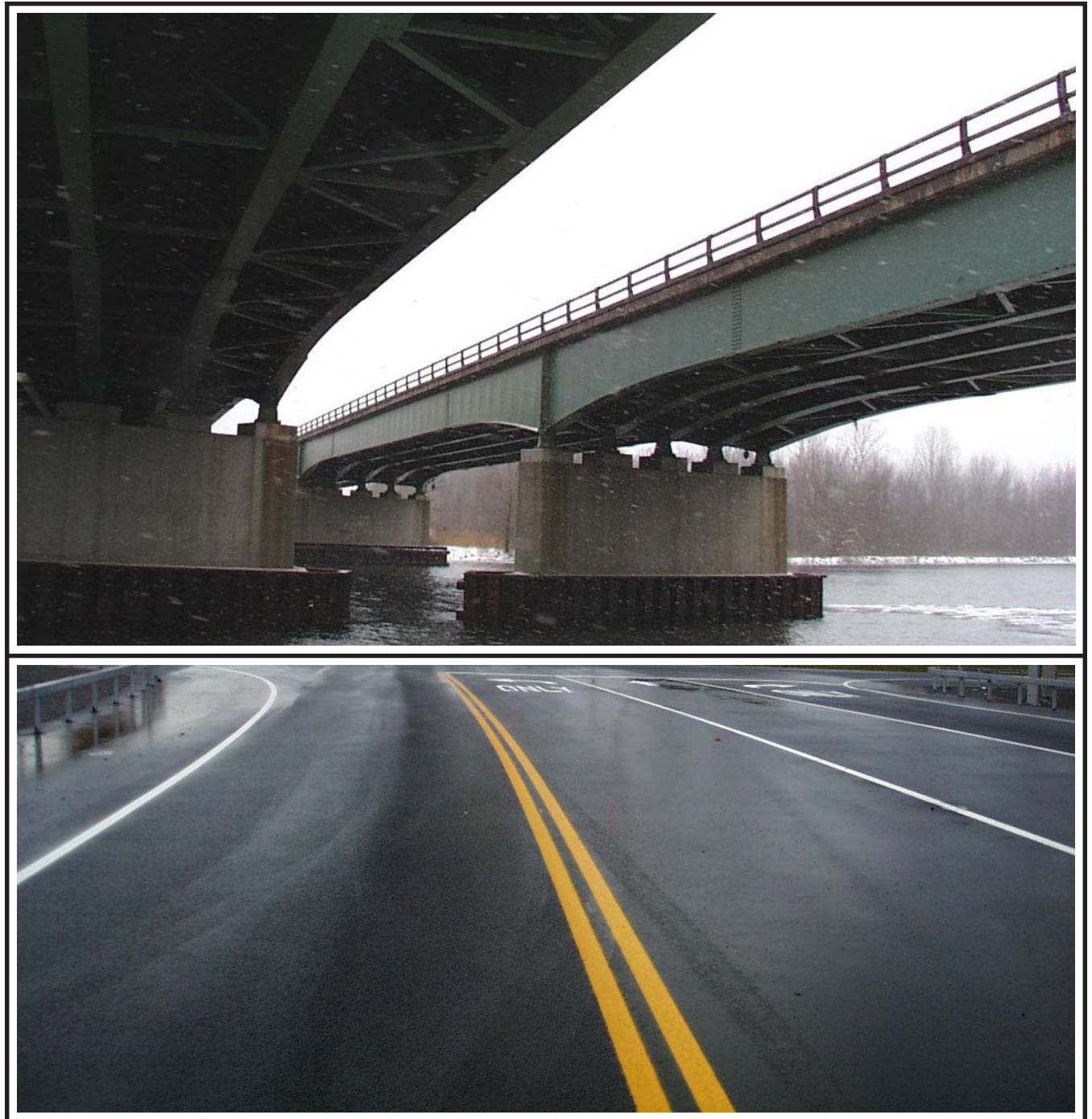


Bridge & Pavement Condition Management System (BPCMS)



Final Report – 2002-2003 UPWP



Report Prepared by:

Syracuse Metropolitan Transportation Council

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BRIDGE & PAVEMENT CONDITION MANAGEMENT SYSTEM

Onondaga County

Final Report

March 2003

2002-2003 Unified Planning Work Program

Financial assistance for the preparation of this document was provided, in part, by the U.S. Department of Transportation's Federal Highway and Federal Transit Administrations and the New York State Department of Transportation. The Syracuse Metropolitan Transportation Council is solely responsible for its content.

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Executive Summary

Introduction

A Bridge Management System (BMS) is a method for tracking and addressing bridge conditions. Similarly, a Pavement Management System (PMS) is a systematic method for tracking and addressing pavement conditions. A Bridge Management System exists for New York State, and individual Pavement Management Systems currently exist in the City of Syracuse (City), Onondaga County (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 in to a GIS format, data can be mapped, analyzed, presented and accessed in a most useful manner. This report is the third annual report produced by the Syracuse Metropolitan Transportation Council (SMTC). In future years, a trend analysis based on all collected data may be completed.

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 GIS 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 only presented and not analyzed. Although the original Scope of Work indicated a full trend analysis would be completed, it was determined that the existing three-year data set was not adequate to produce statistically significant results. This is due to the cycle that each jurisdiction uses to rate their roads and bridges; not every bridge and road is rated on a yearly basis. Therefore, there is not a trend analysis completed in this year's 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. 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

It is recommended that this report continue to be included in 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 has been holding meetings during this program year with the appropriate agency representatives to discuss this topic. In future years, it is recommended that the county, city and local jurisdictions finalize their goals.

The presentation of data in this report is more accurate than the first and second annual reports. Through improving the base GIS data and streamlining the condition ratings, the numbers and percentages in this report are more precise.

Finally, it was previously discussed 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 will not be made for the BPCMS 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. Due to these reasons, as well as the differences in weather and construction seasons in New York State as compared to the U.S., comparisons will only be made to the state conditions.

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Introduction

Introduction

A Bridge Management System (BMS) is a method for tracking and addressing bridge conditions. Similarly, a Pavement Management System (PMS) is a systematic method for tracking and addressing pavement 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 (City), Onondaga County (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. This report is the third annual report produced by the Syracuse Metropolitan Transportation Council (SMTC). In future years, a trend analysis based on all collected data may be completed.

All maps included in this report were compiled utilizing a derivation of the New York State Department of Transportation (NYSDOT) base map system. These digital GIS 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 the SMTC area. Therefore, this report and the data files are significant because of the accessibility to condition rating data through GIS.

The pavement condition rating data reported on throughout this report is based on *linear centerline* miles of roads, not lane miles of roads. This measurement is due to the digital GIS files that are used for calculations. 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 according to the following chart:

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 2001-2002 Highway Sufficiency Rating Manual for Region 3 and the NYSDOT Pavement Rating System contains 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 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 Annual Average 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 (Exhibits 4, 5 and 6). Each graph shows the non-deficient percentage as well as the deficient percentage. The deficient percentage is then separated into deficient and priority deficient sub-categories. The corresponding chart (Exhibit 3) displays the number and percentages of the deficient, priority deficient, and non-deficient 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. Exhibit 1 is a map that represents all bridge condition rating types in Onondaga County, and Exhibit 2 is a map that represents all bridge condition rating types in the City of Syracuse. A total of 474 bridges have been rated with condition ratings. Exhibit 3 shows the total number of bridges by type of rating within the study area. Exhibit 4 categorizes the 474 bridges by jurisdiction and by type of rating, and Exhibit 5 illustrates the total bridges rated in the MPO area.

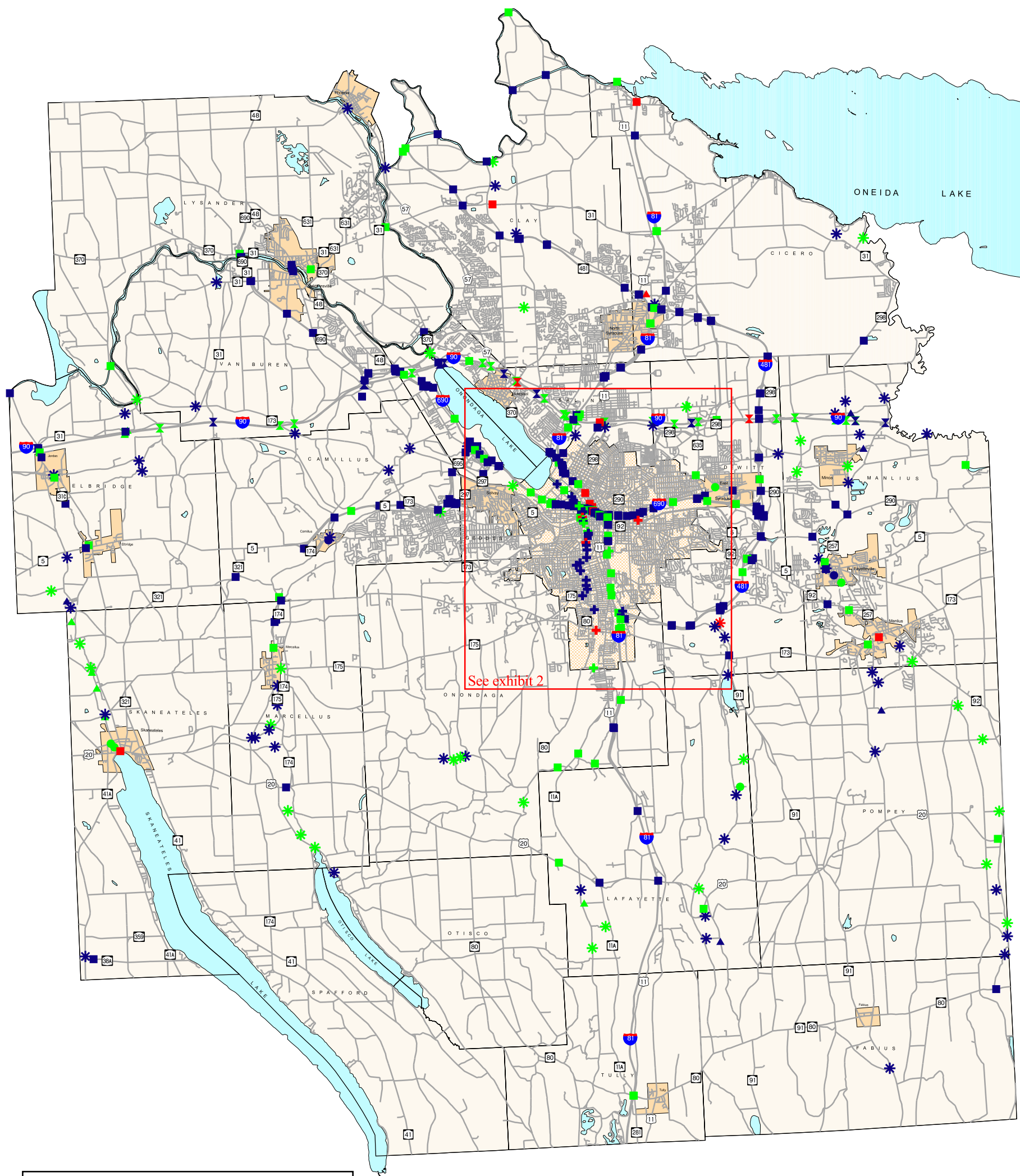
Additionally, Exhibit 6 represents the MPO area, Region 3 area, and state averages for all rated bridges by type of rating. There are 19,724 total state bridges with a rating, and the average condition rating (not including no data) of these bridges is 5.272. There are 1,412 total Region 3 bridges, with an average condition rating (not including no data) of 5.145. 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 priority deficient bridges (SMTC area: 4%, Region 3 and statewide: 3%). Region 3 has the highest percentage of deficient bridges at 39%, while New York State follows closely at 36% and the SMTC MPO area at 32%.

Overall, the City of Syracuse has the highest percentage of priority deficient bridges (13%). All other jurisdictions have between 1% and 7% priority deficient bridges, except for bridges under village jurisdiction, which have no priority deficient bridges.

The villages in Onondaga County have the highest percentage of deficient bridges (71%). The jurisdiction with the lowest percentage of deficient bridges is the City of Syracuse (19%).

The NYSDOT bridges in Onondaga County have the highest percentage of non-deficient ratings (70%), with the City of Syracuse following closely at 69%. All other jurisdictions have between 63% and 29% non-deficient bridges.

The most recent NYSDOT goal is to have 84.2% of state bridges and 74.5% of local bridges non-deficient by the year 2015. According to the bridge condition ratings calculated by the SMTC, the state bridges were 65.2% non-deficient in 2001, and the local bridges were 60.9% non-deficient in 2001.



See exhibit 2

City Bridges			State Bridges			Town Bridges		
+	Non Deficient		■	Non Deficient		▲	Non Deficient	
+	Deficient		■	Deficient		▲	Deficient	
+	Priority Deficient		■	Priority Deficient		▲	Priority Deficient	
County Bridges			Thruway Bridges			Village Bridges		
*	Non Deficient		X	Non Deficient		●	Non Deficient	
*	Deficient		X	Deficient		●	Deficient	
*	Priority Deficient		X	Priority Deficient		●	Priority Deficient	



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Bridge Ratings in Onondaga County Bridge & Pavement Condition Management System

Exhibit 1

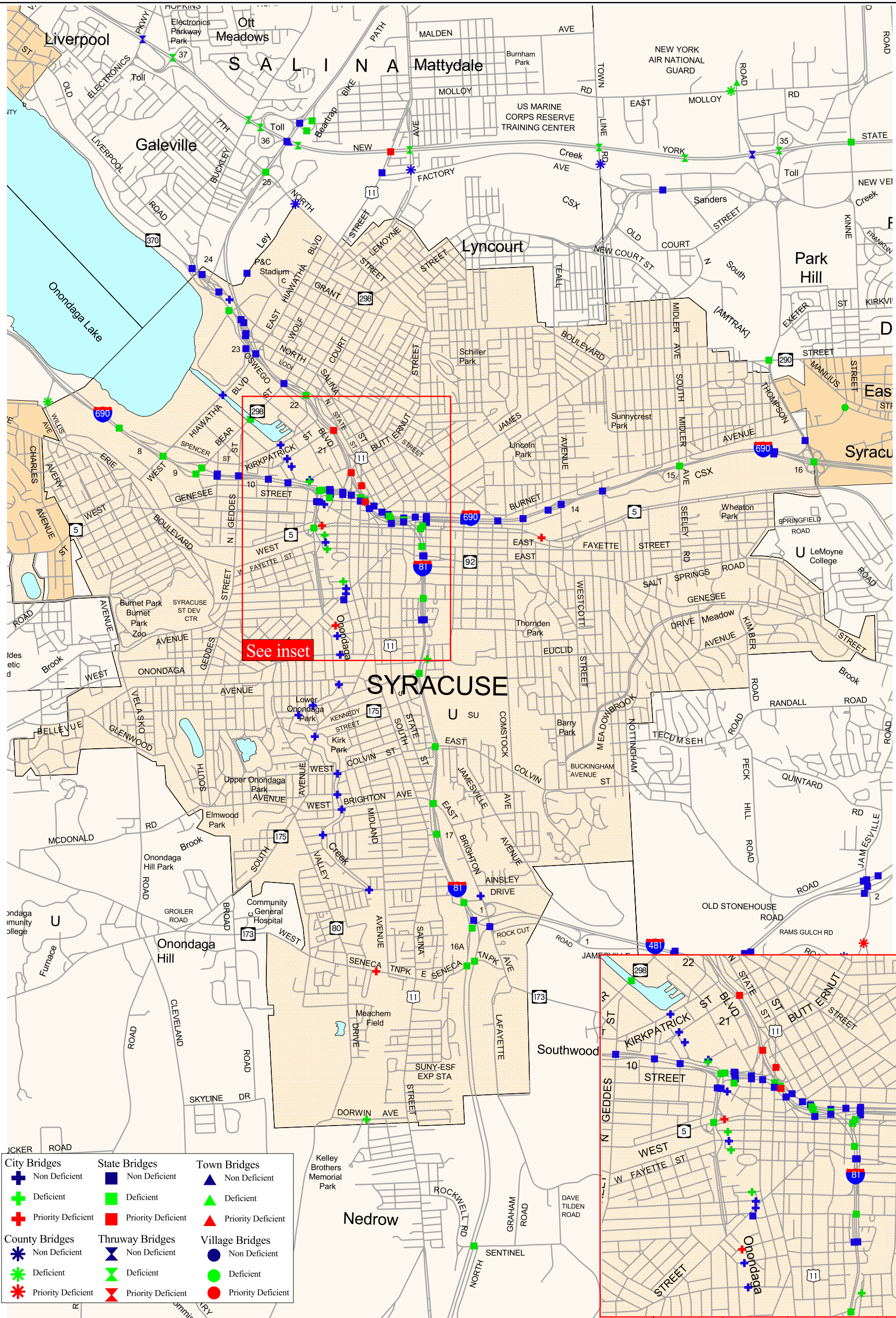
0 2 4 Miles

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

- Towns
- Villages
- City of Syracuse
- Lakes
- Roads



Basemap Copyrighted by NYSDOT, 2001
Datasources: SMTC, NYSDOT, 1999
Prepared by SMTC, 09/2002



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

Exhibit 2

0 0.5 1 Miles

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

- Towns
- Villages
- City of Syracuse
- Lakes
- Roads



Basemap Copyrighted by NYSDOT, 2001
 Datasources: SMTC, NYSDOT, 1999
 Prepared by SMTC, 09/2002

