2020 “State of the Streets”
Final Report

Prepared for:

City of Northlake, Illinois &
Chicago Metropolitan Agency for Planning

Prepared by:

Gorrondona and Associates, Inc.
Pavement Engineering Division
4201 West Parmer Lane, Building A, Suite 150 | Austin, Texas 78727
(512) 719-9933 | www.ga-inc.net

In association with:

Urban GIS, Inc. (MBE/DBE/8a)
171 North Aberdeen | Suite 10 | Chicago, Illinois 60607
(312) 525-8400 | www.urbangis.com

TABLE OF CONTENTS

ACRONYMS

Acronym	Definition
AC	Asphalt concrete pavement
APC	Asphalt concrete overlay on Portland cement concrete pavement
ASTM	American Society for Testing and Materials
BR	Brick pavement
CIP	Capital Improvement Plan
CMAP	Chicago Metropolitan Agency for Planning
CSU	Colorado State University
FT	Foot
G&AI	Gorrondona and Associates, Inc.
GIS	Geographic information system
GR	Gravel pavement
IRI	International Roughness Index
K	Thousand
L&T	Longitudinal and transverse cracking
LCD	Last construction date
M	Million
M&R	Maintenance and rehabilitation
P	Primary rank pavement
PAVER	PAVER Pavement Management System
PCC	Portland cement concrete pavement
PCI	Pavement Condition Index
PMP	Pavement management program
PMS	Pavement management system
S	Secondary rank pavement section
SF	Square feet
SU	Sample unit
SY	Square yard
T	Tertiary rank pavement section

1 EXECUTIVE SUMMARY

1.1 History

In October of 2020, the Chicago Metropolitan Agency for Planning (CMAP) retained the services of Gorrondona and Associates, Inc. (G&AI) to implement a pavement management system for the City of Northlake that will enable the City to manage its roadway network in a more proactive, cost-effective, and sustainable way. To accomplish this objective, G&AI: 1) assessed the condition of the City's 37.6 centerline miles of roadways, 2) implemented and customized a pavement management system for the City, and 3) developed near- and long-term pavement maintenance and rehabilitation (M&R) recommendations for the City's roadways.

During the fall of 2019 and the spring of 2020, G&AI's state-of-the-art PathRunner pavement condition data collection system (shown in Figure 1) was deployed to capture continuous, high-resolution pavement cracking, rutting, and roughness data of the City's roads. Collected data were entered into the PAVER Pavement Management System (PAVER), and baseline pavement condition scores were determined for each roadway. The City's roadways were found to be in overall "satisfactory" conditions, with an average Pavement Condition Index (PCI) score of 81, which is among the highest measured in the region.

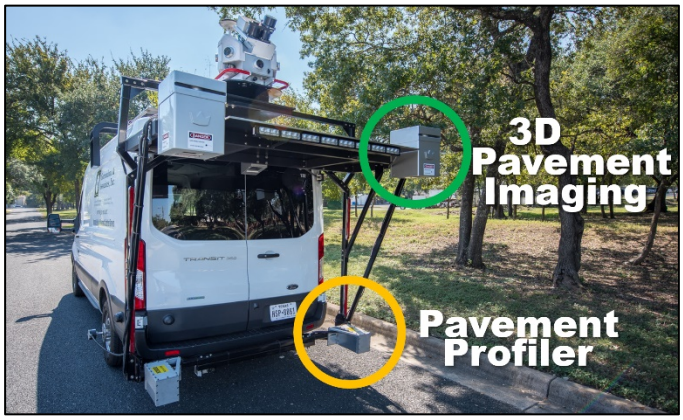


Figure 1. PathRunner pavement condition data collection system.

Maintaining a roadway network at a PCI value near 80 provides a high level of service for City residents and enables the City to maintain its roadway network a relatively low cost. By maintaining roadways in satisfactory condition, the City can focus on proactively maintaining its roadways through more cost-effective pavement preservation activities rather than spending significantly more resurfacing or reconstructing failed roadways.

In July of 2020, preliminary results of the condition survey were presented to the City. G&AI has since worked with the City to collect additional pavement M&R records and M&R unit cost data with which to calibrate PAVER so that it is specific to the City.

The collected pavement condition data along with both the historical M&R data and unit prices provided by the City were used to develop network-level M&R recommendations presented herein for the City's consideration.

1.2 PAVER Pavement Management System

PAVER stores two primary "measures" of pavement condition. The most obvious measure of pavement condition is the **International Roughness Index (IRI)**, which describes the rideability (i.e., smoothness) of the roadway as experienced by the driver.

The second measure of pavement condition is the **Pavement Condition Index (PCI)**, which provides an indication of both the structural integrity and surface operational condition of the roadway. PAVER uses PCI values to determine the most cost-effective level of M&R likely needed. PAVER prioritizes funding

for life-extending, lower-cost preventive maintenance activities (e.g., crack sealing, slurry seals, and localized patching) above more costly funding of last resort major M&R activities, such as resurfacing and reconstruction. This prioritization in the PAVER algorithm seeks a proactive and cost-effective approach to pavement management with the avoidance of – unless necessary – more costly reactive practices.

In addition to routinely collected IRI and PCI data, PAVER stores pavement inventory information, historical M&R records, and M&R unit cost data. The system uses this information to predict future pavement conditions and identify network-level deterioration trends and M&R needs over time. It will also allow the City to evaluate if present M&R methods are performing as expected.

1.3 Purpose and scope

The purpose of this project is to implement a comprehensive pavement management system for the City's roadways. The scope of this project includes all roadways managed by the City, which total approximately 37.6 centerline miles. This pavement management system will serve as a primary tool to assist the City in more efficiently allocating its pavement M&R funding.

To this end, G&AI:

1. Developed an inventory of the City's roadways in PAVER. The PAVER inventory contains pavement surface type, functional classification, M&R unit costs, and historical M&R data. *Note: Inventory development is a one-time effort that can be used by the City if PAVER is retained, only requiring updates to address changes to the City's roadway network and changes in M&R unit costs.*
2. Performed a pavement condition survey of the City's roadways. This survey was used to determine PCI and IRI values for analysis purposes and will serve as an initial baseline of roadway conditions.
3. Used the condition survey with the developed PAVER inventory to determine the impact of different funding levels on the City's roadways and identify potential network-level pavement M&R needs.

1.4 Results

Pavement Condition Index (PCI) and **International Roughness Index (IRI)** values were determined for each roadway. PCI values provide an indication of both the structural integrity and surface operational condition of a pavement. PCI values range from 0 (a failed pavement) to 100 (a pavement in excellent condition). Table 1 shows the categories chosen to represent the City's PCI assessment criteria, which includes typical pavement distresses and levels of M&R needed within each category.

Table 1. City's pavement condition categories.

Category	Typical Distresses and Typical Level of M&R Needed	PCI Range
Good	Longitudinal and transverse cracking and weathering of surface **Preventive maintenance:** *Crack sealing and surface treatments*	86-100
Satisfactory	More extensive longitudinal and transverse cracking and weathering of surface **Preventive maintenance:** *Crack sealing and surface treatments*	71-85
Fair	Extensive longitudinal and transverse cracking, early stage alligator (fatigue) cracking, early stage rutting, and weathering of surface **Global preventive maintenance and localized repairs:** *Localized surface and/or full-depth patching, surface treatments, and thin overlays*	56-70
Poor	More extensive and severe longitudinal and transverse cracking, alligator (fatigue) cracking, rutting, and weathering of surface **Major rehabilitation:** *Localized full-depth patching, mill and overlays, and traditional overlays*	41-55
Very Poor	More extensive and more severe longitudinal and transverse cracking, alligator (fatigue) cracking, rutting, weathering of surface, potholes **Major rehabilitation:** *Full-depth patching, mill and overlays, traditional overlays, and reconstruction*	26-40
Serious	Extensive and severe failure of pavement surface **Major rehabilitation:** *Reconstruction*	11-25
Failed	Complete failure of pavement surface **Major rehabilitation:** *Reconstruction*	0-10

At the time of G&AI's inspection, the City's pavements were found to have an average PCI of 81, indicating that the City's roadways are in overall "satisfactory" condition.

IRI values measure the roughness (vertical displacement over a fixed interval reported in inches per mile) of a roadway pavement:

- IRI values less than 200 inches/mile indicate "smooth" pavement.
- IRI values between 200 and 400 inches/mile indicate a "marginally rough" pavement.
- IRI values greater than 400 inches/mile indicate "rough" pavement.

The City's roadways were found to have an average IRI value of 246 inches/mile, which indicates overall "marginally rough" pavement.

Following this executive summary, Map 1 shows PCI categories for each roadway. Roadways that were planned for resurfacing or reconstruction in 2020 (i.e., after the field inspection was performed) were assigned an assumed PCI value of 100. All other PCI values shown on Map 1 reflect the conditions of the

roadways at the time of the field inspection. Map 2 shows IRI categories for each roadway at the time of inspection. IRI values reflect a physical measurement of roughness. Consequently, IRI values were not adjusted for roadways that were planned for resurfacing or reconstruction in 2020.

The causes of pavement deterioration as quantified by the PCI may be divided into three general categories:

- Vehicle load related.
- Climate/durability related.
- Other (construction defects and material issues).

The deterioration observed on the City's pavements at the time of inspection was caused by a mixture of vehicle load- and climate-related distresses. Vehicle load-related distresses, including alligator cracking and rutting, were evident on some of the City's roadways and contributed most to lower PCI values. Climate-related distresses, including block cracking and weathering, were also observed on the City's roadways.

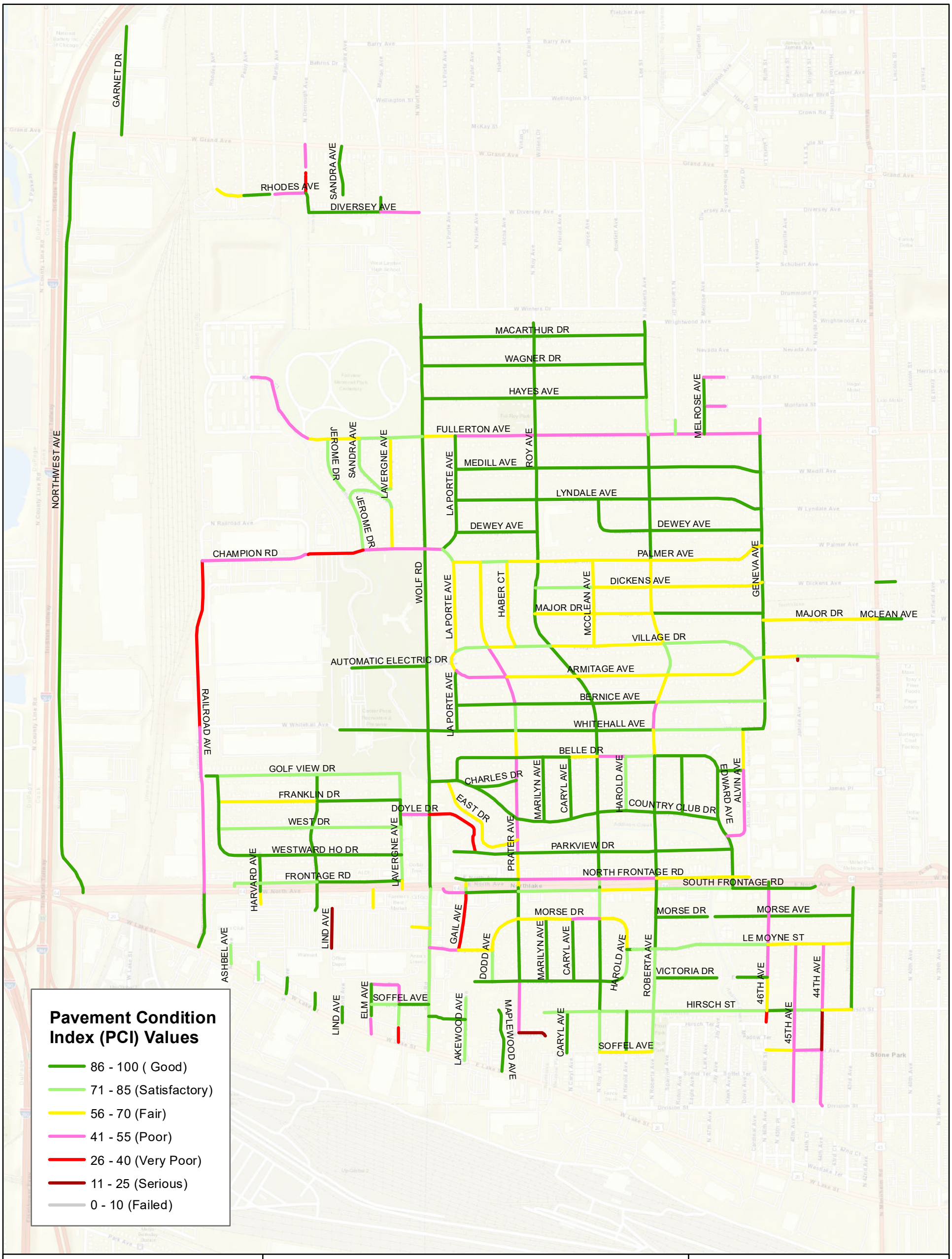
The results of the PAVER M&R analyses indicate that the City's current funding level of approximately $2.25M/Year is adequate to maintain and continue to improve the overall condition of the City's roadways over the next ten years. The City has invested in proactive infrastructure and roadway improvements since 1997, and the City's current overall roadway conditions positively reflect the strategic investments made over the past two decades.

1.5 Recommendations

For the City to get the most return on their investment from PAVER, the system must be considered a living entity. The City should:

1. Implement pavement preservation techniques to cost-effectively extend the life of its roadways.
2. Determine when resurfacing is no longer a cost-effective option and reconstruction is needed.
3. Annually update M&R activities performed on City roadways in the PAVER database.
4. Annually update M&R unit costs (or whenever economic conditions cause changes in unit prices).
5. Commit future funding to the routine collection of pavement condition data (all roadways should be inspected on a two- to three-year cycle).
6. Use collected pavement condition data to assess the performance of the roadways and applied M&R activities.

With such attention, PAVER will become a repository of accurate, up-to-date data and the primary tool that the City uses for more cost-effectively programming M&R funding.



Feet
0 750 1,500

Map 1:
Pavement Condition Index (PCI) Values

Northlake, Illinois

Pavement Management Program

2020

Gorrondona & Associates, Inc.

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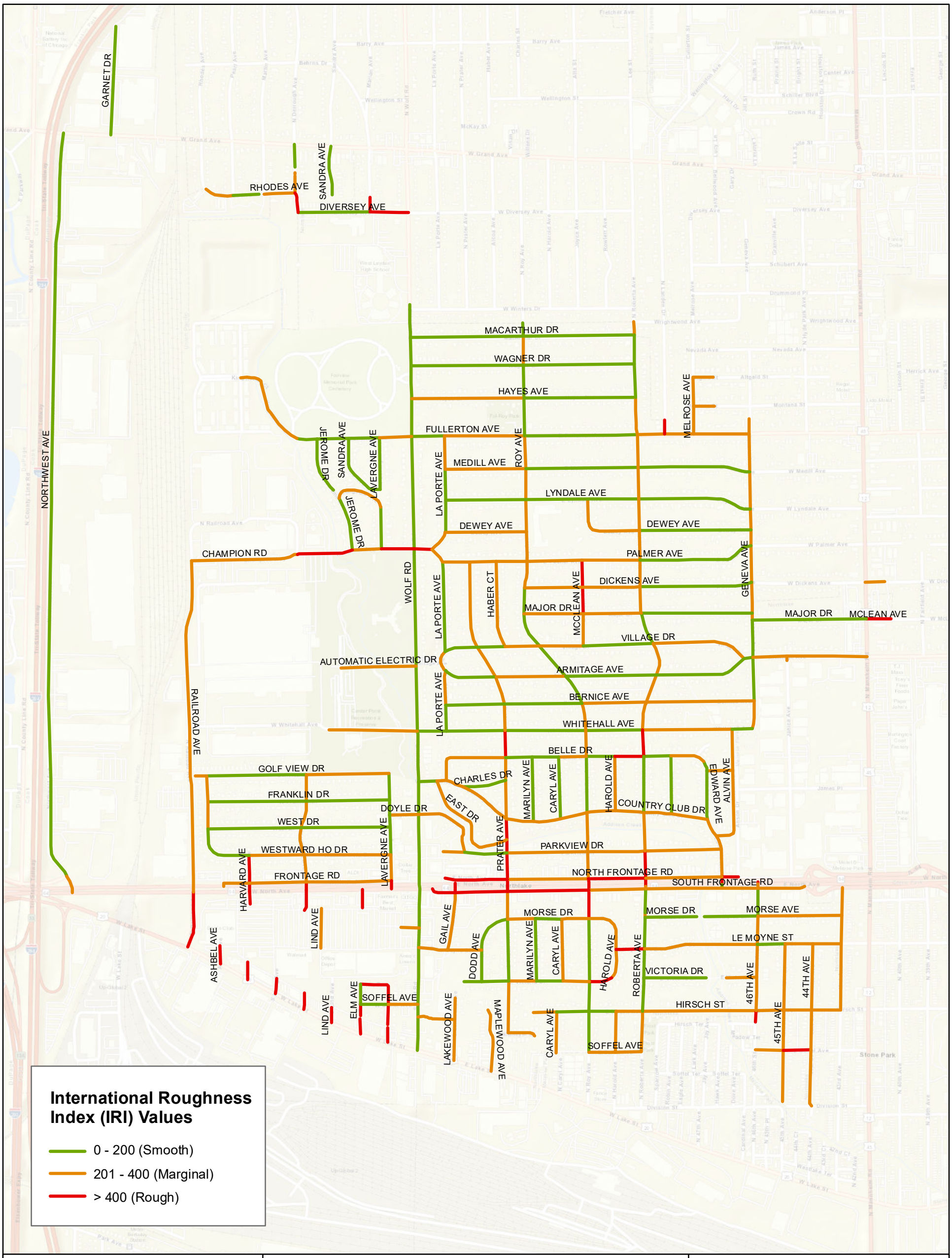
GARNET DR
RHODES AVE
SANDRA AVE
DIVERSEY AVE
MACARTHUR DR
WAGNER DR
HAYES AVE
FULLERTON AVE
MEDILL AVE
LYNDALE AVE
DEWEY AVE
PALMER AVE
DICKENS AVE
MAJOR DR
MCLEAN AVE
VILLAGE DR
ARMITAGE AVE
BERNICE AVE
WHITEHALL AVE
BELLE DR
CHAMPION RD
AUTOMATIC ELECTRIC DR
NORTHWEST AVE
RAILROAD AVE
WOLF RD
LA PORTE AVE
HABER CT
ROY AVE
MELROSE AVE
GENEVA AVE
MCCLEAN AVE
JEROME DR
LAVERGNE AVE
GOLF VIEW DR
FRANKLIN DR
WEST DR
WESTWARD HO DR
FRONTAGE RD
DOYLE DR
CHARLES DR
EAST DR
MARILYN AVE
CARYL AVE
HAROLD AVE
EDWARD AVE
ALVIN AVE
COUNTRY CLUB DR
PARKVIEW DR
PRATER AVE
NORTH FRONTAGE RD
SOUTH FRONTAGE RD
HARVARD AVE
LIND AVE
ASHBEL AVE
GAIL AVE
DODD AVE
MORSE DR
MORSE AVE
LE MOYNE ST
VICTORIA DR
ROBERTA AVE
46TH AVE
44TH AVE
45TH AVE
HIRSCH ST
ELM AVE
SOFFEL AVE
LAKEWOOD AVE
MAPLEWOOD AVE
International Roughness Index (IRI) Values
0 - 200 (Smooth)
201 - 400 (Marginal)
> 400 (Rough)
Feet
0
750
1,500
Map 2:
International Roughness Index (IRI) Values
Northlake, Illinois
Pavement Management Program
2020
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2 INTRODUCTION

2.1 Foreword

This section of the report expands on the Executive Summary and provides the reader with information pertaining to the creation and implementation of this pavement management system for the City.

At the core of a modern pavement management system is a geocentric database that contains pavement inventory and condition information. Combined with up-to-date M&R unit cost data, calibrated deterioration models, and owner-specific M&R practices, this information is used by analysis tools in the pavement management system to predict future pavement conditions, develop multi-year M&R plans, and forecast anticipated funding needs.

This section provides a conceptual overview of pavement management and follows with the benefits and costs of implementing a pavement management system. Implementation of the City's pavement management system is detailed in Sections 3, 4 and 5. This section closes with an overview of effective preventive maintenance strategies that should be considered by the City.

2.2 Background, scope, and objectives

The Chicago Metropolitan Agency for Planning (CMAP) retained the services of Gorrondona and Associates, Inc. (G&AI) to assess the existing condition of the roadways maintained by the City. The primary objectives of this project are to implement a comprehensive and City-wide pavement management system, perform a network-level pavement condition survey, and identify future pavement M&R needs.

The project will provide the City with a better understanding of the current condition of its roadways and network-level recommendations for future M&R based on the results of the pavement condition survey. Moving forward, the pavement management system will continue to serve as a repository for pavement condition data, historical M&R records, and pavement condition deterioration trends.

PAVER was implemented for the City, and a state-of-the-art PathRunner pavement condition data collection system was deployed to capture continuous, high-resolution pavement cracking, rutting, and roughness data of the City's roadways.

G&AI has since developed the PAVER inventory database and worked with the City to collect additional pavement M&R records and M&R unit cost data with which to calibrate the PAVER database so that it is City specific. These M&R records and M&R unit costs, along with the collected pavement condition data, have been used to identify present network-level M&R needs.

2.3 Project tasks

To successfully accomplish the objectives of this project, G&AI performed the following tasks, which are covered in greater detail in Sections 3, 4, and 5 of this report, respectively:

1. Pavement management system implementation
   G&AI developed an inventory of the City's roadway pavements and implemented PAVER.
2. Pavement condition survey
   G&AI performed a network-level pavement condition survey on the roadway pavements using a state-of-the-art pavement imaging and profiling data collection system. The pavement condition survey was performed in the fall of 2019 and spring of 2020.
3. M&R analyses
   G&AI reviewed the collected condition data and determined the impact of several funding scenarios on the City's roadways and identified potential pavement M&R needs using PAVER.

The 3D pavement imaging and profiling technology used to assess the condition of the City's roadway pavements is the most comprehensive available. This technology has evolved rapidly over the past several years, and it is now used across the United States by more than half of the state DOTs. Unlike the inherently subjective windshield pavement condition surveys of years past, high resolution cracking, rutting, and roughness condition data were captured continuously for each of the City's roadways surveyed.

The collected data were then analyzed using a hybrid methodology that incorporates both automated crack detection and classification along with manual quality control. This approach yields a complete set of pavement condition data that may be used for both network-level (high-level budgeting) multi-year M&R planning as well as project-level (estimating M&R quantities) analyses. The collected data were then entered into and analyzed using PAVER. Continuously developed by the US Army Corps of Engineers, PAVER is a sophisticated, non-proprietary system widely used by municipal agencies across the United States and around the world.

2.4 Conceptual overview of pavement management

The use of a pavement management system is intended to provide municipal agencies with a systematic process for cost-effectively managing their pavement network, which may include roadways, parking lots, and alleys. The American Public Works Association (APWA) defines pavement management in the following way:

> *Pavement management is a systematic method for routinely collecting, storing, and retrieving the kind of decision-making information needed to make maximum use of limited maintenance (and construction) dollars.*

Combined with local knowledge and practical judgment, the recommendations from a pavement management system may be used to help make better pavement M&R decisions.

At the core of a pavement management system is the method for assessing pavement condition. The most widely used method for assessing pavement condition is the Pavement Condition Index (PCI), which is industry standard practice and defined in ASTM D6433. The PCI method outlines a process for more objectively assessing the condition of a pavement based on visual observations and measurements that take place during a field inspection. These observations and measurements are then distilled into a PCI

value that ranges between 0 and 100. A PCI value of 0 indicates a failed pavement, and a PCI value of 100 indicates a pavement in good condition.

PCI values help determine the level of M&R needed to cost-effectively maintain or rehabilitate the pavement. These values may also be used to prioritize roadway improvements for the purpose of developing strategic capital improvements programs. When a pavement is in good condition, preventive maintenance can be applied to extend the life of the pavement. However, once a pavement falls below critical condition, preventive maintenance may no longer be cost effective, and more significant and perhaps more costly rehabilitation strategies should be considered.

The "Critical PCI" value for a pavement is the PCI value below which cost-effective preventive maintenance is no longer a viable option, and more significant rehabilitation and sometimes reconstruction may be necessary. As shown in Figure 2, the primary objective of pavement management is to preserve pavements in good condition above the Critical PCI with less costly preventive M&R rather than allow them to deteriorate below the Critical PCI, resulting in the need for more costly major M&R (rehabilitation or reconstruction).

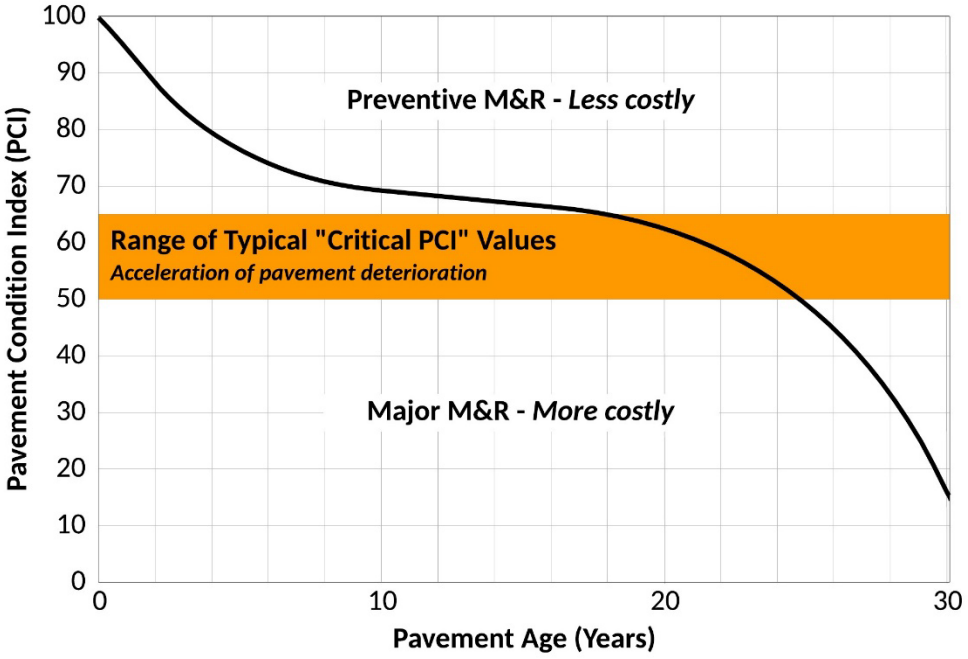


Figure 2. Example of the correct timing of preventive and major M&R relative to the Critical PCI.

The Critical PCI value is determined based on the repeated measurement of pavement condition over time as well as agency-specific M&R policies. Critical PCI values typically range between 50 and 65 (as shown in Figure 2) because the acceleration of pavement deterioration, and subsequent need for more costly M&R, typically occurs then. Setting a higher Critical PCI value simply results in pavements being recommended for major M&R earlier. Some agencies set higher Critical PCI values for their arterial roadways than for their local roadways to ensure that the roadways most heavily traveled (and often at higher speeds) are maintained to a higher standard.

PAVER's default Critical PCI value of 55 has been used for the City's roadways. The City may change this value as more condition data and historical M&R data are captured and the deterioration rates of the

City's roadways are better understood. Typically, two to three PCI inspections are needed to converge on acceptable Critical PCI values. The City may choose to set Critical PCI values for each functional classification of roadway based on desired policy goals.

When the appropriate preventive maintenance treatments (e.g., crack sealing, seal coats, and patching) are undertaken at the correct times during a pavement's service life, these relatively inexpensive preventive M&R treatments can extend the service life of the pavement, as shown in Figure 3.

