Expansion of Highway Services Consolidation and Sharing Study

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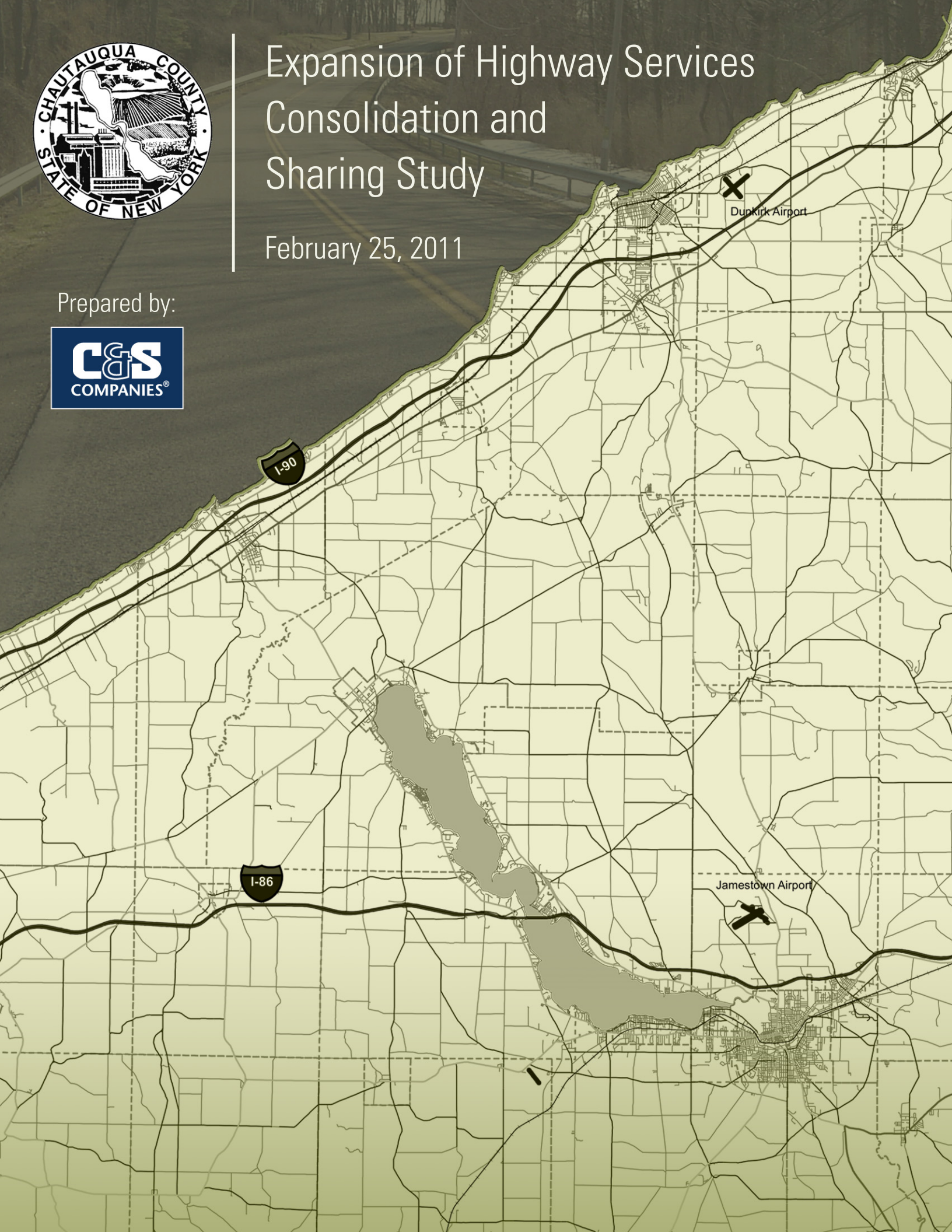
Prepared by:

C&S COMPANIES®



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Executive Summary

Transportation infrastructure is at the heart of our system of commerce, connecting markets to customers, resources to industry, and employees to employers. Bridges built are not only literal but figurative as well, as people and organizations connect and collaborate at national, regional, and local levels. Maintaining critical infrastructure that benefits the common good is a primary function of government. But what occurs when multiple governments are involved?

In its continuing mission to improve performance and serve residents, travelers, and business movers alike, Chautauqua County obtained funding via New York State's Shared Municipal Services Incentive Grant Program to conduct a study aimed at opportunities for higher levels of efficiency. Having experienced success in the implementation of equipment and service sharing in the form of chip seal districts and other examples, the combined 44 municipal entities comprising the county are not looking back but rather forging a stronger future.

Working closely with the shared highway services committee consisting of representatives from the county, the two cities (Dunkirk and Jamestown), and one member from each town and village, C&S Companies conducted an extensive analysis of existing conditions, historical financial data, and other operational information attained via survey and interviews with superintendents.

The team approached the analysis from several perspectives with a focus on empowering superintendents with strategies and tools needed to take their operations to the next level. We attempted to compare the work product quality, attained by collecting road condition ratings, with the overall cost of achieving that outcome for all entities. We call this metric the cost per quality mile. We investigated work practices in search of opportunities for possible improvement. Lastly, we evaluated opportunities for increased resource sharing and strategies to shift more of the non-producing costs of these organizations toward the resources that produce the desired output—a safe, accessible road system in acceptable condition.

Through this process, we gained a greater understanding of the complexity and potential pitfalls of comparing the effectiveness of such activities without a complete and accurate grasp of all of the factors and considerations that comprise these gross measures. A unique aspect of this study is that it was performed by individuals with decades of experience in the management, maintenance, and operation of highway systems of various road types. Their insights enabled us to go much deeper than numbers alone could take us.

Analysis on the basis of resource densities appears to suggest that there is significant potential to reduce the amount of equipment carried in the system through equipment sharing. Additional understanding is necessary to proceed in a knowledgeable fashion, particularly with respect to actual equipment utilization and simultaneous use considerations. This action could be implemented with little or no cost, once greater understanding of use parameters is shared.

We identified several industry best practice methods and techniques that would bring value. Specific recommendations are located in Section 5 of this report. Again, most of these items are implementable at little to no initial cost and have the potential to deliver immediate savings.

Theoretical evaluation of the benefits of sharing facilities and working collaboratively as operational maintenance districts that extend beyond current borders indicates that an opportunity exists to reduce the overhead burden of unproductive assets on operation, thereby increasing efficiency. These considerations are extremely complex, have high capital, political and cultural resistance barriers to implementation, and may take years to implement. It will take collaboration between selfless, visionary leaders to progress this concept. Such an approach does indicate significant long-term savings potential, although deeper analysis guided by information

specific to the operations considering this solution will be required for each unique circumstance.

We found that management accounting and efficiency measurement practices did not exist in virtually any of the municipal operations. The manner in which costs are tracked and reported is based on, and compliant with, state and local government reporting requirements but is inadequate for purposes of operational efficiency analysis and management. This reality constrained our ability to conduct detailed analysis and comparison of relative performance of highway operations with a high degree of dependability.

Management accounting and efficiency measurement offers the greatest opportunity for improvement exists and leads us to our top recommendation, institution of a efficiency management information system.

When estimating the potential return on all of the strategies considered in this study, instituting a maintenance management information system, informed by accurate data relating to daily operational performance, has the potential to stimulate evolutionary change. Putting these tools in the hands of the superintendents and their crews would provide them the opportunity to run government like a business. Why is that advantageous?

In our view, motivational differences between the private sector and public sector, and the manner in which they are judged and rewarded, influences behavior. Private-sector operations are driven to be resource-lean and efficient in order to increase profit, while public-sector operations are more driven to spend their full budgets each year to get as much done as possible due to the uncertainty of funding in subsequent years (i.e., spend it or lose it). We believe that instituting business practices in highway operations will provide superintendents the tools and information needed to evolve their operation toward greater efficiency. Sharing performance information with crews on a regular basis will help them understand their direct relationship to operational achievement as a whole. It is often experienced that once people understand the importance of their contributions and have alignment with the desired goal, they are motivated to higher levels of engagement and performance.

If the importance of becoming more efficient is communicated throughout the organization and embraced by the employees, and if all participants have a clear understanding of how their daily activities contribute to achievement of that goal, conventional wisdom says they will become the problem-solvers. Nobody knows as much as everybody. Nobody knows highway operations better than the men and women who perform it every day. The creative potential of their engagement can drive innovation throughout the organization. Transparency, accountability, and pride result from knowing you are doing the best job you can and being able to demonstrate that.

Tracking activity and resource efficiency information will, we believe, provide for the identification and spread of best practices across the region. Such access will enable greater understanding of why there are differences in performance when differences occur, leading to deeper appreciation of the elements that influence productivity.

Before a full-scale, county-wide implementation, we recommend that an efficiency management information system be developed and pilot-tested among a small group of municipalities to be determined by the Shared Highway Services Committee. Should these results of the pilot prove to be encouraging, Chautauqua County and all of its municipal organizations will be well on their way to the next level.

A. Background

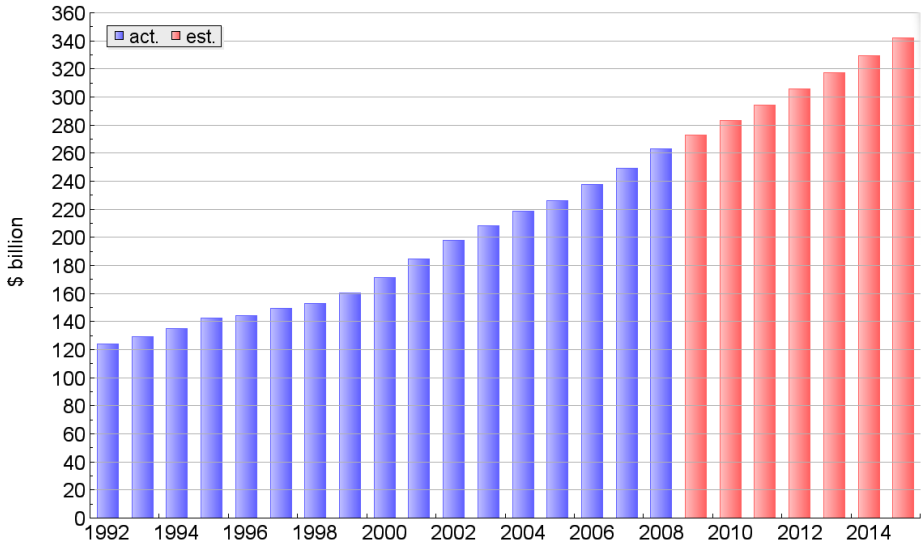
Building and maintaining critical infrastructure to benefit the common good is one of the primary functions of government. In America today, automobile and truck travel is the dominant mode of transportation. Due to this reality, a robust system of local roads and bridges is vitally necessary. This system provides connection to friends and family, enables timely response for emergency services (fire, police, ambulance, etc.), as well as access to recreation and leisure activities. This transportation infrastructure is at the heart of our system of commerce, connecting markets to customers, resources to industry, and employees to employers.

It is worth noting that a system of roadways is only valuable when the entire system maintains acceptable conditions. Isolated areas of serviceable roads or bridges surrounded by significant portions of unsafe or un-drivable roads, fail to provide the vital connection discussed above.

Over the past 2 decades, the population of the United States has increased by over 30%. New York state did not experience this growth as the population of New York state has remained virtually flat. The population of Chautauqua County, and upstate New York in general, has declined slightly. During this same period government spending has increased steadily to double the 1992 levels (Chart 1.1). And public debt is growing at an alarming rate (Chart 1.2).

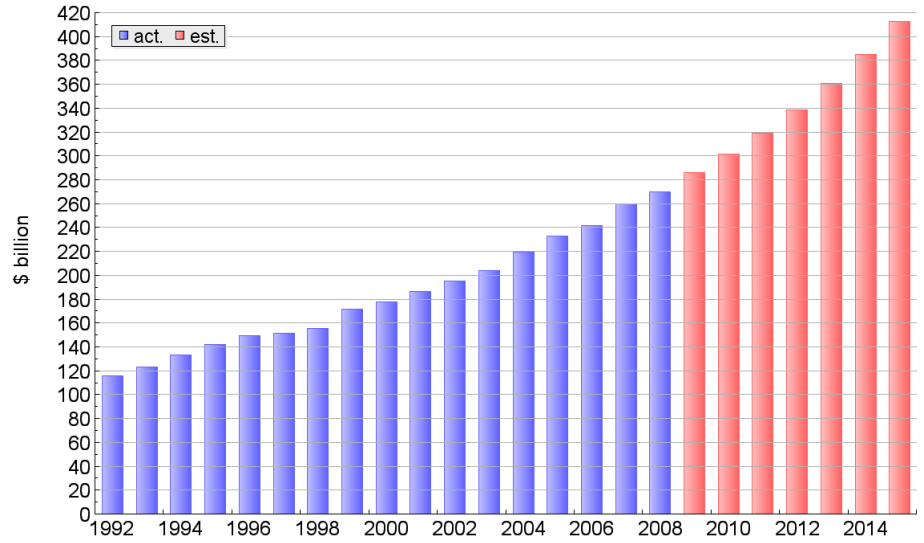
Despite this rise in spending state-wide, transportation infrastructure investment funding has not kept pace. Increases in labor, materials and equipment costs challenge the ability to maintain acceptable system condition and signs of deterioration are beginning to emerge.

Chart 1.1—Total Spending in New York, FY 1992 to FY 2015



Source: usgovernmentspending.com

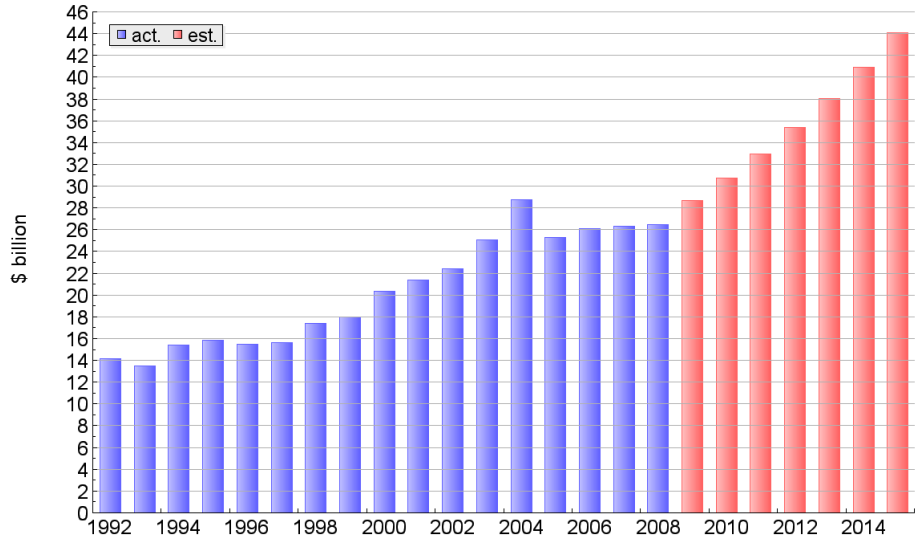
Chart 1.2—Gross Public Debt in New York, FY 1992 to FY 2105



Source: usgovernmentspending.com

As a result, New York state is interested in finding more effective and efficient means to deliver highway services while keeping cost growth in check.

Chart 1.3—Transportation Spending in New York, FY 1992 to FY 2015



Source: usgovernmentspending.com

The goal of making highway maintenance operations more efficient, and therefore more affordable, is not a new concept. With the Chautauqua County Department of Public Facilities, 27 town Highway Departments, 14 village and 2 city Departments of Public Works, redundancy and duplication of services become potentially costly issues. In fact, the 1973 unpublished work, *Highways: A Work Paper* identified duplication of services as its primary concern, concluding: "The prevailing attitude is that if one town gets a backhoe, everyone should get a backhoe…This competition and lack of cooperation is fostered by the political structure of the county. The fact that the county is divided into 27 townships, each with a highway department, automatically fuels this competition…it is necessary to realize that machinery capability and cost do not recognize artificial man-made boundaries. That a machine can be used by more than one political subdivision is an idea which must be considered by equipment planners. This, however, is not possible at present, because of the 18th century boundaries into which we squeeze our highway departments."

Highways: A Work Paper continues: "The amount of highways for which the twenty-seven towns have maintenance responsibility is twice as great as that for which the county has responsibility, yet equipment inventories demonstrate that altogether the townships have five to ten times more equipment than the county."

Twenty-two years later, Chautauqua County's 1995 Comprehensive Plan states: "The highway system's most difficult and sensitive problem area consists of its administrative network…When forty-seven governments control highway maintenance and construction, there is bound to be serious duplication of services dictated in part by the antiquated boundaries controlling activities in Chautauqua County."

The 1995 Comprehensive Plan continues: "A reasonable proposal would be to create—after detailed study—a single service system… That would integrate county, town, and village highway responsibilities under one district authority…There is no possibility of the county's mandating compliance with the program; rather it is a program that can be initiated and maintained only through the total cooperation of the county and town governments involved."

Another issue raised in the 1995 Comprehensive Plan was the perceived "over construction" and "over maintenance" within the county highway system. In other words, the road is built and maintained for purposes greater than needed for its use. It concluded that these matters could be addressed by creating a system of local roadway classifications that take traffic volumes into consideration when determining appropriate design criteria for construction, and appropriate standards for maintenance.

Thirty-seven years after *Highways: A Work Paper* was written and fifteen years after the 1995 Comprehensive Plan was published, this study once more deals with these thorny issues. In doing so, the writers' objective is to present practical recommendations having the potential to generate significant savings, thereby making highway maintenance operations more efficient and more affordable to the taxpayers of Chautauqua County and its political subdivisions.

B. Purpose and Scope

The scope of our report is to analyze the current operations and practices of the 44 collective municipalities within Chautauqua County in search of opportunities to improve the effectiveness and efficiency with which highway services are delivered.

The primary focus of the study is on organizational efficiency and opportunities to achieve higher levels of performance through increased sharing of resources.

The scope of services is generally composed of three elements:

- Inventory and assessment of current highway assets and operational practices
- Identification of cost saving and service improvement opportunities
- Recommendations on how to best prioritize and implement these cost-saving and efficiency concepts.
- Preparation of a report summarizing these findings and recommendations.

Funding was provided by the New York State Department of State–Division of Local Government via their Shared Municipal Services Incentive Grant Program.

C. Study Approach

In this study, we attempt to identify and quantify opportunities for improved operations. Our primary focus was on the operational practices and activities. Additionally, we sought to introduce standardized metrics for categorizing defining, measuring and managing efficiency as it relates to highway services. Lastly, we evaluated the impact of organizational structure and the distribution of resources on overall efficiency.

A unique feature in the execution of this latest study, differentiating it from others conducted previously, is that the primary expertise used to conduct the analysis was provided by transportation professionals with decades of experience in the operation and maintenance of local and state roadway systems. Their deep understanding of "in the trenches" issues provides insights that would not be apparent to an academic conducting a similar analysis.

Our first action was to conduct a partnering session with the Chautauqua County Shared Services Study Committee comprising one representative each from the towns, villages, county and each city. The partnering session is intended to align and commit all stakeholders to a common process, participation expectation and purpose. The result of this session is documented in a partnering agreement that each representative signed to signify their understanding and commitment to the terms outlining how we agreed to work together to achieve the desired outcome.

Throughout the study period, we worked closely with this group to collaboratively develop and refine the study scope and to conduct monthly progress review meetings.

Our approach to this study includes the following:

- Collect town and village road condition data reflecting the current condition of the road system.
- Correlate the road condition data generated with the existing road condition ratings made available for the county system to ensure consistency across the entire system.
- Gather available financial data
- Conduct personal interviews with highway superintendents to better understand their

unique operation, validate data and identify any additional considerations for the study.

- Develop and identify an agreed-to set of efficiency measures/indicators.
- Identify "best practice" opportunities.
- Evaluate the data to determine if any patterns emerge relating to the size of the system served.
- Evaluate the impact of organizational structure on efficiency of operations.
- Compare and contrast the differences between the theoretical structure and the current structure to deliver highway services in Chautauqua County.
- Compare and contrast similar municipalities.
- Identify opportunities for improvement and develop recommendations.
- Develop implementation plans for recommended actions.

The collection of data and its presentation in reports such as this can be a sensitive endeavor. In order to encourage candid and complete cooperation, it was agreed that data reported would be presented without identification of the municipality to which it belongs. For this report, an effort has been made to maintain the focus on the principles and management of efficiency rather than identifying apparently stronger or weaker performers.

D. Definitions

- **Highway Superintendent:** For the purposes of this study, this term refers to the person in charge of highway maintenance for a particular municipality. Other titles may be used particular to a municipality, such as Public Works Superintendent, Director of Public Facilities, Director of Public Works, etc.
- **Efficiency:** The relationship of work accomplished relative to the effort put in to an activity. Mathematically, E = Work Out/Work In. For example, when a road is paved, the "work out" can be the number of tons of paving material placed. The "work in" is the trucking of the material, paving machine placement of the material, equipment rollers to compact the material, any labor for detail placement or clean-up, and flaggers and equipment related to the maintenance and protection of motorists and workers. These varied efforts can be measured in dollars spent in order to quantify the "work in". The quantification of efficiency is a key to understanding how to manage it.
- **Unit cost data** is commonly used within highway maintenance organizations for the purpose of comparing operational efficiencies. This practice will be used in various places throughout this report, in addition to the more classical discussion of efficiency and efficiency measures.
- **Efficiency Measure:** A numerical method of expressing efficiency. In some industries, such as the heating industry, it can be expressed as a percentage—such as "a furnace is 81% efficient." For road maintenance activities, it is usually measured by production and its related cost, expressed as a "unit cost" in dollars per unit of work accomplished, in dollars per ton, for example.
- **Efficiency Indicator:** A numerical method of expressing something that appears to have some influence on, or relationship with efficiency. Usually it is something that can impact work effort, but not the whole effort. For example, the number of highway workers available to maintain a mile of highway system may have relevance to efficiency, but it is just a part of the "work in."
- **Effectiveness:** A measure of whether the purpose of an effort was achieved. Usually, "yes or no" is the answer to the question of whether an activity is effective. An effective activity could be highly efficient or very inefficient since the measure of effectiveness does not account for the effort expended to achieve the result.
- **Quality:** A measure of the level of "perfection" achieved for a particular work effort. Quality is usually defined by the buyer of a service or product. For this study, qual-

ity of roads refers to the existing pavement condition compared to a new condition. The rating scale for quality is from 1 to 10, with 10 being a "new" condition of the pavement. From the road users standpoint, studies have shown that road condition (specifically smoothness of ride) is related to the user's rating of the quality of the road. However, total road quality is comprised of many other factors, including structural integrity of the road, quality of materials, life expectancy, road drainage, etc.

- **Roads:** As used in this study, the term could loosely refer to streets, roads or highways, interchangeably. However there are significant differences in the way streets, roads and highways are built and maintained.
- **Local Roads:** Refers to any of the public roads, including city, village, town and county roads, but not state roads or highways, State roads and highways are not within the scope of this study.

E. Existing Situation

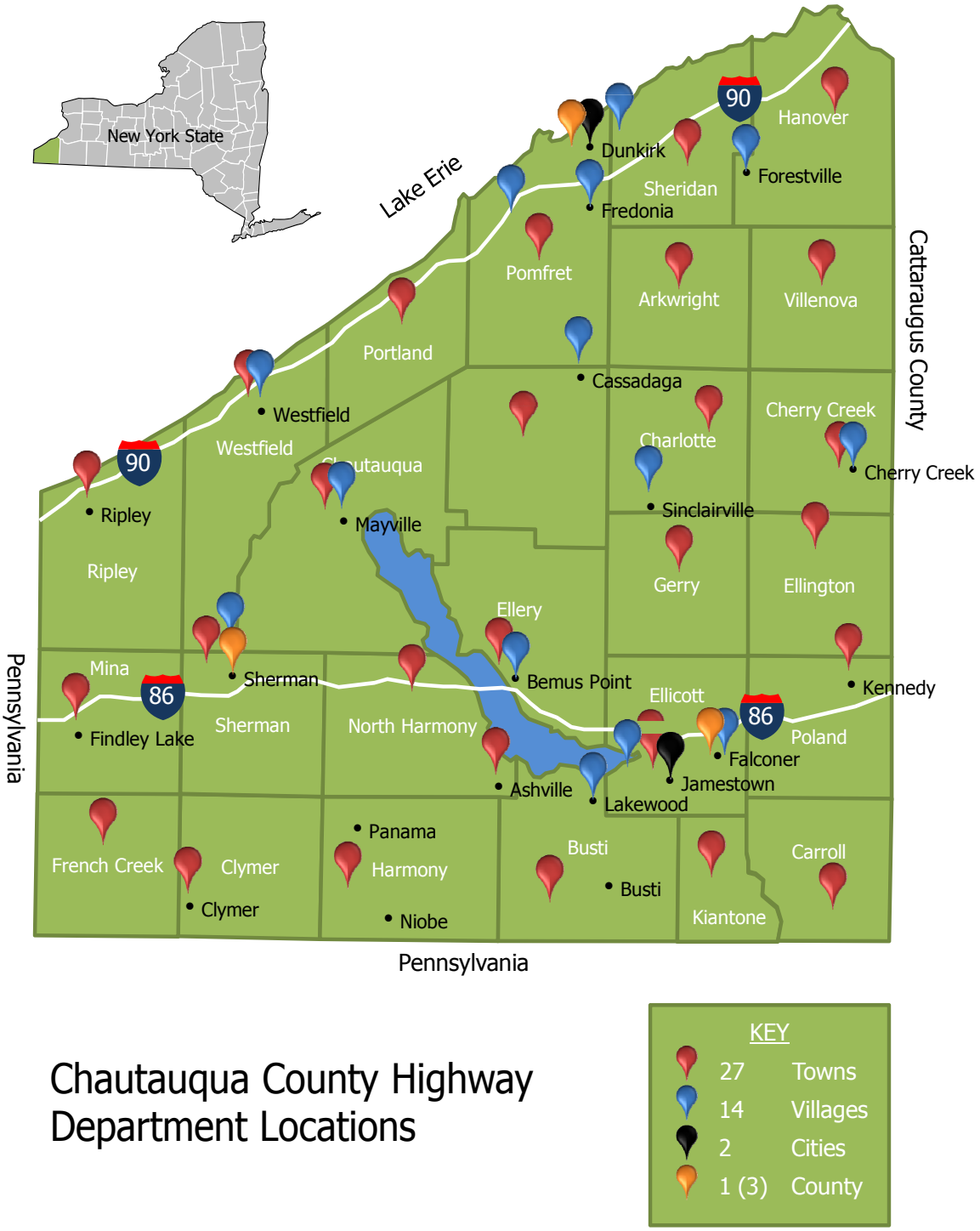
1. Chautauqua County comprises 1,062 square miles of land area, bisected by Chautauqua Lake. It is the 14th largest county in New York State. Its population, estimated at 133,503, is served by 44 local governmental entities.

Table 1.1—Chautauqua County Composition

County	Chautauqua			
Cities	Dunkirk	Jamestown		
Towns	Arkwright Busti Carroll Charlotte Chautauqua Cherry Creek Clymer	Dunkirk Ellery Ellicott Ellington French Creek Gerry Hanover	Harmony Kiantone Mina North Harmony Poland Pomfret	Portland Ripley Sheridan Sherman Stockton Villenova Westfield
Villages	Bemus Point Brocton Cassadaga Celoron	Cherry Creek Falconer Fredonia Forestville	Lakewood Mayville Sinclairville	Silver Creek Sherman Westfield

Each of these governments supports a highway department or department of public works. Figure 1.1 show the various highway department locations, giving an overall perspective of their approximate geographic arrangement. The county is sub-divided into three maintenance areas and their three maintenance facility locations are shown individually on Figure 1.2.

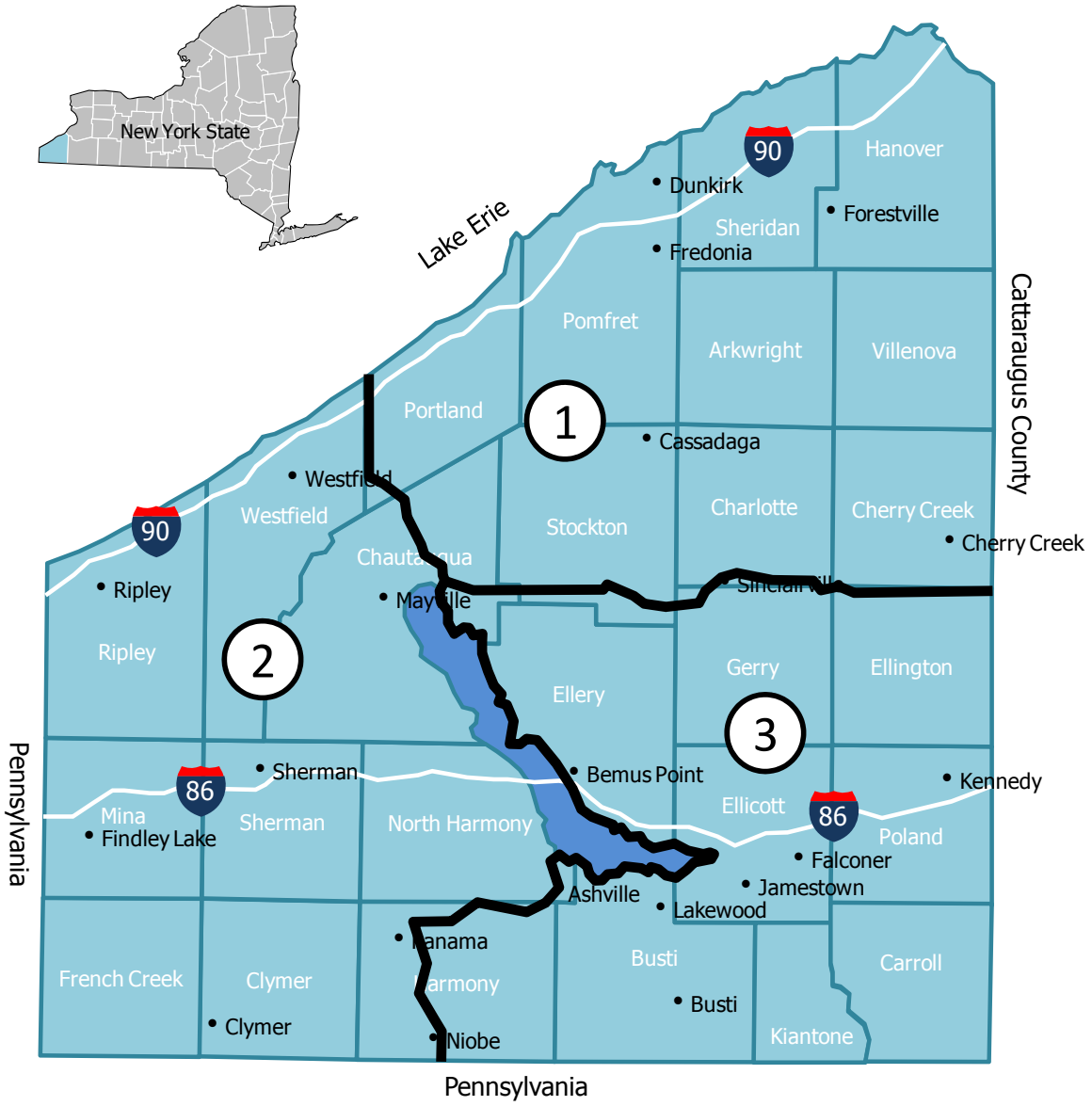
Figure 1.1—Chautauqua County HIghway Department Locations



Chautauqua County Highway Department Locations

KEY	
27	Towns
14	Villages
2	Cities
1 (3)	County

Figure 1.2—Chautauqua County Highway Districts



Chautauqua County Highways
3 Districts

Chautauqua County has been consciously pursuing better methods to deliver highway services, while controlling or reducing costs to taxpayers for many years. Previous studies have been conducted and attempts have been made to implement some recommendations. The current chip-seal districts that share equipment and labor in six districts across the county are good examples of some of the ideas implemented. This cooperative mindset is vital to success and progression toward better government-provided services. We found many examples of service sharing throughout Chautauqua County. Unfortunately, a formal accounting of these activities has not been not conducted because of fears that it will undermine the spirit of cooperation, and will potentially politicize the practices.

It was determined that cities were a unique element of the system and that service sharing with neighboring municipalities was not to be considered in this study. It was also determined that due to the geographic distance between Dunkirk and Jamestown, that sharing between cities would not be practical.

We found that the county maintains annual road condition information; however, the balance of the system did not have current data. The data required for the evaluation of the highway services operations in Chautauqua County included current road condition ratings, financial data, and equipment inventories.

A. Road Network Condition Rating

Road condition ratings have a certain degree of variability due to the subjectivity of the raters. For this reason, C&S conducted the condition assessments with one consistent individual in an attempt to minimize this potential impact.

Using the NYSDOT Pavement Condition Rating Manual, condition ratings were developed by C&S for the complete town and village road systems. The county conducts its own condition ratings periodically, therefore it was determined that we would use their data. A 10% representative sample would be rated for purposes of correlating the ratings of the county system with the ratings developed within this study. It was agreed that the city road system conditions would not be collected under this study since, due to the unique nature and challenges of city streets together with the geographic separation of the cities in Chautauqua County, greater opportunities for shared services would likely be found between the towns, villages and the county. Periodic collection of road condition information for the city systems would still be of value in the future for the reasons listed below.

Consistent, reliable road condition information is beneficial for many reasons:

1. It provides a snapshot of the current condition of each road in the system.
2. Performed consistently, it identifies the improvement, or deterioration of the system over time. Improvements to a road system are immediately evident upon completion of the work, but the deterioration of the system is only evident over longer periods of time due to the inherent durability of the structure and materials.
3. This information is a necessary factor in the planning, prioritization and allocation of transportation resources each year.
4. Condition ratings are a means of identifying whether the services delivered are effective at maintaining the road system to acceptable levels of service. Whether or not it is stated or formally defined, there is an expectation on the part of the tax-paying public and the transportation system users as to what constitutes a minimally acceptable threshold. If a section of road is allowed to deteriorate to a point where safe travel is jeopardized, conditions cause damage to personal vehicles, or roads are inaccessible for an extensive period of time following a weather event or other disruption, taxpayers and travelers will make their dissatisfaction known.
5. GASB Statement 34—The Government Accounting Standards Board develops statements of standards for financial account-

ing in order to reflect generally accepted accounting principles. Statement 34, if implemented, draws attention to infrastructure maintenance principles by recognizing, financially, the capital value of infrastructure (e.g., highway systems) and that it deteriorates with time, measured and reported as a cost (depreciation). Depreciation costs can be assumed to be zero if the so called "modified approach" is used to maintain the system. The requirements of the modified approach are that 1) an asset management system is in place and utilized and 2) the asset is being maintained at or above a condition level established and disclosed by the local government, e.g., through annual road condition ratings.

Currently, target conditions and response times are determined at the local level and no formal policy is evident that represents all of the entities in the study. It would not be appropriate for us to impose a particular threshold since local jurisdictions hold the authority to determine appropriate levels according to needs, values, and resources. As an observation, data would seem to support that a road rating level of 7 appears to be representative system-wide.

B. Highway Operations Expenditures

The financial data relating to highway operations was obtained from annual reports made by local municipalities to the New York State Comptroller's Office. It was collected and analyzed for a five year period (2004–2008) to dampen the effects of annual irregularities that may occur from time to time in a municipality.

The county numbers were complicated by the fact that a central administrative group provides support for all departments in the Department of Public Facilities, including highways. The county highway department bears the cost of a number of services that benefit some or all of the municipalities in the county or other departments within county government. Some of these include responsibility for all bridges in the county, purchasing costs for other municipalities, salt sold to other towns, materials purchased for inventory, vehicle repairs for other departments, fuel consumption for other departments, and some utility expenses for other buildings not related to road maintenance. This makes it difficult to quantify the true costs of highway-related activities with a high degree of accuracy. Rather than get into a lengthy cost accounting effort, a meeting with the director of public facilities resulted in an agreed upon average annual amount for the five-year period used in the study.

Note that there is a significant amount of resource sharing in practice throughout the county currently and that there is an agreement between municipalities not to formally track, report, and back-charge municipalities for services. This is done consciously as it is believed that tracking these activities may politicize the efforts and discourage cooperation between municipalities. Obviously, not accounting for these activities results makes net recipient municipalities appear to be more efficient than they really are while net donor municipalities appear to be less efficient.

To provide some prioritization in analyzing data and to manage the study effort, prioritization was based on the financial portion of the total expenditures from each municipal group. This breakdown of the nearly $40,000,000 annual total expenditure for highway services showed the following: towns 43%; county 38%; cities 10% and villages 9%.

- Note that the financial data utilized is from years 2004-2008 and the road condition ratings and information collected via the superintendent interviews reflect 2009 data.

C. Equipment Inventories

Information relating to equipment inventories was gathered via surveys. The request was made with a prescribed format for the responses and limited to major equipment.

A general operations survey, with a 100% response rate, was completed in January, 2010.

D. On-site Interviews

In gathering data and conducting interviews with the various highway superintendents, several discoveries were made:

- There was a lack of uniform, detailed accounting practices and financial data across the various entities related to efficiency measurement.
- There are a number of activities unrelated to the maintenance and upkeep of the highway system that are performed by some of these departments and are accounted for in a wide variety of manners. Based on interviews with the superintendents, the magnitude seemed to be about 5% of the expenditures, and were considered negligible for the purposes of this study.
- Average annual snowfall rates for municipalities across the county can vary significantly, as much as a factor of 3 times in some instances. Monies expenditure for snow and ice control is not available for improving road condition, and to the extent that there are variations in the percentage of total expenditures for municipalities, this introduces some inaccuracies in overall efficiency measures.
- A few of the municipalities use fly ash from the Dunkirk power plant for ice control, bearing no cost for the materials.
- Some systems comprise a portion of gravel roads deliberately. The efficiency measure formula assigned a road condition value of "4" for gravel roads (10 being the condition of a new paved road). Without the ability to distinguish maintenance costs specific to these roads, they are lumped in with the balance of the road system, the result skews the data in a number of ways, including depression of the overall road condition rating for the system that can lead to inaccurate indicators and infiormation.

To the layman, a road, is a road, is a road, however, this is clearly not the case. Several factors exist that differentiate them, including:

- Road widths
- Road sections
- Curbs
- Sidewalks
- Drainage structures
- Landscaping
- Shoulders
- Intensity of use
- Heavy or light loading

For this reason, it was determined that comparisons between a city and a town system would not be appropriate, although comparisons between similar type road systems may be appropriate.

During the months of May and June 2009 the data collected and preliminary analysis available at the time were reviewed with the superintendents at their shop locations. It was during these meetings that the reliability of the data was verified and other comments sought regarding the topic of efficiency. A notable unexpected characteristic of the meetings was how often our discussions exceeded the hour allocated. This intense interest in wanting to understand their operation better, reinforced our belief that generating efficiency metrics (providing the tools to manage) will drive highway employee efforts to seek greater efficiencies.

Throughout this effort, the level of participation, cooperation, and candid dialogue was commendable. At no point did any one party attempt to influence or direct the outcome of the study. All parties appeared to be genuinely interested in transparency and unbiased analysis and in learning how they can better serve their communities.

E. Weather Data

Research into the average annual snowfall in Chautauqua County revealed that snow removal is a significant effort for all municipalities, typically comprising roughly 20% of the total budget. Annual snowfall rates can vary widely across municipalities, differing by a factor of three or more. The initial reaction is that municipalities with three times the snowfall would experience costs proportional to these differences. However, snow removal is more incident-related than quantity-related. Whenever there is potential for freezing or accumulation, plow trucks and salt spreaders must be deployed to make the roads passable and safe. The relationship between costs and quantity is not linear, although it is likely that regions that experience significantly heavier precipitation levels will experience higher costs. For limited snowfall, one pass of the roads can restore access and safety, while heavier, longer-duration snow events may require revisiting roads several times in the course of a storm.

Again, due to the variation in accounting practices, it is difficult to fully and accurately identify snow removal costs for each municipality with any degree of reliability.

A. Efficiency Considerations

This section presents our analysis and rationale as we attempt to gain a better understanding of current operations and identify and quantify opportunities for improvement. Efficiency is typically lost in one of two areas:

- Field operations or task efficiencies—the cost per unit of production for performing a given task
- Organizational efficiencies—the overall cost of the operation against total production. This is composed of two basic elements:
    - Resources directly involved in the production of work. e.g., laborers, equipment, materials, fuel.
    - Resources which support and enable the production. e.g., management, planning, administration, facilities, utilities, training, etc.

Generally speaking, the greater the proportion of resources dedicated to the production of work, the more efficient the operation, to a point. Management, planning, training and administration are necessary activities that can enable more productive effort. Facilities are necessary to protect and preserve the expensive assets of the operation and ensure that equipment is readily available to support the work.

Task efficiencies can help us identify and capture "best practices" and more efficient ways to accomplish a given task. The act of measuring, benchmarking, and comparing the cost of typical activities involved in highway maintenance accomplishes the following purposes:

1. It identifies the lowest cost per unit of production possible, given similar circumstances.
2. It identifies the optimal mix of resources, (e.g., labor, materials and equipment) to perform the desired task.
3. It opens the discussion of how top performers accomplish their tasks so efficiently, thereby encouraging the sharing of information and spread of effective practices throughout the organization.
4. When there are substantial variations from expectations, it triggers discussion, investigation, and discovery of the cause(s) of the variation. This always leads to a greater understanding of the work and can often result in the identification of new best practice methods or other improvements in work delivery.
5. It is also possible to find that, in some cases, variations are justified due to factors that were not originally considered relevant, yet have an impact on efficiency. Again, greater understanding of the work is a benefit.

Organizational efficiencies include total operational costs, many of which are not directly involved in the performance of work, although these items support and enable the delivery of the services. This is really a measure of how appropriately the resources available for this purpose are structured and allocated to deliver the desired result. It is conceivable that laborers work very efficiently on individual tasks, yet the performance of the organization as a whole falls short of what is attainable. The reverse of this is also possible. Naturally, optimizing these indirect costs can lead to greater efficiency.

There are several variables in the evaluation and comparison of road systems. A few of these are listed here:

- Type of road (town, village, county, city, collector, commuter, etc.)
- Road width
- Road section
- Shoulders (none, paved, unpaved)
- Traffic volume
- Traffic loading
- Drainage structures (none, open ditches, catch basins)
- Curbing
- Road condition maintained
- Paved or unfinished
- Speed limit
- Local geology and soils condition

Each of these factors directly impacts the time and resources required to maintain the road and, consequently, the measured efficiency of the operations.

Due to this inherent complexity and variability, exact comparisons between road systems are potentially misleading, although general comparisons can be beneficial. Comparisons within road systems over time can provide important trend information, provided the mix of these factors doesn't change substantially during the periods of comparison. Comparisons between road systems of essentially similar attributes can be beneficial for benchmarking of performance.

Additional variation exists in the following factors:

- Labor rates
- Utility rates
- Capitalization and depreciation burden
- Benefits costs—both during and post-employment
- Equipment age, condition, and utilization
- Facility age, condition, efficiency, and maintenance costs.

While these factors may not directly impact the effort required to maintain a road system, they do impact the overall cost associated with this activity. For that reason, they also influence the efficiency measurement contained in our analysis. It would take an extensive accounting effort to attempt to incorporate these factors so for our purposes we have assumed these to be essentially equivalent among the similar type municipalities in the study.

As discussed in the previous section, it quickly became evident in the review and validation of the financial data that there was insufficient detail and consistency in accounting practices to enable valid financial analysis. This reality severely limited our ability to accurately quantify and capture the impact of many potential measures. Accepting this reality, we felt there was value in proceeding with various analyses that, despite the known shortcomings in the underlying financial data, would be beneficial in gaining greater understanding.

In order to evaluate the effectiveness of services delivered, we must first have some definition of what constitutes success or failure. In the quest to reduce the cost of highway services to taxpayers of Chautauqua County, we could easily save all of the money, eliminate all of the highway departments, employees and equipment and do nothing. This would of course draw outrage in short order as the system structurally deteriorated and became unsafe to travel or was unavailable for an extended period of time following a snow event. Because of this reality, measures and efforts to improve efficiency must enable the attainment of these minimum condition and performance parameters before they can be considered.

B. Limitations of the Data

Through our review of the data and interviews with the superintendents, a number of limitations of the financial data in its current form became evident.

One complicating issue relates to the existence of roadways that are deliberately elected to be maintained as unfinished pavement or gravel. This amount was insignificant for village roads (less than 1%), but made up roughly 15% of the total town road system. Unfinished roads ranged from 0% to in excess of 50% of town road systems. In our ratings, unfinished roads were given a rating of 4. The existing financial accounting practices do not allow the separation of maintenance costs associated with paved systems from those of unpaved systems, therefore only a blended rating for the systems could be determined.

As a result, systems with a higher percentage of unfinished roads show an overall road rating that is lower than what it would be if it were a fully paved system.

Another consideration is whether the unpaved roads are seasonal use only or if they receive snow and ice control services in the winter. A town system with a large portion of seasonal use highways appears to have more efficient snow and ice control cost per lane mile compared to systems where all lane miles receive this service.

The municipalities of Chautauqua County voluntarily participate in one of six chip seal districts. These districts share labor and equipment to accomplish this task throughout the county over the course of a construction season. By formal agreement, no accounting or back-charging of these efforts is kept.

Interviews revealed:

- A few municipalities located close to the Dunkirk NRG Power Plant receive free fly ash for use on the roads in winter months. This material reduces or eliminates the cost that these municipalities would spend on sand or salt.
- Many municipalities provide a myriad of other services that benefit their communities, although they are not highway-related. Some examples include digging graves, park and cemetery maintenance, brush and leaf pick-up, water department duties, etc.
- Some municipalities have separate accounting activities or accounts that they charge non-highway activities to, while others do not.
- The manner in which these activities are accounted for differs widely. Some municipalities "charge to budget" for certain activities, meaning they charge related activities to the appropriate account until that account is at budget, and then charge this activity against a different account.
- There are numerous examples of service sharing on a smaller scale than the chip seal districts. Similar to the practice and policy of the chip seal districts, the extent of actual service sharing is not accounted for or tracked formally to preserve the spirit of collaboration and cooperation for the greater good.

Most superintendents felt that these factors were insignificant and that service sharing balanced out over the long haul. Their sense is intuitive and unable to verify with data.

Because the impact of the significant snowfall rate variation on actual operating costs cannot be determined, for the purposes of this study, we will accept the data as accurate in our analysis. Snow and ice control costs will be excluded from the cost used to determine roadway maintenance efficiencies because these activities do not contribute to pavement condition and this will minimize the impact of potential inaccuracies.

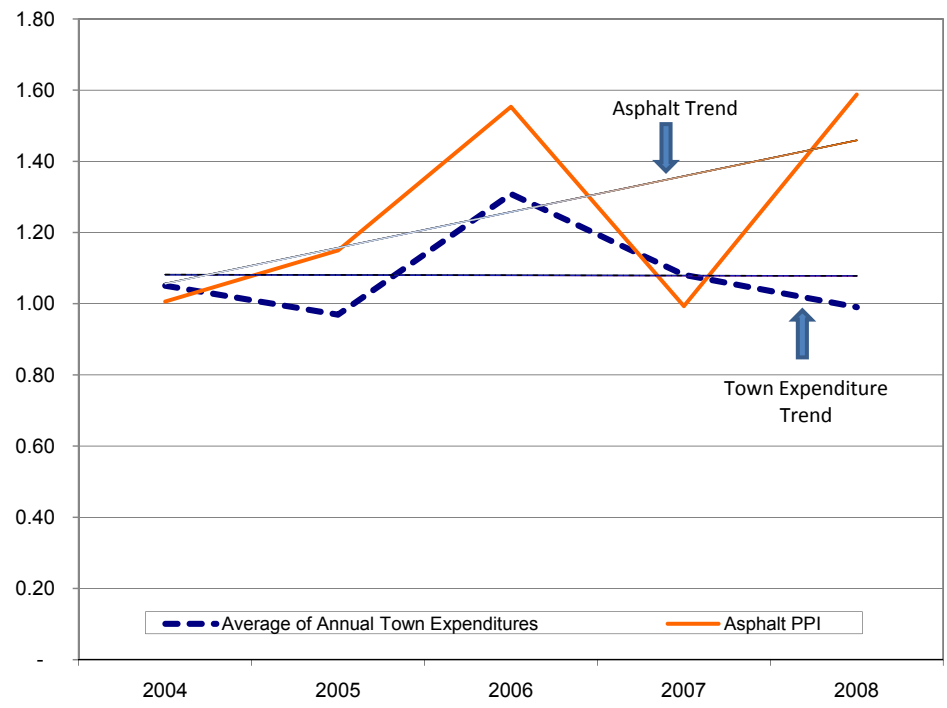
All of these factors introduce significant uncertainty regarding the precision and accuracy of the financial data on which we will attempt to base our analysis. We remained conscious of the impact of these limitations in our analysis.

Impact of Inflation on Efficiency Measurement

The comparison or analysis of efficiencies over time, such as from one year to the next, is complicated by the fact that the measure of costs expended inflates over time. Therefore, an activity that is of unchanging efficiency over time will be shown to have more costs expended for the same result. In other words, numerically, it will look like it is becoming less efficient. Comparisons over time must be adjusted to recognize the impact of monetary price trends in order to be considered valid.

Chart 3.1 shows average annual highway expenditure increases (dashed line) compared to a price index for asphalt. If the dashed line is below the asphalt price line, it indicates that costs of the asphalt are increasing faster than highway expenditures for maintaining the roads. The trend line for town money expended, even though increasing, is less than the trend line for asphalt price. Therefore, even when highway maintenance expenditures are going up, available work effort could be decreasing because the available dollars buy less of it. In this situation,

Chart 3.1—Asphalt price index and average of town expenditures



the hoped-for result of increasing efficiency would not be to "save money," but to sustain the road system condition rating. Without significant and ongoing efficiency gains, expenditures that do not keep pace with inflation will eventually result in an inability to maintain acceptable condition of the infrastructure.

C. Efficiency Performance Metrics

For our analysis, we developed and employed the following metrics & measures:

Gross or overall financial measures

a. Gross maintenance cost per mile of road for the municipality.

   i. This measure meets the definition of efficiency as the cost representing the work effort to get a mile of maintained roadway. This is a relevant measure of efficiency and taxpayers have interest in this cost. However, it has a shortcoming in that there is no indication of the "quality" of the resulting maintained roadway. If comparisons were to be made between municipalities, higher costs per mile may actually not be an "inefficient" thing if the maintained roadway was correspondingly better for the extra cost.

   ii. Mathematically, if:

   C = Annual cost of maintaining the municipal road system

   M = Total system mileage

   E = Gross Efficiency Measure

   Then: E = C/M in $/mile

b. Gross maintenance cost per "quality mile" for the municipality.

   i. This measure overcomes the shortcoming of the previous measure by making an attempt to account for variations in the quality of the maintained road system. This is accomplished by performing a road rating for the entire system, then taking the gross efficiency measure and dividing it by the road system quality number.

   Recognizing that cost without achievement is a meaningless measure, we developed this metric in an attempt to reflect the work result achieved for the dollars invested. It is relevant and simple so us-

ers can make comparisons to themselves and to each other.

ii. Mathematically, if:

E = Gross Efficiency Measure

Q = Road system condition rating (scale of 1-10)

Eq = Efficiency measure accounting for road quality, or condition

Then: Eq = E/Q in $/quality mile

For example, assume a gross efficiency of $18,000/mile for two separate systems, town A and town B. If town A showed a system condition (on a scale of 1-10) of 9 and town B showed a 6, then the Eq would be $2,000/quality mile for town A, and $3,000/quality mile for town B.

This comparison now allows us to say that town A is more efficient than town B, even though their gross efficiency is the same.

Using current study data for the municipalities, Table 3.1 shows rankings for efficiency using the gross efficiency measure, compared to using quality in the efficiency rating.

Table 3.1

Gross Efficiency Ranking	Quality Efficiency Ranking
1	9
2	4
3	17
6	1
4	2
8	3

This metric is a good general measure of efficiency, assuming that all road systems in consideration meet or exceed the minimum condition expectation threshold. For example, it is possible to have a Gross Efficiency of $6,000 and an average road rating of 4. This would result in a Gross Maintenance Cost per Quality Mile of $1,500 and would appear to be very efficient, although in reality, it is failing to achieve the minimum acceptable standard and would be judged a failing operation. Also, this metric does not directly reveal the impacts of the variable considerations listed above.

2. Task or Field Operations Measures

a. Precise calculations of field operations efficiency measures were unable to be determined due to the current lack of tracking information in this form. Below, we have suggested efficiency measures which would be relevant to overall efficiency and would be appropriate to track. Three criteria were used to establish which would be most valuable:

   i. Those most common to the operations of the 44 municipalities

   ii. Those accounting for the biggest share of the money spent

   iii. Those most comparable to operational measures used in the private sector (for interest in comparison of costs).

   Based on these criteria, the field operations efficiency measures shown in Table 3.2 were derived and stated in cost per unit of work accomplished.

Accounting for the effort to track & calculate these metrics and others more accurately will put more information in the hands of the superintendent for his or her use in effective management of the operation.

Resource Densities

Another perspective we used to approach the analysis was to determine and compare the resource densities for equipment and labor. Essentially, we calculated the number of pieces of equipment per mile of roadway in the system and the number of employees per mile. These indicators can highlight variations in these metrics and enable us to compare the cost implications on service delivery. Perhaps their greatest value lies in directing us toward deeper investigation of the causes and considerations that underlie these variances.

Table 3.2

Field Operation	Estimated* % Budget		Efficiency Measure Cost/Unit	Applicable to which municipalities				Private Sector Measure?
	County & Town	**Village & City**		**County**	**Town**	**Village**	**City**	
Paving Placement	30%	30%	$/ton to place	Yes	Yes	Yes	Yes	Yes
Patching (cold mix)	3%	3%	$/ton to place	Yes	Yes	Yes	Yes	Yes
Seal Pavement Cracks	2%	2%	$/gal to place	Yes	Yes	Yes	Yes	Yes
Surface Treatment	10%		$/SY to place	Yes	Yes	Yes	Yes	Yes
Ditch Cleaning	10%		$/Cy, $/Ton or $/ lineal ft	Yes	Yes	No	No	Yes
Roadside Mowing	5%		$/acre or $/ shoulder mile	Yes	Yes	No	No	Yes
Tree Removal	2%	2%	$/inch DBH (Diameter Breast High)	Yes	Yes	Yes	Yes	Yes
Stump Removal	2%	3%	$/ea. or $/inch	Yes	Yes	Yes	Yes	Yes
Clean Enclosed Drainage		10%	$/LF	No	No	Yes	Yes	Yes
Dead Animal Removal	1%		$/each	Yes	Yes	No	No	Yes
Snow and Ice Control	20%	25%	$/lane mile	Yes	Yes	Yes	Yes	Not in NYS
"General"	15%	25%	Not Available	Yes	Yes	Yes	Yes	No

**An estimation is used to get an idea of whether the efficiency measure might be of significance to superintendents and be worth calculating. The posted numbers are not to be used for any other purpose. If actual costs records had been kept, these percentages could have been determined more precisely.*

Equipment Density

Underutilized equipment is a cost burden on the backs of taxpayers. It delivers no value, yet consumes budgets. Therefore, it is important to maximize the utilization of those assets in order to minimize these costs.

Actual utilization of individual pieces of equipment is not widely tracked currently; therefore we analyzed the equipment on the basis of the number of pieces of equipment per system size.

We collected information on specific pieces of municipally owned equipment. Although reporting by the superintendents was incomplete, we attempted to extrapolate and project this information to estimate total system equipment. Efforts have been concentrated on the equipment comprising the "core" of a maintenance operation (e.g., dump trucks, loaders, backhoes, excavators and road graders). Municipalities generally have this core equipment to effectively perform routine maintenance operations.

Specialty equipment (e.g., pavement marking machines, pavers, rollers, hydraulic sewer cleaners, etc.) is not commonly owned by all municipalities. It is more likely to be found in larger equipment pools, such as those associated with county and city maintenance operations. This equipment, if available on a shared basis, could improve operational efficiency, thereby reducing expenditures for rental equipment or associated contracted services.

Dump Trucks

Dump trucks were identified as a large expenditure item which is common to all municipal maintenance operations. The critical nature of these workhorses is indisputable. They are typically considered to be the backbone of any

Table 3.3—Dump Trucks Reported

Jurisdiction	Single Axle	Tandem Axle	Tri-Axle	Reporting Rate
County	9	20	4	100%
Town	50	38 0	0	63%
City	6	0	0	50%
Village	16	1	0	43%

Table 3.4—Estimate of County, Town, City and Village owned Dump Trucks

Jurisdiction	Single Axle	Tandem Axle	Tri-Axle	Estimated Total
County (actual)	9	20	4	33 (actual)
Town	79	60	0	139
City	17	0	0	17
Village	37	1	0	38
Totals	142	81	4	227

highway maintenance organization utilized in all material hauling activities, as well as snow and ice control services. They are expensive to own, operate and maintain therefore it is imperative that their utilization be as high as practical in order to maximize the value invested in these assets. Adjusting fleets to the optimal number of vehicles can ensure that related costs minimized while operational needs are met.

