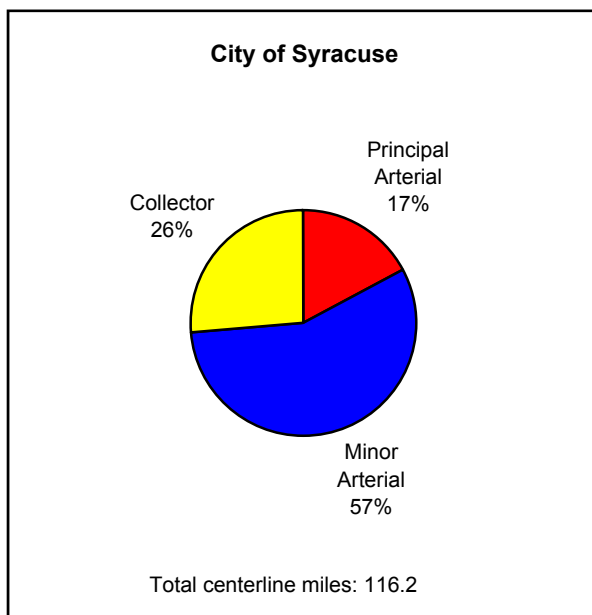
	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
City of Syracuse			
Principal Arterial	105,580	20.0	17%
Minor Arterial	346,472	65.6	56%
Collector	161,276	30.5	26%
Minor Collector	0	0.0	0%
Total	613,328	116.2	100%
Local Federal-Aid Eligible			
Principal Arterial	871	0.2	0%
Minor Arterial	42,068	8.0	17%
Collector	201,017	38.1	79%
Minor Collector	10,410	2.0	4%
Total	254,364	48.2	100%
Onondaga County			
Principal Arterial	162,586	30.8	8%
Minor Arterial	475,825	90.1	23%
Collector	828,260	156.9	41%
Minor Collector	571,129	108.2	28%
Total	2,037,800	385.9	100%
New York State			
Principal Arterial	953,259	180.5	43%
Minor Arterial	546,349	103.5	25%
Collector	557,369	105.6	25%
Minor Collector	135,511	25.7	6%
Total	2,192,488	415.2	100%
New York State Thruway Authority			
Principal Arterial	145,119	27.5	100%
Minor Arterial	0	0.0	0%
Collector	0	0.0	0%
Minor Collector	0	0.0	0%
Total	145,119	27.5	100%
All Federal-Aid Eligible Roads			
Principal Arterial	1,367,414	259.0	26%
Minor Arterial	1,410,713	267.2	27%
Collector	1,747,922	331.0	33%
Minor Collector	717,049	135.8	14%
Total	5,243,099	993.0	100%