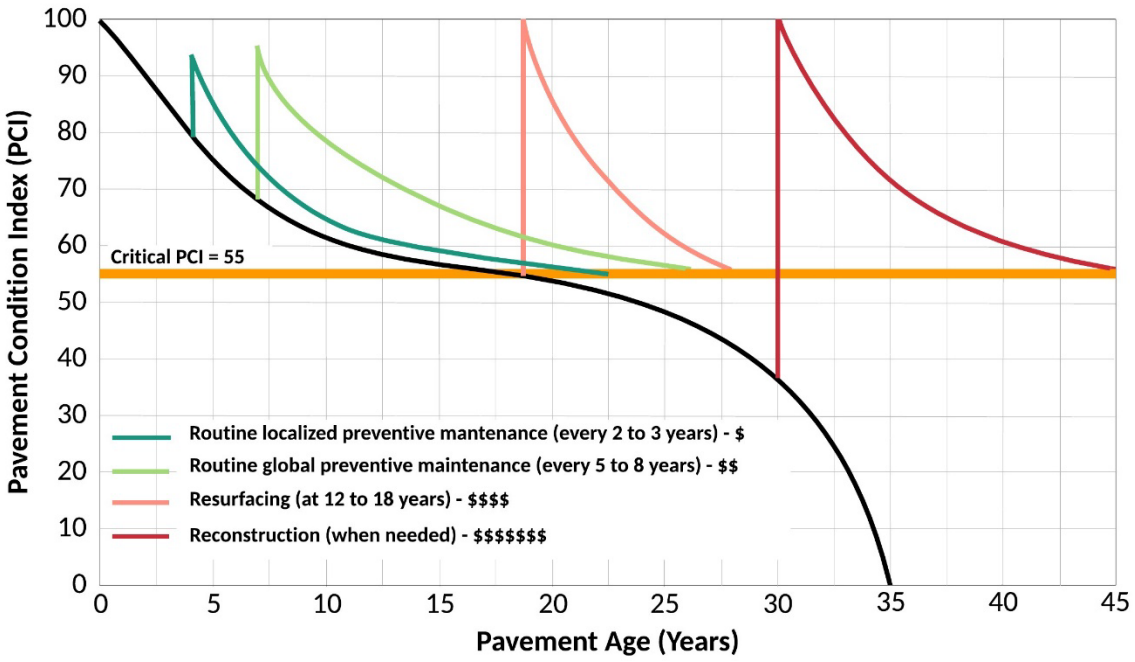


Figure 3. Example of the increasing prices and decreasing benefits of M&R.

It is important to note that the IRI, which provides a useful measure of pavement smoothness, does not correlate well to the level of M&R needed to correct smoothness issues. Consequently, IRI values are not considered when forecasting future M&R needs. Instead, IRI values are used in pavement management systems to identify pavements requiring a special inspection, or they may be used in conjunction with PCI values when prioritizing M&R projects.

As pavement management concepts have gained traction, computer-based pavement management systems have been developed to assist agencies in more optimally managing their pavements. Pavement management systems currently rely on a detailed pavement inventory, routine pavement condition assessments, pavement performance modeling, and sophisticated analysis tools that can forecast future pavement condition and estimate future M&R needs and costs.

2.5 Benefits and costs of implementing a pavement management system

Pavement management systems provide:

- A centralized location for storing pavement condition and inventory data, including construction, maintenance, and rehabilitation records.
- Decision-making support tools for:
  - ✓ Evaluating maintenance and rehabilitation alternatives.
  - ✓ Analyzing the consequences of alternative funding levels on pavement conditions.

  - ✓ Improved scheduling and coordination of pavement M&R projects and other infrastructure projects.
- Analysis tools for evaluating the effectiveness of historical methods of rehabilitation.
- Reporting tools for distilling complex data and justifying funding needs to elected officials.

The benefits of implementing and maintaining a pavement management system improve over time as more data are entered into the system. The costs associated with maintaining a pavement management system include:

- Pavement inventory data collection and routine updates (typically performed annually following the end of the paving season).
- Routine pavement condition data collection (arterials and collectors are typically surveyed every other year and local roadways are surveyed on a three-year cycle).
- Evaluating pavement performance and developing M&R plans (typically performed annually following the end of the paving season – or following a condition survey – to determine candidate roadways for the next paving season).
- Software acquisition, installation, system maintenance, and updates.
- Staff training, as needed.

To ensure the success of a pavement management system, agencies should develop a plan for staffing, maintaining, and funding the system appropriately.

2.6 Incorporating pavement preservation strategies

The implementation of a pavement management system has the added benefit of assisting agencies in determining which pavements may be candidates for preventive maintenance. The use of preventive maintenance early in the life of a pavement, before any significant deterioration, has been demonstrated to be a cost-effective way to extend a pavement's service life.

In the Federal Highway Administration (FHWA) publication, Pavement Preservation, A Road Map to the Future, preventive maintenance is defined as:

> *"…the planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserves the system, retards future deterioration, and maintains or improves the functional condition of the system (without significantly increasing the structural capacity)."*

The FHWA adds that preventive maintenance:

> *"…is typically applied to pavements in good condition having significant remaining service life. As a major component of pavement preservation, preventive maintenance is a strategy of extending the service life by applying cost-effective treatments to the surface or near-surface of structurally sound pavements."*

The following preventive maintenance treatments have been demonstrated to be effective when applied at the right time during a pavement's service life:

- Crack sealing, crack filling, and joint sealing of flexible and rigid pavements
- Patching and edge repairs
- Chip seals, fog seals, and slurry seals
- Micro-surfacing
- Thin "functional" and "maintenance" overlay projects

Too frequently these activities are incorrectly applied as "stop-gap" or "cosmetic" treatments for pavements in poor condition rather than as true preservation activities. Preventive maintenance strategies should be applied to pavements that are in relatively good condition, and the activities should be planned and applied systematically following either the resurfacing or reconstruction of a pavement. The following FHWA website provides additional information for pavement preservation: https://www.fhwa.dot.gov/pavement/preservation/.

2.7 Summary

This section provided the reader with background information pertaining to the creation and implementation of the non-proprietary PAVER system for the City. The section provided a conceptual overview of pavement management and discussed:

1. The benefits the City will see from the implementation of the pavement management system.
2. The costs expected to be incurred with the maintenance of the system.
3. The additional functionality beyond the obvious support the system can provide by objectively assisting the City in optimizing the allocation of its M&R funding.

Implementation of the City's pavement management system is detailed in Sections 3, 4, and 5. This section closed with an overview of effective preventive maintenance strategies that should be considered by the City moving forward.

3 PAVEMENT MANAGEMENT SYSTEM IMPLEMENTATION

3.1 Foreword

This section discusses the first task of this project: Implementing a pavement management system. One of the CMAP's primary desires was to have a non-proprietary pavement management system for participating agencies. This section provides an overview of PAVER, a brief description of the modules available to the City in PAVER, and insight into the PAVER database development. *(Note: The information presented in the section may be supplemented by the PAVER User Manual, which is available as a navigable PDF file in the PAVER software.)*

3.2 Objective

The objective of this task was to implement a pavement management system for the City's roadway pavements. G&AI implemented PAVER, which is developed and continually updated by the US Army Corps of Engineers. This task required developing an inventory of the City's roadway pavements and collecting current pavement condition data and entering it in PAVER.

3.3 PAVER Pavement Management System overview

PAVER assists agencies in determining when, where, and what level of pavement M&R is required and approximately how much it will cost. The system provides a suite of pavement management tools, or "modules", that will help the City with the following tasks:

- Developing and organizing their pavement inventory.
- Assessing the current condition of their pavements.
- Developing models to predict future pavement conditions.
- Reporting on past and future pavement performance.
- Developing scenarios for M&R based on either funding or pavement condition goals.
- Planning M&R projects.

PAVER modules include:

- Inventory
- M&R history
- Inspection
- Prediction modeling
- Condition analysis
- M&R planning
- Project planning
- Reporting

A brief description of these modules is presented in the following sub-sections.

Note: Upon request by the municipality, a one-year PAVER license shall be purchased by CMAP for the municipality from Colorado State University (CSU). The PAVER license does not expire. However, after the first year, the municipality will be responsible for purchasing software updates and technical support, if desired. Current pricing for PAVER may be found at: www.paver.colostate.edu.

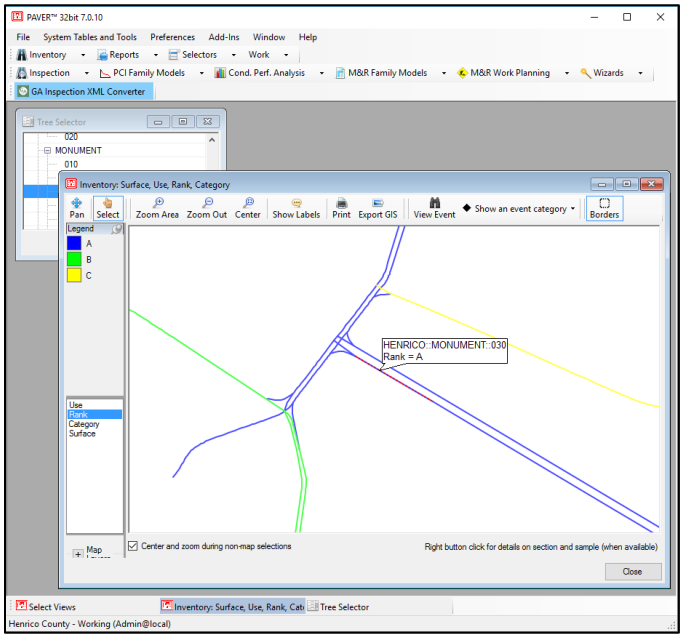


Figure 4. Example roadway functional classifications (ranks) stored in the Inventory module.

3.3.1 Inventory and maintenance and rehabilitation (M&R) history modules

The PAVER **Inventory** and **M&R History** modules, shown in Figure 4 and Figure 5, are based on a hierarchical structure composed of networks (groups of roadways managed with one source of funding), branches (specific roadways), and sections. Sections are the smallest area for which conditions are reported and M&R activities recommended. Sections typically conform to existing GIS segmentation and are commonly defined from intersection to intersection by default.

One network is defined for the City and each roadway is a branch. Pavement sections are defined within each branch following the City's existing GIS segmentation in the Illinois Roadway Information System (IRIS). This structure allows the City to easily organize their inventory and historical M&R data and provides a simple and efficient way for rolling-up data to higher levels of the pavement hierarchy. The City provided G&AI with historical M&R records, and this information was entered in PAVER.

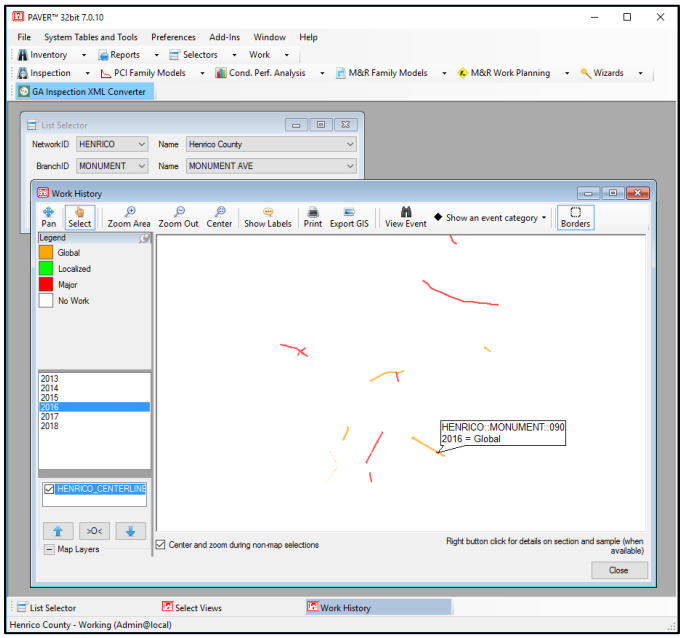


Figure 5. Example historical M&R records stored in the M&R History module.

3.3.2 Inspection module

PAVER uses the PCI as the primary measure of pavement condition. The **Inspection** module, shown in Figure 6, enables agencies to store raw pavement condition survey data and then calculate PCI values. IRI values are also stored in the **Inspection** module.

3.3.3 Prediction modeling module

The **Prediction Modeling** module in PAVER enables the user to group pavements of similar construction that are subjected to similar traffic, weather, and any other factors affecting pavement performance into "families." Historical pavement condition

data are used to build models that can be used to predict future pavement performance. The **Prediction Modeling** module is a hands-on module and prediction models should be updated by the City following each condition survey. If historical pavement condition data are not available, PAVER provides default pavement prediction curves (shown in Figure 7) and allows the user to develop site specific prediction models.

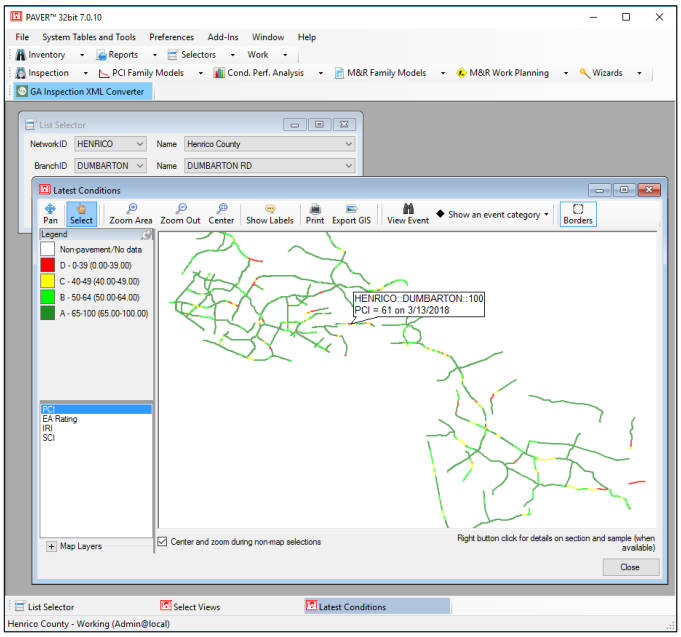


Figure 6. Example PCI values in the Inspection module.

3.3.4 Condition analysis module

The Condition Analysis module allows the City to view the condition of the entire pavement network or any subset of the network over time. The module reports past conditions based on interpolated values between historical condition data, and it reports projected conditions based on the application of prediction models developed using the **Prediction Modeling** module.

3.3.5 M&R planning module

The **M&R Planning** module can determine the consequence of a predetermined funding level on pavement conditions and estimate the resulting backlog of major work. This information assists in determining funding requirements to meet specific City pavement condition goals. These capabilities will enable the City to develop more optimal M&R programs based on available resources and to justify M&R needs.

3.3.6 Reporting module

Each previously described module of PAVER can generate various reports that will assist the City in analyzing, interpreting, and presenting pavement data. In addition to module-specific reports, PAVER also comes equipped with several "canned" reports, which include:

- GIS reports – *Internal/external reporting of inventory and condition data*
- Summary Charts – *Simple graphs and data tables of inventory and inspection data*
- Inspection Reports – *Summary of collected pavement condition data*
- Work History – *Summary of historical maintenance, repair, and rehabilitation data*
- Branch Listing – *Summary of overall pavement inventory data*

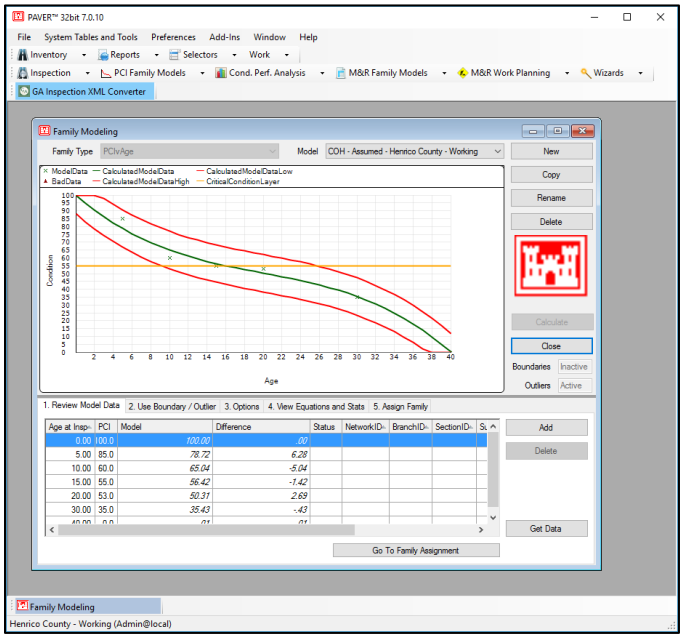


Figure 7. Example deterioration trend developed using the Prediction Modeling module.

- Branch Condition – *Summary of overall pavement condition data*
- Section Condition – *Summary of individual section data*

PAVER can generate on-the-fly "user-defined" reports, which can be tailored to meet the City's specific reporting needs. PAVER's user-defined reporting capability enables the user to extract any data stored in the system and export it to a GIS shapefile, spreadsheet, or text file.

3.4 Summary

This section discussed the first task of this project: Implementing a pavement management system. This section provided an overview of the non-proprietary PAVER system, a brief description of the modules available to the City in PAVER, and insight into the PAVER database development. The City's PAVER database has been developed to include specific and relevant data pertaining to the City's roadway pavement network. PAVER's suite of analysis and planning tools will enable the City to more effectively manage its roadway pavement network.

4 PAVEMENT INVENTORY

4.1 Foreword

This section describes the City's roadway pavement inventory as it exists in PAVER. The data sources used in developing the inventory are discussed in this section, and summary data are presented.

4.2 Objective

The objective of this task was to develop a comprehensive inventory of the City's roadway pavements for inclusion in PAVER. The roadway pavement inventory provides the underlying data on which analysis and reporting is performed with PAVER. In addition, the inventory provides the framework in which all routinely collected pavement condition data and historical work data are stored.

Moving forward, the City should update the pavement inventory in PAVER to reflect the addition, realignment, widening, and/or removal of roadways managed by the City. Typically, these types of changes are infrequent and may be done annually or prior to performing any analysis or reporting tasks with PAVER.

4.3 PAVER inventory development

The City's PAVER inventory was based on the IRIS GIS provided by CMAP. Relevant pavement data available in the IRIS GIS were supplemented with aerial imagery and field observations and entered in the City's PAVER database. These data included: number of lanes, pavement surface type, approximate roadway width, and from/to intersections for each pavement section.

Roadways were also assigned "ranks" (i.e., priorities) of primary (P), secondary (S), and tertiary (T). Federal aid eligible roads were assigned the rank of primary, since these tend to be the more heavily trafficked roadways. Residential roads were assigned the rank of secondary, and unpaved roadways and roadways in industrial zones were assigned the rank of tertiary. Based on these definitions, the City currently maintains only primary and secondary roads.

A shapefile generated from the City's GIS was linked to the PAVER database. This enables the City to conveniently navigate the roadways within PAVER and generate a variety of map-based inventory and condition reports in PAVER. Historical M&R records provided by the City were entered in the PAVER database as well as unit cost data.

4.4 Inventory summary

The City's roadway network consists of approximately 37.6 centerline miles of predominantly asphalt surfaced, two-lane roadways. Table 2 shows the distribution of the City's roadway network in mileage and area by pavement rank, and Table 3 shows the distribution by pavement surface type.

Table 2. Roadway summary data by pavement rank.

Rank	Centerline Miles	Lane Miles	Area (SY)
Primary, P	6.7	17.7	134,872
Secondary, S	30.8	62.0	477,083
Total	**37.6**	**79.7**	**611,955**

Table 3. Roadway summary data by pavement surface type.

Surface Type	Centerline Miles	Lane Miles	Area (SY)
Asphalt, AC	35.5	75.2	576,173
Concrete, PCC	2.1	4.6	35,782
Total	**37.6**	**79.7**	**611,955**

Appendix A maps A-1 and A-2 present pavement rank and surface type data graphically.

5 PAVEMENT CONDITION INSPECTION

5.1 Foreword

This section discusses the second task of this project: Performing a comprehensive pavement condition survey of the City's roadways. The condition survey included the collection of high-resolution pavement imagery and profile measurements using a state-of-the-art PathRunner pavement condition survey system. The collected data were analyzed and PCI and IRI values were calculated for each of the City's roadways surveyed. This section describes the pavement condition survey system, the data collection methodology, how the collected data were analyzed, and a discussion of field observations. It concludes with several examples of pavement conditions from the City's roadways.

5.2 Objective

The objective of the pavement condition survey is to assess the existing structural integrity and surface operational condition of the City's roadways. The survey provides a comprehensive snapshot of pavement conditions at the time of data collection.

Moving forward, the City should perform pavement condition surveys on a routine basis to objectively monitor pavement performance, determine near-term M&R needs, evaluate the effectiveness of M&R activities, develop pavement deterioration trends, and forecast near- and long-term pavement M&R needs.

5.3 Pavement condition data acquisition

G&AI deployed a state-of-the-art PathRunner pavement data collection system to capture high-resolution pavement imagery and surface data necessary to assess the condition of the City's roadways. The PathRunner system is shown in Figure 8.

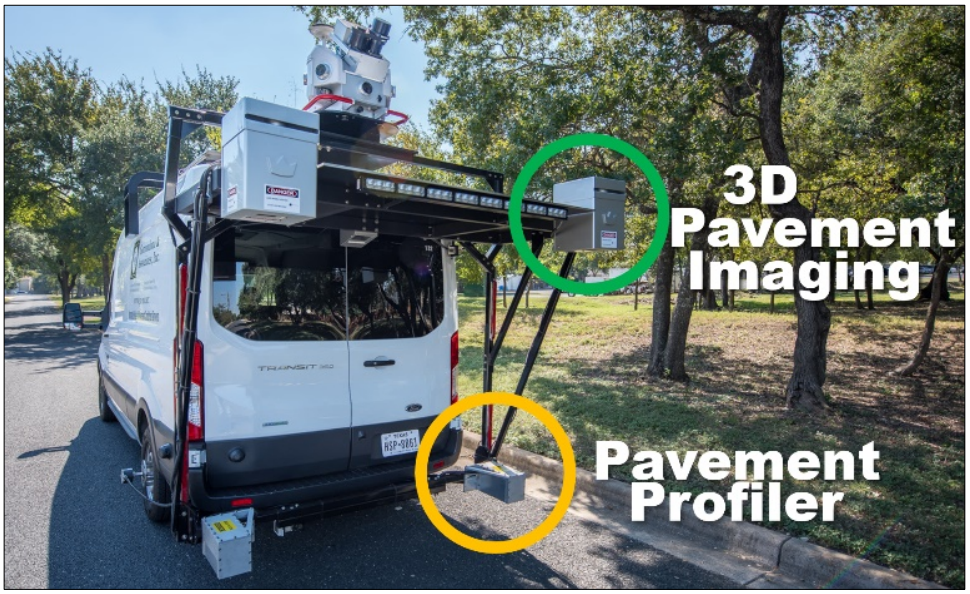


Figure 8. PathRunner pavement condition data collection system.

The PathRunner was driven on all roadways within the City. By agreement with CMAP, only a single lane of two-lane roadways was collected and the outermost lanes in both directions of four-lane and greater roadways were collected. Based on G&AI's experience, contiguous lanes are usually of similar

character, and this inspection approach was deemed to be cost effective for the City while still providing sufficiently detailed information to assess existing pavement conditions. The PathRunner system continuously collected the following data for each roadway:

- High-resolution 2D and 3D pavement images for evaluating pavement distresses and determining Pavement Condition Index (PCI) values.
- Transverse profiles to measure rutting.
- Longitudinal profiles to calculate International Roughness Index (IRI) values.
- High-resolution, forward-facing, right-of-way images for manual review of all data.

These data were processed using automated tools verified by manual review to assess pavement conditions, and the results were entered in the City's PAVER database.

5.4 Pavement Condition Index (PCI) method

The pavement condition survey was performed following the PCI method. The PCI method is based on a set of definitions and procedures for measuring pavement distress types, severities, and quantities during a field inspection. This information is then distilled into a PCI value, which provides an indication of the structural integrity and surface operational condition (roughness) for a pavement section. The PCI method is widely used and provides a significantly more objective and repeatable method for assessing pavement condition than inherently subjective windshield surveys commonly used in the past.

The City's roadway network consists primarily of asphalt pavements with only a few concrete and gravel roadways. During a PCI inspection, several distress types are identified and evaluated for asphalt pavements, as shown in Table 4. The severity and quantity of each observed distress is recorded, and these data are then input into the PCI algorithm to calculate a PCI value, as shown in Figure 9.

Table 4. Asphalt and concrete pavement distress types.

Asphalt Pavement Distresses	
Distress	**Cause**
Alligator Cracking	Load
Bleeding	Other
Block Cracking	Climate/Durability
Bumps and Sags	Other
Corrugation	Other
Depression	Other
Edge Cracking	Load
Joint Reflection Cracking	Climate/Durability
Lane/Shoulder Drop-Off	Other
Longitudinal and Transverse Cracking	Climate/Durability
Patching and Utility Cut Patching	Other
Polished Aggregate	Other
Pothole	Load
Railroad Crossing	Other
Rutting	Load
Shoving	Other
Slippage Cracking	Other
Swell	Other
Raveling	Climate/Durability
Weathering	Climate/Durability

Concrete Pavement Distresses	
Distress	**Cause**
Blowup/Buckling	Climate/Durability
Corner Break	Load
Divided Slab	Load
Durability ("D") Cracking	Climate/Durability
Faulting	Other
Joint Seal Damage	Climate/Durability
Lane/Shoulder Drop-Off	Other
Linear Cracking	Load
Patching, Large and Utility Cuts	Other
Patching, Small	Other
Polished Aggregate	Other
Popouts	Other
Pumping	Other
Punchout	Load
Railroad Crossing	Other
Scaling, Map Cracking, and Crazing	Other
Shrinkage Cracks	Climate/Durability
Spalling, Corner	Climate/Durability
Spalling, Joint	Climate/Durability

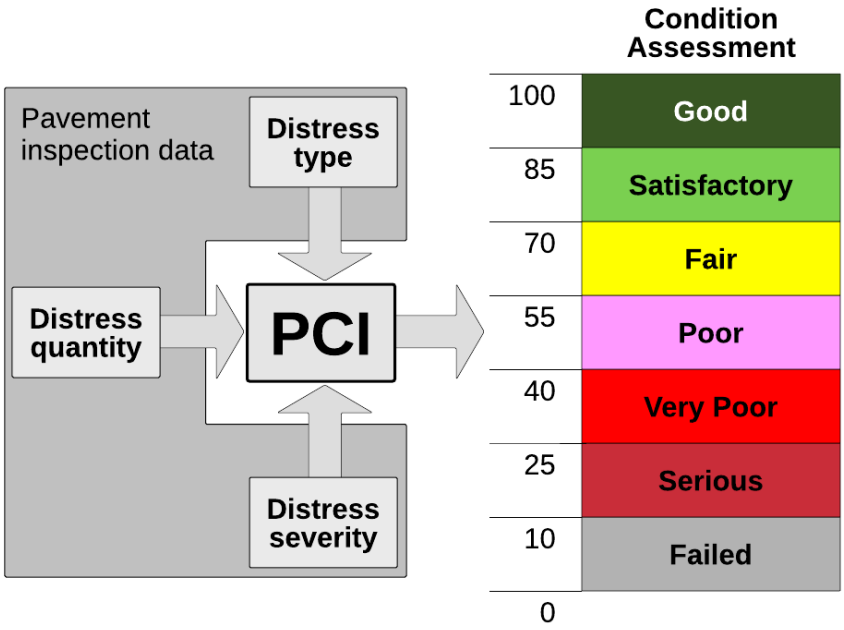


Figure 9. PCI inputs and the City's assessment scale.