Exhibit 3

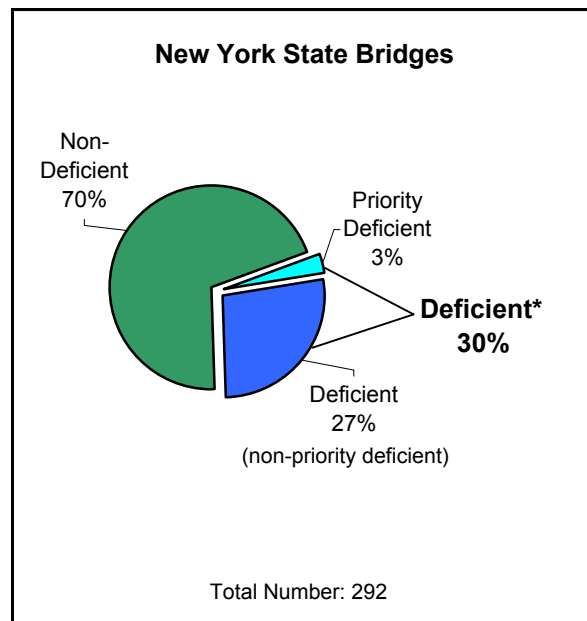
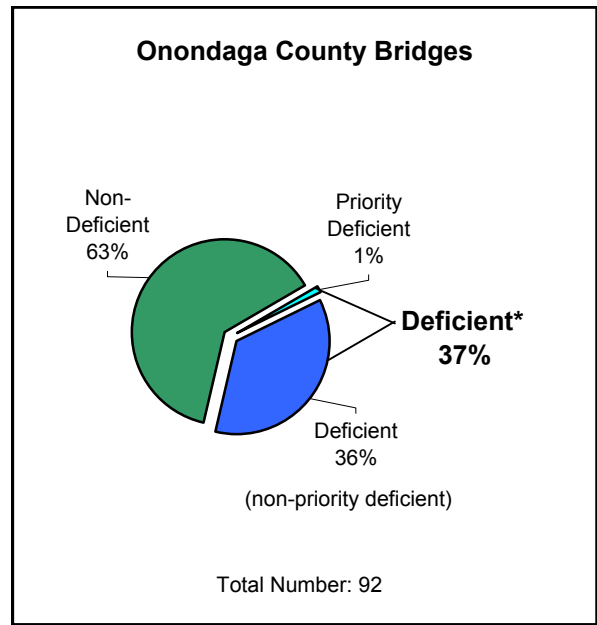
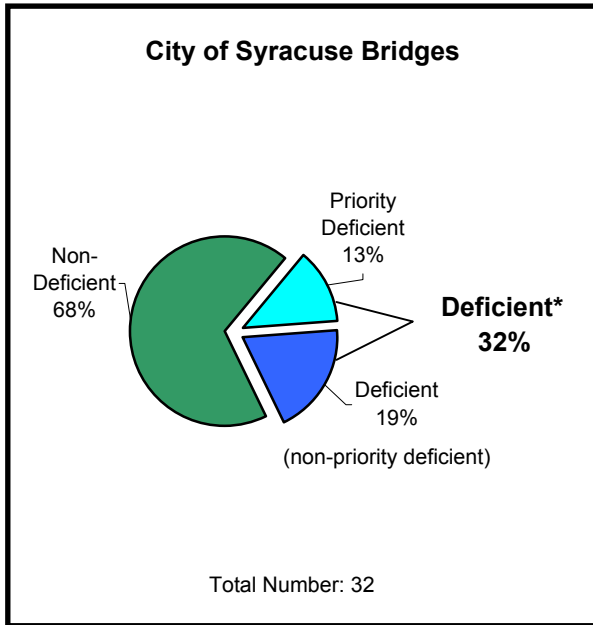
Bridge Jurisdiction and Ratings

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
City of Syracuse	32	6	19%	10	31%	4	13%	22	69%
Onondaga County DOT	92	33	36%	34	37%	1	1%	58	63%
New York State DOT	292	80	27%	89	30%	9	3%	203	70%
New York State Thruway Authority	36	23	64%	25	69%	2	6%	11	31%
Towns in Onondaga County	15	7	47%	8	53%	1	7%	7	47%
Villages in Onondaga County	7	5	71%	5	71%	0	0%	2	29%
Total	474	154	32%	171	36%	17	4%	303	64%

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

Exhibit 4 Part I

Bridge Ratings by Jurisdiction



Deficient

Deficient (non-priority deficient)

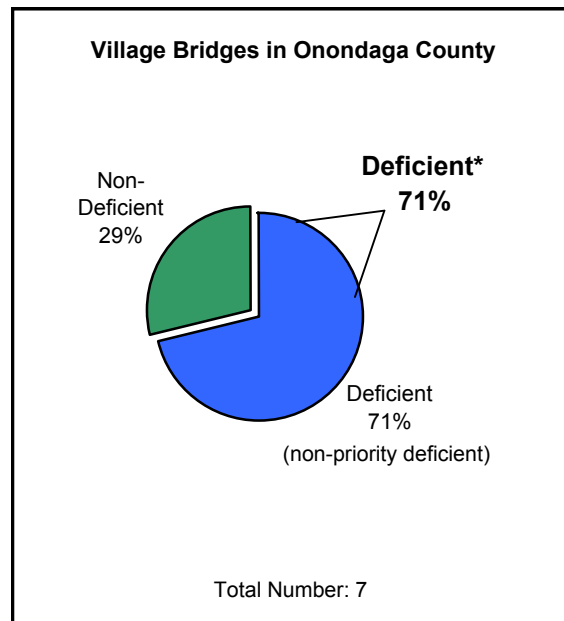
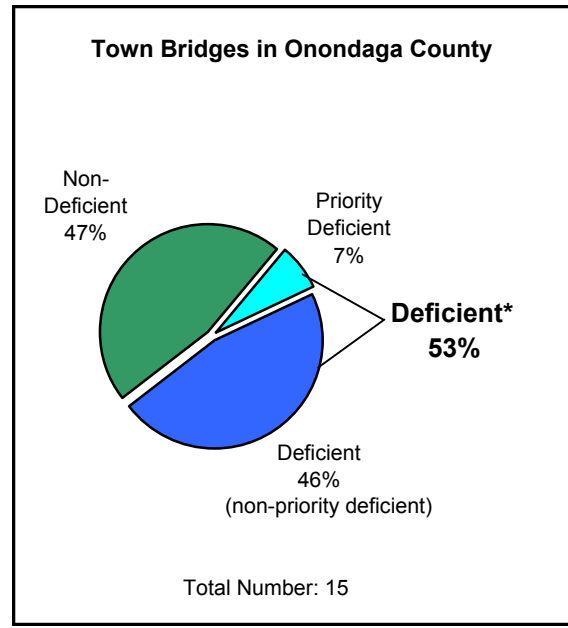
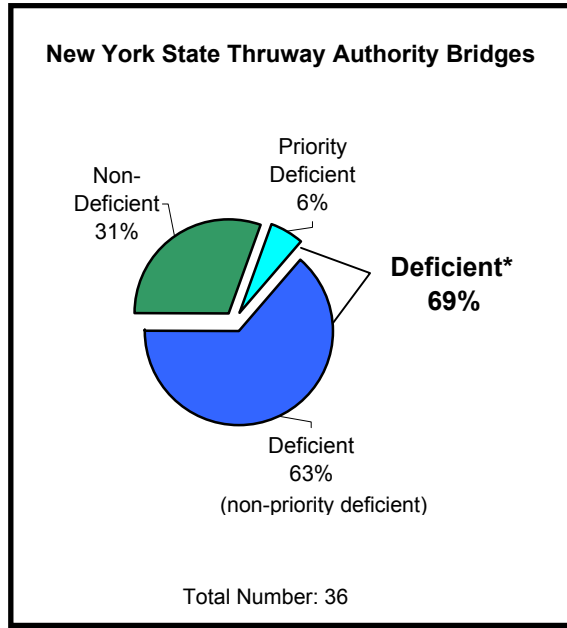
Priority Deficient

Non-Deficient

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

Exhibit 4 Part II

Bridge Ratings by Jurisdiction



Deficient

■ Deficient (non-priority deficient)

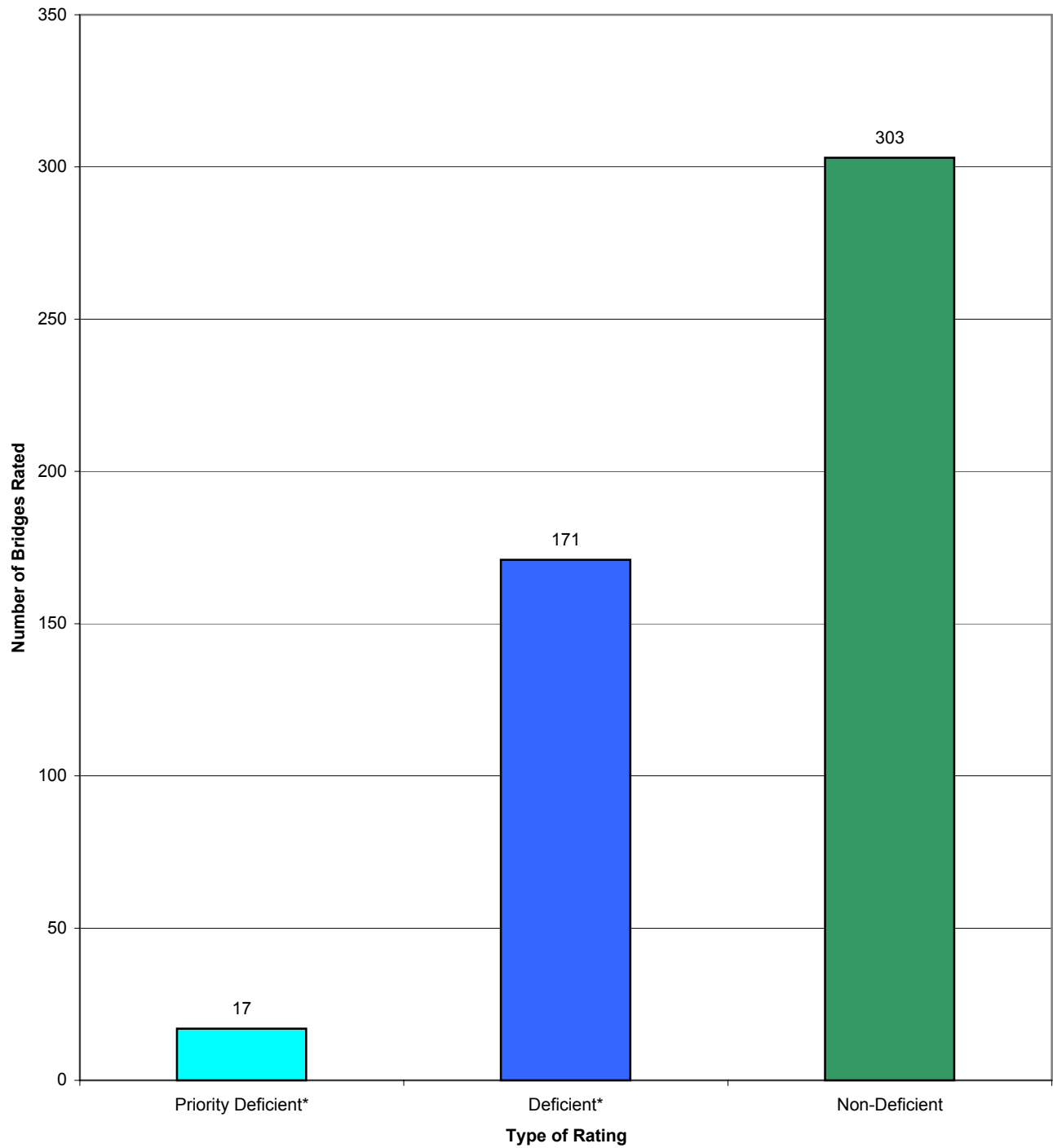
■ Non-Deficient

■ Priority Deficient

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

Exhibit 5

Total Bridges Rated

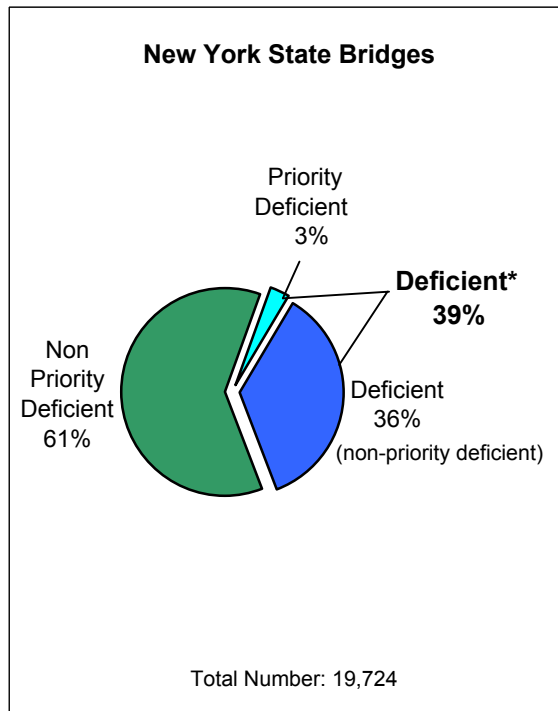
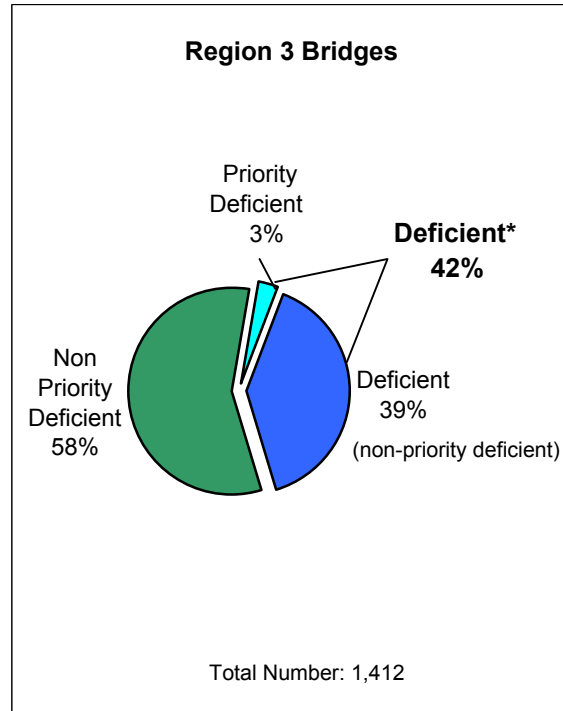
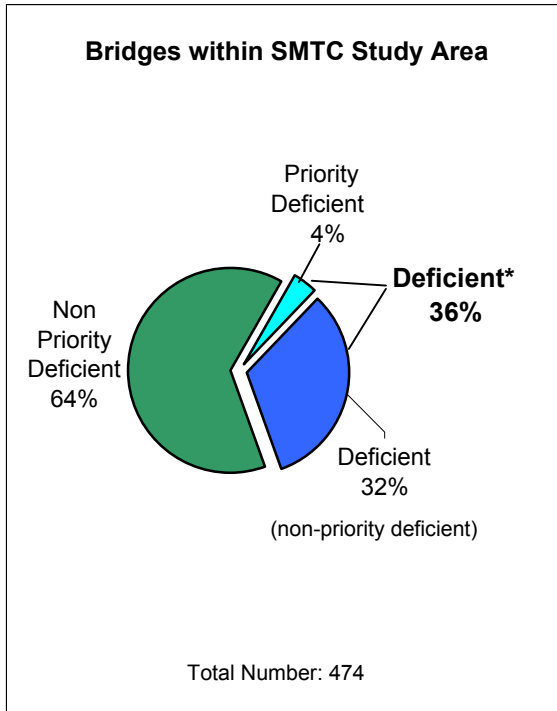


Note: The total number of priority deficient bridges are also counted in the deficient rating

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

Exhibit 6

Comparison of MPO, Region 3 and New York State Bridges



Deficient

■ Deficient (non-priority deficient)

■ Non-Deficient

■ Priority Deficient

*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. Through including town and village local federal-aid eligible road ratings, more municipalities may be aware that they have potentially eligible Transportation Improvement Projects (TIP).

For this section, pavement 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 of road (corresponding to 430 centerline miles) under the jurisdiction of the City of Syracuse are individually rated by the City according to the NYSDOT overall pavement rating scale. The NYSDOT rates all of the touring routes in the City of Syracuse, although most 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.

Exhibits 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.

Exhibit 7 indicates the following:

- Approximately 430 centerline miles of road in the City were rated
- 28 miles of the roads were not rated
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of rated roads, 36%, were classified as “good”
- The average rating for the City roads is 6.5 (fair condition).

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 the NYSDOT on the NYSDOT scale, as described in the introduction. See Exhibit 31 for a map of the functional classification of each town and village local federal-aid eligible road. The data is based on linear centerline miles of roads calculated by the SMTC utilizing the SMTC’s Geographic Information System.

Exhibits 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.

Exhibit 7 indicates the following:

- Approximately 52 centerline miles of local federal-aid eligible roads are rated
- 0% of the roads were not rated, and 1% of the roads were under construction
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of rated roads, 53%, were classified as “fair”
- The average rating for the local roads is 6.7 (fair condition).

C. Onondaga County Pavement Ratings

The roads under the jurisdiction of Onondaga County DOT are rated using the Pavement Management System Limited (PMSL) scale, which is based on the NYSDOT 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.

Exhibits 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.

Exhibit 7 indicates the following:

- Approximately 809 centerline miles of Onondaga County roads are rated
- 2% of Onondaga County roads were not rated
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of rated roads, 61%, were classified as “excellent”
- The average rating for the county roads is 8.4 (good condition).

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.

Exhibits 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.

Exhibit 7 shows the following:

- Approximately 422 centerline miles of New York State DOT roads are rated
- 1% of the state roads were under construction
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of rated roads, 47%, were classified as “good”
- The average rating for the state roads is 6.9 (fair condition).

In Exhibit 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 following was determined:

- The MPO area has 10% excellent roads, while Region 3 has 14% and the state has 9% excellent roads.
- Additionally, Region 3 has 48% good roads, 33% fair, and 5% poor roads, while the state has 59% good roads, 26% fair, and 6% poor roads.
- The MPO area has 48% good roads, 35% fair and 6% poor roads.
- Overall, the MPO area, Region 3 and New York State have relatively similar pavement condition ratings.

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 SMTTC utilizing the SMTTC's Geographic Information System.