*Calculations based on total centerline length of road

Attachment 29

Part I*

Functional Classification of Federal-Aid Eligible Roads by Jurisdiction

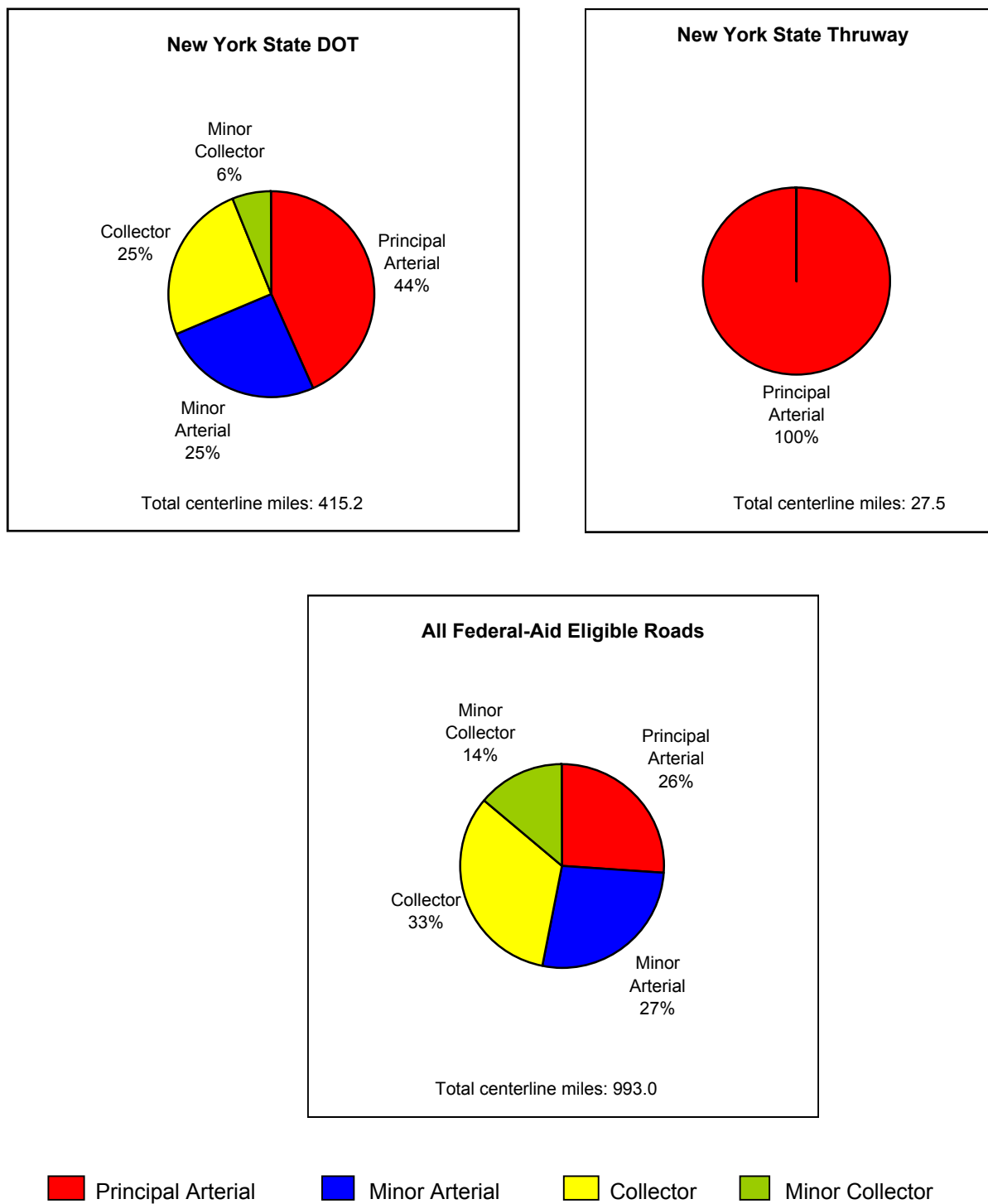


 Principal Arterial  Minor Arterial  Collector  Minor Collector

*Percentages determined by total centerline length in miles of road