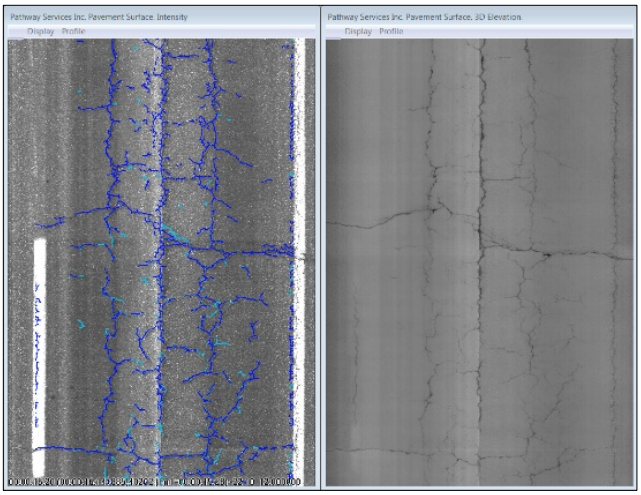
If properly designed and constructed, a new pavement begins its service life with a PCI of 100. Because of distress caused by vehicle loads, environmental factors, and aging, a pavement deteriorates over time. For each combination of distress type, severity level, and quantity observed during the inspection, points

are deducted from the initial value of 100, thereby decreasing the PCI. When multiple distresses are present, the "deduct values" are modified such that the impact of multiple distresses is not unnecessarily compounded. Due to the complexity of the PCI algorithm, PCI values are typically computed using a pavement management software package, such as PAVER. It is important to note that the PCI method does not directly measure the load carrying capacity or the rideability of a pavement. Structural testing combined with coring is needed to determine permissible pavement loadings.

5.5 Pavement Condition Index (PCI) data interpretation

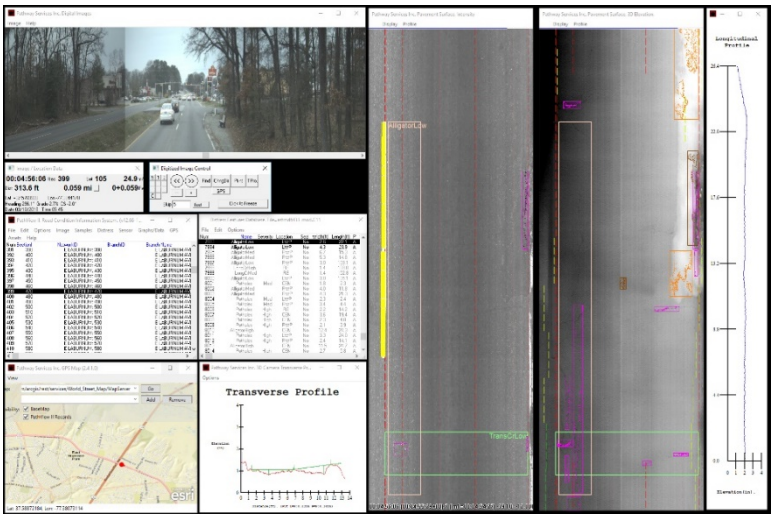
The PathRunner system captures 2D and 3D images of the roadway surface from which pavement surface distresses are evaluated. During the data collection effort, G&AI extracted pavement distress data from georeferenced digital images and rutting measurements from transverse profile measurement to determine PCI values. This process involves four distinct steps:

1. **AutoCrack Software** – This software detects cracking in the pavement imagery.
2. **AutoClass Software** – This software classifies the type of cracking detected.
3. **Manual image rating** – G&AI's team of trained and experienced raters review the imagery and identify any distress types that the automated crack detection and classification software did not observe or incorrectly identified. Performing this manual image rating is considered the Quality Control (QC) review assuring detailed accuracy and completeness of the ratings.
4. **Quality Assurance (QA) rating** – An independent team of G&AI's raters and project engineers perform a systematic QA review of the rated data to ensure proper evaluation of the collected imagery prior to import into PAVER.



Steps 1 and 2: ***Initial Automated Crack Detection and Rutting Analyses***

The QC and QA ratings are the most important steps in the project. G&AI uses the PathView software for evaluating distresses using both automated algorithms and manual supplemental rating. All QC/QA is performed by highly trained and experienced engineers and technicians using PathView. The same software system has been used for more than 25 state DOTs and several municipal agency pavement condition survey projects and is a well proven review tool.



Steps 3 and 4: ***Manual Rating and QC/QA of Pavements using PathView***

In addition to capturing 2D and 3D imagery from which pavement surface

distresses are evaluated, the PathRunner system also captures high-resolution longitudinal and transverse profiles of the roadway surface at 2mm intervals. The longitudinal profile data are analyzed to determine the IRI values, or the "roughness" of the roadway, and the transverse profiles are used to measure rutting.

5.6 Existing pavement conditions and field observations

The collected pavement survey data were used to calculate a PCI value for each pavement section in the City. Table 5 shows the pavement condition assessment criteria used to analyze the pavement network.

Table 5. City's pavement condition categories.

Category	Typical Distresses and Typical Level of M&R Needed	PCI Range
Good	Longitudinal and transverse cracking and weathering of surface **Preventive maintenance:** *Crack sealing and surface treatments*	86-100
Satisfactory	More extensive longitudinal and transverse cracking and weathering of surface **Preventive maintenance:** *Crack sealing and surface treatments*	71-85
Fair	Extensive longitudinal and transverse cracking, early stage alligator (fatigue) cracking, early stage rutting, and weathering of surface **Global preventive maintenance and localized repairs:** *Localized surface and/or full-depth patching, surface treatments, and thin overlays*	56-70
Poor	More extensive and severe longitudinal and transverse cracking, alligator (fatigue) cracking, rutting, and weathering of surface **Major rehabilitation:** *Localized full-depth patching, mill and overlays, and traditional overlays*	41-55
Very Poor	More extensive and more severe longitudinal and transverse cracking, alligator (fatigue) cracking, rutting, weathering of surface, potholes **Major rehabilitation:** *Full-depth patching, mill and overlays, traditional overlays, and reconstruction*	26-40
Serious	Extensive and severe failure of pavement surface **Major rehabilitation:** *Reconstruction*	11-25
Failed	Complete failure of pavement surface **Major rehabilitation:** *Reconstruction*	0-10

At the time of G&AI's inspection, the City's pavements were found to be in overall "satisfactory" condition and have an average PCI of 81. The condition distribution of the City's pavements at the time of inspection is shown in Figure 10, and detailed condition maps can be found in Appendix A.

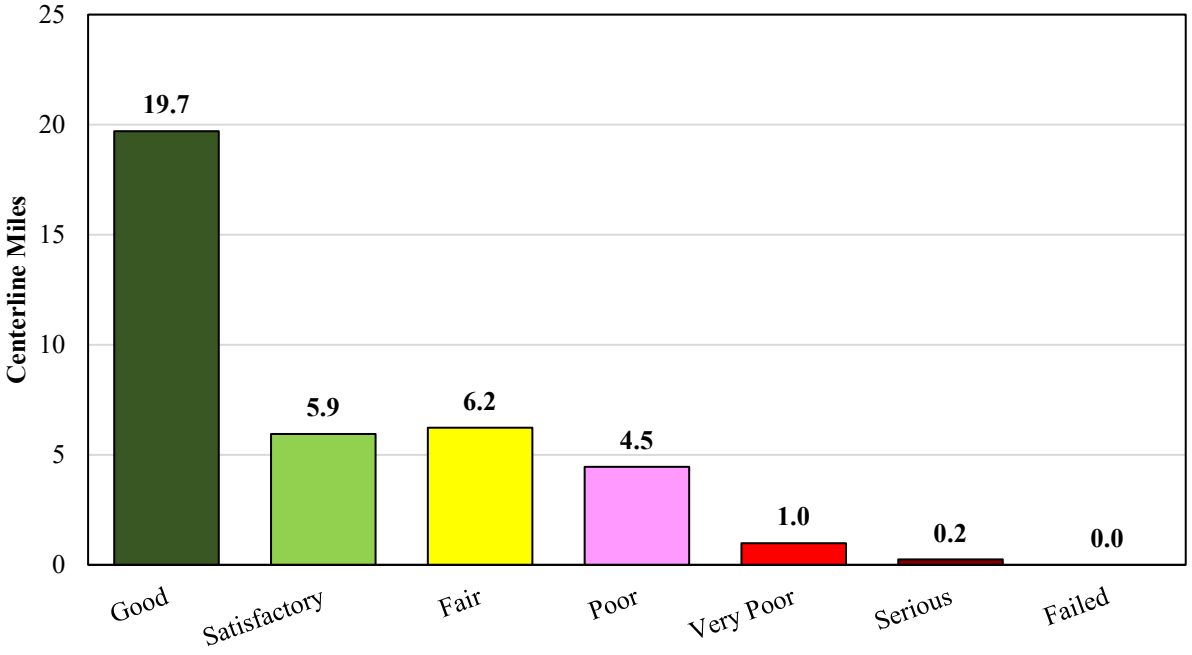


Figure 10. City's roadway pavement condition distribution by PCI category.

Pavement condition data summarized by pavement ranks and surface types are presented in the following two tables, respectively.

Table 6. Roadway summary condition data by pavement rank.

Rank	Centerline Miles	Lane Miles	Area (SY)	PCI	IRI
Primary, P	6.7	17.7	134,872	89	201
Secondary, S	30.8	62.0	477,083	79	259
Total	**37.6**	**79.7**	**611,955**	**81**	**246**

Table 7. Roadway summary condition data by pavement surface type.

Surface Type	Centerline Miles	Lane Miles	Area (SY)	PCI	IRI
Asphalt, AC	35.5	75.2	576,173	80	246
Concrete, PCC	2.1	4.6	35,782	91	251
Total	**37.6**	**79.7**	**611,955**	**81**	**246**

The causes of pavement deterioration as quantified by the PCI may be divided into three general categories:

- Vehicle load related.
- Climate/durability related.
- Other (construction defects and material issues).

Pavement deterioration and ultimate failure is a complex process that often involves a combination of several deterioration mechanisms working together. The deterioration observed on the City's pavements was caused primarily by a mixture of load- and climate-related distresses. Vehicle load-related distresses, including alligator cracking and rutting, were evident on some of the City's roadways and accounted for most of the distress negatively impacting overall roadway conditions. In addition, climate-related distresses, including longitudinal and transverse cracking and block cracking, were found across the City's pavement inventory.

In practice, visually observed pavement distresses collected during a network-level condition survey are used to determine the likely mechanism(s) contributing to the deterioration of a roadway. However, prior to developing a specific M&R strategy, the root cause of pavement deterioration should be determined. Determining the root cause of pavement deterioration may be accomplished through an appropriate combination of traffic load analyses, drainage investigations, structural testing, coring, and material testing.

For example, vehicle load-related distresses such as alligator cracking may be addressed through load analyses and material testing. Contributing root causes may range from the roadway consistently exposed to loads in excess of its design loading to the pavement section having simply reached the end of its design life. Climate/durability-related distresses, such as transverse cracking, may result from a combination of freeze/thaw cycling and oxidation (embrittlement) of the asphalt layer. The cause(s) of "other" distresses may be determined through a combination of coring, boring, and material testing.

In addition to PCI values, IRI values were determined for each of the City's roadways. IRI values, reported in inches per mile, describe the amount of roughness in both wheel paths over a given length of pavement. The IRI is a standard measure of roughness used worldwide. The City's IRI assessment scale is shown in Table 8.

Table 8: City's IRI assessment criteria.

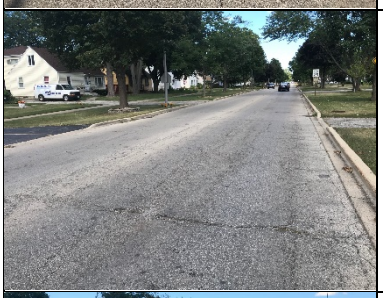
Category	IRI Value
Smooth	0-200
Marginal	201-400
Rough	>401

At the time of G&AI's inspection, the City's pavements were found to be in overall "marginally rough" condition, with an average IRI of 246. Detailed condition maps can be found in Appendix A.

It is worth noting that IRI and PCI values do not necessarily correlate with one another. A roadway can ride well yet still be structurally deficient and in need of major M&R, and vice versa. For example, asphalt-surfaced roadways supported by structurally adequate base (e.g., crushed rock) and subgrade (e.g., existing soil) layers may exhibit extensive cracking in the asphalt surface layer due to fatigue failure of the asphalt. In situations such as these, removal of the existing asphalt layer and replacement with a thicker layer may be enough to rehabilitate the pavement. Conversely, a roadway that rides poorly may be structurally adequate and may only require minimal rehabilitation. Poor construction practices may unfortunately lead to roughness being "built into" an otherwise structurally adequate roadway at the time of construction. Roadways exhibiting this type of roughness may require grinding and/or an additional surface course to remedy the issue.

5.7 Example pavement conditions through the City

Figure 11 illustrates a variety of pavement conditions observed throughout the City during the pavement condition survey. The figure includes PCI and IRI values for each pavement section along with observed distress types and recommended M&R.

	Location + History	PCI *(IRI)*	Recommended M&R Activity (Typical)
	Medill Ave. *(Section 20)* *Last resurfacing date 2015*	92 *(173)*	Preventive maintenance *Seal joints between pavement and curb and gutter.*
	Village Dr. *(Section 70)* *Last resurfacing date 2000*	73 *(226)*	Preventive maintenance *Seal cracks as well as paving lane joint and joints between pavement and curb and gutter + surface treatment.*
	Roberta Ave. *(Section 160)* *Last resurfacing date 2004*	68 *(179)*	Preventive maintenance *Seal cracks as well as paving lane joint and joints between pavement and curb and gutter + edge patching + surface treatment.*
	Fullerton Ave. *(Section 70)* *Last resurfacing date 1998*	49 *(195)*	Major M&R *Localized structural patching + cold mill and overlay*
	Palmer Ave. *(Section 10)* *Last resurfacing date 2007 (Verify)*	36 *(494)*	Major M&R *Localized structural patching + cold mill and overlay or reconstruction*

	Niemeyer Ct. *(Section 10)* *Last resurfacing date 2003*	24 *(261)*	Major M&R *Localized structural patching + cold mill and overlay or reconstruction*
	44th Ave. *(Section 5)* *Last resurfacing date 2012 (Verify)*	23 *(257)*	Major M&R *Localized structural patching + cold mill and overlay or reconstruction*

Figure 11. Pavement conditions observed during PCI inspection.

A distress observed on some of the City's pavements was unsealed paving lane seams (cracks), as shown in several of the photos above. If left unsealed, paving lane seams can deteriorate rapidly and significantly reduce the life of the pavement. By sealing paving lane seams immediately following paving and routinely resealing them, this type of deterioration may be minimized or prevented.

5.8 Summary

This section presented an overview of the methodology used to perform the 2019/2020 pavement condition survey and the results of the survey. A state-of-the-art PathRunner pavement condition survey system was deployed to collect pavement imagery and profile data on the City's roadways. The collected data were analyzed, and PCI values and IRI values were determined for each of the roadways surveyed. The City's roadways were found to be in overall "satisfactory" condition with an average PCI of 81. Furthermore, the City's roadways were found to be in overall "marginally rough" condition, with an average IRI of 246 inches/mile.

6 MAINTENANCE AND REHABILITATION FUNDING ANALYSES

6.1 Foreword

This section discusses the third task of this project: M&R needs analyses. This section discusses the results of the analyses performed for the City's consideration, assumptions which shaped the analyses, and results of the analyses. The recommendations of these analyses are provided in this section and in Appendixes A through D.

6.2 Objective

The M&R Planning module in PAVER provides *raw recommendations* of when and where pavement M&R activities are needed and approximately how much they will cost. The City should use these raw recommendations to develop programmatic M&R plans for the City's roadway network. These programmatic plans may be generated based on anticipated annual funding or with the goal of maintaining or achieving a desired pavement condition.

For the City's roadways, two preliminary M&R analyses were performed:

- A series of **ten-year analyses** was performed to determine the impact of funding levels on overall roadway conditions. The analyses included:
  - Assessing the impact of the City's existing funding level.
  - Determining the annual funding level needed to maintain the City's existing overall average roadway condition.
  - Determining the annual funding level needed to eliminate the City's major M&R backlog over a ten-year period.
- A **one-year analysis** was performed to identify pavements that may benefit from preventive maintenance activities, such as crack sealing or localized patching. Only pavements with a PCI of 65 or better were considered in this analysis.

The purpose of these analyses is to determine the appropriate funding level needed to manage the City's roadways and provide general recommendations that will assist the City in developing and evolving its M&R program. Additional analyses may be performed to assess either the impact of anticipated funding levels or to determine the funding levels needed to achieve a desired overall, network-average condition.

6.3 Assumptions

The M&R analyses were based on the results of the fall of 2019 and spring of 2020 Pavement Condition Index (PCI) survey and the pavement inventory and historical work records provided by the City and stored in the City's PAVER database. The following assumptions were made in our analyses.

- Pavements considered candidates for preventive maintenance were determined based on their overall PCI values and the distresses observed on the pavement at the time of inspection. Pavements with PCI values of 65 or better were considered candidates for preventive maintenance.
- Recommended preventive maintenance policies for asphalt and concrete pavements are shown in Appendix D Tables D-1 and D-2, respectively. The policy tables show what type of repair activity should be applied to each distress type and severity combination. Table D-3 presents estimated unit costs for the maintenance activities recommended in tables D-1 and D-2.

- A pavement deterioration rate of roughly two points per year was used based on the performance of the City's resurfaced roads, which equates to a pavement life between resurfacing or reconstruction of approximately twenty years. This deterioration rate will be refined as more historical work records are entered in PAVER and more PCI inspection data become available over time.
- A Critical PCI value (the PCI value below which a pavement is considered a candidate for major M&R) of 55 was assumed for all pavement sections. Pavements at or below the Critical PCI during the ten-year analysis period triggered major M&R recommendations. *(Note: A PCI value of 55 has been initially chosen for all the City's roadways as this numerical value straddles the "Fair" to "Poor" condition categories in the City's PCI scale. Performing major M&R on pavements that are closer to a PCI of 55, rather than waiting for these pavements to deteriorate further is generally more cost effective.)*
- Unit costs used in these analyses were based on bid tabs provided by the City and by costs reported by nearby municipalities.
    - ✓ Asphalt resurfacing ranged from approximately $1.50 to more than $6.50 a square foot depending roadway condition (i.e., lower PCI values may result in more patching and thicker resurfacing). Reconstruction was set at $12.00 a square foot.
    - ✓ Concrete slab replacement costs ranged from $5.00 to $15.00 a square foot depending on roadway condition (i.e., lower PCI values result in more slab replacement). Reconstruction was set at $20.00 a square foot.
- All analyses began in the fall of 2020 (November 1 start date), and an inflation rate of 3% was assumed.

6.4 Results

The results of the PAVER M&R analyses indicate that the City's current funding level of approximately $2.25M/Year is adequate to maintain and continue to improve the overall condition of the City's roadways over the next ten years. The City has invested in proactive infrastructure and roadway improvements since 1997, and the City's current overall roadway conditions positively reflect the strategic investments made over the past two decades.

The City's current overall average PCI value is 81, which is one of the highest measured within the region. Maintaining a roadway network at a PCI value near 80 provides a high level of service for City residents and enables the City to maintain its roadway network a relatively low cost. By maintaining roadways in satisfactory condition, the City can focus on proactively maintaining its roadways through more cost-effective pavement preservation activities rather than spending significantly more resurfacing or reconstructing failed roadways.

Appendix A maps A-5 and A-6 present major M&R recommendations. Map A-5 shows all roadways recommended for major M&R over the upcoming ten years based on the City's existing funding level. Map A-6 shows all roadways recommended for major M&R over the upcoming ten years given an unlimited budget. The maps show which roadways are recommended each year by PAVER. These recommendations do not consider geographic proximity. Consequently, these recommendations should be grouped into practical projects during the City's planning process.

Map A-7 shows all roads that are candidates for preventive maintenance, such as crack sealing and localized patching. While crack sealing can be an effective treatment for preserving roadways in good condition, its utility diminishes when applied to roadways that are already in poor condition or are exhibiting signs of structural failure.

Appendix B presents tabular data showing the estimated cost to repair each of the roads recommended for major M&R over the next ten years based on the City's existing funding level. Appendix C presents similar data assuming unlimited funding. *The costs presented in Appendixes B and C should be considered rough estimates only and should not be considered engineering estimates.* These costs are based on a simple relationship between predicted PCI value and typical level of major M&R. Unit costs used in developing these relationships were based on bid tabs provided by the City and by costs reported by neighboring municipalities.

Appendix E presents tabular data showing one-year estimated costs to apply preventive maintenance to each of the candidate roadways (i.e., roadways with PCI values of 65 or better). The total one-year preventive maintenance cost is estimated to be approximately $256,000, as shown in Table 9. *The estimated costs presented in Appendix E should be considered rough estimates based on the assumed unit costs only and should not be considered engineering estimates.*

Table 9. Preventive Maintenance Summary

Maintenance Type	Quantity	Units	Est. Cost
Crack Sealing - AC	68,307	FT	$68,306
Patching - AC Deep	8,721	SF	$95,931
Patching - PCC Partial Depth	97	SF	$681
Crack Sealing - PCC	2,149	FT	$3,224
Joint Seal (Localized)	38,590	FT	$57,885
Patching - AC Shallow	758	SF	$4,167
Patching - PCC Full Depth	863	SF	$25,889
		Total:	**$256,082**

7 SUMMARY AND RECOMMENDATIONS

7.1 Summary

A pavement condition survey was performed in the fall of 2019 and spring of 2020 on the City's roadways. The results of the survey provide a snapshot of roadway conditions at the time of the survey. PAVER was implemented for the City's roadways and was populated with collected pavement condition data and available M&R history data provided by the City.

For the City to get the most return on investment out of PAVER, the system must be considered a living entity and be updated regularly with M&R activities as they are performed, M&R unit cost data, and routinely collected pavement condition data. With such attention, PAVER becomes a repository of accurate, up-to-date data and can aid the City in more cost-effectively programming M&R funding and objectively analyzing the true cost-effectiveness of presently employed M&R activities.

Ten-year M&R funding analyses were performed on the City's roadways using PAVER to: 1) evaluate the adequacy of the City's existing funding level, 2) estimate the funding level needed to maintain the City's existing roadway conditions, and 3) estimate the funding level needed to eliminate the City's backlog of major M&R.

It was determined that the City's existing funding level for major M&R is adequate to maintain the current condition of the City's roadway pavements. To maintain existing conditions, a slight increase in funding will likely be needed.

Based on this initial set of PCI data collection and analysis on the City's roadways, G&AI respectfully offers the following broad recommendations.

7.2 Recommendations

7.2.1 Implement pavement preservation techniques

As discussed in Section 2.6, preventive maintenance activities, such as crack sealing, localized patching, and surface treatments, can cost-effectively extend the life of a pavement. The City should incorporate these strategies into its M&R planning.

The City does not appear to have an active crack sealing program for its roadways. Moisture penetrates unsealed cracks and compromises the base structure of the pavement. Freeze/thaw cycling exacerbates the damage. Sealing cracks on roadways that are in relatively good condition is a simple, cost-effective method for pavement preservation. Crack sealing is a preventive maintenance activity and should not be applied on roadways that require major M&R.

Furthermore, the City should focus on applying routine preventive maintenance to newly resurfaced or reconstructed roadways. It was observed that some paving lane seams throughout the City had not been sealed. Like crack sealing, sealing the paving lane seams is a simple method for pavement preservation, and it may be included in construction specifications.

7.2.2 Determine when pavements should be reconstructed rather than resurfaced

As the City's asphalt-surfaced pavements age and are resurfaced multiple times, the performance of successive resurfacing projects will diminish. These "diminishing returns" occur because the sublayers of the pavement (the pavement structure below the asphalt surface) continue to deteriorate due to moisture

infiltration, freeze-thaw damage, and damage due to vehicular loading. The M&R history and performance of resurfaced roadways should be closely tracked to determine the optimal number of resurfacing projects that may be performed prior to reconstructing the pavement.

7.2.3 Perform regular pavement condition inspections – every three years

To capitalize on the pavement condition survey and better track the condition of its pavements, the City should continue to perform PCI surveys on a regular, three-year cycle. Doing so will enable the City to:

1. Better track the deterioration of its pavements over time,
2. Identify pavement deterioration trends and use these trends to better predict future pavement conditions and then strategically apply M&R funding, and
3. Assess and track the effectiveness of its pavement preservation and major M&R activities.

The deterioration trends developed for this project were based on only one set of inspection data. Additional inspection data will help validate these trends and will improve forecasts, which may impact forecasted pavement conditions and recommended future M&R funding needs.

7.2.4 Routinely update PAVER

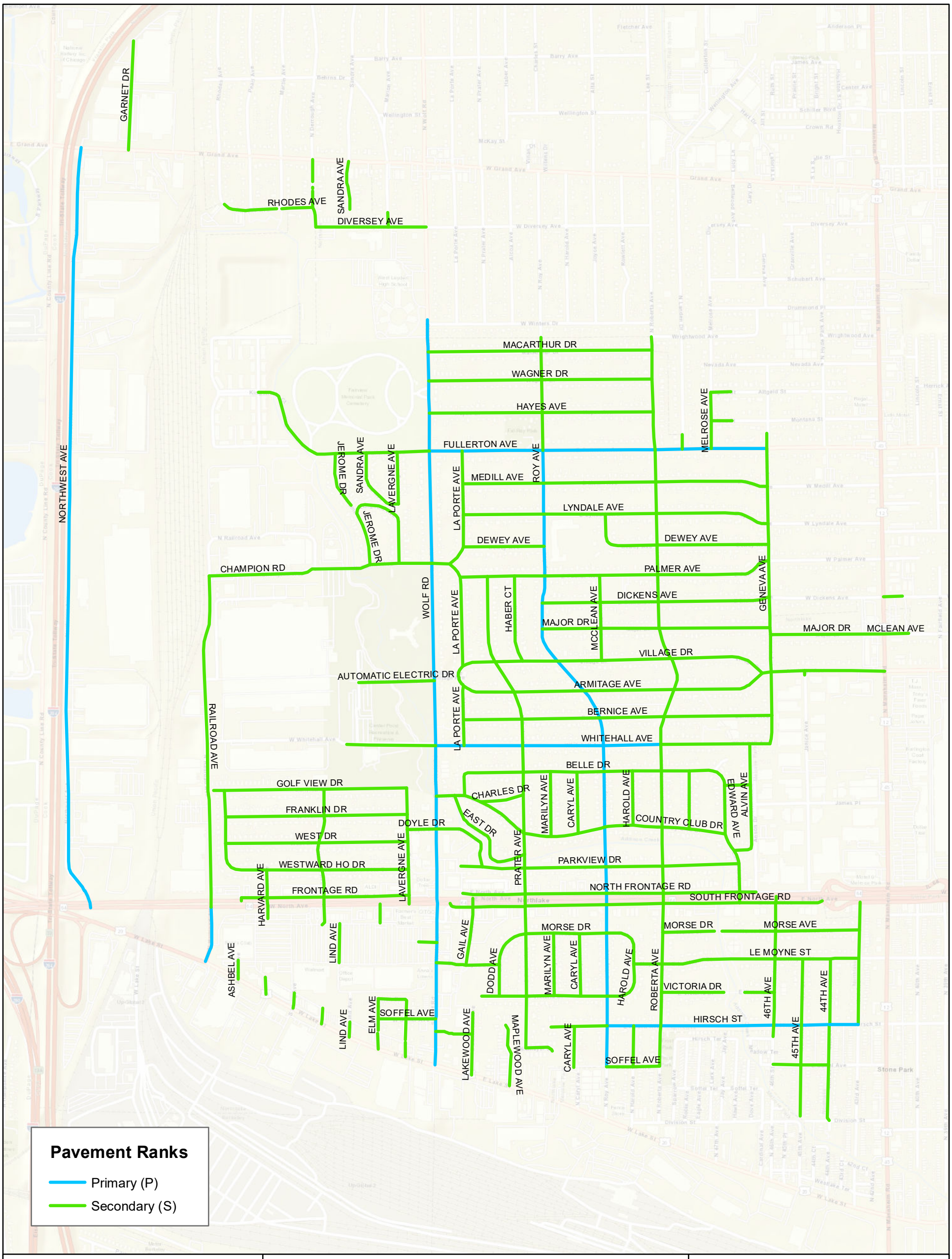
PAVER should be updated annually following the paving season to capture major M&R activities, routine maintenance activities, and pavement inventory changes (new roadways, jurisdictional changes, realignments). PAVER relies on updated inventory and work history data in order to generate meaningful recommendations.

7.2.5 Prioritize existing M&R funding to maximize shared benefit

Currently, the City's roadway M&R funding needs exceed available funding. The City should focus major M&R activities on its most trafficked roadways. Doing so will maximize the overall shared benefit of the funds spent.