The actual numbers of dump trucks reported are listed in Table 3.3 along with the corresponding response rate as a percentage of total municipalities of similar nature.

By these numbers we see that, on average, the 17 townships own and operate 2.94 single axle dump trucks and 2.24 tandem axle trucks per municipal entity.

Projecting these averages across the 27 townships results in the following estimated total dump truck fleet at the town level:

- 79 single axle dump trucks
- 60 tandem axle dump trucks

Similarly, it was determined that the 6 reporting villages operate, on average, 2.67 single axle dump trucks, each. One tandem axle dump truck reported by a village was considered to be an anomaly, and therefore was not considered in the projection of composite village dump truck numbers.

Projecting the 2.67 truck average across 14 villages results in an estimated total of 37 single-axle dump trucks currently in use at the village level.

Finally, the two cities reported owning a total of 17 plow trucks.

Using these projections, we estimate in excess of 225 dump trucks currently owned and operated by Chautauqua County and its municipalities, as shown in Table 3.4.

Next, let us explore the impact on efficiency associated with this number of dump trucks operating within Chautauqua County.

The breakdown of the portion of road system maintained by each municipal entity type is approximated as follows:

- County: 550 miles
- Cities: 210 miles
- Towns: 1,210 miles
- Villages: 158 miles

For comparison purposes, average centerline miles/dump truck has been calculated as follows:

- County—16.7 CLM/dump truck
- Cities—12.4 CLM/dump truck
- Towns—8.7 CLM/dump truck
- Villages—4.2 CLM/dump truck

To bracket the magnitude of the potential opportunity, we projected the lowest equipment density (the county's) across the combined

mileage of the county road system. This projects to roughly 128 total dump trucks or nearly 100 less than the current system-wide estimate. We are not suggesting that the 128 level is appropriate or attainable as there are a number of factors which could justify higher densities. However, it appears reasonable to conclude that a considerable reduction of this equipment could be achieved without sacrificing service levels.

While this information is valuable in quantifying the different fleet densities, it does not provide answers regarding the reasons for any disparity. Additional information is necessary, particularly actual equipment utilization data, in order to provide more informed recommendations. Factors such as variation in average snowfall, variation in current levels of service, response time expectations, density of road system, speed limits, maneuverability/road geometry, and additional "non-highway" snow and ice duties, such as plowing municipal parking lots, must also be considered.

It should also be noted that this analysis is a comparison of current "best practices" and within Chautauqua County and its municipalities and has a base assumption that the lowest equipment density is the best attainable. It would not be beyond imagining that deeper analysis could result in finding even lower equipment densities may be possible.

Excavators and Road Graders

The actual numbers of excavators and road graders reported are shown in Table 3.5 along with the corresponding response rate as a percentage of total municipalities of similar nature.

Table 3.5—Excavators and Road Graders Reported

Jurisdiction	Excavators	Road Graders	Reporting Rate
County	3	4	100%
Town	18	16	63%
City	0	0	50%
Village	0	2	43%

The resulting county equipment ratio for this equipment is 183 miles/excavator and 137.5 miles/road grader. The towns average 1.06 excavators and 0.94 road grader for each town. Applying these averages to the 27 townships within Chautauqua County results in the following estimate of equipment presently in service at the town level:

- 29 excavators (not including tractor backhoes) or 42 miles/excavator
- 25 road graders or 48.4 miles/road grader

County-wide this projects to an estimated 32 excavators and 31 road graders currently in use on the local highway system in Chautauqua County.

To again attempt to identify the magnitude of the potential opportunity, if we project the lowest equipment densities across the total county road system, we find that the potential may exist to reduce these numbers to approach 12 excavators and 16 road graders throughout the county.

Since utilization rates for these pieces of equipment are typically quite low, particularly in the smaller highway departments, this analysis indicates there is again opportunity to reduce the county-wide fleet and reduce costs. Further analysis considering other factors and capturing actual utilization and simultaneous need probabilities is necessary to make more definitive recommendations.

It is recognized that both excavators and road graders play critical roles in providing emergency response to flooding and snow drifting conditions. This factor was taken into consideration in the development of recommendations for reducing the current numbers of these units, as detailed in Section 7.

Front End Loaders and Backhoes

Actual numbers of front end loaders and back-

Table 3.6—Actual Front End Loaders and Backhoes

Jurisdiction	Front End Loaders	Backhoes	Reporting Rate
County	5	3	100%
Town	17	14	63%
City	3	0	50%
Village	4	4	43%

hoes reported are shown in Table 3.6 along with the corresponding response rate as a percentage of total municipalities of similar nature.

Town metrics equate to roughly 1.00 front end loader and 0.82 backhoe per town. Villages maintain approximately 0.57 front end loader and 0.57 backhoe on average per village. Projecting across the total towns and villages brings the following approximations:

Towns

- 27 front end loaders or 44.8 miles/front end loader
- 22 backhoes or 55 miles/backhoe

Villages

- 8 front end loaders or 19.8 miles/front end loader
- 8 backhoes or 19.8 miles/backhoe

In summary, these projections result in the current estimated fleet of 43 front end loaders and 33 backhoes. Projecting the lowest equipment densities across the entire system will result in a target potential fleet comprising 20 front-end loaders and 12 backhoes compared to the current system totals of 43 and 33 respectively.

The front-end loaders are vital to effective snow and ice control operations as a result of their material (salt and abrasive mix) loading function. In addition, loaders are used for snow removal operations at bridges and intersections. Backhoes are used as backup for front end loaders, in case of equipment breakdown. This redundancy is necessary due to the critical role of loading equipment in snow and ice control operations. These are "demand" maintenance activities which may limit the flexibility which is required to arrange for equipment sharing. Further analysis taking into consideration unique circumstance, actual equipment utilization and concurrent need patterns would be necessary to guide more specific recommendations.

Labor Density

Labor is another of the expensive assets in the highway maintenance system accounting for a significant portion of the total cost of delivering these services. The men and women engaged in maintaining this vital infrastructure ensure our roadways are safe, in good condition, and available to support the needs of the traveling public. Beyond that, they are the ones who exercise judgment and strategy in the utilization of all other assets. As with any of our other assets, it is important to invest in, maintain in good working condition (health & safety), and optimize utilization of this resource. When labor is underutilized, their cost impact swings from the production side of the equation to the overhead side of the equation, resulting in diminished efficiency.

Actual labor utilization data is most desirable but is not currently tracked. However, we were able to calculate labor densities reflecting the relationship between workers in the system and miles of road maintained. As you might expect, the number of miles per employee varies considerably from department to department, and from jurisdiction to jurisdiction as shown in Table 3.7.

Table 3.7—Miles Per Employee

Jurisdiction	Miles/ Employee (range)	Miles/ Employee (average)
County	4.7	4.7
Cities	2.2–2.5	2.5
Towns	2.4–12.3	7.8
Villages	1.3–4.2	2.1

Some differences appearing above may be explained by differences in level and scope of services to maintain different road functions

specific to each class of municipality. When reviewing data with the superintendents, an effort was made to remove other non-highway activity personnel from the employee count for highway maintenance.

This type of information is again beneficial to stimulating discussion and investigation into how the top performers are able to attain these results, the implications on quality and service levels, and the other considerations that may impact or justify these variations. All of this leads to greater understanding of the operation and often lead to innovation, development and adoption of new best practices.

Actual employee utilization on maintenance tasks would be valuable to understanding more about appropriate labor allocation. Utilization rates need to consider the time available for productive work in order to determine realistic expectations for this metric.

Consider a highway maintenance worker, with an eight-hour workday, and a five-day work week, working 52 weeks/year. This mathematically equates to a 2,080 hour work year.

Leave time in the form of observed holidays, vacation, sick leave and personal leave all impact available work hours in the range of 15–20% per year, for a NYSDOT highway maintenance operation. Using an average of 17.5% leave will reduce available annual work hours to 1,716 hours, or 33 hours per work week, without accounting for various other types of leave, such as Workers' Compensation, Family Medical Leave Act (FMLA), etc.

Additionally, training is necessary to invest in these assets and ensure they are working in a manner that is efficient while protecting their own safety and the well-being of the public.

Inclement weather is another factor that impacts the ability to be fully utilized and must be considered as well.

We plotted the labor density figures against the cost per quality mile to see if there was any relationship to be derived between the two. As you can see in chart 3.2 and 3.3, it does appear that there is a direct relationship between the number of workers per mile of road system and the overall cost per quality mile measure. This would seem to support that, in general, there tends to be an increase in overall efficiency when the miles per worker is increased.

To conclude, on the basis of this data alone, that simply decreasing labor would result in greater efficiency would obviously be a mistake. We need to thoroughly understand the impact of

Chart 3.2—Town miles/worker vs. efficiency

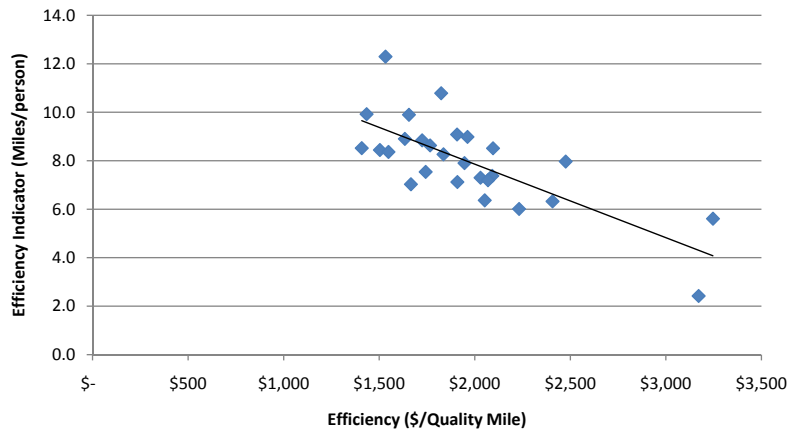
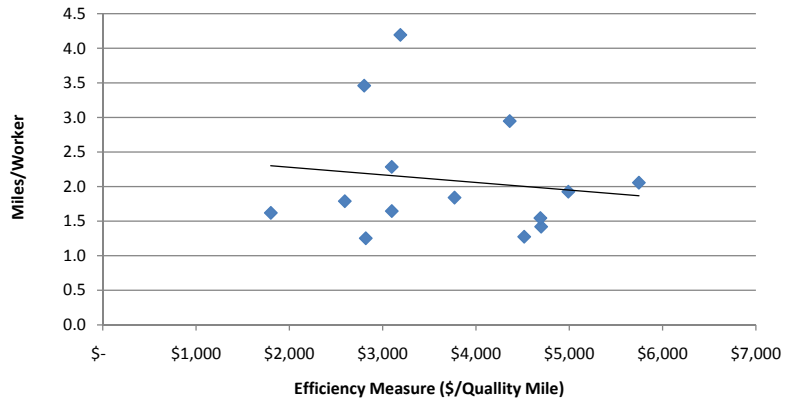


Chart 3.3—Village miles/worker vs. efficiency



other performance drivers and unique circumstances that contribute to this result, before taking action. Dialog with top performers would be the place to start.

D. Facilities/Maintenance District Analysis

Organizational structure is another area that may present potential efficiency opportunities. The manner in which resources are organized and deployed can enable or burden the efficiency of an operation. If all of the municipalities functioned as one business or operation responsible for the entire road system in Chautauqua County, how would it determine the optimal organization of resources to achieve that task, without being bound by existing jurisdictional boundaries?

In order to perform this analysis, we must first understand the performance parameters. The first parameter is to maximize productive time—the time actually spent performing tasks that result in keeping the road system available and in acceptable condition. If we focus only on the minimization of deadhead time/cost, assets (facilities, equipment and labor) would be distributed around the system wherever work would need to be performed with virtually no drive time to the work sites. This arrangement would require many pieces of equipment, facilities, and labor in order to eliminate the non-productive time of travel to the work site, which would introduce another form of lost productivity in the form of idle time. This idle time is due to the fact that each section of roadway does not require continual attention throughout the calendar year. Once the road is up to acceptable condition, it may not require significant effort to maintain for extended periods of time. Underutilized equipment is a drag on the cost of delivering service in the form of excessive equipment capitalization, oversized facility and maintenance/repair costs. Underutilized labor has a similar impact.

Another parameter is responsiveness. This is the allowable time to restore the road system to accessibility in the event of snow or other disruption. Shorter response times would require more distributed operational locations and longer times would allow a higher degree of centralization. A focus on minimization of response time would result in a similar arrangement of resources to that discussed previously.

Conversely, to centralize all operations at one location in the center of the county in a drive to minimize facilities and equipment costs would result in extended response times, greater unproductive time and fuel expense due to deadhead, and decreased service levels. Maximization of both labor and equipment on productive tasks is the goal. All of these factors need to be balanced to determine the optimal arrangement.

Minimization of overhead costs is another consideration in cost efficiency. Contributors to overhead are management activities like planning, accounting, training, benefits, underutilized equipment and labor, administration, and reporting. Additional overhead costs include the cost of facilities necessary to house and protect the equipment and include property value, capitalization costs, energy, operation and maintenance. Fewer, but larger facilities, would reduce this cost overall as the combined square footage of facilities would decrease. An additional factor relating to reduction of facilities is that each parcel held by the municipality is a parcel unavailable to generate tax revenue. This can be called the lost opportunity cost of municipal ownership and can be quantified through property valuation and market analysis (beyond the scope of this study). Many locations currently occupied by municipal facilities are desirable private development locations.

Taking these and other relevant factors into account, we can perform an analysis that would identify the optimal arrangement of resources to serve the county's 2,100 geographically distributed miles of road infrastructure.

The current organizational structures in Chautauqua County evolved over time, long before the existence of the present transportation infrastructure. These boundaries were drawn for myriad reasons, which did not always heavily consider the most efficient method of constructing and maintaining the road infrastructure.

Each municipal entity is responsible for the portion of the system that falls within their geographic limits, with the exception of state and county roads. The result is 44 municipal transportation departments complete with their own individual facilities, leadership, workforce, and equipment. Their responsibilities range from 7 to 550 miles of road system

A more effective organizational structure based on strategically allocating facilities and operations to achieve their mission lies somewhere between the current arrangement and a single, centralized facility.

For our purposes, we conducted the following theoretical analyses. Note that the facilities costs are arbitrary estimates and do not include potential lost opportunity costs, etc. In order to do a more accurate evaluation, each potential location would need to include the following in the analysis:

- Evaluation of existing facilities to determine if any would be suitable to serve a district operation and capital improvements required to adapt to this new purpose.
- Market values of each current highway facility that has the potential to move their operations to a central maintenance district facility.
- Estimated potential for tax revenue generation if privately held.
- Age, condition, operating costs (energy, water, maintenance), net present value of anticipated future facility repair or improvement needs.
- Projected size of new facility (if one of the existing facilities is not located or capable of being retrofit to house the district operation, construction cost, energy and operating costs.
- Density of infrastructure in the district
- Desired service levels

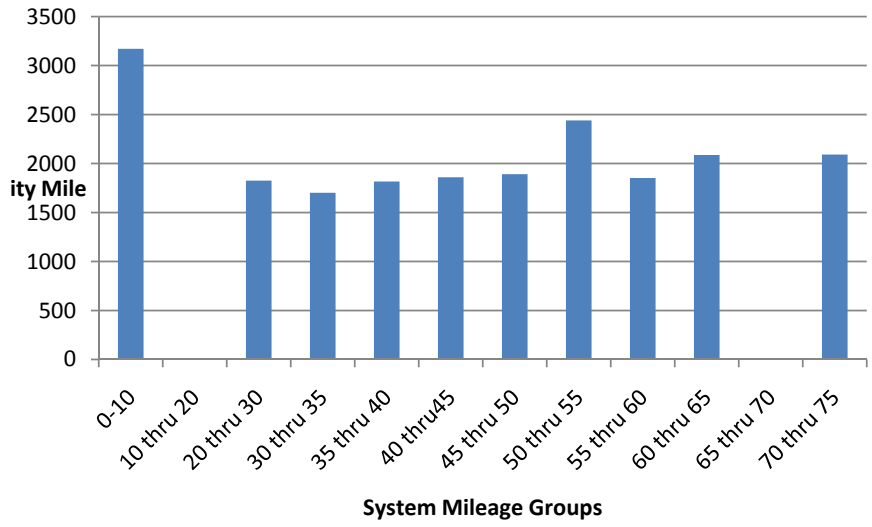
Note that it is improbable that one size will fit all applications. Density of population, intensity of traffic, loading on the road systems and type of road will influence which districts require greater concentration of resources in order to achieve their mission.

Town Facilities Sharing/Maintenance District Analysis

We began with an attempt to see if an optimal size of district for efficiency was able to be extracted from the existing data. Comparison of the 27 towns in terms of cost per quality mile as a function of system size revealed the following.

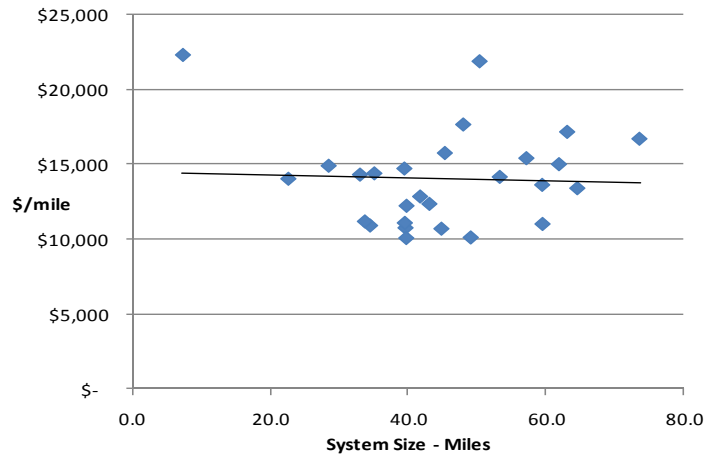
As Chart 3.4 illustrates, a district size of between 30 and 35 miles appears to be most efficient by this measure; however, this is not a strong indicator. There are several other sized road systems that perform very close to this level ranging up

Chart 3.4—District size efficiencies



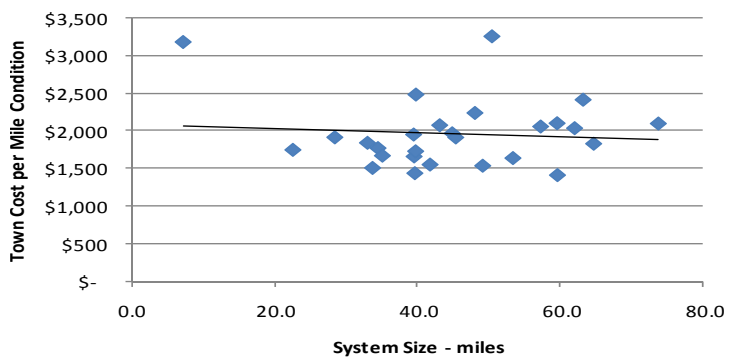
to a factor of double this size. One observation is that smaller systems, below 10 miles, appear to be least efficient. Perhaps there are many answers to the question of system size, above a minimum threshold. We must also remember the inherent limitations and inaccuracies contained in the underlying financial data on which our analysis is based. This will certainly bring into question the validity of these results.

Chart 3.5—Town cost/mile vs. system size



If we were to project the 30–35 miles of road system size across the county we would actually increase the number of highway departments to 35—more than what already exists.

Chart 3.6—Town cost/quality mile vs. size of system



To pursue the issue of size a little further, Chart 3.5 shows the cost per mile versus the system size. This is shown as Chart 3.5. In this case, the relationship seems almost nonexistent, with no apparent relationship to system size. Two interesting stray data points contradict each other. Two towns, one about seven times as big as the other, have approximately the same efficiency rating.

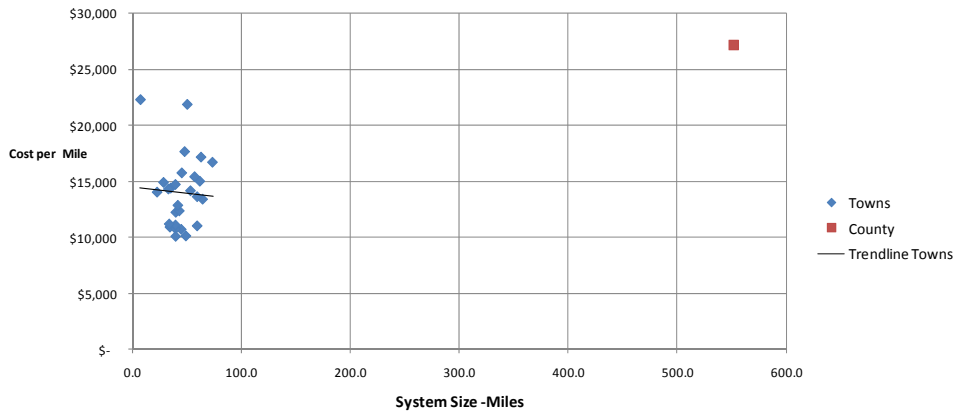
To pursue the issue of size a little further, a chart was drawn showing the cost per quality mile, (a more refined measure of efficiency) versus the system size. This is shown as Chart 3.6. Again, no apparent pattern exists.

Plotting the town cost per mile against system size and including the county metric for this results in the below comparison. The county system mileage is on the order of 10 times the average town system. It was realized that this would not be a good comparison because of the differences in functional classification of town and county roads and the additional responsibilities that the county provides such as responsibility for all bridges, etc.

In general, county highways were built and are maintained for higher traffic volumes, greater loads and higher speeds and therefore are wider, stronger and contain other additional features beyond those for a town road. It was expected that gross costs per mile would be higher for a county road system, not knowing how much higher. The average cost per mile for the towns was about $14,000/mile while the county costs came in at about $27,000/mile, a ratio of county to towns of 1.9. The results are shown on Chart 3.7. If there were efficiency advantages due to system size, they were not large enough to overcome the extra costs of maintaining the more expensive, higher functional class of road and having expanded scope of responsibilities.

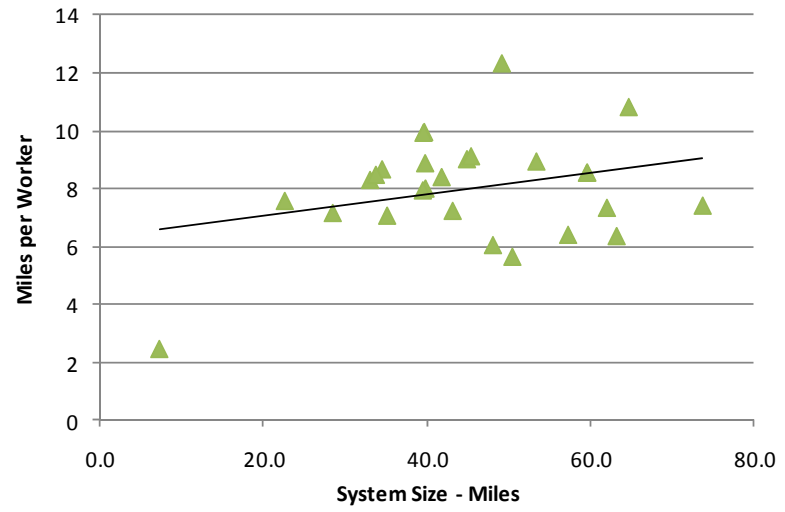
To take the analysis further, the refined efficiency measure of cost/ quality mile can be used to compare the towns and county. In this case, the towns stand at $1,958/ QMi and the county at $3,440/QMi, a ratio of 1.7. The reason for the decrease in ratio from the simple cost per mile ratio of 1.9 is that, on average the county roads are in better condition (7.9) than the towns (7.2).

Chart 3.7—System $/mile vs. system size



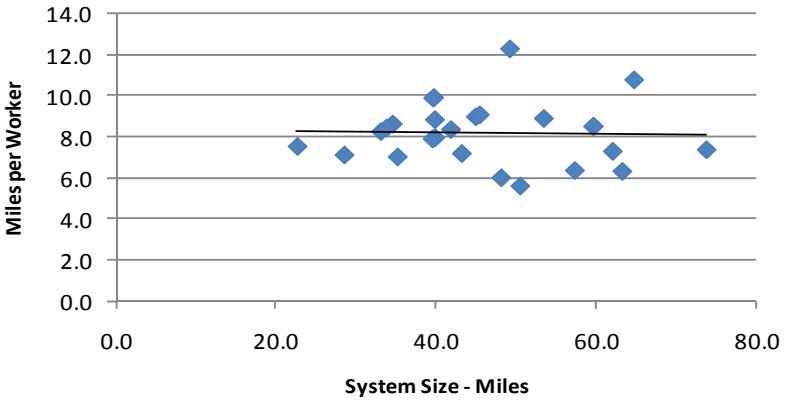
If miles per employee are reviewed we see that county labor at 4.7 miles/person is at a lower ratio than for the average of the towns at 7.8 miles/person. The towns show a wide range of variation on this metric, which would seem to indicate that it would be valuable to learn from the top performers on their methods and other considerations.

Chart 3.8—Town miles per worker vs. system size



We compared labor ratio to system size to see if larger districts presented the opportunity to be more efficient through scale. A trend was evident in that the larger towns tended to have more miles per employee, or in other words, they were "leaner" staff wise, considering the miles per person. This is illustrated in Chart 3.8. However, it should be noticed that a very small town tended to affect the trend. If that data point was removed, the trend is not noticeable, as shown in Chart 3.9. In this trend analysis, it appears that the department labor ratios are marginally affected by department size, averaging about 8 miles/employee.

Chart 3.9—Town miles/worker vs. size (without stray data point



Clearly, analysis relying on the existing financial data has provided us no clear insight into the relationship of operational size to efficiency.

The following analysis is an attempt to determine the optimal number of highway facilities or operational districts necessary to efficiently

serve the county by balancing the performance parameters mentioned earlier in this section.

The primary functions of a highway department are the performance of routine maintenance and demand maintenance activities. While similar tasks are performed, the urgency and scope of work associated with their functions are their distinguishing characteristics.

Routine maintenance includes activities such as ditch cleaning, brush removal and mowing, while demand maintenance involves an emergency response or the response to a problem reported by the public—activities such as repair of a pothole, replacing a stop sign damaged by an errant vehicle, or removing a tree that fell onto a roadway.

Travel time is critical to efficiency in either case, since excessive travel time results in a corresponding decrease in efficiency for routine maintenance activities, and delays the response to sometimes urgent demand maintenance functions.

Currently, the town highway departments each operate within their townships, which were originally established as six square miles and have seen minimal changes to their boundaries since their inception in the 1800s. This is an extremely efficient model from a travel time perspective, since a truck traveling at an average 20 miles per hour could theoretically respond anywhere in the township in just a few minutes.

The actual efficiency of this model is impacted by factors such as scope of responsibility, facility costs, staffing levels, equipment expenditures, degree of technological advancement and management acumen.

The average town highway department in Chautauqua County is responsible for 44.8 centerline miles of highway. It employs a superintendent and 4.7 workers and maintains a fleet of dump trucks, a front end loader, an excavator, a road grader, a backhoe, and various smaller pieces of equipment such as pickup trucks and tractor mowers.

Its primary facility, the "town barn," range in adequacy from out-moded to state-of-the-art. Associated costs include capital construction expenditures, maintenance and repair costs, and utility costs. Ancillary facilities, such as salt storage structures and fuel storage/distribution systems, must also be considered. Here, as with other factors, efficiency is ultimately determined by a sub-set of competing priorities.

Town highway department staffing levels significantly affect operational efficiency since a minimum number of workers are required to safely and productively perform a given task. Assuming these minimum numbers are met, operational efficiency is further dependent on the expertise and motivation of the workforce.

Equipment expenditures begin with the purchase of a piece of equipment and include clear costs such as insurance, maintenance and repair, and less obvious costs associated with utilization rates. That said, a low rate of utilization is not necessarily an indicator of low efficiency, since units such as excavators and road graders are essential to emergency response capabilities of the department, though used on an infrequent basis when compared with people movers (e.g., pickup trucks) and dump trucks. This shows how difficult it is to define what is the "optimal" or most efficient way to maintain a highway system. The size of a maintenance area, and its associated road mileage, are just two of many factors that influence efficiency.

Theoretical sizing based on efficiency

What is the "right" number of highway departments? If a plan were made for a new 2,100-mile system of local roads, it is very unlikely that 44 highway departments would be designated. Chautauqua County's current system was devised in the 1800s and conditions have changed considerably since then, so it would make sense that a change in highway maintenance structure is justified.

Road Classifications

To start with, it must be understood that all 2,100 miles of "road" are not the same. Differing roads mandate different maintenance methods. Roads can be classified according to their function based on traffic volumes and speed—local roads, collectors (urban and rural), arterials, etc., and standards exist to design such classifications. Building and maintaining these different functions are generally similar, but have some significant differences. This means that one department may not be able to do all the maintenance activities of another department. An illustration of some typical differences in appearance between municipal roads is shown in the pictures to the right.

In Chautauqua County there are four types of municipalities, most of which have a road system comprising primarily local roads relating to different functions—county highways, town roads, village streets and city streets. Theoretically,at least four highway departments could be required—one for each type of road type. However, another maintenance consideration comes into play—geographic location of the roads.

There are two cities involved in different geographic areas and 14 villages, all some distance from each other. So it could be reasoned that 18 highway departments are needed—one county, two cities, fourteen villages and one county-wide town highway department. But when one town highway department (or location) is considered for maintenance of the town roads, a large inefficiency would be introduced, because of the extensive travel distances to and from the job sites, so a breakdown of the county area and town road mileage (1,210 miles total) would be necessary for efficiency considerations. The county acknowledged this issue some time ago and divided the county road system into three maintenance districts, each with its own district garage facility (see Figure 1.1).

Village Street

Town Road

County Highway

Deadhead

In the highway maintenance business, as the size of the maintenance area increases, there is a resulting reduction in efficiency which must be more than offset by other operational savings if it is to result in greater efficiency. The reduction in efficiency results from the need to travel greater distances to get to the work site, commonly referred to as "deadhead." So for example, if a maintenance district was large enough so it took half a day travel to get to the work site, it would be time to turn around and go back to the garage. The efficiency would be zero, or on the cost/mile basis, it would be infinitely costly.

Calculating the cost implications of deadhead is a very complex issue. When deadhead time increases, the work product that these resources would have produced during that time is lost. How is lost productivity accurately valued? What is the value of an accessible road in good condition? If that road facilitates swift response of emergency vehicles that save a life, it can be considered infinite. Is that value a function of the combined capital investment to construct and maintain the system? To what extent to the daily and yearly activities contribute to that value? This valuation is open to debate.

A reduction in service levels, however slight, is also a result unless additional resources are applied to offset this impact. This is due to the fact that more time is tied up in travel to the site, leaving less time available for delivery of work.

For our purposes, we have estimated the deadhead cost to be the lost percentage of annual resources expended by the towns, less snow and ice control costs, since this loss is associated with maintenance activity, or roughly $14,000,000 annually. Estimating materials to make up 25% of this number and recognizing that material efficiency will not be impacted by deadhead, this becomes $10,500,000. We estimated that on average, 2 days/month experience lost productivity resulting from inclement weather. This equates to approximately 10% of available time. Average time off for vacation, sick, holidays, etc., is roughly 17% of the total available time. Adjusting for these factors results in total resources available for daily production of approximately $7,665,000.

A theoretical calculation of deadhead costs for varying numbers of maintenance district sizes follows. Costs are based on total annual costs to maintain town roads in Chautauqua County:

Three Districts
If 27 town maintenance districts were absorbed into 3 (similar to current county organization of maintenance operations), the estimated cost of deadhead is 7.5 %, which is $574,875 per year total or $191,625 per district annually.

Five Districts
(Same as current number of county snow and ice districts) The estimated cost of deadhead is 5.8%, which is $444,570 total annually or $88,914 per district annually.

Nine Districts
(About the size of 3 towns combined) The estimated cost of deadhead is 4.3%, which is $329,595 total annually or $36,621 per district annually.

Fourteen Districts
To look at another scenario of having even more and smaller maintenance districts to reduce deadhead costs, we can look at establishing 14 maintenance districts. This would be the smallest district possible because it would comprise the equivalent of just two towns.

Twenty-Seven Districts
(Current number of towns) The estimated cost of deadhead is 2.5%, which is $191,625 total annually or $7,097 per district annually.

It should be noted that this analysis assumes equal distribution of infrastructure assets (road system) close and far from the districts. This would rarely be the case. If facilities were strategically located closer to locations of higher

infrastructure density or areas that require more frequent intensity, the average deadhead time would be less than that calculated via this method.

It should also be noted that districts of various sizes currently exist and function well. The largest town system is responsible for roughly 70 miles of road system.

These deadhead costs for various sizes of districts will be used in an analysis to follow, of savings and costs for various size theoretical districts.

Equipment

Equipment cost savings and their relationship to various sizes of theoretical maintenance districts will be estimated, compared to the existing town arrangement for maintenance. Equipment needed for a maintenance district under a single management is less than that for the same maintenance area maintained by a number of towns. For the five district scenario, each district would cover the area of about five towns (27 towns spread over five district areas). For purposes of estimating needed equipment for theoretical sizes of maintenance districts, the following guidelines were used:

Mileage based equipment needs:

- Excavators: 150 miles/excavator (based on county 183; Tompkins Co.155)
- Loaders: 100 miles/loader (DOT ~65; County ~ 110)
- Backhoes: 175 miles/backhoe (County 183)
- Graders: 100mi/grader (based on county 137mi. and town avg. 50mi.)
- Heavy Trucks: 1 truck/snow route; snow route length = 14 miles

Town based equipment, current average fleet:

- Excavators: 1/town
- Loaders: 1/town
- Backhoes: 1/town
- Graders: 1/town
- Heavy Trucks: 5/town

Five Maintenance District Analysis

The estimates of major equipment costs for a 242 mile, or 212 sq.mi. district, (or about five districts to cover the county) follows. Note that the depreciation is shorter for the new district than for the towns maintaining the same area because the equipment utilization is higher for the new district and would have a shorter life. Other district sizes will be analyzed using similar reasoning.

County divided into five Maintenance Districts: Major Equipment Capital Cost Comparisons

Each district replaces about five town highway departments; district mileage=242 miles. Each consolidated district would have the major equipment shown in Table 3.8.

If each district were instead maintained by five separate town highway departments instead of being consolidated, they would use the existing major equipment shown in Table 3.9.

Other cost differences could be estimated for the two organizational arrangements for road maintenance in the district:

Labor—The data appear to show that one superintendent could do the job of five current superintendents. However, during the on-site

Table 3.8—Major equipment for five consolidated maintenance districts

Equipment Description	# Pieces	Replacement price	Life (yrs.)	Annual Depreciation Cost
Excavator	2	$300,000	15	$40,000
Loader	2	$120,000	15	$16,000
Backhoe	2	$65,000	15	$8,667
Grader	2	$175,000	15	$23,333
Dump Truck	17	$190,000	15	$215,333
Total				$303,333

Table 3.9—Major equipment maintained by five separate highway departments

Equipment Description	# Pieces	Replacement price	Life (yrs.)	Annual Depreciation Cost
Excavator	5	$300,000	20	$75,000
Loader	5	$120,000	20	$30,000
Backhoe	5	$65,000	20	$16,250
Grader	5	$175,000	20	$43,750
Dump Truck	25	$190,000	20	$237,500
Total				$402,500

interviews, the superintendents reported that about 25% of their time was administrative, leaving about 75% of their time working out on the roads. If four superintendents positions were eliminated and their administrative duties now were handled by a superintendent for an organization five times larger, it is reasonable to assume that this would not leave any time for field work. Therefore, the field work that used to be performed by the five superintendents would require four field workers, most likely equipment operators. The cost of these four operators, including overtime, would probably be about the same as four salaried superintendents. So little cost savings would actually be realized in labor for a new, larger maintenance district.

Materials—There would be no savings in the cost of materials for summer or winter work because the cost of road materials used for a given sized system is independent of the organizational makeup of the maintenance district.

Utilities—A new, larger maintenance district facility would be required. It would be more energy efficient than the five existing town facilities combined, saving potentially more than $30,000 in annual utility expenses.

Capital Facility Costs—A new 18,000-square-foot facility would cost around $4,000,000. If existing facilities and land could be sold for $200,000 each, the net facility capital cost

Table 3.10—Five district annual cost differences

Cost Item	New 242 mi. District —One maintenance organization Annual Cost	Same District Maintained by 5 Towns Annual Cost	Net Annual Savings for New District
Labor	About the same as existing	Existing	0
Material	Same as existing	Existing	0
Equipment	$303,333	$402,500	$99,167
Utilities	$28,800	$60,000	$31,200
Deadhead	$88,914	$35,485	($53,429)
Facility	$33,333	$0	($33,333)
Totals	$454,380	$497,985	
Annual Savings			$43,605

would be $3,000,000. Over the 30-year period of analysis, each existing town facility would require capital improvements. This improvement is assumed to occur at year 15 at a cost of $200,000. To do a present worth cost analysis over 30 years to compare the two alternatives involves selecting interest rates and price increases. For the purposes of simplicity, if it is assumed that the interest rate is the same as the price inflation rate, a simple arithmetic calculation can be made of present worth.

For a 5-town, 242-mile district, a simple present worth analysis of 30-year cost differences is summarized in Table 3.10.

This theoretical estimate for a larger maintenance district shows that there is a net saving of about $44,000 annually per district, by having 5 larger maintenance areas, each having about 212 square miles in area with about 242 centerline miles of road. It can be noticed that the deadhead and facility costs are overcome by the savings in equipment and utilities.

Nine Maintenance District Analysis

In the interest of overcoming some of the deadhead and facility costs, a smaller theoretical maintenance district size can be analyzed, using the same approach as the above. For this exercise, 9 maintenance districts are created, each having a size of about 118 square miles and a road system size of about 134 miles. The analysis comparing nine consolidated districts and the same area covered by three separate towns is summarized in Tables 3.11 and 3.12.

Labor Costs—Difference is negligible (as explained in the 5 district scenario)

Material Costs—Difference is negligible (as explained in the 5 district scenario)

Table 3.11—Major equipment comparisons for nine consolidated county maintenance districts

Equipment Description	# Pieces	Replacement price	Life (yrs.)	Annual Depreciation Cost
Excavator	1	$300,000	15	$20,000
Loader	2	$120,000	15	$16,000
Backhoe	1	$65,000	15	$4,333
Grader	2	$175,000	15	$23,333
Dump Truck	10	$190,000	15	$126,667
Total Annual Depreciation Costs				$190,333

Table 3.12—Major equipment comparisons for maintenance by three separate towns

Equipment Description	# Pieces	Replacement price	Life (yrs.)	Annual Cost
Excavator	3	$300,000	20	$45,000
Loader	3	$120,000	20	$18,000
Backhoe	3	$65,000	20	$9,750
Grader	3	$175,000	20	$26,250
DumpTruck	15	$190,000	20	$142,500
Total				$241,500

Utility Costs—New building = $17, 000
3 Existing Hwy Departments = $36,000

Capital Costs—For new highway department facility: $2.4 million. For the 3 existing facilities, assume at year 15, capital improvements of $600,000 are needed.

Using calculations similar to those for the previous five-district scenario, the following results can be obtained, shown in Table 3.13.

Now, even though the deadhead and facility costs have been reduced, so have the savings that result from reduced equipment and utility costs, for a lesser net saving per smaller district. However, when considered on a county-wide basis, there are a greater number of smaller districts (9 vs 5) which incur these lesser savings ($34,836 vs $43,605), resulting in a larger county wide saving for the smaller districts ($313,524/yr) than for the larger districts ($218,025/yr); a $95,499/yr difference.

Fourteen Maintenance Districts

To look at another scenario of having even more and smaller maintenance districts to reduce deadhead costs, we can look at establishing 14 consolidated maintenance districts. This would be the smallest district possible because it would

Table 3.13—Nine district annual cost difference

134-Mile (3 Town) District Cost Item	New 134 -Mile District One Maintenance Organization Annual Cost	Same District Maintained by 3 Towns —Annual Costs	Net Annual Savings for New District
Labor	NA	NA	NA
Material	NA	NA	NA
Equipment	$190,333	$241,500	$51,167
Utilities	$17,000	$36,000	$19,000
Deadhead	$36,622	$21,291	($15,331)
Facility	$20,000	$0	($20,000)
Totals	$263,955	$298,791	
Annual Savings			$34,836

be the equivalent of just two towns. Each district replaces about 2 town highway departments (mileage = 86 mi.; 76 sq.mil). Table 3.14 shows what major equipment each district would have.

Table 3.15 shows the major equipment that would be maintained if the same area were maintained by two separate towns.

27 Maintenance Districts

Each consolidated district replaces one town highway department (mileage = 45 mi.; 39 sq.mil). Each district would have the major equipment shown in Table 3.16. If each district were maintained by one town instead, it would have major equipment shown in Table 3.17.

The utility, facility and deadhead costs would remain the same as the new arrangement is just the same town, except with the lesser equipment amount. The comparable chart is shown in Table 3.18.

Summary

Table 3.19 summarizes the different possibilities for consolidated maintenance districts, including the option of having just a single consolidated district for the entire county.

Again it is important to recognize the limitations of this theoretical exercise. More detailed analysis with specific information is necessary to achieve more accurate recommendations.

- Evaluation of existing facilities to determine if any would be suitable to serve a district operation and capital improvements required to adapt to this new purpose.
- Market values of each current highway facility that has the potential to

Table 3.14—Major equipment for fourteen consolidated districts

Equipment Description	# Pieces	Replacement price	Life (yrs.)	Annual Depreciation Cost	Total Annual Depreciation Cost
Excavator	1	$300,000	15	$20,000	
Loaders	1	$120,000	15	$8,000	
Backhoe	1	$65,000	15	$4,333	
Grader	1	$175,000	15	$11,667	
Dump Trucks	6	$190,000	15	$76,000	
Total Annual Depreciation Costs:				$120,000	$120,000

Table 3.15—Major equipment maintained by two separate towns

Equipment Description	# Pieces	Replacement price	Life (yrs.)	Annual Depreciation Cost	Total Annual Depreciation Cost
Excavator	2	$300,000	20	$30,000	
Loaders	2	$120,000	20	$12,000	
Backhoe	2	$65,000	20	$6,500	
Grader	2	$175,000	20	$17,500	
Dump Trucks	10	$190,000	20	$95,000	
Total Annual Depreciation Costs:				$161,000	$161,000

Table 3.16—Major equipment for 27 consolidated maintenance districts

Equipment Description	# Pieces	Replacement price	Life (yrs.)	Annual Depreciation Cost	Total Annual Depreciation Cost
Excavator	0.3	$300,000	15	$6,000	
Loaders	1	$120,000	15	$8,000	
Backhoe	0.3	$65,000	15	$1,300	
Grader	0.5	$175,000	15	$5,833	
Dump Trucks	3	$190,000	15	$38,000	
Total Annual Depreciation Costs				$59,133	$59,133

Table 3.17—Major equipment for districts maintained by one town

Equipment Description	# Pieces	Replacement price	Life (yrs.)	Annual Cost	Total Annual Depreciation Cost
Excavator	1	$ 300,000	20	$ 15,000	
Loaders	1	$ 120,000	20	$ 6,000	
Backhoe	1	$ 65,000	20	$ 3,250	
Grader	1	$ 175,000	20	$ 8,750	
Dump Trucks	5	$ 190,000	20	$ 47,500	
Total Annual Depreciation Costs				$ 80,500	$ 80,500

Table 3.18—Comparison between 27 consolidated districts and districts maintaned by one town

39 Mile District Cost Item (27 districts)	Annual Costs for 39 sq.mi. District	Annual Costs Maintained by 1 town	Net Savings for New District
Labor	NA	NA	$0
Material	NA	NA	$0
Equipment	$59,133	$80,500	$21,367
Utilities	$12,000	$12,000	$0
Deadhead	$7,097	$7,097	$0
Facility	$0	$0	$0
Totals	$78,230	$99,597	$21,367
Annual Savings		$21,367	

Table 3.19—Summary of district consolidation annual savings

# of Districts	District Size in Sq. Mi.	# of Towns in District	District Size in Miles	Annual District Savings	Annual County wide Savings	Annual Savings per Town
27	39	1	45	$21,367	$596,909	$21,367
14	76	2	86	$34,654	$485,156	$17,969
9	118	3	134	$34,836	$313,524	$11,612
5	212	5	242	$43,605	$218,025	$8,075
3	354	9	403	$68,105	$204,315	$7,567
1	1062	27	1210	$(158,512)	$(158,512)	$(5,871)

move their operations to a central maintenance district facility.

- Estimated potential for tax revenue generation if privately held.
- Age, condition, operating costs (energy, water, maintenance), net present value of anticipated future facility repair or improvement needs.
- Projected size of new facility (if one of the existing facilities is not located or capable of being retrofit to house the district operation, construction cost, energy and operating costs.
- Density of infrastructure in the district
- Desired service levels

These would need to be analyzed for the specific situation under consideration before an informed decision could be made. Note that these factors were not included in the analysis of facilities sharing and would contribute to even greater financial benefit of increased facility and equipment sharing. Considerations of where capital financing to construct new facilities, mechanisms to fairly share the funding and distribution of resources in a shared municipal operation would need to be resolved as well as other non-economic issues that would surely arise.

It should be noted, that one of the larger savings that can come from larger maintenance districts is achieved through reductions in heavy equip-

ment inventory and the resulting reduction in total square footage of facilities necessary to house them. The existing highway departments can accomplish savings in the equipment inventory even now, by continuing and increasing their current ability to share equipment, thus gaining one advantage of a larger district without actually re-organizing maintenance jurisdictions.

Chart 3.10—Village cost/quality mile vs. highway department group size

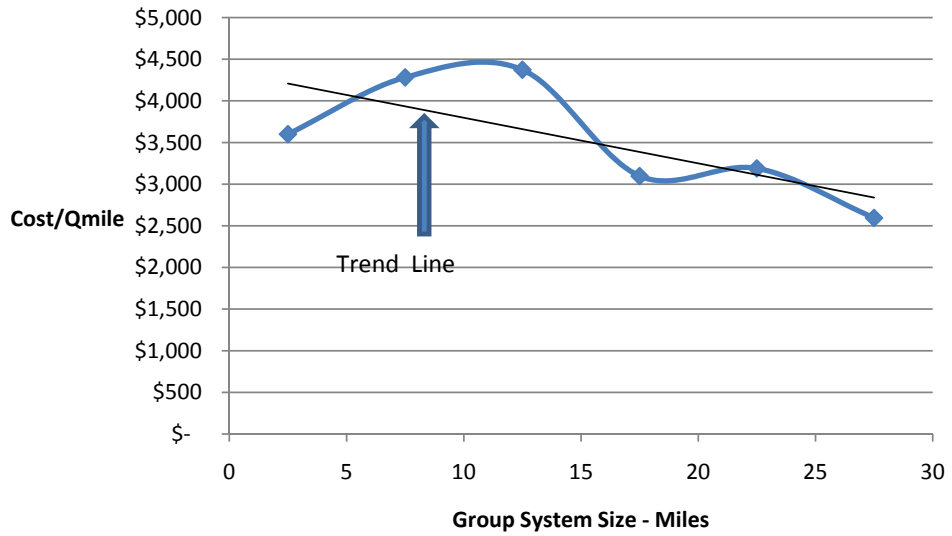
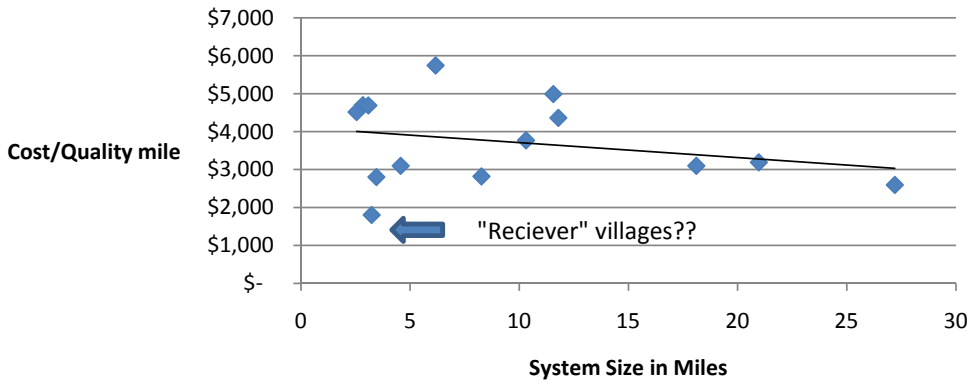


Chart 3.11—Village cost/quality mile vs. system size



Maintenance District Size Conclusion

The analysis based on cost per quality mile as a function of system size indicates a negligible difference between projected efficiency for towns in the 35-mile system size range and those approaching double that, although it does appear to highlight that some systems may be too small to be efficient. The theoretical deadhead analysis shows some savings could result if maintenance districts were formed to double the average town size. More accurate accounting of actual utilization and activity costs is necessary to gain a deeper understanding of where opportunities may be.

Village Facilities Sharing—Theoretical Reorganization

When the village highway departments were reviewed for efficiency, there was a definite trend towards the bigger departments appearing more efficient (see charts 3.10 and 3.11).

However, dedicated maintenance districts that involve only villages is not workable because of their geographic distance from each other. The obvious question is whether a village and the surrounding town highway department could be work in a collaborative effort, resulting in greater efficiency for both? From the writer's perspective, it seems the smaller the village the more workable it could be, simply because the lower volume of work makes the delivery of a product or service "less disruptive" to the larger operation. What would be most workable, is that an auxiliary operation could be added to the town operation to deal with village specific needs, while the operations that were more similar, like paving, patching, tree removal, and snow plow-

ing would be added to the town-like operations. A general recommendation applicable to any and all such situations is not the point of this discussion, but to point out a consideration that could improve the efficiency of smaller villages.

It should be pointed out, once again that the data is not reliable enough to enable a firm recommendation on this issue. For example, it can be seen in Chart 3.11, that some very small villages show some of the highest efficiencies, contrary to the trend. It is believed that there are reasons for this, related to the towns already helping some smaller villages and not keeping track of or allocating the costs to the village operations. This skews the efficiency measure, showing "receiver" villages to be more efficient than they actually are, and conversely, the town being less efficient. This situation could be figured out only if records of sharing were to be kept.

From a village consideration, if one wants to assume that in fact the six smallest villages are "receivers" of unrecorded assistance, it would appear they could be candidates for combining their highway departments with the town in which they are located, , leaving 8 independent village departments. If then, a tally is made from the beginning of this section; recognizing all the uncertainties, the following numbers of departments can be summarized: County – 1; Cities - 2; Villages – 8; Towns – 14; for a total of 25.

This analysis would need to be qualified similar to the town analysis above.

Using Efficiency Measures and Indicators

Since roads for the various municipalities have differing uses, resulting in different functional classifications, and therefore are built and maintained differently, there are two ways for such information to be used:

1. Each municipality may use their efficiency rating to see if, over time they can improve their own efficiency – i.e. compare themselves to themselves over time
2. Each municipality use their efficiency rating to compare to others within their road classification group (municipality to municipality) to see what they can learn from others to improve their own efficiency.

As the county is a singular entity, the only practical use is to use the information for self improvement by comparing to itself over time.

Summary results for the various municipal groups are shown below, and, with each municipality knowing its own efficiency measure, it can be used in the two ways mentioned above.

Cost per quality mile from 2004–2008:

- Towns ranged from $1,409 - $3,246/QMi.
- Villages ranged from $1,801 - $5,746/QMi.
- County =$3,440/QMi.
- Cities not available (due to no street system condition rating)

Once the efficiency measure is reported and available for the superintendent's use, as the search for improved efficiency engages, other indicators of efficiency come into focus as possibly having impacts on efficiency, including:

- System size
- System location (weather, soils, material suppliers, repair facilities, etc.)
- Municipal population
- Municipal financial capacity
- Ratio of personnel to miles maintained
- Ratio of equipment to miles maintained
- Equipment utilization rates
- Equipment availability
- Superintendent's experience
- Geographic density of the road system (dead heading, etc.)
- Snow and ice control costs
- Operational unit costs (Road paving, patch-

ing, drainage maintenance, etc.)

- Garage and shop (facility)
- Fueling facility

It is apparent from the above partial listing, that the overall annual efficiency measures determined and used in this study are a reflection all of the factors listed above, and probably some others that haven't been listed. To try to sort out which factors are the cause of the overall efficiency is not possible with the current data.

Administration Costs

No data was discovered that would enable the study of administrative effort and efficiency.

In order to have an efficiency measure for administration, a cost for administrative effort per unit of output (i.e., miles) would need to be calculated. There was no evidence discovered which would allow the calculation of costs for highway administration. At the county level, administrative costs benefit several public facilities' operations (buildings, airport, etc.), not just highway operations. At the town and village level, the superintendents spend time on administration, which by their own estimates ranged from about 10% to 30% with one estimating at about 50%. In addition, most had assistance from other town staff for such things as payroll and payment of bills, among other things. Therefore, it was not feasible to quantify administrative costs accurately.

In conducting this study we assisted Chautauqua County in gaining a clearer understanding of the efficiency's to be gained in the business of government-provided highway services. One observation that became abundantly clear is the complexity involved in attempting to compare gross performance between different municipal operations. Differences in the type of road and the range of services delivered make such comparisons difficult without the ability to account for and adjust for the impacts of these variations. This is not to say that some level of comparison is not beneficial, merely that much more information is necessary to provide fair and accurate comparison.

Analysis on the gross measures of cost per mile and cost per quality mile to the size of operations were essentially inconclusive in revealing any relationship between efficient performance and the size of the operation.

We found that service sharing exists on a broader basis than initially evident. Several municipalities perform services for other jurisdictions across the county. Accounting for this activity would better enable analysis and identification of top performers. Once top performers are identified, investigation into how they deliver services can lead to a greater understanding of the work and the spread of best practices across all operations.

We were able to perform several analyses regarding resource densities or resource ratios that can be valuable in gaining greater understanding of where opportunities for improvement may be found. The analyses performed are listed and defined below:

- **Equipment densities or equipment ratios across municipalities** (defined as the number of miles per piece of equipment). These analyses did appear to indicate that there is significant potential to reduce the total county-wide fleet through increased equipment sharing. We quantified order of magnitude estimates of the potential in terms of number of vehicles, yet additional information relating to actual equipment utilization and simultaneous use demands is needed to ensure that fleet reductions do not impair the operations ability to deliver the required services.

  In order to effectively facilitate increased equipment sharing, we recommend establishment of an electronic database of system equipment, their locations and availability. This would allow an entity in need of a particular piece of equipment to quickly identify the owner and location of available equipment and make arrangements for sharing, prior to considering other options like rental or contracting.

  While our interest in this mechanism is the pursuit of improved operating performance, it brings with it the additional value of serving to increase the effectiveness of emergency response services.

- NIMS is the **National Incident Management System**, established under the Federal Emergency Management Agency (FEMA), in 2003. NIMS "provides a consistent, nationwide template to enable federal, state, tribal and local governments, non-governmental organizations (NGOs) and the private sector to work together to prevent, protect against, respond to, recover from and mitigate the effects of incidents, regardless of cause, size, location or complexity."

  Under NIMS, local governments are required to maintain an inventory of municipally owned equipment, in order to provide Incident Commanders with a complete record of the resources available to them.

  A list of dump trucks, construction and motorized maintenance equipment owned by the county, each city, town, and village would be beneficial to all entities having a specific need.

  The inventories should be electronic, in a prescribed or agreed upon format. The listing must be kept current and, ideally, should be posted on-line and searchable.

- **Labor density or labor ratio** (defined as the number of miles per employee.The cities and villages currently employ the most staff per mile of system. The towns show a very wide range on this indicator. Comparison between towns and villages of labor density as it relates to cost per quality mile appeared to indicate that operations with higher miles per employee performed better in terms of this measure. Again, additional information pertaining to actual employee utilization and scope of services provided is necessary before any definitive conclusion regarding this finding. Discussion between operations can help provide a greater understanding of why these variances exist and lead to opportunities for improvement.
- **Facilities Sharing** (defined as sharing of facilities across the region). A general, theoretical analysis of the potential impact of working in larger maintenance districts indicated there appears to be potential benefit toward overall operational efficiency. While this theoretical analysis has value, it assumed uniformity and was limited to towns for simplification. Detailed and specific analysis informed by actual data, rather than estimates and assumptions, would need to be performed for each proposed arrangement to fully understand the costs and benefits. One size would not fit all as operations with greater infrastructure density would require more resources to serve than areas with more dispersed infrastructure. Performance parameters must be defined and agreed to and a balance struck between the competing forces of unproductive time and productive time.

  Of all of the strategies evaluated, facilities sharing is the most costly to implement, require extended time to put in place, and depend on cultural mindset shift for success. Many of the other strategies are low or no cost to implement and have the potential to delivery immediate results.

All of these considerations seek to shift the costs of the operation from overhead costs to productive resources, thereby increasing efficiency.

There are fundamental differences between the private sector and the public sector, particularly with regard to the incentives that influence behavior. When entities perform more efficiently in the private sector, money flows toward them. Profitability increases, promotions, raises, and bonuses often result for individuals credited with increasing profit and the company typically has more success and therefore provides greater security. In the public sector, when you perform more efficiently, money flows away from that department. When budget dollars are left unspent, the next year's budget is adjusted down to the new level under the assumption that the required services can be provided for that lesser amount. Over time, this has the potential to reduce access to resources to a point where a department is no longer able to maintain the condition of the system or provide acceptable service levels. Increasing budgets to levels that enable adequate service is becoming increasingly difficult in the competition for tax dollars. Eventually a superintendent may be viewed as failing and voted out of office. In this system, the motivation is to spend a department's full budget every year to prevent a reduction in future years.