Attachment 29 Part II*

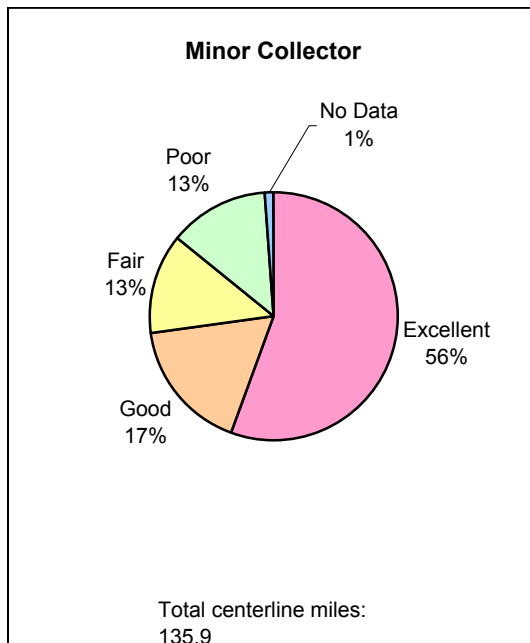
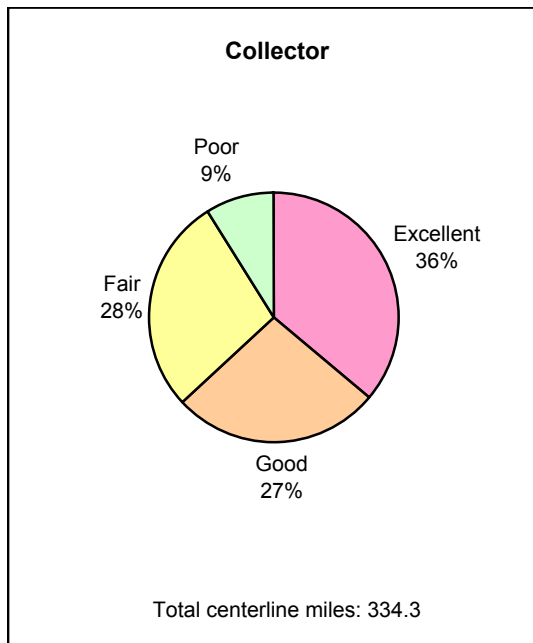
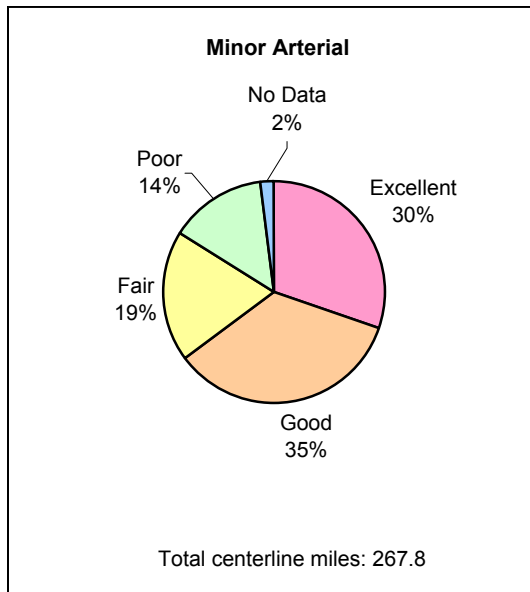
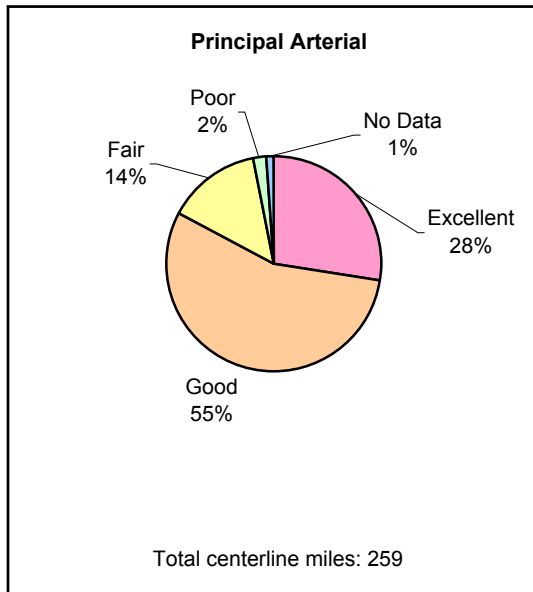
Functional Classification of Federal-Aid Eligible Roads by Jurisdiction