Exhibits 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.

Exhibit 7 shows the following:

- Approximately 28 centerline miles of New York State Thruway Authority roads are rated
- All of the NYS Thruway roads were rated
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of rated roads, 70%, were classified as “good”
- The average rating for the NYS Thruway roads is 7.1 (good condition).

Exhibit 7

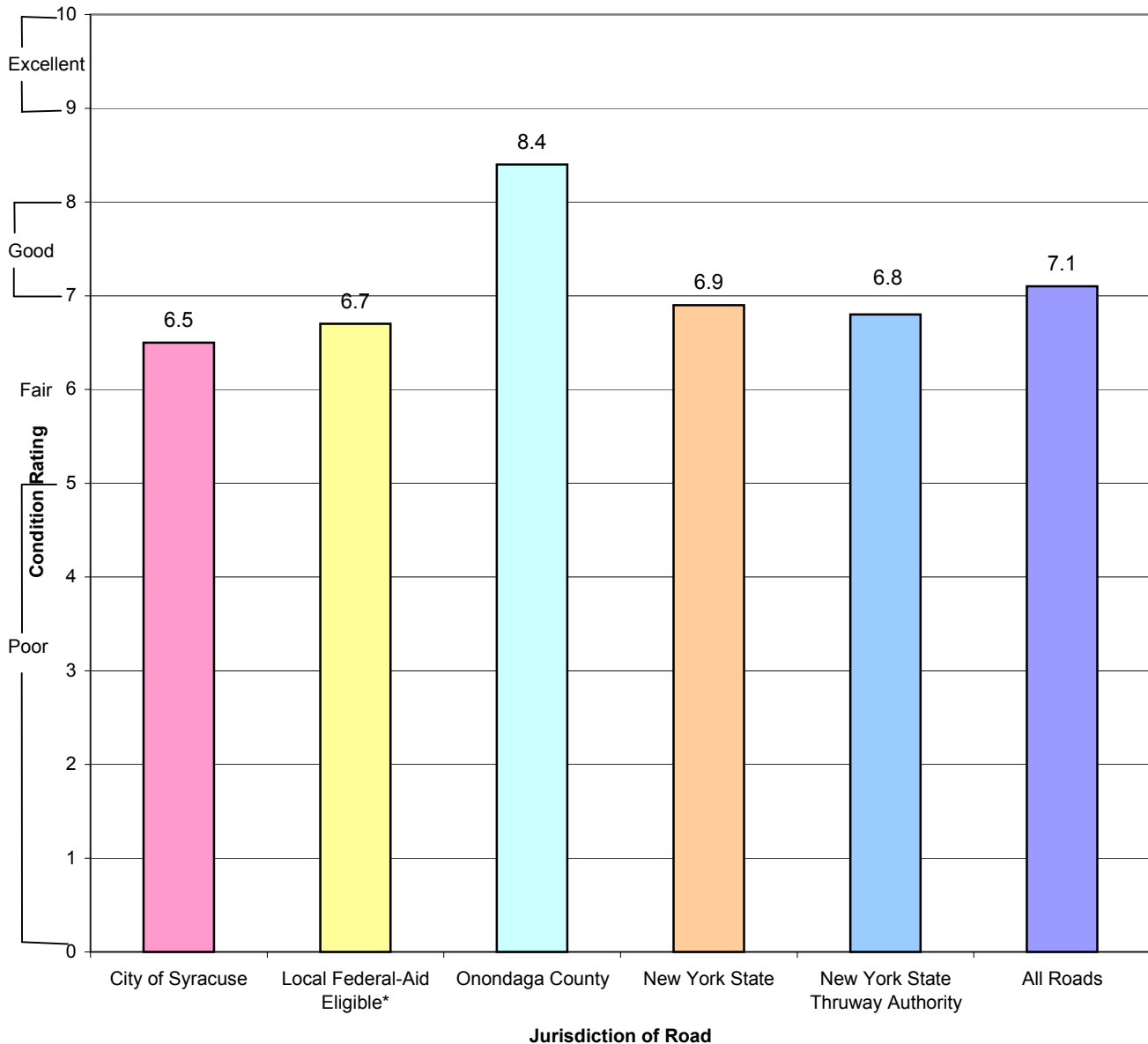
Pavement Ratings for All Roads in Onondaga County

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads by Jurisdiction	Average Rating
City of Syracuse				6.5 (Fair)
Excellent	221,173	41.9	10%	
Good	816,766	154.7	36%	
Fair	557,102	105.5	25%	
Poor	526,814	99.8	23%	
No Data	148,673	28.2	7%	
Total	2,270,529	430.0	100%	
Local Federal-Aid Eligible				6.7 (Fair)
Excellent	48,463	9.2	18%	
Good	52,711	10.0	19%	
Fair	145,098	27.5	53%	
Poor	24,579	4.7	9%	
No Data	0	0.0	0%	
Under Construction	3,582	0.7	1%	
Total	274,433	52.0	100%	
Onondaga County				8.4 (Good)
Excellent	2,609,582	494.2	61%	
Good	819,260	155.2	19%	
Fair	232,857	44.1	5%	
Poor	538,061	101.9	13%	
No Data	71,304	13.5	2%	
Total	4,271,064	808.9	100%	
New York State				6.9 (Fair)
Excellent	233,698	44.3	10%	
Good	1,043,751	197.7	47%	
Fair	790,498	149.7	35%	
Poor	138,860	26.3	6%	
No Data	0	0.0	0%	
Under Construction	24,504	4.6	1%	
Total	2,231,312	422.6	100%	
New York State Thruway				6.8 (Fair)
Excellent	0	0.0	0%	
Good	101,990	19.3	70%	
Fair	43,129	8.2	30%	
Poor	0	0.0	0%	
No Data	0	0.0	0%	
Total	145,119	27.5	100%	
All Roads				7.1 (Good)
Excellent	3,112,916	589.6	34%	
Good	2,834,478	536.8	31%	
Fair	1,768,685	335.0	19%	
Poor	1,228,314	232.6	13%	
No Data	219,978	41.7	2%	
Under Construction	28,086	5.3	0%	
Total	9,192,457	1741.0	100%	

Note: 1. All data for federal-aid eligible and non federal-aid eligible roads, excluding local roads, calculated by total centerline length
2. Total percentages may not add to 100% due to rounding errors

Exhibit 8

Average (Mean) Pavement Ratings for All Roads by



Notes:

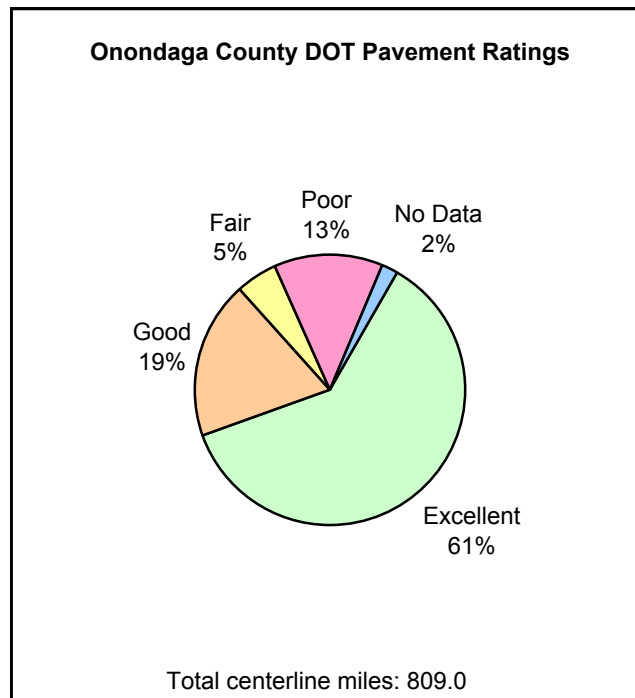
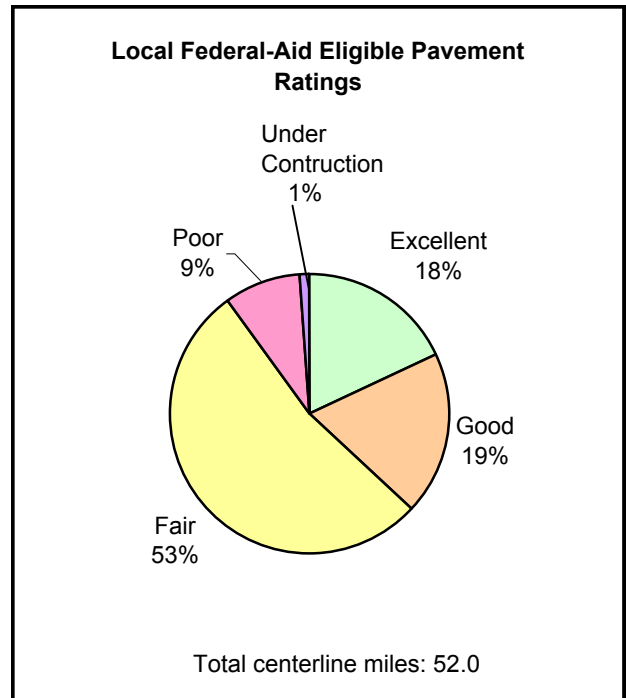
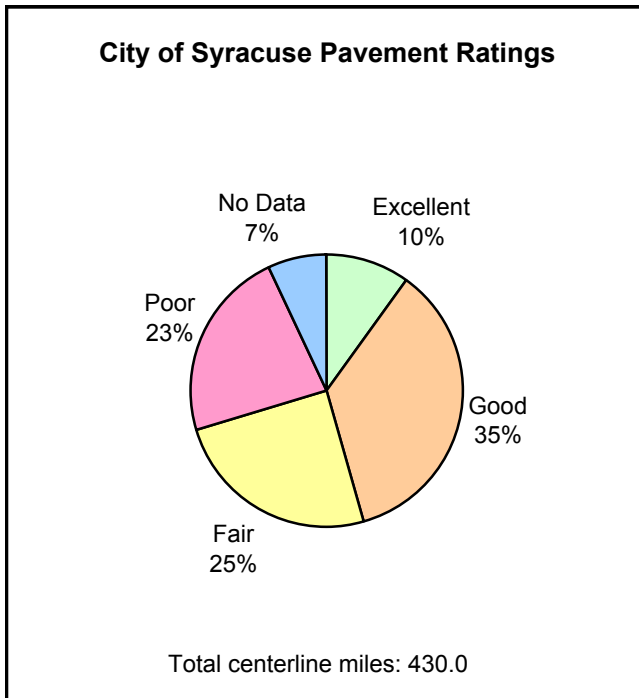
1. Scale of Condition Rating (1-5: Poor) (6: Fair) (7-8: Good) (9-10: Excellent)
2. Calculations based on all Federal-Aid Eligible and Non Federal-Aid Eligible roads measured by total centerline length in miles of road.

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

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

Exhibit 9 Part I

Pavement Ratings for All Roads by Jurisdiction



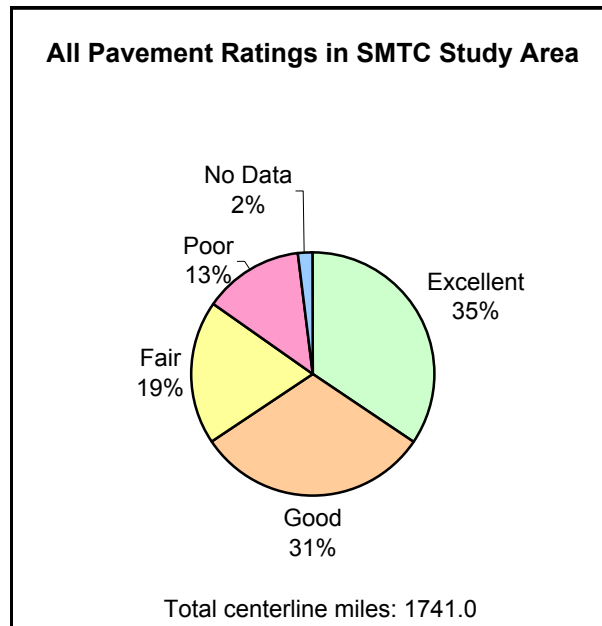
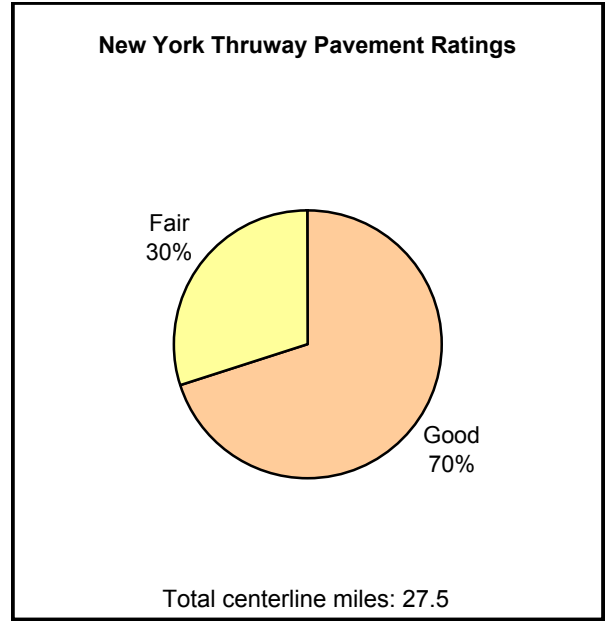
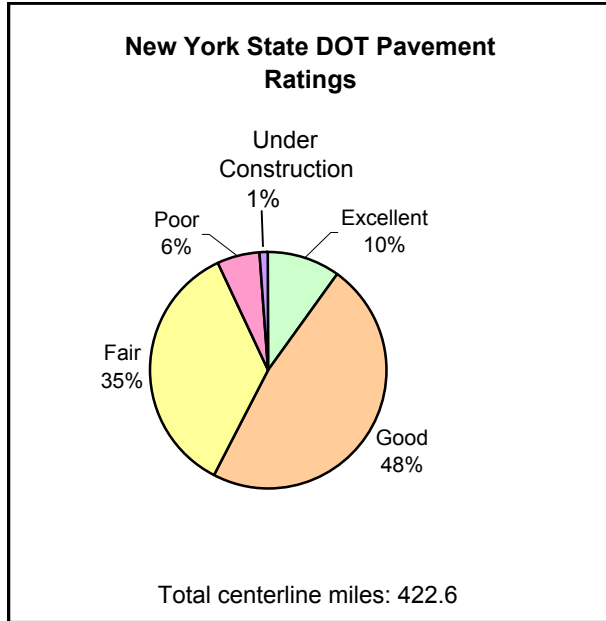
Excellent Good Fair Poor No Data Under Construction

Notes:

1. All Federal-Aid Eligible and Non Federal-Aid Eligible roads excluding local roads, calculated by total centerline length in miles of road
2. The only local roads rated are town and village federal-aid eligible roads.

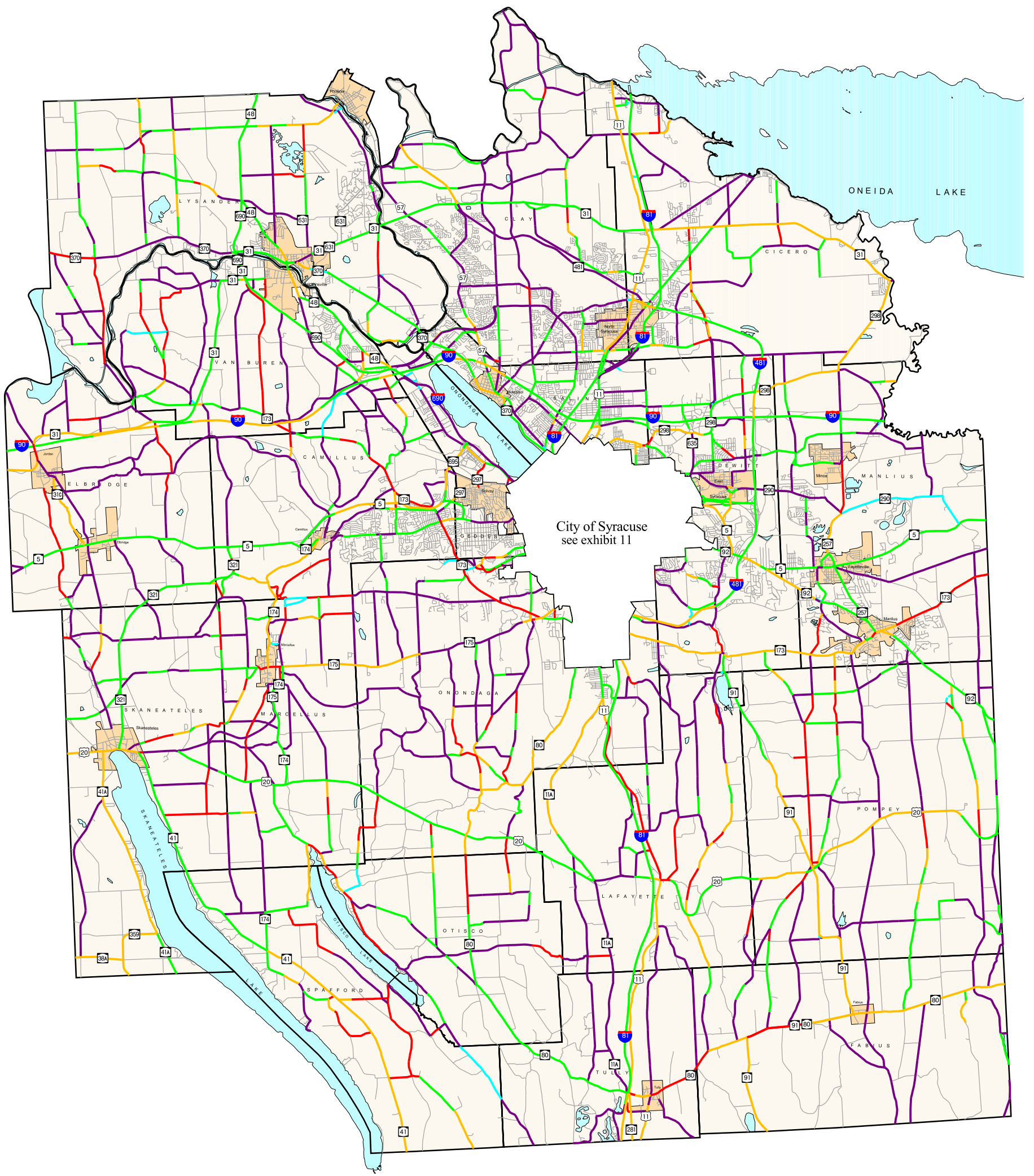
Exhibit 9 Part II

Pavement Ratings for All Roads by Jurisdiction



Excellent Good Fair Poor No Data Under Construction

Note: 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 (9-10)
 - Good (7-8)
 - Fair (6)
 - Poor (1-5)
 - No Data



