

# Pavement Data Collection and Pavement Management System Implementation for the Village of Hodgkins

Prepared For:  
Chicago Metropolitan Agency for Planning  
Village of Hodgkins, Illinois

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## 1. INTRODUCTION

### 1.1 Background

Chicago Metropolitan Agency for Planning (CMAP) selected the ARA team to develop pavement management plans for a selected number of local agencies from the CMAP region, including additional data collection for non-Federal Aid routes. The pavement management plans will provide participating local agencies with a document that describes the importance and types of pavement preservation, the current condition of pavement, scenarios evaluating the cost to meet different network-level pavement conditions, and a recommended capital plan based on the selected pavement condition/spending scenario. The pavement management plan includes summary tables, charts, graphics, and maps depicting current pavement condition and forecasted pavement conditions under different scenarios. CMAP staff managed the development of the pavement management plans in conjunction with Village of Hodgkins.

As part of this project, ARA has evaluated the current condition of the Village of Hodgkins's roadway pavement network, implemented pavement management system (PMS) using PAVER™ software, forecasted condition, generated budget scenario, and recommended future maintenance and rehabilitation (M&R) plans.

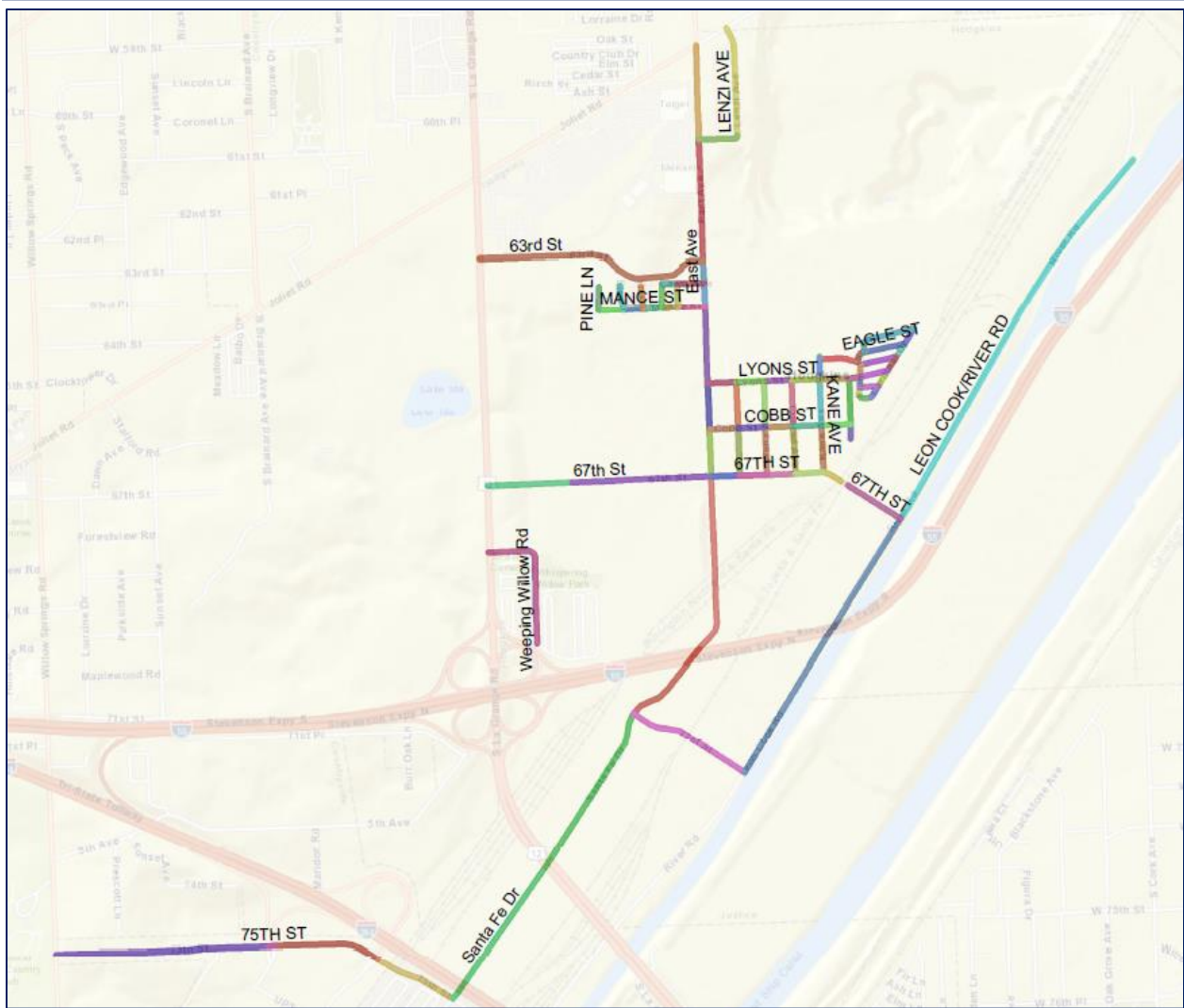
### 1.2 Project Kick-off and Records Review

The ARA team met with the Village of Hodgkins and CMAP representatives for a project kick-off meeting on September 5, 2018. Based on the kick-off meeting and documents provided by the Village and CMAP, pavement data was collected on October 8, 2018. The GIS shapefile was provided by CMAP and was used as the base map for the field data collection. The Village responded with valuable information to the questionnaire that ARA developed for an understanding of the PMS inputs available from the Village and any specific project requirements. The Village also provided roadway construction/resurfacing plans from which ARA extracted pavement related attributes such as length, width, presence of curb and sidewalk, functional class, and construction. In addition, the Village provided their annual M&R budget from 2019 through 2023 to plan future activities. The following documents were reviewed as part of this effort:

- GIS shapefile for local agency (CMAP)
- Network segmentation for collection (CMAP)
- Completed questionnaire (Village of Hodgkins)
- Roadway construction/resurfacing plans (Village of Hodgkins)
- Review of network segmentation (Village of Hodgkins)

### 1.3 Network Segmentation

The Village of Hodgkins manages approximately 10.4 miles of roadway pavements, consisting primarily of asphalt pavements. The pavement network was divided into 84 sections based on the feedback provided by the Village. Figure 1 shows the network segmentation that was approved by the Village.



**Figure 1. Roadway Network Segmentation of the Village of Hodgkins.**

Table 1 displays the distribution of network length based on functional class. As observed in Table 1, majority of the roadway network is comprised of collector and residential streets.