*Percentages determined by total centerline length in miles of road

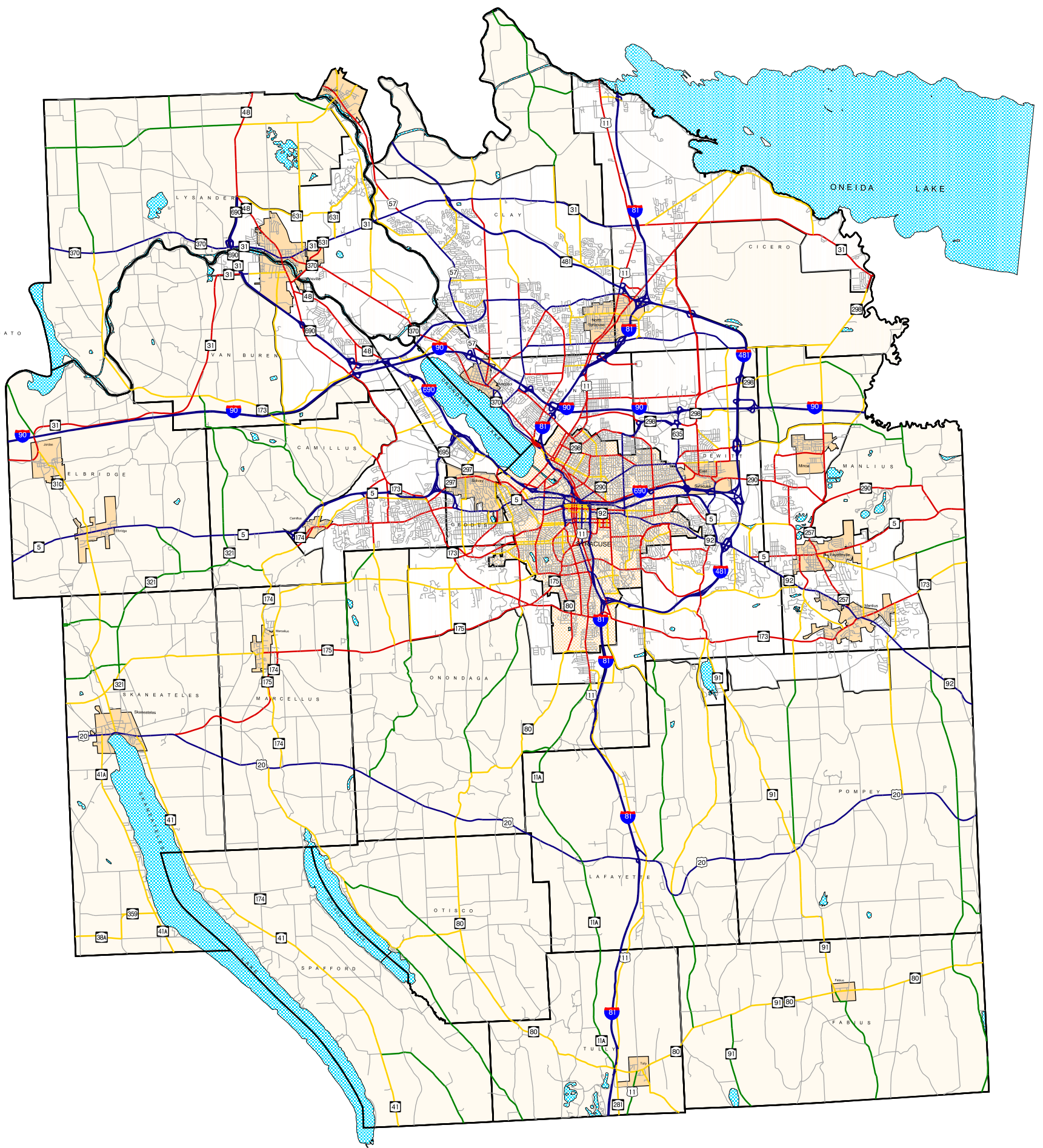
Attachment 30

Pavement Ratings of Federal-Aid Eligible Roads by Functional Classification*



Excellent Good Fair Poor No Data

*Percentages determined by total centerline length in miles of road



Roads

- Principal Arterial
- Collector
- Minor Collector
- Minor Arterial
- Non Federal-Aid Eligible



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Functional Classification Bridge & Pavement Condition Management System

0 2 4 Miles

Attachment 31



- Towns
- Villages
- Lakes
- Urban Boundary

Basemap Copyrighted by NYSDOT
Datasources: SMTC, NYSDOT, 1999
Prepared by SMTC, 02/2002

This map is for presentation purposes only. SMTC does not guarantee the accuracy or completeness of this map.



Jurisdiction

- City of Syracuse
- Local
- OCDOT
- NYSDOT



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Onondaga County Roads by Jurisdiction

Bridge & Pavement Condition Management System

0 2 4 Miles

Attachment 32



- Towns
- Villages
- Lakes

Basemap Copyrighted by NYSDOT
Data Sources: SMTC, NYSDOT, 1999
Prepared by SMTC, 02/2002

This map is for presentation purposes only. SMTC does not guarantee the accuracy or completeness of this map.

III. Closing

As this is the second annual Bridge and Pavement Condition Management Report, no comparisons are made to conditions from past years. In future reports, the benefit of comparing bridge and pavement conditions will be significant. The first trend analysis will be completed in the third annual report, as trends will not be statistically significant with only two years of data. The data collected and analyzed will be used in other SMTC planning activities such as the Long-Range Transportation Plan (LRTP), Transportation Improvement Program (TIP), and the Unified Planning Work Program (UPWP). This information will be helpful for the SMTC to understand the condition of the roads and bridges in the MPO study area, which in turn will aid many tasks the SMTC undertakes.

It is recommended that this report is included in the SMTC's UPWP every year. Beginning with next year's report, an analysis of the collected data will be completed. The comparisons and trend analysis for the condition of bridges and pavement will be determined and will be beneficial to the SMTC and its member agencies.

The NYSDOT has determined rating goals for roads and bridges under their jurisdiction. It is recommended that the county, city and local jurisdictions complete the same type of goal. This will give a better direction for the municipalities to achieve when determining bridge and pavement condition projects.

This year, condition rating data for local federal aid eligible roads was collected for local jurisdiction roads within Onondaga County. Next year, it is recommended that the small portion of Oswego County Roads that are included in the MPO area are also rated.

In this report, the presentation of data was more accurate than the first annual report. Through improving the base GIS data and streamlining the condition ratings, the numbers and percentages in this report are more precise. In order to continue with this accuracy, various minor problems with the current data (ex. the GIS layer of state milepost coverage data) should be improved for next year.

Finally, at the close of last year's project, it was recommended that the bridge and pavement conditions be compared to state and federal conditions. This report does compare bridge and pavement conditions to Region 3 and New York State conditions. The comparison of bridge and pavement conditions between federal and state/local is not made in this report because the NYSDOT bridge rating system is used for programming purposes by all SMTC member agencies. Additionally, there is no federal pavement rating system that is separate than the NYSDOT rating system for all highways. At this time, the SMTC has not made correlations between the federal scale and the NYSDOT scale. It is recommended that this comparison continue for future reports and the trend analysis be compared to the state condition ratings.

Through the process of putting all of the bridge and pavement condition rating data into GIS, a database has been built that is available to all SMTC member agencies. Previously, there was not a single report or database that included all bridge and

pavement conditions for Onondaga County. Therefore, this report and the data files are significant because of the accessibility to condition rating data through GIS in a format directly compatible with city, state and county systems.