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 Onondaga County*

Bridge & Pavement Condition Management System

Exhibit 10

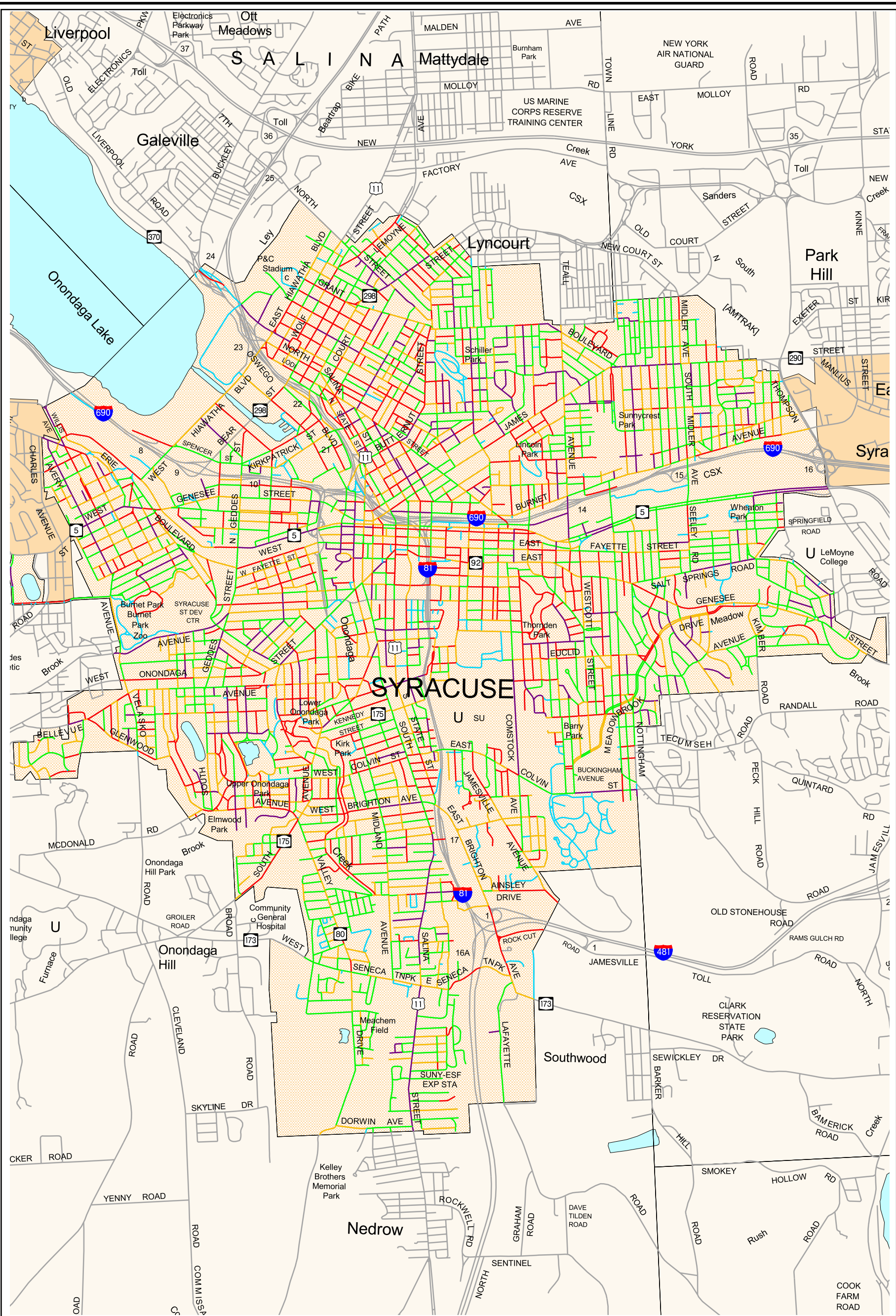
0 2 4 Miles



Basemap Copyrighted by NYSDOT, 2001
Datasources: SMTC, NYSDOT, 1999 *Including all federal-aid eligible and non federal-aid eligible roads
Prepared by SMTC, 09/2002

- Towns
- Lakes
- Villages
- Unrated Roads

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



100 Clinton Square
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Fax: (315) 422-7753
www.smtcmpo.org

All Rated Roads in the City of Syracuse* Bridge & Pavement Condition Management System

Exhibit 11



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



Basemap Copyrighted by NYSDOT, 2001
Datasources: SMTC, NYSDOT, 1999
Prepared by SMTC, 09/2002

- Roads in the City of Syracuse
- Excellent (9-10)
 - Good (7-8)
 - Fair (6)
 - Poor (1-5)
 - No Data
 - Unrated Roads
 - Lakes
 - City of Syracuse
 - Villages
 - Towns

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 Exhibits 12-25.

Exhibits 12, 13 and 14 display the total centerline miles of road by rating category in the MPO area. Exhibit 12 shows that approximately 123 miles of centerline miles of road under the jurisdiction of the City of Syracuse, 52 miles under local jurisdiction, 386 miles under the jurisdiction of Onondaga County, and 423 under the jurisdiction of New York State, 28 under the jurisdiction of New York State Thruway Authority are federal-aid eligible.

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

Exhibits 15, 17, 19, 21, and 24 and the corresponding charts (Exhibits 16, 18, 20, 22, 23, and 25) illustrate the condition of each of the types of functional classifications for each jurisdiction. Exhibit 26 is a map of all of the federal-aid eligible pavement condition ratings. Exhibit 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 rated roads in the excellent category, 59%, fall under the County's jurisdiction
- Of the various pavement rating categories (excellent, good, fair, poor and no data), the highest percentage of rated roads in the poor category, 24%, fall under the City's jurisdiction

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

Exhibit 12

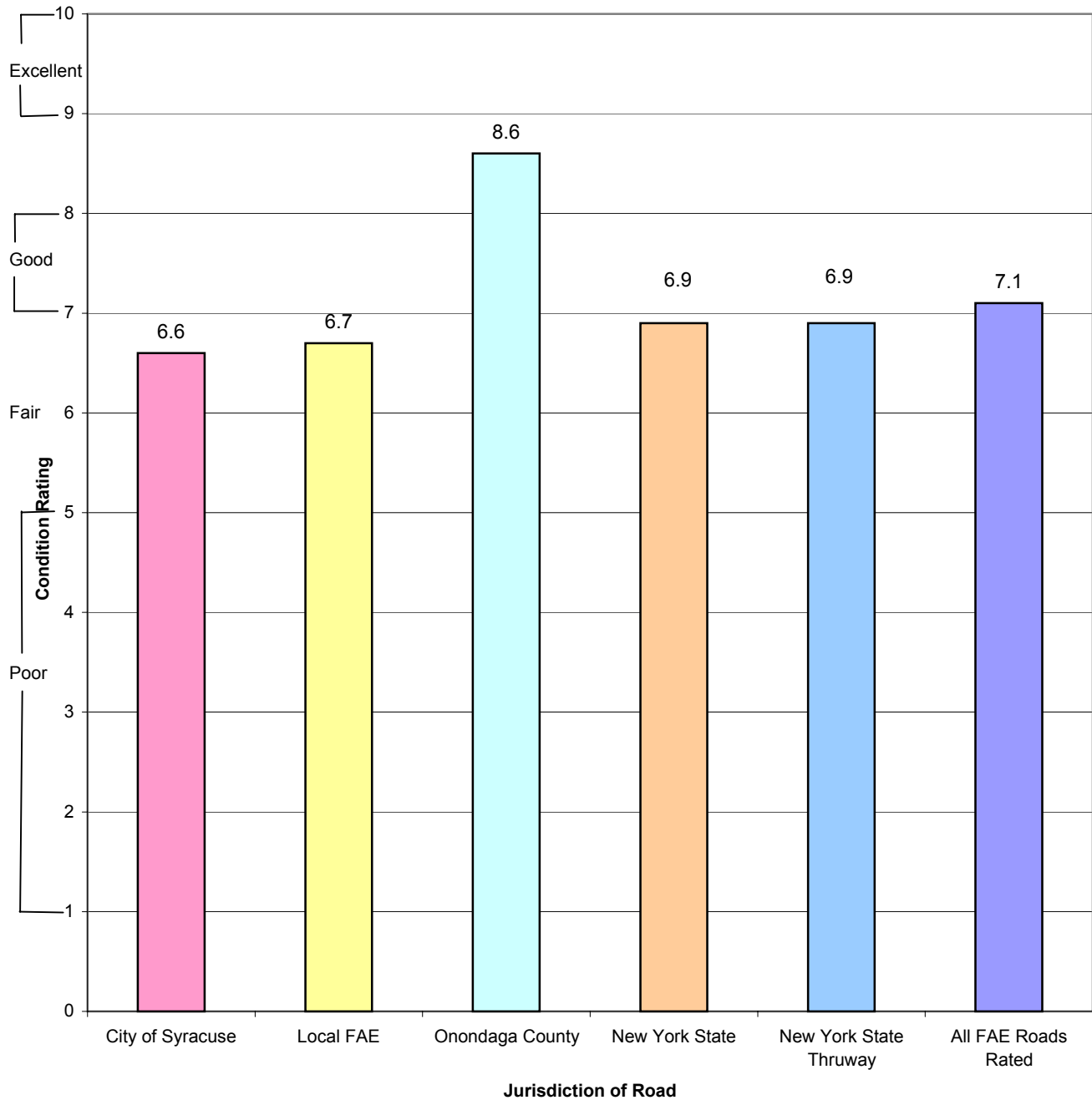
Pavement Ratings for Federal-Aid Eligible Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads	Average Rating
City of Syracuse				
				6.6(Fair)
Excellent	87,538	16.6	14%	
Good	185,446	35.1	29%	
Fair	202,487	38.3	31%	
Poor	154,397	29.2	24%	
No Data	17,949	3.4	3%	
Total	647,817	122.7	100%	
Local Federal-Aid Eligible				
				6.7 (Fair)
Excellent	48,463	9.2	18%	
Good	52,711	10.0	19%	
Fair	145,098	27.5	53%	
Poor	24,579	4.7	9%	
No Data	0	0.0	0	
Under Construction	3,582	0.7	1%	
Total	274,433	52.0	100%	
Onondaga County				
				8.6 (Good)
Excellent	1,205,200	228.3	59%	
Good	460,036	87.1	23%	
Fair	133,252	25.2	7%	
Poor	214,207	40.6	11%	
No Data	25,314	4.8	1%	
Total	2,038,009	386.0	100%	
New York State				
				6.9 (Fair)
Excellent	233,698	44.3	10%	
Good	1,043,751	197.7	47%	
Fair	790,498	149.7	35%	
Poor	138,860	26.3	6%	
No Data	0	0.0	0%	
Under Construction	24,504	4.6	1%	
Total	2,231,312	422.6	100%	
New York State Thruway				
				6.8 (Fair)
Excellent	0	0.0	0%	
Good	101,990	19.3	70%	
Fair	43,129	8.2	30%	
Poor	0	0.0	0%	
No Data	0	0.0	0%	
Total	145,119	27.5	100%	
All Federal-Aid Eligible				
				7.1 (Good)
Excellent	1,574,899	298.3	30%	
Good	1,843,934	349.2	35%	
Fair	1,314,465	249.0	25%	
Poor	532,044	100.8	10%	
No Data	43,263	8.2	1%	
Under Construction	28,086	5.3	1%	
Total	5,336,691	1010.7	100%	

Notes: 1. Calculations based on total centerline length of road
2. Total percentages may not add to 100% due to rounding errors

Exhibit 13

Federal-Aid Eligible (FAE) Pavement Condition Average (Mean) Rating Scores by Jurisdiction

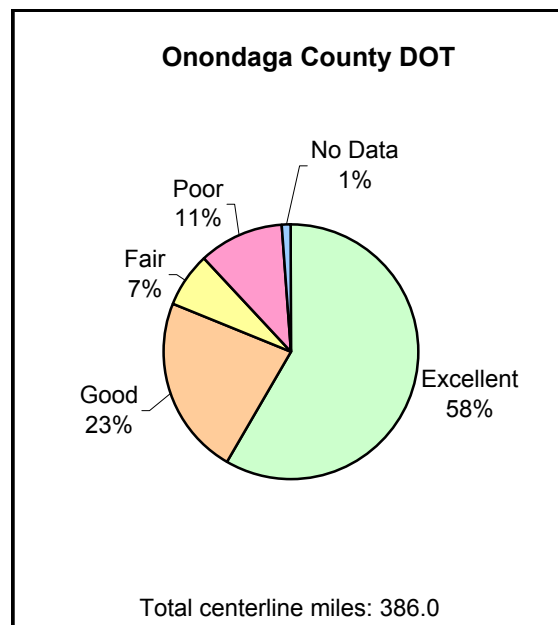
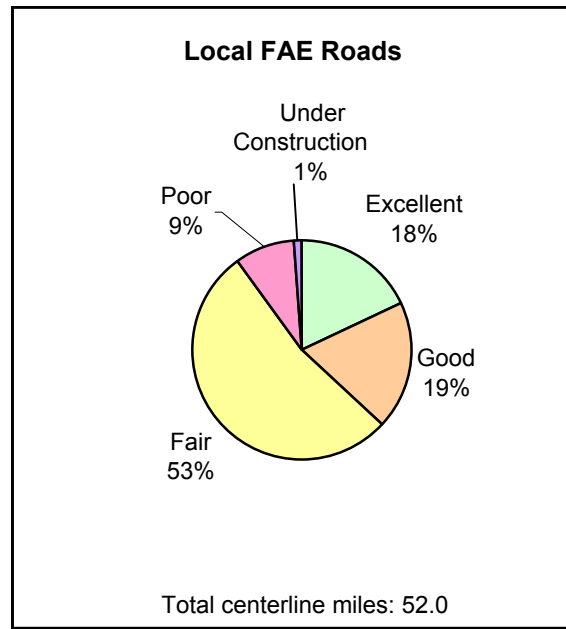
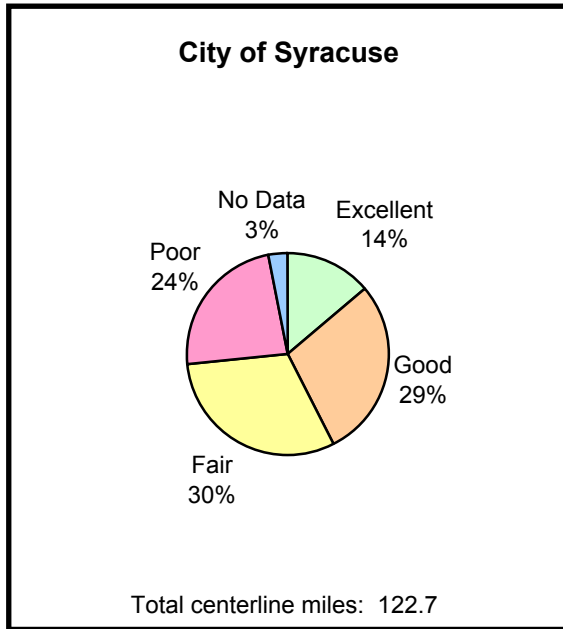


Notes:

1. Scale of Condition Rating (1-5: Poor) (6: Fair) (7-8: Good) (9-10: Excellent)
2. Calculations based on total centerline length of road

Exhibit 14 Part I

Federal-Aid Eligible Rated Roads by Jurisdiction

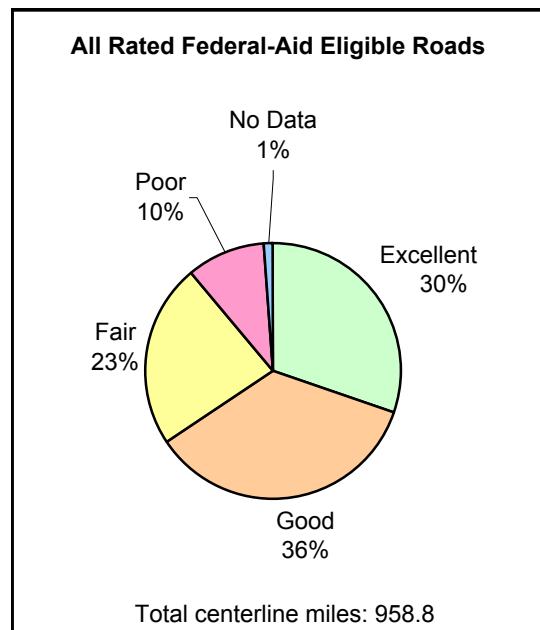
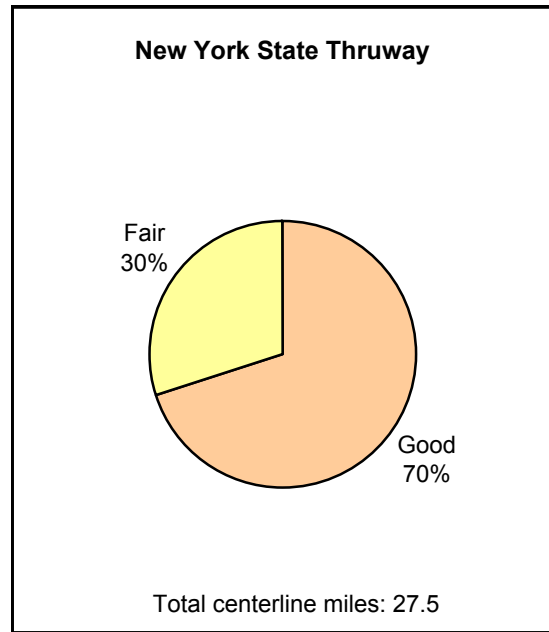
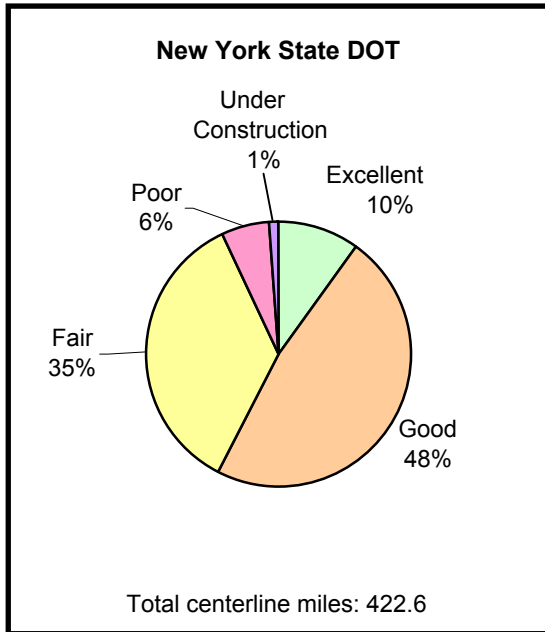