How can we change the dynamics that influence the "spend it or lose it" mentality to the "do more with less" mindset? Resolution of that issue would go a long way toward transformation of the way public services are provided.

A. Field Operations/Task Efficiencies

Task efficiencies are valuable for diagnosing the root cause when performance goes awry. We found very little data or metrics throughout the 44 municipalities that measured and tracked performance by task level, and we could not determine and calculate performance with any degree of accuracy.

As a result, we are unable to dig deeper into the overall performance of the municipalities to decipher where potential opportunities or explanations may lie. We will address our recommenda-

tions regarding instituting these practices later in this section.

1. Unit Costs

Unit costs are used as a measure of efficiency, which can be measured as the cost in dollars to produce a unit of accomplishment for a specific task. For highway maintenance tasks, cost of the task includes the total cost of labor, equipment, and materials needed to produce a unit of accomplishment.

2. Materials Costs

In recent years, materials costs have varied from month to month, particularly in paving operations (when considering the asphalt price adjustments associated with hot mix asphalt paving operations).

Similar variation is experienced on pipe installation projects where pipe may be constructed of polyethylene, corrugated metal, or reinforced concrete, each having specific design applications, with significant variation in cost per lineal foot of pipe, based on the difference in cost of the construction material.

When the productivity of a crew is measured and reported, the material costs are not relevant to the efficiency of the installation or placement operation and if they were included, it could confuse the placement efficiency reporting. As an example; if the efficiency of an operation was exactly the same for two days in a row, but a price change occurred overnight, it would make the efficiency of the operation different between the two days if the material prices were included.

However, for the overall efficiency of the department reported annually, the cost of materials can be included because it reflects the efficient use of materials through good pavement management techniques.

In summary, the cost of materials are not to be considered in the calculation of operational efficiency for tasks such as paving, crack sealing, surface treatment, and pipe installation.

As an example, the cost of a specific task such as culvert pipe installation comprises the following:

- Labor: (direct hourly wage plus indirect [benefit] costs)
- Equipment: (rental rate plus operating costs)
- Materials: (materials are not considered in the calculation of culvert pipe installation efficiency)

So efficiency of installation =

$$\frac{\text{total cost of labor and equipment}}{\text{\# of lineal feet of culvert pipe installed}}$$

= $/lineal foot

Since efficiency is being measured in terms of labor and equipment cost, it is possible to use this calculation to compare productivity for crews having different numbers of workers or using different numbers of pieces of equipment.

For example, a highway superintendent may calculate the labor and equipment cost of culvert pipe installation by a crew using a single dump truck to haul spoil material and deliver backfill material to the worksite and compare it with the cost of using two dump trucks to support the operation. The operation with the lower installation cost per lineal foot would be more efficient in terms of utilization of resources.

Similarly, a highway superintendent may calculate the labor and equipment cost per lineal foot for culvert pipe installation by his crew, and compare it to a contractor's installation bid price (cost per lineal foot), to determine the more economical installation method. It is important to compare like items though, ensuring that pipe material, diameter and length, installation methods and conditions are all comparable.

These calculations may also be used to compare the operational efficiency of two crews performing similar work.

3. Recommended Measures

Unit costs may be calculated for various operational tasks. Listed below are a number of tasks commonly performed by municipal maintenance organizations, with their corresponding cost per unit of accomplishment.

Task	Unit Costs
Clean enclosed drain	$/LF
Dead Animal Removal	$Each
Ditch cleaning:	$/LF or $/CY (of material removed)
Mowing	$/acre
Patching (cold mix)	$/ton
Stump Removal	$Each
Tree removal	$/inch DBH

Recommended performance metrics (metrics that we recommend for use when tracking in the future to inform management decisions) are listed below:

$$\frac{\text{Preventive maintenance activity man hours}}{\text{Total man hours}}$$

$$\frac{\text{Non-overhead cost}}{\text{Total budget}}$$

Non-overhead costs are costs that are associated with the tangible performance of highway maintenance tasks, such as the actual costs of manpower (including benefits), equipment, materials and contracted services. They do not include costs such as travel-time, employee training, administrative costs associated with payroll processing and facility costs, as examples.

$$\frac{\text{Time actually x applied to a work task}}{\text{Total available man-hours}}$$

$$\frac{\text{Equipment availability}}{\text{Total available time}}$$

Equipment availability is defined as the time during which a specific piece of equipment is operational and available for use, whether actually used or not. Total time available would include both "up-time" and "down-time" (time during which the specific piece of the task is inoperable).

$$\frac{\text{Daily time on task}}{\text{8-hour workday}}$$

$$\frac{\text{Tons patch material per 100 lane miles per season}}{\text{Man-hours patching per 100 lane miles per season}}$$

$$\frac{\text{Pavement lane miles scored excellent, good and fair}}{\text{Total system lane miles}}$$

Labor—Miles in the system divided by the number of people in the department
Labor ratio = System miles/personnel

Equipment—Capital value of equipment fleet divided by the system miles Equipment ratio = Dollar value/System miles

Material—Material costs annually divided by the system miles (this should be broken down into materials for snow and ice control and for road maintenance and repair)

Materials ratio = Cost of materials/system miles

Working collaboratively as larger maintenance districts allows for more crew specialization in the performance of specific tasks. This has the most potential benefit for activities that are repetitive and regularly required. The opportunity to focus on one or a few tasks repetitively often leads to perfection in the performance of that task, higher quality, consistency, and lower cost result. Smaller districts do not have this luxury as they must be jacks of all trades.

Special crews could be developed to perform one or more of the following tasks:

- Paving
- Sign maintenance

- Bridge maintenance
- Facility maintenance (boiler cleaning, overhead door adjustment, trades work (plumbing, carpentry, electrical work), etc.
- Tree removal
- Guiderail repair
- Training (safety, equipment operation instruction, work zone setup)

Additionally, we identified a number of industry best practice strategies that, if adopted, have immediate potential to increase the effectiveness of services provided. Several of these are listed in the recommendations portion of this section.

B. Scorekeeping

1. Keeping score

It is common knowledge that athletes are some of the most motivated people around us. Most highway supervisors would like to have similar motivation in their work crews.

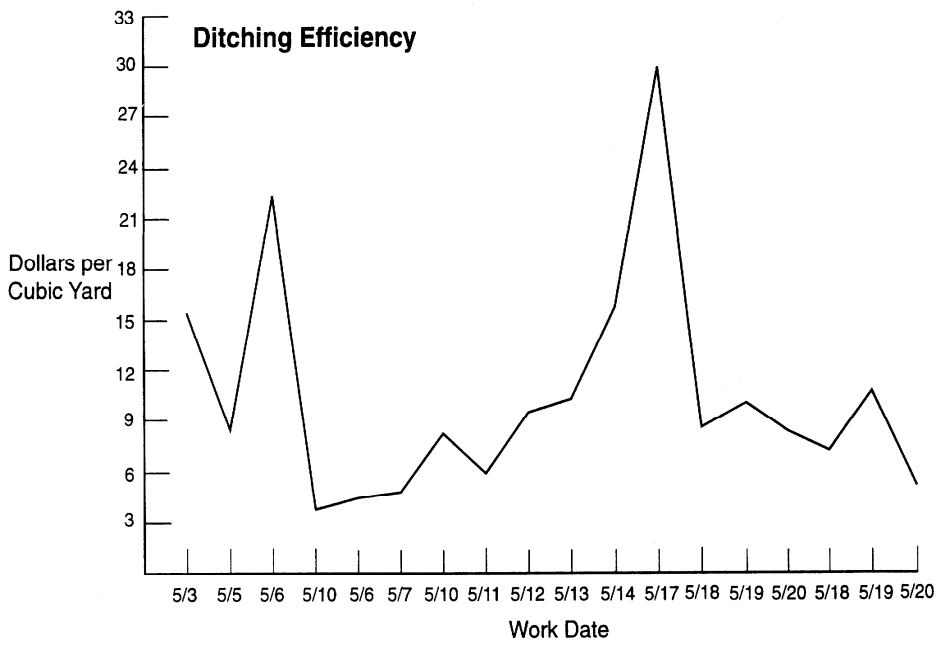
In the book *The Game of Work* by Charles Coonradt, the author discusses using conditions that bring motivation to the athletic world in the workplace. Without scorekeeping, the athletic world would collapse. Athletes wouldn't strive to improve, fans wouldn't be interested, and advertisers would leave. In general, the "game" of work in the highway departments does not keep scores relevant to the daily efforts of most of the workers.

Recognizing this situation, inroads to this problem can be made by providing the highway workers with some scorekeeping on whatever is thought to be important to the organization and relevant to the worker. If scorekeeping is kept about efficiency of operations, and reported in time for it to be related to the previous day's work effort, motivation increases. Superintendents will change work plans and employees will offer suggestions to supervisors on how to be more efficient.

The cost of Chautauqua County highway workers average around 40% of the total expenditure for highway maintenance—more than materials or equipment. Any efficiency improvement effort that does not address the utilization and engagement of the workforce is missing out on the opportunity to have a significant impact on efficiency. Equipment efficiency is improving all the time through the efforts of the manufacturers, and similar improvements are being made in materials by their manufacturers. However, improvements in efficiency of the labor force remain under the control of public officials. To leave this subject unattended results in about 40% of the highway cost effort being left out of efficiency consideration, and that 40% controls the use of the other 60% of the resources.

Examples of activity efficiency tracking, shown on charts 4.1 and 4.2, have been shown to

Chart 4.1—Ditching efficiency



motivate the work crews doing the operation being scored and reported. The scorekeeping reports must be made available on a daily basis as the work goes on, in order to enable operational learning that results in improved daily efficiency scores.

Reporting efficiency measures back to the crews doing the work can take a variety of formats. Chart 4.3 was used for shoulder cutting, and illustrates past years' performance, the urrent year's goal, individual project performance, and average performance. Notice that the average costs for this particular operation in the fifth year are less than those for the first year, resulting from increases in efficiency of that crew. What is shown here for a particular operation can occur throughout the department's operations if reports are available on a regular basis.

Chart 4.2—Ditching effectiveness

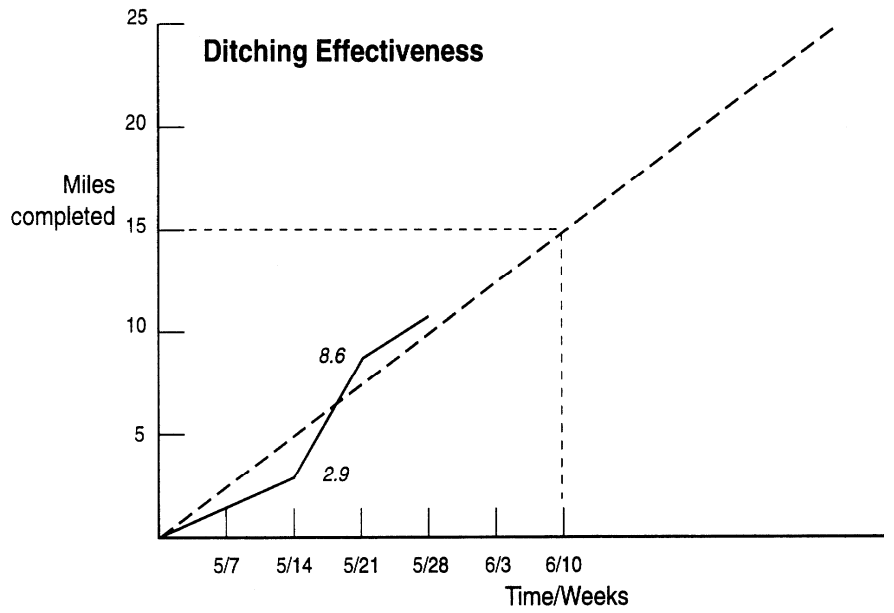
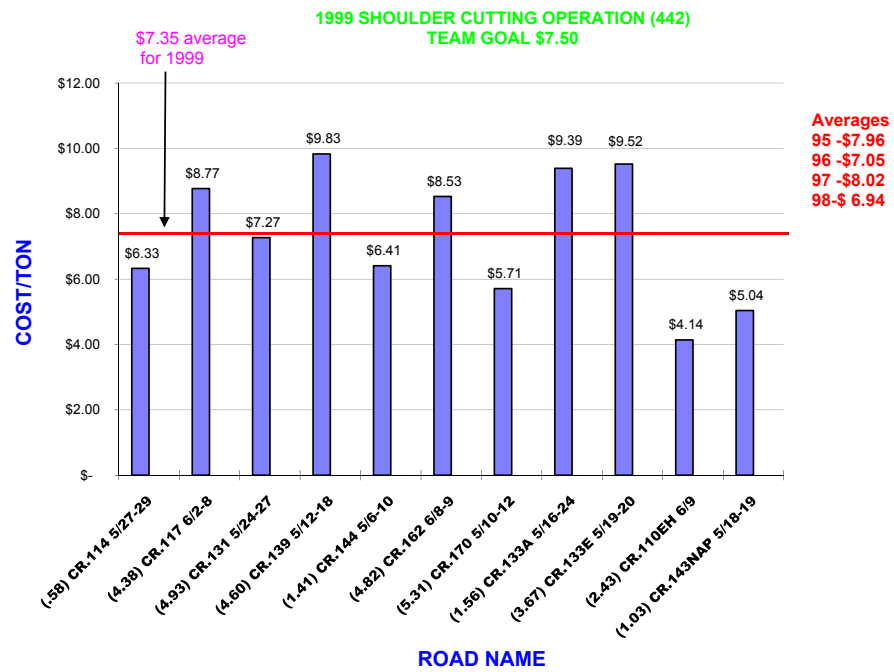


Chart 4.3—Reporting efficiencies within the department



1. Setting up a Scorekeeping System

The scorekeeping system for efficiency uses daily entries of hours, labor, and equipment to accomplish particular tasks. The system of tracking must be simple, clearly understandable and require little time to collect. If scorekeeping is selected for implementation, it should be started for the first year with a small pilot group to perfect the processes of data collection and report generation.

Employees responsible for the collection and input of the required information must understand the benefit of this activity in order to buy in and gather accurate and complete data. A sample specification for scorekeeping appears below:

a. Objective—Provide an automated system to take daily input on highway department activities and provide reports on efficiency.

b. Vision—Forty-four highway departments in Chautauqua County will make end of day work activity reporting by all their personnel, totaling about 420 people in number. The following day, at the beginning of work, reports of the previous day's efficiencies will be accessible to personnel in all forty four departments, as well as efficiencies to date and other related management information.

c. Implementation—As an implementation step, a pilot project of approximately 10 highway departments will do a one year "start up" for evaluation and refinement of the above vision.

d. System Performance Specifications

   i. Data Entry—Non supervisory employees will be able to use the accounting system to enter the day's activities in a time of two minutes or fewer. The system will have a data entry methodology that will not require computer or keyboard knowledge or skills. Paper entries are not acceptable. Total activity data entry time for all employees in a department is not to exceed five minutes.

      Supervisory staff may be expected to enter additional data related to work accomplishment, and data entry time for them is limited to three minutes per job. Keyboard entry of information is allowed and some skill with computer operation can be assumed.

   ii. Reports—The accounting system will not require any time or effort on the part of highway department personnel to process or generate reports. Reports will not be mainly numerical, but present numerical information in a visual format that will convey more information than numbers alone, such as a graphical presentation. Reports will include statistical averages for performance of all municipalities as well as individual performance for the particular municipality receiving a report. The reports will be available the following morning at each department for personnel to view and use.

Maintenance Management Systems

Early in this study it became apparent that most municipal organizations within the study area lacked a formal maintenance management system. MMS were initially developed in the 1970s as desktop computers became affordable and used for business purposes. The absence of detailed productivity and management accounting practices was notable and presents an opportunity for improvement. This limited our ability to perform valid, in-depth analysis based on the existing financial data in its current form. It is often stated that "you can't manage what you can't measure." Instituting maintenance management information systems has the potential to unlock the full potential of these operations and engage the entire workforce in the innovation of more efficient practices through collaboration, cooperation, and communication.

The first MMS were simple databases populated with daily work accomplishments and ancillary employee time and attendance information. The New York State Department of Transportation Highway Maintenance Division began using a system known as the Daily Accomplishment System. DAISY, as it was known, was used from 1985 to 2006, when it was replaced by MAMIS, the Maintenance Management Information System which is still in use.

Advantages of a maintenance management system include:

- Record created contemporaneously with the work.
- Daily record of labor, equipment and material used to perform work.
- Record of units of work accomplished at a specific location, by task, with task codes used to standardize a description of the work to be performed
- Record of time and attendance for crew members assigned to the reporting supervisor
- Provide for segregation of crew hours devoted to work and safety, with safety being used to capture work zone set-up and tear-down.

- Provide for assignment of work order numbers to track project-related activities or emergency response (storm cleanup), etc.
- Provide space for remarks related to the day's work.

Today's maintenance management systems have evolved into comprehensive management tools, generally consisting of a core application with expansion available through various additional modules which enable the maintenance organization to meet their specific needs and objectives.

As part of this study, the writers researched various software products which had features beneficial to municipal maintenance organizations. Among the most promising were Pub works, Citi Tech Management Software and a product intended for the construction industry, called Heavy Job.

A comparison of features is shown in Table 4.1.

Table 4.1—MMS Software Comparisons

Feature	**Pub Works** www.pubworks.com	**CitiTech Mgt Software** www.cititech.com	**Heavy Job** www.hcss.com
Demo available	X	X	
Inventory and condition data	X		
Asset and equipment inventories	X		
Job costing	X	X	X
Crew, activities, projects & materials	X		
Cost analysis reporting	X		X
Inventory mgmt. reporting	X		
Project mgmt.		X	
Employee mgmt.		X	
Equipment mgmt.		X	
Inventory control		X	
Purchase orders		X	
Work reporting/payroll reporting		X	
Fund accounts/budgets		X	
Billing/invoices		X	
Comprehensive SQL (structured query language) reporting		X	
Additional Modules			
Service requests	X		
Track from notification-completion	X		
Employee/crew assignments	X		
Cost/progress monitoring	X		
Respond to citizens w/ accurate info	X		
Historical statistics, charts/graphs	X		
Work orders	X		

Feature	Pub Works www.pubworks.com	CitiTech Mgt Software www.cititech.com	Heavy Job www.hcss.com
All scheduled maintenance	X		
Work plans/pm schedules	X		
Resource tracking	X		
Map trends, costs & progress	X		
Fleet management	X		
Fleet management in basic system			
Track parts, labor, fuel and condition	X		
Manage all fleet activities	X		
Service records	X		
Scheduling, status and cost tracking	X		
Automated fuel system interface	X		
Work orders, scheduled & demand	X		
History, depreciation and replacement	X		
Calculate productivity by tracking			
Standard/flat rate work hrs.	X		
GIS	X		
Capable of mapping all data	X		
Map service requests	X		
Reduce lost time			
Spot trends			
Map work orders	X		
Create map-based “to do” lists	X		
Crew/individual activities	X		
Equipment and materials	X		
Easy for novice, useful for expert	X		
Asset data collector	X		
Inventory positional data by crew			
Drive the road interface	X		
Inventory/inspect any asset	X		
User friendly	X		
Linear reference and/or gis	X		
Sync up to transfer data	X		
Both inventory and condition	X		
Cost accounting	X	X	X
Asset inventory includes –	X	X	
Asset, value, condition, history	X		
Uses activity based costing principles		X	
Manages funds		X	

Feature	Pub Works www.pubworks.com	CitiTech Mgt Software www.cititech.com	Heavy Job www.hcss.com
Customer/vendor management		X	
Alert reminders		X	
Reports module	X		
Compare production rates			X
Provide production and cost history			X
Searchable			X
Improves communications			X
Share field notes, safety meeting			
Records, photos			
Streamlines payroll process (for contractors)			X
Immediate job status feedback			X
Create "what if" scenarios to max. Productivity			X
Analyze multiple jobs at once			X
"Drill down" to specific day, cost code/type			X
View daily production			X
Crew prod. For day, week, month or job-to-date			X
Spot trends	X		X
Forecast remaining cost for job			X
Compare prod. For different crew compositions side by side to maximize efficiency			X
Step-by-step electronic "cheat sheet"			X
Warranty/guarantee		X	
6 Months defect free, opr per spec			
Will either fix or refund purchase			
Money back 12 month guarantee			X

One example that demonstrates the value of instituting a maintenance management system is when the New York State Department of Transportation Highway Maintenance conducted a study of labor distribution for Genesee County in the late 1980s after the introduction of their first maintenance management system. They found that ±83% of actual work hours fell into the following general activity categories: pavement maintenance, shoulder maintenance, roadside maintenance, bridge maintenance, sign maintenance, snow and ice control and facility maintenance.

The conclusion of that manual analysis was that a greater percentage of available work hours were being charged to facility maintenance than to pavement maintenance and snow and ice control, combined. This was an immediate red flag especially given the appearance of the buildings and grounds under the NYSDOT jurisdiction at that time. The analysis was used by management

to redirect available work hours to work that was related to the organization's core mission of highway maintenance, thereby addressing operational efficiency issues which had previously gone unnoticed.

C. Pavement Management

Few of the entities studied practice formal pavement management. All of the operations have some system of managing their pavement. Many rely on the informal knowledge of their system and awareness of which areas require reinvestment. Public complaints may indicate areas that need attention. This method is more reactive than proactive, responding to problems as they occur, rather than preemptively addressing the smaller issues that can become large issues if not addressed in a timely fashion.

Pavement management can be thought of as "doing the right thing, in the right place, at the right time." Essentially, it can be shown that keeping up with lower-cost, preventive maintenance can reduce the life cycle cost of infrastructure maintenance by extending the life of the asset.

Informed decisions require knowledge of existing highway conditions, experience with available treatment options and judgment in selecting the appropriate treatment to address observed deficiencies.

Other than county operations, none of the municipalities collected periodic road condition ratings on a periodic basis. Without a formal measure of the work result, management of resources to maximize efficiency is difficult, if not impossible.

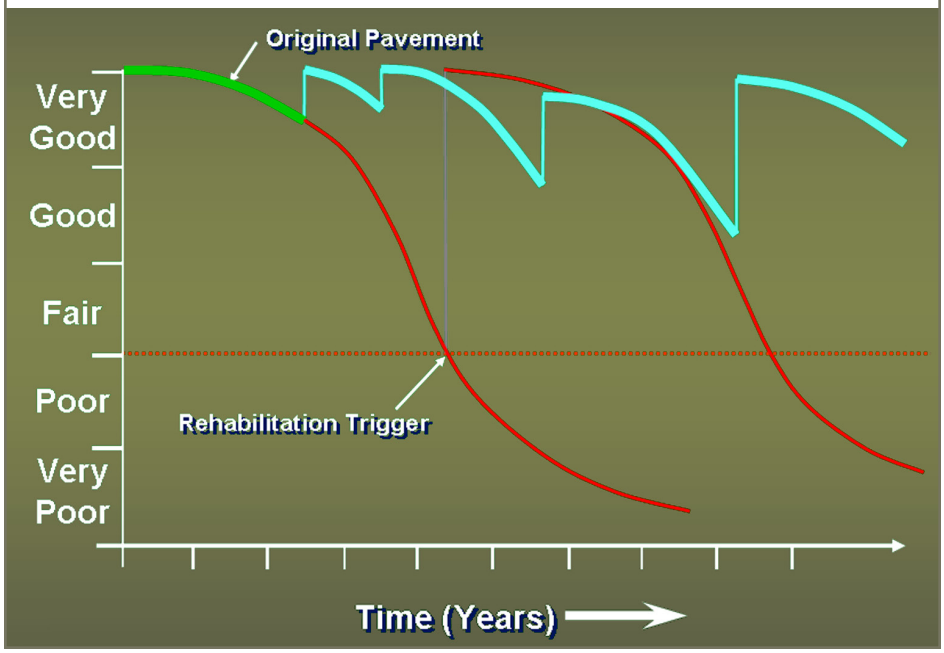
An annual pavement condition survey will rate pavements based on observed surface distress. The resulting rating of 1 through 10 is an indication of the overall condition of the pavement surface, based on observed deficiencies such as cracking, rutting, potholes, delamination, raveling, etc, and the severity of this deterioration

You will note that the expense of the treatment options increase as pavement deterioration progresses, and not only are you faced with a higher bill, but the public is also forced to drive on deteriorated highways until action is taken.

An effective pavement management system will identify pavement sections that are in need of preventive maintenance treatment. It will consider all available treatment options, and will aid in the selection of appropriate treatments.

Each preventive maintenance treatment option has a predictable service life, and pavement management systems can develop strategies for maintaining specific highway sections. This is particularly useful to the highway superintendent in that funding requirements can be predicted and project planning becomes proactive rather than reactive. This concept can be seen in Chart 4.4.

Chart 4.4—The Pavement Preservation Concept



Consulting services and software are available to assist the highway superintendent with the development of a pavement management plan.

Maintenance dollars are used more efficiently since inappropriate or untimely treatments are avoided. Highway conditions are maintained at a higher level and service life is extended, since timely treatments preserve pavement integrity and slow deterioration.

1. Materials Efficiency—Snow & Ice Control

Snow and ice control is required across the region. Various materials are used including straight salt, straight abrasive mixtures (sand or fly ash) or combinations of these materials. Very few of the operations report calibration of their spreaders In fact, only seven towns and two villages report calibrating spreaders, as does the County Department of Public Facilities and the two city Departments of Public Works.

In addition to spreader calibration there are other technological advances that warrant consideration. Two of these are automatic spreader controls and pavement sensors. Together these strategies can serve to significantly reduce materials costs related to these activities without sacrificing performance.

a. Automated spreader controls and pavement temperature sensors give the driver complete control of both granular and liquid application rates, delivering consistent material coverage to the road regardless of vehicle speed or starting and stopping. This eliminates the 'patch and skip' patterns associated with earlier generation "on/off" spreader controls.
b. Pavement and air temperature sensors enable the display of pavement surface and outside ambient air temperatures within the cab of the plow truck. Temperature alarm points are programmable and audible and visible alerts may be set.

   The appropriate selection of snow and ice control material and its proper application rate is dependent upon pavement surface temperature. This temperature may vary considerably from ambient air temperature and is affected by direct sunlight, shade, wind currents, etc.

   The pavement surface is where chemical reactions occur as salt and other materials are applied during snow and ice control operations, and pavement temperature significantly influences those reactions. Knowledge of real-time pavement surface temperature can therefore aid in the selection of appropriate materials and in the determination of their appropriate application rate.

2.—Centralize Administrative and Technical Services

Administrative activities such as cost accounting, work planning, training, engineering, and other office activities should be consolidated and performed by support personnel where possible to free the superintendent for work of higher value. A common frustration during the on-site interviews with the superintendents was the increasing time for administrative work competing with time needed in the field.

The superintendents estimated that they spend anywhere from 10% to 40% of their time on administrative matters. Unfortunately, the administrative workload that the superintendents identified is not fully adaptable to centralization; however, tasks such as budgeting, finance, cost accounting, data input, maintaining equipment records and the ever present "preparing reports" may all be performed, at least in part, by a centralized administrative support staff.

The Department of Public Facilities currently provides purchasing and technical assistance to the highway superintendents.

It is recommended that the following administrative functions be centralized, to be performed either at the county level or otherwise, as deemed appropriate:

1. Efficiency coordination—see proposal and discussion which follows
2. General administrative support to assist with cost accounting and other tasks outlined above
3. Purchasing—expanding on services currently provided by the Department of Public Facilities, if agreeable to the county
4. Engineering/technical services—annual road condition ratings, pavement management, project development, construction inspection, Manual of Uniform Traffic Control interpretation and application
5. Training—employee safety, traffic control (flagger), work zone signing, equipment operator instruction, human resources training
6. Information technology support

D. Additional Recommendations

Inter-municipal shop—For several towns and villages, it was apparent that equipment maintenance and repair facilities were inadequate, making these activities difficult to do properly or necessitating transport to more adequate shops in the private sector. Determining whether the private shops were available or competitive was beyond the scope of this study, cost records most likely do not exist to compare in-house vs. outsourced costs. If in-house shops are suspected to be too costly, then an evaluation could be made of the relative costs of in-house vs. private sector vs. a joint municipal shop operation. An example of a joint municipal shop that could serve as a study model would be that in the City of Sierra Vista, Arizona. They have inter-municipal agreements to provide fleet maintenance services for 23 other public organizations who are too remotely located from private services.

Private fueling stations—For the 44 municipalities in Chautauqua County, most have on-site fueling facilities, and participate in bid pricing for fuels. If a municipal fuel facility requires upgrading or replacement, there is an opportunity to evaluate the efficiency of having motor vehicles fueled at a private facility. This may not be a feasible option for off-road equipment, but depending on the municipality, other options may exist for fueling off-road equipment. Private fueling station providers (as well as basic preventive maintenance and repair services) have been bid successfully for motor vehicles in Tompkins County.

Field fuel delivery—As with many larger private contractors, it may be feasible for some municipalities which share off-road equipment on a regionalized basis to have a fuel and lube truck make the rounds rather than bringing the equipment back to a shop for fueling and lubrication.

Shared fuel bulk storage and distribution facility—As existing fuel storage and distribution facilities become outdated and are targeted for replacement; consideration should be given to constructing a state-of-the-art facility with enough capacity to serve multiple municipal and quasi-public sector organizations.

The Orleans County Highway Department built such a fully-automated facility, with 24/7 access. It supports Village of Albion, Albion Volunteer Fire Department, Albion Central School and COVA County of Orleans Volunteer Ambulance fueling requirements in addition to those of Orleans County operations.

In addition to the obvious savings resulting from not having the initial cost of a replacement facility in each municipality, the municipalities benefit from significantly reduced environmental liability which is inherent to fuel storage and distribution.

Special Crews—While study data shows the size of the town is not well correlated to efficiency, there may be significant benefit to formalizing districts outlined above, or other agreed upon districts, for the purpose of establishing special crews comprising skilled workers from one or more of the included municipalities to perform specialized services as called upon within their district.

This grouping of skilled workers repeatedly performing a specialized task should result in improved operating efficiency and a lower unit cost for performing that task.

Special crews could be developed to perform one or more of the following tasks:

- Paving
- Sign maintenance
- Bridge maintenance
- Facility maintenance (boiler cleaning, overhead door adjustment, trades work (plumbing, carpentry, electrical work), etc.
- Tree removal
- Guiderail repair
- Training (safety, equipment operation instruction, work zone setup)

Special crews could be implemented in the near-term and could result in improved efficiency and lower cost for specialized work. As an addition benefit, all municipalities would not need to purchase equipment and materials required to perform such work, thereby resulting in cost savings.

Where to invest?

A significant effort has been made to estimate potential savings that could be realized from the various opportunities uncovered during this shared services study. These potential savings give guidance in terms of our recommendations as to where to invest time and money.

Each of the efficiency opportunities mentioned in this section can be placed into two categories:

1 **Best practices**—Some departments may already have implemented some of these. This category of opportunities needs the local superintendent's consideration of local conditions for applicability and value to the municipality.

2 **Management opportunties for most or all highway departments**—This category of opportunities generally has more far reaching impacts on department operations because of the ongoing reporting of efficiency related information.

Table 5.1—Efficiency Opportunities

Item	Best Practices Options
A1	Calibrate snow and ice material spreaders
A2	Automated spreader controls
A3	Pavement temp. gauges in plow trucks
A4	Joint garage/shop facility
A5	Consolidate traffic sign maintenance
A6	Centralize fleet maintenance
A7	Snow and ice route optimization
A8	Sand/salt ratios
A9	Joint salt storage facilities
A10	Equipment rental
A11	Computer on-line access
A12	Share excavators and road graders to permit reduction in the current number of units
A13	Share dump trucks to permit a reduction in the number of units
A14	Use pre-treated salt
A15	Centralize Admin/Tech Services
A16	Minimum size highway system

The efficiency opportunities and prioritization of opportunities for efficiency improvements are outlined and listed by category in Table 5.1.

A. Best Practices Options

A1. Calibrate snow and ice material spreaders

Current situation

A snow and ice material spreader is typically known as a "V box." It is placed in the box of a plow truck at the beginning of the snow and ice season and is filled with salt or abrasive material before each plow run. The spreader is equipped with a chain conveyor in the bottom and a gated opening, where material is discharged at the rear of the truck. The conveyor is driven by a hydraulic motor. The amount of material applied to the road surface is therefore determined by the speed of the conveyor and the height of the gated discharge opening.

Calibration is the task of correlating the mechanical operation of the spreader with number of pre-determined material application rates. Simply put, calibration enables the truck driver to select a known conveyor speed and gate opening setting to achieve a desired application rate for a given snow and ice control material.

While a spreader will operate equally well whether calibrated or not, the calibration process introduces increased efficiency into the application process by pre-determining the amount of material to be applied at a given combination of control setting and gate opening.

Not calibrating leaves the actual application rate to chance and introduces the very real possibility of either under-applying or over-applying material. Since the driver never wants to under-apply and risk the possibility of causing motor vehicle accidents, the tendency is to over-apply, thus wasting the material which is applied in excess of the recommended application

rate for specific conditions.

Desired situation
All snow and ice material spreaders should be calibrated annually, in conjunction with winter readiness preparations. This will reduce waste associated with over-application of salt and abrasive mix, and will thereby improve the efficiency of snow and ice control operations.

Recommendations
It is recommended that all snow and ice material spreaders be calibrated annually, prior to the winter maintenance season.

Action plan
Calibrate all snow and ice material spreaders annually, prior to the winter maintenance season. The calibration procedure may be found on the Salt Institute's website, www.saltinstitute.org. The necessary calibration card and procedure is included in the appendix of this report.

A2. Automated spreader controls

Current situation
Chautauqua County municipalities currently control snow and ice material spreaders either manually or through the use of automated controls.

A manually controlled spreader, which has been calibrated, will discharge material at a constant pre-determined rate, regardless of vehicle speed. This means that a spreader which has been calibrated to apply salt at a rate of 250#/lane mile when traveling at 30 MPH will do so at 30 MPH. At 45 MPH, the effective application rate will be 188#/lane mile and at 15 MPH, the effective application rate will increase to 500#/lane mile. When stationary at a STOP sign, the manually controlled hopper will discharge the contents of the spreader box unless it is manually turned off by the truck driver.

An automated spreader control factors the vehicle's ground speed into its control of conveyor speed to maintain a constant, predetermined, material application rate. It slows conveyor speed at low speeds and speeds it up as vehicle ground speed increases, varying the material discharge rate in order to maintain a constant application rate.

Desired situation
All snow and ice material spreaders should be equipped with automated controls. Dickey-John is a recognized leader in the production of such controls. Their systems enable the programming of various application rates for various materials. They have the capability of recording information pertinent to the application process to facilitate management of material usage.

Recommendation
It is recommended that all snow and ice material spreaders be equipped with automated controls. This may be accomplished by retro-fitting existing manually controlled units or by specifying automated spreader controls when purchasing replacement equipment.

Action plan
Check existing equipment to determine if spreaders are manually controlled or if controls are automated.

Determine mechanical and physical condition of spreaders and retro-fit those manually controlled units which are in operational physically sound condition, as soon as budget permits.

Purchase spreaders with automated controls when replacing units.

Calibrate all spreaders annually, whether manually controlled or automated, prior to the beginning of the winter maintenance season.

A3. Pavement temperature gauges in plow trucks

Current situation
Few, if any, plow trucks are equipped with pavement temperature gauges.

Desired situation

The gauges indicate both ambient air and pavement temperatures, and make the driver aware that freezing air temperatures do not necessarily result in simultaneous freezing pavement temperatures. In fact, direct sunlight has a dramatic effect on pavement temperature, even on "cold" days, with solar heat accounting for as much as a 40° F warmer pavement temperature.

Pavement temperatures should be considered when deciding whether or not to apply materials. The reduction of wasted material will result in lower cost and increased operational efficiency.

Recommendation

A pavement temperature gauge should be installed in the superintendent's pickup truck, on a trial basis, with consideration to be given to installation in plow trucks after experience is gained with this device.

Field test this technology on a limited basis before equipping the entire plow truck fleet. Snow and ice control truck drivers will know pavement temperatures as they work their routes.

Action plan

- Equip the superintendent's pickup truck with a pavement temperature gauge and give him time to experience the variation between air temperature and pavement surface temperature found on bridge decks, in shaded areas, on sunny days, etc.
- Make a decision regarding installation in plow trucks based on the experience of the superintendent.
- Install pavement temperature gauges in plow trucks as soon as budget permits and realize increased operational efficiency through resulting material cost savings.
- Do nothing and continue with past practices regarding material application decisions.

A4. Joint garage/shop facility

Current situation

Currently, all 44 local highway departments own and operate at least one maintenance facility, with the Chautauqua County Department of Public Facilities operating from three separate locations within the county.

Each of these facilities had a capital construction cost, each has an overhead cost, including the cost of maintenance, repair, utilities and insurance, and each requires periodic capital improvements.

Their adequacy may range from out-moded to state-of-the-art, with determining factors such as building size and condition, yard area, covered storage area, heated area, OSHA compliance, energy efficiency (heating and lighting), environmental compliance (potable water supply, sanitary sewage disposal, bulk fuel storage and distribution, hazardous material storage, covered salt storage) and fire protection.

Desired situation

Ideally, the number of maintenance facilities in the county would meet and not exceed the number needed to operate most efficiently. This number is a function of size and is determined by the scope and magnitude of maintenance responsibilities assigned to each specific location, with consideration given to the maximum acceptable deadhead travel time from the facility to a work site. Deadhead time adversely impacts operational efficiency since the greater the travel distance from shop to work-site, the less time remains in the workday to actually accomplish work.

Facilities would be of adequate size, including a yard area large enough to accommodate equipment and material storage. They would comply with all pertinent environmental and OSHA regulations, with provision for fueling equipment and covered storage of salt, either on-site or off.

Facilities would be energy efficient and equipped with a functional mechanic's shop area, if equipment is to be serviced or repaired at that location. This may require a hydraulic vehicle lift, depending upon the intended scope of service and repairs.

Adequate rest rooms, locker rooms, lunch/meeting/training room and office space for the superintendent would be required.

Recommendation

It is recommended that a comprehensive survey of all existing maintenance facilities be completed to assess the adequacy of items noted under the desired situation above. From this survey, substandard and functionally deficient facilities could be identified and addressed.

Action plan

- Complete a comprehensive survey of all existing maintenance facilities to assess the adequacy of items noted as the desired situation.
- Using this survey, identify all substandard and functionally deficient facilities.
- Prepare preliminary estimates for required renovation/rehabilitation work for all substandard and functionally deficient facilities. These estimates would be considered by the appropriate municipal boards to determine whether or not it would be feasible to restore the existing facilities to acceptable condition.

The municipal boards would have the following options:

- Proceed with renovation/rehabilitation work
- Replace the facility to restore functionality
- Merge operations with a neighboring municipality if the neighbor's facility would provide adequate accommodations.

Join with neighboring municipalities to construct a new facility meeting the desired conditions outlined. Consideration should be given to sizing and locating the new inter-municipal maintenance facility in accordance with the maintenance district plan outlined in Section 3.

Do nothing and continue to operate from a substandard and functionally deficient facility to the extent they exist.

A5. Consolidate traffic sign maintenance

Current situation

At the present time, the Chautauqua County Department of Public Facilities and each of the 27 towns, 2 cities and 14 villages maintain traffic signs within their jurisdiction.

While the county and cities may have dedicated sign crews, it is suspected that the towns and villages do not, due to their staffing limitations and the in-frequent demand for such services.

Lack of familiarity with traffic sign installation and maintenance operations may result not only in compromised operational efficiency, but in exposure to significant tort liability, as well.

Desired situation

Provide a trained, experienced and properly equipped sign crew which would respond to demand maintenance (e.g., replacing a stop sign damaged by an errant vehicle) as well as routine sign maintenance needs (e.g., replacing traffic signs with poor reflectivity). This would improve the efficiency of sign maintenance operations and could be expected to reduce exposure to tort liability.

Recommendation

A trained and experienced two person sign crew, with a working knowledge of the Manual of Uniform Traffic Control Devices, could be either full or part-time, depending on workload. The crew should be properly equipped with a truck, distance measuring device, post driver, post puller, generator, emergency lighting capability, ladders, metal detector, torches, chainsaw and power and hand tools.

Action plan

Each highway department should consider the following options:

- Develop, train and equip a two person sign crew as outlined in the recommendations above.
- Provided the Chautauqua County Department of Public Facilities is willing, enter into agreement with that department to maintain traffic signs located within town and village jurisdictions. This could be done within the context of shared services.
- Join with neighboring municipalities to staff and equip a two-person sign crew to serve the maintenance district concept in accordance with the special crew discussion in Section 4.
- Do nothing and continue to operate at present efficiency, without addressing current tort liability exposure to the extent they exist.

A6. Centralize fleet maintenance

Current situation

All 44 municipal highway departments currently develop and track their own preventive maintenance program. Fleet maintenance (e.g., lube and oil changes) is performed at the jurisdiction's maintenance facility.

The efficiency of both the tracking process and performance of the actual work may vary considerably, depending on the method of tracking (computer vs. manual), the work environment (vehicle lift, lube rack vs. creepers and manually operated grease guns), and motivation of involved personnel.

Desired situation

An effective preventive maintenance (PM) program is critical to reducing repair costs and extending vehicle service life.

Preventive maintenance work would meet or exceed manufacturer's requirements, be tracked by computer and be properly performed, in a timely manner.

This might be done most efficiently by centralizing the function under the maintenance district concept discussed in Section 4. Not only could this promote efficiency of the PM process through computerized scheduling and performance of the work in an adequately equipped facility, it could also increase operational efficiency of the individual highway departments by removing this overhead task from their workload.

Recommendation

It is recommended that municipalities consider centralizing the fleet preventive maintenance function under the maintenance district concept, to promote both program and operational efficiencies.

Action plan

- Municipalities should assess their current preventive maintenance program and should revise it, as required, to ensure that it meets or exceeds manufacturer's requirements, distinguishing between operator maintenance and shop maintenance.
- The program should be tracked by computer and should include supervisory oversight to ensure that the service work is performed in a proper and timely manner.

Towns and villages should consider the following options:

- Define what maintenance will be done by operators in the yard or field, and what will be sent to a shop.
- Centralize preventive shop maintenance scheduling and fleet maintenance under the maintenance district concept discussed in Section 4.
- Join with neighboring municipalities to perform PM scheduling and fleet maintenance in the most efficient manner, by using their most suitable facility as the "service garage" location.
- Privatize the preventive maintenance function, thereby freeing up man-hours for tasks

which directly contribute to the maintenance of the highway system.

- Do nothing and continue with the current state of the preventive maintenance program.

A7. Snow and ice route optimization

Current situation

At the present time all 44 municipalities are involved, to varying extents, in snow and ice control operations. The magnitude of responsibility ranges from 1 plow route in several of the towns and villages to over 500 centerline miles of highway being maintained by the Chautauqua County Department of Public Facilities.

A significant number of towns perform snow and ice control for other jurisdictions: three for the county, six for villages, five for other towns, one for a city and one for NYSDOT.

A number of villages similarly perform snow and ice control for others: two for towns and three for the county.

The cities each contract snow and ice control with NYSDOT and one also performs work for the county.

Desired situation

Plow trucks should be one person plowing (OPP) operations, where ever feasible and prudent. This will improve the efficiency of snow and ice control operations by eliminating the wing-person in municipalities where two person assignments remain common practice.

The New York State Department of Transportation switched to primarily one person plowing operations in the early 1990s, and this method was eventually preferred by its drivers, and has resulted in a reduction of related preventable vehicle accidents.

Town and county plow routes should be approximately 25-30 lane miles per truck. City and village plow routes would typically be shorter, with determining factors such as traffic volume and geometric complexity in addition to the primary consideration of cycle time.

Efforts should be made to minimize plow deadheading and overlap of jurisdictional services within a geographic area. (e.g., trucks should not travel excessive distances with their plows "up," and taxpayers should not see town and county plows performing work in the same geographic area).

Recommendations

Optimize snow and ice routes by disregarding political boundaries and maximizing combined mileage within circles drawn around existing maintenance facilities. Where circles overlap, plow mileage should be assigned to the facility which results in the least amount of deadheading.

City and large village operations should be exempted due to cycle time considerations and other factors discussed in the desireable situation above.

Action plan

- Perform a comprehensive review of all snow and ice control operations with the objective of determining jurisdiction, location and lane mileage of each highway within the county.
- On a county map, draw circles around existing maintenance facilities to include all highways within circles having the least possible radius. (Cities and large villages should be exempted).
- Assign snow and ice control responsibility to the maintenance facility located within each circle, without regard to political jurisdiction. Where circles overlap, plow mileage should be assigned to the facility which results in the least amount of deadheading.
- Prior to implementing the plan, re-work, as needed, to account for facility sizing limitations and other such local considerations.

  Adjust municipal fleet and staffing by seasonal redistribution among participating jurisdictions, or administratively, as required.

- Initiate contracts between municipalities, as required, to formalize jurisdictional realignments for snow and ice control purposes, and to provide for seasonal redistribution of fleet and staff.

A8. Sand/salt ratios

Current situation

Abrasive mixtures are applied to road surfaces, in snow and ice control operations, to provide traction at low temperatures. Abrasive mixtures currently in use are:

- County did not report use of abrasive mixtures
- Towns 25 (93%) with one town not reporting
- Cities 1 minimal use (50%)
- Villages 8 (57%) with two villages not reporting

The mixtures consist of a formulation of abrasives (typically sand) and road salt. Sand is used to provide traction and salt is used to keep the sand from freezing and forming lumps which would not pass through material spreaders. Approximately 5 to 10% salt, by volume, is needed to prevent the mixture from freezing.

Abrasive mixtures used throughout the county vary widely in salt content.

- Chautauqua County DPF did not report use of abrasive mixtures
- Town mixtures range from 10–50% salt
- Cities use little to no mixtures, but when used, one reports 33% salt content
- Villages report using mixtures of 25–50% salt content

Mixtures with high salt content are typically applied at all temperatures and at higher than require application rates which ensure both traction (the abrasive function) and anti-icing (the traditional salt function) at all but the coldest temperatures.

While maintenance crews and the traveling public may view such mixtures as being effective, they are far from efficient when viewed from fiscal and environmental perspectives. The New York State Department of Transportation has determined that an abrasive mixture containing 50% salt (commonly known as a 50/50 mix) is both "wasteful and inefficient." NYSDOT takes the efficiency aspect one step further, stating, "if spread at the normal application rate for abrasives, this (50/50) mix will place 40% more salt on the road than a normal application of straight salt."

Desired situation

Abrasive mixtures should be formulated and applied in accordance with established guidelines. This will reduce waste and promote the more efficient use of salt. Further detailed information is available in a publication titled; "New York State Department of Transportation Office of Operations Management Highway Maintenance Guidelines Snow and Ice Control" dated April, 2006, available at: http://www.nysdot.gov/divisions/operating/oom/transportation-maintenance (go to the Transportation Systems Maintenance Training column on the left side of the page and click on "Snow and Ice." Then go to the bottom of the Snow and Ice page and click on "Snow and Ice Guidelines." Refer to appendices for more information.

Recommendation

The New York State Department of Transportation guidelines call for an abrasive mix consisting of 5% salt, by volume (with a range of 2 ½%–10% depending on geographic temperature conditions), to be applied at temperatures below 15 degrees Fahrenheit, at an application rate of 750#/lane mile. Straight salt should be applied at recommended rates above this temperature. However, the application of abrasive mix may be justified on hills, curves and intersections of low volume roads at temperatures below freezing, and in the absence of direct sunlight. Use of abrasive mix may also be preferable to the application of straight salt on unpaved roadway surfaces.

Abrasive mixtures should be applied using a calibrated spreader equipped with automated controls.

Action plan

- Formulate abrasive mixtures with no more than 10% salt, by volume. Salt content may be adjusted upward when the mixture is intended for use on hills, curves and intersections of low volume roads at temperatures below freezing and on unpaved roadway surfaces.
- Retro-fit manually operated spreaders with automated ground-speed oriented controls.
- Calibrate all material spreaders annually, prior to the beginning of the snow and ice season.
- Apply abrasive mixtures at rates which are consistent with generally accepted guidelines.

A9. Joint salt storage facilities

Current situation

Salt storage is currently reported as follows:

- Chautauqua County Department of Public Facilities 100%
- Towns 85% of 20 towns reporting salt use and 3 towns reporting no straight salt use
- Cities 50% of the 2 cities reporting salt use
- Villages 50% of the 10 villages reporting salt use

Desired situation

For environmental and economic reasons, it is desired for all municipalities which are involved in snow and ice control to use covered salt storage. These facilities may be either owned or shared with others.

Recommendation

Any municipality currently operating without covered salt storage, or with functionally inadequate storage facilities, should acquire the storage required to support their snow and ice control operations.

Covered salt storage is required by the New York State Department of Environmental Conservation, to prevent pollution of ground water.

In recent years, adequate storage capacity has become an operational necessity due to delays experienced in product delivery. It also gives the municipality the economic advantage of being able to purchase salt at the most opportune price when contract prices change.

Action plan

Municipalities should assess their current salt storage capabilities in terms of functionality, structural integrity, capacity and environmental compliance.

Inadequate storage should be replaced, either through a capital construction project or through a shared services agreement with a neighboring municipality.

A10. Equipment rental

Current situation

A number of municipalities currently rent equipment when needed to supplement their existing fleet:

- Department of Public Facilities—did not report renting equipment
- 14 towns (52%)
- 2 cities (100%)
- 4 villages (29%)

Desired situation

Renting equipment is an efficient means of acquiring specialty pieces or equipment which is needed for only a limited time period. It can help reduce the tendency to "over equip" departments with needed equipment. Availability may be problematic.

Recommendation

It is recommended that superintendents consider renting equipment that is needed to progress their work program when needs exceed availability within their fleet and after pursuing local

equipment inventory availability through shared services.

Action plan

- Superintendents should identify equipment needs that exceed their fleet availability and pursue rentals after checking local availability through shared services.
- Operator instruction should be included in any rental contract.
- The physical and operating condition of the rental should be well documented upon delivery and prior to return of the unit. This documentation may prove useful in evaluating any repair charges which may be billed by the vendor.
- Insurance requirements must also be addressed, either through the municipality's insurance carrier or through the purchase of additional coverage.
- Rental rates—Hourly costs for highway maintenance equipment may be related to rental rates, which are established by the New York State Department of Transportation in the Equipment Rental Rate Schedule, published by the Office of Operations Management, in June 2006, with subsequent addenda amending the rates, and in the Construction Equipment Cost Reference Guide published by PRIMEDIA, Inc.

  Rental rates for privately owned equipment may be obtained by referencing the New York State Office of General Services' Heavy Equipment Rental Contract and the Rental Rate Blue Book for Construction Equipment, published by PRIMEDIA, Inc.

A11. Computer on-line access

Current situation

Most municipalities currently have Internet access:

- Department of Public Facilities 100%
- Towns 20 (74%)
- Villages 9 (53%)
- Cities 2 (100%)

Desired situation

Internet access may improve the efficiency of a highway department, particularly as the size of the department increases. From basic information such as weather forecasts and operators/parts manuals to employee training programs and sophisticated engineering standards, it is all available on the Internet.

Recommendations

It is recommended that all superintendents consider obtaining Internet access for their departments. This decision can best be made at the local level since technological adaptability and computer proficiency are significant factors which need to be taken into account.

Action plan

- The municipality must decide whether or not to provide Internet service at the local highway department.
- Service may be provided by a number of means:
  - Dial-up
  - DSL
  - Cable
  - Air-card
- The advantages and costs of each will need to be evaluated before contracting for the service.

A12. Equipment Sharing (Excavators and Road Graders)

Share excavators and road graders to permit reduction in the current number of units

Current situation

With incomplete reporting by governmental entities, it is estimated that there could currently be over 30 excavators and over 30 road graders in use on the local highway system in Chautauqua County.

Desired situation

Excavators and road graders generally have

relatively low utilization rates. They most likely are not used every day in most departments; however, the absence of municipal equipment utilization records made this impossible to quantify.

In addition to their primary roles in the construction and maintenance of highways, they are vital pieces of equipment in certain emergency response operations, such as flood cleanup. Road graders also serve a unique purpose in snow and ice control; benching snow stored along highways when equipped with a wing-plow attachment, removing hard-pack from pavement surfaces, and blowing snow when equipped with a snow-blower attachment.

It is desired to reduce the current number of excavators and road graders in municipal fleets to numbers which will adequately support both routine construction/maintenance activities and demand emergency response operations. In doing so, the over-all operational efficiency of highway maintenance operations will be increased within the county.

Recommendations

Determine the appropriate number of excavators and road graders to be retained. Existing numbers are reduced by not replacing them when they reach the end of their service life.

Action plan

- Begin tracking the utilization of municipally owned excavators and road graders. Periodically send the daily reports to a central collection point where they will be compiled and analyzed. Quarterly equipment utilization reports will be prepared and distributed to the highway superintendents.
- Analyze concurrent use and rental cost availability.
- Reduce the number of excavators and road graders by not replacing them as existing units reach the end of their service life.
- Municipalities retain their remaining equipment, sharing excavators and road graders with those municipalities which lost theirs through disposition noted in "iii." above.
- Determine the number of excavators and road graders to ultimately be retained based on county-wide experience gained as unit numbers are reduced. (This could be a lengthy process since these pieces of equipment tend to remain serviceable for many years).

A13. Equipment sharing (share dump trucks to permit a reduction in the number of units)

Current situation

Previous analyses indicate that the towns, cities and villages may well be able to achieve greater operating efficiency by reducing the size of their collective dump truck fleet.

Desired situation

It is desired to reduce the current number of dump trucks in municipal fleets to a number which will adequately support both routine construction/maintenance activities and demand emergency response operations.

Recommendations

Determine the appropriate number of dump trucks to be retained as existing numbers are reduced by not replacing units as they reach the end of their service life.

Action plan

- Same as for graders and excavators stated above.

A14. Use pre-treated salt

Current situation

It can reasonably be assumed that the use of pre-treated salt is currently a relatively uncommon practice in Chautauqua County.

Desired situation

The highway superintendents should be provided with information regarding the use and benefits of pre-treated salt.

Salt may be treated with salt brine, calcium chloride, magnesium chloride or magnesium chloride with organic based performance enhancers.

Treated salt can be purchased direct from the vendor, it can be treated as it is being stockpiled at the highway maintenance facility, and it can be treated by a spray system attached to the spreader on a plow truck.

Advantages of pre-treated salt are as follows:

- It begins to work sooner than straight salt
- It will continue to work at lower temperatures
- It reduces "bounce and scatter" upon application, keeping more material on the pavement where it is needed.
- It can generally be applied at lower application rates than straight salt, resulting in potential cost savings.

Recommendation

It is recommended that highway superintendents familiarize themselves with the use and benefits of pre-treated salt.

The ultimate decision to use treated salt or not should be made at the local level.

Action plan

- Highway superintendents should familiarize themselves with the use and benefits of pre-treated salt.
- Further detailed information is available in a publication titled, "New York State Department of Transportation Office of Operations Management Highway Maintenance Guidelines Snow and Ice Control" dated April, 2006, available at: http://www.nysdot.gov/divisions/operating/oom/transportation-maintenance (go to the Transportation Systems Maintenance Training column on the left side of the page and click on "Snow and Ice." Then go to the bottom of the Snow and Ice page and click on "Snow and Ice Guidelines." Refer to Section 5.4000 Ice Control.)
- Purchase a quantity of pre-treated salt from the current New York State Office of General Services contract, "Treated Salt (DOT & Others)," for use on a pilot project basis.

  After gaining field experience, the highway superintendent may decide whether or not to use pre-treated salt in his snow and ice control program.

A15. Centralize Administrative and Technical Services

Current situation

The Chautauqua County Department of Public Facilities currently provides centralized purchasing services to municipal highway departments located within the county. This promotes compliance with municipal purchasing regulations, uniformity of specifications and competitive bidding.

The Department of Public Facilities also assists municipalities with technical/engineering support from time-to-time.

Desired situation

Town, city and village highway departments should consider county contract bid prices when purchasing commodities and services. They may result in a lower price than the municipality could obtain individually, due to economies of scale.

The municipalities would also benefit from increased technical/engineering support from the Department of Public Facilities, or as may otherwise be provided, in coordination of the recommended Efficiency endeavor, cost accounting, annual pavement condition scoring, Pavement Management, Manual of Uniform Traffic Control Devices (MUTCD) interpretation, survey, construction inspection, materials testing, etc.

Other services such as employee training and information technology support could be made available to the municipalities by the Department of Public Facilities, or otherwise.

Recommendation

Town, city and village highway superintendents should consider county contract bid prices when purchasing commodities and services.

Highway superintendents should avail themselves of technical/engineering expertise available at the Department of Public Facilities, or otherwise, and should utilize centralized employee training and Information Technology (IT) support to the extent to which it is available.