APPENDIX A – PAVEMENT INVENTORY, CONDITION, AND RECOMMENDED M&R MAPS

Map A-1: Pavement Ranks
Map A-2: Pavement Surface Types
Map A-3: Pavement Condition Index (PCI) values
Map A-4: International Roughness Index (IRI) values
Map A-5: Ten-year major M&R recommendations – *Recommendations assuming current funding*
Map A-6: Ten-year major M&R recommendations – *Recommendations assuming unlimited funding*
Map A-7: Pavement preservation candidates – *Current recommendations*



Feet
0 750 1,500

Map A-1:
Pavement Ranks

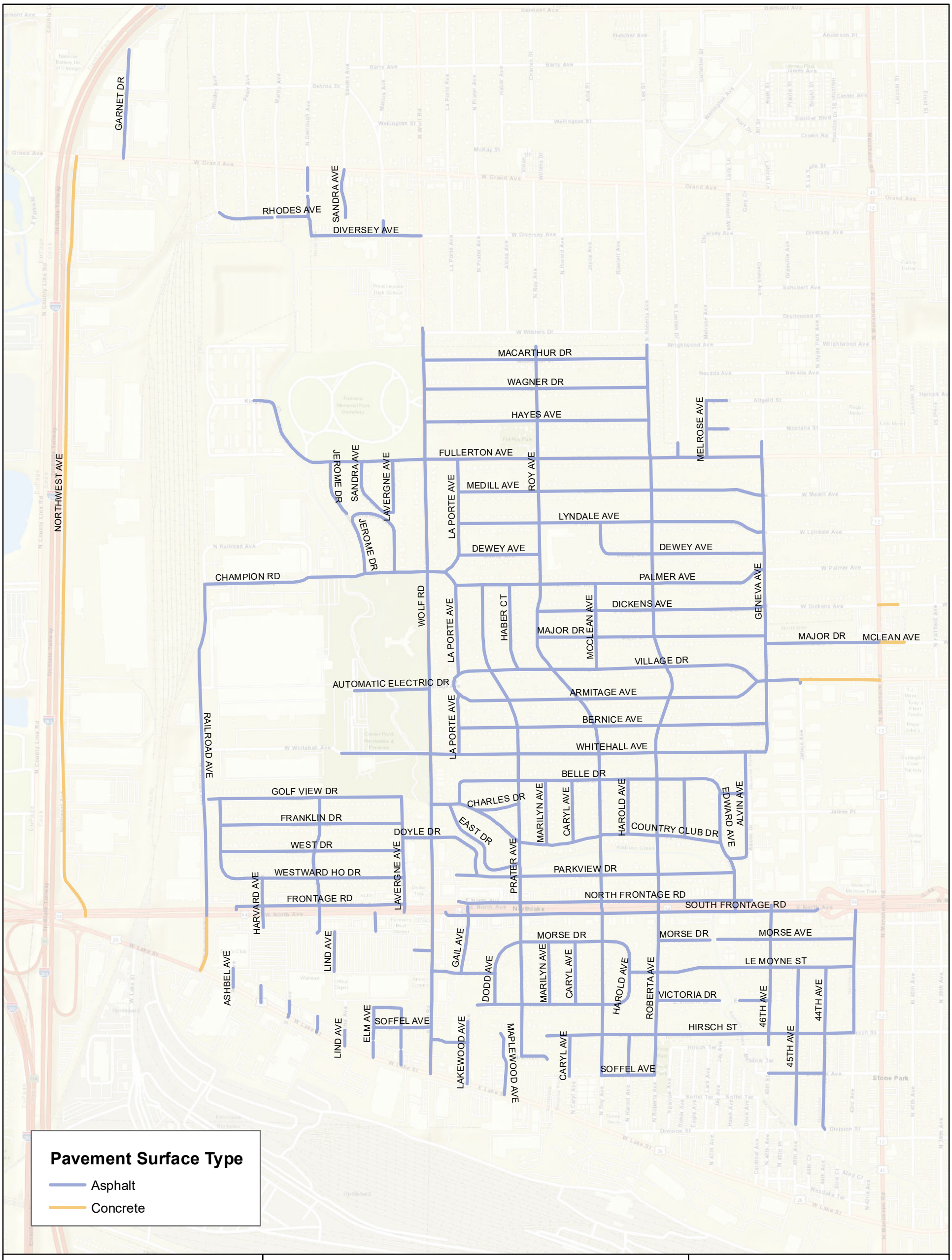
Northlake, Illinois

Pavement Management Program

2020

Gorrondona & Associates, Inc.

Urban GIS
your world, your way



Northlake, Illinois

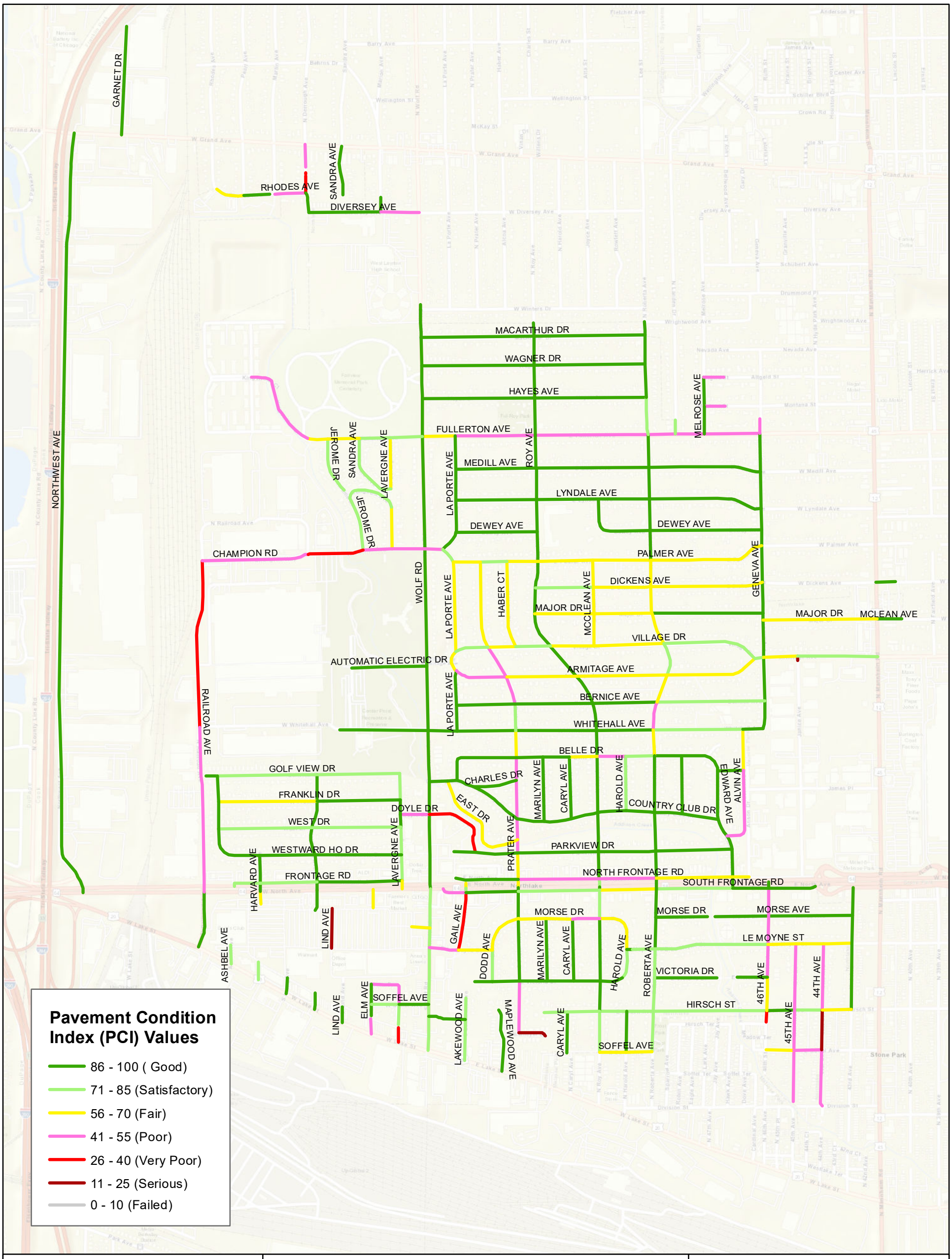
Pavement Management Program

2020

Map A-2:
Pavement Surface Types

Gorrondona & Associates, Inc.

Urban GIS
your world, your way



Feet
0 750 1,500

Map A-3:
Pavement Condition Index (PCI) Values

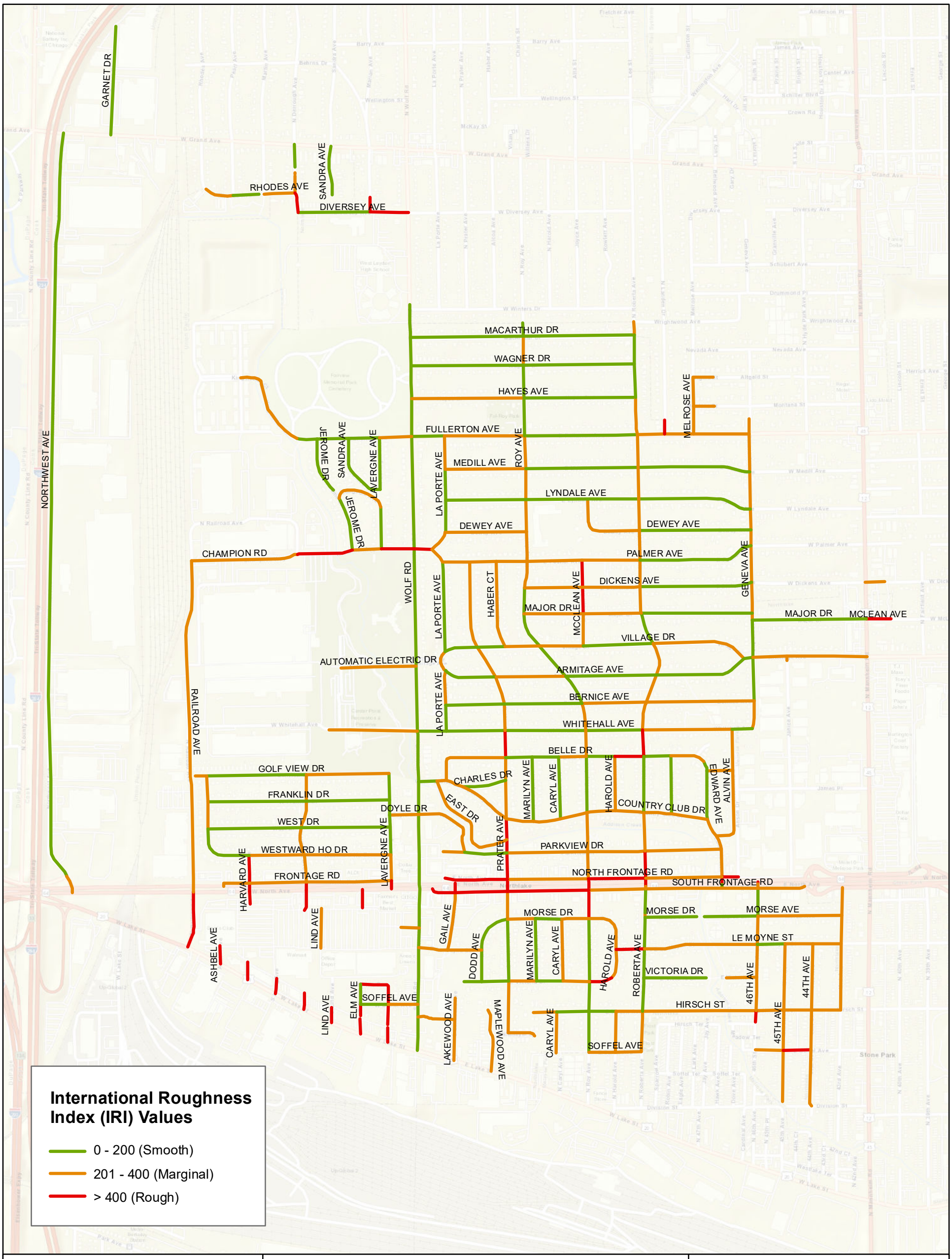
Northlake, Illinois

Pavement Management Program

2020

Gorrondona & Associates, Inc.

Urban GIS
your world, your way



Northlake, Illinois

Pavement Management Program

2020

Map A-4:
International Roughness Index (IRI) Values

Gorrondona & Associates, Inc.

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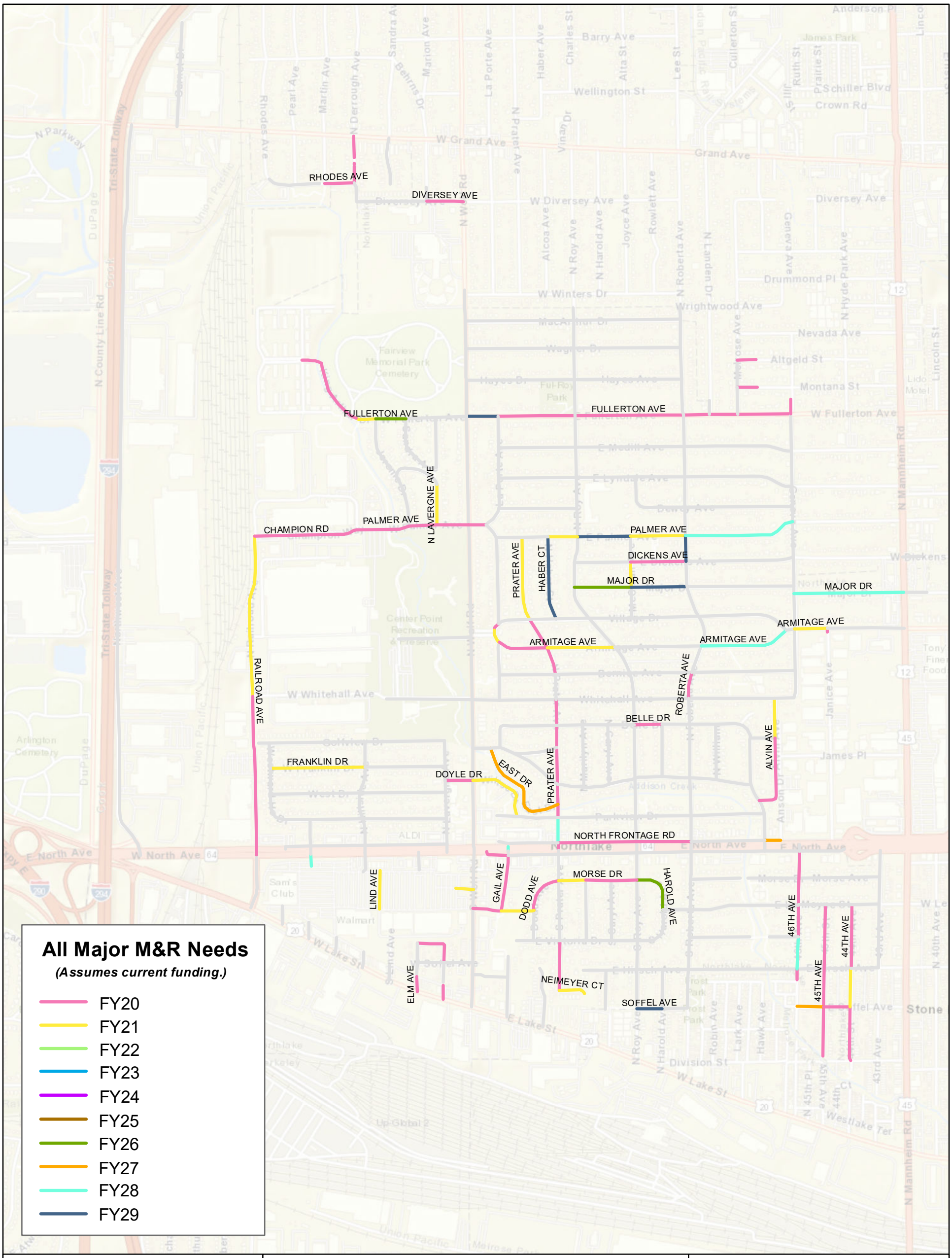

Northlake, Illinois

Pavement Management Program

2020

Map A-5:
All Major M&R Needs
(Assumes current funding.)

Gorrondona & Associates, Inc.

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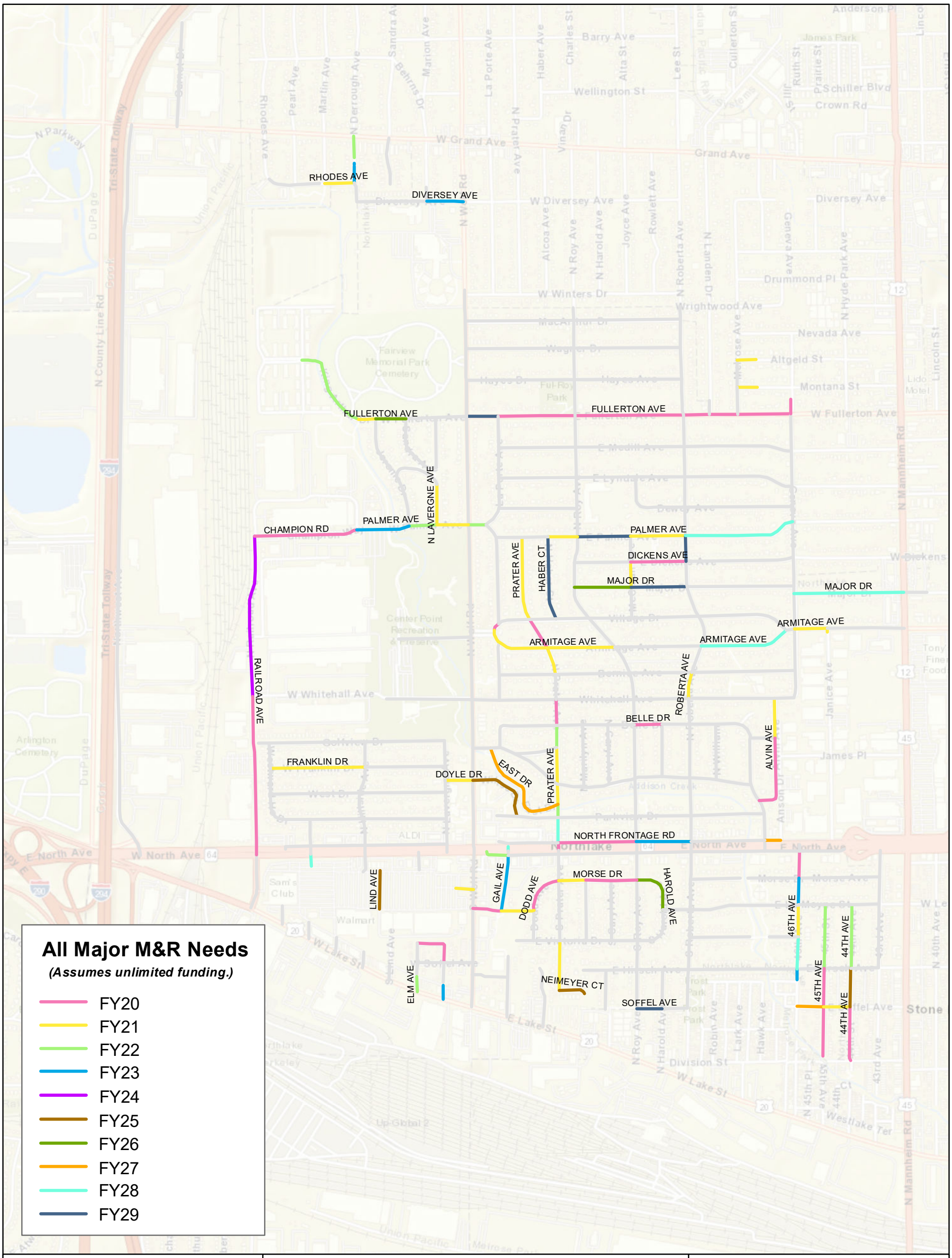
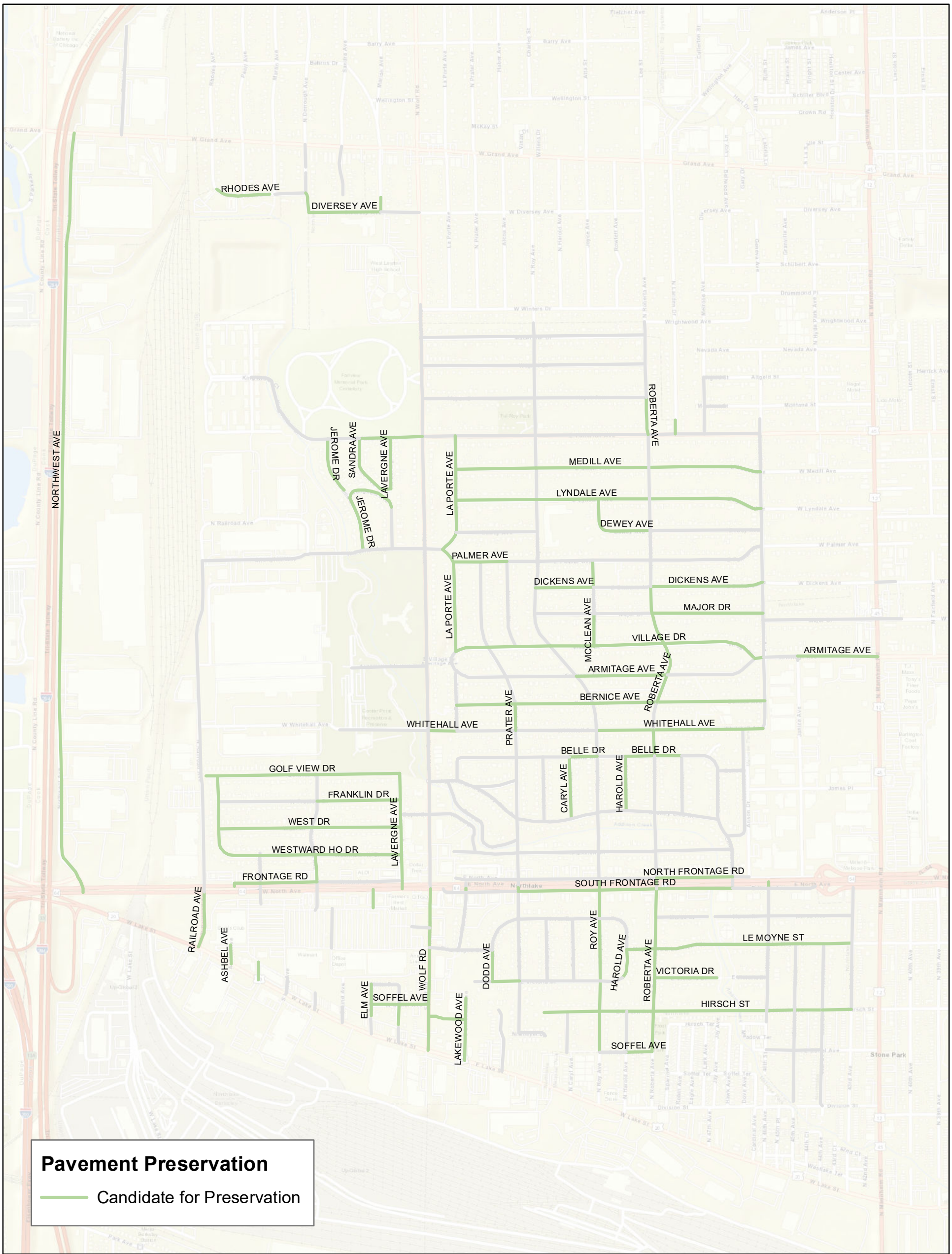

RHODES AVE
DIVERSEY AVE
FULLERTON AVE
FULLERTON AVE
CHAMPION RD
PALMER AVE
N LAVERGNE AVE
PALMER AVE
DICKENS AVE
MAJOR DR
MAJOR DR
PRATER AVE
HABER CT
ARMITAGE AVE
ARMITAGE AVE
ARMITAGE AVE
ROBERTA AVE
RAILROAD AVE
BELLE DR
ALVIN AVE
FRANKLIN DR
DOYLE DR
EAST DR
PRATER AVE
NORTH FRONTAGE RD
LIND AVE
GAIL AVE
DODD AVE
MORSE DR
HAROLD AVE
46TH AVE
45TH AVE
44TH AVE
44TH AVE
ELM AVE
NEIMEYER CT
SOFFEL AVE
All Major M&R Needs
(Assumes unlimited funding.)
FY20
FY21
FY22
FY23
FY24
FY25
FY26
FY27
FY28
FY29
Feet
0
750
1,500
Map A-6:
All Major M&R Needs
(Assumes unlimited funding.)
Northlake, Illinois
Pavement Management Program
2020
Gorrondona & Associates, Inc.
Urban GIS
your world, your way



Feet
0 750 1,500

Map A-7:
Pavement Preservation Candidates

Northlake, Illinois

Pavement Management Program

2020

Gorrondona & Associates, Inc.