Excellent Good Fair Poor No Data Under Construction

Note: Calculations based on total centerline length in miles of road

Exhibit 14 Part II

Federal-Aid Eligible Roads by Jurisdiction



Excellent Good Fair Poor No Data Under Construction

Note: Calculations based on total centerline length in miles of road

Exhibit 15

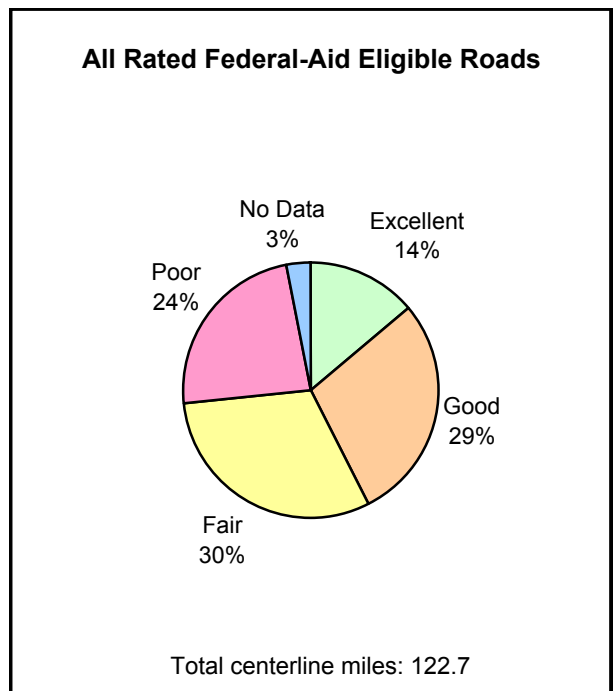
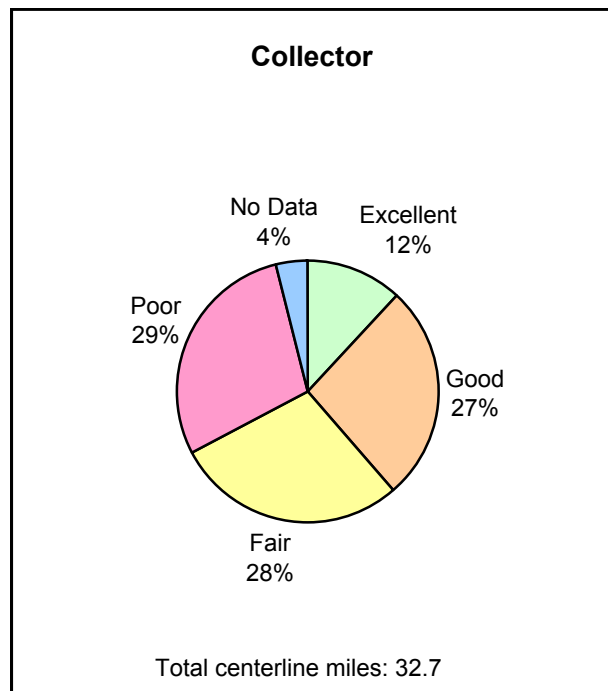
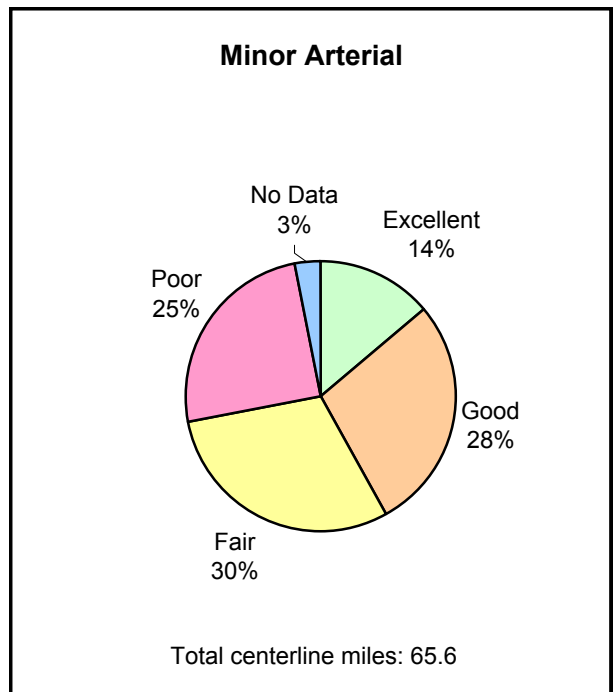
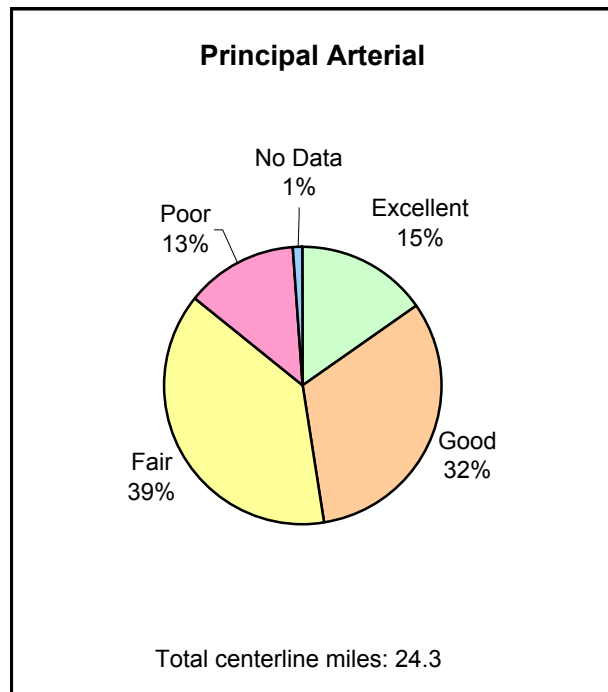
Pavement Ratings by Functional Classification for City of Syracuse

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
City of Syracuse			
Principal Arterial			
Excellent	19,803	3.8	15%
Good	41,514	7.9	32%
Fair	49,171	9.3	38%
Poor	16,481	3.1	13%
No Data	1,459	0.3	1%
Total	128,428	24.3	100%
Minor Arterial			
Excellent	47,340	9.0	14%
Good	98,057	18.6	28%
Fair	103,524	19.6	30%
Poor	88,043	16.7	25%
No Data	9,507	1.8	3%
Total	346,472	65.6	100%
Collector			
Excellent	20,395	3.9	12%
Good	45,875	8.7	27%
Fair	49,792	9.4	29%
Poor	49,873	9.4	29%
No Data	6,983	1.3	4%
Total	172,917	32.7	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	87,538	16.6	14%
Good	185,446	35.1	29%
Fair	202,487	38.3	31%
Poor	154,397	29.2	24%
No Data	17,949	3.4	3%
Total	647,817	122.7	100%

Notes: 1. Calculations based on total centerline length of road
2. Total percentages may not add to 100% due to rounding errors

Exhibit 16

Pavement Ratings by Functional Classification for City of Syracuse Roads



Excellent Good Fair Poor No Data

Note: Percentages determined by total centerline length in miles of road

Exhibit 17

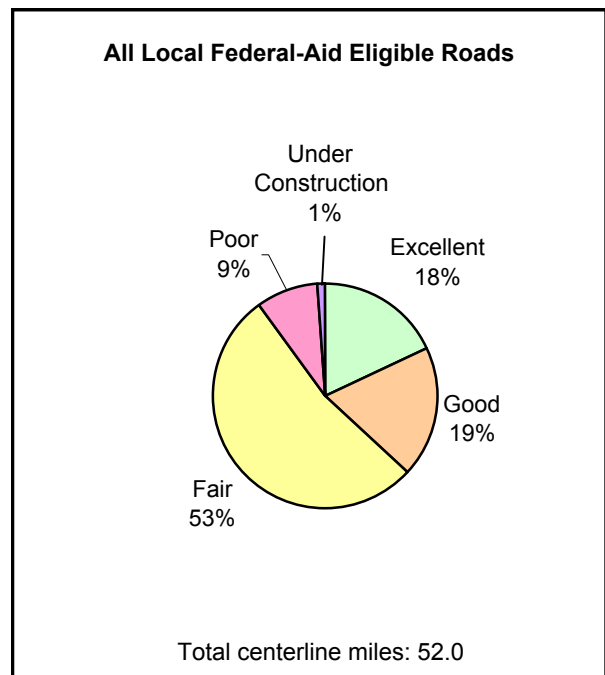
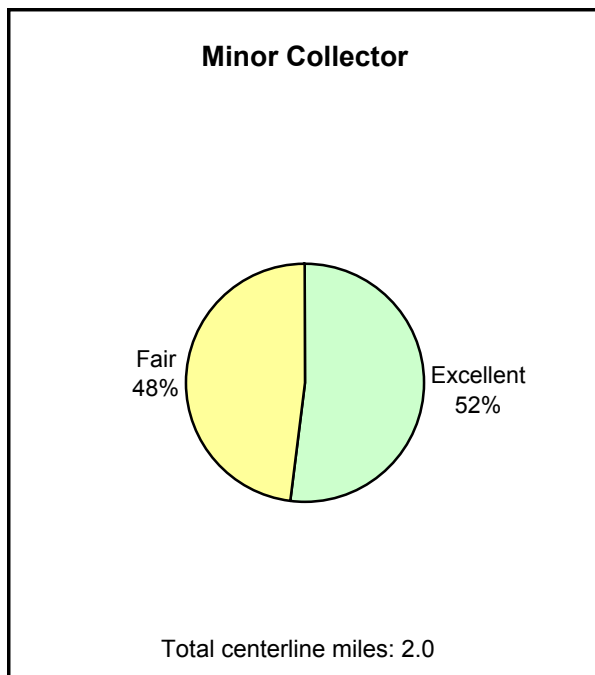
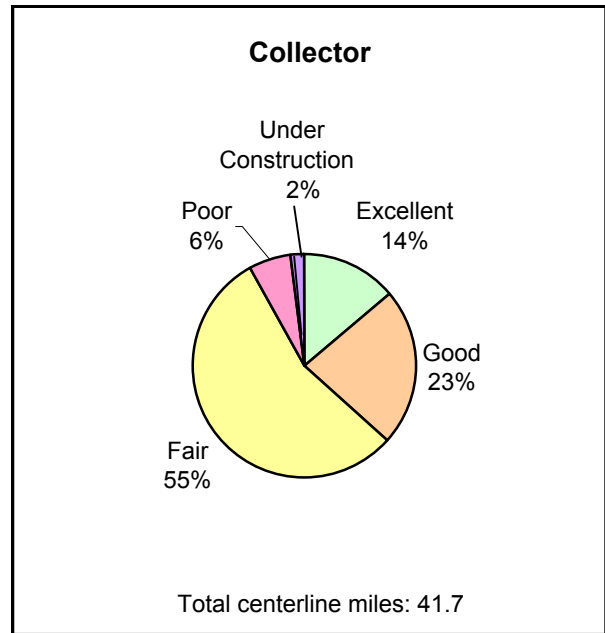
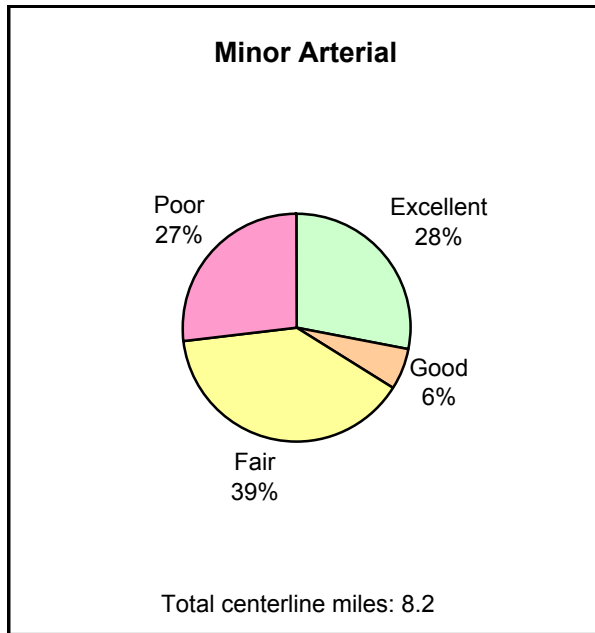
Pavement Ratings by Functional Classification for Local Federal-Aid Eligible Roads

	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	28%
Good	2,529	0.5	6%
Fair	16,830	3.2	39%
Poor	11,795	2.2	27%
No Data	0	0.0	0%
Total	43,225	8.2	100%
Collector			
Excellent	30,943	5.9	14%
Good	50,182	9.5	23%
Fair	122,437	23.2	56%
Poor	12,784	2.4	6%
No Data	0	0.0	0%
Under Construction	3,582	0.7	2%
Total	219,928	41.7	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 Federal-Aid Roads			
Excellent	48,463	9.2	18%
Good	52,711	10.0	19%
Fair	145,098	27.5	53%
Poor	24,579	4.7	9%
No Data	0	0.0	0%
Under Construction	3,582	0.7	1%
Total	274,433	52.0	100%

Notes: 1. Calculations based on total centerline length of road
2. Total percentages may not add to 100% due to rounding errors

Exhibit 18

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



Excellent Good Fair Poor No Data Under Construction

Note: Percentages determined by total centerline length in miles of road

Exhibit 19

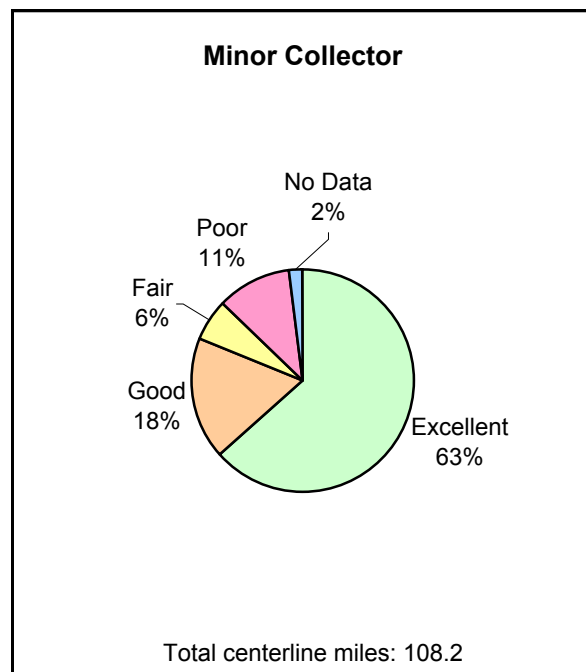
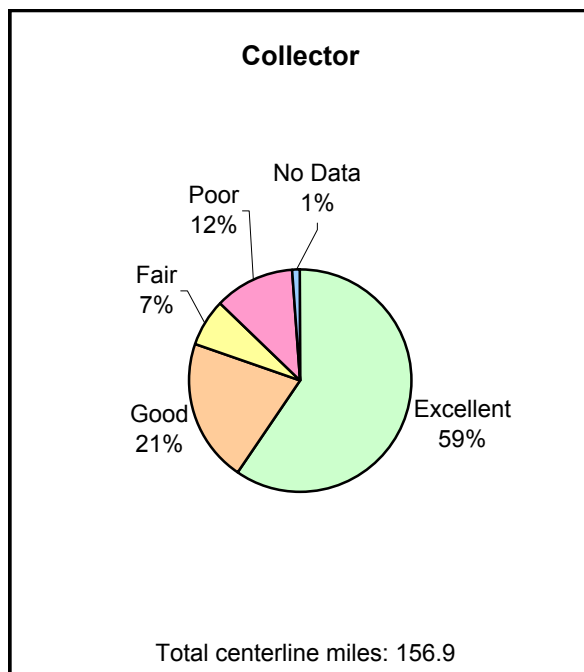
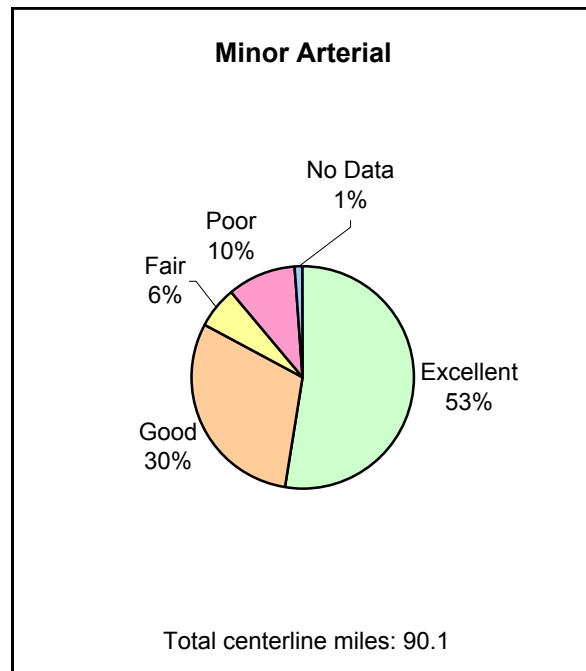
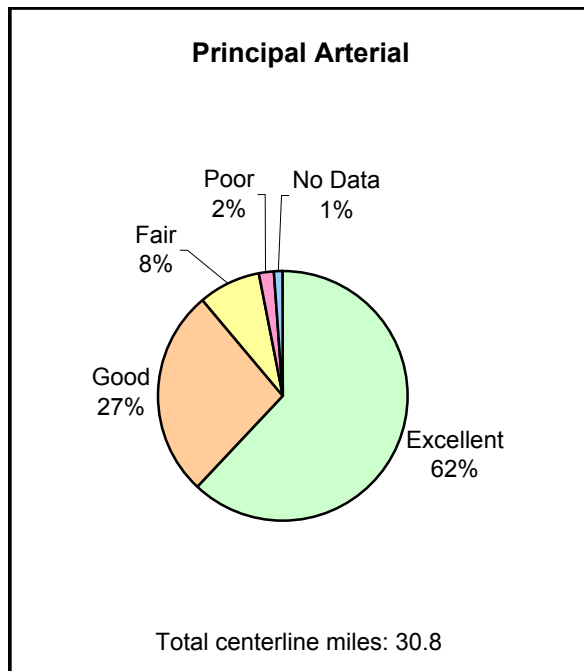
Pavement Ratings by Functional Classification for Onondaga County DOT Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
Onondaga County			
Principal Arterial			
Excellent	100,111	19.0	62%
Good	43,483	8.2	27%
Fair	13,503	2.6	8%
Poor	3,780	0.7	2%
No Data	1,709	0.3	1%
Total	162,586	30.8	100%
Minor Arterial			
Excellent	247,295	46.8	52%
Good	143,494	27.2	30%
Fair	28,075	5.3	6%
Poor	49,872	9.4	10%
No Data	7,089	1.3	1%
Total	475,825	90.1	100%
Collector			
Excellent	493,567	93.5	60%
Good	170,805	32.3	21%
Fair	60,045	11.4	7%
Poor	98,322	18.6	12%
No Data	5,731	1.1	1%
Total	828,469	156.9	100%
Minor Collector			
Excellent	364,227	69.0	64%
Good	102,254	19.4	18%
Fair	31,629	6.0	6%
Poor	62,234	11.8	11%
No Data	10,785	2.0	2%
Total	571,129	108.2	100%
All County Federal-Aid Roads			
Excellent	1,205,200	228.3	59%
Good	460,036	87.1	23%
Fair	133,252	25.2	7%
Poor	214,207	40.6	11%
No Data	25,314	4.8	1%
Total	2,038,009	386.0	100%