Action plan

- Purchasing
  - Determine if a county contract exists for the commodities and services which your highway department needs to purchase.
  - Compare bids obtained individually by your municipality with the bid prices available on county contracts.
  - Proceed with procurement utilizing the most competitive available price.
- Technical/engineering
  - Superintendents should determine technical/engineering needs and seek assistance from Department of Public Facilities staff with the required expertise, or as otherwise made available.
  - County Department of Public Facilities assistance may be incorporated within the Shared Services context as a form of compensation, if agreeable to both parties involved.
- Employee training and information technology

  Superintendents should determine employee training and information technology support requirements and seek assistance from county staff with the necessary expertise, or as otherwise made available.
  - County assistance may be incorporated within the shared services context as a form of compensation, if agreeable to both parties involved.

A16. Eighteen minimum-size highway departments

Current situation

There are 2 towns and 7 villages with highway departments having staffing levels of three employees or less.

Desired situation

For safety reasons, highway department employees should normally work in pairs. A minimum of three employees are needed when the assigned task involves working in a public roadway for safety and traffic control; therefore, the desired minimum staffing level for a highway department is 3 employees.

The average number of miles per employee is 7.8 for town highway departments and 2.1 for villages, so the theoretical minimum size of these departments is 23.4 miles for a town highway system and 6.3 miles for a village.

There are currently 2 towns and 8 villages which fall below this minimum.

Recommendation

Each highway department should establish that they will not operate with fewer employees than is required to safely perform the work. It is recognized that the addition of staff would increase the cost of their operations and negatively impact their efficiency. Therefore, alternative means must be explored for maintaining systems smaller than the minimum highway system mileage.

Action plan

- To promote efficient operations, the towns and villages which fall below the minimum system sizes should evaluate the feasibility of the following possible actions:
  - Avoid adding employees by consolidating mileage and operations with an adjacent town or village.
  - Share services with another town or village in a manner such that the minimum labor ratio is achieved.

- Contract highway maintenance operations to another municipality or to a private sector provider.

B. Management Opportunities

Table 5.2—Management Opportunities

Item #	Management Opportunities
B1	Daily operations efficiency reports
B2	Annual road condition ratings
B3	Use of a pavement management system
B4	Annual reports of department efficiency
B5	Quarterly reports of equipment utilization
B6	Equipment sharing reports
B7	Personnel/mile comparisons
B8	Equipment cost/mile comparisons

B1. Daily operations efficiency reports

Current situation

Reports of efficiency are not available to highway departments. Although cost records are currently available for categories of expenditures for labor, equipment and materials, the records were designed for purposes other than measuring efficiency.

Desired situation

Each highway department has efficiency reports available on a daily basis and year end summaries. Reports are posted and made available to all highway workers.

Recommendation

A uniform system of some operational unit costs should be used to create daily and annual reports of efficiency for department use. This would not be an accountants accounting for all costs, but a management accounting tool for efficiency management purposes.

Action plan

- Designate a person to fulfill the responsibilities of overseeing the development and operation of the efficiency reporting system, with a title such as "efficiency coordinator."
- Develop a unit cost accounting system for select activities to provide all highway departments with uniform efficiency reports on a daily basis.
- Develop daily input procedures for the information needed so it will require only minutes of employee time and less than 10 minutes for superintendents to make daily entries.
- Implement a pilot program with about 10 highway departments for the first year to work out start-up problems.
- Daily reports to be posted and made available to all highway workers.
- At the end of the first year of implementation, evaluate the pilot program for application to the remaining highway departments.

B2. Annual Road Condition Ratings

Current situation

At the present time, the Chautauqua County Department of Public Facilities is the only highway department in the county that uses a system for rating its road conditions.

Each year an experienced and unbiased rater travels all highways within the county's system and scores their surface condition, based on observed surface distress, in accordance with criteria such as that established by the New York Department of Transportation. A numerical rating is assigned to each highway segment, with values ranging from 1 to 10; 1 being the lowest possible score for poor, impassable roadways, and 10 being the highest achievable score for pavements which are in excellent condition.

The scores are weighted, depending on the length of each highway segment, and a composite score is calculated for the jurisdiction's entire system.

This score serves as the director's "report card," providing him with a quantitative assessment of the results of his department's maintenance efforts. A trend toward improvement, or otherwise, can be observed when system scores are reviewed over a period of successive years. This trend can be considered an efficiency indicator.

Desired situation
Each highway department should have annual road condition ratings performed on all segments of their system.

This is an invaluable tool for determining trends in pavement conditions over time (i.e., are pavement conditions improving or deteriorating), since composite scores can be compared year to year or over longer period of time.

Since pavement condition is a function of both resources allocated and the efficiency with which those resources are used, the annual road condition ratings can be used for budgetary purposes, both to identify segments needing preventive maintenance attention (project candidate identification) and as a consideration for determining the appropriate level of highway funding.

Recommendation
It is recommended that every highway department operating within Chautauqua County have annual road condition ratings performed on all segments of their system.

It is strongly recommended that the same rating system be utilized throughout the county and that the system be computer based.

Action plan

- Decide on a rating system which will numerically score pavement surface conditions based on the nature and severity of observed distress characteristics.
- Implement an annual rating program for all highway departments operating within Chautauqua County, taking care to ensure that the raters are trained, experienced, unbiased and rate consistently.
- Use the road condition ratings to identify trends in pavement conditions, identify candidate preventive maintenance projects, and as a consideration when allocating highway funding.

B3. Use of a Pavement Management System

Current situation
At the present time, the Department of Public Facilities is the only highway maintenance entity, located within Chautauqua County, which uses a pavement management system.

Desired situation
It is desired that a pavement management system be identified for use by all highway departments located within Chautauqua County. This could be accomplished through adoption of the system currently used by the Department of Public Facilities, or it may involve the procurement of a new system.

This will promote operational efficiency by providing information enabling the highway superintendents to "do the right thing, at the right time, in the right location."

Recommendation
It is recommended that a single pavement management system be procured for use by all highway departments within Chautauqua County.

Action plan

- Decide on a pavement management system to be used by all highway departments located within Chautauqua County.
- Procure the system and use it to prepare a pavement management plan for each municipality. The plan will identify and prioritize candidate preventive maintenance projects, specify appropriate treatment for each and include an estimate of project cost. The plan

is long-range and should be developed for a six year time period, at a minimum.

- Utilize the plan for budgetary purposes, realizing that "doing the right thing, at the right time, in the right place" will minimize preventive maintenance costs while improving the overall condition of the jurisdiction's highway system.

B4. Annual reports of department efficiency

Current situation
Annual reports of efficiency for highway departments are not available.

Desired situation
Highway superintendents should have management reports to allow them to see the performance of the department.

Recommendation
In addition to the daily efficiency reports recommended above, the annual reports should be generated.

Action plan
Annual efficiency reports to be prepared by or provided to all highway superintendents, indicating their cost/quality mile for the year.

B5. Quarterly report of equipment utilization

Current situation
At the present time, few, if any, municipalities report equipment utilization

Desired situation
It is desired that drivers/operators record utilization for all vehicles and equipment on a daily basis.

This documentation will serve as source information for the calculation of the equipment efficiency indicator. This information will promote higher equipment utilization.

Recommendation
It is recommended that drivers/operators complete utilization records on a daily basis, and that equipment utilization reports be prepared and distributed to the highway superintendents using this data.

Action plan

- The results for this action plan could automatically be derived from the daily operations efficiency report recommendation (B1).
- Use the collected data to prepare Equipment Utilization Reports for each highway department. Such reports should be provided to the superintendents on a quarterly basis.
- Equipment utilization reports could be generated from hour meters for heavy equipment (but not so for trucks)

B6. Equipment Sharing Reports

Current Situation
Most of the municipalities have formal sharing agreements and equipment sharing is being done. It is a policy that records of equipment sharing are not kept.

Desired situation
Sharing of equipment will be happening to such an extent that some municipalities will not be replacing equipment at the end of its service life, and the overall equipment inventory for the county will be decreasing.

Recommendation
Increase sharing through the use of "scorekeeping reports." Increase equipment utilization through the presence of utilization reports.

Action plan
Provide quarterly and annual reports of equipment sharing, which can be generated in conjunction with the daily efficiency reports recommended earlier.

B7. Personnel/mile comparisons

Current situation

There is a wide range of personnel ratios (miles/person), and there is a correlation between higher personnel ratios and higher efficiency.

Desired situation

Each municipality has the optimum amount of labor for best efficiency

Recommendation

Average miles per employee are 7.8 for towns and 2.1 for villages. There is no exact amount of labor effort that brings maximum efficiency (see Section 3). Deviations from average labor ratios could mean there is an opportunity to adjust labor effort for better efficiency. Each superintendent should know their department's labor ratio and be satisfied that adjustments may or may not be needed.

Action plan

- Compute the highway department's labor ratio, and compare it to the average for similar municipalities.

B8. Equipment Cost/mile comparison:

Current situation

There can be a wide range of equipment densities (miles/unit). This indicator of efficiency is a helpful management tool when analyzing efficiency of department operation, but is not generally available to each department, nor are department averages for equipment density. There is a correlation that indicates higher equipment costs/mile generally indicate lower efficiency.

Desired situation

Each municipality has this efficiency indicator information available for their use in determining the optimum amount of equipment for best efficiency.

Recommendation

There is no exact amount of equipment cost/mile that brings maximum efficiency, but less cost generally goes with more efficiency. Higher than average equipment density mean there may be an opportunity to look for better efficiency by lowering equipment costs. Each superintendent should know the department's equipment cost/mile.

Action plan

- Compute highway department equipment costs per mile, and compare to the average for similar municipalities, making adjustments as needed to improve efficiency.

C. Prioritization of Opportunities

The ranking of best practices that apply to some departments must be determined and evaluated by each superintendent individually—it may offer value and it may not, depending on the particular department situation

The Table 5.3 can help prioritize opportunities that apply to most or all of the highway departments, for decision making.

Note: Overall annual spending for road maintenance is about $32,000,00, not including snow costs. Percentage estimates for efficiency improvement are given based on this figure.

Table 5.3—Prioritization of Opportunities for Efficiency Improvement

Item #	Opportunity Description	Opinion of Probable Effort	Opinion Of Probable 1st Year Cost	Opinion of Potential Annual Efficiency Improvement
B1	Develop and post daily operations efficiency reports	Need daily worker data entry. Dedicated "efficiency coordinator" needed.	$350,000 (See "pilot" implementation plan following this table)	~5% or ($1,500,000) Based on ½ of town increase of about 10% for 2/3 of towns matching 1/3 of towns (See conclusion below)
B3	Use of a pavement management system	Required + 25% technician + experienced supervisor; or outside consultant.	$75,000 - $100,000* (B2 + $25,000 DPF staff or $50,000 contract consultant) *Not including cities	~1% ($250,000) To be achieved by reducing excess material and by applying the right treatment at the right time
B2	Provide annual road condition ratings	Contract out	$50,000	< 1% or ($100,000)
B4	Develop annual report of department efficiency ($/Q mile)	Each superintendent to do their own reporting.	Small – part of administrative management effort.	<1% ($100,000)
B4	Same as B4 above except a 3rd party prepares report	3rd party prepare and distribute report	$10,000	<1% or ($150,000)
B5	Quarterly reports of equipment utilization	Use B1 + Superintendants quarterly report of hours for equipment + monthly fuel consumption.	Included in B1 + superintendant's admin effort.	Included in B1
A15	Centralized purchasing/ technical services	County staff to provide expanded services to municipalities. Use shared services concept.	Use shared services. Depends largely on scope of services and use by municipalities.	<1% ($100,000) Produces intangible benefits, training, reduce supt. admin. time
B6	Calibrate snow and ice material spreaders	Experienced technician + driver for 2hrs/spreader	$100/spreader 60 trucks = $6,000	<1% ($100,000) Savings achieved by following appropriate application rate guidelines
B7	Install automated spreader controls	Mechanic and driver for 1 day/spreader	$2,600 parts + $400 labor per spreader. B6 Calibration is required @ $100	<1% ($50,000) savings achieved by following appropriate application rate guidelines
B8	Install pavement temperature gauges in spreader trucks	Mechanic and driver for ½ day/ truck	$750 parts + $200 labor per truck for 50 trucks (1+/municipality)	<1% ($30,000)
B8, A12, A13	Increase equipment sharing by providing utilization reports.	Develop and provide regular reports of both equipment utilization and equipment sharing	Included in recommendation for daily reports of efficiency (B1)	Included in B1 ($300,000 – need time for attrition in equipment retirement)

Additional Opportunities

In addition, there are two opportunities that could result in cost savings, but they involve other considerations. Both involve the development of operational maintenance districts; one involves only the towns, and one involves villages with the surrounding towns. These options are listed in Table 5.4. They can be ranked in priority along with the opportunities already listed above.

Table 5.4—Additional opportunities

Opportunity	Opinion of Probable Effort	Opinion Of Probable 1st Year Cost	Opinion of Potential Annual Efficiency Improvement
Develop about 14 maintenance districts, each the size of about 2 towns	Need to do an in depth study to plan; get local town agreements	$800,000 planning by consultant + build/expand/ upgrade 14 facilities @ $1.2M each	~1.5% ($500,000) (Theory—27 towns at ~$18,000ea.)
Share facilities between 6 smallest villages and 6 surrounding towns	Need to do planning and have village/town agreement	$25,000 consultant for each of 6; say $150,000 (30 years = $5,000/year)	~0.2% ($55,000) (or say 10% savings of approx. $550,000 total expenditure for 6 villages)

These numbers are presented to arrange opportunities in order of their magnitude of relative costs and savings for implementation planning purposes. Revised cost accounting methods would need to be instituted to increase the accuracy of these numbers. Before any proposed move to implement either of the last two options, the analysis would need to be specific to the municipality to get more reliable estimates of proposed costs and benefits.

D. Benefits and Barriers to Change

Benefits

The primary motivation is a desire to perform the job of maintaining Chautauqua County's highways better and to deliver services more economically, responsively, and effectively. Functioning collaboratively as larger maintenance districts or increasing service sharing can capture economies of scale that are unavailable to smaller organizations. It can enable a smaller entity with limited resources to have access to greater resources as needed, particularly for equipment that is needed infrequently and is expensive to own and maintain. A reduction in facilities is also of probable benefit, greatly reducing total capitalized costs, energy, maintenance and operational costs and possibly returning valuable properties to taxable status. This will direct more of the available transportation dollars toward producing assets while reducing unproductive overhead burden.

Centralizing administrative activities can reduce the time and cost associated with such necessary, but non-productive activities. Centralizing planning can result in greater consideration of the functionality of the entire system and more effectively make use of the resources available. Larger working districts can also allow for some specialization. In very small districts, few resources mean staff needs to be more of a jack of all trades rather than develop special expertise. There are advantages and disadvantages to this. It is important to have multi-talented staff for flexibility so that they can be utilized effectively on a variety of tasks. However, it is often found that if people are allowed to focus their efforts repeatedly on a given task, they develop higher levels of performance and efficiency over time. Additionally, working in larger districts can bring to bear greater resources, faster response and focus on the area of need in the event of issues that are regional in nature. For example, we know that average snowfall across the various municipalities varies by a factor of 3 between some locales. Lake effect snow fall is often a tight, focused band that can severely impact a specific region, while leaving areas outside the band untouched. Resources available in the regions that are not impacted could be used to

provide greater responsiveness and service to the heavy snowfall areas.

Barriers to Change

Of course there are many barriers to service sharing as well, many of which are institutional or cultural in nature.

The first resistance is concern regarding loss of control and accountability. Each entity is set up to collect taxes from their constituents and provides services to their geographic region of responsibility. This arrangement is clean and straight-forward. We know what we pay and we know what we get for what we pay. We also know who is responsible and who to hold accountable when expectations are not met. When we extend services beyond these clearly defined areas of responsibility, it becomes less clear and more complex to track.

For some, there is a sense of identity in having town or village trucks and personnel. Many carry a sense of pride in serving their specific community, friends and neighbors.

Another natural fear when reorganizing in more central entities is that, as efficiency and productivity gains are made, fewer facilities and equipment are required, fewer management positions are needed and potentially, less labor may be required. This is of particular concern in our region where job loss and economic decline has resulted in fewer alternatives for employment. These factors are legitimate and significant and must be considered in any recommendations to modify the current working model.

These issues can be handled appropriately so that individuals are not asked to sacrifice so that change to the benefit of society can be attained. Any required staffing adjustments could be accomplished through attrition to overcome this concern.

E. Opportunity—Implement an Efficiency Management System

The analysis of various opportunities considered in this study reveals that the one that could bring the greatest overall improvement in efficiency is to establish and implement an efficiency scoring system, listed as Item B1 in Table 5.2. The major benefit and effect of this recommendation is that it addresses the role of people and their motivation in improving efficiency. This will do three major things:

- Increases understanding of what impacts efficiency
- Encourages improvement by reporting progress
- Develops a continuing focus, or "culture," for working efficiently

Annual reports of efficiency are essential, but not sufficient. Providing only annual reports, as has been done once as a result of this study, is similar to a football team being told when the season is over they have won more games than last year, but they have little idea of how they did it. Daily reports will be immediate enough to the work effort that what caused a result can be remembered and changes made to do more or less of it.

It is quite possible that the following estimate of efficiency improvement could occur. All of the towns, villages and county were made aware of the efficiency measure used in this study. There is a range of efficiencies evident for them all. If it was possible for the average efficiency of the top one-third of the towns to be achieved by the other two-thirds of the towns, an estimate of the magnitude of the improvement, expressed in dollars, is about $3,000,000. (see Appendix: Efficiency Improvement Calculations).

This is just for the towns, which account for about 43% of the annual expenditure for all the local roads in the county. It is to be expected there are reasons that this goal may not be realized when each town is examined for achiev-

ing this. But if half of the goal, say $1,500,000, could be reached, this is an improvement on the order of 10%, of summer expenditures (~$14,000,000) for the towns. It could be reasoned that a 10% improvement of summer expenditures for the villages, towns and cities would occur as well.

A 10% improvement across all municipalities for their summer expenditures ($32,000,000) would yield an improvement of about $3,000,000. For purposes of being even more conservative, half of these savings, or 5%, is used in the prioritization (Table 5.3) for ranking value of various efficiency improvement opportunities. A 5% improvement exceeds any of the other opportunities listed. The effect of efficiency reporting is that not only is equipment used more efficiently, but also labor, and eventually materials are drawn in and used more efficiently with an impact that influences all expenditures for highway maintenance—about $40M at this time, including snow and ice operations.

In conclusion, it is imperative that highway superintendents have access to daily operations efficiency reports. Efficiency reports are more than numbers for managers. The power of this recommendation is that it can motivate a greater focus on efficiency for over 400 people who work on road maintenance and have a part in how nearly $40,000,000 is spent annually. It is imperative that efficiency reports are created and used daily by each superintendent.

F. Pilot Implementation Plan

As shown in the prioritization Table 5.3, this opportunity is expected to yield the greatest improvement in highway operations efficiency across all the municipalities. In spite of this, there are restraining forces to implementing a plan to take advantage of this opportunity. A force diagram can be used to illustrate the driving forces and the restraining forces accompanying this opportunity. Some of these forces are shown in Table 5.5.

Table 5.5—Driving and restraining forces

(+) Driving Forces	Restraining Forces (-)
Public push to lower costs of government	Tax "reductions" probably not noticeable
Costs can be reduced	Costs still increase (but slower)
Superintendents are interested	"Reward" for efficiency not apparent
"Score keeping" motivates workers	Fear of personnel reductions
Budgets are tight	If do the same with less, budgets tighten
Transparency in operational performance	Transparency in operational performance
State funding assistance	State funding assistance may not continue
It's a change for the better	Dislike for change
Makes work more "fun"	Takes some extra admin work

It is recommended that an implementation plan be developed in consideration of the force diagram and using the following guidelines:

Steps: Have the project highway committee for this study resolve to:

1. Provide efficiency reports to select smaller groups, (approx 10), of highway departments for a start-up or pilot program. Based on the site visit discussions conducted for this study, it is recommended that the start-up group come from amongst the following municipalities:
   - Towns—Caroll, Chautauqua, Cherry Creek, Mina, Westfield
   - Villages—Brocton, Forestville, Mayville, Sherman
   - County—Sheridan shop
   - Cities—Jamestown
2. Write a job description for "efficiency facilitator" to lead the effort for implementing and overseeing an efficiency reporting system.
3. Secure funding for the start-up and first year operations. An estimated budget is:
   - Efficiency facilitator = $40,000 (1/4 time)

- Administrative assistant = $30,000 (1/4 time)
- Data entry hardware $1,000/dept =$10,000
- Annual service provider = $20,000
- Office space (assumed to be available at a municipal facility)
- Contingency = $20,000

4. Contract with a person to function as "efficiency facilitator"
5. Determine the efficiency measures to be reported (efficiency facilitator will lead the implementation effort)
6. Engage electronic accounting software vendor to design data entry and reporting system.
7. Load database information for efficiency measures
8. Install hardware in highway departments
9. Perform trial runs and de-bug system
10. Provide daily reports to highway departments
11. Evaluating data entry and reporting operations and revise through monthly meetings with superintendents participating in pilot effort
12. Quarterly, have PHC attend a monthly meeting with pilot superintendents to be updated and evaluate satisfaction
13. After six months of reporting, evaluate whether to offer inclusion to other municipalities and develop the funding plan for continuation beyond the first year pilot program.

G. Concluding remarks

We have referred to scorekeeping and healthy competition among highway employees in Section 4. When "scores" are available, they will ultimately improve efficiency management and will promote a competitive spirit. If this method is used constructively, it will successfully further the efficiency effort. However, if this method is used in such a way as to promote internal competition between Chautauqua County municipalities, it can be potentially detrimental to the team.

There are two types of "competition" – internal and external. External competition can be a positive influence on the efficiency effort and internal competition can be counter-productive.

An example of the two types of competition is: If there is internal competition,(lets use the example of two towns); and one of those towns wants to share equipment with the other with the goal being the reduction of road maintenance operating costs. The town loaning the equipment may feel a reluctance to do so if they think they may lose a competitive cost advantage by helping their "competitor".

On the other hand, if the scores are being compared to "external" competitors in another area (municipalities in another county, or the private sector contractor), with which they don't share equipment or services, this competition can sharpen the efficiency efforts of both municipalities and be tremendously effective. When this happens, the positive effect of external competition can be beneficial to the taxpayers in both areas.

It is very probable that when cost accounting for efficiency management is implemented, the transparency which it brings to understanding efficiency and the ease with which data entry is accomplished will be recognized as something worth doing. Other municipalities within Chautauqua County will want to be included. When the system becomes known to municipalities outside of the County, it is quite probable that they too may want to implement this efficiency tool.

Ultimately, it is imperative that a standard is established and that everyone use the same cost accounting measures of efficiency. This will facilitate accurate cost comparisons with municipalities in other counties, and private sector

bidders. This heightens the interest and understanding of how to become more efficient and promotes the healthy competition that drives and motivates efficiency, ultimately resulting in significant cost reductions across the county municipal structure.

Chautauqua County Municipalities

Shared Services Study

Equipment Usage Survey

September, 2010

The Shared Services Study is being conducted by a team of your municipal representatives. C&S Companies was selected to assist with the work. The Shared Services Team Representatives are: Jim Oakes – Towns; Sam Ognibene – Villages; Jeff Lehman and Tony Gugino – Cities; Greg Edwards and George Spanos – County. C&S Company representatives assisting with the study are Tim Hughes – Project Manager and Bill Mobbs – Technical Leader.

Your questions, comments and suggestions are welcome and can be made to the team through your municipal representative.

Please return the completed survey by **Friday, September 24, 2010** to:

April Kelsey
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212

Tel. (315) 703-4207
Fax (315) 455-9667
Email: akelsey@cscos.com

Thank you.

Chautauqua County Municipalities
Equipment Usage Survey

Municipality:		**Date**:	
Completed by:			

(please print)

Front End Loader(s) Make/Model and CY	Use for Snow and Ice?	Age	Hours
Motor Grader(s) Make/Model	Use for Snow and Ice?	Age	Hours
"Gradall" Type Machine(s) Make/Model		Age	Hours
Tractor/Backhoe(s) Make/Model	Use for Snow and Ice?	Age	Hours
Single Axle Dump Truck(s) Make/Model and CY	Use for Snow and Ice? P = Plowing S = Sanding/Salting	Age	Hours
Tandem Axle Dump Truck(s) Make/Model and CY	Use for Snow and Ice? P = Plowing S = Sanding/Salting	Age	Hours

Please attach additional sheets if necessary.

Thank you for your response.

Please return by **Friday, September 24, 2010** to:

April Kelsey
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212

Tel. (315) 703-4207
Fax (315) 455-9667
Email: akelsey@cscos.com

	Municipality	Response Received	Name	Title	Front End Loader(s) Make/Model and CY	Use for snow and ice?	Age	Hours	Motor Grader(s) Make/ Model	Use for snow and ice?	Age	Hours	"Gradall" Type Machine(s) Make/Model	Use for snow and ice?	Age
(27)	**TOWNS**														
1	Arkwright	Y	Stephen Mead	Supt. of Hwys	Hyundai HL740-9 2.5 cy	N	2010	200	Volvo G276B	Y	2003	1000	Gradall G3WD	N	1997
2	Busti	Y	Melvin Peterson	Supt	Volvo L90F 3.5 cy	Y	2 yrs	497	None				Volvo EW180L	Y	3 yrs
3	Carroll		Tom Allison	Hwy Supt											
4	Charlotte	Y	Lewie Nickerson	Hwy Supt	Cat 938G	Y	13 yrs	3475	Champion 720A	Y	13 yrs	1896	Gradall G3WD	Y	13 yrs
5	Chautauqua	Y	Timothy Wendell	Hwy Supt	John Deere 544H 2.5 yd	Y	2003	4050	Galion 850	Y	1994	4313	Gradall XL3100		2005
6	Cherry Creek		Ken Chase	Hwy Supt											
7	Clymer	Y	Clifton Nyweide	Hwy Supt	Case 621B 6 cy diesel	Y	1996	3903	Case 865 6 cy diesel	N	2008	202	Samsung SE 130 W-2 4 cy	N	1997
					bucket -diesel				(not yet-going to put a wing on it this year)				(Have a wing but haven't used the last few yrs.)		
									Just bought 3/10				excavator		
8	Dunkirk		Richard Butts, Jr.	Hwy Supt											
9	Ellery	Y	Greg Hallberg	Hwy Supt	J.D. 624H 3.5	Y	2001	2238	Champion 740	Y	1984	5600	Badger Cruz-Air 1085-C	Y	1998
					Cat 914 1.8	Y	2006	627							

	Municipality	Response Received	Name	Title	Front End Loader(s) Make/Model and CY	Use for snow and ice?	Age	Hours	Motor Grader(s) Make/ Model	Use for snow and ice?	Age	Hours	"Gradall" Type Machine(s) Make/Model	Use for snow and ice?	Age
				1											
10	Ellicott	Y	Marvin Shellhouse	Hwy Supt	Cat 950 4 cy	Y	1995	3628	Cat 120	P	1988	2203	Badger truck mount	Y	1994
													excavator (ice removal from drains)		
11	Ellington	Y	Casey Rhinehart	Hwy Supt	Hyundai 757-7	Y	2010	300	Champion 720	Y	1996	2500	Volvo ew 180	Y	2005
									a vhp						
12	French Creek	Y	Arthur Malecki	Hwy Supt	John Deere 544K 2010	Y	2 wks	20	Champion 726 awd	Y	1995	5213	Samsung SE130W-3	Y	9 yrs
13	Gerry		Mark Risley	Hwy Supt											
14	Hanover		Steven D'Angelo	Supt.											
15	Harmony		Tim Card	Hwy supt											
16	Kiantone		Gary Carlson	Hwy Supt											
17	Mina	Y	Paul Scarem	Hwy Supt	Hyundai 740-7 3 yd	Y	6 yrs	1460	Campion 710	Ice	14 yrs	2600	Daewoo 200W	N	16 yrs
18	N. Harmony	Y	Gary Ryan	Hwy Supt	Cat 938 G	Y	2004	1557	Champion 720A	Y	1991		Daewoo 170	Y	2001
19	Poland		Larry Mee	Hwy Supt											
20	Pomfret	Y	James Oakes, Jr.	Hwy Supt	Case 821C	N	2001	3922	Cat 120G	N	1975	4790	Liehberr 902	N	1995
													Volvo 180C	N	2007

	Municipality	Response Received	Name	Title	Front End Loader(s) Make/Model and CY	Use for snow and ice?	Age	Hours	Motor Grader(s) Make/ Model	Use for snow and ice?	Age	Hours	"Gradall" Type Machine(s) Make/Model	Use for snow and ice?	Age
				1											
21	Portland	Y	Charles Kelley	Hwy Supt	Komatsu	Y		6000	Champion	N	1986	9000	Volvo excavator	N	
22	Ripley		Jim Maus	Hwy Supt											
23	Sheridan	Y	Jeffrey Feinen	Supt	John Deere 544g 2 1/2 yd	S		4000	Austin Westin	not snow	1964	?	Samsung 170	not snow	1999
													Case 1085AB	not snow	1987
24	Sherman	Y	Dennis Sweatman	Hwy Supt	None				Volvo G720		2000	1000	Daewoo 130HV		2002
									(push banks back)						
25	Stockton		Aaron Burnett	Hwy Supt											
26	Villenova	Y	Lester Quinn	Supt	Case 621 1 -1/2	Y	1990	5643	Galion 830	N	2003	1451	None		
27	Westfield	Y	David Babcock	Hwy Supt	JD 544 H (load sand/salt)	N	2003	3637	Cat 120 G	N	1983	~10k	Volvo EW 170	Y	2002
									(hr meter broken)						
	avg.														
(14)	**VILLAGES**														
1	Bemus Point		Rick Farnham	St. Supt											
2	Brocton	Y	Tom Allen	Supv	None				None				None		

	Municipality	Response Received	Name	Title	Front End Loader(s) Make/Model and CY	Use for snow and ice?	Age	Hours	Motor Grader(s) Make/ Model	Use for snow and ice?	Age	Hours	"Gradall" Type Machine(s) Make/Model	Use for snow and ice?	Age
3	Cassadaga	Y	Tom Fetter	Hwy Supt	Cat 914G 1.8 cy		2008		None				None		
4	Celoron	Y	Terry Schrecengost	Working Supt	None				None				None		
5	Cherry Creek		Duncan (Rick) Young	Supt											
6	Falconer	Y	Samuel Ognibene	DPW Supt	Cat 938H 2.5	Y	2009	184	Cat 120G	Y	1989	1577	None		
7	Forestville		William Bentzoni	Street & Water Supt											
8	Fredonia		Jack Boland	Supt PW											
9	Lakewood		Thomas Pilling	Hwy Supv	John Deere 524k	Y	2008		Galion	Y	1972		None		
					(load salt/snow removal)										
10	Mayville	Y	John Buxton	PW Supt	Case 621	Y	2009	100	None				None		
11	Sherman		Doug Crane	Supt Streets & Water											
12	Silver Creek		Ralph Crawford	Supt											
13	Sinclairville		Mike Livermore	Supt Streets & Water											
14	Westfield		Ed LeBaron	PW Supt											
	avg.														

	Municipality	Response Received	Name	Title	Front End Loader(s) Make/Model and CY	Use for snow and ice?	Age	Hours	Motor Grader(s) Make/ Model	Use for snow and ice?	Age	Hours	"Gradall" Type Machine(s) Make/Model	Use for snow and ice?	Age
(2)	**CITIES**														
1	Dunkirk		Tony Gugino	Director of Public Works	Cat G936, 2.5 cy	Y	2002	6500	N/A				N/A		
					Cat G936, 2.5 cy	Y	2002	7100							
					New Holland LW 1708, 3 cy	Y	2006	2300							
2	Jamestown		Jeffrey Lehman, PE	Director of Public Works											
	avg.														
	CHAUTAUQUA		George Spanos	Director of Public Works											
	COUNTY														

Municipality	Hours	Tractor/ Backhoe Make/Model	Use for snow and ice?	Age	Hours	Single Axle Dump Truck(s) Make/Model and CY	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours	Tandem Axle Dump Truck(s) Make/Model and CY	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours
TOWNS													
Arkwright	4000	Ford 3910	N	1987	?lots	IH 2500 8 cy	P&S	1991	179750 mi.	None			
						Ford L9000 8 cy	P&S	1991	170294 mi.				
						Ford L9000 8 cy	P&S	1993	160436 mi.				
						Freightliner 8 cy	P&S	1994	87799 mi.				
Busti	1580	New Holland LB75E	Y	5 yrs	1361	Int. 7400	P&S	1 yr		Int. 7600	P&S	5 yrs	
						Int.	S	8 yrs		Int. 7600	P&S	4 yrs	
						Chevy 1-Ton	S	8 yrs		Intl. 5600	P&S	9 yrs	
Carroll													
Charlotte	7173	New Holland TL100	Y	9 yrs	2418	Int. 2574	P&S	10 yrs	96,548 mi.	Int. 2574	P&S	13 yrs	155, 620 mi.
						Int. 2574	P&S	8 yrs	102,552 mi.				
Chautauqua	2684	New Holland TL90	N	2004	3007	Int. 5	P&S	1999	94,985 mi.	Sterling LT9500 15	P&S	2000	13,802 mi.
		New Holland LB90B HOE	N	2004	1241	550 Ford 3	P&S	2005	58,203 mi.	Sterling LT9500 15	P&S	2001	109,919 mi.
						Sterling Bullet 3	P&S	2008	26,052 mi.	Sterling LT9500 15	P&S	2004	137,652 mi.
						Oshkosh/5 wheel	P	1988	5540 hrs.	Sterling LT9500 15	P&S	2005	97,591 mi.
Cherry Creek													
Clymer	4611	Ford 5610 2-wh dr. diesel	N	1993	?	Int. dump 6 cy-D	Y	1993	100,532 mi.	Sterling dump 6 cy D	Y	2000	5504 (81,762 mi.)
		tractor				(1,000 gal. brine tank)				Int. dump 6 cy D	Y	2008	1451.3 (22,694 mi.)
		(hrs. meter broken)								Int. dump 6 cy D	Y	2005	2563.4 (37,560 mi.)
										Oshkosh 404 6 cy D	P	1966	87,258 mi.
Dunkirk													
Ellery	3600	New Holland 75LB	Y	2005	500	Ford F-550 SD 3	P&S	2000		Int. 2600	P&S	1997	10,000
						Ford F-500 SD 3	P&S	2004		Int. 2600	P&S	1997	9,300
						Int. 7600 6	P&S	2005	4000	Int. 2600	P&S	1999	8409
						Mack 6	P&S	2007	2500				
						White GMC (brine)	S	1993	9500				

Municipality	Hours	Tractor/ Backhoe Make/Model	Use for snow and ice?	Age	Hours	Single Axle Dump Truck(s) Make/Model and CY	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours	Tandem Axle Dump Truck(s) Make/Model and CY	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours
Ellicott	6238	None				Int. 7600 cy 7	P&S	2010	532	Oshkosh all wheel dr.	P	1981	3863
						Int. 7600 cy 7	P&S	2006	3787	plow truck			
						Int. 7600 cy 7	P&S	2004	5841	F550 cy 4	P&S	2007	1697
						Int. Pay Star cy 7				Ford 4x4 pickup	P	2006	48,271 mi.
Ellington	650	None				Ford L9000	P&S	1995	10,000	IHC 2500	P&S	2000	8500
						Whitel GMC WG46	P&S	1993	10,000	IHC 7600	P&S	2005	5000
						Oshkosh	P&S	1975	4500				
French Creek	3350	John Deere 5520	N	8 yrs	3800	Oshkosh no box	Y	42 yrs	6532	Mac CV 713	P&S	5 yrs	3653
										Mac CV 713	P&S	3 yrs	3007
										Mac GU713	P&S	6 mo.	210
Gerry													
Hanover													
Harmony													
Kiantone													
Mina	5213	None				Int. 2574 7 yd	P&S	12 yrs	93,600 mi.	Int. 7600 14 yd	P&S	3 yrs	3,873 mi.
										Int. 2674 14 yd (brine)	P&S	8 yrs	64,490 mi.
										White GMC WG64 14 yd	gravel	18 yrs	143,288 mi.
N. Harmony	4528	Case 580L	N		1195	Int. 2674 (if needed:)	P	1999	3326	Int. 7600	Y	2004	4505
						Oshkosh P2023-101 "	P	1970	5518	Int. 7600	y	2007	3412
										Int. 2674	Y	2000	6937
										Mack GU 713	Y	2010	938
Poland													
Pomfret	4129	N/A				Ford L9000	P	1997	7139	Sterling	N/A	2003	4393
	1510					Sterling	P	2000	7039				
						Sterling	p	2004	3393				
						Sterling	p	2006	611				

Municipality	Hours	Tractor/ Backhoe Make/Model	Use for snow and ice?	Age	Hours	Single Axle Dump Truck(s) Make/Model and CY	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours	Tandem Axle Dump Truck(s) Make/Model and CY	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours
Portland		JD tractor	N	2005		Ford 8000	P&S	1993		Int.	P&S	1999	
						Ford 8000	P&S	1995		Int.	P&S	2004	
						Volvo	P&S	2006					
						Oshkosh	P&S	1971					
Ripley													
Sheridan	2500	Deere 555D	S	1995	1800	Ford L9000	P&S	1990		Ford L9000 12 yd	no snow	1996	
	4000					Ford L9000	P&S	1995		Int.	no snow	1996	
						Int. 2574	P&S	1990					
						Int. 2574	P&S	1994					
						Ford L9000	P&S	1996					
Sherman	2000	None				L9000	P&S	1992	140,000 mi.	Tandem 2574	P&S	1998	140,000 mi.
										Tandem 2574	P&S	2000	101,000 mi.
										Tandem 7600	P&S	2006	60,000 mi.
Stockton													
Villenova		Ford NH 555E	N	1998	5669	Int.7400 7	N	2007	127	Ford 9000 14	P&S	1997	7393
		Kioti 65 roadside mower	N	2003	2358	Int. 2554 7	N	1993	13558	Sterling 7	P&S	2006	2081
						Ford L9000 7	N	1991	1935	Int. 1700 (brine)	S	1987	9078
										Oshkosh P2323 7	P&S	1977	13225
										Oshkosh 712 snow go blower		1951	36625
Westfield	3126	Case 4x4 JX 95	N	2003	1574	Sterling/Mercedes	P&S	2007	3043	Sterling/Mercedes	P&S	2005	2934
		New Holland 4x4 TD95D	N	2007	953					Sterling/Cat 3406 E	P&S	2001	7285
										Sterling/Cat 3406 E	P&S	2000	8275
avg.													
VILLAGES													
Bemus Point													
Brocton		Case 540 Super M	N	2003	3378	Chevy	S	2007		None			
		(load truck)				Sterling	P	2000					

Municipality	Hours	Tractor/ Backhoe Make/Model	Use for snow and ice?	Age	Hours	Single Axle Dump Truck(s) Make/Model and CY	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours	Tandem Axle Dump Truck(s) Make/Model and CY	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours
						Ford		1984					
Cassadaga		John Deere 4400	S	1995		Int. 7300 10-Ton	P&S	2005		None			
		snowblower				Int. 8-Ton	P&S	1994					
Celoron		Cat 416D (load salt/snow)	N	2005	1665	Int. S1905	P&S	1982	98000 mi.	None			
						Int. 4900	P&S	2002	20,000 mi.				
						Auto ??	??	1981	219,000 mi.				
Cherry Creek													
Falconer		Cat 420E 1.3	Y	2009	172	Int. 4900	P&S	1997	4180	Int. 2674	Y	2000	3909
						Int. 7600	P&S	2004	1911				
Forestville													
Fredonia													
Lakewood		John Deere 310se	Y	1999		Int. 7300	P&S	2006	None				
		Trackless tractor- plow &	Y	2005		Int. 4900	P&S	1998					
		snowblow sidewalks				3/4 Ton pickup	P	2008					
						3/4 Ton pickup	P	2006					
Mayville		New Holland 95B	Y	2005	2500	Int. 7400 5 cy	P&S	2003	2440	None			
						Freight M2 5 cy	P	2008	760				
						Chevy C7 5 cy	S	1994					
						Chevy C7500 5 cy	S	1999					
Sherman													
Silver Creek													
Sinclairville													
Westfield													
avg.													

Municipality

	Hours	**Tractor/ Backhoe Make/Model**	Use for snow and ice?	Age	Hours	**Single Axle Dump Truck(s) Make/Model and CY**	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours	**Tandem Axle Dump Truck(s) Make/Model and CY**	Use for snow and ice? P=Plow S=Sand/Salt	Age	Hours
CITIES													
Dunkirk		Ford WD-55C	N	1990	6400	Sterling L9500, 8 cy	P	2003	51000 mi.	None			
						Sterling L9500, 8 cy	P	2002	56000 mi.				
						Sterling L9500, 8 cy	P	2002	61000 mi.				
						Ford F700, 3 cy	S	1994	40000 mi.				
						GMC TC6H042, 3 cy	S	2002	15100 mi.				
						GMC TC6042, 3 cy	S	2005	11400 mi.				
Jamestown													
avg.													
CHAUTAUQUA													
COUNTY													

Chautauqua County Municipalities

Shared Services Study

Municipal Superintendents Questionnaire

Please complete and return by Friday, Jan. 15, 2010

Municipality:		Date:	
Sup't.:		Email:	

The Shared Services Study is being conducted by a team of your municipal representatives to look for additional ways to help local highway/public works departments to be more efficient. C&S Companies was selected to assist with this work. The Shared Services Team Representatives are: Jim Oakes – Towns; Sam Ognibene – Villages; Jeff Lehman and Tony Guigino – Cities; Greg Edwards and George Spanos – County. C&S Companies representatives assisting with the study are Tim Hughes – Project Manager and Bill Mobbs – Technical Leader.

Your questions, comments and suggestions are welcome and can be made to the team through your municipal representative.

Personnel	Responses:
1.a. What is your job title?	
1.b. Is it an elected or appointed position?	
1.c. How long have you been in this job?	
2. How many employees are there in your department?	
2.a. # Field	
2.b. # Full time shop/equip. maint.	
2.c. # Administrative (office)	
2.d. # Engineering/Technical	
2.e. Do you have an organization chart? (Please attach if you do)	
3. Annually, how many total days off does a five year employee have? (benefits: vacation, sick days, personal days, holidays, etc.)	
4. Is your department unionized?	
4a. Which union?	

Financial	
Note: The team has access to public financial information. If we need something more we will contact you.	XXX
5. In your highway budget, are you expected to perform other tasks that are not highway maintenance related? (Examples might be cemetery maintenance, residential brush/leaf pickup, park maintenance, etc.)	
5a. What are the other tasks?	
Winter Operations	
6. Do you do snow and ice control for other municipalities?	
6a. Which ones?	
6b. How many miles?	
7. Are any of your roads maintained by another municipality?	
7a. Which municipality does them?	
7b. How many miles?	
8. How many miles of your own roads do you maintain for snow and ice control?	
9. Do you use sand?	
9a. Do you use salt?	
9b. Do you use a mixture of sand and salt?	
9c. What percentage of salt in the mix?	
10. How many snow routes do you have?	
11. Do you calibrate your spreaders?	
12. What is your salt storage capacity?	
13. Is your salt storage location at your shop?	
13a. If not at your shop, where is it?	
14. Do you buy salt through a state/county/local contract?	

Equipment Operations	
15. An equipment inventory was requested previously – we will contact you if we have questions	XXX
16. Do you have someone to oversee your equipment (a fleet manager or shop foreman - not yourself)?	
17. Do you have records of fuel consumption for each piece of equipment?	
18. What are your fuel storage capacities in gallons?	
18a. Gas (G)	
18b. Diesel (D)	
19. How many gallons of fuel did you buy in 2009?	
19.a. Gas (G)	
19b. Diesel (D)	
19.c. How did you buy it – state/county/ local contract?	
20. If you had the money, what would be the next piece of equipment you would buy?	
21. Do you purchase your equipment through State bid, county bid, local bid or other?	
22. Do you rent equipment?	
22a. About how much do you spend yearly on rentals?	
Road System Operations	
23. How many bridges do you maintain?	
24. Do you have an inter-municipal agreement with another municipality?	
24a. If so, for what kind of operations did you use it?	
25. Do you maintain your own signs?	
25a. Or do you contract that out?	
25b. With whom do you contract?	

26. Which of your operations do you usually need help with, (both equipment and operators) from another municipality or from private firms, in order to accomplish them?	
27. Do you ever need additional laborer help?	
27a. For which operations?	
27b. How do you get the help or don't you?	
Administration	
28. What administrative things do you have done in your office? (Check those applicable and add others not listed)	Purchasing Payroll Budget management Cost accounting Equipment records Phone answering Dispatching Permit issuance Preparing reports for others Preparing reports for you (Add others)
29. If you could have someone else do one of the administrative tasks for you, which one would it be?	
30. What is one of the most valuable things the office work provides to you in doing your job?	
31. How many public calls for work requests might your department receive on a weekly basis?	
32. Do you have a two way communications system for field operations?	
32a. In a few words describe what it is.	

33. Do you use a computer in your office?	
33a. For what do you use the computer(s)?	
34. Do you have internet access?	
35. Do you use a computer, personally, at work?	
36. In your **administrative** operations, do you generate reports that show what your unit costs are (cost/ton, cost/lineal foot, cost per cubic yard, etc.) for your field operations?	
37. Name a couple of things that you think are going quite well in your **field** operations.	
38. Name a couple of things that you think are going quite well in your **office** operation.	
Planning and Engineering	
39. Who prepares your annual highway budget? (if not you, list title of position)?	
40. Who is mostly responsible for planning the annual highway maintenance operations?	
41. Who schedules maintenance operations?	
42. If you need engineering for maintenance operations, who does it?	
43. If highway work permits are necessary, who issues them?	
44. What suggestion do you have for making municipal highway operations more efficient?	

Thank you for completing this questionnaire.
Please e-mail it back to akelsey@cscos.com

or US Postal Mail to:
Ms. April Kelsey
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212

	Municipality			1.a.	1.b.	1.c.	2	2.a.	2.b.	2.c.	2.d.	2.e.	3	4	4.a.	5	5.a.	6	6.a.	6.b.
		Response Received	Name	Job Title	Elected/ Appointed	Years	#Staff Calculated	#Field	#FT Shop	#Adm	#Eng/ Tech	Org chart?	#Days off	Unionized	Union Name	Other Tasks	Tasks	Snow/Ice Ctrl for Others	For Which	#Miles
(27)	**TOWNS**	**26**																		
1	Arkwright	Y	Stephen Mead	Supt. of Hwys	E	15	10	4	4	1	1	N	31	Y	Teamsters	N		N		
							0													
2	Busti	Y	Melvin Peterson	Supt	E	2	12	6	6	0	0	N	25	N		Y	water line install., park	N		
							0													
3	Carroll	Y	Tom Allison	Hwy Supt	E	10	12	6	6	0	0	N	30	N		Y	park maint., Town Hall	Y	Co.	3.76
							0													
4	Charlotte	Y	Lewie Nickerson	Hwy Supt	E	4	8	4	4	0	0	N	30	Y	Teamsters	Y	3 cemeteries and towr	Y	V/Sinclairville	2.5
							0													
5	Chautauqua	Y	Timothy Wendell	Hwy Supt	E	1	20	10	10				36	N		Y	cemetery maint., brush	Y	N. Harmony, St	4
							0													
6	Cherry Creek	Y	Ken Chase	Hwy Supt	E	16	6	3	3	0	0	N	18	N		Y	cemetery, dig graves, c	Y	V/Cherry Creek	3.5
							0													
7	Clymer	Y	Clifton Nyweide	Hwy Supt	E	2	6	3	3	0	0	N	22	N	Don't want	Y	water dept., cemetery	N		
							0													
8	Dunkirk	Y	Richard Butts, Jr.	Hwy Supt	E -2 mo.		2		2				18	N		Y	parks, water, sewer	Y	Pomfret, C/Dur	4
							0													
9	Ellery	Y	Greg Hallberg	Hwy Supt	E	5	14	7	7	0	0	N	40	N	they have their own		cemetery, park	Y	V/Bemus; Co.	4
							0													
10	Ellicott	Y	Marvin Shellhouse	Hwy Supt	E	30	9	9	0	0	0	Y	44	Y	CSEA	Y	winter cemetery maint	N		
							0													
11	Ellington	Y	Casey Rhinehart	Hwy Supt	E	6	8	4	4	0	0	N	17	N		Y	snowplowing town hal	N		
							0													
12	French Creek	Y	Arthur Malecki	Hwy Supt	E	10	7	3	3	0	1	N	22	N		N		Y	Mina, Clymer, C	2.2
							0													
13	Gerry	Y	Mark Risley	Hwy Supt	E	4.5	4	4		0	0	N	28	N		Y	park repairs & maint.,	N		
							0													
14	Hanover	Y	Steven D'Angelo	Supt.			0									Y	beach, cemetery, towr	Y	NYS	2.2
							0													
15	Harmony	Y	Tim Card	Hwy supt	E	12	3	3					35	N		Y	transfer station	Y	V/Panama	5

	Municipality			1.a.	1.b.	1.c.	2	2.a.	2.b.	2.c.	2.d.	2.e.	3	4	4.a.	5	5.a.	6	6.a.	6.b.
		Response Received	Name	Job Title	Elected/ Appointed	Years	#Staff Calculated	#Field	#FT Shop	#Adm	#Eng/ Tech	Org chart?	#Days off	Unionized	Union Name	Other Tasks	Tasks	Snow/Ice Ctrl for Others	For Which	#Miles
							0													
16	Kiantone	Y	Gary Carlson	Hwy Supt	E	22	3	3				N	25	N		Y	garbage transfer statio	N		
							0													
17	Mina	Y	Paul Scarem	Hwy Supt	E	24	3	3		0	0	N	35	N		Y	cemetery maint. & ten	Y	NE Township	0.3
							0													
18	N. Harmony	Y	Gary Ryan	Hwy Supt	E	3	13	6	6	1		N		N		Y	parks, cemeteries	N		
							0													
19	Poland	Y	Larry Mee	Hwy Supt	E	10	8	4	4				37	N		Y	road maint for 4 ceme	Y	Co.	3.9
							0													
20	Pomfret	Y	James Oakes, Jr.	Hwy Supt	E	29	18	8	8	1	1	N	42	N		N	other duties are not in	N		
							0													
21	Portland	Y	Charles Kelley	Hwy Supt	E	12	16	8	7	1	0	N	30	Y	CSEA	Y	park maint., cemetery	Y	Chautauqua	0.50
							0													
22	Ripley	Y	Jim Maus	Hwy Supt	E	6	10	5	5				35	N		Y	sidewalks, brush & leaf	N		
							0													
23	Sheridan	Y	Jeffrey Feinen	Supt	E	4	8	4	4				29	Y	Teamsters	Y	town park	N		
							0													
24	Sherman	Y	Dennis Sweatman	Hwy Supt	E	8	3	3				N	21	N		Y	cemetery, leaf pickup	Y - haul snc	V/Sherman	
							0													
25	Stockton	Y	Aaron Burnett	Hwy Supt	E	3	8	4	4				35	N		Y	cemetery, park, town h	Y - shared s	V-Cassadaga, El	10
							0													
26	Villenova	Y	Lester Quinn	Supt	E	19	9	4	4	1	0	N	31	Y	Teamsters	Y	cemetery mowing & sn	N		
							0			self										
27	Westfield	Y	David Babcock	Hwy Supt	E	2	20	5	13	2	0	N	30	N		Y	1 cemetery, 1 park, be	N		

	Municipality			1.a.	1.b.	1.c.	2	2.a.	2.b.	2.c.	2.d.	2.e.	3	4	4.a.	5	5.a.	6	6.a.	6.b.
		Response Received	Name	Job Title	Elected/ Appointed	Years	#Staff Calculated	#Field	#FT Shop	#Adm	#Eng/ Tech	Org chart?	#Days off	Unionized	Union Name	Other Tasks	Tasks	Snow/Ice Ctrl for Others	For Which	#Miles
					26 E	**260**		**123**	**107**	**7**	**3**	**1**	**746**	**6**	**4 Teamsters**	**24**		**14**		**46**
	avg.					**10.0**		**4.7**	**4.1**	**0.3**	**0.1**	**0.0**	**28.7**	**0.23**		**0.89**		**0.52**		**1.7**
(14)	**VILLAGES**	**14**																		
1	Bemus Point	Y	Rick Farnham	St. Supt	A	17	2	1	0	1	0	N	40	N		Y	leaf/brush pickup, park	Y	T/Ellery sidewalk	
2	Brocton	Y	Tom Allen	Supv	A	5	8	4	4			N	38	N		Y	park maint., sidewalk r	N		
3	Cassadaga	Y	Tom Fetter	Hwy Supt	A	16	3	2		1		N	30	N		Y	water system maint.	N		
4	Celoron	Y	Terry Schrecengost	Working Supt	A	4	3	3					10	N		Y	leaf pickup, park maint	Y	Co.	4.31
5	Cherry Creek	Y	Duncan (Rick) Young	Supt	A	17	2	2					10	N		Y	parks	N		
6	Falconer	Y	Samuel Ognibene	DPW Supt	A	5	9	4	4	1	0	N	43	N		Y	parks, brush & leaf picl	Y	Co.	1.3
7	Forestville	Y	William Bentzoni	Street & Water S	A	3	2	2				N	18	N		Y	leaf pickup, mowing, b	Y	T/Hanover	0.5
8	Fredonia	Y	Jack Boland	Supt PW	A	4.5	17	15	1	1	0	N	30	Y	CSEA	Y	water distribution O&M	N		
9	Lakewood	Y	Thomas Pilling	Hwy Supv	A	2	4	4					32	N		Y	leaf & brush pickup, ga	Y	Co.	5.63
10	Mayville	Y	John Buxton	PW Supt	A	12	10	10					36	N		Y	Residential brush/leaf	N		
11	Sherman	Y	Doug Crane	Supt Streets & W	A	9	4	2	2				35	N		Y	park maint., brush clea	N		
12	Silver Creek	Y	Ralph Crawford	Supt		5	15	6	6	3	0	N	43	Y	CSEA	Y		N		

	Municipality			1.a.	1.b.	1.c.	2	2.a.	2.b.	2.c.	2.d.	2.e.	3	4	4.a.	5	5.a.	6	6.a.	6.b.
		Response Received	Name	Job Title	Elected/ Appointed	Years	#Staff Calculated	#Field	#FT Shop	#Adm	#Eng/ Tech	Org chart?	#Days off	Unionized	Union Name	Other Tasks	Tasks	Snow/Ice Ctrl for Others	For Which	#Miles
13	Sinclairville	Y	Mike Livermore	Supt Streets & W	A	1	1		1			N	28	N		Y	park maint., brush/leaf	N		
14	Westfield	Y	Ed LeBaron	PW Supt	Civil Svc	14	11	9	1	1	0	Y	30	Y	IBEW	Y	park maint., brush pick	N		
					14-A	**115**	**91**	**64**	**19**	**8**	**0**	**0**	**423**	**3**	**2 CSEA; 1 IB**	**14**		**5**		**12**
	avg.					**8.2**	**6.5**	**4.6**	**1.4**	**0.6**	**0.0**	**0.0**	**30.2**	**0.21**		**0.54**		**0.36**		**0.84**
(2)	**CITIES**	**2**																		
1	Dunkirk	Y	Tony Gugino	Director of Publi	A	6	62	55	3	2	2	N	46	Y	AFSCME AFL	Y	drainage, garbage pick	Y	NYSDOT	2.5
2	Jamestown	Y	Jeffrey Lehman, PE	Director of Publi	A	16	50	37	9	1	3	Y	40	Y	AFSME	Y	leaf pickup, bldg. main	Y	NYSDOT, Co.	9
						22	**112**	**92**	**12**	**3**	**5**	**0**	**86**	**2**		**2**		**2**		**11.5**
	avg.				**2-A**	**11**	**56**	**46**	**6**	**1.5**	**2.5**	**0**	**43**	**1.00**		**1.00**		**1.00**		**5.75**
	CHAUTAUQUA	Y	George Spanos	Director of Publi	A	5.5	131	97	20	7	7	Y	41	Y	CSEA	Y	fleet management, par	N		
	COUNTY	(DRAFT survey)			1-A															