**Table 1. Village of Hodgkins’s Roadway Network Distribution.**

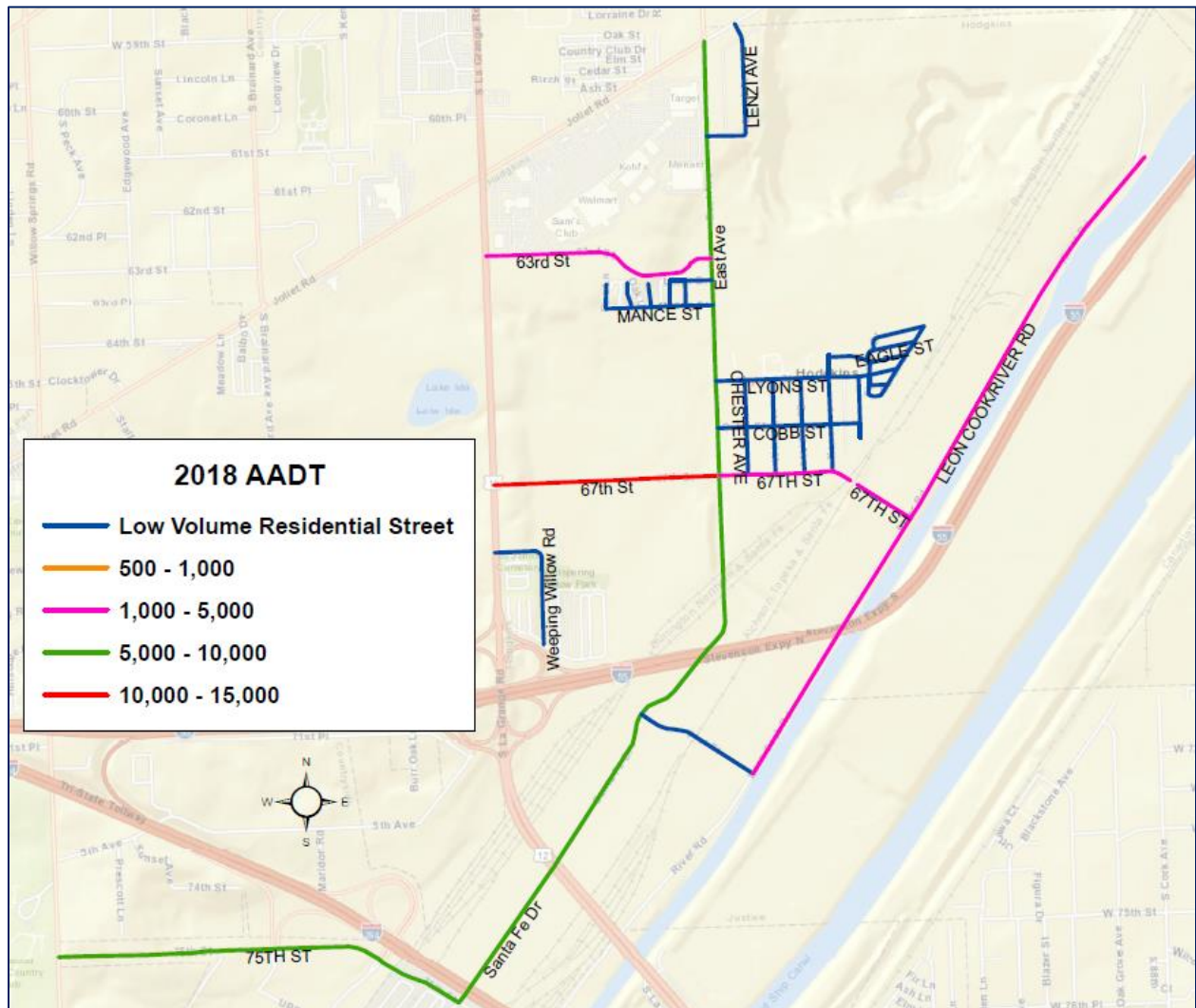
Network/Functional Class	Length	Unit
Collector	6.2	miles
Residential	4.2	miles
Total Network	10.4	miles

### 1.4 Traffic Data

Average daily traffic (ADT) data for the Village of Hodgkins network was obtained from the Illinois Department of Transportation (IDOT) transportation management system (<http://www.gettingaroundillinois.com/gai.htm?mt=aadt>). Table 2 shows traffic data based on the functional class of the streets. Traffic volumes range from 1,550 to 10,250 vehicles per day. Figure 2 shows annual average daily traffic (AADT) data for the individual pavement sections.

**Table 2. Summary of Traffic Data.**

Functional Class	Maximum AADT in 2018	Minimum AADT in 2018
Collector	10,250	1,550
Residential	N/A	N/A



**Figure 2. Annual Average Daily Traffic Data of the Village of Hodgkins.**

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## 2. FIELD DATA COLLECTION AND ASSESSMENT

### 2.1 Digital Survey Vehicle (DSV)

ARA collected geo-referenced images of the entire Village of Hodgkins roadway network using the DSV on October 8, 2018. ARA's DSV equipped with the Laser Crack Measurement System (LCMS), shown in Figure 3, captures images at 20-ft intervals. Each image is linearly referenced with the DSV's onboard distance measuring instrument (DMI) and associated global positioning system (GPS) coordinates. For two lane County highways, ARA collected images in a single direction. In four-lane pavement sections, data was collected in the outermost lane in both directions.



**Figure 3. ARA's Laser Crack Measurement System.**

The LCMS captures enhanced right-of-way images using a 360° camera system. The images were used to assess the surface condition of the pavement using the Pavement Condition Index (PCI) methodology in accordance with ASTM D6433. In addition to the images, sensor data was collected including International Roughness Index (IRI) and rutting for all the segments.

### 2.2 Pavement Condition Index Procedure

The pavement condition index (PCI) is a measurement of pavement condition which ranges from 0 to 100. This is an industry standard defined in ASTM D6433. The PCI value and corresponding pavement condition rating are shown in Figure 4. A newly constructed pavement will have a PCI of 100 whereas a failed pavement will have a PCI of 20 or less. After the construction of pavements, the condition of pavement starts deteriorating with time due to traffic loads and volumes, climate, construction materials, and age.

PCI Value	Pavement Rating
100	<b>Very Good</b>
80	
60	<b>Good</b>
40	<b>Fair</b>
20	<b>Poor</b>
0	<b>Very Poor</b>

**Figure 4. Pavement Condition Category Based on PCI Value.**

A PCI survey allows users to compare all pavements on a common scale and provides an index for monitoring pavement deterioration and treatment selection during the PMS analysis. Typically, PCI surveys are conducted foot-on-ground in the field. The modified version allows the use of digital images to perform the survey in an office environment and still provide the highest detail of distress rating.