Notes: 1. Calculations based on total centerline length of road
2. Total percentages may not add to 100% due to rounding errors

Exhibit 20
Part I

Pavement Ratings by Functional Classification for Onondaga County DOT Roads

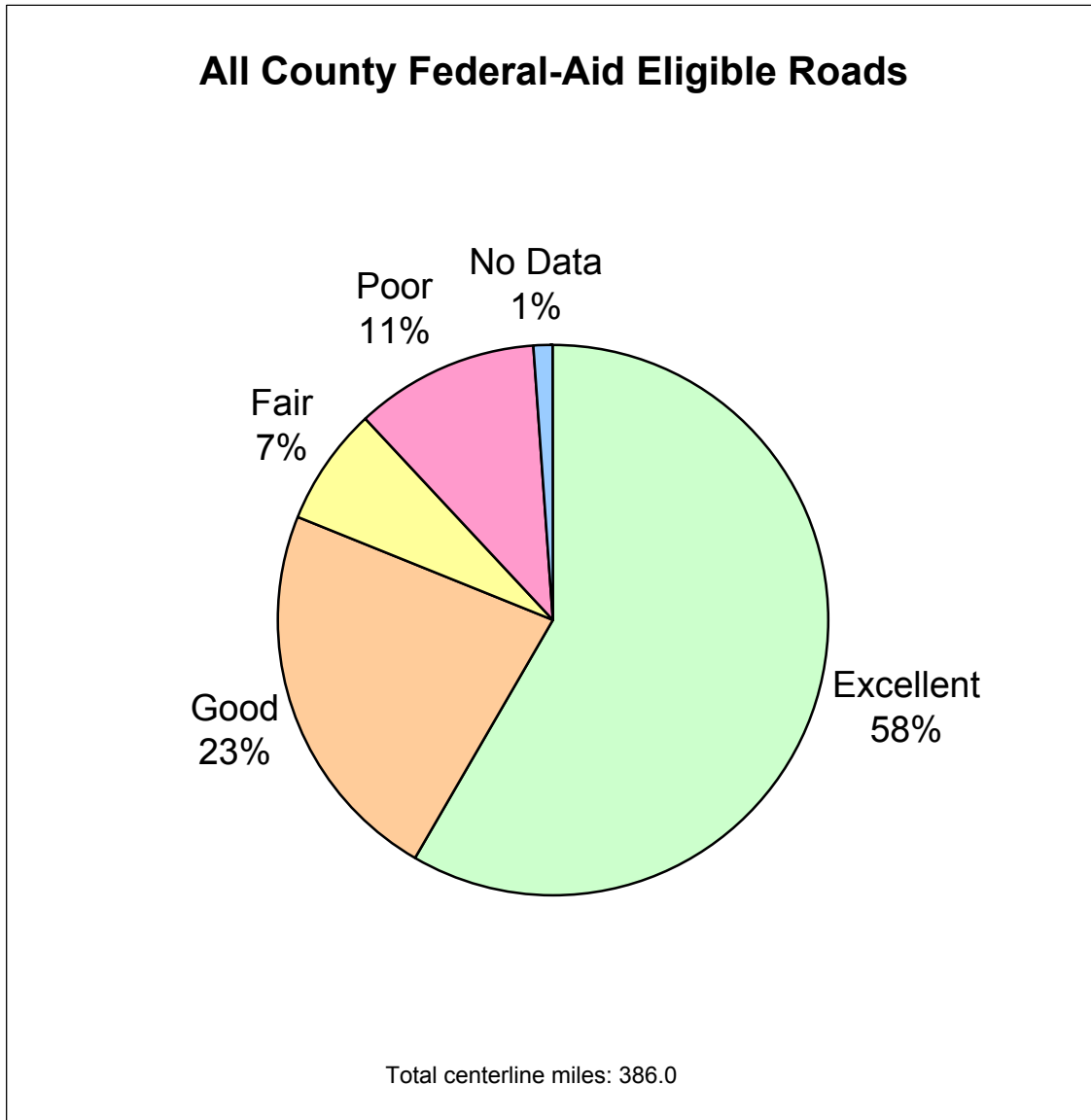


Excellent Good Fair Poor No Data

Note: Percentages determined by total centerline length in miles of road

Exhibit 20
Part II

Pavement Ratings by Functional Classification for Onondaga County DOT Roads



Excellent Good Fair Poor No Data

Note: Percentages determined by total centerline length in miles of road

Exhibit 21

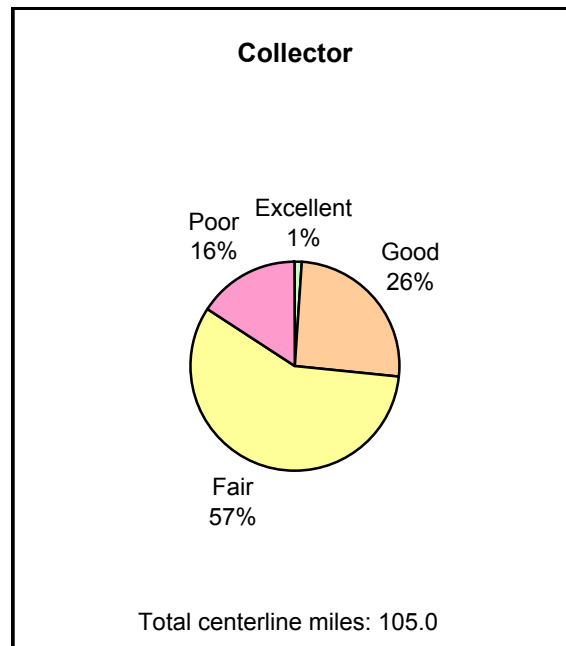
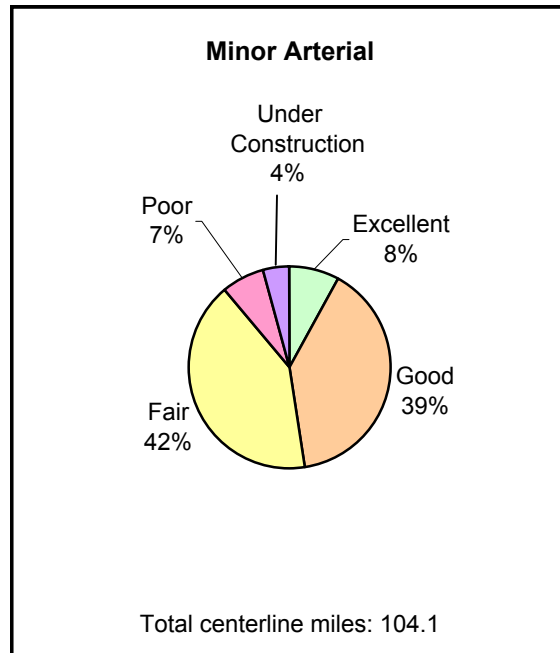
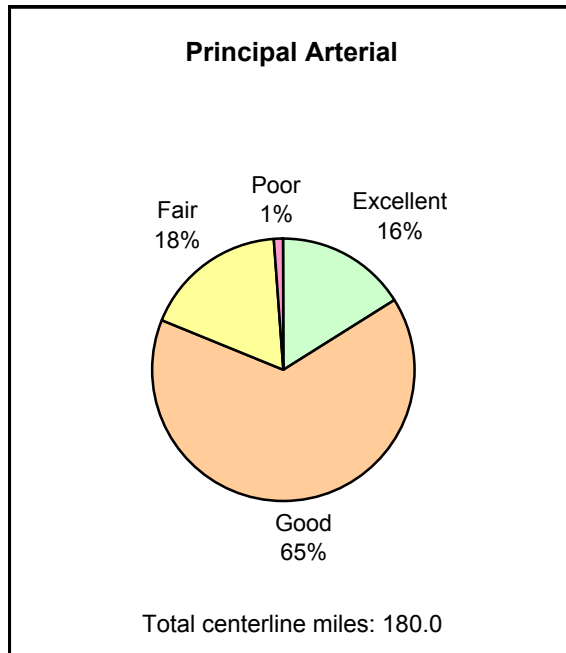
Pavement Ratings by Functional Classification for New York State DOT Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
New York State			
Principal Arterial			
Excellent	149,840	28.4	16%
Good	621,201	117.7	65%
Fair	167,494	31.7	18%
Poor	11,986	2.3	1%
No Data	0	0.0	0%
Total	950,521	180.0	100%
Minor Arterial			
Excellent	43,111	8.2	8%
Good	216,353	41.0	39%
Fair	224,966	42.6	41%
Poor	40,704	7.7	7%
No Data	0	0.0	0%
Under Construction	24,504	4.6	4%
Total	549,637	104.1	100%
Collector			
Excellent	4,024	0.8	1%
Good	141,519	26.8	26%
Fair	322,755	61.1	58%
Poor	86,171	16.3	16%
No Data	0	0.0	0%
Total	554,468	105.0	100%
Minor Collector			
Excellent	36,724	7.0	26%
Good	51,064	9.7	36%
Fair	53,840	10.2	38%
Poor	0	0.0	0%
No Data	0	0.0	0%
Total	141,628	26.8	100%
Local			
Excellent	0	0.0	0%
Good	13,615	2.6	39%
Fair	21,444	4.1	61%
Poor	0	0.0	0%
No Data	0	0.0	0%
Total	35,059	6.6	100%
All State Federal-Aid Roads			
Excellent	233,698	44.3	10%
Good	1,043,751	197.7	47%
Fair	790,498	149.7	35%
Poor	138,860	26.3	6%
No Data	0	0.0	0%
Under Construction	24,504	4.6	1%
Total	2,231,312	422.6	100%

Notes: 1. Calculations based on total centerline length of road
2. Total percentages may not add to 100% due to rounding errors

Exhibit 22
Part I

Pavement Ratings by Functional Classification for New York State DOT Roads

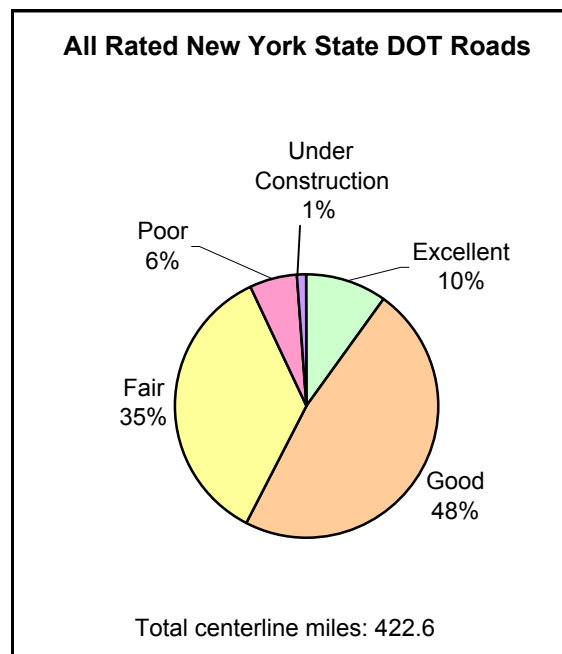
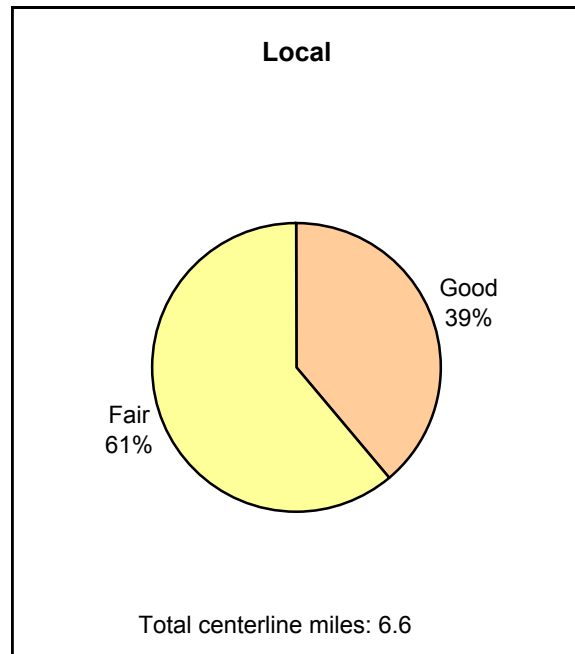
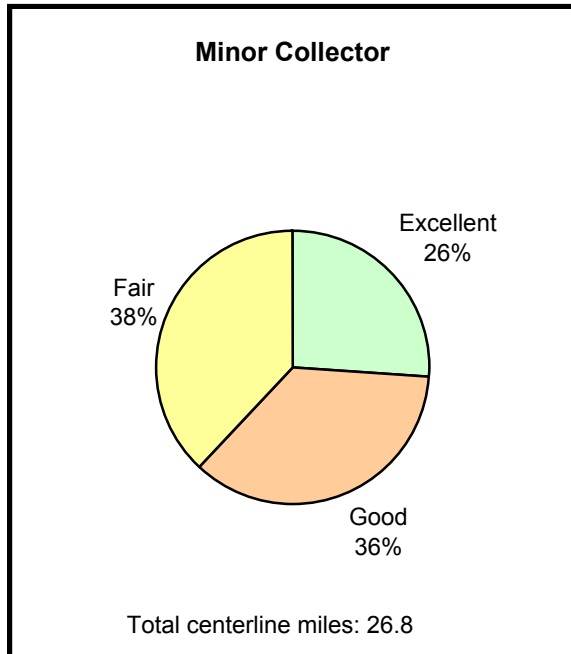