Urban GIS
your world, your way

APPENDIX B – TABULATED TEN-YEAR MAJOR M&R RECOMMENDATIONS AND ESTIMATED COSTS – *ASSUMING CURRENT FUNDING*

Pavement ID	Road Name	From	To	Area (SF)	PCI	Year	Cost
NTHL::44TH AVE::03	44TH AVENUE	DIVISION STREET	SOFFEL AVENUE	17,305	49	2020	$36,348
NTHL::44TH AVE::10	44TH AVENUE	HIRSCH STREET	LE MOYNE STREET	19,971	43	2020	$101,860
NTHL::45TH AVE::10	45TH AVENUE	SOFFEL AVENUE	END	15,639	51	2020	$23,465
NTHL::45TH AVE::20	45TH AVENUE	SOFFEL AVENUE	HIRSCH STREET	12,166	50	2020	$19,470
NTHL::45TH AVE::30	45TH AVENUE	HIRSCH STREET	LE MOYNE STREET	20,269	44	2020	$93,247
NTHL::46TH AVE::10	46TH AVENUE	START	HIRSCH STREET	3,475	37	2020	$22,591
NTHL::46TH AVE::30	46TH AVENUE	VICTORIA DRIVE	LE MOYNE STREET	10,154	49	2020	$21,328
NTHL::46TH AVE::40	46TH AVENUE	LE MOYNE STREET	MORSE AVENUE	8,537	40	2020	$55,496
NTHL::46TH AVE::50	46TH AVENUE	MORSE AVENUE	SOUTH FRONTAGE ROAD	8,611	50	2020	$13,780
NTHL::ALVN AV::10	ALVIN AVENUE	EDWARD AVENUE	BELLE DRIVE	24,580	49	2020	$51,628
NTHL::BLL DR::50	BELLE DRIVE	ROY AVENUE	HAROLD AVENUE	8,745	51	2020	$13,121
NTHL::CHPN RD::10	CHAMPION ROAD	RAILROAD AVENUE	PALMER AVENUE	32,630	51	2020	$48,958
NTHL::DCKNS AVE::20	DICKENS AVENUE	MCCLEAN AVENUE	ROBERTA AVENUE	17,638	54	2020	$26,464
NTHL::DDD AVE::20	DODD AVENUE	LE MOYNE STREET	PRATER AVENUE	13,839	54	2020	$20,763
NTHL::DRRGH AVE::20	DERROUGH AVENUE	RHODES AVENUE	END	5,492	28	2020	$42,346
NTHL::DRRGH AVE::30	DERROUGH AVENUE	START	GRAND AVENUE	6,895	44	2020	$31,720
NTHL::DVRSY AVE::20	DIVERSEY AVENUE	MARION AVENUE	WOLF ROAD	11,603	41	2020	$70,784
NTHL::DYL DR::10	DOYLE DRIVE	LAVERGNE AVENUE	WOLF ROAD	8,760	48	2020	$22,780
NTHL::ELM AV::05	ELM AVENUE	LAKE STREET	END	4,680	40	2020	$30,422
NTHL::FLLRTN AVE::100	FULLERTON AVENUE	ROBERTA AVENUE	GENEVA AVENUE	16,843	46	2020	$60,642
NTHL::FLLRTN AVE::60	FULLERTON AVENUE	LA PORTE AVENUE	ROY AVENUE	24,490	49	2020	$51,438
NTHL::FLLRTN AVE::70	FULLERTON AVENUE	ROY AVENUE	ROBERTA AVENUE	34,466	47	2020	$106,859
NTHL::FLLRTN AVE::80	FULLERTON AVENUE	ROBERTA AVENUE	LANDEN DRIVE	8,280	44	2020	$38,092
NTHL::FLLRTN AVE::90	FULLERTON AVENUE	LANDEN DRIVE	MELROSE AVENUE	8,919	45	2020	$36,570
NTHL::GL AVE::10	GAIL AVENUE	LE MOYNE STREET	SOUTH FRONTAGE ROAD	17,846	36	2020	$116,004
NTHL::GNV AVE::110	GENEVA AVENUE	FULLERTON AVENUE	END	4,576	50	2020	$6,866
NTHL::JNC AVE::10	JANICE AVENUE	START	ARMITAGE AVENUE	1,229	23	2020	$12,852
NTHL::KNG RTR DR::10	KING ARTHUR DRIVE	START	FULLERTON AVENUE	27,820	45	2020	$114,073
NTHL::L MYN ST::40	LE MOYNE STREET	WOLF ROAD	GAIL AVENUE	9,009	51	2020	$13,516
NTHL::LTGD AVE::10	ALTGELD AVENUE	MELROSE AVENUE	END	6,240	49	2020	$13,106
NTHL::MNTN AVE::10	MONTANA AVENUE	MELROSE AVENUE	END	6,240	46	2020	$22,467
NTHL::MRS DR::20	MORSE DRIVE	MARILYN AVENUE	CARYL AVENUE	8,023	54	2020	$12,037
NTHL::MRS DR::30	MORSE DRIVE	CARYL AVENUE	ROY AVENUE	8,317	50	2020	$13,311
NTHL::NRTH FR RD::20	NORTH FRONTAGE ROAD	PRATER AVENUE	ROY AVENUE	24,830	51	2020	$37,255

Pavement ID	Road Name	From	To	Area (SF)	PCI	Year	Cost
NTHL::NRTH FR RD::30	NORTH FRONTAGE ROAD	ROY AVENUE	ROBERTA AVENUE	17,394	39	2020	$113,068
NTHL::PLMR AVE::10	PALMER AVENUE	CHAMPION ROAD	JEROME DRIVE	16,900	34	2020	$109,857
NTHL::PLMR AVE::20	PALMER AVENUE	JEROME DRIVE	N LAVERGNE AVENUE	8,921	42	2020	$49,959
NTHL::PLMR AVE::30	PALMER AVENUE	N LAVERGNE AVENUE	WOLF ROAD	13,090	47	2020	$40,585
NTHL::PLMR AVE::40	PALMER AVENUE	WOLF ROAD	LA PORTE AVENUE	7,130	42	2020	$39,930
NTHL::PRTR AVE::10	PRATER AVENUE	NEIMEYER COURT	VICTORIA DRIVE	15,800	48	2020	$41,086
NTHL::PRTR AVE::100	PRATER AVENUE	CHARLES DRIVE	BELLE DRIVE	7,051	45	2020	$28,910
NTHL::PRTR AVE::110	PRATER AVENUE	BELLE DRIVE	WHITEHALL AVENUE	8,130	52	2020	$12,199
NTHL::PRTR AVE::130	PRATER AVENUE	BERNICE AVENUE	ARMITAGE AVENUE	8,800	49	2020	$18,483
NTHL::PRTR AVE::140	PRATER AVENUE	ARMITAGE AVENUE	VILLAGE DRIVE	10,650	50	2020	$15,979
NTHL::PRTR AVE::50	PRATER AVENUE	NORTH AVENUE	NORTH FRONTAGE ROAD	2,558	54	2020	$3,838
NTHL::PRTR AVE::70	PRATER AVENUE	PARKVIEW DRIVE	EAST DRIVE	4,179	42	2020	$23,406
NTHL::PRTR AVE::80	PRATER AVENUE	EAST DRIVE	COUNTRY CLUB DRIVE	6,283	48	2020	$16,340
NTHL::PRTR AVE::90	PRATER AVENUE	COUNTRY CLUB DRIVE	CHARLES DRIVE	11,747	49	2020	$24,674
NTHL::RBRT AVE::130	ROBERTA AVENUE	WHITEHALL AVENUE	BERNICE AVENUE	8,516	47	2020	$26,403
NTHL::RHDS AVE::30	RHODES AVENUE	MARTIN AVENUE	DERROUGH AVENUE	9,489	48	2020	$24,674
NTHL::RLRD AVE::20	RAILROAD AVENUE	NORTH AVENUE	WHITEHALL AVENUE	61,934	52	2020	$92,925
NTHL::RMTG AVE::20	ARMITAGE AVENUE	LA PORTE AVENUE	PRATER AVENUE	15,886	49	2020	$33,367
NTHL::S LVRN AVE::10	S LAVERGNE AVENUE	ELM AVENUE	SOFFEL AVENUE	14,315	52	2020	$21,478
NTHL::S LVRN AVE::30	S LAVERGNE AVENUE	LAKE STREET	END	4,368	35	2020	$28,394
NTHL::SFFL AV::40	SOFFEL AVENUE	45TH AVENUE	44TH STREET	8,411	49	2020	$17,666
NTHL::STH FTG RD::10	SOUTH FRONTAGE ROAD	NORTH AVENUE	GAIL AVENUE	7,491	43	2020	$38,205
NTHL::VLLG DR::10	VILLAGE DRIVE	ARMITAGE AVENUE	LA PORTE AVENUE	2,581	52	2020	$3,872
NTHL::44TH AVE::05	44TH AVENUE	SOFFEL AVENUE	HIRSCH STREET	12,187	18	2021	$150,630
NTHL::ALVN AV::20	ALVIN AVENUE	BELLE DRIVE	WHITEHALL AVENUE	12,627	55	2021	$19,514
NTHL::BRKHS AVE::10	BRICKHOUSE AVENUE	START	WOLF ROAD	5,538	55	2021	$8,558
NTHL::FLLRTN AVE::10	FULLERTON AVENUE	KING ARTHUR DRIVE	JEROME DRIVE	6,252	52	2021	$9,662
NTHL::FRNKLN DR::10	FRANKLIN DRIVE	WESTWARD HO DRIVE	HILLSIDE AVENUE	30,172	52	2021	$46,628
NTHL::L MYN ST::50	LE MOYNE STREET	GAIL AVENUE	DODD AVENUE	10,365	55	2021	$16,018
NTHL::LND AVE::20	LIND AVENUE	START	END	12,066	13	2021	$149,142
NTHL::MCCLN AV::20	MCCLEAN AVENUE	MAJOR DRIVE	DICKENS AVENUE	8,000	55	2021	$12,364
NTHL::MRS DR::10	MORSE DRIVE	PRATER AVENUE	MARILYN AVENUE	8,459	55	2021	$13,072
NTHL::N LVRN AVE::10	N LAVERGNE AVENUE	PALMER AVENUE	LONGFIELD AVENUE	12,774	52	2021	$19,741

Pavement ID	Road Name	From	To	Area (SF)	PCI	Year	Cost
NTHL::NMYR CT::10	NEIMEYER COURT	PRATER AVENUE	END	8,450	19	2021	$104,444
NTHL::PLMR AVE::100	PALMER AVENUE	MCCLEAN AVENUE	ROBERTA AVENUE	17,591	55	2021	$27,184
NTHL::PLMR AVE::80	PALMER AVENUE	HABER COURT	ROY AVENUE	9,382	52	2021	$14,499
NTHL::PRTR AVE::150	PRATER AVENUE	VILLAGE DRIVE	PALMER AVENUE	26,441	55	2021	$40,862
NTHL::RLRD AVE::30	RAILROAD AVENUE	WHITEHALL AVENUE	END	64,496	29	2021	$453,382
NTHL::RMTG AVE::10	ARMITAGE AVENUE	VILLAGE DRIVE	LA PORTE AVENUE	4,134	55	2021	$6,389
NTHL::RMTG AVE::30	ARMITAGE AVENUE	PRATER AVENUE	ROY AVENUE	21,346	52	2021	$32,988
NTHL::RMTG AVE::70	ARMITAGE AVENUE	GENEVA AVENUE	JANICE AVENUE	10,322	52	2021	$15,952
NTHL::WLTS DR::10	WILTSE DRIVE	WOLF ROAD	PARKVIEW DRIVE	22,418	24	2021	$221,084
NTHL::FLLRTN AVE::20	FULLERTON AVENUE	JEROME DRIVE	SANDRA AVENUE	9,596	52	2026	$17,191
NTHL::HRLD AVE::40	HAROLD AVENUE	ROY AVENUE	LE MOYNE STREET	15,908	52	2026	$28,499
NTHL::MJR DR::10	MAJOR DRIVE	ROY AVENUE	MCCLEAN AVENUE	17,980	52	2026	$32,212
NTHL::EST DR::10	EAST DRIVE	COUNTRY CLUB DRIVE	PRATER AVENUE	34,482	54	2027	$63,629
NTHL::NRTH FR RD::50	NORTH FRONTAGE ROAD	EDWARD AVENUE	ANSON DRIVE	5,070	54	2027	$9,356
NTHL::SFFL AV::30	SOFFEL AVENUE	46TH AVENUE	45TH AVENUE	8,514	54	2027	$15,712
NTHL::46TH AVE::20	46TH AVENUE	HIRSCH STREET	VICTORIA DRIVE	10,102	53	2028	$19,200
NTHL::GL AVE::30	GAIL AVENUE	NORTH AVENUE	NORTH AVENUE	1,532	53	2028	$2,912
NTHL::HRVRD AVE::20	HARVARD AVENUE	START	NORTH AVENUE	3,858	53	2028	$7,332
NTHL::MJR DR::40	MAJOR DRIVE	GENEVA AVENUE	MANHEIM ROAD	34,730	53	2028	$66,010
NTHL::PLMR AVE::110	PALMER AVENUE	ROBERTA AVENUE	GENEVA AVENUE	35,457	53	2028	$67,390
NTHL::PRTR AVE::60	PRATER AVENUE	NORTH FRONTAGE ROAD	PARKVIEW DRIVE	8,027	53	2028	$15,256
NTHL::RMTG AVE::50	ARMITAGE AVENUE	ROBERTA AVENUE	ARMITAGE AVENUE	28,548	53	2028	$54,260
NTHL::FLLRTN AVE::50	FULLERTON AVENUE	WOLF ROAD	LA PORTE AVENUE	14,791	53	2029	$28,956
NTHL::HBR CT::10	HABER COURT	VILLAGE DRIVE	PALMER AVENUE	26,365	53	2029	$51,615
NTHL::MJR DR::20	MAJOR DRIVE	MCCLEAN AVENUE	ROBERTA AVENUE	17,821	52	2029	$34,887
NTHL::PLMR AVE::90	PALMER AVENUE	ROY AVENUE	MCCLEAN AVENUE	16,809	53	2029	$32,906
NTHL::RBRT AVE::180	ROBERTA AVENUE	DICKENS AVENUE	PALMER AVENUE	8,205	53	2029	$16,064
NTHL::SFFL AV::25	SOFFEL AVENUE	ROY AVENUE	HAROLD AVENUE	8,060	53	2029	$15,779

APPENDIX C – TABULATED TEN-YEAR MAJOR M&R RECOMMENDATIONS AND ESTIMATED COSTS – *ASSUMING UNLIMITED FUNDING*

Pavement ID	Road Name	From	To	Area (SF)	PCI	Year	Cost
NTHL::44TH AVE::03	44TH AVENUE	DIVISION STREET	SOFFEL AVENUE	17,305	49	2020	$36,348
NTHL::44TH AVE::10	44TH AVENUE	HIRSCH STREET	LE MOYNE STREET	19,971	43	2020	$101,860
NTHL::45TH AVE::10	45TH AVENUE	SOFFEL AVENUE	END	15,639	51	2020	$23,465
NTHL::45TH AVE::20	45TH AVENUE	SOFFEL AVENUE	HIRSCH STREET	12,166	50	2020	$19,470
NTHL::45TH AVE::30	45TH AVENUE	HIRSCH STREET	LE MOYNE STREET	20,269	44	2020	$93,247
NTHL::46TH AVE::10	46TH AVENUE	START	HIRSCH STREET	3,475	37	2020	$22,591
NTHL::46TH AVE::30	46TH AVENUE	VICTORIA DRIVE	LE MOYNE STREET	10,154	49	2020	$21,328
NTHL::46TH AVE::40	46TH AVENUE	LE MOYNE STREET	MORSE AVENUE	8,537	40	2020	$55,496
NTHL::46TH AVE::50	46TH AVENUE	MORSE AVENUE	SOUTH FRONTAGE ROAD	8,611	50	2020	$13,780
NTHL::ALVN AV::10	ALVIN AVENUE	EDWARD AVENUE	BELLE DRIVE	24,580	49	2020	$51,628
NTHL::BLL DR::50	BELLE DRIVE	ROY AVENUE	HAROLD AVENUE	8,745	51	2020	$13,121
NTHL::CHPN RD::10	CHAMPION ROAD	RAILROAD AVENUE	PALMER AVENUE	32,630	51	2020	$48,958
NTHL::DCKNS AVE::20	DICKENS AVENUE	MCCLEAN AVENUE	ROBERTA AVENUE	17,638	54	2020	$26,464
NTHL::DDD AVE::20	DODD AVENUE	LE MOYNE STREET	PRATER AVENUE	13,839	54	2020	$20,763
NTHL::DRRGH AVE::20	DERROUGH AVENUE	RHODES AVENUE	END	5,492	28	2020	$42,346
NTHL::DRRGH AVE::30	DERROUGH AVENUE	START	GRAND AVENUE	6,895	44	2020	$31,720
NTHL::DVRSY AVE::20	DIVERSEY AVENUE	MARION AVENUE	WOLF ROAD	11,603	41	2020	$70,784
NTHL::DYL DR::10	DOYLE DRIVE	LAVERGNE AVENUE	WOLF ROAD	8,760	48	2020	$22,780
NTHL::ELM AV::05	ELM AVENUE	LAKE STREET	END	4,680	40	2020	$30,422
NTHL::FLLRTN AVE::100	FULLERTON AVENUE	ROBERTA AVENUE	GENEVA AVENUE	16,843	46	2020	$60,642
NTHL::FLLRTN AVE::60	FULLERTON AVENUE	LA PORTE AVENUE	ROY AVENUE	24,490	49	2020	$51,438
NTHL::FLLRTN AVE::70	FULLERTON AVENUE	ROY AVENUE	ROBERTA AVENUE	34,466	47	2020	$106,859
NTHL::FLLRTN AVE::80	FULLERTON AVENUE	ROBERTA AVENUE	LANDEN DRIVE	8,280	44	2020	$38,092
NTHL::FLLRTN AVE::90	FULLERTON AVENUE	LANDEN DRIVE	MELROSE AVENUE	8,919	45	2020	$36,570
NTHL::GL AVE::10	GAIL AVENUE	LE MOYNE STREET	SOUTH FRONTAGE ROAD	17,846	36	2020	$116,004
NTHL::GNV AVE::110	GENEVA AVENUE	FULLERTON AVENUE	END	4,576	50	2020	$6,866
NTHL::JNC AVE::10	JANICE AVENUE	START	ARMITAGE AVENUE	1,229	23	2020	$12,852
NTHL::KNG RTR DR::10	KING ARTHUR DRIVE	START	FULLERTON AVENUE	27,820	45	2020	$114,073
NTHL::L MYN ST::40	LE MOYNE STREET	WOLF ROAD	GAIL AVENUE	9,009	51	2020	$13,516
NTHL::LTGD AVE::10	ALTGELD AVENUE	MELROSE AVENUE	END	6,240	49	2020	$13,106
NTHL::MNTN AVE::10	MONTANA AVENUE	MELROSE AVENUE	END	6,240	46	2020	$22,467
NTHL::MRS DR::20	MORSE DRIVE	MARILYN AVENUE	CARYL AVENUE	8,023	54	2020	$12,037
NTHL::MRS DR::30	MORSE DRIVE	CARYL AVENUE	ROY AVENUE	8,317	50	2020	$13,311
NTHL::NRTH FR RD::20	NORTH FRONTAGE ROAD	PRATER AVENUE	ROY AVENUE	24,830	51	2020	$37,255

Pavement ID	Road Name	From	To	Area (SF)	PCI	Year	Cost
NTHL::NRTH FR RD::30	NORTH FRONTAGE ROAD	ROY AVENUE	ROBERTA AVENUE	17,394	39	2020	$113,068
NTHL::PLMR AVE::10	PALMER AVENUE	CHAMPION ROAD	JEROME DRIVE	16,900	34	2020	$109,857
NTHL::PLMR AVE::20	PALMER AVENUE	JEROME DRIVE	N LAVERGNE AVENUE	8,921	42	2020	$49,959
NTHL::PLMR AVE::30	PALMER AVENUE	N LAVERGNE AVENUE	WOLF ROAD	13,090	47	2020	$40,585
NTHL::PLMR AVE::40	PALMER AVENUE	WOLF ROAD	LA PORTE AVENUE	7,130	42	2020	$39,930
NTHL::PRTR AVE::10	PRATER AVENUE	NEIMEYER COURT	VICTORIA DRIVE	15,800	48	2020	$41,086
NTHL::PRTR AVE::100	PRATER AVENUE	CHARLES DRIVE	BELLE DRIVE	7,051	45	2020	$28,910
NTHL::PRTR AVE::110	PRATER AVENUE	BELLE DRIVE	WHITEHALL AVENUE	8,130	52	2020	$12,199
NTHL::PRTR AVE::130	PRATER AVENUE	BERNICE AVENUE	ARMITAGE AVENUE	8,800	49	2020	$18,483
NTHL::PRTR AVE::140	PRATER AVENUE	ARMITAGE AVENUE	VILLAGE DRIVE	10,650	50	2020	$15,979
NTHL::PRTR AVE::50	PRATER AVENUE	NORTH AVENUE	NORTH FRONTAGE ROAD	2,558	54	2020	$3,838
NTHL::PRTR AVE::70	PRATER AVENUE	PARKVIEW DRIVE	EAST DRIVE	4,179	42	2020	$23,406
NTHL::PRTR AVE::80	PRATER AVENUE	EAST DRIVE	COUNTRY CLUB DRIVE	6,283	48	2020	$16,340
NTHL::PRTR AVE::90	PRATER AVENUE	COUNTRY CLUB DRIVE	CHARLES DRIVE	11,747	49	2020	$24,674
NTHL::RBRT AVE::130	ROBERTA AVENUE	WHITEHALL AVENUE	BERNICE AVENUE	8,516	47	2020	$26,403
NTHL::RHDS AVE::30	RHODES AVENUE	MARTIN AVENUE	DERROUGH AVENUE	9,489	48	2020	$24,674
NTHL::RLRD AVE::20	RAILROAD AVENUE	NORTH AVENUE	WHITEHALL AVENUE	61,934	52	2020	$92,925
NTHL::RMTG AVE::20	ARMITAGE AVENUE	LA PORTE AVENUE	PRATER AVENUE	15,886	49	2020	$33,367
NTHL::S LVRN AVE::10	S LAVERGNE AVENUE	ELM AVENUE	SOFFEL AVENUE	14,315	52	2020	$21,478
NTHL::S LVRN AVE::30	S LAVERGNE AVENUE	LAKE STREET	END	4,368	35	2020	$28,394
NTHL::SFFL AV::40	SOFFEL AVENUE	45TH AVENUE	44TH STREET	8,411	49	2020	$17,666
NTHL::STH FTG RD::10	SOUTH FRONTAGE ROAD	NORTH AVENUE	GAIL AVENUE	7,491	43	2020	$38,205
NTHL::VLLG DR::10	VILLAGE DRIVE	ARMITAGE AVENUE	LA PORTE AVENUE	2,581	52	2020	$3,872
NTHL::44TH AVE::05	44TH AVENUE	SOFFEL AVENUE	HIRSCH STREET	12,187	18	2021	$150,630
NTHL::ALVN AV::20	ALVIN AVENUE	BELLE DRIVE	WHITEHALL AVENUE	12,627	55	2021	$19,514
NTHL::BRKHS AVE::10	BRICKHOUSE AVENUE	START	WOLF ROAD	5,538	55	2021	$8,558
NTHL::FLLRTN AVE::10	FULLERTON AVENUE	KING ARTHUR DRIVE	JEROME DRIVE	6,252	52	2021	$9,662
NTHL::FRNKLN DR::10	FRANKLIN DRIVE	WESTWARD HO DRIVE	HILLSIDE AVENUE	30,172	52	2021	$46,628
NTHL::L MYN ST::50	LE MOYNE STREET	GAIL AVENUE	DODD AVENUE	10,365	55	2021	$16,018
NTHL::LND AVE::20	LIND AVENUE	START	END	12,066	13	2021	$149,142
NTHL::MCCLN AV::20	MCCLEAN AVENUE	MAJOR DRIVE	DICKENS AVENUE	8,000	55	2021	$12,364
NTHL::MRS DR::10	MORSE DRIVE	PRATER AVENUE	MARILYN AVENUE	8,459	55	2021	$13,072
NTHL::N LVRN AVE::10	N LAVERGNE AVENUE	PALMER AVENUE	LONGFIELD AVENUE	12,774	52	2021	$19,741

Pavement ID	Road Name	From	To	Area (SF)	PCI	Year	Cost
NTHL::NMYR CT::10	NEIMEYER COURT	PRATER AVENUE	END	8,450	19	2021	$104,444
NTHL::PLMR AVE::100	PALMER AVENUE	MCCLEAN AVENUE	ROBERTA AVENUE	17,591	55	2021	$27,184
NTHL::PLMR AVE::80	PALMER AVENUE	HABER COURT	ROY AVENUE	9,382	52	2021	$14,499
NTHL::PRTR AVE::150	PRATER AVENUE	VILLAGE DRIVE	PALMER AVENUE	26,441	55	2021	$40,862
NTHL::RLRD AVE::30	RAILROAD AVENUE	WHITEHALL AVENUE	END	64,496	29	2021	$453,382
NTHL::RMTG AVE::10	ARMITAGE AVENUE	VILLAGE DRIVE	LA PORTE AVENUE	4,134	55	2021	$6,389
NTHL::RMTG AVE::30	ARMITAGE AVENUE	PRATER AVENUE	ROY AVENUE	21,346	52	2021	$32,988
NTHL::RMTG AVE::70	ARMITAGE AVENUE	GENEVA AVENUE	JANICE AVENUE	10,322	52	2021	$15,952
NTHL::WLTS DR::10	WILTSE DRIVE	WOLF ROAD	PARKVIEW DRIVE	22,418	24	2021	$221,084
NTHL::FLLRTN AVE::20	FULLERTON AVENUE	JEROME DRIVE	SANDRA AVENUE	9,596	52	2026	$17,191
NTHL::HRLD AVE::40	HAROLD AVENUE	ROY AVENUE	LE MOYNE STREET	15,908	52	2026	$28,499
NTHL::MJR DR::10	MAJOR DRIVE	ROY AVENUE	MCCLEAN AVENUE	17,980	52	2026	$32,212
NTHL::EST DR::10	EAST DRIVE	COUNTRY CLUB DRIVE	PRATER AVENUE	34,482	54	2027	$63,629
NTHL::NRTH FR RD::50	NORTH FRONTAGE ROAD	EDWARD AVENUE	ANSON DRIVE	5,070	54	2027	$9,356
NTHL::SFFL AV::30	SOFFEL AVENUE	46TH AVENUE	45TH AVENUE	8,514	54	2027	$15,712
NTHL::46TH AVE::20	46TH AVENUE	HIRSCH STREET	VICTORIA DRIVE	10,102	53	2028	$19,200
NTHL::GL AVE::30	GAIL AVENUE	NORTH AVENUE	NORTH AVENUE	1,532	53	2028	$2,912
NTHL::HRVRD AVE::20	HARVARD AVENUE	START	NORTH AVENUE	3,858	53	2028	$7,332
NTHL::MJR DR::40	MAJOR DRIVE	GENEVA AVENUE	MANHEIM ROAD	34,730	53	2028	$66,010
NTHL::PLMR AVE::110	PALMER AVENUE	ROBERTA AVENUE	GENEVA AVENUE	35,457	53	2028	$67,390
NTHL::PRTR AVE::60	PRATER AVENUE	NORTH FRONTAGE ROAD	PARKVIEW DRIVE	8,027	53	2028	$15,256
NTHL::RMTG AVE::50	ARMITAGE AVENUE	ROBERTA AVENUE	ARMITAGE AVENUE	28,548	53	2028	$54,260
NTHL::FLLRTN AVE::50	FULLERTON AVENUE	WOLF ROAD	LA PORTE AVENUE	14,791	53	2029	$28,956
NTHL::HBR CT::10	HABER COURT	VILLAGE DRIVE	PALMER AVENUE	26,365	53	2029	$51,615
NTHL::MJR DR::20	MAJOR DRIVE	MCCLEAN AVENUE	ROBERTA AVENUE	17,821	52	2029	$34,887
NTHL::PLMR AVE::90	PALMER AVENUE	ROY AVENUE	MCCLEAN AVENUE	16,809	53	2029	$32,906
NTHL::RBRT AVE::180	ROBERTA AVENUE	DICKENS AVENUE	PALMER AVENUE	8,205	53	2029	$16,064
NTHL::SFFL AV::25	SOFFEL AVENUE	ROY AVENUE	HAROLD AVENUE	8,060	53	2029	$15,779

APPENDIX D – PAVEMENT MAINTENANCE POLICIES AND UNIT COSTS

Table D-1. Recommended Asphalt Pavement Maintenance Policy.

Pavement Distress	Severity	Recommended Maintenance Type	Units
Alligator Cracking	Low	Crack Sealing	FT
Alligator Cracking	Medium	Patching - AC Deep	SF
Alligator Cracking	High	Patching - AC Deep	SF
Block Cracking	Low	Crack Sealing - AC	FT
Block Cracking	Medium	Crack Sealing - AC	FT
Block Cracking	High	Patching - AC Shallow	SF
Bumps and Sags	Medium	Patching - AC Shallow	SF
Bumps and Sags	High	Patching - AC Deep	SF
Corrugation	Medium	Patching - AC Shallow	SF
Corrugation	High	Patching - AC Deep	SF
Depressions	Medium	Patching - AC Deep	SF
Depressions	High	Patching - AC Deep	SF
Edge Cracking	Low	Crack Sealing - AC	FT
Edge Cracking	Medium	Crack Sealing - AC	FT
Edge Cracking	High	Patching - AC Shallow	SF
Joint Reflection Cracking	Low	Crack Sealing - AC	FT
Joint Reflection Cracking	Medium	Crack Sealing - AC	FT
Joint Reflection Cracking	High	Patching - AC Shallow	SF
Lane/Shoulder Dropoff	Medium	Shoulder leveling	FT
Lane/Shoulder Dropoff	High	Shoulder leveling	FT
Long. and Trans. Cracking	Low	Crack Sealing - AC	FT
Long. and Trans. Cracking	Medium	Crack Sealing - AC	FT
Long. and Trans. Cracking	High	Patching - AC Shallow	SF
Patching and Utility Cuts	High	Patching - AC Deep	SF
Potholes	Low	Patching - AC Deep	SF
Potholes	Medium	Patching - AC Deep	SF
Potholes	High	Patching - AC Deep	SF
Rutting	Medium	Patching - AC Shallow	SF
Rutting	High	Patching - AC Deep	SF
Shoving	Medium	Grinding (Localized)	FT
Shoving	High	Grinding (Localized)	FT
Slippage Cracking	Low	Crack Sealing - AC	FT
Slippage Cracking	Medium	Patching - AC Shallow	SF
Slippage Cracking	High	Patching - AC Shallow	SF

Table D-2. Recommended Concrete Pavement Maintenance Policy.