ARA’s LCMS system identifies the pavement distresses and reports the type, severity, and extent of key pavement distresses as shown in Figure 5. Some sample pavement surface images with representative PCI values are shown in Figure 6.

Ten percent of the surveyed sections were subjected to an internal quality assurance survey by an independent surveyor. After completion of the PCI calculation, visual checks were performed to ensure that the PCI values are representative of the surveyed images.

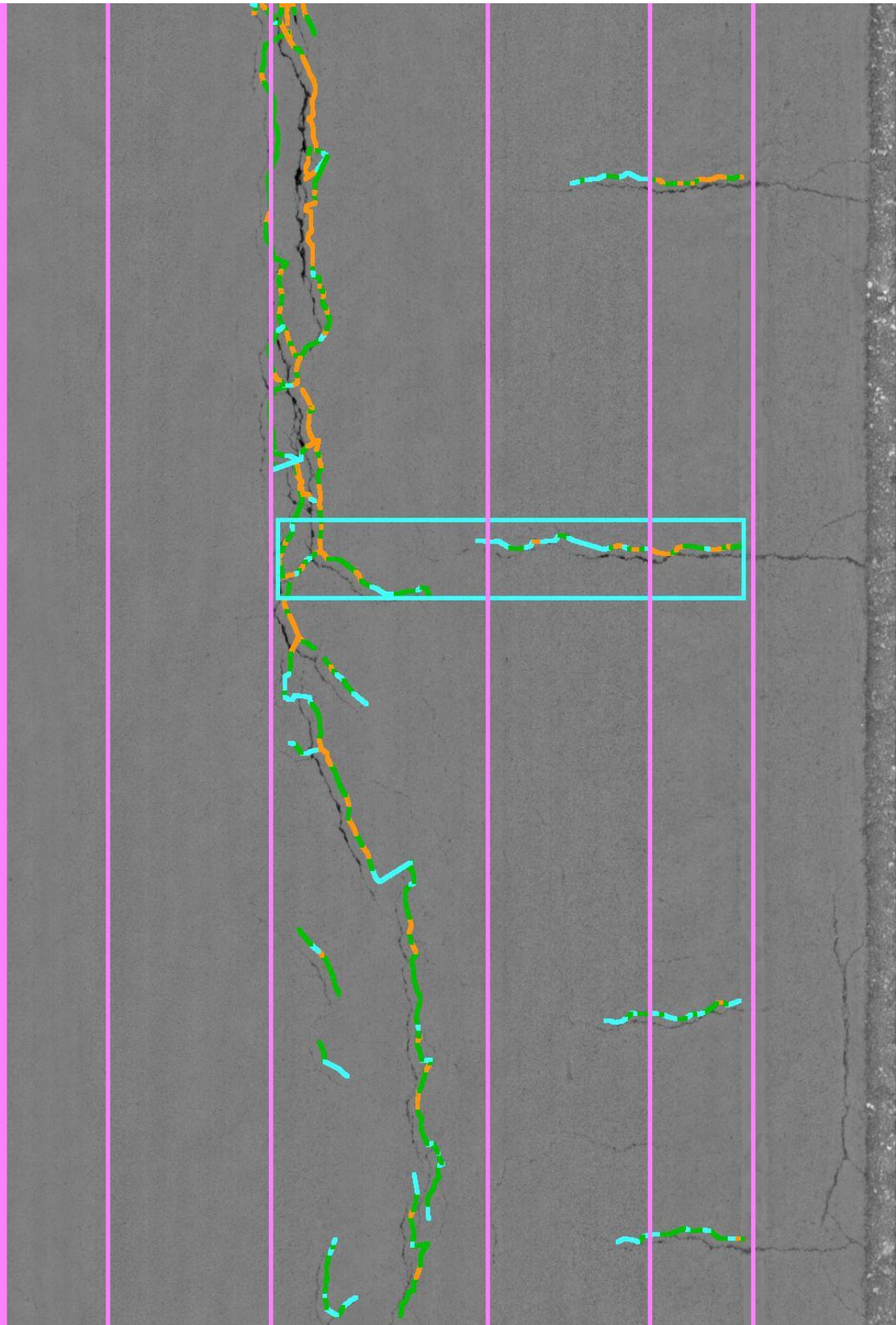


Figure 5. Pavement Distress Detection Using LCMS System.





Figure 6. Sample Pavement Distress Images with Different PCI Values.

### 2.3 Pavement Network and Current Condition

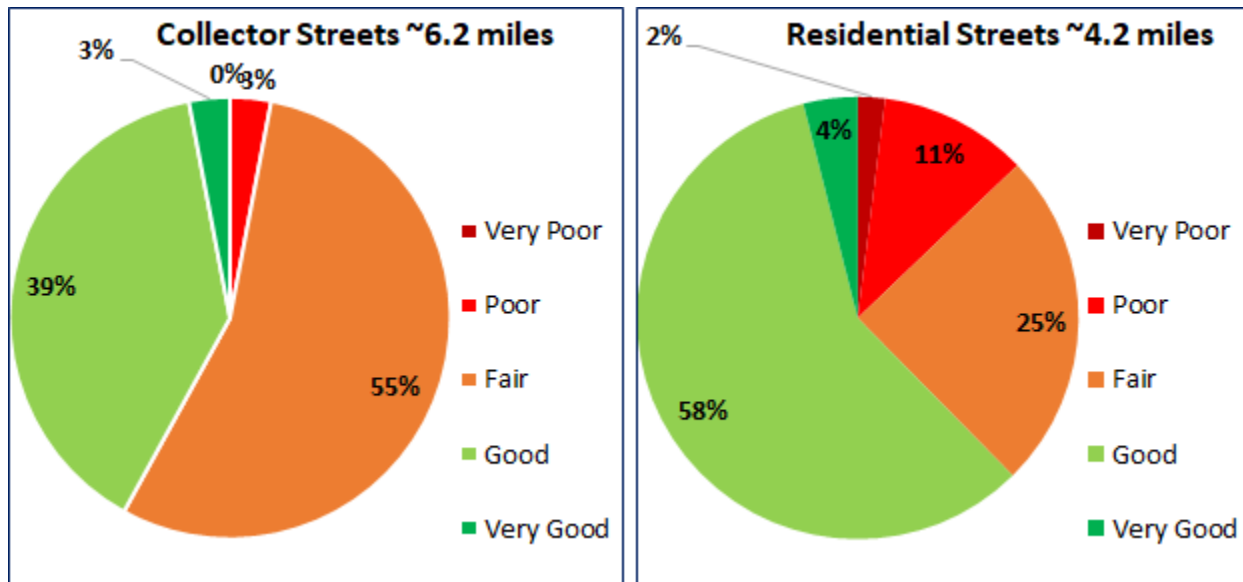
After performing an automated condition survey with the collected images, the inspection data was imported into the PAVER™ software. The ARA team presented the pavement condition results to the Village and CMAP on March 15, 2019. Based on the October 2018 pavement condition survey, the weighted average PCI of the network is 59.5 which represents a pavement network is in fair condition. The collector pavement sections comprise 65% of the network, and are in good condition with an average PCI value of 60.1. Rest of the network consists of residential streets with an average PCI value of

59.5. The current pavement condition based on the functional class can be summarized as shown Table 3. Figure 7 displays the current pavement condition distributions based on functional class.