Excellent Good Fair Poor No Data Under Construction

Note: Percentages determined by total centerline length in miles of road

Exhibit 22 Part II

Pavement Ratings by Functional Classification for New York State DOT Roads

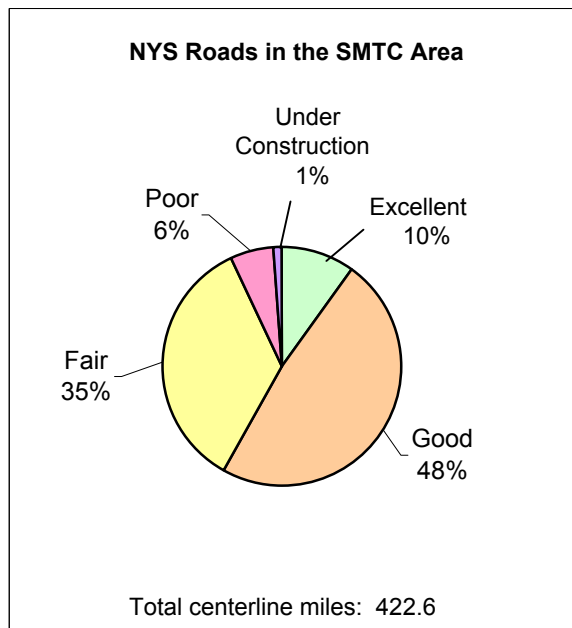
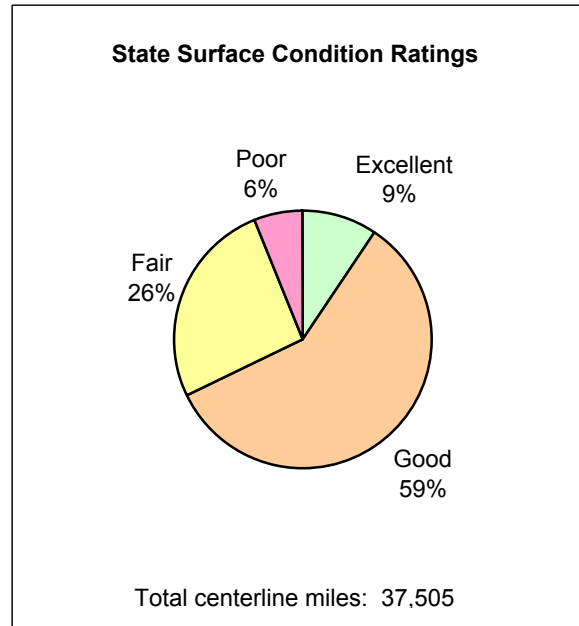
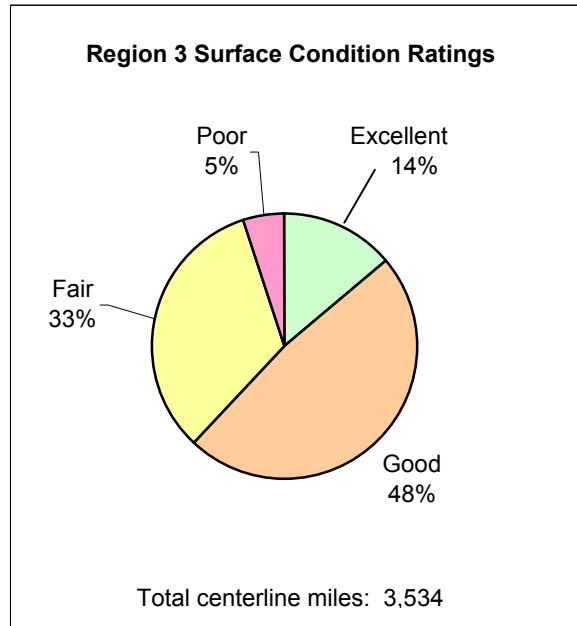


Excellent Good Fair Poor No Data Under Construction

Note: Percentages determined by total centerline length in miles of road

Exhibit 23

Comparison of State Pavement Ratings



Excellent Good Fair Poor No Data Under Construction

Note: Percentages determined by total centerline length in miles of road

Exhibit 24

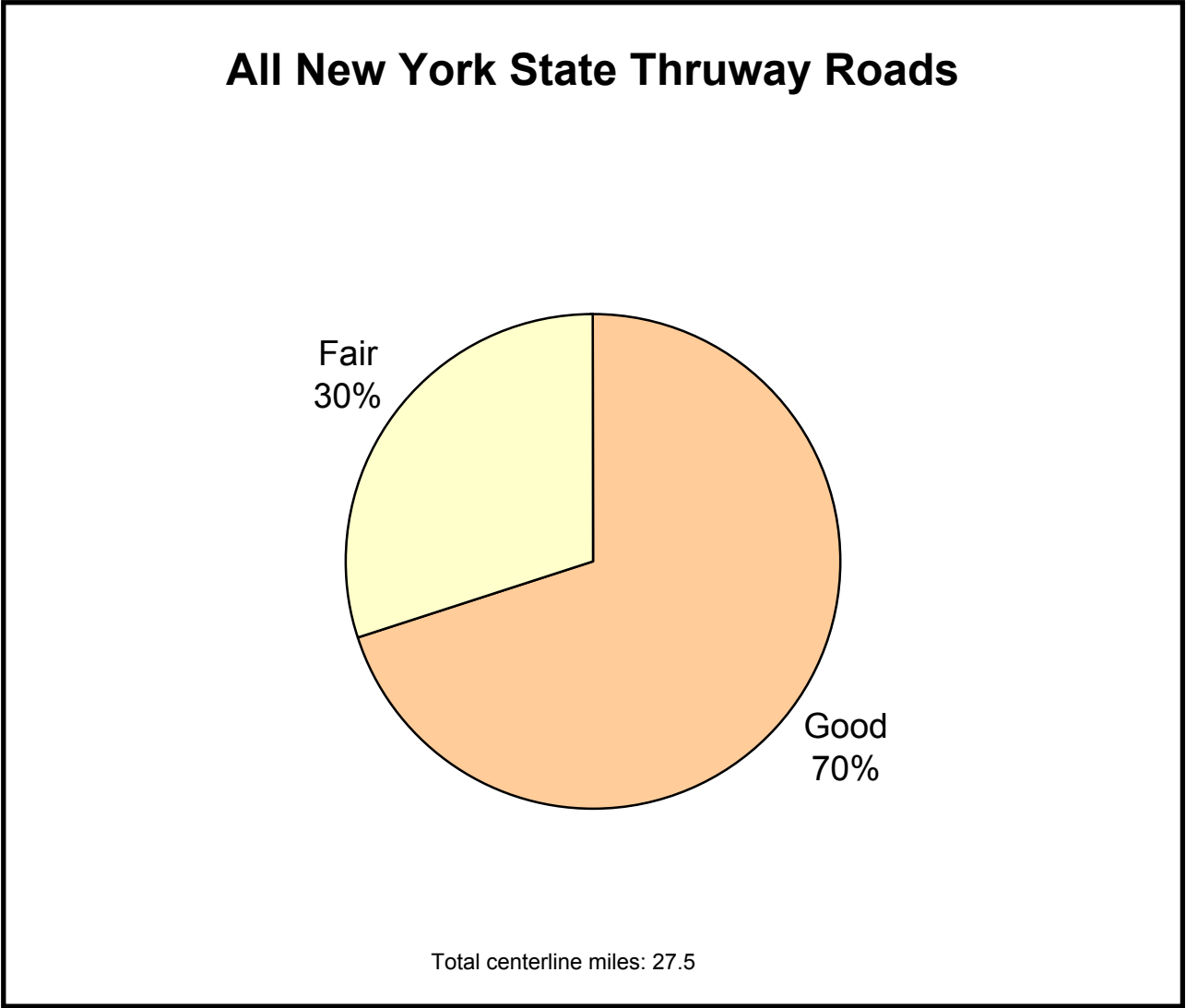
Pavement Ratings by Functional Classification for New York State Thruway Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
Thruway			
Principal Arterial			
Excellent	0	0	0%
Good	101,990	19.3	70%
Fair	43,129	8.2	30%
Poor	0	0	0%
No Data	0	0	0%
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%
Good	101,990	19.3	70%
Fair	43,129	8.2	30%
Poor	0	0	0%
No Data	0	0	0%
Total	145,119	27.5	100%

Notes: 1. Calculations based on total centerline length of road
2. Total percentages may not add to 100% due to rounding errors

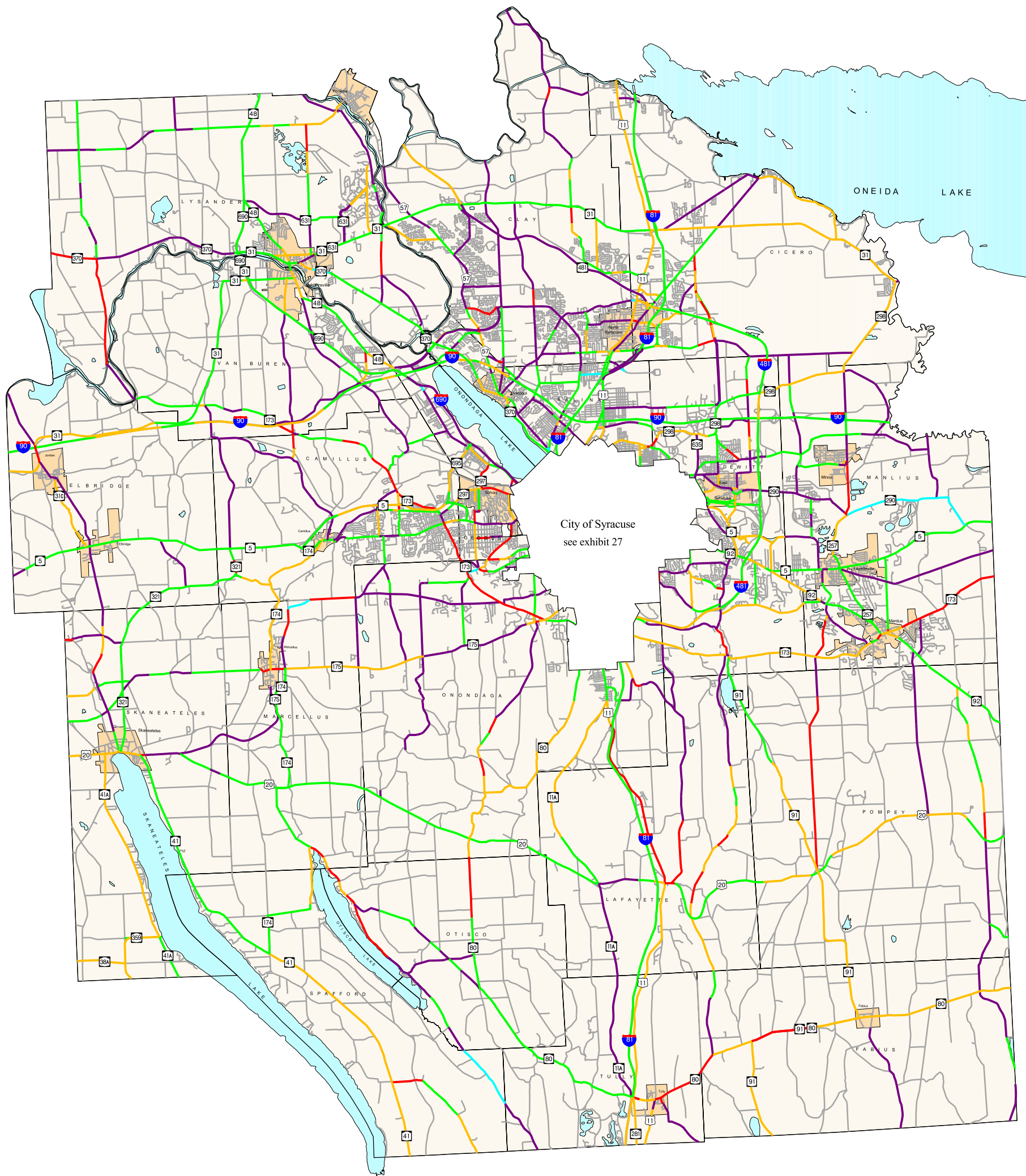
Exhibit 25

Pavement Ratings by Functional Classification for New York State Thruway Roads



Good Fair

Note: Percentages determined by total centerline length in miles of road



All Federal-Aid Eligible Roads*

- Excellent (9-10)
- Good (7-8)
- Fair (6)
- Poor (1-5)
- No Data

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



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Federal-Aid Eligible Roads Bridge & Pavement Condition Management System

Exhibit 26

0 2 4 Miles



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

Basemap Copyrighted by NYSDOT, 2001
Datasources: SMTC, NYSDOT, 1999
Prepared by SMTC, 09/2002

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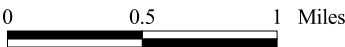


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Federal-Aid Eligible Roads in the City of Syracuse

Bridge & Pavement Condition Management System

Exhibit 27



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

- Towns
- Villages
- City of Syracuse
- Lakes
- Non Federal-Aid Eligible Roads



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Datasources: SMT, NYSDOT, 1999
Prepared by SMT, 09/2002

Exhibit 28

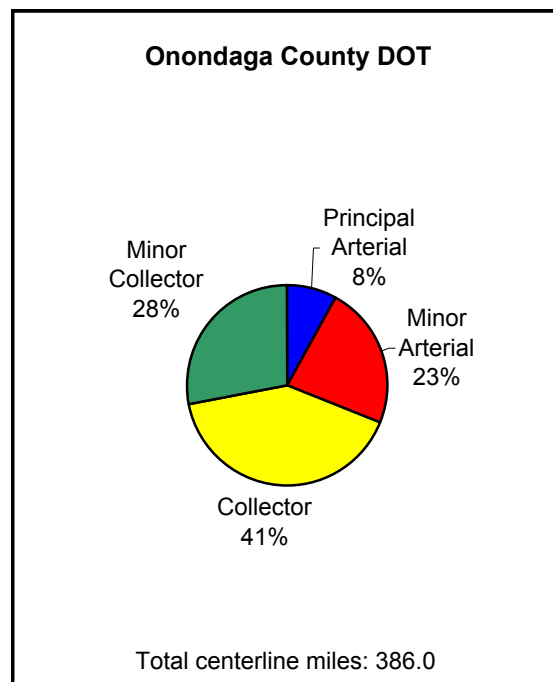
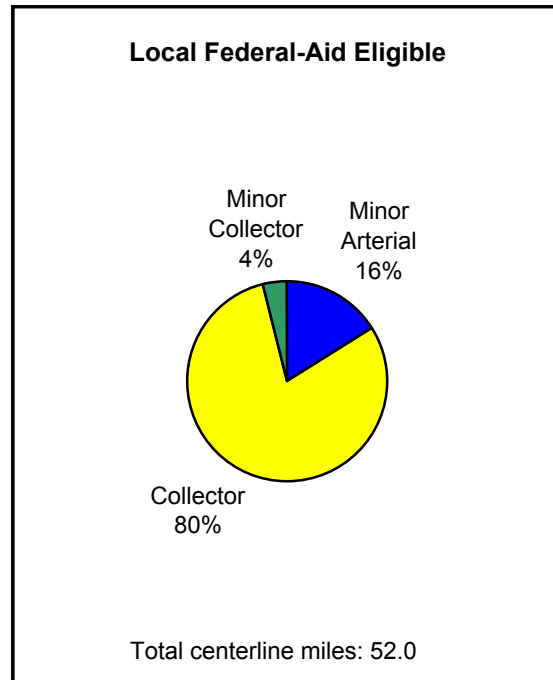
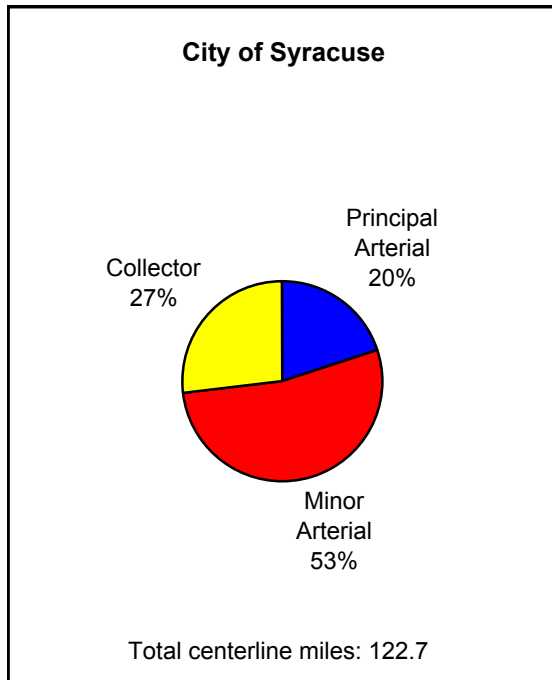
Functional Classification for Federal-Aid Eligible Roads

	Total Centerline Length in Feet	Total Centerline Length in Miles	Percent of Roads
City of Syracuse			
Principal Arterial	128,428	24.3	20%
Minor Arterial	346,472	65.6	53%
Collector	172,917	32.7	27%
Minor Collector	0	0.0	0%
Total	647,817	122.7	100%
Local Federal-Aid Eligible			
Principal Arterial	871	0.2	0%
Minor Arterial	43,225	8.2	16%
Collector	219,928	41.7	80%
Minor Collector	10,410	2.0	4%
Total	274,433	52.0	100%
Onondaga County			
Principal Arterial	162,586	30.8	8%
Minor Arterial	475,825	90.1	23%
Collector	828,469	156.9	41%
Minor Collector	571,129	108.2	28%
Total	2,038,009	386.0	100%
New York State			
Principal Arterial	950,521	180.0	43%
Minor Arterial	549,637	104.1	25%
Collector	554,468	105.0	25%
Minor Collector	141,628	26.8	6%
Local	35,059	6.6	2%
Total	2,231,312	422.6	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 Rated Federal-Aid Eligible Roads			
Principal Arterial	1,387,524	262.8	26%
Minor Arterial	1,415,159	268.0	27%
Collector	1,775,782	336.3	33%
Minor Collector	723,166	137.0	14%
Local	35,059	6.6	1%
Total	5,336,691	1010.7	100%

Notes: 1. Calculations based on total centerline length of road
2. Total percentages may not add to 100% due to rounding errors