Municipality	7	7.a.	7.b.	8	9	9.a.	9.b.	9.c.	10	11	12	13	13.a.	14	15	16	17	18.a.	18.b.	19.a.	19.b.	19.c.
	Maint. By Others?	Which	#Miles	Ice Ctrl Own #Mi.	Use Sand?	Salt?	Mix?	%Salt	#Snow Routes	Calibrate spreaders?	Salt Stor. Capacity (tons)	At your shop?	If not, where?	Salt purch contract?	Equip. Inventory	Oversee equip.?	Fuel Records?	2009 Gas #Gallons	2009 Dsl. #Gallons	2009 Purch. Gas	2009 Purch. Dsl.	Local purch. Contract?
TOWNS															XXX							
Arkwright	N			32	Y	N	N		4	N	0			N		N	Y	1000	1000	30	15361	Local
Busti	N			64	Y	Y	Y	0.50		Y	350	Y		Y		Y	Y	2000	2000	4619	16844	State
Carroll	N	N/A	N/A	48		Y-for Vil	Y-out o	0.33	6	Y	200	Y	N/A	Y		N	Y -Provided by Frewsburg CS			2090.7	12014	State
Charlotte	N			39.13	Y	Y	Y	0.17	2	Y	800	Y		Y - Co.		N	Y	500	2500	1975.5	11913.5	State bid
Chautauqua	Y	Stockton, Sher	4	70	Y	Y	Y	0.25	4	N	70	Y		Y - State		N (Emplo	Y (log shee	500	2000	1241	30240	Local
Cherry Creek	N		28.5	Y	Y	Y	Y	Varies	3	Not w/comp.		N	Center St.	Y		N	Y	0	1000			Local
Clymer	Y	French Creek (	1/2	31	Y		Y	0.20	3	N	750	Y		Y - State		N	N	0	2000	1200	10000	Local
Dunkirk				8	Y	U	U	0.50	1	Y	0	N	Co.	Y - Co.		N	Y					Y - Co.
Ellery	N			60	Y	Y	Y	0.33	5	N	300	Y		Y - State		N	Y	1000	4000	4918	46217	Y - State
Ellicott	N			50.48	N	Y			4	N		N -Share	Co. DPF, Fa	Y - State		N	Y	4000	4000	3091.53	19438.5	Y - State/Co
Ellington	N			45	Y	Y	Y	0.14	4	N	100	Y		Y - State		N	Y	500	200	1000	20000	Y - State/Co
French Creek	Y	Mina, Clymer	1.2	39	N	N	Y	0.20	3	N	1500	Y		Y		Y - Emplo	Y	250	4000	1389	125494.41	Y
Gerry	N			33	Y	Y	Y	0.20	2		1200	Y		Y		N	Y - Just sta	300	700	2524.6	10358.5	Y
Hanover	N			64.2	Y	Y	Y	0.33	5	Y	2500	Y		Y - State		N	Y	2000	4000	8000	10000	Y - Local
Harmony	N			40		Y	Y	0.33	3	N	1500	Y		Y - State		N	Y	500	2000			Y - Local

Municipality	7	7.a.	7.b.	8	9	9.a.	9.b.	9.c.	10	11	12	13	13.a.	14	15	16	17	18.a.	18.b.	19.a.	19.b.	19.c.
	Maint. By Others?	Which	#Miles	Ice Ctrl Own #Mi.	Use Sand?	Salt?	Mix?	%Salt	#Snow Routes	Calibrate spreaders?	Salt Stor. Capacity (tons)	At your shop?	If not, where?	Salt purch contract?	Equip. Inventory	Oversee equip.?	Fuel Records?	2009 Gas #Gallons	2009 Dsl. #Gallons	2009 Purch. Gas	2009 Purch. Dsl.	Local purch. Contract?
Kiantone	N			22.62	Y	Y	Y	0.50	2	N	400	Y		Y - State		N	Y (Fire Dep	500	1000	1116.4	5560.3	Y - State
Mina	Y	Sherman, Clym	1.7	31.34			Y	0.17	4	N	1000	Y		Y		Y	Y	500	2000	2715	10817	Y - local
N. Harmony	N			60	Y	Y	Y	0.33	4	Y	100	Y		Y - State		N	Y	500	2500	3080.8	19709.3	Y - State
Poland	N			46.72	Y	Y	Y	0.25	4	N	250	Y		Y - State		N	Y	500	1500	2600	14000	Y - Town
Pomfret	N			55	Y	Y	Y	0.33	4	N	80	Mix	Salt at NYS	Y - State		N	Y	500	1000	3615	14683	Y - local
Portland	Y	Chautauqua		57	Y	Y	Y	0.10	3	Y	120	Y		Y - State		Y	Y	2000	8000			Y - local
Ripley	N			44	Y	Y	Y	0.20	4	N		Y- unlimited		Y - Co.		N	N - somew	2000	5000			Y - school
Sheridan	N			40	Y	Y	Y	0.33	4	N	50	mix @ s	Salt @ Co.	Y - Co.		N	Y - it's not	1000	1000	1400	10000	Y - local
Sherman	N			31.96	Y	Y	Y	0.33	3	N		N	Co. in Sher	Y - State		N	Y -Co. in Sherman			1950	9700	Y - Co.
Stockton	Y	Ellery & Chaut	4	38	Y		Y	0.20	4	N		N -Share	.3 mi. west	Y - Co.		Y	Y	3000	1000	2000	11391	Y - State bi
Villenova	N			37	Y	Y	Y	0.20	2	N	1500	Y		Y - State		N	Y -call 988-	500	2000			Bid
Westfield	N			54			Y	0.14	5	N		Y -outside		Y		Drivers m	Y	450	990	2500.7	19095.48	Y - local

Municipality	7	7.a.	7.b.	8	9	9.a.	9.b.	9.c.	10	11	12	13	13.a.	14	15	16	17	18.a.	18.b.	19.a.	19.b.	19.c.
	Maint. By Others?	Which	#Miles	Ice Ctrl Own #Mi.	Use Sand?	Salt?	Mix?	%Salt	#Snow Routes	Calibrate spreaders?	Salt Stor. Capacity (tons)	At your shop?	If not, where?	Salt purch contract?	Equip. Inventory	Oversee equip.?	Fuel Records?	2009 Gas #Gallons	2009 Dsl. #Gallons	2009 Purch. Gas	2009 Purch. Dsl.	Local purch. Contract?
	6		**39.40**	**1,141.45**	**21**	**20**	**24**		**92**	**7**	**12,770**	**21**		**25**		**5**	**25**	**24,000.00**	**55,390.00**	**53,057.23**	**442,836.99**	**27**
avg.	**0.22**		**1.52**	**42.28**	**0.78**	**0.74**	**0.89**	**0.26**	**3**	**0.26**	**473**	**0.78**		**0.93**		**0.19**	**0.93**	**888.89**	**2,051.48**	**1,965.08**	**16,401.37**	**1.00**
VILLAGES																						
Bemus Point	Y	T/Ellery	3.46	0	N	N	N		0	N/A	0		0	N/A		N	Y	0	0	?	?	N
Brocton	N			6.17	Y	Y	Y	0.25	1	N		Y		Y - State		N	Y	2000	5000	1322.4	2502.5	Y - State
																		Shared w/ t-Portland and Brocton Central School				
Cassadaga	N			14	Y	Y	Y	0.25	1	N				Y - State bid		N	N	0	0			Buy all fuel
Celoron	Y	T/Ellicott	1.5	6.5		Y	Y	0.50	2	N	100	N	South & Ce	Y - Co.		All the me	Y	500	500	756	2104	Y - Co.
Cherry Creek	Y	T/CC	2.2	1												N	Y			566	114	NOCO
Falconer	N			11.8	N	Y	N		2	N		N	Co.	Y - Co., State		N	Y	1000	1000	3600	6415	Y - Co.
Forestville	Y	Co.	?	5	Y	Y	Y			Y	25	Y		Y		N	Y	300	300			Y - State
Fredonia	N			29	N	Y	N		0	N	0	N	NYSDOT, F	Y - State		Y	Y	2000	1000	20,000	10,000	Y - local
Lakewood	N			42.3	N	Y	Y	0.50	42	N	200	Y		Y - State		All	Y	0	1000	5180.58	6378.2	Y - local
Mayville	N			10	Y	Y	Y	0.33	1	Y	0	N	NYSDOT	Y - State		Y	Y	500	1000	7000	12000	Y - local
Sherman	N			2.5	N	N	N		1	N	0	N		N		Y	Y	0	0			Y - Co.
Silver Creek	N		21	Y	Y	Y	Y	0.50	2	N	600	Y		Y - State bid		N	Y					Y - local

Municipality	7	7.a.	7.b.	8	9	9.a.	9.b.	9.c.	10	11	12	13	13.a.	14	15	16	17	18.a.	18.b.	19.a.	19.b.	19.c.
	Maint. By Others?	Which	#Miles	Ice Ctrl Own #Mi.	Use Sand?	Salt?	Mix?	%Salt	#Snow Routes	Calibrate spreaders?	Salt Stor. Capacity (tons)	At your shop?	If not, where?	Salt purch contract?	Equip. Inventory	Oversee equip.?	Fuel Records?	2009 Gas #Gallons	2009 Dsl. #Gallons	2009 Purch. Gas	2009 Purch. Dsl.	Local purch. Contract?
Sinclairville	Y	T/Gerry, T/Cha	3.9	0												Y	Y	1000	500	500		Y - local
Westfield	N			18.1	Y	Y	Y	0.33	3	N	100	Y		Y - State		mechanic	Y - share w	2000	2000	school buys fuel and cha		Y - State
	5		**32**	**146**	**6**	**10**	**8**		**55**	**2**	**1025**	**5**		**9**		**4**	**13**	**9300**	**12300**	**38925**	**39514**	**11**
avg.	**0.36**		**2.29**	**10.46**	**0.43**	**0.71**	**0.57**	**0.19**	**4**	**0.14**	**73**	**0.36**		**0.43**		**0.29**	**0.93**	**664.3**	**878.6**	**2780.4**	**2822.4**	**0.79**
CITIES																						
Dunkirk	N			60	N	Y	N		1	Y	225	Y		Y - State		Y	Y	2000	20000	63000	26360	
Jamestown	N			?	Min.	Y	Min.	0.33	12	Y		Y		Y		Y	Y	10000	10000	100000	180000	bid out
			0	**60**		**2**			**13**	**2**	**225**	**2**		**2**		**2**	**2**	**12000**	**30000**	**163000**	**206360**	
avg.			**0**	**30**		**1.00**		**0.33**	**7**	**1.00**	**113**	**1.00**		**1.00**		**1.00**	**1.00**	**6000**	**15000**	**81500**	**103180**	
CHAUTAUQUA	Y		37.5	515	N	Y	N		29	Y	15000	Y	6 locations	Y - State		Y	Y	22000	30000	50000	335000	Y - Co.
COUNTY																						

Municipality	20	21	22	22.a.	23	24	24.a.	25	25.a.	25.b.	26	27	27.a.	27.b.	28	28.a.	28.b.
	Next equip. purchase	Purch. Bid Agency?	Rent Equip.?	$/Year rentals	#Bridges maint.	Inter-mun. Agr.?	For which operations?	Maint. own signs?	Contract out?	With whom?	Help from other mun. for:	Add'l. laborer help?	Which operations	How do you get help?	Adm. Tasks	Purch.	Payroll
TOWNS																	
Arkwright	14k lb. dur	All	N		0	Y-Co.	chip seal, trucking, gravel	Y			blacktop patch, graveling of roa	Y	blacktop patch	phone call		1	1
Busti	1.25 yard l	All	Y	$8,000	0	Y	paving, stone, oil	Y			paving, stone, oil	Y	same	shared svcs		1	1
Carroll	10-wheel c	All	N	N/A	1	Y - Co. Shar	chip sealing, trucking	Y	N/A	N/A	trucks and drivers	N	N/A	N/A		1	
Charlotte	loader	All	Y	$1,400	0			Y			sealing, blacktop, graveling	once in a while	sealing and blacktop	phone call		1	
Chautauqua	single axle	State & lo	Y	1000	0	Y	chip & seal, blacktopping	Y			blacktopping, chip sealing	N				1	
Cherry Creek	ditching m	State & lo	N	0	0	Y	V/Cherry Creek snow remov	Y			Large excavatory, replace large	Y		Other Towns			
Clymer	grader, bru	All	seldom		0	Y	Co. main. bridges	Y				N		Adjoining townships		1	
Dunkirk	dump truc	N			0	Y	all	Y			road work	Y	all	Shared svcs		1	1
Ellery	grader	All	No		0	Y	Anything we want or need	Y	No		Blacktop, oil and stone	N				1	1
Ellicott	track excav	Y - Co./Lo	seldom		6	Y	hot mix, line painting, mach	Y			Bar patching, paving, surface	Always	All	T/V/Co.		1	1
Ellington	trucks	All	occasion	<$1000	0	Y - Co.	oil, stone, blacktop	Y			All	Y	mowing, hauling	PT shared svcs		1	1
French Creek	loader	Y - State	N		0	Y	sealing, blacktop, graveling	Y			summer projects, sealing, blackt	N		all the Towns help one another and C			
Gerry	dump truc	Y - local	N		0	Y	summer work	Y			blacktop, oil & stone	N				1	1
Hanover	Excavator	Y - State a	N		3	N		Y				Y	paving	other Mun.		1	1
Harmony	truck	All	N		1	N		Y			Both	Y	paving, graveling	other Towns		1	1

Municipality	20	21	22	22.a.	23	24	24.a.	25	25.a.	25.b.	26	27	27.a.	27.b.	28	28.a.	28.b.
	Next equip. purchase	Purch. Bid Agency?	Rent Equip.?	$/Year rentals	#Bridges maint.	Inter-mun. Agr.?	For which operations?	Maint. own signs?	Contract out?	With whom?	Help from other mun. for:	Add'l. laborer help?	Which operations	How do you get help?	Adm. Tasks	Purch.	Payroll
Kiantone	loader bac	All	N			Y - Co.	surface treating, paving, sho	Y			hot mix paving, surface treating	Y	flagging, bldg maint, snow rer	PT employee		1	1
Mina	9T wheele	Y - Co./loc	occasion	$1,000	0	Y	graveling, sealing, blacktop	Y			blacktop, sealing, gravel	N				1	1
N. Harmony	tractor	Y - State, (	N		2	Y	blacktop, gravel, oil & stone	Y			blacktop, gravel, oil & stone	N				1	
Poland	10-wh plo	Y - local	Y	$1,000	3	Y	chip sealing, blacktop, culve	Y			chip sealing, blacktop, large culv	N				1	1
Pomfret	dump truc	All	Y	$4,000	1	Y	Mainly for labor and equip i	Y			equip and operators from other	seldom	water breaks	T/Portland or V/Fred		1	1
Portland	10-wh	Y - State, (	Y	varies	0	All - shared	blacktop, oil/stone	Y			blacktop, oil/stone	Y	same as above	Call		1	1
Ripley	trucks	Y - State, (	Y	$2000-$50	0	Co. & all to	road maint, whatever helps	Y			tar & chipping, hauling for stock	Y	tar & chipping	Water & Sewer Dep		1	1
Sheridan	loader	All	Y	$200	7 (culverts WJM)	N		Y			paving, oiling	Y	paving, oiling	just ask		1	1
Sherman	10-wh.	Y - State	occasionally					Y			blacktopping	Y	blacktopping	other mun		1	1
Stockton	grader	Y - State b	N		1	N		Y			grading dirt roads and pulling sh	Y	oil & stone roads, paving road	Shared svcs		1	1
Villenova	trucks	Y - State	N		2	N		Y			blacktop	Y	everything	do not		1	1
Westfield	10-wh	Y - local	Y	$2,000	0	Y	Village - whatever is needed	Y			both	Y	general help	call Village		1	

Municipality	20	21	22	22.a.	23	24	24.a.	25	25.a.	25.b.	26	27	27.a.	27.b.	28	28.a.	28.b.
	Next equip. purchase	Purch. Bid Agency?	Rent Equip.?	$/Year rentals	#Bridges maint.	Inter-mun. Agr.?	For which operations?	Maint. own signs?	Contract out?	With whom?	Help from other mun. for:	Add'l. laborer help?	Which operations	How do you get help?	Adm. Tasks	Purch.	Payroll
		26	**14**	**18,600.00**	**20**	**20**		**27**	**0.00**			**18**				**25**	**19**
avg.		**0.96**	**0.54**	**688.89**	**0.74**	**0.74**		**1.00**				**0.67**				**0.93**	**0.70**
VILLAGES																	
Bemus Point	truck	Y - State	N		0	Y	Anything we want or need!	Y			paving, snow removal	Y	leaf pickup	PT		1	1
Brocton	dump truc	Y - All	N					Y			blacktopping	N				1	
Cassadaga	compact t	Y - State, (	N		0	N		Y			road maint. equip. and manpow	Y		shared svcs		1	
Celoron	backhoe	Y - Local, S	N		0	Y	paving	Y			paving	Y	sidewalk rebuilding	call Lakewood			
Cherry Creek	truck	not yet	N		5	Y - T/CC	road maint.	Y			water leaks	Y	water leaks	phone call			
Falconer	sidewalk p	Y - Local	seldom		0	Y - Co.	paving, chip sealing, road re	Y				Y	varies	Co. shared svcs agr.		1	1
Forestville	sidewalk p	Y	N		0	N		Y				Y	summer				
Fredonia	small exca	Y - all	Y	15,000	0	Y - Co. shar	whatever and whenever rec	Y			chip & seal, paving = trucks rolle	Y	all	summer, fall season		1	1
Lakewood	single axle	Y - all	N		0	Y	blacktop, bank restoration	Y			blacktopping roads, trucks & pa	Y	blacktop roads	call neighboring Villa		1	1
Mayville	plow/dum	Y - all	Y	2,000	0	N		Y			paving, oil & Stone	Y	all	seasonal employees		1	1
Sherman	loader	Y	Y		0	Y	all	Y			water system, snow hauling	Y	water system, snow hauling	Mun. Agr.		1	
Silver Creek	asphalt pa	Y - all		0	1	Y	oil and stone, paving should	Y			paving, shoulders						

Municipality	20	21	22	22.a.	23	24	24.a.	25	25.a.	25.b.	26	27	27.a.	27.b.	28	28.a.	28.b.
	Next equip. purchase	Purch. Bid Agency?	Rent Equip.?	$/Year rentals	#Bridges maint.	Inter-mun. Agr.?	For which operations?	Maint. own signs?	Contract out?	With whom?	Help from other mun. for:	Add'l. laborer help?	Which operations	How do you get help?	Adm. Tasks	Purch.	Payroll
Sinclairville	dump truc	Y - State	N		0	Y - Co.		Y			sidewalk repair, snow removal,	Y	water & road repair	Mun. sharing		1	
Westfield	dump truc	Y - all	Y	8,000	0	Y	paving	Y			paving	Y	construction, park maint.	hire 4 summer seasc		1	1
		13	**4**	**25000**	**6**	**10**		**14**				**12**				**10**	**6**
avg.		**0.93**	**0.29**	**1785.7**	**0.4**	**0.7**		**1.00**				**0.86**				**0.71**	**0.43**
CITIES																	
Dunkirk	hot patch	Y - State b	Y	10,000	0	Y - CO. & N	paving, plowing, some equi	Y			paving	Y	all areas due to manpower cuts due to budgetary			1	
Jamestown	loader	Y	Y	20,000	0	Co.-wide agr.		Y			emergency snow removal	Y	emergency snow removal	Hire PT summer labor			1
		2	**2**	**30000**	**0**	**2**		**2**				**2**				**1**	**1**
avg.		**1.00**	**1.00**	**15000**	**0**	**1.00**		**1.00**				**1.00**				**0.50**	**0.50**
CHAUTAUQUA	crane	Y - all	Y		315	Y- shared svcs					trucks for chip seal	Y	Hire 20 summer seasonal employees			1	1
COUNTY																	

Municipality	28.c.	28.d.	28.e.	28.f.	28.g.	28.h.	28.i.	28.j.	28.k.	29	30	31	32	32.a.	33	33a
	Budget Maint.	Cost Acctg.	Equip. Records	Phone answering	Dispatch	Permit issuance	Report prep for others	Report prep for you	Other:	Wd. Like Adm. Task help with:	Valuable office work provides:	#Public calls for work requests/ mo.	2-Way Field Commun.?	Describe system	Use computer in office?	For what use?
TOWNS																
Arkwright	1	1	1	1	1	1	1	1	All done by self	None	N/A	2	Y	County-wide radio system	N	
Busti	1	1	1	1	1	1	1	1		Payroll	Bookkeeping	5	Y	Town radio	Y	
Carroll	1	1	1	1	1		1	1		Preparing reports for s	cost accounting	1	Y	2-way radio w/county system	Y	weather radar
Charlotte	1	1	1	1	1	1	1	1		Voucher and warrants	Continuous update of	5-10	Y	Radios in trucks; 2 cell phones (on	Y	Timekeeping, fuel records
Chautauqua	1	1	1	1			1	1		Reports	Tracking	4-5	Y	Shared radio system, cell phones	Y	Email, timekeeping, office wor
Cherry Creek										All	staying within budget	2-3	Y	Hwy system	Y	budget
Clymer			1	1	1					All paperwork, surveys	Budget	10 per yr.	Y	Town radio	Y - DOS	filing
Dunkirk	1	1	1	1	1			1		N/A	N/A	5	Y	radio, cell phone	N	
Ellery	1		1	1	1	1					Keep track or up on wl	5	Y	Radio and cell phones	Y	Email, fuel reports, weather, e
Ellicott	1	1	1	1	1	1	1	1	water line insp	None	cost	30-40	Y	cell phones, radio, phone	y	payroll, budget, day log, proje
Ellington	1	1	1	1	1		1	1		equip. records, budget	budget	1	Y	2-way radios	Y	cost totals, road repairs & mai
French Creek	o. also											0	Y	Radios	Y	budget, fuel usage, letters, em
Gerry	1	1	1	1	1	1	1	1		None	cost mgmt.	0	Y	2-way radio, cell phones	Y	payroll, budget, equip. invento
Hanover	1		1	1	1	1	1	1		None	computer	10	Y	radios, cell phones	Y	budget, fuel consumption
Harmony	1	1	1	1	1							0-3	Y	cell phone, radio system	N	

Municipality	28.c.	28.d.	28.e.	28.f.	28.g.	28.h.	28.i.	28.j.	28.k.	29	30	31	32	32.a.	33	33a
	Budget Maint.	Cost Acctg.	Equip. Records	Phone answering	Dispatch	Permit issuance	Report prep for others	Report prep for you	Other:	Wd. Like Adm. Task help with:	Valuable office work provides:	#Public calls for work requests/ mo.	2-Way Field Commun.?	Describe system	Use computer in office?	For what use?
Kiantone	1	1	1	1	1	1	1	1			Up to the minute costs, fund balar		Y	cell phone & Co.-wide town radio	Y	
Mina	1	1	1	1	1		1	1			I do the office work to	few/yr.	Y	2-way radios, cell phones	Y	Signage records, fuel records,
N. Harmony		1	1	1	1					budget mgmt.	payroll	2-3	Y	2-way radio	Y	maint. records
Poland	1		1	1	1			1		data input for comput	cost control	2	Y	Co. radio, cell phones	Y	all records, all maint planning
Pomfret	1	1	1	1	1		1	1	Water Dept. re	cost accounting	hands on, knowing abo	3-5	Y	2-way radio	Y	recordkeeping, emails
Portland	1	1	1	1	1	1	1	1		None	All	Occasional	Y	2-way radio, cell phones	Y	all bookkeeping
Ripley	1	1	1	1	1	1	1	1	by self	billings	typing letters, computer work		Y	CB's, cell phones	Y	time records, purchases, paid
Sheridan	1	1	1	1	1	1	1	1		records	None, I hate it	2-3	Y	2-way radios, cell phones	N	parts, equip
Sherman	1	1	1	1	1	1	1	1			keeping a daily log	1-2	N		Y	road & equip inventory, claims
Stockton	1	1	1	1	1	1	1	1	If I don't do it,	preparing reports	Lets me keep close eye on all aspe		Y	cell phones and radios	Y	filling out this survey, records
Villenova	1	1	1	1	1	1	1	1		all	helps knowing budget	1	Y	Co. tower	N	
Westfield	1		1	1	1			1		paperwork	help you know how th	1	Y	radios	Y	inventory, paperwork, track w

Municipality	28.c.	28.d.	28.e.	28.f.	28.g.	28.h.	28.i.	28.j.	28.k.	29	30	31	32	32.a.	33	33a
	Budget Maint.	Cost Acctg.	Equip. Records	Phone answering	Dispatch	Permit issuance	Report prep for others	Report prep for you	Other:	Wd. Like Adm. Task help with:	Valuable office work provides:	#Public calls for work requests/ mo.	2-Way Field Commun.?	Describe system	Use computer in office?	For what use?
	23	**20**	**25**	**25**	**24**	**14**	**18**	**21**				**33**	**26**		**22**	
avg.	**0.85**	**0.74**	**0.93**	**0.93**	**0.89**	**0.52**	**0.67**	**0.78**				**1.22**	**0.96**		**0.81**	
VILLAGES																
Bemus Point	1	1	1	1	1	1	1	1		None	None	2	N		N	
Brocton	1		1	1	1		1	1		preparing reports	making our own budge	5	Y	radio, cell phone	Y	weather, email
Cassadaga	1		1	1			1	1				2	Y	Town radios, cell phones	N	
Celoron			1										Y	radio, cell phones	Y	equip. records
Cherry Creek												0	N		Y	
Falconer	1	1	1	1	1		1	1		I like to do myself so I	Keeps me on top of th	Varies	Y	radio, cell phones	Y	daily log, payroll, equip. recor
Forestville	1		1					1		None		40	Y	cell phones		computer in clerk's office
Fredonia	1	1		1	1	1	1	1		Any that require more	overview of entire ope	1	Y	radio, cell phone	Y	email, fax, payroll, spreadshee
Lakewood	1	1	1	1			1	1		None	communications	6	Y	radios, cell phones	Y	preparing reports, budgets
Mayville	1	1	1	1	1	1	1	1	safety training		Mostly I stay in touch	1	Y	Village 2-way radio system	Y	draft letters, documents, polic
Sherman	1	1	1	1						budget management	management	2	Y	radio, cell phone	N	
Silver Creek											budgeting, payroll	10	Y	radios	Y	budget

Municipality	28.c.	28.d.	28.e.	28.f.	28.g.	28.h.	28.i.	28.j.	28.k.	29	30	31	32	32.a.	33	33a
	Budget Maint.	Cost Acctg.	Equip. Records	Phone answering	Dispatch	Permit issuance	Report prep for others	Report prep for you	Other:	Wd. Like Adm. Task help with:	Valuable office work provides:	#Public calls for work requests/ mo.	2-Way Field Commun.?	Describe system	Use computer in office?	For what use?
Sinclairville			1	1								3	Y	radios, cell phones	N	don't have computer
Westfield	1		1	1	1		1	1		all of the above	budget management	25	Y	radio, cell phones	Y	recordkeeping, job reports, let
	10	**6**	**11**	**10**	**6**	**3**	**8**	**9**				**97**	**12**		**9**	
avg.	**0.71**	**0.43**	**0.79**	**0.71**	**0.43**	**0.21**	**0.57**	**0.64**				**6.93**	**0.86**		**0.64**	
CITIES																
Dunkirk	1		1	1		1	1	1			stay on top of budget	60	Y	Motorola based system	Y	purchasing, budget manageme
Jamestown	1	1	1	1	1	1	1	1	Utility marking	utility marking	recordkeeping/billing	25	Y		Y	Cadd, spreadsheets, word pro
	2	**1**	**2**	**2**	**1**	**2**	**2**	**2**				**85**	**2**		**2**	
avg.	**1.00**	**0.50**	**1.00**	**1.00**	**0.50**	**1.00**	**1.00**	**1.00**				**42.50**	**1.00**		**1.00**	
CHAUTAUQUA	1	1	1	1	1	1	1	1		financing	all	50	Y		Y	everything
COUNTY																

Municipality	34	35	36	37	38	39	40	41	42	43	44
	Internet access?	Use computer at work?	Field ops reports?	Going well in field ops:	Going well in office ops:	Hwy budget prep by:	Hwy maint operations led by:	Maint operations sched. by:	Maint. operations eng. by:	Hwy work permits issued by:	Suggestions for improving efficiency for municipal highway operations:
TOWNS											
Arkwright	Y	Y	occasionally	winter maint.		self	self	self	self	self	Ours or anyone's?
Busti		Y	N	We all work together we	I run it	self & Supv.	self	men			
Carroll	Y	Y	Y	plowing, shop & equip. re	budgeting, cost accoun	self	self	self	self or Co.	self	Limit operations to roads and not parks, cemeteries, etc.
Charlotte	Y	Y				Self, with an-asked	self	self	usually get	self	Actually present system is working quite well, but some snags on Co. side
Chautauqua	Y	Y	Not yet	Road maint., snowplowir	First year with compute	self	self	self	Outside firr	self	Shared service has worked well for our Town. Hope to do more.
Cherry Creek	N	Y	Y	Good employees, able to	Staying within budget,	self	self	self	Have not ne	self	County sub contract, some emergency work, some plowing & mowing. Towns be able to contract from County for ditching or mowing
Clymer	N		N	Road improv.	Ditching, tree/brush rer	Budget officer	self	self			More money for equip.
Dunkirk	N	N	Y	all	N/a	self	self	self		self	
Ellery	Y	Y	sometimes	snowplowing, road maint	fuel reports	self	self	self	Co. or priva	self	Keep politics out of it, use money for work not studies
Ellicott	Y	Y	Y	All ops	All	self	self	self	Co. engr. To	self	more money
Ellington	Y	N		work getting done	records mgmt.	self & Town Board	self	self	N/A	N/A	proper manpower
French Creek	Y	N	Y	everything; snow ops and	recordkeeping on equip	self	self	self	Co.	self	None because if any Town has a problem we help one another out
Gerry	Y	Y	N	road repairs, snowplowir	Everything	self	self	self	self w/Co. c	N/A	I think we are running things as efficiently as we can. I always strive for efficiency
Hanover	Y	Y	N	snowplowing and road co	office work and plannin	self	self	self	Toemen En	self	None
Harmony	N	N	N	Keep things simple, being	Having a system that w	self	self	self & crew			Keep things simple and run it like your own household

Municipality	34	35	36	37	38	39	40	41	42	43	44
	Internet access?	Use computer at work?	Field ops reports?	Going well in field ops:	Going well in office ops:	Hwy budget prep by:	Hwy maint operations led by:	Maint operations sched. by:	Maint. operations eng. by:	Hwy work permits issued by:	Suggestions for improving efficiency for municipal highway operations:
Kiantone	Y	Y	Y		Cost containment & worker productivity/sc		self	self	Contractor	self	remove the politics and have a trusting relationship with honest communication
Mina	Y	N	Y - if asked for	road maint., equip maint.		self	self	self	Co.	self	I think we're already pretty efficient - we have downsized from 4 men & Supt to 3 men & Supt
N. Harmony	Y	Y	Y	snow removal, road mair	recordkeeping	self	self	self			
Poland	Y	Y	Y - as needed	road maint, oiling progra	budgeting, records mgr	self	self	self	bid out	self	less duplication of services
Pomfret	Y	N	N	culvert repl., ditching, pa	correspondence with c	self and bookkeepe	self	self	self	N/A	better scheduling of employees time and take more time to set up different job operations
Portland	Y	N	Y	blacktop, oil/stone, main	everything	Town Board	self	self	engr. firm	self	
Ripley	Y	Y	N			self w/Town Supv	self & crew	self & crew	Co.		Things are going good - don't mess with anything
Sheridan	N	N	FEMA projects	roads are in very good shape		self and Supv	self	self	Nussbaume	self	When we work together things work well
Sherman	Y	Y		Everything is going well		self	self	self			You can't get much more efficient with the funds we have to work with
Stockton	Y	Y	sometimes			self	self & deput	self & deput	Co.		We are very efficient, I believe less micromanaging, hire people who care about their job, hire people who realize they have a good job, if people aren't capable of performing their job fire them. It doesn't hurt anyone to actually work, less use of free money, it's not free, we all pay
Villenova	N		Y - price per to	brine ice & dust		self		Maintenanc	None	self	less paperwork
Westfield	Y	Y	N	snow removal, road mair	track daily ops	self with T/Supv	self	everyone ke	Co.	depends or	need higher bidding $ for purchasing

Municipality	34	35	36	37	38	39	40	41	42	43	44
	Internet access?	Use computer at work?	Field ops reports?	Going well in field ops:	Going well in office ops:	Hwy budget prep by:	Hwy maint operations led by:	Maint operations sched. by:	Maint. operations eng. by:	Hwy work permits issued by:	Suggestions for improving efficiency for municipal highway operations:
						self (17); self & others (7); other (2)	self (24); self & other (2)	self (21); self & others (3); others (3)	self (2); self & others (4); Co. (8); others (8)	self (16); N/A (4)	
	20	**17**	**16**								
avg.	**0.74**	**0.63**	**0.59**								
VILLAGES											
Bemus Point						Mayor	self & Mayo	self	outside firn	none	Consolidation
Brocton	Y	Y	N	water & sewer maps, snow removal		self	self	self	self	N/A	
Cassadaga	N	N	N	No breakdowns (major)	Don't spend much time	V-Board, V-Clerk &	self	self		N/A	Would be great if we had a computer
Celoron	N	Y				Board and self	self	self	Co.		
Cherry Creek	Y	N	N	water & sewer		Mayor	self & Town	Town	Co. sometir	State & Co.	
Falconer	Y	Y	Y	morale of employees and	Equip. records	Mayor & Board of T	self	self	Co. or cont	Main office	Continue with the Shared Services Agreement. Upgrade of equipment when necessary and possible. Maintain equipment to the best of condition to eliminate breakdowns.
Forestville	Y	N	N/A	monitor water for safety	work is monitored and	Village Clerk & Boar	Village Clerk	self	N/A	NYSDOT	
Fredonia	Y	Y	Y	everything's 9as well as c	same	self	self	self	outsourced	Village	
Lakewood	Y	N	N	erosion control work, wo	public relations	self	self	self	N/A	N/A	Quit wasting money on useless studies when it could be spent on road maintenance
Mayville	Y	Y	Y	safety, installation of closed drainage, install side		self, Village Treasur	self	self	County, pri	self	consolidation of Towns, Town maintenance of Co. highways
Sherman	N	N				self	self	self		self	
Silver Creek	Y	Y	N	maintenance	budget officer	self	self	self	bid out	self	

Municipality	34	35	36	37	38	39	40	41	42	43	44
	Internet access?	Use computer at work?	Field ops reports?	Going well in field ops:	Going well in office ops:	Hwy budget prep by:	Hwy maint operations led by:	Maint operations sched. by:	Maint. operations eng. by:	Hwy work permits issued by:	Suggestions for improving efficiency for municipal highway operations:
Sinclairville			Y	water repair & snow removal		Mayor, Village Clerl	self	self			
Westfield	Y	Y	when needed	water/sewer maint. & install., paving, snowplowi		self	self	Vehicles-me	hire prof. e	Co. & State; self-local	
	9	**7**	**5**								
avg.	**0.64**	**0.50**	**0.36**			**6 self;**					
CITIES											
Dunkirk	Y	Y	Y	road salt cost control, dra	smooth cooperation of	Mayor	self and sr. e	self	sr. eng. Tec	supt office	sharing equipment and vehicles
Jamestown	Y	Y	we are capabl	survey/construction layo	permitting	self	sr civil engr	self and sr. c	self, sr. civil	engr., 1-2 j	Towns taking over Villages
	2	**2**	**1**								
avg.	**1.00**	**1.00**	**0.50**								
CHAUTAUQUA	Y	Y	Y - capital proj	chip seal, fleet mgmt., AC, bridges, signage, main		financial personnel,	engineering	district supv	engineers	engr. Div.	
COUNTY											

TOWNS	Total Highway Maintenance $ Cost 2008	Total Highway Maintenance $ Cost 2007	Total Highway Maintenance $ Cost 2006
Arkwright	505,760	560,379	482,921
Busti	786,695	1,012,727	841,564
Carroll	881,153	924,232	871,779
Charlotte	574,769	541,196	468,134
Chautauqua	1,241,166	1,177,317	1,325,076
Cherry Creek	449,004	438,486	444,698
Clymer	406,956	385,341	343,835
Dunkirk	137,745	171,191	156,644
Ellery	1,058,111	1,017,912	908,861
Ellicott	1,173,048	1,155,126	1,071,071
Ellington	571,955	536,206	519,758
French Creek	475,320	427,299	395,469
Gerry	555,033	534,798	489,790
Hanover	1,199,438	1,233,122	1,071,945
Harmony	466,154	465,347	459,995
Klantone	325,855	314,848	268,409
Mina	477,264	619,728	430,860
N. Harmony	823,700	808,854	885,032
Poland	697,132	663,782	621,946
Pomfret	976,190	897,096	846,754
Portland	719,383	653,329	633,942

Ripley	590,182	545,897	523,763
Sheridan	684,514	579,648	528,467
Sherman	392,223	381,050	380,031
Stockton	556,777	503,930	504,939
Villenova	454,410	401,761	393,820
Westfield	730,463	795,959	641,678
Town Totals:	17,910,400	17,746,561	16,511,181

VILLAGES	Total Highway Maintenance Cost 2008	Total Highway Maintenance Cost 2007	Total Highway Maintenance Cost 2006
Bemus Point	110,159	67,908	73,603
Brocton	607,135	215,905	175,135
Cassadaga	89,381	98,578	68,365
Celeron	183,611	158,871	171,694
Cherry Creek	50,296	40,463	53,130
Falconer	395,186	440,826	309,028
Forestville	160,678	112,737	87,319
Fredonia	467,275	548,632	545,433
Lakewood	554,809	523,157	752,913
Mayville	353,553	292,225	323,561
Silver Creek	371,651	351,510	434,883

Sinclairville	63,794	139,567	121,784
Panama	30,085	29,718	29,801
Sherman	86,722	92,502	74,881
Westfield	467,697	452,609	384,790
Village Totals:	3,992,032	3,565,208	3,606,320

CITIES	Total Highway Maintenance Cost 2008	Total Highway Maintenance Cost 2007	Total Highway Maintenance Cost 2006
Dunkirk	1,219,533	1,200,425	1,129,728
Jamestown	2,672,832	2,456,085	1,943,829
City Totals:	3,892,365	3,656,510	3,073,557

COUNTY	2008 County Total	2007 County Total	2006 County Total
General Fund Expenditure - Transportation	5,047,482	4,752,809	4,384,163
County Road Fund	15,732,117	16,600,374	11,584,849
Road Machinery Fund	4,146,849	3,780,989	3,431,300
Geo. Spanos: Remove Bridge Expense 2/25/10	-1,500,000	-1,500,000	-1,500,000
Geo. Spanos: Remove 50% Admin. Expense	-350,000	-350,000	-350,000
Adjusted County Rd. Fund - Hwy Maint only	13,882,117	14,750,374	9,734,849

Total Highway Maintenance $ Cost 2005	Total Highway Maintenance $ Cost 2004	Tot. Hwy Maint 5Yr. Average
492,080	393,915	$487,011
839,895	853,234	$866,823
769,060	794,770	$848,199
455,781	363,720	$480,720
1,284,355	1,127,396	$1,231,062
354,229	434,728	$424,229
418,430	328,766	$376,666
165,558	177,163	$161,660
807,461	860,035	$930,476
1,141,957	971,650	$1,102,570
461,887	398,861	$497,733
409,661	427,108	$426,971
492,355	455,912	$505,578
956,381	960,130	$1,084,203
438,724	364,389	$438,922
296,736	380,063	$317,182
459,671	376,513	$472,807
820,666	719,916	$811,634
545,578	1,045,676	$714,823
848,928	842,043	$882,202
683,244	595,720	$657,124

522,430	484,146	$533,284
561,298	552,081	$581,202
452,782	282,332	$377,684
676,445	443,799	$537,178
374,386	383,020	$401,479
806,296	803,945	$755,668
16,536,274	15,821,031	$16,905,089

Total Highway Maintenance Cost 2005	Total Highway Maintenance Cost 2004	
46,737	50,600	$69,801
182,782	148,469	$265,885
170,464	181,838	$121,725
169,264	167,471	$170,182
37,820	37,146	$43,771
382,908	348,981	$375,386
87,484	98,838	$109,411
598,568	521,367	$536,255
408,031	302,727	$508,327
302,655	243,907	$303,180
458,180	431,351	$409,515

130,831	109,226	$113,040
39,311	6,255	$27,034
69,394	62,318	$77,163
488,576	338,170	$426,368
3,573,005	3,048,664	$3,557,046

Total Highway Maintenance Cost 2005	Total Highway Maintenance Cost 2004	
1,162,125	1,320,081	$1,206,378
2,169,981	1,696,773	$2,187,900
3,332,106	3,016,854	$3,394,278

2005 County Total	2004 County Total	
4,379,296	4,531,156	
15,680,465	20,563,352	
3,543,196	3,596,903	
-1,500,000	-1,500,000	
-350,000	-350,000	
13,830,465	18,713,352	$14,182,231

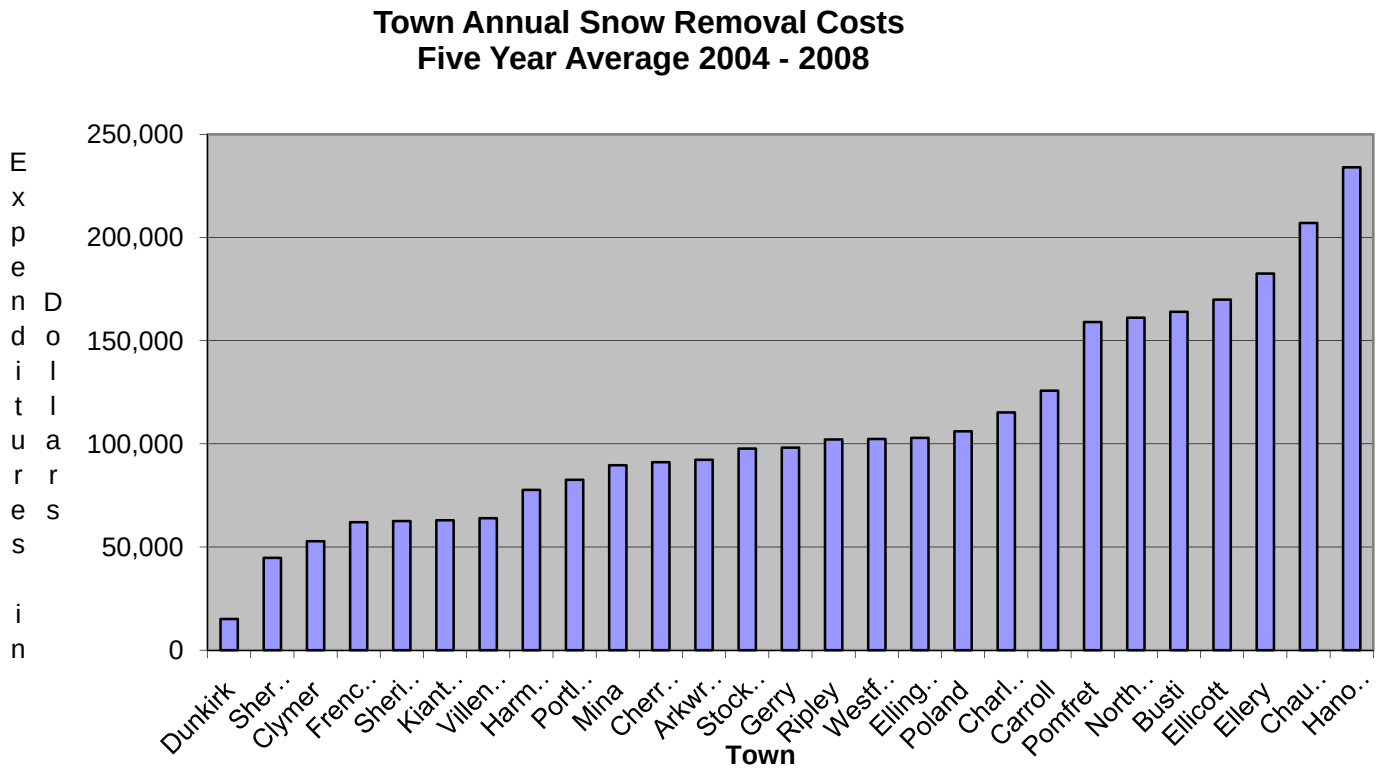
Municipality **TOWNS**	Total System Mileage (Miles)	Paved System Surveyed (Miles)	Total (Pv'd+Grvl) System Quality	Paved System Quality
Arkwright	39.8	10.1	4.9	7.7
Busti	64.7	64.7	7.3	7.3
Carroll	48.1	46.5	7.9	8.2
Charlotte	44.9	28.7	5.5	6.3
Chautauqu	73.8	69.7	8.0	8.2
Cherry Cre	28.5	23.4	7.8	8.6
Clymer	34.5	19.7	6.2	7.5
Dunkirk	7.3	6.6	7.0	7.2
Ellery	62.1	54.9	7.4	7.7
Ellicott	50.5	49.3	6.7	6.8
Ellington	49.2	32.5	6.6	8.0
French Cre	39.7	34.9	7.5	8.0
Gerry	35.2	32.2	8.6	9.0
Hanover	63.2	58.7	7.1	7.2
Harmony	39.6	32.9	6.7	7.5
Kiantone	22.6	21.5	8.0	8.3
Mina	33.1	27.3	7.8	8.5
N. Harmony	59.6	46.7	6.5	7.2
Poland	45.4	42.9	8.3	8.4
Pomfret	57.3	52.9	7.5	7.7

Portland	59.7	54.7	7.8	8.1
Ripley	43.2	28.7	6.0	7.0
Sheridan	39.5	38.3	7.6	7.6
Sherman	33.8	30.2	7.4	7.8
Stockton	41.8	37.2	8.3	8.8
Villenova	39.8	29.6	5.8	6.5
Westfield	53.4	52.3	8.7	8.7
Total Miles	1210.2			

VILLAGES

Bemus Poi	3.46	3.45	7.2	7.2
Brocton	6.17	6.12	7.5	7.5
Cassadaga	4.57	4.57	8.6	8.6
Celoron	8.27	8.27	7.3	7.3
Cherry Cre	3.24	3.1	7.5	7.7
Falconer	11.79	11.79	7.3	7.3
Forestville	2.84	2.84	8.2	8.2
Fredonia	27.2	27.2	7.6	7.6
Lakewood	20.97	20.53	7.6	7.6
Mayville	10.31	10.31	7.8	7.8
Sherman	2.55	2.17	6.7	7.1
Silver Cree	11.56	11.56	7.1	7.1
Sinclairville	3.09	3.09	7.8	7.8

Westfield	18.11	17.46	7.6	7.7
Total Miles:	134.13			


Town Annual Snow Removal Costs
Five Year Average 2004 - 2008
Expenditures in Dollars
250,000
200,000
150,000
100,000
50,000
0
Dunkirk
Sher..
Clymer
Frenc..
Sheri..
Kiant..
Villen..
Harm..
Portl..
Mina
Cherr..
Arkwr..
Stock..
Gerry
Ripley
Westf..
Elling..
Poland
Charl..
Carroll
Pomfret
North..
Busti
Ellicott
Ellery
Chau..
Hano..
Town

Pavement Surface Condition
Survey

Municipality: Town of Poland

Weather: Sunny

Date of Survey: 10/18/09

Temp. 50

Road /Street Name	Start of Section	End of Section	Mileage Start	Mileage Stop	Section Length Miles	Rating	Mi.XRating
Grub Hill Rd	Rt 62	1.68	0	1.68	1.68	8	13.44
	1.68	2.13	1.68	2.13	0.45	4	1.8
Cook Rd	Grub Hill Rd	0.32	0	0.32	0.32	4	1.28
	0.32	0.48	0.32	0.48	0.16	6	0.96
Ellington St	Rt 394	0.11	0	0.11	0.11	9	0.99
	0.11	Rt 62	0.11	1.04	0.93	8	7.44
Alberta St	Rt 62	Cemetary St	0	0.07	0.07	7	0.49
Cemetary St	Rt 62	Rt 62	0	0.33	0.33	7	2.31
Maple Shade Ln	Rt 62	Cemetary St	0	0.06	0.06	8	0.48
Jackson Alley	Rt 62	River St	0	0.1	0.1	8	0.8
River St	Rt 62	Dead End	0	0.08	0.08	7	0.56
2nd St	Langdon St	Ellington St	0	0.2	0.2	10	2
	Ellington St	gravel section	0.2	0.42	0.22	8	1.76
Langdon st	Rt 394	gravel section	0	0.15	0.15	10	1.5
Daily Hill Rd	Rt 394	3rd St	0	0.11	0.11	10	1.1
	3rd St	Cobb St	0.11	0.73	0.62	9	5.58
	Cobb St	Sprague Hill	0.73	1.99	1.26	8	10.08
3rd St	Daily Hill Rd	Ellington St	0	0.14	0.14	8	1.12

Weighted Average Rating

Municipal Sign Management
Services

E Cobb St	Daily Hill Rd	0.25	0	0.25	0.25	9	2.25
	0.25	0.63	0.25	0.63	0.38	10	3.8
	0.63	Dry Brook Rd	0.63	1.18	0.55	9	4.95
Cross St	Rt 394	2nd St	0	0.05	0.05	8	0.4
Leach Hill Rd	Rt 394	Town Line	0	0.15	0.15	8	1.2
Church St	Rt 394	3rd St	0	0.11	0.11	10	1.1
Burch St	Rt 62	Dead End	0	0.03	0.03	10	0.3
Wheelock Rd	Rt 394	Dry Brook Rd	0	1.21	1.21	9	10.89
Dry Brook Rd	Rt 394	0.66	0	0.66	0.66	8	5.28
	0.66	2.59	0.66	2.59	1.93	8	15.44
	2.59	Ellington T/L	2.59	3.2	0.61	9	5.49
Sprague Hill Rd	Townline	0.23	0	0.23	0.23	6	1.38
	0.23	Townline	0.23	3.65	3.42	9	30.78
W Cobb St	Sprague Hill Rd	Dean School Rd	0	0.65	0.65	9	5.85
	Sprague Hill Rd	Dry Book Rd	0	0.62	0.62	9	5.58
Mee Rd	Dry Brook Rd	0.9	0	0.9	0.9	9	8.1
	0.9	Sprague Hill Rd	0.9	2.67	1.77	8	14.16
Dean School Rd	Sprague Hill Rd	Townline	0	1.2	1.2	9	10.8
Willet Rd	Rt 394	Linquist Dr	0	0.11	0.11	9	0.99
Linquist Dr	Rt 394	0.4.	0	0.4	0.4	8	3.2
	0.4	Rt 394	0.4	0.54	0.14	9	1.26
Ericson Rd	Rt 62	1.14	0	1.14	1.14	8	9.12
	1.14	Dead End	1.14	1.25	0.11	7	0.77
Miller Vallet Rd	Rt 62	1.39	0	1.39	1.39	9	12.51
	1.39	Townline	1.39	1.9	0.51	6	3.06

Hartson Rd	Rt 62	0.45	0	0.45	0.45	6	2.7	
	0.45	Stone Rd	0.45	1.67	1.22	9	10.98	
Stone Rd	Rt 394	0.75	0	0.75	0.75	7	5.25	
	0.75	Quaint Rd	0.75	1.25	0.5	8	4	
Quaint Rd	CR 65	0.79	0	0.79	0.79	9	7.11	
	0.79	1.3	0.79	1.3	0.51	10	5.1	
	1.3	2.45	1.3	2.45	1.15	9	10.35	
	2.45	CR 55 (340)	2.45	2.74	0.29	8	2.32	
Willard St Ext	0	CR 55 (340)	0	0.35	0.35	9	3.15	
	0.35	RT 380	0.35	0.75	0.4	8	3.2	
Buffalo St Ext	RT 380	CR 55 (340)	0	1.1	1.1	9	9.9	
Carlberg Rd	CR 55	Elliot T/L	0	0.55	0.55	7	3.85	
Pine Hill Rd	Hartson Rd	gravel section	0	0.45	0.45	8	3.6	
Scott Hill Rd	RT 62	CR 42	0	3.1	3.1	9	27.9	
Fisher Hill Rd	Scott Hill Rd	Dead End	0	1.7	1.7	9	15.3	
Gospel Lane	Scott Hill Rd	CR 42	0	0.11	0.11	9	0.99	
Eccles Rd	Fisher Hill Rd	0.26	0	0.26	0.26	9	2.34	
	0.26	Scott Hill Rd	0.26	0.6	0.34	10	3.4	
Page Hill Rd	CR 42	Carroll T/L	0	2.41	2.41	8	19.28	
Munson Rd	Page Hill Rd	Dead End	0	0.32	0.32	9	2.88	
Emery Hill Rd	Page Hill Rd	Carroll T/L	0	0.14	0.14	9	1.26	
Clay Pond Rd	Quaint Rd	Ellicott T/L	0	0.5	0.5	8	4	
Sprague Alley	Langdon St	Dailey Hill Rd			0		0	
			Surveyed miles		42.9		361.2	**8.4**
			Unsurfaced Miles		1.71	4	6.84	**4.0**

Town of Poland			AVG. System Condition		44.61		368.1	**8.3**

Pavement Surface Condition
Survey

Municipality: Town of Carroll Weather: Sunny

Date of Survey: 10/18-19/09 Temp. 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length Miles	Rating	Weighted Average
			Start	Stop			
Emery Hill Rd	Poland T/L	0.81	0	0.81	0.81	9	7.29
	0.81	CR 36 (318)	0.81	1.6	0.79	8	6.32
Harrington Rd	CR 36 (318)	RT 62	0	1.17	1.17	8	9.36
Page Rd	RT 62	Poland T/L	0	1.38	1.38	9	12.42
Bragg Rd	Emery Hill Rd	pavement change	0	0.55	0.55	8	4.4
	pavement change	seasonal use sign	0.55	1.17	0.62	9	5.58
Elderkin Rd	Bragg Rd	Woodchuck Hill	0	0.31	0.31	8	2.48
Woodchuck Hill	Elderkin Rd	gravel section	0	0.39	0.39	9	3.51
Church Rd	Elderkin Rd	0.34	0	0.34	0.34	9	3.06
	0.34	0.77	0.34	0.77	0.43	6	2.58
Scott Rd	CR 36 (318)	Oak Hill Rd	0	1.74	1.74	8	13.92
Railroad Ave	Rt 62	Dead End	0	0.18	0.18	7	1.26
Institute St	Railroad Ave	Rt 62	0	0.48	0.48	7	3.36
Center St	Rt 62	Institute St	0	0.1	0.1	7	0.7
Park St	Institute St	Prospect St	0	0.08	0.08	7	0.56
Prospect St	N Pearl St	Dead End	0	0.11	0.11	7	0.77
N Pearl St	CR 317	Rt 62	0	1.2	1.2	6	7.2
S Pearl St	Rt 62	Lincoln St	0	0.28	0.28	7	1.96
Lincoln St	S Pearl St	CR 8139	0	0.14	0.14	7	0.98

Lafayette St	S Pearl St	Maple Lane	0	0.14	0.14	7	0.98
Maple Lane	Lafayette	Washington St	0	0.05	0.05	6	0.3
Washington St	S Pearl St	Maple Lane	0	0.13	0.13	6	0.78
Jefferson St	S Pearl St	Maple Lane	0	0.08	0.08	7	0.56
Venman St	N Pearl St	Dead End	0	0.19	0.19	7	1.33
Harrison St	Venman Rd	Cherry St	0	0.11	0.11	7	0.77
Traver St	N Pearl St	Dead End	0	0.09	0.09	0	0
Cherry St	N Pearl St	Berg Dr	0	0.22	0.22	7	1.54
Berg Dr	End of Pavement	Cherry St	0	0.15	0.15	9	1.35
	Cherry St	Maple Ave	0.15	0.21	0.06	7	0.42
Maple Ave (St)	Berg Dr	N Pearl St	0.21	0.41	0.2	7	1.4
Howard St	N Pearl St	CR 317	0	0.26	0.26	7	1.82
Annis St	Dead End	N Pearl St	0	0.16	0.16	6	0.96
Johnson St	N Pearl St	CR 317	0	0.26	0.26	7	1.82
Mari Ln	Johnson St	Dead End	0	0.09	0.09	7	0.63
Marvin St	CR 317	Ruth Pl	0	0.14	0.14	7	0.98
Ruth Pl	N Meadow	E Meadow	0	0.07	0.07	7	0.49
E Meadow Ln	Ruth Pl	N Meadow Ln	0	0.18	0.18	7	1.26
N Meadow Ln	Ruth Pl	Meadow	0	0.16	0.16	7	1.12
Meadow Ln	E Meadow Ln	RT 62	0	0.11	0.11	7	0.77
Carroll St	RT 62	Carroll St Spur	0	0.18	0.18	10	1.8
Carroll St Spur	Carroll St	CR 80	0	0.08	0.08	10	0.8
Danielson St	CR 80	Carroll St	0	0.15	0.15	10	1.5
Duff St	Carroll St	Danielson St	0	0.1	0.1	10	1
Whitney Ave	RT 62	Dead End	0	0.27	0.27	10	2.7

Mattison St	RT 62	Dead End	0	0.32	0.32	10	3.2
Everett St	RT 62	Mattison St	0	0.16	0.16	10	1.6
Durand St	Mattison St	RT 62	0	0.21	0.21	10	2.1
Wigren Rd	RT 62	0.1	0	0.1	0.1	10	1
	0.1	Bunce Rd	0.1	1.7	1.6	8	12.8
Diamond Dr	Wigren Rd	Dead End	0	0.15	0.15	10	1.5
Nash Ave	Wigren Rd	Dead End	0	0.18	0.18	7	1.26
Rio Dr	Wigren Rd	Valleyview Dr	0	0.17	0.17	10	1.7
Valleyview	Rio Dr	Rice Ave	0	0.28	0.28	10	2.8
Rice Ave	Valleyview	Wigren Rd	0	0.17	0.17	10	1.7
Wahgren Rd	RT 62	Dead End	0	0.39	0.39	8	3.12
Bunce Rd	CR 318 (36)	Oak Hill Rd	0	1.7	1.7	8	13.6
Oak Hill Rd	CR 80 (34)	2.6	0	2.6	2.6	9	23.4
	2.6	Oak Hill Ext	2.6	4.61	2.01	8	16.08
Oak Hill Ext	Oak Hill Rd	Cattaraugus T/L	0	0.41	0.41	8	3.28
Church Cross Rd	Oak Hill Rd	CR 336 (34)	0	0.64	0.64	9	5.76
Engstrom Cross Rd	CR 336 (34)	Wheeler Hill Rd	0	0.4	0.4	8	3.2
Wheeler Hill Rd	Cattaraucus C/L	Robin Hill Rd	0	1.05	1.05	8	8.4
	1.05	1.39	1.05	1.39	0.34	8	2.72
	1.39	CR 366 (34)	1.39	2.09	0.7	9	6.3
Robin Hill Rd	Wheeler Hill Rd	Robin Hill Rd Spur	0	1.55	1.55	8	12.4
Anderson Rd	Cattaraucus C/L	Robin Hill Rd	0	0.33	0.33	7	2.31
	Robin Hill Rd	Dodge Rd	0.33	1.18	0.85	7	5.95
Dodge Rd	PA S/L	0.85	0	0.85	0.85	7	5.95
	0.85	Wiltsie Rd	0.85	2.92	2.07	9	18.63