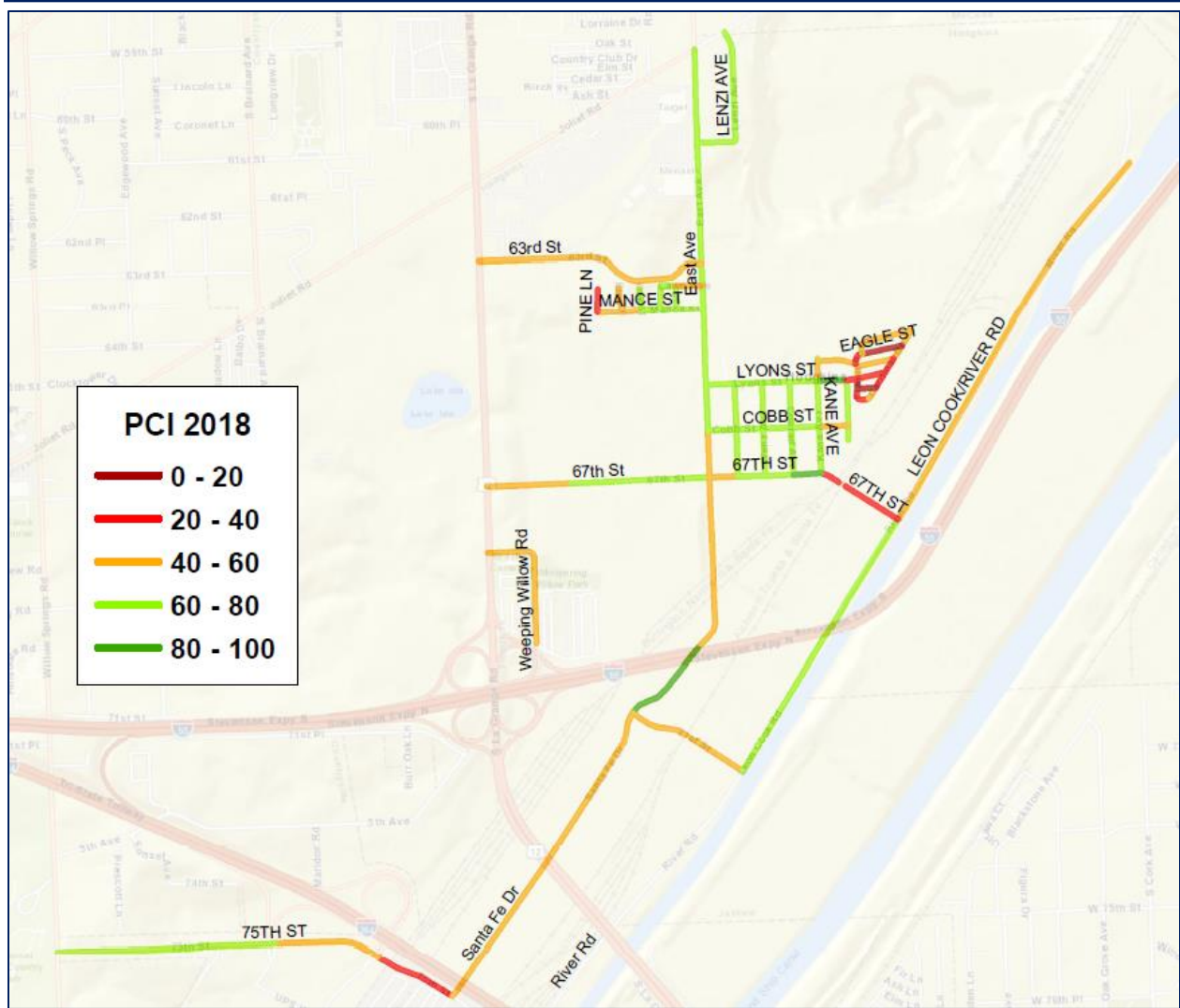
**Table 3. Pavement Functional Class and Current PCI**

Section Rank	% Pavement Area of the Network	% Area of Network in Poor and Very Poor Condition	Wt. Avg. PCI
Collector	65.0	3.0	60.1
Residential	35.0	13.0	59.5

Figure 8 shows pavement condition rating for the Village of Hodgkins network. From Figure 8, it can be seen that major roads such as part of Santa Fe Drive, most part of the East Ave, and part of 67<sup>th</sup> St are in 'very good' or 'good' condition whereas about half of 75<sup>th</sup> St is in 'fair' or 'poor' condition.