Pavement Distress	Severity	Recommended Maintenance Type	Units
Blow ups	Medium	Patching - PCC Full Depth	SF
Blow ups	High	Patching - PCC Full Depth	SF
Corner Breaks	Low	Crack Sealing - PCC	FT
Corner Breaks	Medium	Patching - PCC Full Depth	FT
Corner Breaks	High	Patching - PCC Full Depth	SF
Divided (Shattered) Slabs	Low	Crack Sealing - PCC	FT
Divided (Shattered) Slabs	Medium	Slab Replacement - PCC	SF
Divided (Shattered) Slabs	High	Slab Replacement - PCC	SF
Durability (D) Cracking	Medium	Patching - PCC Full Depth	SF
Durability (D) Cracking	High	Slab Replacement - PCC	SF
Faulting	Medium	Grinding (Localized)	FT
Faulting	High	Grinding (Localized)	FT
Joint Seal Damage	Medium	Joint Seal (Localized)	FT
Joint Seal Damage	High	Joint Seal (Localized)	FT
Lane/Shoulder Dropoff	Medium	Shoulder leveling	FT
Lane/Shoulder Dropoff	High	Shoulder leveling	FT
Linear Cracking	Low	Crack Sealing - PCC	FT
Linear Cracking	Medium	Crack Sealing - PCC	FT
Linear Cracking	High	Patching - PCC Partial Depth	SF
Patches, Large	High	Patching - PCC Full Depth	SF
Patches, Small	High	Patching - PCC Partial Depth	SF
Punchouts	Medium	Patching - PCC Full Depth	SF
Punchouts	High	Slab Replacement - PCC	SF
Scaling	High	Slab Replacement - PCC	SF
Corner Spalls	Medium	Patching - PCC Partial Depth	SF
Corner Spalls	High	Patching - PCC Partial Depth	SF
Joint Spalls	Medium	Patching - PCC Partial Depth	SF
Joint Spalls	High	Patching - PCC Partial Depth	SF

Table D-3. Estimate Unit Cost for Maintenance Activities.

Maintenance Type	Est. Unit Cost	Units
Crack Sealing - AC	$1.00	FT
Joint Seal - Silicon	$2.75	FT
Crack Sealing - PCC	$1.50	FT
Grinding (Localized)	$4.00	FT
Joint Seal (Localized)	$1.50	FT
Patching - AC Deep	$11.00	SF
Patching - AC Leveling	$1.20	SF
Patching - AC Shallow	$5.50	SF
Patching - PCC Full Depth	$30.00	SF
Patching - PCC Partial Depth	$7.00	SF
Shoulder leveling	$1.20	FT
Slab Replacement - PCC	$20.00	SF

APPENDIX E – TABULATED PREVENTIVE MAINTENANCE RECOMMENDATIONS

Pavement ID	Road Name	From	To	Area (SF)	PCI	Year	Cost
NTHL::44TH AVE::03	44TH AVENUE	DIVISION STREET	SOFFEL AVENUE	17,305	49	2020	$36,348
NTHL::44TH AVE::10	44TH AVENUE	HIRSCH STREET	LE MOYNE STREET	19,971	43	2020	$101,860
NTHL::45TH AVE::10	45TH AVENUE	SOFFEL AVENUE	END	15,639	51	2020	$23,465
NTHL::45TH AVE::20	45TH AVENUE	SOFFEL AVENUE	HIRSCH STREET	12,166	50	2020	$19,470
NTHL::45TH AVE::30	45TH AVENUE	HIRSCH STREET	LE MOYNE STREET	20,269	44	2020	$93,247
NTHL::46TH AVE::10	46TH AVENUE	START	HIRSCH STREET	3,475	37	2020	$22,591
NTHL::46TH AVE::30	46TH AVENUE	VICTORIA DRIVE	LE MOYNE STREET	10,154	49	2020	$21,328
NTHL::46TH AVE::40	46TH AVENUE	LE MOYNE STREET	MORSE AVENUE	8,537	40	2020	$55,496
NTHL::46TH AVE::50	46TH AVENUE	MORSE AVENUE	SOUTH FRONTAGE ROAD	8,611	50	2020	$13,780
NTHL::ALVN AV::10	ALVIN AVENUE	EDWARD AVENUE	BELLE DRIVE	24,580	49	2020	$51,628
NTHL::BLL DR::50	BELLE DRIVE	ROY AVENUE	HAROLD AVENUE	8,745	51	2020	$13,121
NTHL::CHPN RD::10	CHAMPION ROAD	RAILROAD AVENUE	PALMER AVENUE	32,630	51	2020	$48,958
NTHL::DCKNS AVE::20	DICKENS AVENUE	MCCLEAN AVENUE	ROBERTA AVENUE	17,638	54	2020	$26,464
NTHL::DDD AVE::20	DODD AVENUE	LE MOYNE STREET	PRATER AVENUE	13,839	54	2020	$20,763
NTHL::DRRGH AVE::20	DERROUGH AVENUE	RHODES AVENUE	END	5,492	28	2020	$42,346
NTHL::DRRGH AVE::30	DERROUGH AVENUE	START	GRAND AVENUE	6,895	44	2020	$31,720
NTHL::DVRSY AVE::20	DIVERSEY AVENUE	MARION AVENUE	WOLF ROAD	11,603	41	2020	$70,784
NTHL::DYL DR::10	DOYLE DRIVE	LAVERGNE AVENUE	WOLF ROAD	8,760	48	2020	$22,780
NTHL::ELM AV::05	ELM AVENUE	LAKE STREET	END	4,680	40	2020	$30,422
NTHL::FLLRTN AVE::100	FULLERTON AVENUE	ROBERTA AVENUE	GENEVA AVENUE	16,843	46	2020	$60,642
NTHL::FLLRTN AVE::60	FULLERTON AVENUE	LA PORTE AVENUE	ROY AVENUE	24,490	49	2020	$51,438
NTHL::FLLRTN AVE::70	FULLERTON AVENUE	ROY AVENUE	ROBERTA AVENUE	34,466	47	2020	$106,859
NTHL::FLLRTN AVE::80	FULLERTON AVENUE	ROBERTA AVENUE	LANDEN DRIVE	8,280	44	2020	$38,092
NTHL::FLLRTN AVE::90	FULLERTON AVENUE	LANDEN DRIVE	MELROSE AVENUE	8,919	45	2020	$36,570
NTHL::GL AVE::10	GAIL AVENUE	LE MOYNE STREET	SOUTH FRONTAGE ROAD	17,846	36	2020	$116,004
NTHL::GNV AVE::110	GENEVA AVENUE	FULLERTON AVENUE	END	4,576	50	2020	$6,866
NTHL::JNC AVE::10	JANICE AVENUE	START	ARMITAGE AVENUE	1,229	23	2020	$12,852
NTHL::KNG RTR DR::10	KING ARTHUR DRIVE	START	FULLERTON AVENUE	27,820	45	2020	$114,073
NTHL::L MYN ST::40	LE MOYNE STREET	WOLF ROAD	GAIL AVENUE	9,009	51	2020	$13,516
NTHL::LTGD AVE::10	ALTGELD AVENUE	MELROSE AVENUE	END	6,240	49	2020	$13,106
NTHL::MNTN AVE::10	MONTANA AVENUE	MELROSE AVENUE	END	6,240	46	2020	$22,467
NTHL::MRS DR::20	MORSE DRIVE	MARILYN AVENUE	CARYL AVENUE	8,023	54	2020	$12,037
NTHL::MRS DR::30	MORSE DRIVE	CARYL AVENUE	ROY AVENUE	8,317	50	2020	$13,311
NTHL::NRTH FR RD::20	NORTH FRONTAGE ROAD	PRATER AVENUE	ROY AVENUE	24,830	51	2020	$37,255

Pavement ID	Road Name	From	To	Area (SF)	PCI	Year	Cost
NTHL::NRTH FR RD::30	NORTH FRONTAGE ROAD	ROY AVENUE	ROBERTA AVENUE	17,394	39	2020	$113,068
NTHL::PLMR AVE::10	PALMER AVENUE	CHAMPION ROAD	JEROME DRIVE	16,900	34	2020	$109,857
NTHL::PLMR AVE::20	PALMER AVENUE	JEROME DRIVE	N LAVERGNE AVENUE	8,921	42	2020	$49,959
NTHL::PLMR AVE::30	PALMER AVENUE	N LAVERGNE AVENUE	WOLF ROAD	13,090	47	2020	$40,585
NTHL::PLMR AVE::40	PALMER AVENUE	WOLF ROAD	LA PORTE AVENUE	7,130	42	2020	$39,930
NTHL::PRTR AVE::10	PRATER AVENUE	NEIMEYER COURT	VICTORIA DRIVE	15,800	48	2020	$41,086
NTHL::PRTR AVE::100	PRATER AVENUE	CHARLES DRIVE	BELLE DRIVE	7,051	45	2020	$28,910
NTHL::PRTR AVE::110	PRATER AVENUE	BELLE DRIVE	WHITEHALL AVENUE	8,130	52	2020	$12,199
NTHL::PRTR AVE::130	PRATER AVENUE	BERNICE AVENUE	ARMITAGE AVENUE	8,800	49	2020	$18,483
NTHL::PRTR AVE::140	PRATER AVENUE	ARMITAGE AVENUE	VILLAGE DRIVE	10,650	50	2020	$15,979
NTHL::PRTR AVE::50	PRATER AVENUE	NORTH AVENUE	NORTH FRONTAGE ROAD	2,558	54	2020	$3,838
NTHL::PRTR AVE::70	PRATER AVENUE	PARKVIEW DRIVE	EAST DRIVE	4,179	42	2020	$23,406
NTHL::PRTR AVE::80	PRATER AVENUE	EAST DRIVE	COUNTRY CLUB DRIVE	6,283	48	2020	$16,340
NTHL::PRTR AVE::90	PRATER AVENUE	COUNTRY CLUB DRIVE	CHARLES DRIVE	11,747	49	2020	$24,674
NTHL::RBRT AVE::130	ROBERTA AVENUE	WHITEHALL AVENUE	BERNICE AVENUE	8,516	47	2020	$26,403
NTHL::RHDS AVE::30	RHODES AVENUE	MARTIN AVENUE	DERROUGH AVENUE	9,489	48	2020	$24,674
NTHL::RLRD AVE::20	RAILROAD AVENUE	NORTH AVENUE	WHITEHALL AVENUE	61,934	52	2020	$92,925
NTHL::RMTG AVE::20	ARMITAGE AVENUE	LA PORTE AVENUE	PRATER AVENUE	15,886	49	2020	$33,367
NTHL::S LVRN AVE::10	S LAVERGNE AVENUE	ELM AVENUE	SOFFEL AVENUE	14,315	52	2020	$21,478
NTHL::S LVRN AVE::30	S LAVERGNE AVENUE	LAKE STREET	END	4,368	35	2020	$28,394
NTHL::SFFL AV::40	SOFFEL AVENUE	45TH AVENUE	44TH STREET	8,411	49	2020	$17,666
NTHL::STH FTG RD::10	SOUTH FRONTAGE ROAD	NORTH AVENUE	GAIL AVENUE	7,491	43	2020	$38,205
NTHL::VLLG DR::10	VILLAGE DRIVE	ARMITAGE AVENUE	LA PORTE AVENUE	2,581	52	2020	$3,872
NTHL::44TH AVE::05	44TH AVENUE	SOFFEL AVENUE	HIRSCH STREET	12,187	18	2021	$150,630
NTHL::ALVN AV::20	ALVIN AVENUE	BELLE DRIVE	WHITEHALL AVENUE	12,627	55	2021	$19,514
NTHL::BRKHS AVE::10	BRICKHOUSE AVENUE	START	WOLF ROAD	5,538	55	2021	$8,558
NTHL::FLLRTN AVE::10	FULLERTON AVENUE	KING ARTHUR DRIVE	JEROME DRIVE	6,252	52	2021	$9,662
NTHL::FRNKLN DR::10	FRANKLIN DRIVE	WESTWARD HO DRIVE	HILLSIDE AVENUE	30,172	52	2021	$46,628
NTHL::L MYN ST::50	LE MOYNE STREET	GAIL AVENUE	DODD AVENUE	10,365	55	2021	$16,018
NTHL::LND AVE::20	LIND AVENUE	START	END	12,066	13	2021	$149,142
NTHL::MCCLN AV::20	MCCLEAN AVENUE	MAJOR DRIVE	DICKENS AVENUE	8,000	55	2021	$12,364
NTHL::MRS DR::10	MORSE DRIVE	PRATER AVENUE	MARILYN AVENUE	8,459	55	2021	$13,072
NTHL::N LVRN AVE::10	N LAVERGNE AVENUE	PALMER AVENUE	LONGFIELD AVENUE	12,774	52	2021	$19,741

Pavement ID	Road Name	From	To	Area (SF)	PCI	Year	Cost
NTHL::NMYR CT::10	NEIMEYER COURT	PRATER AVENUE	END	8,450	19	2021	$104,444
NTHL::PLMR AVE::100	PALMER AVENUE	MCCLEAN AVENUE	ROBERTA AVENUE	17,591	55	2021	$27,184
NTHL::PLMR AVE::80	PALMER AVENUE	HABER COURT	ROY AVENUE	9,382	52	2021	$14,499
NTHL::PRTR AVE::150	PRATER AVENUE	VILLAGE DRIVE	PALMER AVENUE	26,441	55	2021	$40,862
NTHL::RLRD AVE::30	RAILROAD AVENUE	WHITEHALL AVENUE	END	64,496	29	2021	$453,382
NTHL::RMTG AVE::10	ARMITAGE AVENUE	VILLAGE DRIVE	LA PORTE AVENUE	4,134	55	2021	$6,389
NTHL::RMTG AVE::30	ARMITAGE AVENUE	PRATER AVENUE	ROY AVENUE	21,346	52	2021	$32,988
NTHL::RMTG AVE::70	ARMITAGE AVENUE	GENEVA AVENUE	JANICE AVENUE	10,322	52	2021	$15,952
NTHL::WLTS DR::10	WILTSE DRIVE	WOLF ROAD	PARKVIEW DRIVE	22,418	24	2021	$221,084
NTHL::FLLRTN AVE::20	FULLERTON AVENUE	JEROME DRIVE	SANDRA AVENUE	9,596	52	2026	$17,191
NTHL::HRLD AVE::40	HAROLD AVENUE	ROY AVENUE	LE MOYNE STREET	15,908	52	2026	$28,499
NTHL::MJR DR::10	MAJOR DRIVE	ROY AVENUE	MCCLEAN AVENUE	17,980	52	2026	$32,212
NTHL::EST DR::10	EAST DRIVE	COUNTRY CLUB DRIVE	PRATER AVENUE	34,482	54	2027	$63,629
NTHL::NRTH FR RD::50	NORTH FRONTAGE ROAD	EDWARD AVENUE	ANSON DRIVE	5,070	54	2027	$9,356
NTHL::SFFL AV::30	SOFFEL AVENUE	46TH AVENUE	45TH AVENUE	8,514	54	2027	$15,712
NTHL::46TH AVE::20	46TH AVENUE	HIRSCH STREET	VICTORIA DRIVE	10,102	53	2028	$19,200
NTHL::GL AVE::30	GAIL AVENUE	NORTH AVENUE	NORTH AVENUE	1,532	53	2028	$2,912
NTHL::HRVRD AVE::20	HARVARD AVENUE	START	NORTH AVENUE	3,858	53	2028	$7,332
NTHL::MJR DR::40	MAJOR DRIVE	GENEVA AVENUE	MANHEIM ROAD	34,730	53	2028	$66,010
NTHL::PLMR AVE::110	PALMER AVENUE	ROBERTA AVENUE	GENEVA AVENUE	35,457	53	2028	$67,390
NTHL::PRTR AVE::60	PRATER AVENUE	NORTH FRONTAGE ROAD	PARKVIEW DRIVE	8,027	53	2028	$15,256
NTHL::RMTG AVE::50	ARMITAGE AVENUE	ROBERTA AVENUE	ARMITAGE AVENUE	28,548	53	2028	$54,260
NTHL::FLLRTN AVE::50	FULLERTON AVENUE	WOLF ROAD	LA PORTE AVENUE	14,791	53	2029	$28,956
NTHL::HBR CT::10	HABER COURT	VILLAGE DRIVE	PALMER AVENUE	26,365	53	2029	$51,615
NTHL::MJR DR::20	MAJOR DRIVE	MCCLEAN AVENUE	ROBERTA AVENUE	17,821	52	2029	$34,887
NTHL::PLMR AVE::90	PALMER AVENUE	ROY AVENUE	MCCLEAN AVENUE	16,809	53	2029	$32,906
NTHL::RBRT AVE::180	ROBERTA AVENUE	DICKENS AVENUE	PALMER AVENUE	8,205	53	2029	$16,064
NTHL::SFFL AV::25	SOFFEL AVENUE	ROY AVENUE	HAROLD AVENUE	8,060	53	2029	$15,779

APPENDIX F – PAVEMENT INVENTORY AND CONDITION TABULAR DATA

Pavement ID	Road Name	From	To	Surface	Rank	Length (FT)	Width (FT)	Area (SF)	PCI	IRI
NTHL::43RD AVE::10	43RD AVENUE	HIRSCH STREET	LE MOYNE STREET	Asphalt	S	779	26	20,246	100	292
NTHL::43RD AVE::20	43RD AVENUE	LE MOYNE STREET	MORSE AVENUE	Asphalt	S	330	26	8,591	100	240
NTHL::43RD AVE::30	43RD AVENUE	MORSE AVENUE	SOUTH FRONTAGE ROAD	Asphalt	S	327	26	8,506	100	311
NTHL::44TH AVE::03	44TH AVENUE	DIVISION STREET	SOFFEL AVENUE	Asphalt	S	666	26	17,305	51	333
NTHL::44TH AVE::05	44TH AVENUE	SOFFEL AVENUE	HIRSCH STREET	Asphalt	S	469	26	12,187	23	257
NTHL::44TH AVE::10	44TH AVENUE	HIRSCH STREET	LE MOYNE STREET	Asphalt	S	768	26	19,971	45	351
NTHL::45TH AVE::10	45TH AVENUE	SOFFEL AVENUE	END	Asphalt	S	602	26	15,639	54	250
NTHL::45TH AVE::20	45TH AVENUE	SOFFEL AVENUE	HIRSCH STREET	Asphalt	S	468	26	12,166	52	337
NTHL::45TH AVE::30	45TH AVENUE	HIRSCH STREET	LE MOYNE STREET	Asphalt	S	780	26	20,269	46	292
NTHL::46TH AVE::10	46TH AVENUE	START	HIRSCH STREET	Asphalt	S	134	26	3,475	39	485
NTHL::46TH AVE::20	46TH AVENUE	HIRSCH STREET	VICTORIA DRIVE	Asphalt	S	389	26	10,102	62	365
NTHL::46TH AVE::30	46TH AVENUE	VICTORIA DRIVE	LE MOYNE STREET	Asphalt	S	391	26	10,154	51	329
NTHL::46TH AVE::40	46TH AVENUE	LE MOYNE STREET	MORSE AVENUE	Asphalt	S	328	26	8,537	42	331
NTHL::46TH AVE::50	46TH AVENUE	MORSE AVENUE	SOUTH FRONTAGE ROAD	Asphalt	S	331	26	8,611	52	184
NTHL::46TH AVE::60	46TH AVENUE	SOUTH FRONTAGE ROAD	NORTH AVENUE	Asphalt	S	47	26	1,231	94	303
NTHL::46TH AVE::70	46TH AVENUE	NORTH AVENUE	NORTH AVENUE	Asphalt	S	26	26	672	95	649
NTHL::ALVN AV::10	ALVIN AVENUE	EDWARD AVENUE	BELLE DRIVE	Asphalt	S	945	26	24,580	51	334
NTHL::ALVN AV::20	ALVIN AVENUE	BELLE DRIVE	WHITEHALL AVENUE	Asphalt	S	486	26	12,627	59	267
NTHL::ASHBL AVE::10	ASHBEL AVENUE	LAKE STREET	END	Asphalt	S	221	26	5,757	77	456
NTHL::BLL DR::10	BELLE DRIVE	COUNTRY CLUB DRIVE	PRATER AVENUE	Asphalt	S	941	26	24,471	100	242
NTHL::BLL DR::20	BELLE DRIVE	PRATER AVENUE	MARILYN AVENUE	Asphalt	S	316	26	8,223	100	137
NTHL::BLL DR::30	BELLE DRIVE	MARILYN AVENUE	CARYL AVENUE	Asphalt	S	312	26	8,117	100	155
NTHL::BLL DR::40	BELLE DRIVE	CARYL AVENUE	ROY AVENUE	Asphalt	S	322	26	8,370	68	385
NTHL::BLL DR::50	BELLE DRIVE	ROY AVENUE	HAROLD AVENUE	Asphalt	S	336	26	8,745	54	180
NTHL::BLL DR::60	BELLE DRIVE	HAROLD AVENUE	ROBERTA AVENUE	Asphalt	S	339	26	8,810	81	469
NTHL::BLL DR::70	BELLE DRIVE	ROBERTA AVENUE	WILLIAM AVENUE	Asphalt	S	321	26	8,357	95	138
NTHL::BLL DR::80	BELLE DRIVE	WILLIAM AVENUE	EDWARD AVENUE	Asphalt	S	403	26	10,482	100	214
NTHL::BLL DR::90	BELLE DRIVE	EDWARD AVENUE	ALVIN AVENUE	Asphalt	S	305	26	7,930	100	317
NTHL::BRKHS AVE::10	BRICKHOUSE AVENUE	START	WOLF ROAD	Asphalt	S	213	26	5,538	59	385
NTHL::BRNC AVE::10	BERNICE AVENUE	LA PORTE AVENUE	PRATER AVENUE	Asphalt	S	691	26	17,954	94	167
NTHL::BRNC AVE::20	BERNICE AVENUE	PRATER AVENUE	ROY AVENUE	Asphalt	S	907	26	23,578	93	182
NTHL::BRNC AVE::30	BERNICE AVENUE	ROY AVENUE	ROBERTA AVENUE	Asphalt	S	758	26	19,700	87	206
NTHL::BRNC AVE::40	BERNICE AVENUE	ROBERTA AVENUE	GENEVA AVENUE	Asphalt	S	1,266	26	32,927	75	245
NTHL::CHPN RD::10	CHAMPION ROAD	RAILROAD AVENUE	PALMER AVENUE	Asphalt	S	1,255	26	32,630	54	308
NTHL::CHRLS DR::10	CHARLES DRIVE	COUNTRY CLUB DRIVE	PRATER AVENUE	Asphalt	S	517	26	13,433	100	186
NTHL::CNTR CL DR::10	COUNTRY CLUB DRIVE	WOLF ROAD	EAST DRIVE	Asphalt	S	216	26	5,611	100	157
NTHL::CNTR CL DR::100	COUNTRY CLUB DRIVE	ROBERTA AVENUE	WILLIAM AVENUE	Asphalt	S	325	26	8,445	100	339
NTHL::CNTR CL DR::110	COUNTRY CLUB DRIVE	WILLIAM AVENUE	EDWARD AVENUE	Asphalt	S	428	26	11,129	100	237
NTHL::CNTR CL DR::20	COUNTRY CLUB DRIVE	EAST DRIVE	BELLE DRIVE	Asphalt	S	116	26	3,025	100	223
NTHL::CNTR CL DR::30	COUNTRY CLUB DRIVE	BELLE DRIVE	CHARLES DRIVE	Asphalt	S	202	26	5,254	100	213
NTHL::CNTR CL DR::40	COUNTRY CLUB DRIVE	CHARLES DRIVE	PRATER AVENUE	Asphalt	S	641	26	16,674	100	212
NTHL::CNTR CL DR::50	COUNTRY CLUB DRIVE	PRATER AVENUE	MARILYN AVENUE	Asphalt	S	321	26	8,349	100	321
NTHL::CNTR CL DR::60	COUNTRY CLUB DRIVE	MARILYN AVENUE	CARYL AVENUE	Asphalt	S	317	26	8,244	100	341

Pavement ID	Road Name	From	To	Surface	Rank	Length (FT)	Width (FT)	Area (SF)	PCI	IRI
NTHL::CNTR CL DR::70	COUNTRY CLUB DRIVE	CARYL AVENUE	ROY AVENUE	Asphalt	S	324	26	8,420	100	278
NTHL::CNTR CL DR::80	COUNTRY CLUB DRIVE	ROY AVENUE	HAROLD AVENUE	Asphalt	S	332	26	8,641	100	238
NTHL::CNTR CL DR::90	COUNTRY CLUB DRIVE	HAROLD AVENUE	ROBERTA AVENUE	Asphalt	S	340	26	8,832	100	301
NTHL::CRYL AV::10	CARYL AVENUE	HIRSCH STREET	END	Asphalt	S	480	26	12,469	100	205
NTHL::CRYL AV::20	CARYL AVENUE	VICTORIA DRIVE	MORSE DRIVE	Asphalt	S	733	26	19,057	94	229
NTHL::CRYL AV::30	CARYL AVENUE	COUNTRY CLUB DRIVE	BELLE DRIVE	Asphalt	S	723	26	18,801	94	182
NTHL::DCKNS AVE::10	DICKENS AVENUE	ROY AVENUE	MCCLEAN AVENUE	Asphalt	S	685	26	17,820	72	211
NTHL::DCKNS AVE::20	DICKENS AVENUE	MCCLEAN AVENUE	ROBERTA AVENUE	Asphalt	S	678	26	17,638	57	218
NTHL::DCKNS AVE::30	DICKENS AVENUE	ROBERTA AVENUE	GENEVA AVENUE	Asphalt	S	1,316	26	34,207	67	144
NTHL::DCKNS AVE::40	DICKENS AVENUE	MANHEIM ROAD	END	Concrete	S	226	26	5,886	98	254
NTHL::DDD AVE::10	DODD AVENUE	VICTORIA DRIVE	LE MOYNE STREET	Asphalt	S	367	26	9,532	72	174
NTHL::DDD AVE::20	DODD AVENUE	LE MOYNE STREET	PRATER AVENUE	Asphalt	S	532	26	13,839	57	174
NTHL::DRRGH AVE::10	DERROUGH AVENUE	DIVERSEY AVENUE	RHODES AVENUE	Asphalt	S	236	26	6,133	90	527
NTHL::DRRGH AVE::20	DERROUGH AVENUE	RHODES AVENUE	END	Asphalt	S	211	26	5,492	30	202
NTHL::DRRGH AVE::30	DERROUGH AVENUE	START	GRAND AVENUE	Asphalt	S	265	26	6,895	46	152
NTHL::DVRSY AVE::10	DIVERSEY AVENUE	DERROUGH AVENUE	MARION AVENUE	Asphalt	S	850	35	29,749	89	189
NTHL::DVRSY AVE::20	DIVERSEY AVENUE	MARION AVENUE	WOLF ROAD	Asphalt	S	446	26	11,603	43	461
NTHL::DWY AVE::10	DEWEY AVENUE	LA PORTE AVENUE	ROY AVENUE	Asphalt	S	952	26	24,755	100	241
NTHL::DWY AVE::20	DEWEY AVENUE	LYNDALE AVENUE	ROBERTA AVENUE	Asphalt	S	924	26	24,034	90	212
NTHL::DWY AVE::30	DEWEY AVENUE	ROBERTA AVENUE	GENEVA AVENUE	Asphalt	S	1,314	26	34,156	100	167
NTHL::DYL DR::10	DOYLE DRIVE	LAVERGNE AVENUE	WOLF ROAD	Asphalt	S	337	26	8,760	50	292
NTHL::EDWRD AVE::10	EDWARD AVENUE	SOUTH FRONTAGE ROAD	NORTH AVENUE	Asphalt	S	44	26	1,138	95	111
NTHL::EDWRD AVE::20	EDWARD AVENUE	NORTH AVENUE	NORTH FRONTAGE ROAD	Asphalt	S	87	26	2,273	95	759
NTHL::EDWRD AVE::30	EDWARD AVENUE	NORTH FRONTAGE ROAD	PARKVIEW DRIVE	Asphalt	S	329	26	8,558	95	305
NTHL::EDWRD AVE::40	EDWARD AVENUE	PARKVIEW DRIVE	ALVIN AVENUE	Asphalt	S	171	26	4,438	94	386
NTHL::EDWRD AVE::50	EDWARD AVENUE	COUNTRY CLUB DRIVE	ALVIN AVENUE	Asphalt	S	218	26	5,675	94	211
NTHL::EDWRD AVE::60	EDWARD AVENUE	COUNTRY CLUB DRIVE	BELLE DRIVE	Asphalt	S	574	26	14,928	100	194
NTHL::EDWRD AVE::70	EDWARD AVENUE	BELLE DRIVE	BELLE DRIVE	Asphalt	S	118	26	3,061	100	198
NTHL::ELM AV::05	ELM AVENUE	LAKE STREET	END	Asphalt	S	180	26	4,680	42	420
NTHL::ELM AV::10	ELM AVENUE	SOFFEL AVENUE	END	Asphalt	S	134	26	3,492	93	522
NTHL::ELM AV::20	ELM AVENUE	SOFFEL AVENUE	S LAVERGNE AVENUE	Asphalt	S	238	26	6,189	93	195
NTHL::EST DR::10	EAST DRIVE	COUNTRY CLUB DRIVE	PRATER AVENUE	Asphalt	S	1,326	26	34,482	61	295
NTHL::FLLRTN AVE::10	FULLERTON AVENUE	KING ARTHUR DRIVE	JEROME DRIVE	Asphalt	S	240	26	6,252	58	186
NTHL::FLLRTN AVE::100	FULLERTON AVENUE	ROBERTA AVENUE	GENEVA AVENUE	Asphalt	P	648	26	16,843	48	261
NTHL::FLLRTN AVE::20	FULLERTON AVENUE	JEROME DRIVE	SANDRA AVENUE	Asphalt	S	369	26	9,596	60	157
NTHL::FLLRTN AVE::30	FULLERTON AVENUE	SANDRA AVENUE	LAVERGNE AVENUE	Asphalt	S	364	26	9,466	72	148
NTHL::FLLRTN AVE::40	FULLERTON AVENUE	LAVERGNE AVENUE	WOLF ROAD	Asphalt	S	375	38	14,263	72	300
NTHL::FLLRTN AVE::50	FULLERTON AVENUE	WOLF ROAD	LA PORTE AVENUE	Asphalt	P	389	38	14,791	64	180
NTHL::FLLRTN AVE::60	FULLERTON AVENUE	LA PORTE AVENUE	ROY AVENUE	Asphalt	P	942	26	24,490	51	209
NTHL::FLLRTN AVE::70	FULLERTON AVENUE	ROY AVENUE	ROBERTA AVENUE	Asphalt	P	1,326	26	34,466	49	195
NTHL::FLLRTN AVE::80	FULLERTON AVENUE	ROBERTA AVENUE	LANDEN DRIVE	Asphalt	P	318	26	8,280	46	275
NTHL::FLLRTN AVE::90	FULLERTON AVENUE	LANDEN DRIVE	MELROSE AVENUE	Asphalt	P	343	26	8,919	47	225
NTHL::FRNKLN DR::10	FRANKLIN DRIVE	WESTWARD HO DRIVE	HILLSIDE AVENUE	Asphalt	S	1,160	26	30,172	58	136