Gurnsey Hollow	Wheeler Hill Rd	0.26	0	0.26	0.26	7	1.82	
	0.26	Cattaraugus C/L	0.26	1.12	0.86	9	7.74	
Wiltsie Rd	CR 34	CR 53	0	2.24	2.24	9	20.16	
	CR 53	Fentonville Rd	0	0.22	0.22	8	1.76	
Wiltsie Cross Rd	CR 53	End of Pavement	0	0.08	0.08	9	0.72	
Sandberg Rd	Wiltsie Rd	Dodge Rd	0	2.35	2.35	9	21.15	
Fentonville Rd	CR 53	0.19	0	0.19	0.19	6	1.14	
	0.19	CR 53	0.19	0.91	0.72	7	5.04	
Ford Peterson Rd	CR 80 (34)	Oak Hill Rd	0	0.79	0.79	8	6.32	
Bain Rd	CR 80 (34)	Seasonal Use sign	0	1.18	1.18	8	9.44	
Austin Hill Rd	Bain Rd	CR 53	0	1.32	1.32	8	10.56	
Riverside Rd	CR 8139 (53)	Townline	0	0.37	0.37	9	3.33	
McCoy Rd	CR 8139 (53)	Dead End	0	0.12	0.12	7	0.84	
Centennial St	N Pearl St	CR 317 (55)	0	0.26	0.26	8	2.08	
White Dr	CR 317 (55)	Dead End	0	0.17	0.17	6	1.02	
Charles St	Ruth Pl	Clifford St	0	0.14	0.14	7	0.98	
Clifford St	Charles St	Rodgers St	0	0.14	0.14	7	0.98	
Roger St	Ruth Pl	Clifford St	0	0.05	0.05	7	0.35	
Myers Ave	CR 317 (55)	Dead End	0	0.08	0.08	7	0.56	
Carlburg Rd	CR 317 (55)	Poland T/L	0	0.68	0.68	7	4.76	
Academy St	CR 317 (55)	Dead End	0	0.07	0.07	8	0.56	
Parkway Dr	CR 80 (34)	Town Park	0	0.11	0.11	8	0.88	
Lori Ln	CR 80 (34)	Dead End	0	0.15	0.15	9	1.35	
			Surveyed miles		46.51		379.09	**8.2**
			Unsurfaced Miles		2.98	4	11.92	**4.0**

Town of Carroll			AVG. System Condition		49.49		391.01	**7.9**

Pavement Surface Condition
Survey

Municipality: Town of Clymer

Weather: Sunny

Date of Survey: 10/21/09

Temp. 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Maple Ave	RT 474	CR 15	0	0.22	0.22	6	1.32
Freeman Rd	CR 15	RT 474	0	0.27	0.27	9	2.43
Bakerink Rd	RT 474	CR 2 (21)	0	0.78	0.78	8	6.24
Townline Rd	CR 2 (21)	Ravlin Hill Rd	0	0.36	0.36	8	2.88
Mohawk Rd	RT 474	Knowlton Rd	0	0.53	0.53	8	4.24
Knowlton Rd	CR 15	Rundall Rd	0	1.27	1.27	8	10.16
Rundall Rd	gravel section	Calflish Rd	0	0.62	0.62	8	4.96
	Calflisch Rd	RT 474	0	0.34	0.34	8	2.72
Calflisch Rd	RT 474	intersection	0	0.43	0.43	8	3.44
Rhebergen Rd	Brownell Rd	CR 8	0	0.6	0.6	8	4.8
Einink Rd	CR 8	Brownell Rd	0	1.19	1.19	7	8.33
Ravlin Hill Rd	CR 15	Mina T/L	0	0.98	0.98	8	7.84
Pork Rd	Ravlin Hill Rd	0.72	0	0.72	0.72	7	5.04
	0.72	Mina T/L	0.72	1.98	1.26	10	12.6
Upper Rd	CR 19 (636)	CR 19 (636)	0	1.63	1.63	8	13.04
Ten Haken	Raspas Hill Rd	gravel section	0	0.64	0.64	5	3.2
Raspas Hill Rd	Ten Haken Rd	RT 474	0	1.4	1.4	6	8.4

Railroad St	Raspas Hill Rd	Dead End	0	0.19	0.19	9	1.71	
	Raspas Hill Rd	Dead End	0	0.03	0.03	7	0.21	
Church St	RT 76	RT 474	0	0.11	0.11	4	0.44	
Wait Corners Rd	RT 474	Sherman T/L	0	0.76	0.76	10	7.6	
Brownell Rd	RT 474	0.5	0	0.5	0.5	7	3.5	
	0.5	CR 19	0.5	1.02	0.52	6	3.12	
	CR 19	0.2	0	0.2	0.2	6	1.2	
	0.2	CR 15	0.2	0.73	0.53	7	3.71	
	RT 474	CR 23	0	3.58	3.58	7	25.06	
			Surveyed miles		19.66		148.19	**7.5**
			Unsurfaced Miles		12.31	4	49.2	**4.0**
Town of Clymer			AVG. System Condition		31.97		197.43	**6.2**

Pavement Surface Condition
Survey

Municipality: Town of Ellington

Weather: Sunny

Date of Survey: 10/25/09

Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Bemis Rd			0	0.35	0.35	6	2.1
Leach Hill Rd	Town / Poland	RT 62	0	3.02	3.02	9	27.18
Watkins Rd	Leach Hill Rd	CR 67	0	0.74	0.74	9	6.66
Oak St			0	0.08	0.08	9	0.72
Church St			0	0.18	0.18	8	1.44
Maple St			0	0.06	0.06	9	0.54
Elm St			0	0.07	0.07	9	0.63
Bently Hill Rd	RT 62	CR 86	0	3.99	3.99	9	35.91
Wade Hill Rd	CR 66	gravel section	0	0.27	0.27	8	2.16
Harris Hollow Rd	CR 66	0.8	0	0.8	0.8	7	5.6
	0.8	gravel section	0.8	2.5	1.7	6	10.2
Hagerdon Hill Rd	CR 66	1	0	1	1	7	7
	1	Chautauqua Rd	1	1.93	0.93	6	5.58
Chautauqua Rd	Hagerdon Hill Rd	1.19	0	1.19	1.19	6	7.14
Mill St	CR 66	RT 62	0	0.27	0.27	8	2.16
N Hill Rd	RT 62	gravel section	0	1.36	1.36	7	9.52
28th Creek Rd	CR 50	Woolcott Rd	0	1.22	1.22	9	10.98

28th Creek Rd	Woolcott Rd	0.95	0	0.95	0.95	10	9.5	
	0.95	Gerry T/L	0.95	2.5	1.55	9	13.95	
Dean School Rd	gravel section	28th Creek Rd	0	0.22	0.22	9	1.98	
	0.22	1.38	0.22	1.38	1.16	9	10.44	
	1.38	Poland T/L	1.38	2.07	0.69	8	5.52	
Waterman Rd	Dean School Rd	2	0	2	2	6	12	
	2	RT 62	2	4.35	2.35	8	18.8	
Hopkins Rd	Waterman Rd	Poland T/L	0	0.87	0.87	9	7.83	
Dry Brook Rd	Poland T/L	Waterman Rd	0	0.84	0.84	9	7.56	
Butman Rd	Waterman Rd	Abbey Rd	0	0.74	0.74	9	6.66	
S Hill Rd	CR 50	0.6	0	0.6	0.6	7	4.2	
	0.6	Abbey Rd	0.6	1.74	1.14	6	6.84	
Brainard Rd	RT 62	gravel section	0	0.99	0.99	9	8.91	
Abbey Hill Rd	RT 62	gravel section	0	0.38	0.38	9	3.42	
Young Rd	RT 62	gravel section	0	0.11	0.11	5	0.55	
County Line (Bu)	CR 67	County Line	0	0.66	0.66	8	5.28	
			Surveyed miles		32.48		258.96	**8.0**
			Unsurfaced Miles		16.6	4	66.4	**4.0**
Town of Ellington			AVG. System Condition		49.08		325.36	**6.6**

Pavement Surface Condition
Survey

Municipal Sign Management
Services

Pavement Surface Condition
Survey

Municipality: Town of French Creek

Weather: Sunny

Date of Survey: 10/20/09

Temp. 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Harrington Rd	Mina T/L	CR 7	0	0.54	0.54	9	4.86
Pork Rd	Cherry Hill Rd	Clymer T/L	0	0.66	0.66	6	3.96
Bush Rd	Marks Corners	0.66	0	0.66	0.66	8	5.28
	0.66	0.8	0.66	0.8	0.14	7	0.98
	0.8	2.81	0.8	2.81	2.01	8	16.08
	2.81	CR 2	2.81	3.52	0.71	7	4.97
Ravlin Hill Rd	Clymer T/L	0.89	0	0.89	0.89	7	6.23
	0.89	1.85	0.89	1.85	0.96	8	7.68
	1.85	2.65	1.85	2.65	0.8	7	5.6
	2.65	3.9	2.65	3.9	1.25	9	11.25
VanEarden Rd	Ravlin Hill Rd	CR 2	0	0.74	0.74	8	5.92
Redding Rd	RT 426	0.24	0	0.24	0.24	8	1.92
	0.24	1.16	0.24	1.16	0.92	10	9.2
	1.16	CR 4	1.16	1.57	0.41	9	3.69
King Rd	CR 4	RT 426	0	0.57	0.57	8	4.56
Conway Rd	CR 1	Old Rd	0	1.07	1.07	8	8.56
Old Rd	RT 426	1.49	0	1.49	1.49	8	11.92

	1.49	2.5	1.49	2.5	1.01	7	7.07
	2.5	Griffin Rd	2.5	3.43	0.93	10	9.3
Griffin Rd Sp	CR 1	Griffin Rd	0	0.06	0.06	10	0.6
Griffin Rd	CR 1	0.69	0	0.69	0.69	7	4.83
	0.69	W Mina Rd	0.69	1.06	0.37	8	2.96
Pekin Hill Rd	Griffin Rd	0.72	0	0.72	0.72	6	4.32
	0.72	1.09	0.72	1.09	0.37	7	2.59
	1.09	1.5	1.09	1.5	0.41	8	3.28
	1.5	1.96	1.5	1.96	0.46	7	3.22
	1.96	3.08	1.96	3.08	1.12	9	10.08
Surry Ln	Pekin Hill Rd	Eggles Cliff	0	0.09	0.09	9	0.81
Dovenshire Pl	Surry Ln	Dead End	0	0.08	0.08	9	0.72
Eggles Cliff Pl	Surry Ln	Dead End	0	0.08	0.08	9	0.72
New Rd	Old Rd	Gilmore Rd	0	1.15	1.15	9	10.35
Rouse Hill Rd	Rt 474	0.48	0	0.48	0.48	8	3.84
	0.48	gravel section	0.48	0.71	0.23	7	1.61
Marvin Rd	Rt 474	Old Rd	0	1.68	1.68	9	15.12
Belknap Rd	Marvin Rd	RT 474	0	0.54	0.54	8	4.32
New Buffalo Rd	Rt 474	0.3	0	0.3	0.3	8	2.4
	0.3	State Line Rd	0.3	1.8	1.5	7	10.5
State Line Rd	New Buffalo Rd	1.3	0	1.3	1.3	6	7.8
	1.3	1.7	1.3	1.7	0.4	9	3.6
	1.7	PA S/L	1.7	2.5	0.8	6	4.8
Vruwink Rd	Rt 474	CR 2	0	1.3	1.3	9	11.7
Cabbage Hill Rd	Rt 474	0.5	0	0.5	0.5	7	3.5

	0.5	1	0.5	1	0.5	6	3	
	1	PA S/L	1	1.5	0.5	8	4	
Bakerink Rd	Rt 474	CR 2	0	0.15	0.15	9	1.35	
Clymer-French	CR 2	Ravlin Hill Rd	0	0.99	0.99	9	8.91	
Reagon Rd	Bush Rd	1.55	0	1.55	1.55	9	13.95	
	1.55	CR 4	1.55	2.11	0.56	8	4.48	
			Surveyed miles		34.88		278.39	**8.0**
			Unsurfaced Miles		4.63	4	18.52	**4.0**
Town of French Creek			AVG. System Condition		39.51		296.91	**7.5**

Pavement Surface Condition
Survey

Municipality: Town of Gerry

Weather: Sunny

Date of Survey: 10/25/09

Temp. 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Harris Hill Rd	CR 50	Chautauqua Rd	0	1.53	1.53	9	13.77
	Chautauqua Rd	CR 64	1.53	2.56	1.03	9	9.27
	CR 50	Ellicott T/L	0	3.21	3.21	9	28.89
Chautauqua Rd	Harris Hollow Rd	Herrick Rd	0	1.42	1.42	10	14.2
	Herrick Rd	RT 60	1.42	4.59	3.17	9	28.53
Damon Hill Rd	V/L	CR 50	0	4.52	4.52	9	40.68
Nobles Rd	Damon Hill Rd	Chautauqua Rd	0	1.2	1.2	9	10.8
Terry Rd	RT 60	Damon Hill Rd	0	0.98	0.98	9	8.82
	Damon Hill Rd	gravel section	0	0.18	0.18	8	1.44
Hodge Rd	Chautauqua Rd	gravel section	0	0.91	0.91	8	7.28
Herrick Rd	Chautauqua Rd	0.2	0	0.2	0.2	10	2
	0.2	Elwell Rd	0.2	2.31	2.11	9	18.99
Elwell Rd	Dead End	28th Creek Rd	0	1.68	1.68	9	15.12
28th Creek Rd	CR 50	Harris Hill Rd	0	3.32	3.32	9	29.88
	Harris Hill Rd	Ellington T/L	3.32	3.56	0.24	9	2.16
Hanson Rd	T/L	Harris Hill Rd	0	0.55	0.55	9	4.95
	Harris Hill Rd	Bridge barricade	0	1.05	1.05	9	9.45

	Bridge barricade	CR 65	0	1.45	1.45	9	13.05	
Wilson Hollow Rd	Hanson Rd	Ellicott T/L	0	0.9	0.9	9	8.1	
Cobb St	28th Creek Rd	Hanson Rd	0	0.84	0.84	9	7.56	
Church St			0	0.22	0.22	9	1.98	
Miller Rd	Rt 60	end of pavement	0	0.3	0.3	7	2.1	
Kimball Dr			0	0.42	0.42	8	3.36	
Center St			0	0.12	0.12	8	0.96	
Barmore Dr			0	0.18	0.18	8	1.44	
Hillside Dr			0	0.16	0.16	8	1.28	
Melvin Ln			0	0.09	0.09	8	0.72	
Strong Ave			0	0.1	0.1	8	0.8	
Terrace Dr			0	0.16	0.16	7	1.12	
			Surveyed miles		32.24		288.7	**9.0**
			Unsurfaced Miles		2.24	4	8.96	**4.0**
Town of Gerry			AVG. System Condition		34.48		297.66	**8.6**

Pavement Surface Condition
Survey

Municipality: Town of Harmony

Weather: Cloudy

Date of Survey: 10/22/09

Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Demming Rd	Hoag Rd	Busti T/L	0	0.28	0.28	9	2.52
Sandstone Rd	Hoag Rd	Busti T/L	0	0.32	0.32	9	2.88
Waltonia Rd	Hoag Rd	gravel section	0	0.84	0.84	10	8.4
Hoag Rd	Busti T/L	0.5	0	0.5	0.5	7	3.5
	0.5	1.2	0.5	1.2	0.7	6	4.2
	1.2	2.81	1.2	2.81	1.61	9	14.49
	2.81	4.17	2.81	4.17	1.36	7	9.52
	4.17	4.79	4.17	4.79	0.62	8	4.96
Spooner Rd	RT 474	N Harmony T/L	0	0.18	0.18	8	1.44
Water St	RT 474	Mill St	0	0.12	0.12	8	0.96
Mill St	RT 474	CR 316	0	0.26	0.26	8	2.08
Church St	Water St	CR 316	0	0.08	0.08	8	0.64
Matson St	RT 474	Dead End	0	0.13	0.13	8	1.04
Randolph Rd	RT 474	N Harmony T/L	0	0.28	0.28	7	1.96
Eddy Rd	RT 474	0.04	0	0.04	0.04	7	0.28
	0.04	gravel section	0.04	0.29	0.25	5	1.25
Wiltsie Rd	School St	gravel section	0	0.3	0.3	7	2.1

Goshen Rd	PA S/L	0.53	0	0.53	0.53	6	3.18
	0.53	Muzzy Hill Rd	0.53	1.36	0.83	8	6.64
	Muzzy Hill Rd	0.35	0	0.35	0.35	6	2.1
	0.35	3.2	0.35	3.2	2.85	7	19.95
	3.2	3.74	3.2	3.74	0.54	10	5.4
Muzzy Hill Rd	CR 33	0.73	0	0.73	0.73	9	6.57
	0.73	1.5	0.73	1.5	0.77	8	6.16
	1.5	Goshen Rd	1.5	1.82	0.32	9	2.88
Stevens Rd	CR 33	gravel section	0	0.33	0.33	6	1.98
Button Valley Rd	CR 33	CR 35	0	4.25	4.25	9	38.25
Washington St	CR 35	Hoag Rd	0	1.04	1.04	8	8.32
Madden Rd	Hoag Rd	CR 35	0	1.21	1.21	7	8.47
Cherry Hill Rd	CR 12	gravel section	0	0.84	0.84	5	4.2
Barker Rd	CR 12	0.08	0	0.08	0.08	8	0.64
	0.08	Dole Swamp Rd	0.08	0.74	0.66	5	3.3
Church St	CR 12	End of Curve	0	0.18	0.18	5	0.9
Willetts Rd	CR 33	CR 33	0	0.58	0.58	4	2.32
Wilcox Rd	CR 33	gravel section	0	0.12	0.12	6	0.72
Swede Rd	Button Valley Rd	0.7	0	0.7	0.7	5	3.5
	0.7	1.3	0.7	1.3	0.6	6	3.6
	1.3	1.87	1.3	1.87	0.57	10	5.7
	1.87	2.15	1.87	2.15	0.28	8	2.24
	2.15	Dole Swamp Rd	2.15	2.35	0.2	6	1.2
	Button Valley Rd	RT 474	0	1.78	1.78	7	12.46
	Dead End	Button Valley Rd	0	0.2	0.2	6	1.2

Swede Rd Spur	Swede Rd	Button Valley Rd	0	0.05	0.05	6	0.3	
Village of Panama (from Villages spreadsheet)					4.43		33.82	
			Surveyed miles		32.89		248.22	**7.5**
			Unsurfaced Miles		10.39	4	41.56	**4.0**
Town of Harmony			AVG. System Condition		43.28		289.78	**6.7**

Pavement Surface Condition
Survey

Municipality: Town of Mina

Weather: Sunny

Date of Survey: 10/20/09

Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Pelton Rd	RT 430	Sherman T/L	0	0.5	0.5	9	4.5
Hazen Rd	Pelton Rd	CR 13	0	1.26	1.26	9	11.34
	CR 13	CR 3	0	2.48	2.48	9	22.32
Miller Rd	Sulpher Spur	Ripley T/L	0	0.68	0.68	9	6.12
Sulpher Springs Rd	Miller Rd	Stetson Rd	0	0.8	0.8	9	7.2
	RT 3	Ripley T/L	0	1.49	1.49	8	11.92
Stetson Rd	Ri[ley T/L	RT 426	0	1.57	1.57	9	14.13
Sinden Rd	Sulpher Sp Rd	Ripley T/L	0	0.08	0.08	8	0.64
Mina Cemetary Rd	RT 430	CR 11	0	0.94	0.94	8	7.52
Kidder Rd	CR 11	Sherman T/L	0	0.74	0.74	7	5.18
Bailey Rd	CR 11	Sherman T/L	0	0.75	0.75	8	6
	CR 11	RT 426	0	3.74	3.74	9	33.66
School St	RT426	CR 3	0	0.14	0.14	7	0.98
	CR 3	RT 426	0	0.32	0.32	8	2.56
Pleasant St	Main ST (RT 430)	School Rd	0	0.13	0.13	8	1.04
Shady Side Rd	Main ST (RT 430)	1.87	0	1.87	1.87	10	18.7
	1.87	RT 426	1.87	2.89	1.02	9	9.18

Woodland Shores Rd	Shady Side Rd	Shady Side Rd	0	0.1	0.1	7	0.7	
Parsonage Rd	Shady Side Rd	Ball Diamond Rd	0	0.33	0.33	8	2.64	
Shady Side Rd Ext	Parsonage Rd	Dead End	0	0.22	0.22	7	1.54	
Eighth Ave	Parsonage Rd	Dead End	0	0.08	0.08	7	0.56	
Ball Diamond Rd	Shady Side Rd	0.16	0	0.16	0.16	10	1.6	
	0.16	Shady Side Rd	0.16	0.77	0.61	8	4.88	
Greenman Rd	RT 430	0.58	0	0.61	0.61	7	4.27	
	0.61	.74 (Kress Rd)	0.61	0.74	0.13	6	0.78	
	0.74	RT 426	0.74	1.62	0.88	7	6.16	
Kress Rd	Greenman Rd	0.12	0	0.12	0.12	6	0.72	
	0.12	.30 S/L	0.12	0.3	0.18	8	1.44	
Greenman Rd	Greenman Rd	RT 426	0	0.09	0.09	9	0.81	
W Mina Rd	French Creek T/L	RT 430	0	2.29	2.29	8	18.32	
W Mina Hill Rd	W Mina Rd	CR 1	0	0.6	0.6	8	4.8	
Jude Rd	W Mina Rd	PA S/L	0	0.36	0.36	8	2.88	
Lakeview Ave	RT 426	Dead End	0	0.11	0.11	10	1.1	
Case Rd	Lakeman Ave	Dead End	0	0.07	0.07	10	0.7	
Meadows Rd	RT 426	Dead End	0	0.15	0.15	7	1.05	
Harrington Hill Rd	Rt 426	0.48	0	0.48	0.48	8	3.84	
Cherry Hill Rd	Bush Rd	gravel section	0	0.8	0.8	9	7.2	
Marks Corners Rd	Cherry Hill Rd	CR 4	0	0.06	0.06	8	0.48	
Mannison Rd	Rt 430	Sherman T/L	0	0.4	0.4	9	3.6	
			Surveyed miles		27.34		233.06	**8.5**
			Unsurfaced Miles		5.32	4	21.28	**4.0**
Town of Mina			AVG. System Condition		32.66		254.34	**7.8**

Pavement Surface Condition
Survey

Municipal Sign Management
Services

Pavement Surface Condition
Survey

Municipality: Town Cherry Creek

Weather: Sunny

Date of Survey: 10/27/09

Temp. 55

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Mile Strip Rd	Rt 83	Villenova T/L	0	1.42	1.42	8	11.36
Crest View Dr			0	0.47	0.47	9	4.23
Park Terrace Dr			0	0.35	0.35	9	3.15
Kent switch Rd	Mile Strip Rd	C/L	0	1.51	1.51	8	12.08
Weaver Rd	Rt 83	1.2	0	1.2	1.2	8	9.6
	1.2	1.55	1.2	1.55	0.35	7	2.45
	1.55	Plank Rd	1.55	2.29	0.74	10	7.4
Plank Rd	CR 85	Villenova T/L	0	2.28	2.28	9	20.52
Davison rd	Weaver Rd	0.65	0	0.65	0.65	9	5.85
	0.65	gravel section	0.65	1	0.35	9	3.15
Aldrich Hill Rd			0	1.51	1.51	9	13.59
Cross Rd	CR 68	Southside	0	0.32	0.32	8	2.56
Southside Ave			0	0.11	0.11	9	0.99
Southside Ext			0	0.49	0.49	9	4.41
Piner Rd			0	1	1	9	9
Hunt Rd	Risley Rd	gravel section	0	1.41	1.41	9	12.69
Risley Rd	Hunt Rd	CR 66	0	1.44	1.44	9	12.96

Pickup Hill rd	Hunt Rd	1.75	0	1.75	1.75	9	15.75	
	1.75	Southside	1.75	2.31	0.56	8	4.48	
Boutwell Hill Rd	CR 85	0.65	0	0.65	0.65	8	5.2	
	0.65	1.5	0.65	1.5	0.85	9	7.65	
	1.5	East Rd	1.5	2.87	1.37	8	10.96	
Mill Creek Rd	Boutwell Hill Rd	T/L (gravel)	0	0.09	0.09	8	0.72	
Sanford Rd	Boutwell Hill Rd	1.15	0	1.15	1.15	9	10.35	
	1.15	1.48	1.15	1.48	0.33	8	2.64	
	1.48	2.15	1.48	2.15	0.67	7	4.69	
	2.15	CR 85	2.15	2.53	0.38	9	3.42	
			Surveyed miles		23.4		201.85	**8.6**
			Unsurfaced Miles		5.09	4	20.36	**4.0**
Town of Cherry Creek			AVG. System Condition		28.49		222.21	**7.8**

Pavement Surface Condition
Survey

Municipal Sign Management
Services

Pavement Surface Condition
Survey

Municipality: Town of Sherman

Weather: Cloudy - showers

Date of Survey: 10/20-21/09

Temp. 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Pelton Rd	Mina T/L	Klondyke Rd	0	0.84	0.84	8	6.72
Klondyke Rd	Westfield T/L	V/L	0	2.13	2.13	8	17.04
Titus Rd	Sherman T/L	Sherman T/L	0	1.33	1.33	7	9.31
Morris Ext	Sherman T/L	CR 18	0	0.87	0.87	8	6.96
Kendrick Rd	V/L	Titus Rd	0	0.52	0.52	7	3.64
Miller Rd	Titus Rd	V/L	0	0.51	0.51	7	3.57
Armenian Rd	RT 430	0.21	0	0.21	0.21	5	1.05
	.21 (Bement Rd)	0.4	0.21	0.4	0.19	6	1.14
	0.4	0.63	0.4	0.63	0.23	7	1.61
	0.63	2.95	0.63	2.95	2.32	8	18.56
Wait Corners Rd	Wait Corners	1.09	0	1.09	1.09	10	10.9
	1.09	Clymer T/L	1.09	2.37	1.28	9	11.52
	Wiat Corners	0.16	0	0.16	0.16	10	1.6
	0.16	1.7	0.16	1.7	1.54	8	12.32
	1.7	2.3	1.7	2.3	0.6	7	4.2
	2.3	2.62	2.3	2.62	0.32	8	2.56
	2.62	2.9	2.62	2.9	0.28	6	1.68

	2.9	3.28	2.9	3.28	0.38	8	3.04	
Wiltsie Rd	Wait Corners Rd	0.53	0	0.53	0.53	7	3.71	
	0.53	T/L	0.53	1.43	0.9	6	5.4	
Warner Rd	Wait Corners Rd	gravel section	0	0.95	0.95	8	7.6	
Stebbins Rd	Elden Rd	0.52	0	0.52	0.52	10	5.2	
	0.52	0.7	0.52	0.7	0.18	7	1.26	
	0.7	0.9	0.7	0.9	0.2	6	1.2	
	0.9	Stebbins Corners	0.9	1.33	0.43	8	3.44	
Bates Rd	Wait Corners Rd	0.5	0	0.5	0.5	8	4	
	0.5	1.2	0.5	1.2	0.7	6	4.2	
	1.2	Stebbins Rd	1.2	1.6	0.4	7	2.8	
Freeman Rd	Wait Corners Rd	0.4	0	0.4	0.4	7	2.8	
	0.4	0.65	0.4	0.65	0.25	6	1.5	
	0.65	Armenian rd	0.65	1.02	0.37	8	2.96	
Mannison Rd	Mina T/L	CR 15	0	1.89	1.89	9	17.01	
Barcelona Rd	Mannison Rd	gravel section	0	0.14	0.14	6	0.84	
Kidder Rd	Mannison Rd	Mina T/L	0	0.99	0.99	8	7.92	
Bailey Hill Rd	CR 15 (65)	Mina T/L	0	1.33	1.33	8	10.64	
	CR 15 (65)	0.73	0	0.73	0.73	7	5.11	
	0.73	RT 76	0.73	1.66	0.93	8	7.44	
	RT 76	Wait Corners	0	1.61	1.61	8	12.88	
	Wait Corners	Townline	0	1.43	1.43	8	11.44	
			Surveyed miles		30.18		236.77	**7.8**
			Unsurfaced Miles		3.59	4	14.36	**4.0**
Town of Sherman			AVG. System Condition		33.77		251.13	**7.4**

Pavement Surface Condition
Survey

Municipality: Town of Villenova

Weather: Cloudy

Date of Survey: 10/26-27/09

Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
S Hill Rd	Hamlet Rd	Cherry Creek T/L	0	1.5	1.5	5	7.5
Aldrich Hill Rd	RT 322	Cherry Creek T/L	0	1.39	1.39	5	6.95
Cemetary Rd	CR 87	RT 322	0	0.41	0.41	7	2.87
	0.41	0.66	0.41	0.66	0.25	6	1.5
Mile Strip Rd	Cherry Creek T/L	Cattaragus C/L	0	1.05	1.05	8	8.4
	Cattaragus C/L	RT 322	0	0.21	0.21	7	1.47
Smith Rd	Cemetary Rd	Butcher Rd	0	0.77	0.77	6	4.62
	Butcher Rd	1.83	0.77	1.83	1.06	7	7.42
	1.83	North Hill Rd	1.83	2.35	0.52	6	3.12
Howard Dr	Smith Rd	gravel section	0	0.1	0.1	9	0.9
Butcher Rd	Smith Rd	0.42	0	0.42	0.42	7	2.94
	0.42	1	0.42	1	0.58	6	3.48
	1	1.47	1	1.47	0.47	7	3.29

N Hill Rd	Smith Rd	0.35	0	0.35	0.35	6	2.1	
	0.35	0.81	0.35	0.81	0.46	7	3.22	
	0.81	RT 83	0.81	3.11	2.3	5	11.5	
Stafford Rd	Round Top Rd	gravel section	0	0.15	0.15	6	0.9	
Zahm Rd	Rt 83	gravel section	0	1.25	1.25	8	10	
Pope Hill Rd	N Hill Rd	Round Top Rd	0	2.32	2.32	5	11.6	
Dye Rd	Hanover T/L	CR 87	0	4.36	4.36	6	26.16	
Philips Rd	CR 91	CR 93	0	0.82	0.82	7	5.74	
	CR 93	C/L	0.82	1.17	0.35	9	3.15	
Flucker Hill Rd	CR 93	Hanover T/L	0	3.22	3.22	6	19.32	
Cottage Rd	T/L	C/L	0	0.13	0.13	8	1.04	
Round Top Rd	Hanover T/L	1.4	0	1.4	1.4	6	8.4	
	1.4	2.36	1.4	2.36	0.96	8	7.68	
	2.36	RT 83	2.36	3.75	1.39	10	13.9	
Wentworth Rd	Rt 83	CR 72	0	1.15	1.15	9	10.35	
	CR 72	Dead End	0	0.25	0.25	9	2.25	
			Surveyed miles		29.59		191.77	**6.5**
			Unsurfaced Miles		10.21	4	40.84	**4.0**
Town of Villenova			AVG. System Condition		39.8		232.61	**5.8**

Pavement Surface Condition
Survey

Municipality: Town of Stockton

Weather: Cloudy

Date of Survey: 10/29/09

Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Cemetary Rd	CR 58	Barnes Rd	0	0.27	0.27	7	1.89
	Barnes Rd	CR 380	0.27	0.95	0.68	8	5.44
Nelson Hill Rd			0	0.58	0.58	9	5.22
Bowers Rd	CR 58	0.24	0	0.24	0.24	9	2.16
	0.24	1.25	0.24	1.25	1.01	10	10.1
	1.25	Bruyer Rd	1.25	2.78	1.53	8	12.24
	Bruyer Rd	Waterman Rd	2.78	3.41	0.63	9	5.67
Pierson Rd	Bowers Rd	CR 380	0	1.63	1.63	9	14.67
Lord Rd	CR 380	gravel section	0	0.15	0.15	6	0.9

Bruyer Rd	Pierson Rd	Bowers Rd	0	1.39	1.39	7	9.73
	Bowers Rd	CR 71	1.39	1.77	0.38	9	3.42
Moon Rd	CR 71	RT 60	0	1.01	1.01	9	9.09
Waterman Rd	CR 71	CR 380	0	2.18	2.18	9	19.62
James Rd	CR 380	CR 380	0	2.61	2.61	9	23.49
Meadows Rd	T/L	CR 58	0	0.59	0.59	9	5.31
Fenner Rd	CR 380	Ellery T/L	0	1.31	1.31	9	11.79
High St	V/L	T/L	0	0.4	0.4	9	3.6
Bachellor Hill Rd	Glasgow Rd	Cummings Rd	0	0.98	0.98	9	8.82
Cummings Rd			0	1.58	1.58	9	14.22
Bear Lake Rd			0	1.02	1.02	8	8.16
Bowen Rd			0	1.63	1.63	9	14.67
Mill St			0	0.62	0.62	9	5.58
Dean St	Bowen Rd	T/L	0	3.49	3.49	9	31.41
Barber Rd	gravel section	Coes Rd	0	1.32	1.32	9	11.88
Coes Rd	Dean Rd	CR 58	0	1.23	1.23	9	11.07
	CR 58	1.35	1.23	1.35	0.12	9	1.08
	1.35	2	1.35	2	0.65	7	4.55
	2	4.1	2	4.1	2.1	9	18.9
Bayview Rd	CR 54	Waterman Rd	0	0.77	0.77	9	6.93
Maring Rd	CR 54	gravel section	0	0.12	0.12	9	1.08
	gravel section	Munger Rd	0	0.33	0.33	8	2.64
Munger Rd	Coes Rd	CR 380	0	2.28	2.28	9	20.52
Barnes Rd	Munger Rd	Cemetary Rd	0	1.46	1.46	9	13.14
Bone Dry Lane			0	0.08	0.08	9	0.72

Luce Rd		.	0	0.8	0.8	9	7.2	
			Surveyed miles		37.17		326.91	**8.8**
			Unsurfaced Miles		4.33	4	17.32	**4.0**
Town of Stockton			AVG. System Condition		41.5		344.23	**8.3**

Municipality: Town of Arkwright Weather: Cloudy

Date of Survey: 10/29/09 Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Tarbox Rd	CR 72	gravel section	0	1.35	1.35	6	8.1
Hall Rd	CR 72	gravel section	0	0.3	0.3	8	2.4
Shumla Rd			0	1.12	1.12	9	10.08
Burnham Rd	Shumla Rd		0	0.11	0.11	9	0.99
Brainard Rd	RT 83	gravel section	0	0.04	0.04	9	0.36

Webster Rd	Miller Rd	1.29	0	1.29	1.29	7	9.03	
Straight Rd W	Pomfret T/L	0.37	0	0.37	0.37	6	2.22	
	0.37	1.08	0.37	1.08	0.71	7	4.97	
	1.08	CR 79	1.08	3.08	2	9	18	
Straight Rd E	Rt 79	0.63	0	0.63	0.63	9	5.67	
	0.63	CR 85	0.63	1.68	1.05	8	8.4	
Miller Rd	Sheridan T/L	0.2	0	0.2	0.2	7	1.4	
	0.2	0.5	0.2	0.5	0.3	6	1.8	
	0.5	1	0.5	1	0.5	7	3.5	
Griswold Rd	Bard Rd	0.16	0	0.16	0.16	6	0.96	
			Surveyed miles		10.13		77.88	**7.7**
			Unsurfaced Miles		29.71	4	118.84	**4.0**
Town of Arkwright			AVG. System Condition		39.84		196.72	**4.9**

Municipality: Town of Kiantone

Weather: Sunny, Cloudy/showers

Date of Survey: 10/19,31/09

Temp. 50, 45

Pavement Surface Condition
Survey

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Riverside Rd	US 62	Carroll T/L	0	0.92	0.92	6	5.52
	US 62	CR 77	0	0.57	0.57	6	3.42
	CR 77	S Main St Ext	0	2.85	2.85	10	28.5
Hall Rd	CR 26	Riverside Rd	0	0.98	0.98	9	8.82
Maple St	RT 60	Dead End	0	0.2	0.2	7	1.4
Frissell Rd	US 62	0.3	0	0.3	0.3	10	3
	0.3	Riverside Rd	0.3	0.92	0.62	8	4.96
Sturdevant Rd	CR 77	S/L	0	0.57	0.57	7	3.99
Spencer Rd	CR 52	0.51	0	0.51	0.51	7	3.57
	0.51	US 62	0.51	1.42	0.91	9	8.19
Manchester Rd	CR 380	Ellicott T/L	0	0.88	0.88	7	6.16
Grandview	Manchester Rd	Dead End	0	0.13	0.13	7	0.91
Norby Rd	CR 380	S Main St	0	0.71	0.71	7	4.97
	CR 380	0.41	0	0.41	0.41	9	3.69
	0.41	CR 49	0.41	0.55	0.14	7	0.98
Whitetail Lane	Norby Rd	MI Mark 30	0	0.3	0.3	9	2.7
Stillwater Rd	CR 380	Dead End	0	0.17	0.17	10	1.7
W&J Blvd	CR 380	Maple Ave	0	0.16	0.16	8	1.28
	Summer St	Cty Line	0	0.81	0.81	8	6.48
Clyde St	W&J Blvd	Summer St	0	0.21	0.21	9	1.89
Summer St	Clyde St	RT 60	0	0.31	0.31	8	2.48

Municipal Sign Management
Services

Brown St	RT 60	High St	0	0.22	0.22	8	1.76	
High St	Brown St	Cty Line	0	0.19	0.19	8	1.52	
Dewey Ave	Johns Place	Brown St	0	0.36	0.36	8	2.88	
Johns Place	T 60	W&J Blvd	0	0.13	0.13	7	0.91	
Beech St	W&J Blvd	Dead End	0	0.2	0.2	8	1.6	
Glen Rd	RT 60	RT 60	0	0.15	0.15	6	0.9	
Kiantone Dr	CR 49	Dead End	0	0.11	0.11	6	0.66	
Bacon Rd	CR 49	Busti T/L	0	1.3	1.3	9	11.7	
Prosser Hill Rd	Bacon Rd	CR 26	0	1.8	1.8	8	14.4	
South Ave	S Main St	0.24	0	0.24	0.24	9	2.16	
Widdy Bostwick	S Main St	0.15	0	0.15	0.15	6	0.9	
	0.15	0.38	0.15	0.38	0.23	7	1.61	
Bently Rd			0	0.08	0.08	8	0.64	
S Main St	S/L	Riverside Rd	0	0.38	0.38	8	3.04	
	Riverside Rd	CR 26	0.38	1.55	1.17	9	10.53	
	CR 26	T/L	1.55	2.07	0.52	7	3.64	
Christy Ln			0	0.17	0.17	7	1.19	
Carlson Rd	Prosser Hill Rd	CR 52	0	1.17	1.17	9	10.53	
S Hill Dr			0	0.22	0.22	9	1.98	
			Surveyed miles		21.45		177.16	**8.3**
			Unsurfaced Miles		1.14	4	4.56	**4.0**
Town of Kiantone			AVG. System Condition		22.59		181.72	**8.0**

Pavement Surface Condition
Survey

Municipality: Town of Hanover

Weather: Sunny, Cloudy

Date of Survey: 10/26,30/09

Temp. 60,45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Buffalo Rd	RT 20	Indian Resv.	0	1.25	1.25	6	7.5
	Indian Resv	CR 88	0	1.2	1.2	6	7.2
	RT 20	Dead End	0	0.35	0.35	7	2.45
Christy Rd	CR 95	0.9	0	0.9	0.9	8	7.2
	0.9	Buffalo Rd	0.9	1.27	0.37	7	2.59
Bradley Rd	Buffalo Rd	CR89	0	0.62	0.62	6	3.72
Spears Rd E	Buffalo Rd	Dead End	0	0.32	0.32	6	1.92
Mechanic St	Buffalo Rd	Erie St	0	0.06	0.06	8	0.48
	Erie St	Main St	0.06	0.22	0.16	7	1.12
Beebe Rd	RT 95	Rt 20	0	1.45	1.45	6	8.7
W Spears Rd			0	0.24	0.24	6	1.44
Hanford Rd	RT 20	1.21	0	1.21	1.21	7	8.47
	1.21	CR 93	1.21	2.06	0.85	6	5.1
	CR 20	Scarlata Rd	0	0.15	0.15	6	0.9
	Scarlata Rd	Stewart Ave	0.15	0.31	0.16	6	0.96
Holmes Rd			0	1.1	1.1	7	7.7
Blanding Rd			0	0.49	0.49	6	2.94

King Rd	CR 89	CR 85	0	0.72	0.72	6	4.32
	CR 89	CR 93	0	2.6	2.6	8	20.8
	CR 93	C/L	0	2.3	2.3	9	20.7
Allegany Rd	RT 88	1.32	0	1.32	1.32	9	11.88
	1.32	1.7	1.32	1.7	0.38	8	3.04
	1.7	3	1.7	3	1.3	7	9.1
	3	4.4	3	4.4	1.4	8	11.2
	4.4	RT 39	4.4	4.73	0.33	6	1.98
	Rt 39	Villenova T/L	4.73	6.28	1.55	8	12.4
Cottage Rd			0	0.73	0.73	8	5.84
County Line Rd	RT 39	0.8	0	0.8	0.8	6	4.8
	0.8	2.26	0.8	2.26	1.46	9	13.14
Hopper Rd	Allegany Rd	RT 93	0	1.23	1.23	9	11.07
	RT 93	0.2	0	0.2	0.2	7	1.4
	0.2	2	0.2	2	1.8	6	10.8
	2	RT 39	2	3	1	7	7
Empire Rd	Hopper Rd	RT 39	0	0.57	0.57	8	4.56
	RT 39	Hulbert Rd	0	1.26	1.26	6	7.56
Hulbert Rd	CR 87	0.6	0	0.6	0.6	6	3.6
	0.6	Villenova T/L	0.6	2.02	1.42	9	12.78
Quarry Rd	Hopper Rd	Overhiser Rd	0	1.66	1.66	7	11.62
Waterman Rd	Quarry Rd	0.77	0	0.77	0.77	6	4.62
	0.77	RT 93	0.77	1.52	0.75	7	5.25
Overhiser Rd	CR 93	1.85	0	1.85	1.85	8	14.8
	1.85	CR 89	1.85	2.4	0.55	9	4.95

Mixer Rd	CR 84	V/L	0	1.2	1.2	6	7.2
Gibbs Rd	Mixer Rd	0.6	0	0.6	0.6	6	3.6
Kuart Rd	0.6	0.88	0.6	0.88	0.28	7	1.96
	Mixer Rd	Sheridan T/L	0	0.39	0.39	7	2.73
Bradigan Rd	V/L	1.94	0	1.94	1.94	7	13.58
	1.94	T/L	1.94	2.2	0.26	6	1.56
Gage Rd	Bradigan	CR 87	0	0.82	0.82	6	4.92
Laona Rd			0	0.32	0.32	7	2.24
Ryder Rd	CR 85	gravel section	0	0.72	0.72	9	6.48
Franklin St	Buffalo St		0	0.05	0.05	6	0.3
			0.05	0.32	0.27	6	1.62
Main St	Rt 20	0.2	0	0.2	0.2	6	1.2
	0.2	0.36	0.2	0.36	0.16	8	1.28
	0.36	0.5	0.36	0.5	0.14	6	0.84
	0.5	Buffalo St	0.5	0.58	0.08	7	0.56
Allegany Rd	RT 20	RR Tracks	0	0.15	0.15	6	0.9
	RR Tracks	S Shore Dr	0.15	0.74	0.59	8	4.72
Moran Ln	Middle Rd	0.08	0	0.08	0.08	5	0.4
	0.08	Moran Rd	0.08	0.2	0.12	8	0.96
Old Main Rd	V/L	RT 5/20	0	0.5	0.5	5	2.5
	Rt 5/20	Sheridan T/L	0.5	1.47	0.97	7	6.79
Forestville Rd	CR 85	V/L	0	0.81	0.81	7	5.67
Adams St			0	0.07	0.07	9	0.63
Ann St			0	0.15	0.15	10	1.5
Armstrong St			0	0.06	0.06	5	0.3

Baker St			0	0.05	0.05	9	0.45
Barone Dr			0	0.26	0.26	8	2.08
Beach Ave			0	0.1	0.1	6	0.6
Breeze Ave			0	0.14	0.14	6	0.84
Brook Ave			0	0.1	0.1	5	0.5
Buffalo St			0	0.18	0.18	7	1.26
Cayuga St			0	0.12	0.12	6	0.72
Center St			0	0.13	0.13	5	0.65
Charles St	Iola Dr	0.06	0	0.06	0.06	6	0.36
	0.06	0.15	0.06	0.15	0.09	8	0.72
Columbia St			0	0.15	0.15	6	0.9
Debbar St			0	0.08	0.08	9	0.72
Dixie St			0	0.14	0.14	6	0.84
Douglas St			0	0.06	0.06	8	0.48
Erie St			0	0.28	0.28	8	2.24
			0.28	0.31	0.03	6	0.18
Exchange St			0	0.15	0.15	6	0.9
Henry St			0	0.07	0.07	6	0.42
Hornburg Rd			0	0.08	0.08	6	0.48
Iola Dr			0	0.36	0.36	8	2.88
Jackson St			0	0.28	0.28	6	1.68
Lake St			0	0.1	0.1	8	0.8
Ludeman Dr			0	0.07	0.07	9	0.63
Mackinaw Rd			0	0.79	0.79	9	7.11
Michigan St			0	0.26	0.26	6	1.56

Middle St			0	0.08	0.08	7	0.56
Moran Rd			0	0.27	0.27	7	1.89
Mott St			0	0.1	0.1	7	0.7
Muriel Dr			0	0.09	0.09	8	0.72
Newton St	Allegany Rd	0.13	0	0.13	0.13	6	0.78
	0.13	0.2	0.13	0.2	0.07	7	0.49
Ohio St			0	0.09	0.09	6	0.54
Oneida St			0	0.06	0.06	7	0.42
Ontario Rd			0	0.12	0.12	6	0.72
Ontario St			0	0.12	0.12	7	0.84
Parkway Ave			0	0.13	0.13	6	0.78
Pleasant Rd			0	0.13	0.13	6	0.78
Pleasantview Dr			0	0.08	0.08	9	0.72
Post St			0	0.15	0.15	9	1.35
S Shore Dr			0	0.26	0.26	7	1.82
Scarlata Dr			0	0.15	0.15	9	1.35
Seneca St			0	0.13	0.13	6	0.78
Shady Dr			0	0.12	0.12	7	0.84
Shore Dr			0	0.18	0.18	9	1.62
Shriver Rd			0	0.08	0.08	6	0.48
Silver La			0	0.18	0.18	6	1.08
Southern Rd			0	0.36	0.36	7	2.52
Stewart Ave			0	0.22	0.22	8	1.76
Third St			0	0.12	0.12	9	1.08
Triangle Dr			0	0.2	0.2	10	2

W Erie St			0	0.2	0.2	7	1.4	
Walnut St			0	0.22	0.22	7	1.54	
Willow St			0	0.07	0.07	7	0.49	
Woodland Dr			0	0.07	0.07	9	0.63	
			Surveyed miles		58.67		424.72	**7.2**
			Unsurfaced Miles		2.19	4	8.76	**4.0**
Town of Hanover			AVG. System Condition		60.86		433.48	**7.1**

Municipality: Town of Charlotte Weather: Sunny, Cloudy

Date of Survey: 10/27,29/09 Temp. 60,45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
C Johnson Rd	Gilbert Rd	0.22	0	0.22	0.22	6	1.32
	0.22	0.49	0.22	0.49	0.27	10	2.7
	0.49	CR 66	0.49	1.06	0.57	6	3.42
Harper Rd	0	0.25	0	0.25	0.25	6	1.5
	,25	CR 77	0.25	1.35	1.1	7	7.7
East Rd	CR 77	gravel section	0	2.14	2.14	6	12.84
Boutwell Hill Rd	gravel section	0.2	0	0.2	0.2	5	1

	0.2	0.5	0.2	0.5	0.3	6	1.8
	0.5	CR 66	0.5	0.78	0.28	5	1.4
Sanson Rd	CR 66	gravel section	0	0.28	0.28	8	2.24
Cleland Rd	CR 66	gravel section	0	0.73	0.73	5	3.65
N Hill Rd	CR 77	1.25	0	1.25	1.25	8	10
	1.25	2.39	1.25	2.39	1.14	5	5.7
	2.39	Arkwright T/L	2.39	2.93	0.54	6	3.24
Cassadaga Rd	CR 77	1.35	0	1.35	1.35	5	6.75
	1.35	2.44	1.35	2.44	1.09	6	6.54
	2.44	3.6	2.44	3.6	1.16	7	8.12
	3.6	Barnum Rd	3.6	4.25	0.65	5	3.25
Barnum Rd	T/L	Cr 75	0	1.68	1.68	5	8.4
Andrews Rd	Spur	Dead End	0	0.17	0.17	8	1.36
Charlotte Hill Rd	RT 60	1	0	1	1	5	5
	1	1.3	1	1.3	0.3	7	2.1
	1.3	V/L	1.3	1.51	0.21	5	1.05
Hooker Rd	CR 75	1.1	0	1.1	1.1	10	11
	1.1	Cr77	1.1	2.11	1.01	8	8.08
Ames Rd	CR 75	0.7	0	0.7	0.7	6	4.2
	0.7	Hall Rd	0.7	1.21	0.51	5	2.55
Luce Rd	CR 60	T/L	0	0.17	0.17	9	1.53
Smith Rd	Barnum Rd	Hall Rd	0	1.58	1.58	6	9.48
Bernard Rd	Hall Rd	0.65	0	0.65	0.65	6	3.9
	0.65	Smith Rd	0.65	1.31	0.66	7	4.62
Hall Rd	Arkwrught Rd	0.45	0	0.45	0.45	6	2.7

	0.45	3.15	0.45	3.15	2.7	5	13.5	
	3.15	3.66	3.15	3.66	0.51	8	4.08	
	3.66	4.1	3.66	4.1	0.44	9	3.96	
	4.1	Sinclairville V/L	4.1	5.13	1.03	7	7.21	
Abbey Rd	Hall Rd	Dead End	0	0.15	0.15	6	0.9	
High St Ext			0	0.01	0.01	9	0.09	
Reed St			0	0.15	0.15	8	1.2	
			Surveyed miles		28.7		180.08	**6.3**
			Unsurfaced Miles		16.19	4	64.76	**4.0**
Town of Charlotte			AVG. System Condition		44.89		244.84	**5.5**

Municipality: Town of Dunkirk Weather: Partly Sunny,

Date of Survey: 11/1/09 Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating
			Start	Stop	Miles	
Arrowhead Dr			0	0.25	0.25	9
Beachcliff Dr			0	0.17	0.17	6
Bennett Rd E			0	0.23	0.23	8

Bennett Rd W			0	0.18	0.18	9	1.62
			0.18	0.23	0.05	8	0.4
Cedarcliff Dr			0	0.18	0.18	7	1.26
			0.18	0.3	0.12	6	0.72
Chadwick Way	Arrowhead Dr	Bennett Rd	0	0.1	0.1	9	0.9
Chestnut Rd	Pomfret T/L	0.09	0	0.09	0.09	5	0.45
	0.09	0.29	0.09	0.29	0.2	7	1.4
	0.29	Willow Rd	0.29	0.47	0.18	6	1.08
Chestnut Rd Spur			0	0.04	0.04	7	0.28
Crestwood Dr			0	0.12	0.12	6	0.72
Franklin Ave			0	0.31	0.31	7	2.17
Greenhurst Rd	CR 323	CR 136	0	0.22	0.22	7	1.54
	Cr136	End of Section	0.22	0.25	0.03	9	0.27
Morewood Dr			0	0.33	0.33	7	2.31
New Rd			0	0.55	0.55	7	3.85
Roberts Rd Ext			0	0.18	0.18	7	1.26
Swamp Rd			0	0.22	0.22	8	1.76
W Williams St			0	0.22	0.22	5	1.1
Wilbur Rd			0	0.38	0.38	8	3.04
			0.38	0.55	0.17	7	1.19
Wildwood Dr			0	0.12	0.12	7	0.84
			0.12	0.16	0.04	9	0.36
Williams St			0	0.69	0.69	6	4.14
			0.69	0.85	0.16	7	1.12
Willow Rd			0	0.2	0.2	7	1.4

			0.2	0.35	0.15	8	1.2	
			0.35	1.1	0.75	8	6	
			Surveyed miles		6.63		47.49	**7.2**
			Unsurfaced Miles		0.31	4	1.24	**4.0**
Town of Dunkirk			AVG. System Condition		6.94		48.73	**7.0**

Municipality: Town of Ripley

Weather: Clear Sunny,

Date of Survey: 11/2/09

Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length Miles	Rating
			Start	Stop		

Ottoway Rd	Dead End	Rod & Gun Club	0	0.44	0.44	6	2.64
	Rod & Gun Club	CR 6	0.44	1.11	0.67	5	3.35
Siden Rd	CR 6	Mina T/L	0	0.82	0.82	9	7.38
Stetson Rd	Colton Rd	Mina T/L	0	0.71	0.71	9	6.39
Sulfer Springs Rd	Mina T/L	CR 6	0	1.19	1.19	8	9.52
Irish Hill	CR 3	Dead End	0	1.69	1.69	9	15.21
Perdue Rd	RT 20	RR track	0	0.13	0.13	5	0.65
W Sidehill Rd	RT 20	0.55	0	0.55	0.55	5	2.75
	0.55	2.03	0.55	2.03	1.48	9	13.32
	2.03	2.7	2.03	2.7	0.67	6	4.02
	2.7	RT 76	2.7	3.61	0.91	5	4.55
Maple Ave	W Sidehill Rd	0.58	0	0.58	0.58	5	2.9
	0.58	RT 20	0.58	0.8	0.22	6	1.32
Goodrich St	Lakeview Ave	0.27	0	0.27	0.27	5	1.35
	0.27	RT 20	0.27	0.4	0.13	6	0.78
Shaver St	RT 20	0.28	0	0.28	0.28	6	1.68
	0.28	E Sidehill Rd	0.28	0.8	0.52	5	2.6
E Sidehill Rd	RT 76	Welch Hill Rd	0	1.18	1.18	9	10.62
Wiley Rd	RT 20	0.37	0	0.37	0.37	7	2.59
	0.37	0.6	0.37	0.6	0.23	6	1.38
	0.6	RT 5	0.6	1.1	0.5	7	3.5
Klondyke Rd	RT 20	0.38	0	0.38	0.38	6	2.28
	0.38	0.75	0.38	0.75	0.37	8	2.96
	0.75	Dead End	0.75	1.02	0.27	6	1.62
Forsyth Rd	RT 20	0.25	0	0.25	0.25	7	1.75

	0.25	0.44	0.25	0.44	0.19	6	1.14
	0.44	RT 5	0.44	1.17	0.73	7	5.11
Old Rt 20	Dead End	0.36	0	0.36	0.36	5	1.8
	0.36	Westfield T/L	0.36	0.72	0.36	6	2.16
Belson Rd	Welch Hill Rd	Westfield T/L	0	1.96	1.96	6	11.76
Welch Rd	Brockway Rd	0.9	0	0.9	0.9	6	5.4
	0.9	1.5	0.9	1.5	0.6	7	4.2
	1.5	RT 76	1.5	1.91	0.41	8	3.28
Lombard Rd	Welch Hill Rd	0.75	0	0.75	0.75	6	4.5
	0.75	Westfield T/L	0.75	1.57	0.82	5	4.1
Noble Rd			0	0.77	0.77	9	6.93
Loomis Rd			0	0.83	0.83	6	4.98
Mechanic St			0	0.2	0.2	6	1.2
Meeder Rd			0	0.17	0.17	9	1.53
N State St Ext			0	0.21	0.21	7	1.47
Park Ave			0	0.17	0.17	5	0.85
Ross St			0	0.37	0.37	8	2.96
Barnes Rd			0	0.13	0.13	4	0.52
Brockway Rd			0	1	1	9	9
Burton Rd			0	0.59	0.59	5	2.95
Carris Rd			0	0.39	0.39	5	1.95
Carris Rd Spur			0	0.02	0.02	5	0.1
Cemetary Rd	Pvmt Change	US 20	0	1	1	9	9
Hamilton Rd	SR 20	Pvmt Change	0	0.13	0.13	5	0.65
Lake View Ave			0	0.8	0.8	6	4.8

Wisner St			0	0.06	0.06	5	0.3	
			Surveyed miles		28.73		199.75	**7.0**
			Unsurfaced Miles		14.34	4	57.36	**4.0**
Town of Ripley			AVG. System Condition		43.07		257.11	**6.0**