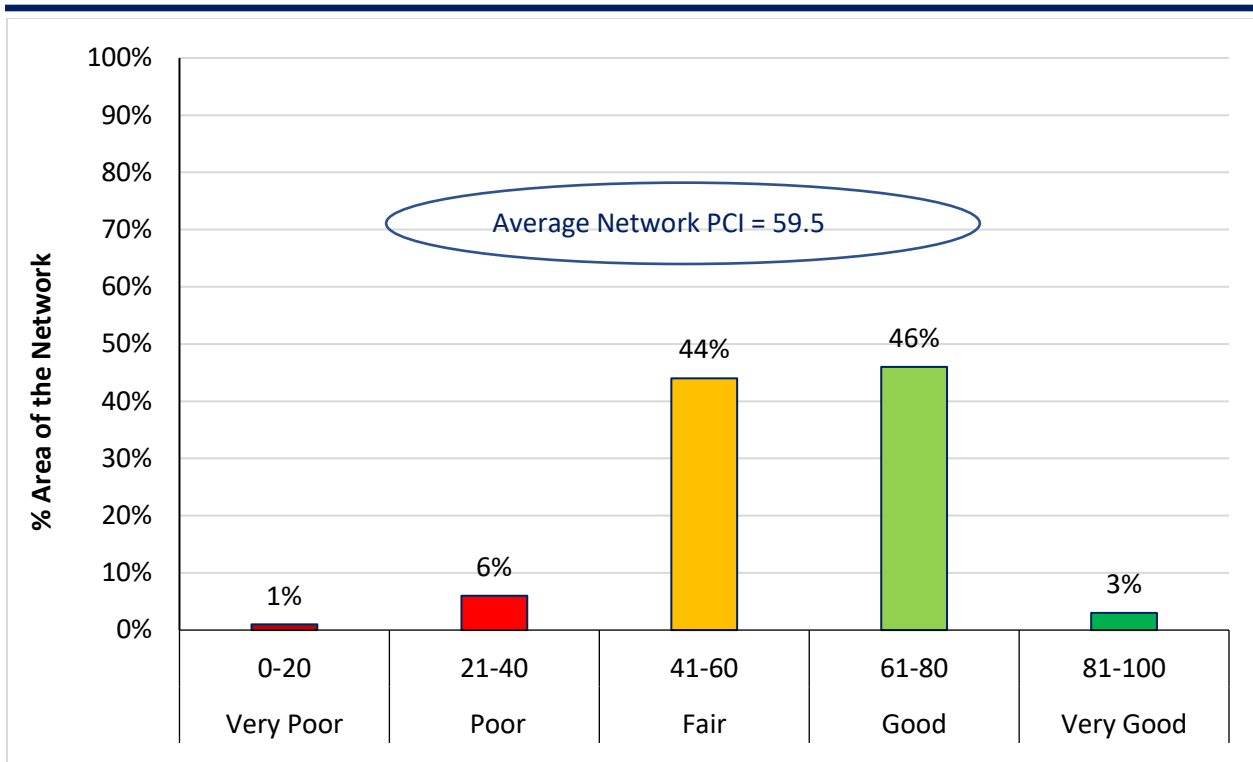
**Figure 7. Pavement Condition Distribution Based on Functional Class.**



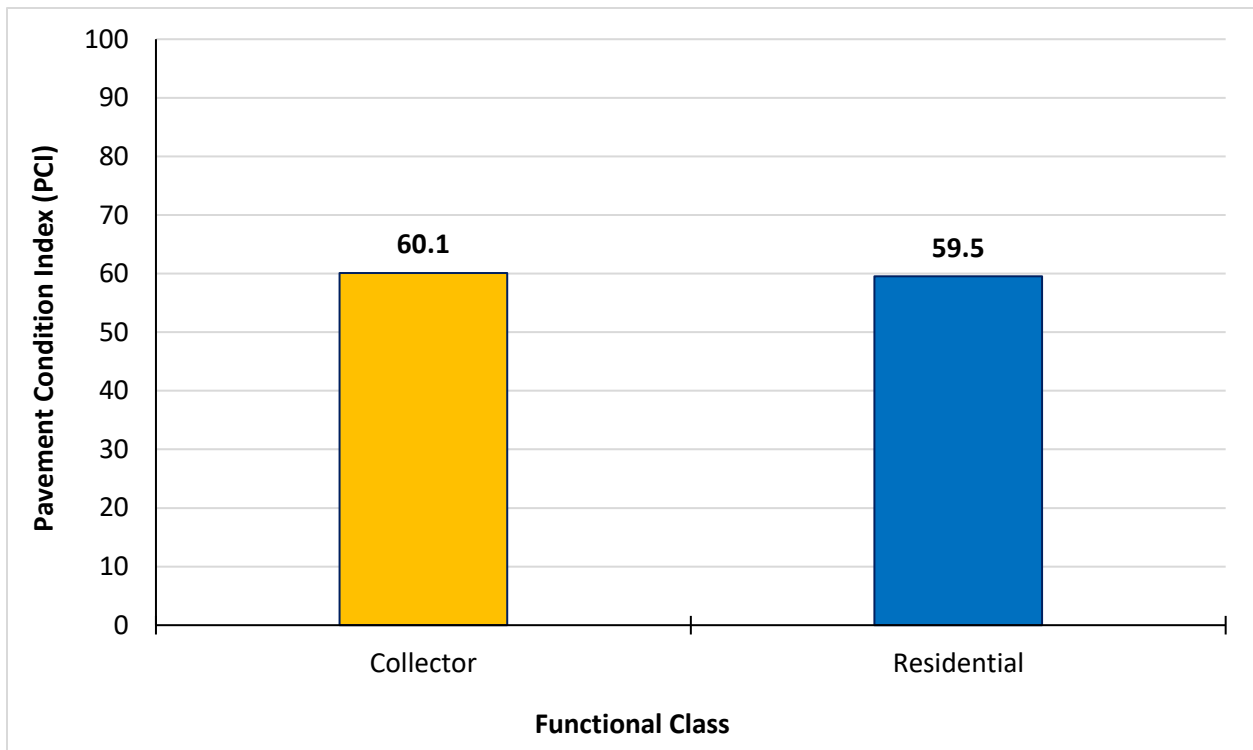
**Figure 8. Village of Hodgkins’s Current Pavement Condition Ratings.**

Notable residential streets such as Cobb St and Lyons St are in ‘very good’ condition, whereas Weeping Willow Rd is in ‘fair’ condition.

Figure 9 and Figure 10 show the distribution of network pavement area based on pavement current condition and average pavement condition based on functional class, respectively. In Figure 9, it can be observed that about 7% of the network pavement area is in ‘poor’ and ‘very poor’ condition. It can also be seen that about 44% of the network is in ‘fair’ condition whereas about 49% of the network is in ‘good’ and ‘very good’ condition.



**Figure 9. Distribution of Network Pavement Area Based on Pavement Condition.**



**Figure 10. Weighted Average Pavement Condition Index (PCI) Based on Functional Class.**

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### 3. PAVEMENT MANAGEMENT SYSTEM IMPLEMENTATION

The ARA team discussed preliminary results of the PMS analysis with the Village and CMAP on June 7, 2019. ARA presented pavement performance models, treatment matrix, unit costs, and consequences of several funding scenarios. Based on the Village's feedback on PMS analysis, the ARA team updated the PMS analysis and updated results are presented in this section.

ARA used PAVER™ pavement management software to implement a pavement management system (PMS) for the Village of Hodgkins. PAVER™ provides pavement management capabilities to: (a) develop and organize the pavement inventory, (b) assess the current condition of pavements, (c) develop models to predict future conditions, (d) report on past and future pavement performance, (e) develop scenarios for M&R based on budget or condition requirements, and (f) plan projects.