Pavement ID	Road Name	From	To	Surface	Rank	Length (FT)	Width (FT)	Area (SF)	PCI	IRI
NTHL::FRNKLN DR::20	FRANKLIN DRIVE	HILLSIDE AVENUE	LAVERGNE AVENUE	Asphalt	S	974	26	25,333	91	194
NTHL::FRNTG RD::10	FRONTAGE ROAD	NORTH AVENUE	HARVARD AVENUE	Asphalt	S	340	26	8,851	73	356
NTHL::FRNTG RD::20	FRONTAGE ROAD	HARVARD AVENUE	HILLSIDE AVENUE	Asphalt	S	666	26	17,318	82	218
NTHL::FRNTG RD::30	FRONTAGE ROAD	HILLSIDE AVENUE	LAVERGNE AVENUE	Asphalt	S	1,002	26	26,056	100	309
NTHL::GL AVE::10	GAIL AVENUE	LE MOYNE STREET	SOUTH FRONTAGE ROAD	Asphalt	S	686	26	17,846	38	310
NTHL::GL AVE::20	GAIL AVENUE	SOUTH FRONTAGE ROAD	NORTH AVENUE	Asphalt	S	47	26	1,234	77	922
NTHL::GL AVE::30	GAIL AVENUE	NORTH AVENUE	NORTH AVENUE	Asphalt	S	59	26	1,532	62	443
NTHL::GLF VW DR::10	GOLF VIEW DRIVE	WESTWARD HO DRIVE	END	Asphalt	S	132	26	3,424	92	312
NTHL::GLF VW DR::20	GOLF VIEW DRIVE	WESTWARD HO DRIVE	HILLSIDE AVENUE	Asphalt	S	1,170	26	30,420	85	187
NTHL::GLF VW DR::30	GOLF VIEW DRIVE	HILLSIDE AVENUE	LAVERGNE AVENUE	Asphalt	S	969	26	25,199	81	295
NTHL::GNV AVE::10	GENEVA AVENUE	WHITEHALL AVENUE	BERNICE AVENUE	Asphalt	S	334	26	8,681	95	215
NTHL::GNV AVE::100	GENEVA AVENUE	MEDILL AVENUE	FULLERTON AVENUE	Asphalt	S	449	26	11,662	100	337
NTHL::GNV AVE::110	GENEVA AVENUE	FULLERTON AVENUE	END	Asphalt	S	176	26	4,576	53	265
NTHL::GNV AVE::20	GENEVA AVENUE	BERNICE AVENUE	ARMITAGE AVENUE	Asphalt	S	512	26	13,318	95	138
NTHL::GNV AVE::30	GENEVA AVENUE	VILLAGE DRIVE	MAJOR DRIVE	Asphalt	S	433	26	11,271	95	149
NTHL::GNV AVE::40	GENEVA AVENUE	MAJOR DRIVE	MAJOR DRIVE	Asphalt	S	86	26	2,245	95	212
NTHL::GNV AVE::50	GENEVA AVENUE	MAJOR DRIVE	DICKENS AVENUE	Asphalt	S	360	26	9,360	95	208
NTHL::GNV AVE::60	GENEVA AVENUE	DICKENS AVENUE	PALMER AVENUE	Asphalt	S	428	26	11,138	95	292
NTHL::GNV AVE::70	GENEVA AVENUE	PALMER AVENUE	DEWEY AVENUE	Asphalt	S	187	26	4,874	100	322
NTHL::GNV AVE::80	GENEVA AVENUE	DEWEY AVENUE	LYNDALE AVENUE	Asphalt	S	248	26	6,451	100	363
NTHL::GNV AVE::90	GENEVA AVENUE	LYNDALE AVENUE	MEDILL AVENUE	Asphalt	S	434	26	11,279	100	307
NTHL::GRNT DR::10	GARNET DRIVE	GRAND AVENUE	END	Asphalt	S	1,278	32	40,902	95	188
NTHL::HBR CT::10	HABER COURT	VILLAGE DRIVE	PALMER AVENUE	Asphalt	S	1,014	26	26,365	64	250
NTHL::HLLSD AVE::05	HILLSIDE AVENUE	LAKE STREET	END	Asphalt	S	189	26	4,914	100	519
NTHL::HLLSD AVE::07	HILLSIDE AVENUE	START	NORTH AVENUE	Asphalt	S	243	56	13,608	100	462
NTHL::HLLSD AVE::10	HILLSIDE AVENUE	NORTH AVENUE	FRONTAGE ROAD	Asphalt	S	95	26	2,464	95	828
NTHL::HLLSD AVE::20	HILLSIDE AVENUE	FRONTAGE ROAD	WESTWARD HO DRIVE	Asphalt	S	321	26	8,349	92	319
NTHL::HLLSD AVE::30	HILLSIDE AVENUE	WESTWARD HO DRIVE	WEST DRIVE	Asphalt	S	327	26	8,494	95	234
NTHL::HLLSD AVE::40	HILLSIDE AVENUE	WEST DRIVE	FRANKLIN DRIVE	Asphalt	S	326	26	8,471	95	209
NTHL::HLLSD AVE::50	HILLSIDE AVENUE	FRANKLIN DRIVE	GOLF VIEW DRIVE	Asphalt	S	310	26	8,070	95	248
NTHL::HRLD AVE::10	HAROLD AVENUE	SOFFEL AVENUE	HIRSCH STREET	Asphalt	S	477	26	12,406	100	205
NTHL::HRLD AVE::20	HAROLD AVENUE	VICTORIA DRIVE	LE MOYNE STREET	Asphalt	S	349	26	9,069	76	267
NTHL::HRLD AVE::30	HAROLD AVENUE	HAROLD AVENUE	LE MOYNE STREET	Asphalt	S	66	26	1,728	90	423
NTHL::HRLD AVE::40	HAROLD AVENUE	ROY AVENUE	LE MOYNE STREET	Asphalt	S	612	26	15,908	60	261
NTHL::HRLD AVE::50	HAROLD AVENUE	COUNTRY CLUB DRIVE	BELLE DRIVE	Asphalt	S	642	26	16,691	73	232
NTHL::HRSCH ST::10	HIRSCH STREET	CARYL AVENUE	END	Asphalt	S	274	26	7,122	80	237
NTHL::HRSCH ST::20	HIRSCH STREET	CARYL AVENUE	ROY AVENUE	Asphalt	S	383	26	9,971	83	139
NTHL::HRSCH ST::30	HIRSCH STREET	ROY AVENUE	HAROLD AVENUE	Asphalt	P	314	26	8,176	79	157
NTHL::HRSCH ST::40	HIRSCH STREET	HAROLD AVENUE	ROBERTA AVENUE	Asphalt	P	314	26	8,176	81	366
NTHL::HRSCH ST::50	HIRSCH STREET	ROBERTA AVENUE	46TH AVENUE	Asphalt	P	1,330	26	34,569	79	272
NTHL::HRSCH ST::60	HIRSCH STREET	46TH AVENUE	45TH AVENUE	Asphalt	P	331	26	8,602	88	251
NTHL::HRSCH ST::70	HIRSCH STREET	45TH AVENUE	44TH AVENUE	Asphalt	P	324	26	8,431	79	215
NTHL::HRSCH ST::80	HIRSCH STREET	44TH AVENUE	43RD AVENUE	Asphalt	P	339	26	8,823	67	247

Pavement ID	Road Name	From	To	Surface	Rank	Length (FT)	Width (FT)	Area (SF)	PCI	IRI
NTHL::HRVRD AVE::10	HARVARD AVENUE	LAKE STREET	END	Asphalt	S	201	26	5,232	72	564
NTHL::HRVRD AVE::20	HARVARD AVENUE	START	NORTH AVENUE	Asphalt	S	148	26	3,858	62	587
NTHL::HRVRD AVE::30	HARVARD AVENUE	NORTH AVENUE	FRONTAGE ROAD	Asphalt	S	98	26	2,553	95	754
NTHL::HRVRD AVE::40	HARVARD AVENUE	FRONTAGE ROAD	WESTWARD HO DRIVE	Asphalt	S	327	26	8,500	100	416
NTHL::HRY CY DR::10	HARRY CARAY DRIVE	START	NORTH AVENUE	Asphalt	S	217	26	5,647	68	956
NTHL::HYS AVE::10	HAYES AVENUE	WOLF ROAD	ROY AVENUE	Asphalt	S	1,324	26	34,414	100	228
NTHL::HYS AVE::20	HAYES AVENUE	ROY AVENUE	ROBERTA AVENUE	Asphalt	S	1,309	26	34,022	100	175
NTHL::IRVNG AVE::10	IRVING AVENUE	LAKE STREET	END	Asphalt	S	197	26	5,122	100	503
NTHL::JNC AVE::10	JANICE AVENUE	START	ARMITAGE AVENUE	Asphalt	S	47	26	1,229	25	205
NTHL::JRM DR::10	JEROME DRIVE	PALMER AVENUE	LONGFIELD AVENUE	Asphalt	S	631	26	16,405	79	169
NTHL::JRM DR::20	JEROME DRIVE	START	FULLERTON AVENUE	Asphalt	S	664	26	17,252	72	165
NTHL::KNG RTR DR::10	KING ARTHUR DRIVE	START	FULLERTON AVENUE	Asphalt	S	1,070	26	27,820	47	259
NTHL::L MYN ST::100	LE MOYNE STREET	44TH AVENUE	43RD AVENUE	Asphalt	S	332	26	8,641	68	203
NTHL::L MYN ST::40	LE MOYNE STREET	WOLF ROAD	GAIL AVENUE	Asphalt	S	346	26	9,009	54	396
NTHL::L MYN ST::50	LE MOYNE STREET	GAIL AVENUE	DODD AVENUE	Asphalt	S	399	26	10,365	59	353
NTHL::L MYN ST::60	LE MOYNE STREET	HAROLD AVENUE	ROBERTA AVENUE	Asphalt	S	266	26	6,911	75	447
NTHL::L MYN ST::70	LE MOYNE STREET	ROBERTA AVENUE	46TH AVENUE	Asphalt	S	1,331	26	34,612	73	314
NTHL::L MYN ST::80	LE MOYNE STREET	46TH AVENUE	45TH AVENUE	Asphalt	S	328	26	8,523	70	180
NTHL::L MYN ST::90	LE MOYNE STREET	45TH AVENUE	44TH AVENUE	Asphalt	S	325	26	8,444	69	333
NTHL::L PRT AVE::10	LA PORTE AVENUE	WHITEHALL AVENUE	BERNICE AVENUE	Asphalt	S	307	26	7,991	95	132
NTHL::L PRT AVE::20	LA PORTE AVENUE	BERNICE AVENUE	ARMITAGE AVENUE	Asphalt	S	404	26	10,500	95	295
NTHL::L PRT AVE::30	LA PORTE AVENUE	VILLAGE DRIVE	PALMER AVENUE	Asphalt	S	1,052	26	27,345	67	190
NTHL::L PRT AVE::40	LA PORTE AVENUE	PALMER AVENUE	DEWEY AVENUE	Asphalt	S	261	26	6,776	92	220
NTHL::L PRT AVE::50	LA PORTE AVENUE	DEWEY AVENUE	LYNDALE AVENUE	Asphalt	S	374	26	9,732	93	137
NTHL::L PRT AVE::60	LA PORTE AVENUE	LYNDALE AVENUE	MEDILL AVENUE	Asphalt	S	366	26	9,525	91	114
NTHL::L PRT AVE::70	LA PORTE AVENUE	MEDILL AVENUE	FULLERTON AVENUE	Asphalt	S	389	26	10,101	92	217
NTHL::LKWD AVE::10	LAKEWOOD AVENUE	LAKE STREET	END	Asphalt	S	735	26	19,108	79	226
NTHL::LKWD BLVD::10	LAKEWOOD BOULEVARD	WOLF ROAD	LAKEWOOD AVENUE	Asphalt	S	434	26	11,284	87	223
NTHL::LND AVE::10	LIND AVENUE	LAKE STREET	END	Asphalt	S	183	26	4,758	100	430
NTHL::LND AVE::20	LIND AVENUE	START	END	Asphalt	S	464	26	12,066	18	311
NTHL::LNDN DR::10	LANDEN DRIVE	FULLERTON AVENUE	END	Asphalt	S	169	26	4,389	75	404
NTHL::LNGFLD AVE::10	LONGFIELD AVENUE	JEROME DRIVE	N LAVERGNE AVENUE	Asphalt	S	631	26	16,413	71	244
NTHL::LTGD AVE::10	ALTGELD AVENUE	MELROSE AVENUE	END	Asphalt	S	240	26	6,240	51	253
NTHL::LVRGN AVE::10	LAVERGNE AVENUE	NORTH AVENUE	FRONTAGE ROAD	Asphalt	S	98	26	2,558	67	703
NTHL::LVRGN AVE::20	LAVERGNE AVENUE	FRONTAGE ROAD	WESTWARD HO DRIVE	Asphalt	S	308	26	7,997	81	287
NTHL::LVRGN AVE::30	LAVERGNE AVENUE	WESTWARD HO DRIVE	WEST DRIVE	Asphalt	S	325	26	8,452	80	197
NTHL::LVRGN AVE::40	LAVERGNE AVENUE	WEST DRIVE	DOYLE DRIVE	Asphalt	S	144	26	3,739	92	191
NTHL::LVRGN AVE::50	LAVERGNE AVENUE	DOYLE DRIVE	FRANKLIN DRIVE	Asphalt	S	173	26	4,489	87	110
NTHL::LVRGN AVE::60	LAVERGNE AVENUE	FRANKLIN DRIVE	GOLF VIEW DRIVE	Asphalt	S	313	26	8,127	73	176
NTHL::LVRGN AVE::70	LAVERGNE AVENUE	SANDRA AVENUE	FULLERTON AVENUE	Asphalt	S	606	26	15,758	67	189
NTHL::LYNDL AVE::10	LYNDALE AVENUE	LA PORTE AVENUE	ROY AVENUE	Asphalt	S	948	26	24,644	93	186
NTHL::LYNDL AVE::20	LYNDALE AVENUE	ROY AVENUE	DEWEY AVENUE	Asphalt	S	721	26	18,741	92	152
NTHL::LYNDL AVE::30	LYNDALE AVENUE	DEWEY AVENUE	ROBERTA AVENUE	Asphalt	S	605	26	15,728	94	182

Pavement ID	Road Name	From	To	Surface	Rank	Length (FT)	Width (FT)	Area (SF)	PCI	IRI
NTHL::LYNDL AVE::40	LYNDALE AVENUE	ROBERTA AVENUE	GENEVA AVENUE	Asphalt	S	1,340	26	34,851	94	163
NTHL::MCCLN AV::10	MCCLEAN AVENUE	VILLAGE DRIVE	MAJOR DRIVE	Asphalt	S	378	26	9,832	65	330
NTHL::MCCLN AV::20	MCCLEAN AVENUE	MAJOR DRIVE	DICKENS AVENUE	Asphalt	S	308	26	8,000	59	480
NTHL::MCCLN AV::30	MCCLEAN AVENUE	DICKENS AVENUE	PALMER AVENUE	Asphalt	S	319	26	8,290	68	485
NTHL::MCLN AVE::10	MCLEAN AVENUE	MANHEIM ROAD	END	Concrete	S	291	26	7,573	98	537
NTHL::MCRTHR DR::10	MACARTHUR DRIVE	WOLF ROAD	ROY AVENUE	Asphalt	S	1,325	26	34,448	100	174
NTHL::MCRTHR DR::20	MACARTHUR DRIVE	ROY AVENUE	ROBERTA AVENUE	Asphalt	S	1,305	26	33,927	100	146
NTHL::MDLL AVE::10	MEDILL AVENUE	LA PORTE AVENUE	ROY AVENUE	Asphalt	S	946	26	24,593	93	231
NTHL::MDLL AVE::20	MEDILL AVENUE	ROY AVENUE	ROBERTA AVENUE	Asphalt	S	1,323	26	34,404	92	173
NTHL::MDLL AVE::30	MEDILL AVENUE	ROBERTA AVENUE	GENEVA AVENUE	Asphalt	S	1,322	26	34,364	90	166
NTHL::MJR DR::10	MAJOR DRIVE	ROY AVENUE	MCCLEAN AVENUE	Asphalt	S	692	26	17,980	60	215
NTHL::MJR DR::20	MAJOR DRIVE	MCCLEAN AVENUE	ROBERTA AVENUE	Asphalt	S	685	26	17,821	63	250
NTHL::MJR DR::30	MAJOR DRIVE	ROBERTA AVENUE	GENEVA AVENUE	Asphalt	S	1,306	26	33,946	90	194
NTHL::MJR DR::40	MAJOR DRIVE	GENEVA AVENUE	MANHEIM ROAD	Asphalt	S	1,336	26	34,730	62	179
NTHL::MLRS AVE::10	MELROSE AVENUE	FULLERTON AVENUE	MONTANA AVENUE	Asphalt	S	326	26	8,476	100	266
NTHL::MLRS AVE::20	MELROSE AVENUE	MONTANA AVENUE	ALTGELD AVENUE	Asphalt	S	337	26	8,762	100	257
NTHL::MNTN AVE::10	MONTANA AVENUE	MELROSE AVENUE	END	Asphalt	S	240	26	6,240	48	358
NTHL::MPLWD AVE::10	MAPLEWOOD AVENUE	LAKE STREET	END	Asphalt	S	733	26	19,060	100	234
NTHL::MRLYN AVE::10	MARILYN AVENUE	VICTORIA DRIVE	MORSE DRIVE	Asphalt	S	734	26	19,086	100	173
NTHL::MRLYN AVE::20	MARILYN AVENUE	COUNTRY CLUB DRIVE	BELLE DRIVE	Asphalt	S	758	26	19,714	100	164
NTHL::MRN AVE::10	MARION AVENUE	DIVERSEY AVENUE	END	Asphalt	S	172	26	4,473	91	472
NTHL::MRS AVE::10	MORSE AVENUE	46TH AVENUE	43RD AVENUE	Asphalt	S	986	26	25,632	100	279
NTHL::MRS AVE::20	MORSE AVENUE	46TH AVENUE	END	Asphalt	S	627	26	16,312	100	195
NTHL::MRS DR::10	MORSE DRIVE	PRATER AVENUE	MARILYN AVENUE	Asphalt	S	325	26	8,459	59	398
NTHL::MRS DR::20	MORSE DRIVE	MARILYN AVENUE	CARYL AVENUE	Asphalt	S	309	26	8,023	57	196
NTHL::MRS DR::30	MORSE DRIVE	CARYL AVENUE	ROY AVENUE	Asphalt	S	320	26	8,317	52	213
NTHL::MRS DR::40	MORSE DRIVE	ROBERTA AVENUE	END	Asphalt	S	608	26	15,804	100	177
NTHL::N LVRN AVE::10	N LAVERGNE AVENUE	PALMER AVENUE	LONGFIELD AVENUE	Asphalt	S	491	26	12,774	58	180
NTHL::NMYR CT::10	NEIMEYER COURT	PRATER AVENUE	END	Asphalt	S	325	26	8,450	24	261
NTHL::NRHWST AVE::10	NORTHWEST AVENUE	NORTH AVENUE	LAKE STREET	Concrete	P	212	60	12,723	93	388
NTHL::NRHWST AVE::20	NORTHWEST AVENUE	LAKE STREET	GRAND AVENUE	Concrete	P	8,798	26	228,752	92	198
NTHL::NRTH FR RD::10	NORTH FRONTAGE ROAD	START	PRATER AVENUE	Asphalt	S	731	26	19,005	100	466
NTHL::NRTH FR RD::20	NORTH FRONTAGE ROAD	PRATER AVENUE	ROY AVENUE	Asphalt	S	955	26	24,830	54	220
NTHL::NRTH FR RD::30	NORTH FRONTAGE ROAD	ROY AVENUE	ROBERTA AVENUE	Asphalt	S	669	26	17,394	41	444
NTHL::NRTH FR RD::40	NORTH FRONTAGE ROAD	ROBERTA AVENUE	EDWARD AVENUE	Asphalt	S	896	26	23,296	70	263
NTHL::NRTH FR RD::50	NORTH FRONTAGE ROAD	EDWARD AVENUE	ANSON DRIVE	Asphalt	S	195	26	5,070	61	415
NTHL::PLMR AVE::10	PALMER AVENUE	CHAMPION ROAD	JEROME DRIVE	Asphalt	S	650	26	16,900	36	494
NTHL::PLMR AVE::100	PALMER AVENUE	MCCLEAN AVENUE	ROBERTA AVENUE	Asphalt	S	677	26	17,591	59	327
NTHL::PLMR AVE::110	PALMER AVENUE	ROBERTA AVENUE	GENEVA AVENUE	Asphalt	S	1,364	26	35,457	62	196
NTHL::PLMR AVE::20	PALMER AVENUE	JEROME DRIVE	N LAVERGNE AVENUE	Asphalt	S	343	26	8,921	44	318
NTHL::PLMR AVE::30	PALMER AVENUE	N LAVERGNE AVENUE	WOLF ROAD	Asphalt	S	385	34	13,090	49	426
NTHL::PLMR AVE::40	PALMER AVENUE	WOLF ROAD	LA PORTE AVENUE	Asphalt	S	210	34	7,130	44	732
NTHL::PLMR AVE::50	PALMER AVENUE	LA PORTE AVENUE	PALMER AVENUE	Asphalt	S	201	26	5,213	83	271

Pavement ID	Road Name	From	To	Surface	Rank	Length (FT)	Width (FT)	Area (SF)	PCI	IRI
NTHL::PLMR AVE::60	PALMER AVENUE	LA PORTE AVENUE	PRATER AVENUE	Asphalt	S	316	26	8,228	65	371
NTHL::PLMR AVE::70	PALMER AVENUE	PRATER AVENUE	HABER COURT	Asphalt	S	317	26	8,248	72	225
NTHL::PLMR AVE::80	PALMER AVENUE	HABER COURT	ROY AVENUE	Asphalt	S	361	26	9,382	58	308
NTHL::PLMR AVE::90	PALMER AVENUE	ROY AVENUE	MCCLEAN AVENUE	Asphalt	S	647	26	16,809	64	274
NTHL::PRKVW DR::10	PARKVIEW DRIVE	WILTSE DRIVE	END	Asphalt	S	251	26	6,524	100	211
NTHL::PRKVW DR::20	PARKVIEW DRIVE	WILTSE DRIVE	PRATER AVENUE	Asphalt	S	501	26	13,038	100	177
NTHL::PRKVW DR::30	PARKVIEW DRIVE	PRATER AVENUE	ROY AVENUE	Asphalt	S	951	26	24,738	100	209
NTHL::PRKVW DR::40	PARKVIEW DRIVE	ROY AVENUE	ROBERTA AVENUE	Asphalt	S	672	26	17,485	100	255
NTHL::PRKVW DR::50	PARKVIEW DRIVE	ROBERTA AVENUE	EDWARD AVENUE	Asphalt	S	895	26	23,267	100	266
NTHL::PRTR AVE::10	PRATER AVENUE	NEIMEYER COURT	VICTORIA DRIVE	Asphalt	S	608	26	15,800	50	313
NTHL::PRTR AVE::100	PRATER AVENUE	CHARLES DRIVE	BELLE DRIVE	Asphalt	S	271	26	7,051	47	272
NTHL::PRTR AVE::110	PRATER AVENUE	BELLE DRIVE	WHITEHALL AVENUE	Asphalt	S	313	26	8,130	56	591
NTHL::PRTR AVE::120	PRATER AVENUE	WHITEHALL AVENUE	BERNICE AVENUE	Asphalt	S	312	26	8,118	73	356
NTHL::PRTR AVE::130	PRATER AVENUE	BERNICE AVENUE	ARMITAGE AVENUE	Asphalt	S	338	26	8,800	51	267
NTHL::PRTR AVE::140	PRATER AVENUE	ARMITAGE AVENUE	VILLAGE DRIVE	Asphalt	S	410	26	10,650	53	322
NTHL::PRTR AVE::150	PRATER AVENUE	VILLAGE DRIVE	PALMER AVENUE	Asphalt	S	1,017	26	26,441	59	254
NTHL::PRTR AVE::20	PRATER AVENUE	VICTORIA DRIVE	MORSE DRIVE	Asphalt	S	732	26	19,044	100	181
NTHL::PRTR AVE::30	PRATER AVENUE	MORSE DRIVE	SOUTH FRONTAGE ROAD	Asphalt	S	321	26	8,341	100	315
NTHL::PRTR AVE::40	PRATER AVENUE	SOUTH FRONTAGE ROAD	NORTH AVENUE	Asphalt	S	45	26	1,157	93	1,000
NTHL::PRTR AVE::50	PRATER AVENUE	NORTH AVENUE	NORTH FRONTAGE ROAD	Asphalt	S	98	26	2,558	57	525
NTHL::PRTR AVE::60	PRATER AVENUE	NORTH FRONTAGE ROAD	PARKVIEW DRIVE	Asphalt	S	309	26	8,027	62	427
NTHL::PRTR AVE::70	PRATER AVENUE	PARKVIEW DRIVE	EAST DRIVE	Asphalt	S	161	26	4,179	44	433
NTHL::PRTR AVE::80	PRATER AVENUE	EAST DRIVE	COUNTRY CLUB DRIVE	Asphalt	S	242	26	6,283	50	795
NTHL::PRTR AVE::90	PRATER AVENUE	COUNTRY CLUB DRIVE	CHARLES DRIVE	Asphalt	S	452	26	11,747	51	394
NTHL::RBRT AVE::10	ROBERTA AVENUE	SOFFEL AVENUE	HIRSCH STREET	Asphalt	S	473	26	12,289	80	225
NTHL::RBRT AVE::100	ROBERTA AVENUE	PARKVIEW DRIVE	COUNTRY CLUB DRIVE	Asphalt	S	458	26	11,898	100	374
NTHL::RBRT AVE::110	ROBERTA AVENUE	COUNTRY CLUB DRIVE	BELLE DRIVE	Asphalt	S	661	26	17,182	100	178
NTHL::RBRT AVE::120	ROBERTA AVENUE	BELLE DRIVE	WHITEHALL AVENUE	Asphalt	S	310	26	8,069	68	590
NTHL::RBRT AVE::130	ROBERTA AVENUE	WHITEHALL AVENUE	BERNICE AVENUE	Asphalt	S	328	26	8,516	49	368
NTHL::RBRT AVE::140	ROBERTA AVENUE	BERNICE AVENUE	ARMITAGE AVENUE	Asphalt	S	343	26	8,926	66	316
NTHL::RBRT AVE::150	ROBERTA AVENUE	ARMITAGE AVENUE	VILLAGE DRIVE	Asphalt	S	384	26	9,980	73	272
NTHL::RBRT AVE::160	ROBERTA AVENUE	VILLAGE DRIVE	MAJOR DRIVE	Asphalt	S	385	26	10,014	68	179
NTHL::RBRT AVE::170	ROBERTA AVENUE	MAJOR DRIVE	DICKENS AVENUE	Asphalt	S	312	26	8,107	70	317
NTHL::RBRT AVE::180	ROBERTA AVENUE	DICKENS AVENUE	PALMER AVENUE	Asphalt	S	316	26	8,205	64	211
NTHL::RBRT AVE::190	ROBERTA AVENUE	PALMER AVENUE	DEWEY AVENUE	Asphalt	S	346	26	9,004	100	290
NTHL::RBRT AVE::20	ROBERTA AVENUE	HIRSCH STREET	VICTORIA DRIVE	Asphalt	S	396	26	10,303	83	163
NTHL::RBRT AVE::200	ROBERTA AVENUE	DEWEY AVENUE	LYNDALE AVENUE	Asphalt	S	374	26	9,733	100	293
NTHL::RBRT AVE::210	ROBERTA AVENUE	LYNDALE AVENUE	MEDILL AVENUE	Asphalt	S	371	26	9,638	100	307
NTHL::RBRT AVE::220	ROBERTA AVENUE	MEDILL AVENUE	FULLERTON AVENUE	Asphalt	S	381	26	9,917	100	247
NTHL::RBRT AVE::230	ROBERTA AVENUE	FULLERTON AVENUE	HAYES AVENUE	Asphalt	S	444	26	11,549	76	227
NTHL::RBRT AVE::240	ROBERTA AVENUE	HAYES AVENUE	WAGNER DRIVE	Asphalt	S	387	26	10,050	100	135
NTHL::RBRT AVE::250	ROBERTA AVENUE	WAGNER DRIVE	MACARTHUR DRIVE	Asphalt	S	341	26	8,866	100	178
NTHL::RBRT AVE::260	ROBERTA AVENUE	MACARTHUR DRIVE	END	Asphalt	S	156	26	4,046	100	218