Exhibit 29
Part I

Functional Classification of Federal-Aid Eligible Roads by Jurisdiction

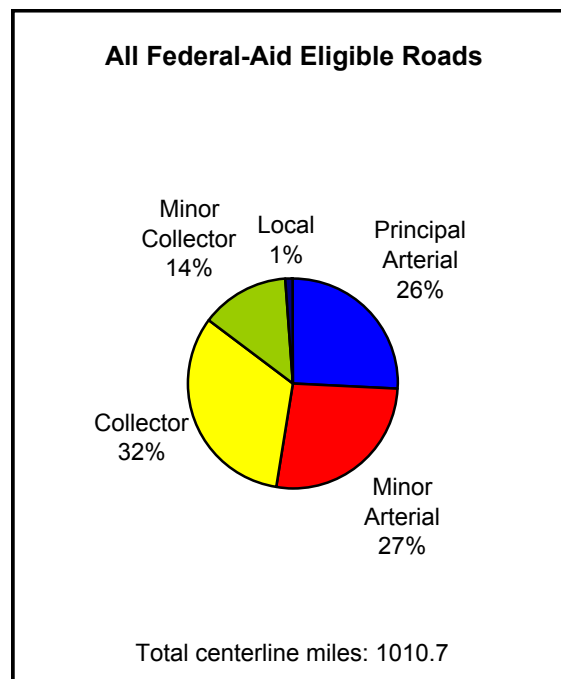
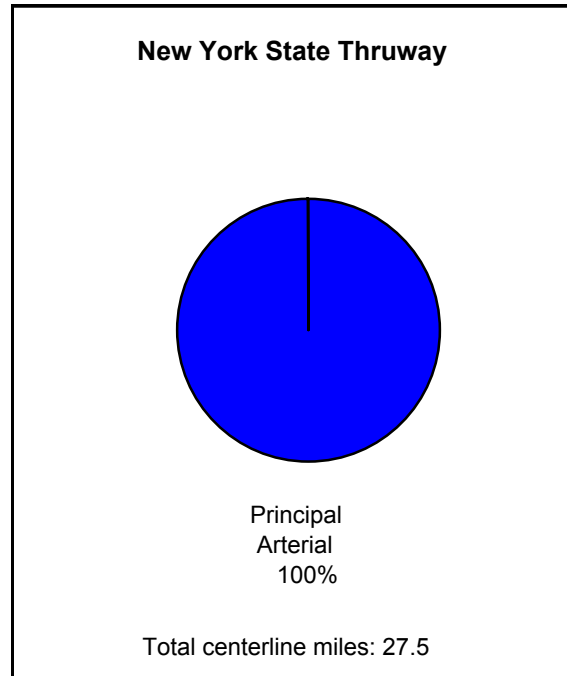
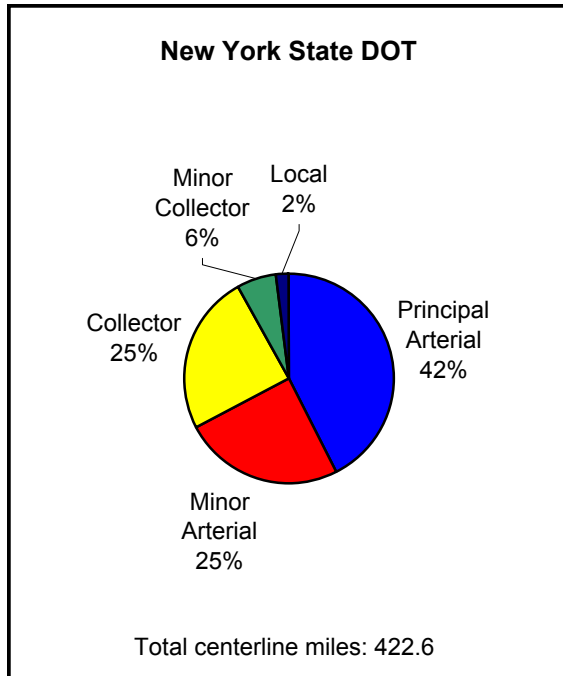


Principal Arterial Minor Arterial Collector Minor Collector

Note: Percentages determined by total centerline length in miles of road

Exhibit 29 Part II

Functional Classification of Federal-Aid Eligible Roads by Jurisdiction

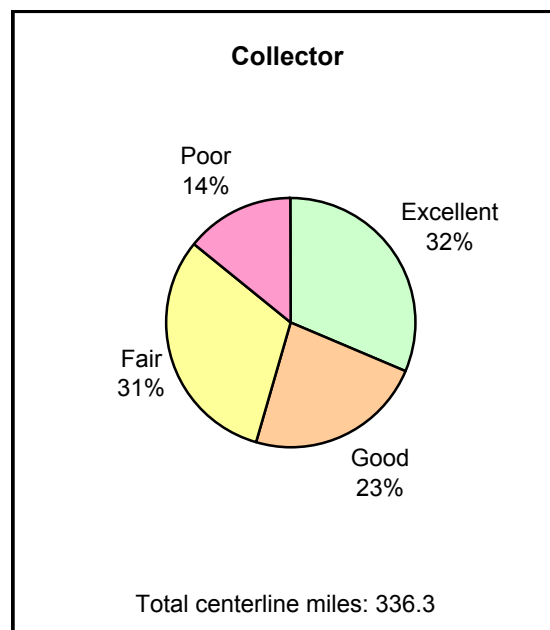
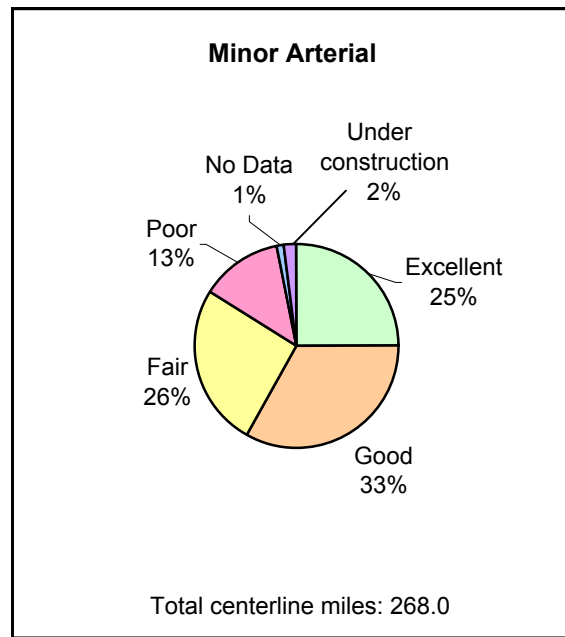
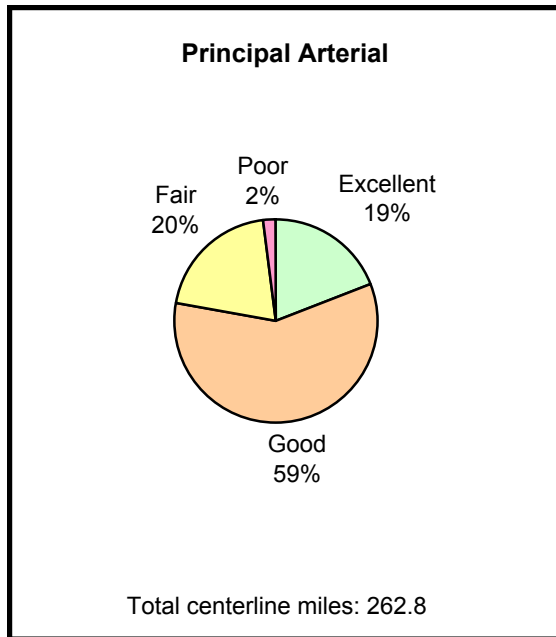


Principal Arterial Minor Arterial Collector Minor Collector Local

Note: Percentages determined by total centerline length in miles of road

Exhibit 30 Part I

Pavement Ratings of Federal-Aid Eligible Roads by Functional Classification

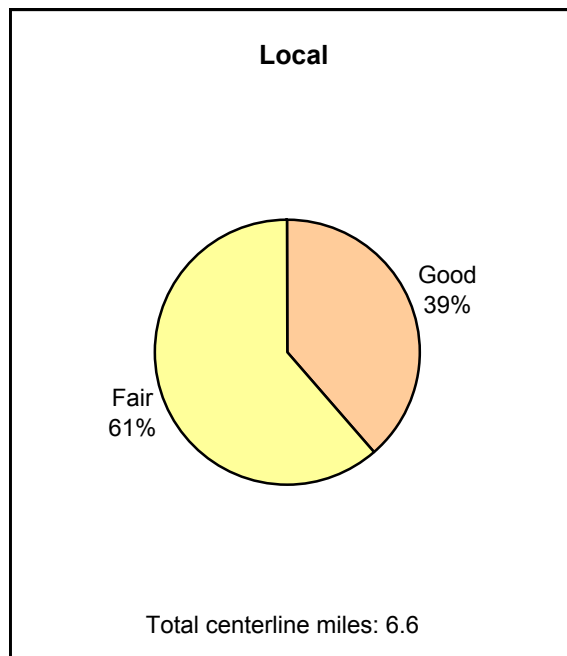
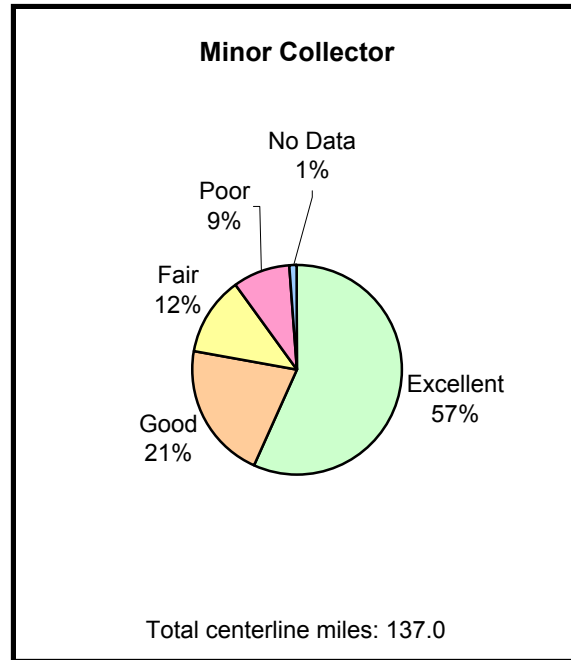


Excellent Good Fair Poor No Data Under Construction

Note: Percentages determined by total centerline length in miles of road

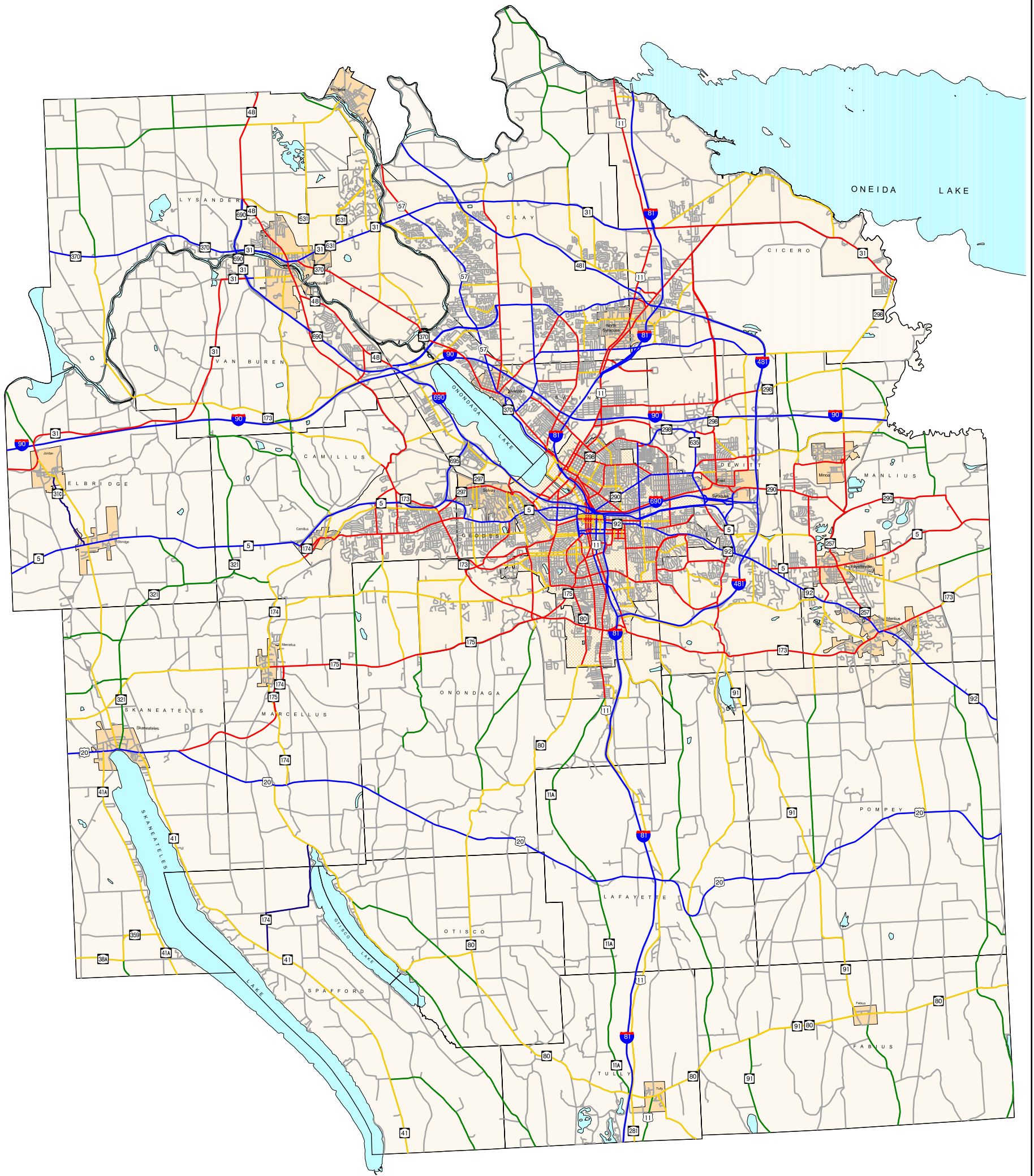
Exhibit 30 Part II

Pavement Ratings of Federal-Aid Eligible Roads by Functional Classification



Excellent Good Fair Poor No Data Under Construction

Note: Percentages determined by total centerline length in miles of road



Roads

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



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Functional Classification Bridge & Pavement Condition Management System

Exhibit 31

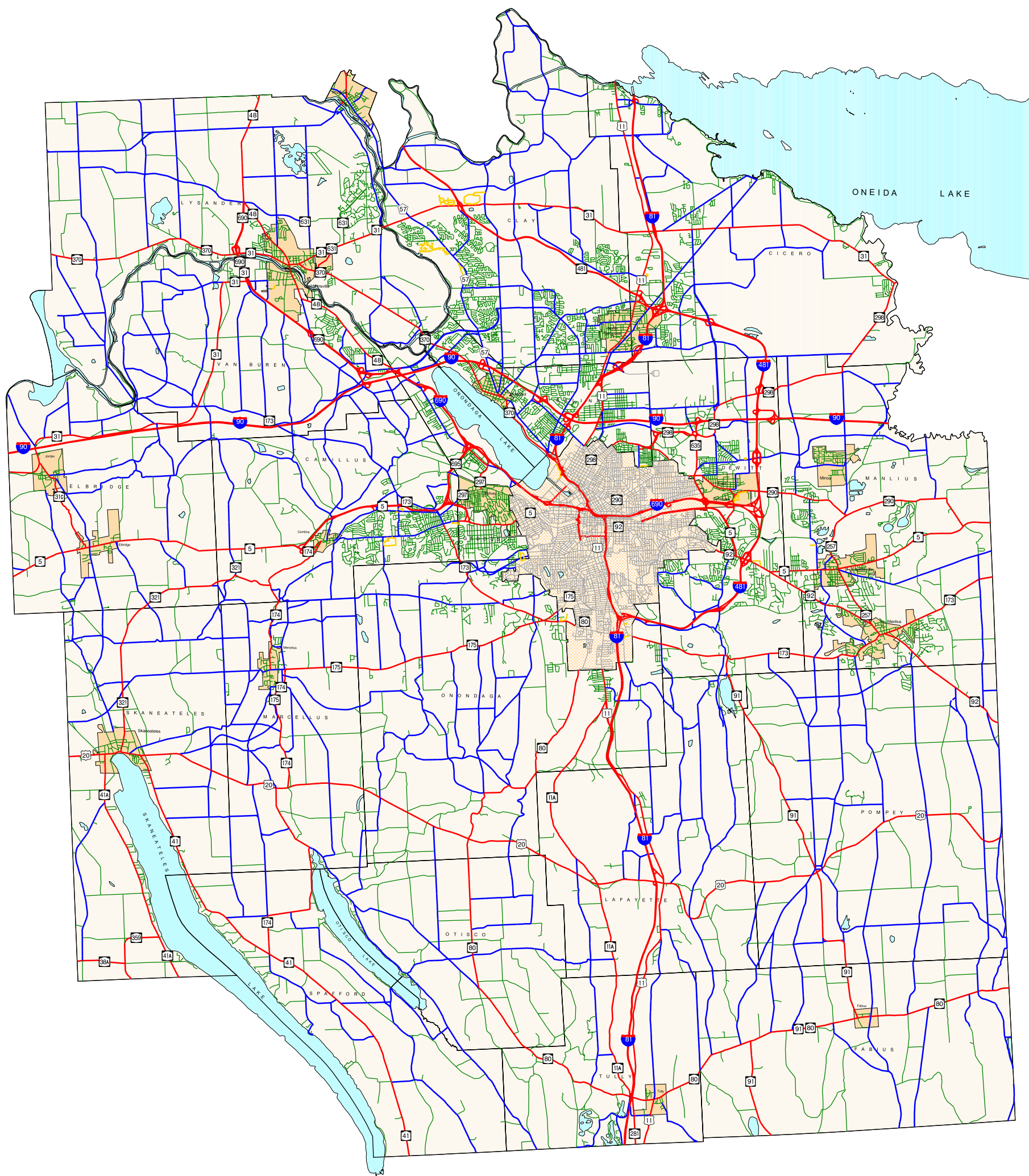
0 2 4 Miles

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- Towns
- Villages
- City of Syracuse
- Urban Boundary
- Lakes



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Prepared by SMTC, 09/2002



Jurisdiction

- NYSDOT
- OCDOT
- City of Syracuse
- Local
- Private



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Onondaga County Roads by Jurisdiction

Bridge & Pavement Condition Management System

Exhibit 32

0 2 4 Miles

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- Towns
- Villages
- City of Syracuse
- Lakes

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III. Closing

It is recommended that this report continue to be 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 has been holding meetings during this program year with the appropriate agency representatives to discuss this topic. In future years, it is recommended that the county, city and local jurisdictions finalize their goals.

The presentation of data in this report is more accurate than the first and second annual reports. Through improving the base GIS data and streamlining the condition ratings, the numbers and percentages in this report are more precise.

Finally, it was previously discussed 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 will not be made for the BPCMS 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. Due to these reasons, as well as the differences in weather and construction seasons in New York State as compared to the U.S., comparisons will only be made to the state conditions.

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.