#### 3.1 PAVER™ Pavement Management System Overview

Figure 11 shows the various modules of the PAVER™ software which includes:

- Inventory — The inventory module is designed based on a hierarchical structure including network, branch, and sections where section is the smallest pavement unit managed by the agency. This structure allows users to easily organize their inventory while providing numerous fields and levels for storing pavement data.
- Work History — Similar to the inventory module, work history module also follows the hierarchical structure. To updated a pavement section's attribute or work history, it is required to have the network, branch, and section information.
- Inspection — In the inspection module, pavement can be surveyed manually or the automated survey data can be imported and modified, and finally PCI is being calculated.
- PCI Family Model— The PCI family model module is used to create pavement performance model. Basically, it uses the historical pavement condition and age data.
- Condition Analysis — The condition analysis module is used to analyze or predict the condition of the entire or part of the network. This feature reports past conditions based on prior interpolated values between previous inspections and projected conditions based on prediction models.
- M&R Family Models — M&R Family Models module is used to select treatment, treatment consequences, unit costs, and treatment matrix.
- M&R Working Plans — M&R working plans module allows to create multi-year network and project level M&R planning, scheduling, and budgeting. This module allows the users to create consequence of current funding level and generates funding scenarios for targeted PCI, backlog eliminations, etc.
- Reports — This module facilitates generation of summary charts, latest condition map, and user defined reports. The users can pick and choose the attributes fields to create a report.

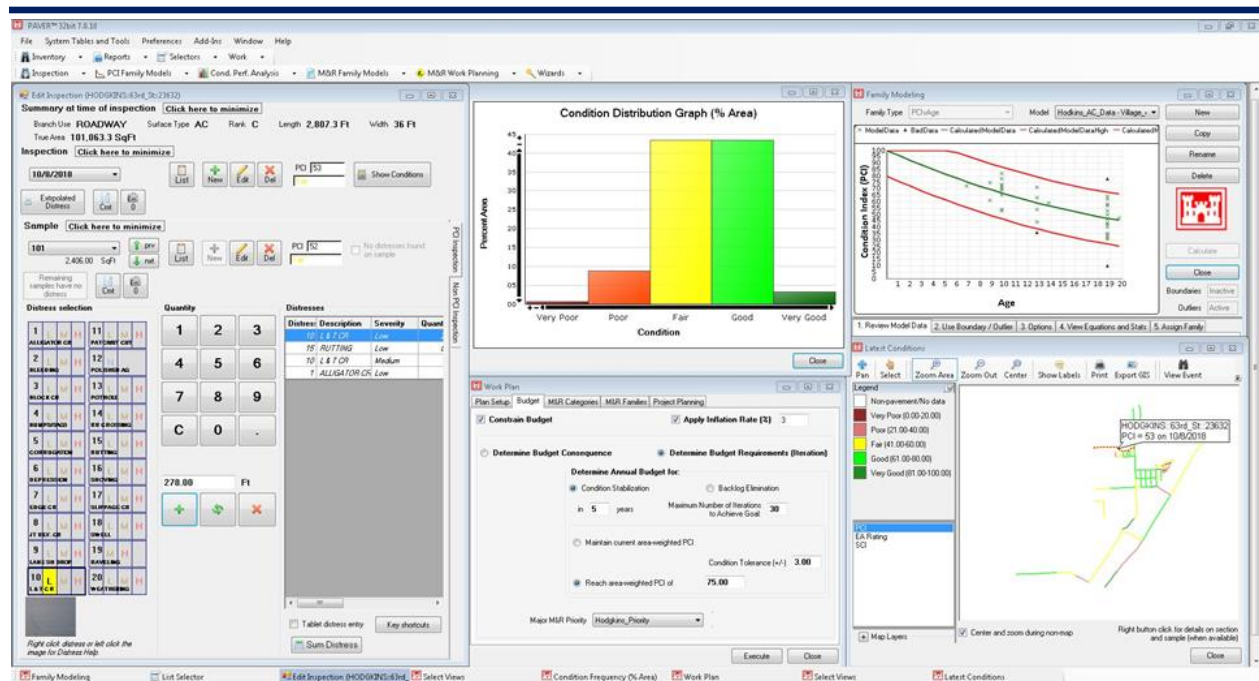


Figure 11. PAVER™ Overview.

### 3.2 Pavement Performance Model

A PMS is only useful for making decisions if performance models can be established, validated, and relied upon to accurately forecast pavement conditions into the future. A pavement performance model is developed based on the date of construction of a road, the types and thicknesses of pavement materials, the traffic level, and the pavement condition. The pavement performance model becomes more accurate with multiple pavement condition ratings, as the model gets calibrated and adjusted to match the conditions present at the time in a pavement’s life cycle.

The PCI Family Models module in PAVER™ helps to identify and group pavements of similar construction that are subjected to similar traffic, weather, and other factors affecting pavement performance. The pavement condition historical data are used to build a model that can accurately predict the future performance of a group of pavements with similar attributes.

For the Village of Hodgkins, a PCI family model was created for the asphalt surfaced pavements. The reliability of the pavement performance models is expected to increase with future pavement inspection and age data. Figure 12 shows the PCI family model for the asphalt surfaced pavements.