Municipality: Town of Westfield Weather: Clear Sunny,

Pavement Surface Condition
Survey

Date of Survey: 11/2,3/09 Temp. 50,40

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Parker Rd	Old US 20	Belson Rd	0	1.81	1.81	9	16.29
	Belson Rd	2.6	0	2.6	2.6	9	23.4
	2.6	5.2	2.6	5.2	2.6	8	20.8
	5.2	RT 76	5.2	5.96	0.76	9	6.84
	RT 76	Sherman T/L	5.96	6.7	0.74	9	6.66
Belson Rd	Parker Rd	Ripley T/L	0	0.38	0.38	9	3.42
	Parker Rd	Creamery Rd	0.38	1.05	0.67	8	5.36
Putnam Rd	T/L	0.35	0	0.35	0.35	7	2.45
	0.35	CR 21	0.35	0.85	0.5	8	4
Lyons Rd	CR 21	Dead End	0	1.23	1.23	9	11.07
Jones Rd	CR 21	0.3	0	0.3	0.3	7	2.1
	0.3	Parker Rd	0.3	1.43	1.13	8	9.04
Kent Rd	Parker Rd	gravel section	0	0.38	0.38	8	3.04
Culver Rd	Ogden Rd	0.2	0	0.2	0.2	7	1.4
	0.2	CR 21	0.2	0.41	0.21	8	1.68
Creamery Rd	Douglas Rd	0.77	0	0.77	0.77	10	7.7
	0.77	RT 20	0.77	1.94	1.17	9	10.53
Light Rd S	RT 20	Dead End	0	0.35	0.35	8	2.8
	Dead End	Reid RD	0	0.3	0.3	6	1.8

Reid Rd	Light Rd S	Walker Rd	0	0.83	0.83	8	6.64
Hardscramble Rd	Creamery Rd	1.6	0	1.6	1.6	9	14.4
	1.6	2	1.6	2	0.4	10	4
	2	CR 21	2	2.39	0.39	9	3.51
N Gale St	Westfield V/L	CR 24	0	0.45	0.45	9	4.05
	RT 5	Dead End	0	0.26	0.26	9	2.34
Persons Rd	Dead End	0.2	0	0.2	0.2	6	1.2
	0.2	V/L	0.2	0.37	0.17	8	1.36
	Dead End	NY 5	0	0.2	0.2	8	1.6
Prospect Rd	V/L	1	0	1	1	9	9
	1	CR 31	1	1.51	0.51	8	4.08
Allen Rd			0	0.45	0.45	7	3.15
Barber Rd			0	0.74	0.74	9	6.66
Bliss Rd			0	1.55	1.55	9	13.95
Coon Rd			0	1.4	1.4	9	12.6
Douglas Rd			0	1.9	1.9	9	17.1
Felton Rd			0	0.63	0.63	9	5.67
Fifth Rd			0	0.11	0.11	8	0.88
First St			0	0.14	0.14	9	1.26
Hardenburg Rd			0	1.73	1.73	9	15.57
Jamestown St			0	0.12	0.12	9	1.08
Jilson Rd			0	1.08	1.08	9	9.72
Knight Rd			0	0.44	0.44	8	3.52
Lake St	Westfield V/L	Nichol Rd	0	0.08	0.08	8	0.64
	End	NY 5	0	0.19	0.19	8	1.52

Light Rd N			0	0.6	0.6	9	5.4	
Lombard Rd			0	0.32	0.32	9	2.88	
Main St			0	0.47	0.47	9	4.23	
Martin Wright Rd			0	1.97	1.97	9	17.73	
Mckinley Rd			0	1.16	1.16	8	9.28	
Minton Rd			0	0.72	0.72	9	6.48	
Mount Baldy Rd			0	2.62	2.62	9	23.58	
Munson Rd			0	1.49	1.49	8	11.92	
N Portage St			0	0.11	0.11	9	0.99	
Napper Rd			0	0.29	0.29	9	2.61	
Nichols Rd			0	0.17	0.17	8	1.36	
Ogden Rd			0	2.35	2.35	9	21.15	
Old US RT 20			0	0.1	0.1	8	0.8	
Pigeon Rd			0	1.85	1.85	9	16.65	
Rogerville Rd			0	1.23	1.23	9	11.07	
S Gale St			0	0.48	0.48	8	3.84	
Second St			0	0.17	0.17	8	1.36	
Seventh St			0	0.16	0.16	9	1.44	
Taylor Rd			0	0.58	0.58	9	5.22	
Terrace St			0	0.07	0.07	8	0.56	
Third St			0	0.22	0.22	8	1.76	
Titus Rd			0	0.49	0.49	8	3.92	
Walker Rd			0	1.53	1.53	8	12.24	
Wheeler Rd			0	0.15	0.15	9	1.35	
			Surveyed miles		52.32		453.7	**8.7**

			Unsurfaced Miles		0.17	4	0.68	**4.0**
Town of Westfield			AVG. System Condition		52.49		454.38	**8.7**

Municipality: Town of Portland

Weather: Sunny, showers

Date of Survey: 11/3/09

Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Finley Rd	CR 31	Prospect Rd	0	0.91	0.91	7	6.37
	Prospect Rd	1.25	0.91	1.25	0.34	9	3.06
	1.25	2	1.25	2	0.75	6	4.5
	2	gravel section	2	2.15	0.15	8	1.2
	gravel section	Thayer Rd	0	0.77	0.77	8	6.16
Webster Rd	Prospect Sta Rd	2.35	0	2.35	2.35	9	21.15
	2.35	2.9	2.35	2.9	0.55	8	4.4
	2.9	4	2.9	4	1.1	9	9.9
	4	CR 380	4	4.91	0.91	8	7.28
	CR 380	Pomfret T/L	4.91	6.56	1.65	9	14.85
Bear Lake Rd	Ellicott Rd	Pomfret T/L	0	1.5	1.5	8	12
Thayer Rd	Ellicott Rd	1.5	0	1.5	1.5	8	12
	1.5	Barnes Rd	1.5	2.68	1.18	9	10.62

Pavement Surface Condition
Survey

Cemetary Rd	RT 20	Webster Rd	0	0.5	0.5	7	3.5
	Webster Rd	Ellicott Rd	0.5	0.76	0.26	8	2.08
Fay St	Ellicott Rd	Rt 20	0	0.52	0.52	9	4.68
			0.52	1	0.48	8	3.84
Onthank Rd	RT 20	0.32	0	0.32	0.32	7	2.24
	0.32	Pecor St	0.32	1.31	0.99	10	9.9
Walker Rd	RT 20	RR tracks	0	0.4	0.4	8	3.2
	RT 5	RR tracks	0	0.93	0.93	8	7.44
Pratt Rd	RT 20	RR tracks	0	0.42	0.42	9	3.78
	RT 5	RR tracks	0	0.82	0.82	9	7.38
Pecor Rd	RT 20	0.5	0	0.5	0.5	8	4
	0.5	RT 5	0.5	1.48	0.98	9	8.82
Barnes Rd			0	1.58	1.58	9	14.22
Beach Rd			0	0.16	0.16	6	0.96
Bliss Rd			0	0.45	0.45	9	4.05
			0.45	1.33	0.88	7	6.16
Burr Rd			0	1.2	1.2	7	8.4
Campbell Rd			0	1.03	1.03	7	7.21
Central Ave			0	0.04	0.04	9	0.36
Central Ave Ext			0	0.54	0.54	10	5.4
Church St			0	0.41	0.41	8	3.28
Colt Rd			0	1.68	1.68	8	13.44
Colt Rd Ext			0	0.24	0.24	7	1.68
Dahlberg Rd	Mathews Rd	End of Section	0	0.75	0.75	5	3.75
	End of Section	Brocton V/L	0	0.15	0.15	5	0.75

Municipal Sign Management
Services

E Forest Ave			0	0.91	0.91	8	7.28
Ellicott Rd	Webster Rd	CR 380	0	3.14	3.14	8	25.12
Ellicott Rd E	CR 380	Pomfret T/L	0	1.07	1.07	9	9.63
Felton Rd			0	0.64	0.64	6	3.84
First St			0	0.2	0.2	8	1.6
Fish Rd			0	1.16	1.16	8	9.28
Fuller Rd			0	0.85	0.85	9	7.65
Greenwood Dr			0	0.25	0.25	7	1.75
Hazel PL			0	0.17	0.17	9	1.53
Highland Rd			0	0.47	0.47	8	3.76
Martin Rd			0	1.14	1.14	9	10.26
Mathews Rd			0	1.22	1.22	7	8.54
Munson Ave	Woleben Rd	Webster Rd	0	0.72	0.72	7	5.04
	Webster Rd	US 20	0	0.52	0.52	8	4.16
	US 20	0.81	0.52	0.81	0.29	9	2.61
North Rd			0	0.42	0.42	8	3.36
Parcell Rd			0	1.06	1.06	8	8.48
Parkview Ln			0	0.37	0.37	6	2.22
Patterson Ln			0	0.5	0.5	7	3.5
Prospect Sta Rd			0	3.62	3.62	8	28.96
Second St			0	0.13	0.13	8	1.04
Smith Rd			0	0.06	0.06	8	0.48
Swede Rd	Brocton V/L	End of Section	0	1.19	1.19	9	10.71
	End of Section	0.27	0	0.27	0.27	9	2.43
	0.27	Martin Rd	0.27	0.38	0.11	9	0.99

	Martin Rd	NY 5	0.38	0.73	0.35	7	2.45	
Tastor Ln			0	0.35	0.35	7	2.45	
Third St			0	0.13	0.13	8	1.04	
W Forest Ave			0	0.25	0.25	8	2	
Wilson Blvd			0	0.31	0.31	7	2.17	
Woleben Rd			0	2.76	2.76	9	24.84	
Woodcrest Ave			0	0.18	0.18	7	1.26	
			Surveyed miles		54.7		444.44	**8.1**
			Unsurfaced Miles		4.37	4	17.48	**4.0**
Town of Portland			AVG. System Condition		59.07		461.92	**7.8**

Municipality: Town of Busti

Weather: Cloudy, showers

Date of Survey: 10/31, 11/5/09

Temp. 45, 35

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
2nd Ave			0	0.28	0.28	7	1.96
3rd Ave			0	0.18	0.18	8	1.44
4th Ave			0	0.35	0.35	6	2.1
5th Ave			0	0.43	0.43	6	2.58

Anderson Rd			0	0.24	0.24	9	2.16
Bacon Rd			0	0.02	0.02	9	0.18
Briarwood Dr			0	0.25	0.25	6	1.5
Burton Rd	S Main St	1.55	0	1.55	1.55	9	13.95
	1.55	Pine Ridge Rd	1.55	1.96	0.41	10	4.1
Cedar Brook Dr			0	0.02	0.02	9	0.18
Chase Ln			0	0.06	0.06	6	0.36
Chautauqua Blvd			0	0.17	0.17	6	1.02
Coleman Rd			0	0.4	0.4	6	2.4
Cooper Ridge Dr			0	0.11	0.11	9	0.99
Cowing Rd	Wellman rd	0.75	0	0.75	0.75	7	5.25
	0.75	Big tree rd	0.75	1.1	0.35	6	2.1
	Big Tree Rd	1.6	1.1	1.6	0.5	9	4.5
	1.6	CR 45	1.6	3.75	2.15	10	21.5
Cramer Dr			0	0.28	0.28	7	1.96
Creek Rd	Rt 26	2.04	0	2.04	2.04	8	16.32
	2.04	PA S/L	2.04	2.42	0.38	7	2.66
Davidson La			0	0.21	0.21	9	1.89
Demmings Rd			0	0.75	0.75	9	6.75
E Robt Bootey B			0	0.26	0.26	7	1.82
First Ave			0	0.06	0.06	7	0.42
Garfield Ave			0	1.92	1.92	6	11.52
Gleason Rd			0	1.32	1.32	8	10.56
Goose Creek Rd			0	0.38	0.38	7	2.66
Grandview Ave			0	0.41	0.41	7	2.87

Hillview Rd			0	0.13	0.13	9	1.17
Hoag Rd			0	0.7	0.7	8	5.6
Holley La			0	0.2	0.2	7	1.4
Keller Rd			0	0.23	0.23	8	1.84
Kortwright Rd	CR 69	1	0	1	1	7	7
	1	RT 952P	1	1.67	0.67	6	4.02
Lakeside Dr			0	0.46	0.46	7	3.22
Lawson Rd	RT 26	Rt 952P	0	0.93	0.93	6	5.58
	RT 952P	1.2	0.93	1.2	0.27	7	1.89
	1.2	2	1.2	2	0.8	8	6.4
	2	BigTree Rd	2	3.42	1.42	7	9.94
	Big Tree Rd	Wellman Rd	3.42	4.65	1.23	7	8.61
Loomis Bay Rd			0	0.5	0.5	7	3.5
Loomis La			0	0.1	0.1	7	0.7
Marrietta Ave			0	0.05	0.05	8	0.4
Mead Rd	BCR 45	0.43	0	0.43	0.43	8	3.44
	0.43	Big Tree Rd	0.43	3.03	2.6	7	18.2
Mitchell Rd			0	1.58	1.58	6	9.48
Nelson Rd			0	0.77	0.77	6	4.62
North Ave			0	0.22	0.22	6	1.32
Northrup Ave			0	0.88	0.88	9	7.92
Nutt Rd	Big Tree Rd	1.35	0	1.35	1.35	7	9.45
	1.35	Shady Side Rd	1.35	1.75	0.4	6	2.4
	Shady Side Rd	2.58	1.75	2.58	0.83	7	5.81
	2.58	RT 952P	2.58	3.13	0.55	8	4.4

Orr St Ext			0	2.68	2.68	7	18.76
Park Meadow Dr			0	0.46	0.46	6	2.76
Park St Ext			0	0.28	0.28	6	1.68
Paterniti Dr			0	0.11	0.11	6	0.66
Pewter Rock Rd			0	0.15	0.15	9	1.35
Pine Ridge Rd	PA S/L	1.09	0	1.09	1.09	8	8.72
	1.09	Creek Rd	1.09	2.37	1.28	6	7.68
Ridge Rd			0	0.17	0.17	9	1.53
Riverside Rd			0	1.75	1.75	7	12.25
S Main St Ext	CRs 18/19	0.8	0	0.8	0.8	6	4.8
	0.8	Kiantone T/L	0.8	1.49	0.69	7	4.83
Sanbury Rd	Lawson Rd	1.14	0	1.14	1.14	8	9.12
	1.14	Kortwright Rd	1.14	1.98	0.84	10	8.4
Sandstone Rd	Wellman Rd	0.45	0	0.45	0.45	7	3.15
	0.45	T/L	0.45	0.76	0.31	6	1.86
Shadyside Rd	Lawson Rd	Mead Rd	0	1.09	1.09	6	6.54
	Mead Rd	Cowing Rd	1.09	2.3	1.21	7	8.47
	Cowing Rd	CR 36	2.3	3.36	1.06	6	6.36
	CR 36	CR 32	3.36	4.32	0.96	7	6.72
	CR 32	Lakewood V/L	4.32	4.64	0.32	7	2.24
Simmons Rd			0	0.74	0.74	8	5.92
South Ave			0	0.59	0.59	5	2.95
Stoneman Circle			0	0.25	0.25	8	2
Sunset Dr			0	0.89	0.89	8	7.12
Trask Rd	CR 30	0.47	0	0.47	0.47	10	4.7

	0.47	CR 45	0.47	1.45	0.98	7	6.86	
Vukote Rd			0	0.25	0.25	7	1.75	
Wellman Rd	PA S/L	Kortwright Rd	0	0.75	0.75	7	5.25	
	Kortwright Rd	1.24	0.75	1.24	0.49	8	3.92	
	1.24	1.81	1.24	1.81	0.57	7	3.99	
	1.81	3.88	1.81	3.88	2.07	8	16.56	
	3.88	4.5	3.88	4.5	0.62	7	4.34	
	4.5	CR 30	4.5	5.61	1.11	8	8.88	
Whitehall Cir			0	0.2	0.2	7	1.4	
Winch Rd	Cowing Rd	1.22	0	1.22	1.22	6	7.32	
	1.22	CR 32	1.22	2.02	0.8	9	7.2	
	CR 32	V/L	2.02	2.31	0.29	9	2.61	
Wing Rd			0	1.06	1.06	8	8.48	
			Surveyed miles		64.72		475.14	**7.3**
			Unsurfaced Miles		0	4	0	**0.0**
Town of Busti			AVG. System Condition		64.72		475.14	**7.3**

Municipality: Town of Chautauqua Weather: Sunny

Date of Survey: 11/7/09 Temp. 50

Pavement Surface Condition
Survey

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Barber Rd			0	0.73	0.73	9	6.57
Barnes Rd			0	0.04	0.04	8	0.32
Beaujean Rd	RT 394	2.1	0	2.1	2.1	7	14.7
	2.1	Dead End	2.1	2.69	0.59	8	4.72
Beck Rd	SR 430	gravel section	0	0.73	0.73	7	5.11
Bently Rd			0	0.76	0.76	9	6.84
Bliss Rd			0	0.45	0.45	7	3.15
Bloomer Rd			0	2.66	2.66	9	23.94
Brodt Rd	Beck Rd	Dinsbier Rd	0	1	1	8	8
	CR 301	0.22	0	0.22	0.22	6	1.32
Brumagin Rd	End of Pavmt	Mt Pleasant Rd	0	0.4	0.4	8	3.2
Burdick Rd			0	2.73	2.73	9	24.57
Canada Rd			0	0.98	0.98	9	8.82
Canterbury Dr	Dead End	0.45	0	0.45	0.45	6	2.7
	0.45	RT 394	0.45	0.73	0.28	7	1.96
Card Rd	Hewes Rd	0.3	0	0.3	0.3	7	2.1
	0.3	Potter Rd	0.3	0.71	0.41	8	3.28
Crawford Rd			0	0.78	0.78	9	7.02
Crestwood Rd			0	0.15	0.15	6	0.9
Davis Rd			0	1.37	1.37	9	12.33
Dean Rd			0	1.74	1.74	9	15.66

Diamond Ave			0	0.22	0.22	8	1.76
Dinsbier Rd	Brodt Rd	0.27	0	0.27	0.27	8	2.16
	0.27	RT 430	0.27	1.17	0.9	9	8.1
Elm Ave			0	0.15	0.15	8	1.2
Elm Flat Rd			0	3.92	3.92	8	31.36
Elmwood Ave	SR 394	Lakeview	0	0.31	0.31	7	2.17
	0.31	Elmwood Ave	0.31	0.36	0.05	8	0.4
Elmwood Rd	Galloway Rd	SR 430	0	0.55	0.55	8	4.4
Emerald Ave	Diamond Ave	Leet Ave	0	0.32	0.32	8	2.56
Farr Rd			0	0.2	0.2	9	1.8
Floral Ave			0	0.2	0.2	8	1.6
Galloway Rd			0	0.39	0.39	7	2.73
Griswold Rd			0	0.06	0.06	7	0.42
Haight Rd	Elm Flat Rd	0.75	0	0.75	0.75	9	6.75
	0.75	Cr 37	0.75	1.56	0.81	7	5.67
Hannun Rd	SR 430	1.15	0	1.15	1.15	9	10.35
	1.15	1.48	1.15	1.48	0.33	8	2.64
	1.48	2.3	1.48	2.3	0.82	7	5.74
	2.3	gravel section	2.3	2.54	0.24	6	1.44
Hewes Rd	Moore Rd	0.6	0	0.6	0.6	7	4.2
	0.6	0.75	0.6	0.75	0.15	6	0.9
	0.75	2	0.75	2	1.25	8	10
	2	2.28	2	2.28	0.28	9	2.52
	2.28	N Harmony T/L	2.28	3.06	0.78	7	5.46
Hidden Valley Rd			0	0.28	0.28	9	2.52

Hillcrest Dr			0	0.21	0.21	8	1.68
Knight St			0	0.15	0.15	8	1.2
Lake Ave			0	0.43	0.43	8	3.44
Lawndale Ave			0	0.12	0.12	10	1.2
Lawson Rd	Elm Flat Rd	1	0	1	1	6	6
	1	Prospect Rd	1	1.27	0.27	7	1.89
Leet Ave			0	0.53	0.53	8	4.24
Lindburg Rd	CR 308	Dead End	0	0.12	0.12	9	1.08
Lookout Ave			0	0.33	0.33	8	2.64
Lyons Rd	Dead End	0.9	0	0.9	0.9	9	8.1
	0.9	1.2	0.9	1.2	0.3	7	2.1
	1.2	1.4	1.2	1.4	0.2	6	1.2
	1.4	1.82	1.4	1.82	0.42	7	2.94
Magnolia Rd			0	0.25	0.25	9	2.25
McKay Rd			0	0.62	0.62	9	5.58
Meadows Rd	Dead End	CR 54	0	2.1	2.1	8	16.8
	CR 54	T/L	2.1	3.4	1.3	9	11.7
Midland Ave			0	0.18	0.18	8	1.44
Mill St			0	0.33	0.33	8	2.64
Moore Rd	RT 394	1.25	0	1.25	1.25	8	10
	1.25	CR 25	1.25	1.55	0.3	7	2.1
Mt Pleasant Rd			0	2.5	2.5	9	22.5
Munson Rd			0	1.13	1.13	9	10.17
Orchard Ave			0	0.2	0.2	8	1.6
Orchard Ave Sp			0	0.01	0.01	8	0.08

Parcell Rd			0	0.68	0.68	9	6.12
Parker Rd	SR 394	1.24	0	1.24	1.24	9	11.16
Potter Rd	N Harmony T/L	0.75	0	0.75	0.75	7	5.25
	0.75	RT 394	0.75	3.36	2.61	9	23.49
Prospect Station Rd			0	1.52	1.52	9	13.68
Putnam Rd	CR 22	0.5	0	0.5	0.5	8	4
	0.5	Westfield T/L	0.5	0.85	0.35	7	2.45
Quilliam Rd			0	1.31	1.31	7	9.17
Redwing Rd			0	0.53	0.53	9	4.77
Sea Lion Dr			0	0.46	0.46	8	3.68
Snug Harbor Rd			0	0.29	0.29	9	2.61
Summerdale Rd			0	1.72	1.72	8	13.76
Sunrise Ct			0	0.12	0.12	8	0.96
Terrace Ave			0	0.15	0.15	8	1.2
Thayer Rd			0	0.07	0.07	8	0.56
Thumb Rd			0	0.29	0.29	8	2.32
Titus Rd	Sherman T/L	SR 430	0	0.22	0.22	8	1.76
	SR 430	0.65	0.22	0.65	0.43	6	2.58
Tyler Rd	SR 430	0.22	0	0.22	0.22	8	1.76
VanNess Rd	RT 40	0.4	0	0.4	0.4	9	3.6
	0.4	Bloomer Rd	0.4	1.37	0.97	10	9.7
Walker Rd			0	0.99	0.99	7	6.93
Webber Rd			0	2.5	2.5	9	22.5
Wiery Rd			0	0.15	0.15	9	1.35
Wright Rd	CR 58	1	0	1	1	7	7

	1	CR 54	1	1.35	0.35	6	2.1	
	CR 54	Meadows Rd	1.35	2.13	0.78	8	6.24	
Zephyr Rd			0	0.13	0.13	8	1.04	
			Surveyed miles		69.73		572.37	**8.2**
			Unsurfaced Miles		4.04	4	16.16	**4.0**
Town of Chautauqua			AVG. System Condition		73.77		588.53	**8.0**

Municipality: Town of N Harmony

Weather: Partly cloudy, Sunny

Date of Survey: 10/22, 11/6/09

Temp. 55, 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Randolph Rd	CR 33	0.9	0	0.9	0.9	9	8.1
	0.9	Harmony T/I	0.9	1.77	0.87	8	6.96
Erickson Rd	Randolph Rd	0.07	0	0.07	0.07	7	0.49
	0.07	RT 474	0.07	2.15	2.08	9	18.72
Diffley Rd	Erickson Rd	CR 35	0	1.26	1.26	8	10.08
Baker Rd	Erickson Rd	0.31	0	0.31	0.31	9	2.79
	0.31	CR 33	0.31	1.49	1.18	8	9.44
Fox Rd	CR 33	Randolph Rd	0	1.11	1.11	8	8.88

Wall Rd	CR 33	0.5	0	0.5	0.5	8	4
	0.5	0.8	0.5	0.8	0.3	7	2.1
	0.8	Gravel section	0.8	1.59	0.79	8	6.32
	CR 18	Gravel section	0	1.74	1.74	9	15.66
Potter Rd			0	0.2	0.2	7	1.4
Hewes Rd			0	0.5	0.5	7	3.5
Havercamp Rd			0	0.08	0.08	7	0.56
Eiden Rd	Wall Rd	CR 33	0	1.28	1.28	9	11.52
Ramsey Rd	CR 33	CR 35	0	0.75	0.75	7	5.25
	CR 35	Morley Rd	0	1.22	1.22	6	7.32
	Morley Rd	RT 394	1.22	3.12	1.9	7	13.3
Old Bridge Rd	Stow-Ferry	Bridge	0	0.2	0.2	8	1.6
	Bridge	Cul-de-sac	0.2	0.32	0.12	5	0.6
	Stow-Ferry	Dead End	0	0.07	0.07	8	0.56
Morley Rd	RT 394	CR 16	0	0.8	0.8	6	4.8
	CR 16	Ramsey Rd	0	1.1	1.1	7	7.7
Eck Rd			0	0.19	0.19	6	1.14
Carpenter-Pringles Rd	RT 394	CR 16	0	0.32	0.32	9	2.88
	Bridge S End	Ramsey Rd	0	1.02	1.02	7	7.14
	Ramsey Rd	CR 35	0	3.2	3.2	6	19.2
Steinhoff Rd	Carpenter-Pring	0.4	0	0.4	0.4	7	2.8
	0.4	0.88	0.4	0.88	0.48	8	3.84
Bly Hill Rd	RT 394	0.55	0	0.55	0.55	5	2.75
	0.55	Carpenter-Pring	0.55	1.99	1.44	7	10.08
Cheney Rd	CR 35	0.35	0	0.35	0.35	6	2.1

	0.35	0.72	0.35	0.72	0.37	8	2.96
	0.72	RT 394	0.72	2.99	2.27	6	13.62
Butts Rd	Ramsey Rd	0.77	0	0.77	0.77	6	4.62
	0.77	1.5	0.77	1.5	0.73	7	5.11
	1.5	CR 35	1.5	3.6	2.1	6	12.6
Spooner Rd	CR 35	Harmony T/l	0	0.84	0.84	8	6.72
Gesaman Rd	Dead End	0.18	0	0.18	0.18	7	1.26
	0.18	RT 474	0.18	0.44	0.26	6	1.56
Brooks St			0	0.2	0.2	6	1.2
Westhill Rd			0	0.16	0.16	6	0.96
Fardink Rd			0	0.72	0.72	8	5.76
Stoneledge Rd	CR 43	0.7	0	0.7	0.7	8	5.6
	0.7	1.14	0.7	1.14	0.44	7	3.08
	1.14	Butts Rd	1.14	1.93	0.79	6	4.74
Alexander Rd	Stoneledge Rd	0.25	0	0.25	0.25	7	1.75
	0.25	Dead End	0.25	0.62	0.37	6	2.22
Ashville Bay Rd			0	0.34	0.34	7	2.38
Cedar Ave	CR 37	0.13	0	0.13	0.13	6	0.78
	0.13	End of Section	0.13	0.22	0.09	5	0.45
College St			0	0.17	0.17	7	1.19
Cove Circle E			0	0.13	0.13	6	0.78
Goose Bay Creek			0	0.1	0.1	7	0.7
Hoag Rd			0	0.56	0.56	8	4.48
LaCresta Dr			0	0.14	0.14	6	0.84
Lakeshore Dr			0	0.14	0.14	8	1.12

Linden Rd			0	0.15	0.15	6	0.9
Longview Ave			0	0.09	0.09	7	0.63
Loomis Bay Rd			0	0.04	0.04	7	0.28
Magnolia Ave			0	0.27	0.27	6	1.62
Almar Dr			0	0.19	0.19	7	1.33
Cheney Pt Rd	Spring St	End of Section	0	0.83	0.83	6	4.98
	SR 394	Chautauqua Ave	0	0.19	0.19	6	1.14
Connelly Park Rd	Al Mar Dr	SR 394	0	0.25	0.25	7	1.75
	SR 394	AlMar	0.25	0.32	0.07	8	0.56
Hadley Bay Rd			0	0.48	0.48	6	2.88
Lakeland Rd			0	0.4	0.4	7	2.8
Magnolia Rd			0	0.25	0.25	9	2.25
Mulberry St			0	0.08	0.08	5	0.4
Neits Crest Rd			0	0.29	0.29	6	1.74
Quigly Park Rd			0	0.17	0.17	6	1.02
Roemer Rd			0	0.2	0.2	6	1.2
Salam Dr			0	0.13	0.13	8	1.04
Stewert Ave			0	0.21	0.21	7	1.47
Stowe-Ferry			0	0.4	0.4	7	2.8
Street To Church			0	0.07	0.07	6	0.42
Sunrise Dr			0	0.18	0.18	8	1.44
Victoria Rd			0	0.66	0.66	9	5.94
Watson Rd			0	0.3	0.3	7	2.1
Wells Bay Rd			0	0.38	0.38	7	2.66
Woodland Dr			0	0.21	0.21	9	1.89

Pavement Surface Condition
Survey

			Surveyed miles		46.72		335.3	**7.2**
			Unsurfaced Miles		12.69	4	50.76	**4.0**
Town of N. Harmony			AVG. System Condition		59.41		386.06	**6.5**

Municipality: Town of Sheridan

Weather: Partly sunny

Date of Survey: 11/6/09

Temp: 40

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating
			Start	Stop	Miles	

Municipal Sign Management
Services

Cook Rd	Middle Rd	0.36	0	0.36	0.36	5	1.8
	0.36	0.9	0.36	0.9	0.54	7	3.78
	0.9	View Rd	0.9	1.54	0.64	6	3.84
New Rd	Dunkirk T/L	RT 20	0	1.21	1.21	7	8.47
Walnut Rd	RT 20	CR 84	0	1	1	7	7
	CR 84	1	1	1.6	0.6	7	4.2
	1.6	1.8	1.6	1.8	0.2	6	1.2
	1.8	V/L	1.8	2.02	0.22	7	1.54
Kuhrt Rd	Hanover T/L	1.15	0	1.15	1.15	6	6.9
	1.15	CR 84	1.15	1.62	0.47	7	3.29
S Roberts Rd	Whittaker Rd	CR 79	0	1.85	1.85	8	14.8
Mezzio Rd	Center Rd	Laona Rd	0	1.2	1.2	7	8.4
	Laona Rd	Whittaker Rd	1.2	1.75	0.55	8	4.4
Whittaker Rd	Laona Rd	1.19	0	1.19	1.19	7	8.33
	1.19	CR 79	1.19	2.2	1.01	8	8.08
Christy Rd	T/L	0.5	0	0.5	0.5	7	3.5
	0.5	RT 20	0.5	0.81	0.31	8	2.48
Pennsylvania Ave	Silver Creek V/L	Middle Rd	0	0.69	0.69	7	4.83
E Middle Rd	V/L	1.4	0	1.4	1.4	7	9.8
	1.4	Dead End	1.4	1.85	0.45	6	2.7
	Center Rd	0.36	0	0.36	0.36	7	2.52
	0.36	Dead End	0.36	0.8	0.44	8	3.52
Aldrich Rd	Middle Rd	0.82	0	0.82	0.82	9	7.38
	0.82	RT 20	0.82	1.79	0.97	10	9.7
Old Man Rd	V/L	0.4	0	0.4	0.4	6	2.4

	0.4	RT 20	0.4	0.57	0.17	5	0.85
Chapin Rd	Aldrich Rd	1.45	0	1.45	1.45	6	8.7
	1.45	Center Rd	1.45	2.18	0.73	8	5.84
Newell Rd	RT 5	Dead End	0	0.37	0.37	9	3.33
	Werle Rd	Dead End	0	0.61	0.61	9	5.49
	RR tracks	Middle Rd	0	0.16	0.16	9	1.44
	RT 20	0.5	0	0.5	0.5	7	3.5
	0.5	1.66	0.5	1.66	1.16	8	9.28
	1.66	Middle Rd	1.66	2.1	0.44	9	3.96
	RT 20	S Roberts Rd	0	1.4	1.4	9	12.6
Airport Rd			0	0.64	0.64	7	4.48
Epolito Rd			0	0.14	0.14	7	0.98
Farmingdale Rd			0	0.75	0.75	7	5.25
Laon Rd			0	0.58	0.58	7	4.06
Martin Rd			0	0.28	0.28	9	2.52
Marylane Dr			0	0.09	0.09	8	0.72
Meyers Rd			0	0.63	0.63	9	5.67
Miller Rd			0	1.4	1.4	7	9.8
Obrien Rd			0	1.3	1.3	9	11.7
Old Man Rd Spur			0	0.05	0.05	5	0.25
Schultz Rd			0	0.12	0.12	8	0.96
Stone Quarry Rd			0	0.97	0.97	10	9.7
Straight Rd			0	1.41	1.41	9	12.69
Strawser Rd	Bridge	W Sheridan Rd	0	0.26	0.26	9	2.34
Swamp Rd			0	0.38	0.38	9	3.42

Van Vokenburg Rd			0	0.06	0.06	7	0.42	
W Sheridan Dr	S Roberts Rd	US 20	0	0.28	0.28	7	1.96	
W Sheridan Rd	Newell Rd	CR 91	0	1.71	1.71	7	11.97	
Waite Rd	79	0.47	0	0.47	0.47	6	2.82	
Werle Rd	Middle Rd	Progress Dr	0	0.69	0.69	9	6.21	
	Harrington Rd	Newell Rd	0	0.59	0.59	9	5.31	
			Surveyed miles		38.32		293.08	**7.6**
			Unsurfaced Miles		1.00	4	4.0	**4.0**
Town of Sheridan			AVG. System Condition		39.32		297.08	**7.6**

Municipality: Town of Pomfret Weather: Cloudy showers

Pavement Surface Condition
Survey

Date of Survey: 11/4/09 Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Chestnut Rd	Dunkirk T/L	0.58	0	0.58	0.58	8	4.64
	0.58	Dunkirk T/l	0.58	0.69	0.11	6	0.66
Christy Rd	RT 20	Arkwright T/L	0	0.63	0.63	6	3.78
Chautauqua Rd	Fredonia T/L	0.85	0	0.85	0.85	10	8.5
	0.85	Maytum Rd	0.85	2.67	1.82	9	16.38
	Maytum Rd	Kelly Hill Rd	2.67	4.62	1.95	9	17.55
	Kelly Hill Rd	Gravel section	4.62	4.91	0.29	9	2.61
Bear Lake Rd	Kelly Hill Rd	1.85	0	1.85	1.85	9	16.65
	1.85	Stockton T/L	1.85	2.38	0.53	8	4.24
Bacheller Hill Rd	Bear Lake Rd	CR 73	0	0.6	0.6	9	5.4
	Cummings Rd	Gravel section	0	0.45	0.45	6	2.7
Kelly Hill Rd	Bear Lake Rd S		0	2.25	2.25	9	20.25
		Bear Lake Rd N	2.25	2.84	0.59	7	4.13
Webster Rd	Portland T/L	Ellicott Rd	0	1.6	1.6	8	12.8
	Ellicott Rd	Adams Rd	0	1.35	1.35	9	12.15
	Adams Rd	CR 73	0	2.61	2.61	9	23.49
Hahn Rd	CR 73 S	1.45	0	1.45	1.45	5	7.25
	1.45	CR 73 N	1.45	1.93	0.48	6	2.88
Glasgow Rd	CR 73	0.9	0	0.9	0.9	7	6.3
	0.9	1.56	0.9	1.56	0.66	9	5.94

	1.56	2.1	1.56	2.1	0.54	8	4.32
	2.1	2.3	2.1	2.3	0.2	9	1.8
	2.3	CR 48	2.3	2.93	0.63	7	4.41
Adams Rd			0	0.6	0.6	9	5.4
Barnum Rd			0	0.57	0.57	9	5.13
Block House Rd			0	0.72	0.72	6	4.32
Brainard Rd			0	0.31	0.31	9	2.79
Concord Dr			0	1.94	1.94	9	17.46
Cummings Rd			0	1.01	1.01	9	9.09
Darby Switch Rd			0	0.65	0.65	6	3.9
Eagle Rd			0	0.25	0.25	6	1.5
Ellicott Rd			0	2.11	2.11	8	16.88
Farel Rd	Webster Rd	SR 20	0	0.54	0.54	8	4.32
	Berry Rd	VanBuren Rd	0	1	1	7	7
	US 20	Berry Rd	0	0.79	0.79	8	6.32
Hall Rd	VanBuren Rd	Wilbur Rd	0	0.53	0.53	8	4.24
	Wilbur Rd	Dunkirk T/L	0.53	0.84	0.31	7	2.17
Harmon Hill Rd	Kelly Hill Rd	Webster Rd	0	2.04	2.04	8	16.32
	Webster Rd	SR 20	2.04	2.67	0.63	9	5.67
Lake Rd	SR 5	Van Buren Bay	0	0.02	0.02	7	0.14
	VanBuren Bay	Lake Erie	0.02	0.12	0.1	8	0.8
Lake View Rd	Fredonia V/L	SR 60	0	0.2	0.2	7	1.4
	SR 60	Sheridan T/L	0.2	0.77	0.57	8	4.56
Lamberton Rd	SR 20	Thruway	0	0.6	0.6	6	3.6
	Thruway	Lowell Rd	0	0.33	0.33	6	1.98

Lowell Rd			0	0.55	0.55	6	3.3	
Marthas Vineyard			0	0.21	0.21	6	1.26	
Maytum Rd			0	0.45	0.45	7	3.15	
McCallister Rd			0	0.5	0.5	7	3.5	
North Rd			0	1.64	1.64	7	11.48	
Osborne Rd			0	1.29	1.29	7	9.03	
Ransom Rd			0	0.69	0.69	8	5.52	
Rood Rd			0	0.25	0.25	6	1.5	
Seymour Rd	Dead End	Webster Rd	0	0.67	0.67	6	4.02	
	Webster Rd	Fredonia V/L	0.67	1.1	0.43	7	3.01	
Shumla Rd	Stockton T/L	Bard Rd	0	0.57	0.57	7	3.99	
	Bard Rd	Arkwright T/L	0	0.54	0.54	8	4.32	
	Arkwright T/L	SR 60	0.54	1.77	1.23	7	8.61	
Spoden Rd			0	2.35	2.35	5	11.75	
Stone Rd			0	0.72	0.72	6	4.32	
Straight Rd			0	0.59	0.59	10	5.9	
Swamp Rd			0	0.04	0.04	8	0.32	
VanBuren Bay Rd			0	0.43	0.43	7	3.01	
Walden Rd			0	0.46	0.46	7	3.22	
Wilber Rd			0	0.16	0.16	6	0.96	
Wilson Rd		SR 60	0	0.34	0.34	8	2.72	
	CR 140		0	0.01	0.01	7	0.07	
			Surveyed miles		52.86		408.78	**7.7**
			Unsurfaced Miles		3.49	4	13.96	**4.0**
Town of Pomfret			AVG. System Condition		56.35		422.74	**7.5**

Pavement Surface Condition
Survey

Municipality: Town of Ellery

Weather: Sunny, clear

Date of Survey: 11/7,9/09

Temp. 55, 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Bayview Rd	Watermans Crn	2.24	0	2.24	2.24	7	15.68
	2.24	CR 47	2.24	4.33	2.09	6	12.54
Weaver Rd	Lewis Rd	0.35	0	0.35	0.35	8	2.8
	0.35	RT 430	0.35	0.71	0.36	7	2.52
Beck Rd	CR 57	0.25	0	0.25	0.25	7	1.75
	0.25	Cr 44	0.25	1.82	1.57	8	12.56
Johnson Rd	CR 44	CR 48	0	0.49	0.49	6	2.94
	CR 44	Skunk Hollow Rd	0	0.86	0.86	9	7.74
Maple Grove Rd	CR 57	0.65	0	0.65	0.65	9	5.85
	0.65	1.65	0.65	1.65	1	8	8
	1.65	Westman Rd	1.65	2.1	0.45	9	4.05
Brown Hill Rd	Bayview Rd	0.2	0	0.2	0.2	7	1.4
	0.2	Dead End	0.2	0.27	0.07	9	0.63
Brown Rd	Bayview Rd	0.5	0	0.5	0.5	7	3.5

	0.5	Mahanna Rd	0.5	0.74	0.24	9	2.16
Crestwood Rd	Sunrise Rd	0.2	0	0.2	0.2	6	1.2
	0.2	Sunset Bay Rd	0.2	0.34	0.14	10	1.4
Sunrise Dr	Crestwood Rd	0.08	0	0.08	0.08	6	0.48
	0.08	Sunset Bay Rd	0.08	0.33	0.25	9	2.25
Abbott PK Rd			0	0.08	0.08	8	0.64
Alm Rd			0	0.12	0.12	7	0.84
Anderson Rd			0	0.25	0.25	9	2.25
Arrot Rd			0	0.21	0.21	10	2.1
Barton Ave	RT 430	Park Ave Dr	0	0.08	0.08	6	0.48
	Park Ave Dr	Merritt Ave	0.08	0.2	0.12	7	0.84
Bay View Cut Off	CR 52	Waterman rd	0	0.82	0.82	6	4.92
	CR 52	Bay View Rd	0	0.07	0.07	7	0.49
Belle Ave			0	0.2	0.2	9	1.8
Belleview Hts			0	0.22	0.22	7	1.54
Belleview Rd			0	3.74	3.74	7	26.18
Bemus Crk Rd			0	0.12	0.12	8	0.96
Bemus St			0	0.05	0.05	6	0.3
Broadway St			0	0.33	0.33	6	1.98
Brookside Dr			0	0.11	0.11	8	0.88
Carlson Dr	Sunset Bay Rd	Dead End	0	0.1	0.1	7	0.7
Carlson Rd	CR 57	Dead End	0	0.22	0.22	6	1.32
Carmen Dr			0	0.19	0.19	7	1.33
Carol Dr			0	0.14	0.14	7	0.98
Casselman Rd			0	0.1	0.1	7	0.7

Chautauqua Ave			0	0.8	0.8	7	5.6
Chautauqua Rd			0	0.08	0.08	7	0.56
Chedwel Rd			0	0.34	0.34	7	2.38
Cheney Dr			0	0.2	0.2	6	1.2
Clifford Ave N	Williams Ave	Dead End	0	0.01	0.01	8	0.08
Clifford Ave S	RT 430	Williams Ave	0	0.3	0.3	7	2.1
Colburn Ave			0	0.16	0.16	6	0.96
Crestview Dr			0	0.04	0.04	8	0.32
Crestwood Dr			0	0.04	0.04	8	0.32
Driftwood Rd	RT 430	Cul-De- Sac	0	0.7	0.7	6	4.2
	RT 430	Dead End	0	0.07	0.07	7	0.49
	Dead End	Cul-De- Sac	0.07	0.54	0.47	9	4.23
East Ave			0	0.23	0.23	10	2.3
Eastwind Dr			0	0.06	0.06	7	0.42
Elm Ave			0	0.05	0.05	7	0.35
Emory La			0	0.05	0.05	7	0.35
Everett Ave N	Main St	Everett Pk Rd	0	0.13	0.13	8	1.04
Everett Ave S	Dead End	Main St	0	0.22	0.22	7	1.54
Everett Park Dr			0	0.2	0.2	8	1.6
Forest Ave			0	0.15	0.15	9	1.35
Forestlawn Ave			0	0.1	0.1	7	0.7
Greenhurst Ave			0	0.45	0.45	10	4.5
Hale Rd	Mahanna	Dead End	0	0.24	0.24	9	2.16
	Dead End	CR 57	0	0.59	0.59	6	3.54
Harold Ave N			0	0.22	0.22	8	1.76

Harold Ave S			0	0.2	0.2	7	1.4
Harvey Rd			0	0.66	0.66	9	5.94
Heineman Rd			0	0.35	0.35	10	3.5
JT Ave			0	0.05	0.05	9	0.45
Jamestown Ave			0	0.04	0.04	8	0.32
Kel Rol Ave			0	0.02	0.02	9	0.18
Lakecrest ave			0	0.17	0.17	7	1.19
Lakeside Promen			0	0.12	0.12	7	0.84
Lakeview Ave			0	0.09	0.09	7	0.63
Lakeview Dr			0	0.29	0.29	8	2.32
Lewis Rd			0	1.73	1.73	8	13.84
Lin Ave			0	0.23	0.23	7	1.61
Lloyd Ave			0	0.24	0.24	8	1.92
Luce Rd			0	1.9	1.9	8	15.2
Mahanna Rd	CR 13	Hale Rd	0	2.33	2.33	7	16.31
Maple Shade Ave			0	0.06	0.06	8	0.48
Maple Shade Dr			0	0.08	0.08	8	0.64
Maple Spring			0	0.26	0.26	7	1.82
Marina Dr			0	0.21	0.21	6	1.26
Marshall St			0	0.28	0.28	8	2.24
Mary Ellen Dr			0	0.21	0.21	7	1.47
Meadow Dr			0	0.12	0.12	8	0.96
Merriman Rd			0	0.2	0.2	8	1.6
Merritt Ave			0	0.14	0.14	7	0.98
N Clifford Ave			0	0.06	0.06	8	0.48

Nesmith Ave N			0	0.09	0.09	8	0.72
Nesmith Ave S			0	0.17	0.17	7	1.19
North St	West Ave	0.09	0	0.09	0.09	9	0.81
	0.09	East Ave	0.09	0.14	0.05	10	0.5
Northwind Dr			0	0.04	0.04	6	0.24
Oriental Ave N			0	0.21	0.21	8	1.68
Oriental Ave S			0	0.22	0.22	7	1.54
Overlook Terrace			0	0.06	0.06	8	0.48
Pancake Hill Rd			0	2.04	2.04	9	18.36
Park Ave Dr			0	0.24	0.24	7	1.68
Pearl St	West Ave	0.09	0	0.09	0.09	9	0.81
	0.09	East Ave	0.09	0.14	0.05	10	0.5
Pest Rd			0	0.69	0.69	9	6.21
Pine St	West Ave	0.09	0	0.09	0.09	9	0.81
	0.09	East Ave	0.09	0.14	0.05	10	0.5
Pleasant View Ave			0	0.14	0.14	7	0.98
Popal La			0	0.11	0.11	8	0.88
Prospect St			0	0.08	0.08	7	0.56
Ralph Ave N			0	0.12	0.12	8	0.96
Ralph Ave S			0	0.16	0.16	7	1.12
Rivulet Ave	Chautauqua Ave	16 Pvmt width	0	0.07	0.07	7	0.49
	Whiteside Pkwy	10 Pvmt width	0	0.13	0.13	7	0.91
	Chautauqua Ave	10 Pvmt width	0	0.21	0.21	7	1.47
Sager Rd	Slide Joslyn Rd	1.61	0	2.01	2.01	9	18.09
	2.01	CR 647 Condin Rd	2.01	2.29	0.28	7	1.96

Scandia Dr			0	0.26	0.26	9	2.34
Service Rd			0	0.16	0.16	6	0.96
Sheldon Hall Rd			0	0.25	0.25	7	1.75
Shelly La			0	0.07	0.07	7	0.49
Shore Acres Dr			0	0.17	0.17	6	1.02
Skunk Hollow Rd			0	0.1	0.1	9	0.9
Slide Joslyn Rd			0	3.47	3.47	9	31.23
Stockholm Ave			0	0.07	0.07	7	0.49
Summit Ave			0	0.09	0.09	10	0.9
			0	0.01	0.01	7	0.07
Sunnyside Rd			0	0.29	0.29	10	2.9
Sunset Dr			0	0.34	0.34	6	2.04
The Circle	Whiteside Pkwy	Lakeside Prom	0	0.12	0.12	7	0.84
	Whiteside Pkwy	The Circle	0	0.04	0.04	7	0.28
Thum Rd			0	1.73	1.73	7	12.11
Walker Rd	Lewis Rd	gravel section	0	0.15	0.15	8	1.2
	gravel section	Bay View Rd	0	0.16	0.16	5	0.8
Warner Bay Rd	Sunset Bay Dr	14 Pvmt width	0	0.49	0.49	7	3.43
	14 Pvmt width	Dead End	0.49	0.56	0.07	6	0.42
Waterman Rd	Bay View Rd	gravel section	0	0.32	0.32	7	2.24
West Ave	Greenhurst Ave	0.09	0	0.09	0.09	9	0.81
	0.09	Dead End	0.09	0.27	0.18	10	1.8
Westman Rd	NY 430	Meadow Rd	0	2.45	2.45	9	22.05
Westwind Dr			0	0.13	0.13	6	0.78
Whiteside Pkwy			0	0.43	0.43	7	3.01

Williams Ave			0	0.26	0.26	6	1.56	
Willow Ave			0	0.15	0.15	9	1.35	
Yost Ave			0	0.11	0.11	7	0.77	
			Surveyed miles		54.85		424.3	**7.7**
			Unsurfaced Miles		5.66	4	22.64	**4.0**
Town of Ellery			AVG. System Condition		60.51		446.94	**7.4**

Municipality: Town of Ellicott

Weather: Overcast,sunny, sunny

Date of Survey: 11/9,14,15/09

Temp. 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating
			Start	Stop	Miles	
Wilson Hollow Rd	Gerry T/L	0.25	0	0.25	0.25	6	1.5
	0.25	0.85	0.25	0.85	0.6	7	4.2

	0.85	CR 65	0.85	2.01	1.16	9	10.44
Turner Rd	CR 61	1.24	0	1.24	1.24	7	8.68
	1.24	Gritts Rd	1.24	2.08	0.84	9	7.56
Gritts Rd	Turner Rd	0.3	0	0.3	0.3	7	2.1
	0.3	1.17	0.3	1.17	0.87	8	6.96
	1.17	Moon Rd	1.17	1.57	0.4	6	2.4
Moon Rd	Townline Rd	2.5	0	2.5	2.5	6	15
	2.5	RT 60	2.5	2.84	0.34	7	2.38
Strunk Rd	W Oak Hill Rd	1.65	0	1.65	1.65	6	9.9
	1.65	1.95	1.65	1.95	0.3	10	3
Tompkins Rd	RT 60	0.5	0	0.5	0.5	6	3
	0.5	Berg Rd	0.5	1.01	0.51	7	3.57
Palm Rd	RT 60	Matson Rd	0	0.41	0.41	10	4.1
	Matson Rd	0.74	0.41	0.74	0.33	5	1.65
	0.74	Eckman Rd	0.74	0.95	0.21	6	1.26
Horton Rd	RT 60	0.96	0	0.96	0.96	6	5.76
	0.96	Hough Hill Rd	0.96	1.4	0.44	7	3.08
Hough Hill Rd	Horton Rd	0.25	0	0.25	0.25	5	1.25
	0.25	N Work St	0.25	0.51	0.26	6	1.56
Johnson Rd	W Oak Hill Rd	0.2	0	0.2	0.2	6	1.2
	0.2	Dead End	0.2	0.38	0.18	5	0.9
Bonita Ln	Old Fluv Rd	0.1	0	0.1	0.1	6	0.6
	0.1	Bentley Ave	0.1	0.23	0.13	7	0.91
Bentley Rd	Bonita Ln	0.42	0	0.42	0.42	6	2.52
	0.42	Dead End	0.42	0.67	0.25	5	1.25

Third St	RT 380	0.05	0	0.05	0.05	5	0.25
	0.05	0.16	0.05	0.16	0.11	6	0.66
	0.16	Delaware Rd	0.16	0.21	0.05	7	0.35
Delaware Ave		0.06	0	0.06	0.06	6	0.36
	0.06	Lyndon Ave	0.06	0.27	0.21	7	1.47
Swanson Rd	Buffalo St Ext	Willard St	0	0.42	0.42	7	2.94
	Willard St	Camp St	0	0.75	0.75	6	4.5
Howard Rd	Baker St Ext	Hunt Rd	0	0.99	0.99	7	6.93
	Hunt Rd	Fairmount	0.99	1.48	0.49	8	3.92
Homestead	Hunt Rd	0.16	0	0.16	0.16	7	1.12
	0.16	Glenwood Ave	0.16	0.21	0.05	5	0.25
Sycamore St	Hanford Rd	0.07	0	0.07	0.07	5	0.35
	0.07	0.12	0.07	0.12	0.05	6	0.3
Hanford Ave	Fairmount Ave	0.4	0	0.4	0.4	5	2
	0.4	0.76	0.4	0.76	0.36	6	2.16
Warwick	Fairmount Ave	Woolworth	0	0.09	0.09	7	0.63
	Woolworth	Howard Rd	0.09	0.35	0.26	10	2.6
Columbia	Warwick Rd	Westminister	0	0.05	0.05	6	0.3
	0.05	Canterbury	0.05	0.1	0.05	10	0.5
	0.1	Chicago	0.1	0.32	0.22	7	1.54
Allegany Ave			0	0.52	0.52	9	4.68
Allen St Ext			0	0.22	0.22	8	1.76
Arlington St			0	0.06	0.06	5	0.3
Avalon Blvd	Fairmount Ave	Avalon Blvd	0	0.26	0.26	10	2.6
	Avalon Blvd	Hunt Rd	0.26	0.52	0.26	6	1.56

Babcock Ave			0	0.14	0.14	7	0.98
Berg Rd			0	0.53	0.53	6	3.18
Berkley St			0	0.11	0.11	6	0.66
Bittersweet Dr			0	0.09	0.09	7	0.63
Brooks St			0	0.06	0.06	6	0.36
Brown St			0	0.08	0.08	7	0.56
Bryson			0	0.04	0.04	6	0.24
Buffalo St Ext			0	0.11	0.11	8	0.88
Camay Ln			0	0.28	0.28	8	2.24
Camp St	City Line	Curve	0	0.5	0.5	6	3
	Curve	Southerly	0.5	0.89	0.39	5	1.95
Canterbury Rd			0	0.22	0.22	6	1.32
Carter St			0	0.05	0.05	8	0.4
Central Ave	End	Howard Ave	0	0.07	0.07	5	0.35
	Howard Ave	Homestead Blvd	0	0.1	0.1	6	0.6
Cherry St			0	0.05	0.05	7	0.35
Clifton Ave	City Line	End of Section	0	0.09	0.09	5	0.45
	End	Johnson Rd	0	0.27	0.27	6	1.62
Cobbe Cir			0	0.23	0.23	6	1.38
Curtis Rd	Jamestown C/L	RT 17 Overpass	0	0.39	0.39	6	2.34
	Rt 17 Overpass	Horton Rd	0.39	0.65	0.26	7	1.82
Demslow			0	0.22	0.22	6	1.32
Devon St			0	0.06	0.06	6	0.36
Dow St			0	0.46	0.46	7	3.22
E Everett St			0	0.08	0.08	7	0.56

East Ave			0	0.08	0.08	7	0.56
Eckman Rd			0	0.37	0.37	6	2.22
Edith St			0	0.14	0.14	6	0.84
Elam St			0	0.26	0.26	8	2.08
Elmhurst			0	0.1	0.1	7	0.7
Elmwood Ave			0	0.22	0.22	6	1.32
Faber St			0	0.06	0.06	7	0.42
Factura Dr			0	0.12	0.12	9	1.08
First Ave			0	0.08	0.08	8	0.64
Fluvanna Rd			0	0.94	0.94	6	5.64
Frederick Blvd			0	0.52	0.52	6	3.12
Gatlord Ave			0	0.08	0.08	7	0.56
Gayton Rd			0	0.08	0.08	6	0.48
Gifford Ave			0	0.17	0.17	6	1.02
Glenwood Ave			0	0.1	0.1	6	0.6
Glidden Ave	Plummer St	0.18	0	0.13	0.13	6	0.78
	0.13	Fairmount Ave	0.13	0.22	0.09	7	0.63
Grace St			0	0.05	0.05	6	0.3
Harmon St			0	0.07	0.07	7	0.49
Harris Hill Rd			0	1.62	1.62	8	12.96
Henry St			0	0.06	0.06	5	0.3
Hickories			0	0.1	0.1	6	0.6
High St	End	Howard Ave	0	0.04	0.04	5	0.2
	Howard Ave	Homestead Blvd	0	0.1	0.1	6	0.6
Hine St			0	0.05	0.05	8	0.4

Houston Ave			0	0.21	0.21	7	1.47
Idlewood Dr			0	0.16	0.16	5	0.8
Industrie Dr			0	0.12	0.12	9	1.08
Ivystone Dr			0	0.21	0.21	6	1.26
Jackson Ave			0	0.4	0.4	8	3.2
Knight Rd			0	0.4	0.4	7	2.8
Lafayette St			0	0.11	0.11	7	0.77
Lake St			0	0.23	0.23	6	1.38
Lennox St			0	0.12	0.12	7	0.84
Leslie St			0	0.09	0.09	6	0.54
Lewis St	Buffalo St Ext	Longview	0	0.36	0.36	8	2.88
Lodestro Ln			0	0.3	0.3	8	2.4
Longview Ave			0	0.28	0.28	6	1.68
Longview Ct			0	0.08	0.08	8	0.64
Louisa Ave			0	0.2	0.2	7	1.4
Lyndon Pk			0	0.17	0.17	8	1.36
Magnolia Ave			0	0.2	0.2	6	1.2
Manchester Rd			0	0.7	0.7	7	4.9
Maple St			0	0.14	0.14	6	0.84
Marlow Rd			0	0.06	0.06	6	0.36
Mason St			0	0.04	0.04	6	0.24
Matson Rd	Palm Rd	Tompkins Rd	0	0.82	0.82	7	5.74
	Tompkins Rd	Northerly	0.82	1.18	0.36	6	2.16
Melford St			0	0.07	0.07	6	0.42
Merlin Ave			0	0.17	0.17	7	1.19