Pavement ID	Road Name	From	To	Surface	Rank	Length (FT)	Width (FT)	Area (SF)	PCI	IRI
NTHL::RBRT AVE::30	ROBERTA AVENUE	VICTORIA DRIVE	LE MOYNE STREET	Asphalt	S	337	26	8,756	81	166
NTHL::RBRT AVE::40	ROBERTA AVENUE	LE MOYNE STREET	MORSE DRIVE	Asphalt	S	372	26	9,664	87	138
NTHL::RBRT AVE::50	ROBERTA AVENUE	MORSE DRIVE	ROBERTA AVENUE	Asphalt	S	56	26	1,453	93	206
NTHL::RBRT AVE::60	ROBERTA AVENUE	ROBERTA AVENUE	SOUTH FRONTAGE ROAD	Asphalt	S	279	26	7,263	93	198
NTHL::RBRT AVE::70	ROBERTA AVENUE	SOUTH FRONTAGE ROAD	NORTH AVENUE	Asphalt	S	33	26	855	95	331
NTHL::RBRT AVE::80	ROBERTA AVENUE	NORTH AVENUE	NORTH FRONTAGE ROAD	Asphalt	S	91	26	2,366	87	587
NTHL::RBRT AVE::90	ROBERTA AVENUE	NORTH FRONTAGE ROAD	PARKVIEW DRIVE	Asphalt	S	319	26	8,296	100	440
NTHL::RHDS AVE::10	RHODES AVENUE	START	PEARL AVENUE	Asphalt	S	338	26	8,776	67	278
NTHL::RHDS AVE::20	RHODES AVENUE	PEARL AVENUE	END	Asphalt	S	304	26	7,895	89	189
NTHL::RHDS AVE::30	RHODES AVENUE	MARTIN AVENUE	DERROUGH AVENUE	Asphalt	S	365	26	9,489	50	269
NTHL::RLRD AVE::10	RAILROAD AVENUE	LAKE STREET	NORTH AVENUE	Concrete	P	657	65	42,712	90	437
NTHL::RLRD AVE::20	RAILROAD AVENUE	NORTH AVENUE	WHITEHALL AVENUE	Asphalt	S	1,935	32	61,934	55	298
NTHL::RLRD AVE::30	RAILROAD AVENUE	WHITEHALL AVENUE	END	Asphalt	S	2,481	26	64,496	34	383
NTHL::RMTG AVE::10	ARMITAGE AVENUE	VILLAGE DRIVE	LA PORTE AVENUE	Asphalt	S	159	26	4,134	59	356
NTHL::RMTG AVE::20	ARMITAGE AVENUE	LA PORTE AVENUE	PRATER AVENUE	Asphalt	S	611	26	15,886	51	187
NTHL::RMTG AVE::30	ARMITAGE AVENUE	PRATER AVENUE	ROY AVENUE	Asphalt	S	821	26	21,346	58	205
NTHL::RMTG AVE::40	ARMITAGE AVENUE	ROY AVENUE	ROBERTA AVENUE	Asphalt	S	1,061	26	27,586	68	185
NTHL::RMTG AVE::50	ARMITAGE AVENUE	ROBERTA AVENUE	ARMITAGE AVENUE	Asphalt	S	1,098	26	28,548	62	161
NTHL::RMTG AVE::60	ARMITAGE AVENUE	ARMITAGE AVENUE	GENEVA AVENUE	Asphalt	S	105	26	2,730	76	192
NTHL::RMTG AVE::70	ARMITAGE AVENUE	GENEVA AVENUE	JANICE AVENUE	Asphalt	S	397	26	10,322	58	289
NTHL::RMTG AVE::80	ARMITAGE AVENUE	JANICE AVENUE	MANHEIM ROAD	Concrete	S	938	26	24,388	84	255
NTHL::RY AVE::10	ROY AVENUE	SOFFEL AVENUE	HIRSCH STREET	Asphalt	P	482	26	12,524	83	193
NTHL::RY AVE::100	ROY AVENUE	BELLE DRIVE	WHITEHALL AVENUE	Asphalt	P	306	26	7,944	100	338
NTHL::RY AVE::110	ROY AVENUE	WHITEHALL AVENUE	BERNICE AVENUE	Asphalt	P	329	26	8,548	100	327
NTHL::RY AVE::120	ROY AVENUE	BERNICE AVENUE	ARMITAGE AVENUE	Asphalt	P	372	26	9,660	100	123
NTHL::RY AVE::130	ROY AVENUE	ARMITAGE AVENUE	VILLAGE DRIVE	Asphalt	P	469	26	12,185	100	139
NTHL::RY AVE::140	ROY AVENUE	VILLAGE DRIVE	MAJOR DRIVE	Asphalt	P	433	26	11,266	100	144
NTHL::RY AVE::150	ROY AVENUE	MAJOR DRIVE	DICKENS AVENUE	Asphalt	P	304	26	7,905	100	80
NTHL::RY AVE::160	ROY AVENUE	DICKENS AVENUE	PALMER AVENUE	Asphalt	P	321	26	8,339	100	210
NTHL::RY AVE::170	ROY AVENUE	PALMER AVENUE	DEWEY AVENUE	Asphalt	P	348	26	9,053	100	251
NTHL::RY AVE::180	ROY AVENUE	DEWEY AVENUE	LYNDALE AVENUE	Asphalt	P	375	26	9,749	100	229
NTHL::RY AVE::190	ROY AVENUE	LYNDALE AVENUE	MEDILL AVENUE	Asphalt	P	368	26	9,562	100	270
NTHL::RY AVE::20	ROY AVENUE	HIRSCH STREET	VICTORIA DRIVE	Asphalt	P	353	26	9,190	93	198
NTHL::RY AVE::200	ROY AVENUE	MEDILL AVENUE	FULLERTON AVENUE	Asphalt	P	386	26	10,026	100	210
NTHL::RY AVE::210	ROY AVENUE	FULLERTON AVENUE	HAYES AVENUE	Asphalt	S	442	26	11,504	100	185
NTHL::RY AVE::220	ROY AVENUE	HAYES AVENUE	WAGNER DRIVE	Asphalt	S	385	26	10,019	100	173
NTHL::RY AVE::230	ROY AVENUE	WAGNER DRIVE	MACARTHUR DRIVE	Asphalt	S	340	26	8,834	100	288
NTHL::RY AVE::240	ROY AVENUE	MACARTHUR DRIVE	END	Asphalt	S	154	26	4,013	100	158
NTHL::RY AVE::30	ROY AVENUE	VICTORIA DRIVE	MORSE DRIVE	Asphalt	P	740	26	19,253	86	183
NTHL::RY AVE::40	ROY AVENUE	MORSE DRIVE	SOUTH FRONTAGE ROAD	Asphalt	P	332	26	8,621	76	480
NTHL::RY AVE::50	ROY AVENUE	SOUTH FRONTAGE ROAD	NORTH AVENUE	Asphalt	P	37	26	950	91	410
NTHL::RY AVE::60	ROY AVENUE	NORTH AVENUE	NORTH FRONTAGE ROAD	Asphalt	P	99	26	2,562	77	955
NTHL::RY AVE::70	ROY AVENUE	NORTH FRONTAGE ROAD	PARKVIEW DRIVE	Asphalt	P	314	26	8,152	100	324

Pavement ID	Road Name	From	To	Surface	Rank	Length (FT)	Width (FT)	Area (SF)	PCI	IRI
NTHL::RY AVE::80	ROY AVENUE	PARKVIEW DRIVE	COUNTRY CLUB DRIVE	Asphalt	P	463	26	12,043	100	220
NTHL::RY AVE::90	ROY AVENUE	COUNTRY CLUB DRIVE	BELLE DRIVE	Asphalt	P	656	26	17,059	100	199
NTHL::S LVRN AVE::10	S LAVERGNE AVENUE	ELM AVENUE	SOFFEL AVENUE	Asphalt	S	551	26	14,315	55	522
NTHL::S LVRN AVE::20	S LAVERGNE AVENUE	SOFFEL AVENUE	END	Asphalt	S	241	26	6,266	79	425
NTHL::S LVRN AVE::30	S LAVERGNE AVENUE	LAKE STREET	END	Asphalt	S	168	26	4,368	37	473
NTHL::SFFL AV::10	SOFFEL AVENUE	ELM AVENUE	S LAVERGNE AVENUE	Asphalt	S	325	26	8,447	85	194
NTHL::SFFL AV::20	SOFFEL AVENUE	S LAVERGNE AVENUE	WOLF ROAD	Asphalt	S	353	26	9,181	86	337
NTHL::SFFL AV::25	SOFFEL AVENUE	ROY AVENUE	HAROLD AVENUE	Asphalt	S	310	26	8,060	64	280
NTHL::SFFL AV::27	SOFFEL AVENUE	HAROLD AVENUE	ROBERTA AVENUE	Asphalt	S	310	26	8,060	67	356
NTHL::SFFL AV::30	SOFFEL AVENUE	46TH AVENUE	45TH AVENUE	Asphalt	S	327	26	8,514	61	306
NTHL::SFFL AV::40	SOFFEL AVENUE	45TH AVENUE	44TH STREET	Asphalt	S	323	26	8,411	51	428
NTHL::SNDR AV::10	SANDRA AVENUE	FULLERTON AVENUE	LAVERGNE AVENUE	Asphalt	S	817	26	21,248	76	151
NTHL::SNDR AV::20	SANDRA AVENUE	GRAND AVENUE	END	Asphalt	S	571	26	14,858	100	174
NTHL::STH FTG RD::10	SOUTH FRONTAGE ROAD	NORTH AVENUE	GAIL AVENUE	Asphalt	S	288	26	7,491	45	408
NTHL::STH FTG RD::20	SOUTH FRONTAGE ROAD	GAIL AVENUE	PRATER AVENUE	Asphalt	S	614	26	15,972	100	582
NTHL::STH FTG RD::30	SOUTH FRONTAGE ROAD	PRATER AVENUE	ROY AVENUE	Asphalt	S	960	26	24,954	75	443
NTHL::STH FTG RD::40	SOUTH FRONTAGE ROAD	ROY AVENUE	ROBERTA AVENUE	Asphalt	S	662	26	17,210	70	232
NTHL::STH FTG RD::50	SOUTH FRONTAGE ROAD	ROBERTA AVENUE	EDWARD AVENUE	Asphalt	S	900	26	23,407	71	321
NTHL::STH FTG RD::60	SOUTH FRONTAGE ROAD	EDWARD AVENUE	46TH AVENUE	Asphalt	S	425	26	11,048	100	280
NTHL::STH FTG RD::70	SOUTH FRONTAGE ROAD	46TH AVENUE	IL 64	Asphalt	S	553	26	14,376	100	284
NTHL::TMTC LC DR::10	AUTOMATIC ELECTRIC DRIVE	START	WOLF ROAD	Asphalt	S	885	26	23,019	100	205
NTHL::VCTR DR::10	VICTORIA DRIVE	DODD AVENUE	END	Asphalt	S	207	26	5,378	95	171
NTHL::VCTR DR::20	VICTORIA DRIVE	DODD AVENUE	PRATER AVENUE	Asphalt	S	319	26	8,290	94	200
NTHL::VCTR DR::30	VICTORIA DRIVE	PRATER AVENUE	MARILYN AVENUE	Asphalt	S	329	26	8,551	100	333
NTHL::VCTR DR::40	VICTORIA DRIVE	MARILYN AVENUE	CARYL AVENUE	Asphalt	S	306	26	7,967	100	150
NTHL::VCTR DR::50	VICTORIA DRIVE	CARYL AVENUE	ROY AVENUE	Asphalt	S	315	26	8,197	100	235
NTHL::VCTR DR::60	VICTORIA DRIVE	ROY AVENUE	HAROLD AVENUE	Asphalt	S	268	26	6,966	100	423
NTHL::VCTR DR::70	VICTORIA DRIVE	ROBERTA AVENUE	END	Asphalt	S	732	26	19,042	93	160
NTHL::VCTR DR::80	VICTORIA DRIVE	START	46TH AVENUE	Asphalt	S	352	26	9,159	100	202
NTHL::VLLG DR::10	VILLAGE DRIVE	ARMITAGE AVENUE	LA PORTE AVENUE	Asphalt	S	99	26	2,581	56	249
NTHL::VLLG DR::20	VILLAGE DRIVE	LA PORTE AVENUE	PRATER AVENUE	Asphalt	S	390	26	10,128	80	161
NTHL::VLLG DR::30	VILLAGE DRIVE	PRATER AVENUE	HABER COURT	Asphalt	S	325	26	8,452	67	161
NTHL::VLLG DR::40	VILLAGE DRIVE	HABER COURT	ROY AVENUE	Asphalt	S	405	26	10,524	74	217
NTHL::VLLG DR::50	VILLAGE DRIVE	ROY AVENUE	MCCLEAN AVENUE	Asphalt	S	518	26	13,481	65	211
NTHL::VLLG DR::60	VILLAGE DRIVE	MCCLEAN AVENUE	ROBERTA AVENUE	Asphalt	S	821	26	21,341	69	136
NTHL::VLLG DR::70	VILLAGE DRIVE	ROBERTA AVENUE	ARMITAGE AVENUE	Asphalt	S	1,133	26	29,466	73	226
NTHL::WGNR DR::10	WAGNER DRIVE	WOLF ROAD	ROY AVENUE	Asphalt	S	1,323	26	34,407	100	165
NTHL::WGNR DR::20	WAGNER DRIVE	ROY AVENUE	ROBERTA AVENUE	Asphalt	S	1,303	26	33,890	100	137
NTHL::WHTHLL AVE::10	WHITEHALL AVENUE	RAILROAD AVENUE	WOLF ROAD	Asphalt	S	2,696	32	86,262	100	371
NTHL::WHTHLL AVE::20	WHITEHALL AVENUE	WOLF ROAD	LA PORTE AVENUE	Asphalt	P	336	26	8,725	93	189
NTHL::WHTHLL AVE::30	WHITEHALL AVENUE	LA PORTE AVENUE	PRATER AVENUE	Asphalt	P	692	26	18,000	95	127
NTHL::WHTHLL AVE::40	WHITEHALL AVENUE	PRATER AVENUE	ROY AVENUE	Asphalt	P	949	26	24,670	95	156
NTHL::WHTHLL AVE::50	WHITEHALL AVENUE	ROY AVENUE	ROBERTA AVENUE	Asphalt	P	670	26	17,408	91	179

Pavement ID	Road Name	From	To	Surface	Rank	Length (FT)	Width (FT)	Area (SF)	PCI	IRI
NTHL::WHTHLL AVE::60	WHITEHALL AVENUE	ROBERTA AVENUE	ALVIN AVENUE	Asphalt	S	1,049	26	27,277	83	216
NTHL::WHTHLL AVE::70	WHITEHALL AVENUE	ALVIN AVENUE	GENEVA AVENUE	Asphalt	S	239	26	6,225	86	197
NTHL::WLF RD::10	WOLF ROAD	LAKE STREET	LAKEWOOD BOULEVARD	Asphalt	P	544	65	35,383	80	127
NTHL::WLF RD::100	WOLF ROAD	PALMER AVENUE	FULLERTON AVENUE	Asphalt	P	1,320	50	65,998	100	127
NTHL::WLF RD::110	WOLF ROAD	FULLERTON AVENUE	HAYES AVENUE	Asphalt	P	442	50	22,093	100	144
NTHL::WLF RD::120	WOLF ROAD	HAYES AVENUE	WAGNER DRIVE	Asphalt	P	384	50	19,213	100	179
NTHL::WLF RD::130	WOLF ROAD	WAGNER DRIVE	MACARTHUR DRIVE	Asphalt	P	338	50	16,925	100	111
NTHL::WLF RD::140	WOLF ROAD	MACARTHUR DRIVE	WINTERS DRIVE	Asphalt	P	327	50	16,326	100	136
NTHL::WLF RD::150	WOLF ROAD	WINTERS DRIVE	END	Asphalt	P	54	50	2,708	100	117
NTHL::WLF RD::20	WOLF ROAD	SOFFEL AVENUE	LE MOYNE STREET	Asphalt	P	662	65	43,021	77	163
NTHL::WLF RD::30	WOLF ROAD	LE MOYNE STREET	NORTH AVENUE	Asphalt	P	692	65	45,005	73	187
NTHL::WLF RD::40	WOLF ROAD	NORTH AVENUE	WILTSE DRIVE	Asphalt	P	875	65	56,874	100	197
NTHL::WLF RD::50	WOLF ROAD	DOYLE DRIVE	COUNTRY CLUB DRIVE	Asphalt	P	388	55	21,353	100	171
NTHL::WLF RD::60	WOLF ROAD	COUNTRY CLUB DRIVE	WHITEHALL AVENUE	Asphalt	P	594	50	29,717	100	179
NTHL::WLF RD::70	WOLF ROAD	WHITEHALL AVENUE	AUTOMATIC ELECTRIC DRIVE	Asphalt	P	762	50	38,100	100	156
NTHL::WLF RD::80	WOLF ROAD	AUTOMATIC ELECTRIC DRIVE	VILLAGE DRIVE	Asphalt	P	89	50	4,455	100	136
NTHL::WLF RD::90	WOLF ROAD	VILLAGE DRIVE	PALMER AVENUE	Asphalt	P	1,291	50	64,532	93	157
NTHL::WLLM AV::10	WILLIAM AVENUE	COUNTRY CLUB DRIVE	BELLE DRIVE	Asphalt	S	682	26	17,733	100	198
NTHL::WLTS DR::10	WILTSE DRIVE	WOLF ROAD	PARKVIEW DRIVE	Asphalt	S	862	26	22,418	29	291
NTHL::WST DR::10	WEST DRIVE	WESTWARD HO DRIVE	HILLSIDE AVENUE	Asphalt	S	1,098	26	28,555	80	145
NTHL::WST DR::20	WEST DRIVE	HILLSIDE AVENUE	LAVERGNE AVENUE	Asphalt	S	1,045	26	27,170	82	157
NTHL::WSTWRD DR::10	WESTWARD HO DRIVE	FRANKLIN DRIVE	GOLF VIEW DRIVE	Asphalt	S	309	26	8,037	87	217
NTHL::WSTWRD DR::20	WESTWARD HO DRIVE	WEST DRIVE	FRANKLIN DRIVE	Asphalt	S	315	26	8,182	93	234
NTHL::WSTWRD DR::30	WESTWARD HO DRIVE	HARVARD AVENUE	WEST DRIVE	Asphalt	S	721	26	18,753	90	188
NTHL::WSTWRD DR::40	WESTWARD HO DRIVE	HARVARD AVENUE	HILLSIDE AVENUE	Asphalt	S	651	26	16,917	90	285
NTHL::WSTWRD DR::50	WESTWARD HO DRIVE	HILLSIDE AVENUE	LAVERGNE AVENUE	Asphalt	S	1,017	26	26,435	86	379

APPENDIX G – PAVEMENT INVENTORY TABULAR DATA BY ROADWAY

Road Name	Surface	Rank	Length (FT)	Width (FT)	Area (SF)
43RD AVENUE	Asphalt	S	1,436	26	37,344
44TH AVENUE	Asphalt	S	1,902	26	49,463
45TH AVENUE	Asphalt	S	1,849	26	48,074
46TH AVENUE	Asphalt	S	1,645	26	42,782
ALVIN AVENUE	Asphalt	S	1,431	26	37,208
ASHBEL AVENUE	Asphalt	S	221	26	5,757
BELLE DRIVE	Asphalt	S	3,596	26	93,506
BRICKHOUSE AVENUE	Asphalt	S	213	26	5,538
BERNICE AVENUE	Asphalt	S	3,622	26	94,160
CHAMPION ROAD	Asphalt	S	1,255	26	32,630
CHARLES DRIVE	Asphalt	S	517	26	13,433
COUNTRY CLUB DRIVE	Asphalt	S	3,562	26	92,624
CARYL AVENUE	Asphalt	S	1,936	26	50,327
DICKENS AVENUE	Asphalt	S	2,906	26	75,551
DODD AVENUE	Asphalt	S	899	26	23,371
DERROUGH AVENUE	Asphalt	S	712	26	18,520
DIVERSEY AVENUE	Asphalt	S	1,296	35	41,352
DEWEY AVENUE	Asphalt	S	3,190	26	82,945
DOYLE DRIVE	Asphalt	S	337	26	8,760
EDWARD AVENUE	Asphalt	S	1,541	26	40,071
ELM AVENUE	Asphalt	S	552	26	14,361
EAST DRIVE	Asphalt	S	1,326	26	34,482
FULLERTON AVENUE	Asphalt	S	5,315	26	147,366
FRANKLIN DRIVE	Asphalt	S	2,135	26	55,505
FRONTAGE ROAD	Asphalt	S	2,009	26	52,225
GAIL AVENUE	Asphalt	S	793	26	20,611
GOLF VIEW DRIVE	Asphalt	S	2,271	26	59,044
GENEVA AVENUE	Asphalt	S	3,648	26	94,854
GARNET DRIVE	Asphalt	S	1,278	32	40,902
HABER COURT	Asphalt	S	1,014	26	26,365
HILLSIDE AVENUE	Asphalt	S	1,811	26	54,370
HAROLD AVENUE	Asphalt	S	2,146	26	55,802
HIRSCH STREET	Asphalt	S	3,610	26	93,869
HARVARD AVENUE	Asphalt	S	775	26	20,143
HARRY CARAY DRIVE	Asphalt	S	217	26	5,647
HAYES AVENUE	Asphalt	S	2,632	26	68,436
IRVING AVENUE	Asphalt	S	197	26	5,122
JANICE AVENUE	Asphalt	S	47	26	1,229
JEROME DRIVE	Asphalt	S	1,294	26	33,657
KING ARTHUR DRIVE	Asphalt	S	1,070	26	27,820
LE MOYNE STREET	Asphalt	S	3,327	26	86,505
LA PORTE AVENUE	Asphalt	S	3,153	26	81,971
LAKEWOOD AVENUE	Asphalt	S	735	26	19,108
LAKEWOOD BOULEVARD	Asphalt	S	434	26	11,284
LIND AVENUE	Asphalt	S	647	26	16,824
LANDEN DRIVE	Asphalt	S	169	26	4,389

Road Name	Surface	Rank	Length (FT)	Width (FT)	Area (SF)
LONGFIELD AVENUE	Asphalt	S	631	26	16,413
ALTGELD AVENUE	Asphalt	S	240	26	6,240
LAVERGNE AVENUE	Asphalt	S	1,966	26	51,120
LYNDALE AVENUE	Asphalt	S	3,614	26	93,964
MCCLEAN AVENUE	Asphalt	S	1,005	26	26,123
MCLEAN AVENUE	Concrete	S	291	26	7,573
MACARTHUR DRIVE	Asphalt	S	2,630	26	68,376
MEDILL AVENUE	Asphalt	S	3,591	26	93,362
MAJOR DRIVE	Asphalt	S	4,018	26	104,478
MELROSE AVENUE	Asphalt	S	663	26	17,238
MONTANA AVENUE	Asphalt	S	240	26	6,240
MAPLEWOOD AVENUE	Asphalt	S	733	26	19,060
MARILYN AVENUE	Asphalt	S	1,492	26	38,800
MARION AVENUE	Asphalt	S	172	26	4,473
MORSE AVENUE	Asphalt	S	1,613	26	41,944
MORSE DRIVE	Asphalt	S	1,562	26	40,603
N LAVERGNE AVENUE	Asphalt	S	491	26	12,774
NEIMEYER COURT	Asphalt	S	325	26	8,450
NORTHWEST AVENUE	Concrete	P	9,010	60	241,476
NORTH FRONTAGE ROAD	Asphalt	S	3,446	26	89,595
PALMER AVENUE	Asphalt	S	5,470	26	146,968
PARKVIEW DRIVE	Asphalt	S	3,271	26	85,052
PRATER AVENUE	Asphalt	S	5,628	26	146,327
ROBERTA AVENUE	Asphalt	S	8,652	26	224,946
RHODES AVENUE	Asphalt	S	1,006	26	26,160
RAILROAD AVENUE	Concrete	P	5,073	65	169,142
ARMITAGE AVENUE	Asphalt	S	5,190	26	134,940
ROY AVENUE	Asphalt	P	8,806	26	228,960
S LAVERGNE AVENUE	Asphalt	S	960	26	24,949
SOFFEL AVENUE	Asphalt	S	1,949	26	50,673
SANDRA AVENUE	Asphalt	S	1,389	26	36,106
SOUTH FRONTAGE ROAD	Asphalt	S	4,402	26	114,457
AUTOMATIC ELECTRIC DRIVE	Asphalt	S	885	26	23,019
VICTORIA DRIVE	Asphalt	S	2,829	26	73,551
VILLAGE DRIVE	Asphalt	S	3,691	26	95,972
WAGNER DRIVE	Asphalt	S	2,627	26	68,297
WHITEHALL AVENUE	Asphalt	S	6,630	32	188,567
WOLF ROAD	Asphalt	P	8,763	65	481,702
WILLIAM AVENUE	Asphalt	S	682	26	17,733
WILTSE DRIVE	Asphalt	S	862	26	22,418
WEST DRIVE	Asphalt	S	2,143	26	55,725
WESTWARD HO DRIVE	Asphalt	S	3,012	26	78,325