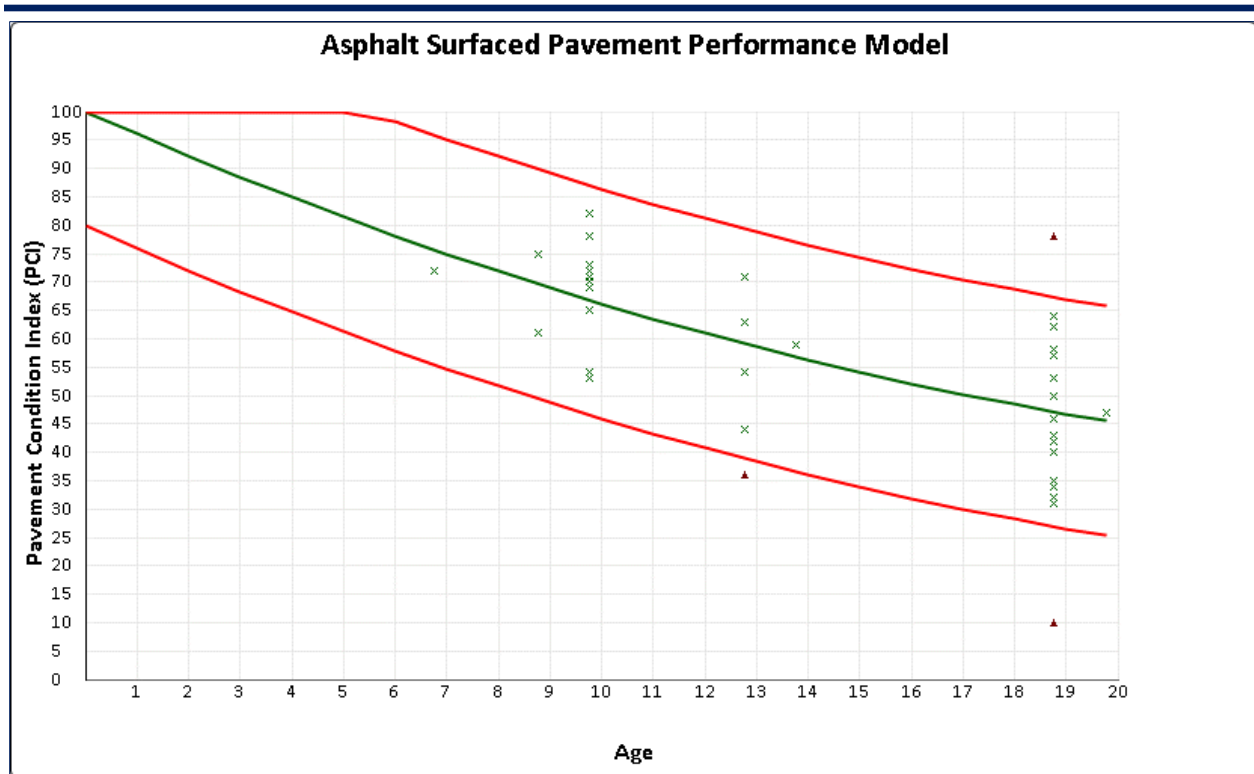


Figure 12. PCI Family Model for Arterials and Collector Streets.

### 3.3 Treatment Matrix

Based on the pavement preservation and rehabilitation techniques currently used in Village of Hodgkins, and discussion with the Village, ARA developed a treatment matrix that defines when a treatment will be performed based on PCI values and functional class. In PAVER™, critical PCI is defined as the PCI value at which the rate of PCI loss increases with time and the cost of applying localized preventive maintenance increases significantly. The M&R Family Assignment Tool is used to designate sections to receive specific M&R work, including:

- Localized Stopgap
- Localized Preventative, and
- Major M&R

The *Localized Stopgap* (PCI<Critical) option is used to indicate the use of Safety M&R policies, which allows PAVER™ to plan localized stopgap M&R work (pothole filling, etc.) on areas where the PCI is below the critical level. The *Localized Preventative* M&R (PCI>= Critical) option allows PAVER™ to plan M&R work in localized areas where the PCI is above critical. In this option, life extending credit, in years, can be given to any localized preventative work. Applying any preventative work where the PCI is still above critical will save money and improve the pavements life. The *Major M&R* option allows PAVER™ to plan any overlay or other major work where the resulting pavement has a PCI of 100.

**Table 4. Treatment Matrix for Collector Streets.**

Treatment Matrix for Collector Streets			
PCI	Stopgap	Localized Preventive	Major M&R
0	Patching & Repairs	Do Nothing	Reconstruction
10			
20			
30			
40			
50	Do Nothing	Crack Seal and Patching	2.25" Mill and Overlay
55			
60			
70			
80			
90	Do Nothing	Do Nothing	Do Nothing
100			

**Table 5. Treatment Matrix for the Residential Streets.**

Treatment Matrix for Residential Streets			
PCI	Stopgap	Localized Preventive	Major M&R
0	Patching & Repairs	Do Nothing	4" Mill and Overlay
10			
20			
30			
40			
50	Do Nothing	Crack Seal and Patching	2.25" Mill and Overlay
55			
60			
70			
80			
90	Do Nothing	Do Nothing	Do Nothing
100			

As observed from Table 4 and Table 5, pavement sections with PCI greater than the critical PCI (50) are selected for localized preventive treatment such as crack sealing or patching. Sections with PCI values less than critical PCI are assigned to stopgap policies related M&R work such as patching and repair. For major M&R, 2.25-inch mill and overlay and reconstruction are considered for the collector streets. However, based on the Village’s recommendation, 4-inch and 2.25-inch mill and overlay option were planned for the residential streets.



### 3.4 Unit Costs

Using treatment information discussed with the Village of Hodgkins, ARA determined the typical unit costs for each M&R item, listed in Table 6, based on ARA's experience with agencies in the Chicagoland area. These costs were discussed with the Village during the meeting on June 7, 2019. Costs were determined based on a square foot or linear foot basis. The unit costs used for PAVER™ analysis for 2019, are shown in Table 6. To run the PMS analysis in future, the unit costs can be updated based on the available unit price of materials and construction in the Village of Hodgkins area.

**Table 6. Treatment Unit Costs for the Village of Hodgkins.**

Treatment Type	Cost	Units
No Localized M & R	\$0.00	SqFt
Crack Sealing - AC	\$1.00	Ft
Patching - AC Shallow	\$4.50	SqFt
Patching - AC Deep	\$7.00	SqFt
2.25" Mill and Overlay	\$1.87	SqFt
4" Mill and Overlay	\$3.20	SqFt
Reconstruction - AC	\$4.20	SqFt

## 4. MAINTENANCE AND REHABILITATION ANALYSIS

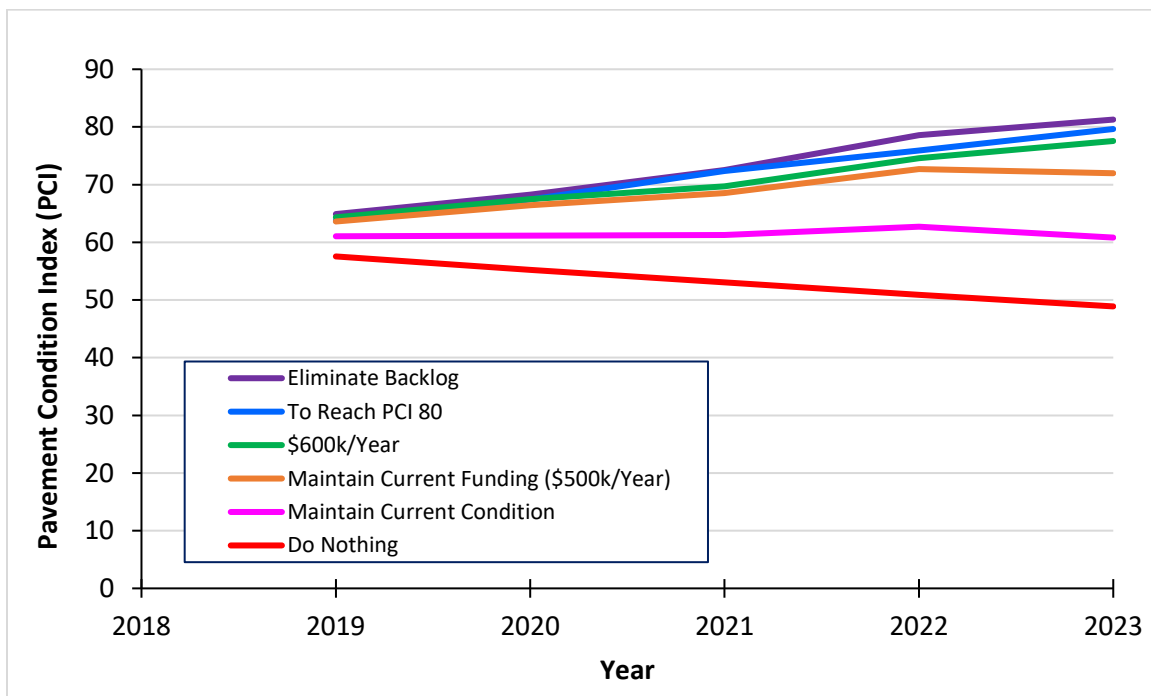
Maintenance and rehabilitation (M&R) analysis can be performed in PAVER™ to generate an optimized work plan by assuming an annual funding level, or specifying a target PCI.