Metcalf St			0	0.19	0.19	6	1.14
Moraco Ave	Elmwood Ave	End Y Intersection	0	0.04	0.04	7	0.28
	End Y Intersection	Southerly	0.04	0.22	0.18	6	1.08
N Allegany Ave			0	0.19	0.19	6	1.14
N Butts Ave			0	0.28	0.28	6	1.68
S Chicago Ave			0	0.22	0.22	6	1.32
N Green Ave			0	0.11	0.11	5	0.55
New York Ave	S Curves	Townline	0	0.62	0.62	7	4.34
	S Work St	NY Ave	0	0.14	0.14	7	0.98
Nottingham Cir			0	0.43	0.43	5	2.15
Orchard Rd			0	0.55	0.55	6	3.3
Parkway Dr			0	0.38	0.38	9	3.42
Paterniti Dr			0	0.04	0.04	7	0.28
Plummer St			0	0.11	0.11	7	0.77
Price Ave	Hunt Rd	Bryson Ave	0	0.2	0.2	6	1.2
	Willis Ave	Fairmount Ave	0	0.1	0.1	6	0.6
Reid St			0	0.11	0.11	6	0.66
Robinson Ave			0	0.52	0.52	8	4.16
Rod and Gun Club			0	0.28	0.28	6	1.68
Royal Oaks Dr			0	0.48	0.48	5	2.4
S Butts Ave			0	0.12	0.12	6	0.72
S Green Ave			0	0.09	0.09	7	0.63
S Wilcox Ave			0	0.09	0.09	7	0.63
School Ave	Howard Ave	Brook St	0	0.36	0.36	6	2.16
Second Ave	S Work St	End of Section	0	0.05	0.05	8	0.4

Sherman Ave			0	0.05	0.05	6	0.3	
Spraque Hill Rd			0	0.15	0.15	6	0.9	
Stubbs Rd			0	0.32	0.32	6	1.92	
Summit Blvd			0	0.18	0.18	8	1.44	
Taylor St			0	0.07	0.07	8	0.56	
Townline Rd			0	0.18	0.18	6	1.08	
Valerie Ln			0	0.25	0.25	6	1.5	
Wellington St			0	0.1	0.1	6	0.6	
Wellman Ave			0	0.19	0.19	6	1.14	
Westbury Ct			0	0.15	0.15	7	1.05	
Westminster Cir	Woodworth Ave	Woodworth Ave	0	0.12	0.12	8	0.96	
Westminster Dr	Westminster Cir	Hunt Rd	0	0.43	0.43	6	2.58	
Wick Ave			0	0.32	0.32	6	1.92	
Willard St Ext			0	1.52	1.52	8	12.16	
Willis Ave			0	0.04	0.04	6	0.24	
Woolworth Ave			0	0.49	0.49	6	2.94	
Yolande Ave			0	0.36	0.36	5	1.8	
Young St			0	0.18	0.18	6	1.08	
			Surveyed miles		49.3		333.46	**6.8**
			Unsurfaced Miles		0.65	4	2.6	**4.0**
Town of Ellicott			AVG. System Condition		49.95		336.06	**6.7**

Pavement Surface Condition
Survey

Municipality: Village of Cherry Creek — Weather: Sunny

Date of Survey: 10/27/09 — Temp: 55

Road /Street Name	Start of Section	End of Section	Mileage Start	Mileage Stop	Section Length Miles	Rating		
Southside Ave	W Village line	0.32	0	0.32	0.32	7	2.24	
	0.32	Main St	0.32	0.61	0.29	9	2.61	
Prospect St	Center St	0.15	0	0.15	0.15	8	1.2	
	0.15	0.37	0.15	0.37	0.22	9	1.98	
Depot St	Maple Ave	0.18	0	0.18	0.18	8	1.44	
	0.18	0.34	0.18	0.34	0.16	7	1.12	
Center St	Southside Ave	0.15	0	0.15	0.15	6	0.9	
	0.15	Main St	0.15	0.28	0.13	7	0.91	
Hadley St			0	0.07	0.07	6	0.42	
Hess St			0	0.04	0.04	8	0.32	
Kent St	Bit Pavt	Main St	0	0.36	0.36	9	3.24	
Maple Ave	Main St	Orchard St	0	0.08	0.08	9	0.72	
	Orchard St	Wiley St	0.08	0.2	0.12	8	0.96	
	Wiley St	Depot St	0.2	0.28	0.08	8	0.64	
Orchard St			0	0.14	0.14	8	1.12	
Railroad Ave			0	0.36	0.36	6	2.16	
Union St			0	0.11	0.11	6	0.66	
Wiley St			0	0.14	0.14	8	1.12	
			Surveyed miles		3.1		23.76	**7.7**
			Unsurfaced Miles		0.14	4	0.56	**4.0**
Village of Cherry Creek			AVG. System Condition		3.24		24.32	**7.5**

Pavement Surface Condition
Survey

Municipality: Village of Silver Creek

Weather: Cloudy - showers

Date of Survey: 10/30/09

Temp. 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Adams St			0	0.34	0.34	7	2.38
Alfred Dr			0	0.32	0.32	7	2.24
Alpine Dr			0	0.06	0.06	8	0.48
Andrus St			0	0.24	0.24	6	1.44
Arch St			0	0.2	0.2	7	1.4
Babcock Ave			0	0.34	0.34	6	2.04
Bay View Ave			0	0.13	0.13	5	0.65
Beach View Ave			0	0.06	0.06	5	0.3
Buffalo St	Hanover T/L	0.22	0	0.22	0.22	8	1.76
	0.22	RT 5	0.22	0.47	0.25	7	1.75
Christy St			0	0.17	0.17	5	0.85
Crandall Ave			0	0.15	0.15	9	1.35
Dana Ave	Dead End	Parkway	0	0.01	0.01	8	0.08
Dana Ave	Parkway	Oliver Pl	0.01	0.07	0.06	7	0.42
Dickinson			0	0.27	0.27	7	1.89
Drake Ave	Alfred Dr	Crandall Ave	0	0.06	0.06	8	0.48
Drake Ave Ext	Crandall Ave	Glenwood Ave	0	0.09	0.09	8	0.72
	Glenwood Ave	Ward PL	0.09	0.15	0.06	6	0.36
Elm St	Rt 20	0.12	0	0.12	0.12	5	0.6

	0.12	Seneca St	0.12	0.19	0.07	6	0.42
Fenner St			0	0.03	0.03	6	0.18
Forestville St	Dickinson St	Dead End	0	0.18	0.18	8	1.44
	Dead End	Main St	0.18	0.27	0.09	9	0.81
Front St			0	0.15	0.15	5	0.75
Glenwood Ave			0	0.32	0.32	7	2.24
Grove St			0	0.17	0.17	7	1.19
Hanover St			0	0.27	0.27	9	2.43
Hawkins Ave			0	0.24	0.24	7	1.68
Henry St			0	0.07	0.07	8	0.56
Hickory St			0	0.13	0.13	5	0.65
Jackson St			0	0.23	0.23	8	1.84
Jaekle Ave			0	0.16	0.16	6	0.96
Jefferson Ave			0	0.04	0.04	6	0.24
Karen Dr			0	0.1	0.1	6	0.6
Knight St	Main St	Newton St	0	0.22	0.22	6	1.32
Knight St Ext	Newton St	Webster Ave	0	0.07	0.07	9	0.63
Lafayette St			0	0.22	0.22	5	1.1
Lake Ave			0	0.22	0.22	6	1.32
Lake Ave Ext	Lake Ave	Dead End	0	0.2	0.2	6	1.2
Lee Pl			0	0.06	0.06	6	0.36
Lincoln Ave			0	0.09	0.09	8	0.72
Madison Ave			0	0.13	0.13	9	1.17
Maple Ave			0	0.06	0.06	8	0.48
Mechanic St			0	0.11	0.11	8	0.88
Monroe St			0	0.32	0.32	7	2.24
Monygomery			0	0.08	0.08	9	0.72
Newton St			0	0.23	0.23	10	2.3
N Main St			0	0.08	0.08	7	0.56

Oak St			0	0.27	0.27	6	1.62
Old Main St	Rt 20	0.11	0	0.11	0.11	6	0.66
	0.11	V/L	0.11	0.29	0.18	9	1.62
Oliver PL	Dana Ave	0.05	0	0.05	0.05	10	0.5
	0.05	Rix PL	0.05	0.12	0.07	6	0.42
Park PL			0	0.06	0.06	9	0.54
Parkway Ave	RT 5	0.11	0	0.11	0.11	6	0.66
	0.11	Ward Ave	0.11	0.48	0.37	9	3.33
Pearl St			0	0.08	0.08	8	0.64
Pennsylvania Ave			0	0.05	0.05	7	0.35
Porter Ave			0	0.16	0.16	7	1.12
Prospect St			0	0.05	0.05	9	0.45
Rix PL			0	0.06	0.06	7	0.42
Robert Dr			0	0.15	0.15	5	0.75
Robinson St			0	0.42	0.42	7	2.94
Rollin Ave			0	0.02	0.02	8	0.16
Rumsey St			0	0.1	0.1	8	0.8
Seneca St			0	0.05	0.05	8	0.4
Spaulding Ave			0	0.04	0.04	9	0.36
Spencer Alley			0	0.08	0.08	7	0.56
Stapf Ave			0	0.14	0.14	6	0.84
Stewart Ave			0	0.21	0.21	7	1.47
Tew St	Dead End	RT 5	0	0.06	0.06	5	0.3
	RT 5	Buffalo	0.06	0.2	0.14	7	0.98
Thompson Ave	Monroe	Adams	0	0.08	0.08	7	0.56
	Adams	Buffalo	0.08	0.13	0.05	5	0.25
Ward PL	Ward PL Ext	RT 20	0	0.37	0.37	6	2.22
Ward PL Ext	Drake Ave Ext	Ward PL	0	0.05	0.05	6	0.3
Washington Ave			0	0.15	0.15	10	1.5

Webster Ave			0	0.21	0.21	9	1.89	
William St			0	0.1	0.1	7	0.7	
Windsor Ave			0	0.03	0.03	8	0.24	
			Surveyed miles		11.56		81.73	**7.1**
			Unsurfaced Miles		0	4	0	0
Village of Silver Creek			AVG. System Condition		11.56		81.73	**7.1**

Municipality: Village of Cassadaga

Weather: Cloudy

Date of Survey: 10/29/09

Temp: 45

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Alden Rd			0	0.3	0.3	8	2.4
Burnhams PL			0	0.15	0.15	8	1.2

Commercial St			0	0.12	0.12	8	0.96	
Dale Dr			0	0.91	0.91	10	9.1	
Frisbee Rd	Pomfret T/L	0.67	0	0.67	0.67	8	5.36	
	0.67	CR 58	0.67	1.02	0.35	9	3.15	
High St			0	0.35	0.35	7	2.45	
Lakeview Ave			0	0.23	0.23	10	2.3	
Leroy Rd			0	0.13	0.13	8	1.04	
Mill St	Main St	0.07	0	0.07	0.07	6	0.42	
	0.07	0.2	0.07	0.2	0.13	7	0.91	
	0.2	Maple Ave	0.2	0.28	0.08	6	0.48	
Miller Pl			0	0.18	0.18	9	1.62	
N Shore Par	Dale Dr	N Village Line	0	0.13	0.13	8	1.04	
	N Village Line	Dale Dr	0.13	0.24	0.11	8	0.88	
Park Ave			0	0.25	0.25	9	2.25	
Pennington PL			0	0.18	0.18	8	1.44	
Petit PL			0	0.23	0.23	10	2.3	
			Surveyed miles		4.57		39.3	**8.6**
			Unsurfaced Miles		0	4	0	0
Village of Cassadaga			AVG. System Condition		4.57		39.3	**8.6**

Pavement Surface Condition
Survey

Municipality: Village of Forestville

Weather: Sunny

Date of Survey: 10/26/09

Temp. 55

Road /Street Name	Start of Section	End of Section	Mileage Start	Mileage Stop	Section Length Miles	Rating	
Academy St			0	0.28	0.28	8	2.24
Bradigan St			0	0.13	0.13	8	1.04
Cedar St			0	0.33	0.33	8	2.64
Chestnut St			0	0.28	0.28	8	2.24
Eagle St			0	0.27	0.27	9	2.43
Erie St			0	0.04	0.04	10	0.4
Fourth St			0	0.07	0.07	8	0.56
Hanover St	Center St	0.07	0	0.07	0.07	10	0.7

	0.07	Third St	0.07	0.12	0.05	6	0.3	
Hillview Dr			0	0.1	0.1	8	0.8	
Mixer			0	0.05	0.05	7	0.35	
Park St			0	0.12	0.12	8	0.96	
Second St			0	0.12	0.12	10	1.2	
Swan St			0	0.18	0.18	9	1.62	
Third St			0	0.21	0.21	9	1.89	
Walnut St			0	0.54	0.54	7	3.78	
			Surveyed miles		2.84		23.15	**8.2**
			Unsurfaced Miles		0	4	0	0
Village of Forestville			AVG. System Condition		2.84		23.15	**8.2**

Municipality: Village of Panama

Weather: Cloudy

Date of Survey: 10/22/09

Temp. 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Wesleyan St			0	0.41	0.41	7	2.87
School St	North St	0.26	0	0.26	0.26	6	1.56
	0.26	Wiltsie Rd	0.26	0.98	0.72	7	5.04
Pond Rd	School St	RT 474	0	0.44	0.44	8	3.52
Stevens Rd	South St	gravel section	0	0.28	0.28	6	1.68
Church St			0	0.1	0.1	7	0.7
Polder Rd			0	0.6	0.6	10	6
Myers Rd			0	0.15	0.15	9	1.35

Portage Rd			0	0.12	0.12	7	0.84	
Wiltsie Rd	School St	V/L	0	0.17	0.17	7	1.19	
	School St	Dead End	0	0.12	0.12	10	1.2	
Eddy Rd	RT 474	0.05	0	0.05	0.05	7	0.35	
	0.05	0.47	0.05	0.47	0.42	5	2.1	
Goshen Rd	Stevens Rd	Rockhill Rd	0	0.47	0.47	10	4.7	
Brooker Rd			0	0.12	0.12	6	0.72	
			Surveyed miles		4.43		33.82	**7.6**
			Unsurfaced Miles		1.03	4	4.12	**4.0**
Village of Panama			AVG. System Condition		5.46		37.94	**6.9**

Municipality: Village of Sherman

Weather: Cloudy - shower

Date of Survey: 10/21/09

Temp. 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Church St	W Main St	0.18	0	0.18	0.18	6	1.08
	0.18	Cul De Sac	0.18	0.27	0.09	7	0.63
Columbia St			0	0.13	0.13	7	0.91
East St			0	0.19	0.19	6	1.14
Edmunds St			0	0.09	0.09	7	0.63
First St			0	0.14	0.14	6	0.84
Hayes St			0	0.06	0.06	7	0.42
Kendrick St			0	0.21	0.21	10	2.1
Klondike St			0	0.25	0.25	6	1.5

Mill St			0	0.1	0.1	7	0.7	
Miller St	E Main St	Park St	0	0.09	0.09	7	0.63	
	Park St	N Village Line	0.09	0.48	0.39	8	3.12	
Post Ave			0	0.06	0.06	6	0.36	
Propect St	Hayes St	Paving	0	0.1	0.1	7	0.7	
Willard St			0	0.09	0.09	7	0.63	
			Surveyed miles		2.17		15.39	**7.1**
			Unsurfaced Miles		0.32	4	1.28	**4.0**
Village of Sherman			AVG. System Condition		2.49		16.67	**6.7**

Municipality: Village of Sinclairville Weather: Sunny

Date of Survey: 10/27/09 Temp. 60

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Andrews Rd	V/L	CR 75	0	0.4	0.4	9	3.6
Bloomer Rd			0	0.29	0.29	9	2.61
Church St	Ppark st	Dead End	0	0.21	0.21	8	1.68
Clover Leaf			0	0.1	0.1	9	0.9
Edson St			0	0.08	0.08	8	0.64
Hall Rd	Park St	V/L (bridge)	0	0.09	0.09	10	0.9
Lester St			0	0.15	0.15	9	1.35
Maple St			0	0.23	0.23	9	2.07
Mill St			0	0.05	0.05	8	0.4
Mitchell St			0	0.09	0.09	8	0.72

Nobles Rd			0	0.4	0.4	8	3.2	
Parkway Dr			0	0.09	0.09	8	0.72	
Prospect St	V/L	0.3	0	0.3	0.3	6	1.8	
	0.3	CR 75	0.3	0.4	0.1	5	0.5	
Reed St			0	0.51	0.51	6	3.06	
			Surveyed miles		3.09		24.15	**7.8**
			Unsurfaced Miles		0	4	0	0
Village of Sinclairville			AVG. System Condition		3.09		24.15	**7.8**

Municipality: Village of Fredonia

Weather: Overcast

Date of Survey: 11/01/09

Temp. 40

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Ahrens PL			0	0.1	0.1	7	0.7
Andrew CT			0	0.07	0.07	6	0.42
Barker St			0	0.18	0.18	6	1.08
Bernett Drive			0	0.28	0.28	7	1.96
Birchwood Dr			0	0.57	0.57	8	4.56
Bradish St			0	0.13	0.13	8	1.04
Brendon Ct			0	0.06	0.06	9	0.54
Bryant St			0	0.08	0.08	7	0.56
Canadaway St			0	0.19	0.19	6	1.14
Carol Ave			0	0.48	0.48	9	4.32
Cassabella Dr			0	0.2	0.2	9	1.8

Castile Dr			0	0.43	0.43	9	3.87
Center St	W Main St	Church St	0	0.05	0.05	7	0.35
	Church St	Risley St	0	0.41	0.41	6	2.46
Central Ave	Temple St	0.28	0	0.28	0.28	7	1.96
	0.28	0.75	0.28	0.75	0.47	6	2.82
	0.75	City line	0.75	1.01	0.26	7	1.82
Chautauqua St			0	0.66	0.66	7	4.62
Chestnut St			0	1.43	1.43	9	12.87
Church St	Center St	Temple St	0	0.07	0.07	6	0.42
	Temple St	Day St	0.07	0.11	0.04	7	0.28
Clark St			0	0.1	0.1	7	0.7
Claudia Ct			0	0.07	0.07	6	0.42
Cleveland Ave			0	0.28	0.28	9	2.52
Clinton Ave			0	0.61	0.61	9	5.49
Cottage St			0	0.48	0.48	9	4.32
Curtis PL			0	0.19	0.19	7	1.33
Cushing St	E Main St	Orchard St	0	0.3	0.3	7	2.1
	Orchard St	Prospect St	0.3	0.51	0.21	6	1.26
Day St	E Main St	Church St	0	0.07	0.07	6	0.42
	Church St	Central Ave	0.07	0.25	0.18	7	1.26
Douglas St			0	0.16	0.16	9	1.44
Dunn St			0	0.14	0.14	9	1.26
Eagle St	US 20 E Main St	Lake View Ave	0	0.7	0.7	7	4.9
	Lake View Ave	0.25	0.7	0.95	0.25	7	1.75
	0.95	East V/L	0.95	1.2	0.25	8	2
Elm St			0	0.27	0.27	9	2.43
Forbes PL			0	0.18	0.18	7	1.26
Forest PL			0	0.48	0.48	7	3.36
Gardner St			0	0.62	0.62	9	5.58

Georges PL			0	0.07	0.07	6	0.42
Gillis St			0	0.12	0.12	8	0.96
Green St			0	0.08	0.08	9	0.72
Hamlet St			0	0.39	0.39	8	3.12
Hart St			0	0.07	0.07	6	0.42
Hillcrest Dr			0	0.17	0.17	8	1.36
Holmes PL			0	0.47	0.47	6	2.82
Houghton St			0	0.17	0.17	7	1.19
Howard St	Water St	Seymour St	0	0.5	0.5	7	3.5
	Seymour St	Dead End	0.5	0.62	0.12	6	0.72
James PL			0	0.21	0.21	9	1.89
Johnson St	Berry Rd	Gardner St	0	0.3	0.3	8	2.4
	Gardner St	Ventura Cir	0.3	0.42	0.12	7	0.84
Lake View Ave			0	0.43	0.43	10	4.3
Lambert			0	0.76	0.76	7	5.32
Leon PL			0	0.21	0.21	7	1.47
Leverett St			0	0.14	0.14	7	0.98
Link St			0	0.1	0.1	8	0.8
Lowell Pl			0	0.34	0.34	7	2.38
Maple Ave			0	0.29	0.29	9	2.61
Middlesex Rd			0	0.53	0.53	7	3.71
Moore Ave			0	0.17	0.17	9	1.53
Nance Terrace			0	0.1	0.1	8	0.8
Newton St			0	0.69	0.69	7	4.83
Norton PL			0	0.16	0.16	7	1.12
Orchard St			0	0.28	0.28	8	2.24
Park St			0	0.05	0.05	7	0.35
Pine Dr			0	0.21	0.21	8	1.68
Pleasant Ave			0	0.13	0.13	8	1.04

Porter St			0	0.34	0.34	7	2.38
Prospect St	Main St	0.15	0	0.15	0.15	7	1.05
	0.15	Eagle St	0.15	0.59	0.44	6	2.64
Pulaski St			0	0.12	0.12	8	0.96
Reese Pwy			0	0.19	0.19	6	1.14
Risley St	Chestnut St	Forest PL	0	0.1	0.1	7	0.7
	Forest PL	Temple St	0.1	0.37	0.27	6	1.62
Rosalyn Dr			0	0.16	0.16	6	0.96
Ryan PL			0	0.46	0.46	7	3.22
Sahle PL			0	0.12	0.12	9	1.08
Seymour St			0	0.76	0.76	8	6.08
Skyeandro Dr			0	0.16	0.16	9	1.44
Spring St			0	0.24	0.24	7	1.68
Steuben St			0	0.14	0.14	7	0.98
Summer St			0	0.26	0.26	8	2.08
Sunset Dr			0	0.24	0.24	8	1.92
Susann CT			0	0.07	0.07	9	0.63
Temple St	Main St	Maple Ave	0	0.62	0.62	7	4.34
	Maple Ave	Brigham Rd	0.62	1.12	0.5	8	4
Terrace PL			0	0.11	0.11	9	0.99
Union St			0	0.08	0.08	6	0.48
University PL			0	0.35	0.35	8	2.8
Ventura Cir			0	0.22	0.22	7	1.54
Viola Dr			0	0.04	0.04	8	0.32
Washington Ave			0	0.15	0.15	8	1.2
Westerly Dr			0	0.21	0.21	8	1.68
White St			0	0.15	0.15	9	1.35
Woodcrest Dr			0	0.16	0.16	6	0.96
Woodward Dr			0	0.22	0.22	6	1.32

Pavement Surface Condition
Survey

			Surveyed miles		26.39		200.45	**7.6**
			Unsurfaced Miles		0	4	0	0
Village of Fredonia			AVG. System Condition		26.39		200.45	**7.6**

Municipality: Village of Brocton

Weather: Cloudy - showers

Date of Survey: 11/3/09

Temp. 45

Pavement Surface Condition
Survey

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Blood St			0	0.1	0.1	7	0.7
Brandy Blvd			0	0.08	0.08	8	0.64
Central Ave	W Main St	Park St	0	0.23	0.23	8	1.84
	Park St	Smith St	0.23	0.31	0.08	7	0.56
	Smith St	Railroad Ave	0.31	0.62	0.31	8	2.48
	Railroad Ave	Peerless St	0.62	0.77	0.15	10	1.5
	Peerless St	V/L	0.77	0.81	0.04	9	0.36
Dahlberg Rd	Lake Ave	Peerless St	0	0.11	0.11	8	0.88
Fay St			0	0.25	0.25	9	2.25
Green St	Central Ave	Salem PL	0	0.11	0.11	7	0.77
	Salem Pl	Lake Ave	0.11	0.25	0.14	8	1.12
Greenbush St			0	0.31	0.31	6	1.86
Harmon Ave			0	0.15	0.15	7	1.05
Haywood Dr			0	0.2	0.2	8	1.6
Highland Ave	South V/L	0.28	0	0.28	0.28	8	2.24
	0.28	0.5	0.28	0.5	0.22	10	2.2
	0.5	Main St	0.5	0.62	0.12	8	0.96
John St			0	0.1	0.1	8	0.8
Kinney St			0	0.39	0.39	8	3.12
Myrtle Ave			0	0.08	0.08	8	0.64
Park St			0	0.19	0.19	7	1.33
Pearl St			0	0.13	0.13	8	1.04
Peerless St			0	0.56	0.56	8	4.48
Pullman St			0	0.42	0.42	7	2.94
Salem PL			0	0.06	0.06	10	0.6
School St			0	0.17	0.17	9	1.53

Pavement Surface Condition
Survey

Railroad Ave	Dead End	0.05	0	0.05	0.05	7	0.35	
	0.05	Central Ave	0.05	0.08	0.03	5	0.15	
Smith St	Central Ave	Fay St	0	0.24	0.24	8	1.92	
	Fay St	Lake Ave	0.24	0.33	0.09	7	0.63	
Swede Rd			0	0.16	0.16	5	0.8	
West Ave			0	0.57	0.57	5	2.85	
			Surveyed miles		6.12		46.19	**7.5**
			Unsurfaced Miles		0.05	4	0.2	**4.0**
Village of Brocton			AVG. System Condition		6.17		46.39	**7.5**

Municipality: Village of Mayville

Weather: Sunny

Date of Survey: 11/8/09

Temp: 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Academy St			0	0.27	0.27	8	2.16
Ash St			0	0.08	0.08	7	0.56
Barnes St			0	0.15	0.15	9	1.35

Barton St			0	0.18	0.18	9	1.62
Bird Tree Rd			0	0.31	0.31	9	2.79
Blanchard St			0	0.12	0.12	9	1.08
Bloomer Rd			0	0.57	0.57	8	4.56
Clark St			0	0.09	0.09	9	0.81
Deer Meadow Ln			0	0.04	0.04	8	0.32
E Evans St	Lakeview	0.3	0	0.3	0.3	7	2.1
	0.3	S Erie St	0.3	0.48	0.18	10	1.8
E Marvin St	S Erie St	Elm St	0	0.11	0.11	10	1.1
	Elm St	Washington St	0.11	0.16	0.05	9	0.45
E Whallon St	RT 394	0.1	0	0.1	0.1	10	1
	0.1	Lakeview Dr	0.1	0.38	0.28	9	2.52
Eagle Ridge Dr			0	0.08	0.08	7	0.56
Elm St	RT 430	0.14	0	0.14	0.14	7	0.98
	0.14	Lakeview Dr	0.14	0.62	0.48	9	4.32
Gable Way			0	0.12	0.12	7	0.84
Jackson St			0	0.13	0.13	9	1.17
Lakeview Ave	E Chautauqua St	0.27	0	0.27	0.27	10	2.7
	0.27	0.44	0.27	0.44	0.17	6	1.02
	0.44	,7	0.44	0.7	0.26	7	1.82
	0.7	E Erie St	0.7	0.93	0.23	6	1.38
Lincoln St			0	0.11	0.11	9	0.99
Maple Dr E	N Erie St	Vista Dr	0	0.13	0.13	7	0.91
	Vista Dr	Dead End	0.13	0.38	0.25	6	1.5
Maple Dr W			0	0.51	0.51	8	4.08
Meadow Ln			0	0.11	0.11	7	0.77
Memorial Dr			0	0.11	0.11	9	0.99
Oak St			0	0.14	0.14	6	0.84
Parkside St			0	0.13	0.13	10	1.3

Patterson St	RT 430	0.2	0	0.2	0.2	9	1.8	
	0.2	W Whallon St	0.2	0.46	0.26	8	2.08	
Pratt St			0	0.16	0.16	8	1.28	
Sea Lion Dr			0	0.62	0.62	7	4.34	
Valley St			0	0.95	0.95	6	5.7	
Vista Dr			0	0.27	0.27	8	2.16	
W Evans St			0	0.11	0.11	7	0.77	
W Marvin St			0	0.2	0.2	8	1.6	
W Whallon St	Dead End	Patterson St	0	0.09	0.09	5	0.45	
	Patterson St	Valley St	0.09	0.15	0.06	8	0.48	
	Dead End	S Erie St	0	0.33	0.33	8	2.64	
Washington Ave	S Erie St	Elm St	0	0.15	0.15	7	1.05	
	Elm St	Dead End	0.15	0.28	0.13	8	1.04	
Wild Orchard Way			0	0.02	0.02	9	0.18	
			Surveyed miles		9.75		75.96	**7.8**
			Unsurfaced Miles		0	4	0	0
Village of Mayville			AVG. System Condition		9.75		75.96	**7.8**

Pavement Surface Condition
Survey

Municipality: Village of Westfield

Weather: Sunny

Date of Survey: 11/8/09

Temp: 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Allen Road			0	0.21	0.21	8	1.68
Ash St			0	0.06	0.06	7	0.42
Bank St			0	0.17	0.17	7	1.19
Beckman Ave			0	0.29	0.29	9	2.61
Bell Parkway			0	0.09	0.09	9	0.81
Billsboro St			0	0.14	0.14	7	0.98
Bird St			0	0.29	0.29	8	2.32
Bliss St	RT 394	0.05	0	0.05	0.05	7	0.35
	0.05	0.15	0.05	0.15	0.1	10	1
	0.15	E Village Line	0.15	0.94	0.79	7	5.53
Bourne St	Portage St	0.63	0	0.63	0.63	6	3.78
	0.63	Dead End	0.63	0.95	0.32	9	2.88

Brewer Pl			0	0.14	0.14	8	1.12
Camelot Dr			0	0.06	0.06	9	0.54
Cass Rd	RT 20	0.15	0	0.15	0.15	7	1.05
	0.15	0.24	0.15	0.24	0.09	6	0.54
	,24	Dead End	0.24	0.39	0.15	7	1.05
Chase St			0	0.15	0.15	9	1.35
Clark St	Cass St	0.15	0	0.15	0.15	6	0.9
	0.15	Pearl St	0.15	0.23	0.08	7	0.56
Clinton St	RT 394	Pearl St	0	0.27	0.27	8	2.16
	Pearl St	Holt St	0.27	0.36	0.09	5	0.45
Colburn St			0	0.12	0.12	7	0.84
Cottage St			0	0.17	0.17	8	1.36
Crandall St			0	0.3	0.3	8	2.4
E Campbell St			0	0.24	0.24	7	1.68
East Pearl St			0	0.2	0.2	6	1.2
Elm St	Main St	McClurg St	0	0.12	0.12	8	0.96
	McClurg St	Bliss St	0.12	0.7	0.58	8	4.64
English St	E Pearl St	Franklin St	0	0.22	0.22	8	1.76
	Franklin St	Portage St	0.22	0.36	0.14	6	0.84
First St			0	0.16	0.16	7	1.12
Franklin St	Engkish St	0.14	0	0.14	0.14	8	1.12
	0.14	0.26	0.14	0.26	0.12	10	1.2
	0.26	Clinton St	0.26	0.38	0.12	9	1.08
Grove St			0	0.26	0.26	8	2.08
Holt St			0	0.21	0.21	7	1.47
Jackson St			0	0.14	0.14	8	1.12
Jefferson St	Colburn St	Cass St	0	0.05	0.05	8	0.4
	Cass St	0.18	0.05	0.18	0.13	6	0.78
	0.18	RT 394	0.18	0.56	0.38	10	3.8

Kent St			0	0.19	0.19	9	1.71
Lake St			0	0.23	0.23	8	1.84
Lower Main St			0	0.06	0.06	7	0.42
Lumber St			0	0.07	0.07	9	0.63
Maple Ave			0	0.14	0.14	8	1.12
Market St			0	0.06	0.06	8	0.48
Martin Wright			0	0.39	0.39	8	3.12
McClurg St			0	0.16	0.16	9	1.44
Nichols Ave			0	0.47	0.47	8	3.76
N Gale St			0	0.6	0.6	9	5.4
Oak st	Main St	0.44	0	0.44	0.44	9	3.96
	0.44	S Gale St	0.44	0.6	0.16	7	1.12
Old Hawley St			0	0.12	0.12	7	0.84
Patterson St			0	0.05	0.05	6	0.3
Pearl St			0	0.24	0.24	6	1.44
Persons St	Main St	Dead End	0	0.31	0.31	7	2.17
	Bourne St	V/L	0.31	0.34	0.03	9	0.27
Pleasant St			0	0.14	0.14	9	1.26
Riley St			0	0.05	0.05	9	0.45
Second St			0	0.31	0.31	7	2.17
S Gale St	W Main St	0.3	0	0.3	0.3	7	2.1
	0.3	0.59	0.3	0.59	0.29	9	2.61
	0.59	Westfield T/L	0.59	0.88	0.29	8	2.32
Southwater St	Chestnut St	W Second St	0	0.15	0.15	7	1.05
	W Second St	Lower Main St	0.15	0.42	0.27	9	2.43
Spring St			0	0.63	0.63	6	3.78
Temple St			0	0.03	0.03	8	0.24
Terrace St			0	0.15	0.15	7	1.05
Third St	Portage St	0.15	0	0.15	0.15	8	1.2

	0.15	0.3	0.15	0.3	0.15	7	1.05	
	0.3	Spring St	0.3	,44	0.14	8	1.12	
Union St	E Main St	Bliss St	0	0.66	0.66	8	5.28	
	Bliss St	Dead End	0.66	0.84	0.18	9	1.62	
Villa Dr			0	0.26	0.26	6	1.56	
W Campbell St			0	0.11	0.11	8	0.88	
Walnut St			0	0.12	0.12	9	1.08	
Washington St			0	0.34	0.34	7	2.38	
Watson Ave			0	0.1	0.1	8	0.8	
Wells St			0	0.04	0.04	7	0.28	
W Pearl st			0	0.18	0.18	7	1.26	
W Second St			0	0.16	0.16	7	1.12	
Wood St			0	0.27	0.27	9	2.43	
			Surveyed miles		17.46		134.66	**7.7**
			Unsurfaced Miles		0.31	4	1.24	**4.0**
Village of Westfield			AVG. System Condition		17.77		135.9	**7.6**

Municipality: Village of Bemus Point Weather: Clear

Pavement Surface Condition
Survey

Date of Survey: 11/9/09 Temp: 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating		
			Start	Stop	Miles			
Alburtus Ave	Lakeside Ave	0.16	0	0.16	0.16	9	1.44	
	0.16	Main St	0.16	0.21	0.05	8	0.4	
Bemus Pt	Lakeside Dr	0.12	0	0.12	0.12	7	0.84	
	0.12	E Village Line	0.12	0.19	0.07	6	0.42	
Brown Rd			0	0.1	0.1	7	0.7	
Elm St			0	0.13	0.13	7	0.91	
Grove Ave			0	0.07	0.07	6	0.42	
Lakeside Dr	Ferry Landing	Center St	0	0.22	0.22	8	1.76	
	Center St	N V/L	0.22	1.02	0.8	7	5.6	
Lakeview Ave			0	0.08	0.08	7	0.56	
Lenhart Ave			0	0.09	0.09	7	0.63	
Liberty St			0	0.17	0.17	8	1.36	
Lincoln Rd			0	0.2	0.2	6	1.2	
Maple Ave			0	0.15	0.15	10	1.5	
Merz Ave			0	0.12	0.12	6	0.72	
N Frontage			0	0.09	0.09	6	0.54	
Parkside Ave			0	0.06	0.06	7	0.42	
Shepardson Dr			0	0.11	0.11	10	1.1	
S Lakeside Ave			0	0.12	0.12	7	0.84	
S Frontage			0	0.32	0.32	6	1.92	
Springbrook Ave			0	0.06	0.06	7	0.42	
Sunnyside Ave			0	0.16	0.16	7	1.12	
			Surveyed miles		3.45		24.82	**7.2**
			Unsurfaced Miles		0.01	4	0.04	**4.0**

Pavement Surface Condition
Survey

Village of Bemus Point			AVG. System Condition		3.46		24.86	**7.2**
Municipality: Village of Falconer				Weather: Clear				
Date of Survey: 11/15/09				Temp. 40				
Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating		
			Start	Stop	Miles			
Alberta St N			0	0.17	0.17	7	1.19	

Alberta St S			0	0.1	0.1	7	0.7
Aldren Ave	Jamestown C/L	Mapleshade Ave	0	0.17	0.17	7	1.19
	Mapleshade Ave	End of Mosher	0.17	0.34	0.17	6	1.02
Almet Ave			0	0.14	0.14	9	1.26
Anderson Ave			0	0.08	0.08	8	0.64
Ann Ave			0	0.08	0.08	7	0.56
Beckrink Ave			0	0.05	0.05	9	0.45
Carlton Ave			0	0.11	0.11	7	0.77
Carter St	End of St	S Work St	0	0.22	0.22	9	1.98
Central Ave	West Ave	Grace St	0	0.1	0.1	8	0.8
	Grace St	E Main St	0.1	0.38	0.28	6	1.68
Cherry St			0	0.16	0.16	9	1.44
Clyde Ave			0	0.09	0.09	8	0.72
Coleson Dr			0	0.09	0.09	8	0.72
Cross St			0	0.14	0.14	7	0.98
Davis St			0	0.1	0.1	7	0.7
Dow St N	W Main St	W Falconer St	0	0.07	0.07	7	0.49
	W Falconer St	Beckrink Ave	0.07	0.19	0.12	8	0.96
Dow St S	Falconer V/L	W main St	0	0.21	0.21	6	1.26
East Ave	E Everett St	E Main St	0	0.06	0.06	7	0.42
	E Main St	N V/L	0.06	0.28	0.22	6	1.32
Elmeere Ave	W Mosher St	0.05	0	0.05	0.05	7	0.35
	0.05	Harold Ave	0.05	0.17	0.12	6	0.72
	.Harold Ave	MapleShade Ave	0.17	0.22	0.05	7	0.35
Elmwood Ave E			0	0.36	0.36	8	2.88
Elmwood Ave W	Lister Ave	0.05	0	0.05	0.05	8	0.4
	0.05	Carter St	0.05	0.12	0.07	9	0.63
	Carter St	S Work St	0.12	0.17	0.05	7	0.35
Everett St E			0	0.46	0.46	6	2.76

Everett St W	S Dow St	0.13	0	0.13	0.13	7	0.91
	0.13	Phette Place	0.13	0.27	0.14	10	1.4
	Dead End	Davis St	0	0.03	0.03	6	0.18
	Davis St	S Work St	0.03	0.11	0.08	6	0.48
Falconer St E	Work St	West Ave	0	0.13	0.13	7	0.91
	West Ave	East Ave	0.13	0.34	0.21	6	1.26
Falconer St W	West V/L	N Work St	0	0.56	0.56	9	5.04
Falconer W Ext			0	0.03	0.03	7	0.21
Grace St	East V/L	0.06	0	0.06	0.06	6	0.36
	0.06	West Ave	0.06	0.16	0.1	7	0.7
Harmon Ave			0	0.06	0.06	8	0.48
Harold Ave			0	0.05	0.05	8	0.4
Hickory St	W James St	0.07	0	0.07	0.07	8	0.56
	0.07	Dead End	0.07	0.2	0.13	7	0.91
Homestead St	W Mosher St	0.05	0	0.05	0.05	6	0.3
	0.05	0.14	0.05	0.14	0.09	7	0.63
	0.14	W Main St	0.14	0.21	0.07	8	0.56
James St E	N Work St	Dead End	0	0.13	0.13	5	0.65
	West Ave	Central Ave	0.13	0.21	0.08	8	0.64
	Central Ave	East Ave	0.21	0.34	0.13	7	0.91
James St W	End of St	0.08	0	0.08	0.08	6	0.48
	0.08	N Work St	0.08	0.19	0.11	7	0.77
Kane Ave	S Work St	End Pvmt	0	0.13	0.13	7	0.91
	End Pvmt	Old S Work St	0.13	0.17	0.04	6	0.24
Karen Ln			0	0.08	0.08	8	0.64
Kimball Ave			0	0.08	0.08	8	0.64
Lindsey Ave			0	0.07	0.07	7	0.49
Lister St	S Phetter Place	0.19	0	0.19	0.19	8	1.52
	0.19	S Work St	0.19	0.27	0.08	7	0.56

Mapleshade Ave	Work St	Aldren Ave	0	0.24	0.24	6	1.44
Mason St			0	0.14	0.14	6	0.84
Merchants PL			0	0.08	0.08	7	0.56
Merriam St			0	0.1	0.1	7	0.7
Morgan St	N Ralph Ave	N Ralph Ave	0	0.21	0.21	7	1.47
Mosher St E			0	0.33	0.33	8	2.64
Mosher St W	Aldren Ave	0.18	0	0.18	0.18	6	1.08
	0.18	N Work St	0.18	0.39	0.21	7	1.47
Olson St			0	0.09	0.09	8	0.72
Park Ave			0	0.09	0.09	9	0.81
Pearl St	N Work St	Central Ave	0	0.2	0.2	8	1.6
	Central Ave	East Ave	0.2	0.31	0.11	7	0.77
Phetteplace St	W Main St	W Falconer St	0	0.06	0.06	8	0.48
	W Falconer St	Richard Ave	0.06	0.18	0.12	6	0.72
	Richard Ave	End of St	0.18	0.48	0.3	7	2.1
	Lister Ave	W Everett St	0	0.14	0.14	9	1.26
	W Everett St	W Main St	0.14	0.2	0.06	8	0.48
Prosser St			0	0.11	0.11	8	0.88
Railroad Alley			0	0.05	0.05	7	0.35
Ralph Ave N	Mason St	Waldemeere Ave	0	0.3	0.3	7	2.1
Richard Ave	W Main St	Pavmnt Change	0	0.21	0.21	7	1.47
	Pavmnt Change	W Mosher St	0.21	0.31	0.1	6	0.6
S Work St Old			0	0.09	0.09	8	0.72
Tiffany Ave	Village Limits	0.08	0	0.08	0.08	8	0.64
	0.08	Main St	0.08	0.26	0.18	9	1.62
	Main St	Falconer St	0.26	0.34	0.08	8	0.64
Valmeere Ave			0	0.1	0.1	7	0.7
Waldemeere Ave			0	0.05	0.05	8	0.4
West Ave	E Falconer St	0.19	0	0.19	0.19	9	1.71

	0.19	Grace St	0.19	0.22	0.03	8	0.24	
	Grace St	Central Ave	0.22	0.41	0.19	7	1.33	
Williams St			0	0.04	0.04	8	0.32	
			Surveyed miles		11.79		86.29	**7.3**
			Unsurfaced Miles		0	4	0	0
Village of Falconer			AVG. System Condition		11.79		86.29	**7.3**

Municipality: Village of Celeron — Weather: Overcast

Date of Survey: 11/15/09 — Temp: 50

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
10th St			0	0.08	0.08	9	0.72
4th St			0	0.11	0.11	6	0.66
5th St			0	0.2	0.2	6	1.2
6th St			0	0.09	0.09	8	0.72
7th St	Jackson Ave	Dunham Ave	0	0.11	0.11	6	0.66
	Dunham Ave	Butler	0.11	0.24	0.13	7	0.91
9th St			0	0.34	0.34	7	2.38
Allegheny Ave	Lake St	0.04	0	0.04	0.04	8	0.32
	0.04	Linwood Ave	0.04	0.2	0.16	7	1.12
	9th St	0.04	0	0.04	0.04	7	0.28
	0.04	0.18	0.04	0.18	0.14	5	0.7
	0.18	4th St	0.18	0.24	0.06	6	0.36
Avon St	Duquesne St	Blvd Ave	0	0.08	0.08	7	0.56

	Blvd Ave	Dead end	0.08	0.14	0.06	6	0.36
Beaver St			0	0.12	0.12	9	1.08
Burtis St	Jackson Ave	Allegheny Ave	0	0.12	0.12	10	1.2
	Allegheny Ave	Dunham Ave	0.12	0.22	0.1	8	0.8
	Dunham Ave	Conewango	0.22	0.32	0.1	9	0.9
Butler			0	0.26	0.26	10	2.6
Butts Ave	Dead End	Livingston Ave	0	0.1	0.1	5	0.5
Chadakoin Pkwy	Dead End	Walton Ave	0	0.06	0.06	8	0.48
Chadakoin St	Lake Chautauqua	Jackson St	0	0.02	0.02	8	0.16
	Jackson St	Conewango St	0.02	0.32	0.3	9	2.7
Chautauqua PL			0	0.04	0.04	8	0.32
Chicago Ave	Woodbine	0.09	0	0.09	0.09	7	0.63
	0.09	Livingston Ave	0.09	0.14	0.05	6	0.3
Conewango Ave	Burtis St	Livingston Ave	0	0.04	0.04	9	0.36
	Livingston Ave	Duquesne St	0.04	0.12	0.08	7	0.56
	Duquesne St	Boulevard Ave	0.12	0.19	0.07	6	0.42
Duquesne St	Dead End	Jackson Ave	0	0.01	0.01	8	0.08
	Jackson Ave	0.01	0.01	0.04	0.03	6	0.18
	0.04	Allegheny Ave	0.04	0.13	0.09	10	0.9
	Allegheny Ave	Dunham Ave	0.13	0.23	0.1	7	0.7
	Dunham Ave	Smith Ave	0.23	0.43	0.2	6	1.2
	Smith Ave	East Ave	0.43	0.48	0.05	5	0.25
	East Ave	Gifford Ave	0.48	0.63	0.15	6	0.9
	Gifford Ave	Dead end	0.63	0.72	0.09	7	0.63
East Ave	Railroad	Duquesne St	0	0.03	0.03	6	0.18
	Duquesne St	Boulevard Ave	0.03	0.11	0.08	5	0.4
Edgewater St			0	0.09	0.09	8	0.72
Edith Ave			0	0.05	0.05	6	0.3
Gifford Ave			0	0.26	0.26	7	1.82

Hanford Ave			0	0.1	0.1	7	0.7
Hillcrest ave			0	0.04	0.04	7	0.28
Houston Ave			0	0.07	0.07	7	0.49
Houston Ct			0	0.14	0.14	7	0.98
Jackson Ave	4th	5th	0	0.04	0.04	9	0.36
	5th	RR tracks	0.04	0.23	0.19	8	1.52
	RR Tracks	Chadakoin	0.23	0.28	0.05	7	0.35
	Chadakoin	Duquesne St	0.28	0.32	0.04	8	0.32
Lake St	Allegheny Ave	Dunham Ave	0	0.1	0.1	8	0.8
	Dunham Ave	Conewango Ave	0.1	0.19	0.09	9	0.81
Lindsey			0	0.08	0.08	6	0.48
Linwood Ave	Jackson Ave	0.11	0	0.11	0.11	8	0.88
	0.11	Dunham Ave	0.11	0.2	0.09	6	0.54
	Dunham Ave	Dead end	0.2	0.23	0.03	7	0.21
Livingston Ave	Dunham Ave	CR 139 Bailey S	0	0.6	0.6	7	4.2
	Dead End	Jackson Ave	0	0.02	0.02	6	0.12
Louisa Ave			0	0.05	0.05	6	0.3
Lucy Ln			0	0.19	0.19	8	1.52
Maple St			0	0.16	0.16	9	1.44
Melvin Ave	Livingston Ave	Boulevard Ave	0	0.17	0.17	10	1.7
Merlin Ave			0	0.15	0.15	7	1.05
Metcalf Ave			0	0.48	0.48	6	2.88
Robert St			0	0.12	0.12	6	0.72
Smith Ave	Livingston Ave	Duquesne St	0	0.1	0.1	6	0.6
	Duquesne St	Boulevard Ave	0.1	0.18	0.08	7	0.56
Swan St			0	0.12	0.12	9	1.08
Venice St			0	0.08	0.08	8	0.64
Walton Ave			0	0.05	0.05	7	0.35
Waverly Ave	Railroad	Duquesne St	0	0.06	0.06	7	0.42

	Duquesne St	Boulevard Ave	0.06	0.14	0.08	6	0.48	
	Boulevard Ave	Dead End	0.14	0.21	0.07	8	0.56	
Woodbine			0	0.1	0.1	6	0.6	
			Surveyed miles		8.27		60.16	**7.3**
			Unsurfaced Miles		0		0	0
Village of Celoron			AVG. System Condition		8.27		60.16	**7.3**

Municipality: Village of Lakewood

Weather: Overcast

Date of Survey: 11/16/09

Temp. 45

Pavement Surface Condition
Survey

Road /Street Name	Start of Section	End of Section	Mileage		Section Length	Rating	
			Start	Stop	Miles		
Altaway			0	0.09	0.09	9	0.81
Atlantic Ave			0	0.07	0.07	7	0.49
Baxter Ave			0	0.09	0.09	7	0.63
Bemus St			0	0.12	0.12	7	0.84
Bentley Ave	Terrace St	0.15	0	0.15	0.15	7	1.05
	0.15	First St	0.15	0.3	0.15	10	1.5
Briggs St			0	0.1	0.1	8	0.8
Brook St			0	0.16	0.16	9	1.44
Canal St			0	0.04	0.04	8	0.32
Case Ave			0	0.16	0.16	9	1.44
Chautauqua Ave	Fairmount Ave	Erie RR	0	0.2	0.2	7	1.4
	Erie RR	Terrace Ave	0.2	0.54	0.34	7	2.38
Cherry Ln	End of surface	Fairmount Ave	0	0.21	0.21	6	1.26
Clark St			0	0.14	0.14	9	1.26
Crawford Ln	Edgewood Dr	0.19	0	0.19	0.19	8	1.52
	0.19	Winch Rd	0.19	0.27	0.08	7	0.56
Cresant Alley			0	0.06	0.06	8	0.48
Cresant Ave			0	0.14	0.14	10	1.4
Dawson St			0	0.04	0.04	9	0.36
Delaware St			0	0.13	0.13	8	1.04
Division St			0	0.06	0.06	9	0.54
Dunn St			0	0.04	0.04	10	0.4
E Fairmount Dr			0	0.28	0.28	10	2.8
Edgewood Dr			0	0.06	0.06	7	0.42
Elizabeth St			0	0.19	0.19	7	1.33

Elmcrest Ave			0	0.31	0.31	8	2.48
Erie St			0	0.43	0.43	6	2.58
Erlfrd			0	0.11	0.11	8	0.88
Fairdale Ave	Fairmount Ave	0.11	0	0.11	0.11	7	0.77
	0.11	Summit St	0.11	0.18	0.07	8	0.56
First St	Winchester Rd	Chautauqua Ave	0	0.26	0.26	5	1.3
	Lakeview	Bentley Ave	0	0.09	0.09	10	0.9
	Shadyside	Southland Ave	0	0.05	0.05	8	0.4
Franklin St			0	0.21	0.21	7	1.47
Freeman St			0	0.05	0.05	8	0.4
Front St			0	0.3	0.3	7	2.1
Gerald Ave	Dead End	Summit St	0	0.1	0.1	10	1
	Summit Ave	Dead End	0.1	0.23	0.13	8	1.04
Gifford Ave	Dead End	Erie	0	0.04	0.04	8	0.32
	Erie	Delaware	0	0.13	0.13	8	1.04
	Delaware	Summit St	0.13	0.18	0.05	8	0.4
Glenwood Ave			0	0.21	0.21	7	1.47
Grandview Ave			0	0.27	0.27	7	1.89
Greene St			0	0.16	0.16	9	1.44
Harlem Ave	Summit St	0.1	0	0.1	0.1	10	1
	0.1	Front St	0.1	0.14	0.04	9	0.36
Hawthorne St			0	0.05	0.05	9	0.45
Hern Ave			0	0.06	0.06	9	0.54
Highland Ave			0	0.17	0.17	6	1.02
Hillcrest Ave			0	0.26	0.26	7	1.82
Holly Dr			0	0.06	0.06	8	0.48
Ivy Ln			0	0.09	0.09	10	0.9
Jones St			0	0.2	0.2	7	1.4
Lake St			0	0.31	0.31	8	2.48

Lakecrest Ave			0	0.31	0.31	8	2.48
Lakeview Ave	NY 394	0.36	0	0.36	0.36	8	2.88
	0.36	Lake St	0.36	0.59	0.23	7	1.61
Laurel St	Maple Ave	0.15	0	0.15	0.15	6	0.9
	0.15	Dead End	0.15	0.21	0.06	8	0.48
Linwood Ave			0	0.31	0.31	7	2.17
Locust St	Grandview Ave	Fairmount Ave	0	0.29	0.29	7	2.03
	Fairmount Ave	Dead End	0.29	0.39	0.1	6	0.6
Lowe St			0	0.11	0.11	6	0.66
Mall Blvd			0	0.32	0.32	7	2.24
Maple Ave			0	0.07	0.07	8	0.56
Maplecrest Ave			0	0.3	0.3	8	2.4
Mapleview Ave			0	0.3	0.3	7	2.1
Mari Ln			0	0.11	0.11	9	0.99
Marion St			0	0.06	0.06	7	0.42
Marvin Ave			0	0.16	0.16	8	1.28
Miller Ave			0	0.08	0.08	8	0.64
Muto St			0	0.1	0.1	7	0.7
NY Ave			0	0.24	0.24	8	1.92
Nicholas Ave			0	0.06	0.06	7	0.42
Oak St	Grandview Ave	Mapleview Ave	0	0.16	0.16	8	1.28
	Mapleview Ave	Fairmount Ave	0.16	0.3	0.14	7	0.98
	Fairmount Ave	Dead End	0.3	0.37	0.07	8	0.56
Oakland Ave			0	0.18	0.18	7	1.26
Ohio Ave			0	0.14	0.14	9	1.26
Olive Ave			0	0.18	0.18	8	1.44
Owana Way			0	0.16	0.16	8	1.28
Packard Ave	Lakeview Ave	0.08	0	0.08	0.08	5	0.4
	0.08	Chautauqua Ave	0.08	0.17	0.09	6	0.54

Packard St	Terrace St	Lake St	0	0.06	0.06	8	0.48
Park Ln			0	0.13	0.13	7	0.91
Pennsylvania Ave			0	0.22	0.22	8	1.76
Pleasantview Ave	Summit St	0.09	0	0.09	0.09	10	0.9
	0.09	Front St	0.09	0.14	0.05	8	0.4
Roxa Ave			0	0.09	0.09	10	0.9
Second St	Lakeview Ave	Chautauqua Ave	0	0.17	0.17	10	1.7
Sessions Ave			0	0.05	0.05	7	0.35
Shady Ln			0	0.07	0.07	7	0.49
Shadyside Ave	S Village Line	Fairmount Ave	0	0.31	0.31	7	2.17
	Fairmount Ave	Summit St	0.31	0.66	0.35	9	3.15
	Summit St	Terrace Ave	0.66	0.78	0.12	9	1.08
Sheldon PL			0	0.05	0.05	7	0.35
Southland Ave	S Village Line	Fairmount Ave	0	0.29	0.29	7	2.03
	First Ave	Terrace Ave	0	0.23	0.23	7	1.61
Spruce St			0	0.16	0.16	7	1.12
Squires Ave			0	0.07	0.07	7	0.49
Stoneman Ave			0	0.2	0.2	7	1.4
Sunset Ave	Erlerd Dr	Summit St	0	0.2	0.2	8	1.6
	Summit St	Lake St	0.2	0.26	0.06	7	0.42
	Lake St	Terrace Ave	0.26	0.3	0.04	7	0.28
Sylvia Way			0	0.04	0.04	8	0.32
Teddy Ave			0	0.1	0.1	7	0.7
Terrace St	Sunset Ave	Summit St	0	1.7	1.7	7	11.9
Third St			0	0.37	0.37	8	2.96
Velie Ave			0	0.04	0.04	7	0.28
Vista Way			0	0.21	0.21	7	1.47
Waldmer Way	Dead End	Third St	0	0.04	0.04	7	0.28
	Third St	Terrace Ave	0.04	0.26	0.22	7	1.54

Walnut St			0	0.19	0.19	7	1.33	
Webster St			0	0.22	0.22	7	1.54	
W Fairwood Dr			0	0.38	0.38	10	3.8	
Winch Rd			0	0.31	0.31	8	2.48	
Winchester Rd	Lake St	Terrace Ave	0	0.1	0.1	8	0.8	
	Terrace Ave	Summit St	0.08	0.22	0.14	8	1.12	
	Summit St	Dead End	0.22	0.41	0.19	7	1.33	
	Fairmount Rd	Dead End	0	0.19	0.19	7	1.33	
Winding Way			0	0.2	0.2	8	1.6	
Woodcrest Ave			0	0.11	0.11	9	0.99	
Woodland Ave			0	0.14	0.14	8	1.12	
			Surveyed miles		20.53		156.32	**7.6**
			Unsurfaced Miles		0.1	4	0.4	**4.0**
Village of Lakewood			AVG. System Condition		20.63		156.72	**7.6**

1.33	
1.33	
1.6	
0.99	
1.12	
156.32	**7.6**
0.4	**4.0**
156.72	**7.6**