For the Village of Hodgkins, the M&R funding analyses were based on the roadway inventory approved by the Village, unit costs discussed with the Village, and the Village's existing Major M&R policies. An inflation rate of 3% was used for all analyses. PCI family curve was developed based on existing pavement age and collected condition data. The critical PCI value was assumed to 55 for the collector, streets, whereas a critical PCI of 50 was assumed for the residential streets. The critical PCI value represents the condition at or below which Major M&R is recommended. The following five-year M&R funding scenarios, in order of highest cost option to lowest cost option, were evaluated on the Village's pavements:

- Eliminate backlogs (unlimited funding)
- Funds to meet potential performance targets (PCI = 80)
- Add moderate funding relative to current levels (\$600K/year)
- Keep funding level current (\$500K/year)
- Maintain current condition (PCI =59.5)
- Do nothing (\$0/year)

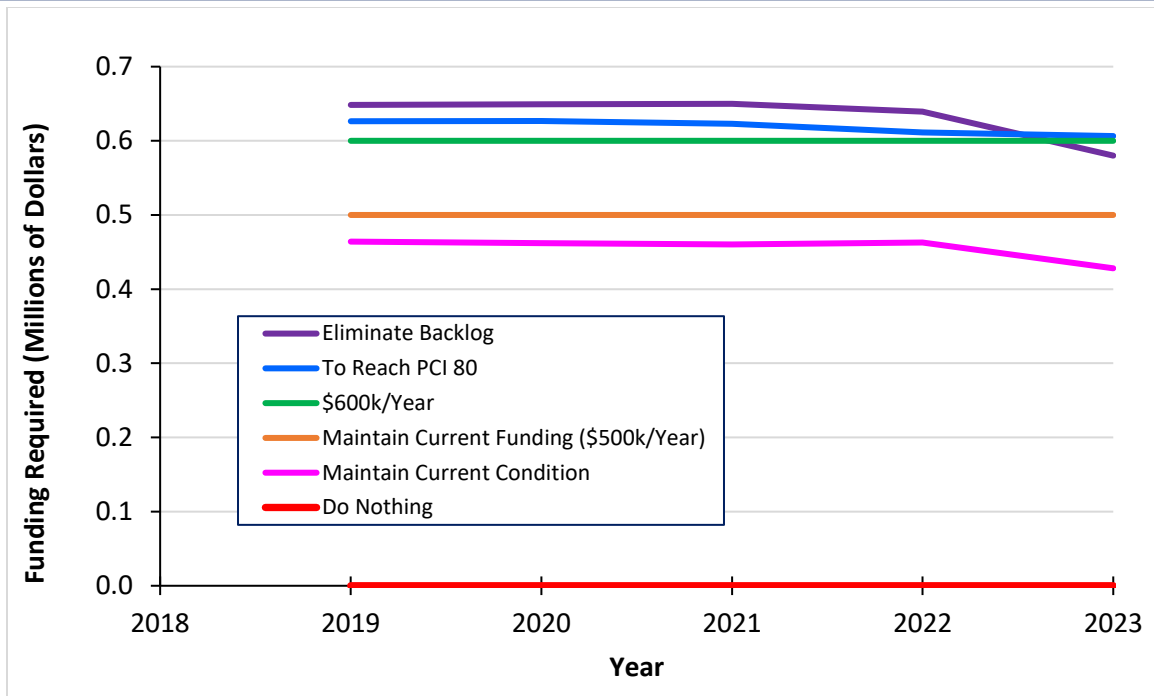
### 4.1 Funding Scenario Results

Using the M&R Working Plans module, the funding level scenarios were generated for a five-year period. For the current funding level (\$500K/year), it was assumed that \$150K/year would be allocated for stopgap and localized preventive distress maintenance, whereas \$350K/year would be spent for major M&R activities. Figure 13 displays the effect of different funding levels on the average pavement condition of the Village of Hodgkins network. From Figure 13, it can be seen that current funding level is higher than maintain current condition over five years. The network average PCI is estimated to be 72 in five years with the current funding level. Increasing the funding to \$600K/year will result in an increase of the average network PCI by about 5.5 points compared to the current funding level. Providing budget to eliminate backlogs results in an average PCI of 81.2 after five years, while not spending any funds on the M&R program will deteriorate the network to an average PCI of 48.9 after five years.



**Figure 13. Effect of Funding Level on Village’s Pavement Condition.**

Figure 14 shows the amount of funding required to maintain target PCI for the various funding scenarios. To eliminate backlogs, it is required to invest about \$650K/year for next five years. To achieve average network PCI of 80, the required investment is, approximately, \$615K/year for the next five years.



**Figure 14. Required Funding Per Year to Achieve Different Condition Target.**

The 2019 M&R plan, 5-Year major M&R plan, and 5-Year localized M&R plan are provided in Appendix A. Figure 15 shows the network condition distribution for the next five years with current funding level. It can be seen that currently about 7% of the pavement network is in ‘poor’ or ‘very poor’ condition. However, the average PCI of the network is expected to be 72 in 2023 with the current funding level; an increase of 12.5 PCI points from the 2018 average PCI. Moreover, with the current funding level, the amount of ‘good’ and ‘very good’ condition would increase to 57% while no section would be in ‘poor’ or ‘very poor’ condition by 2023.

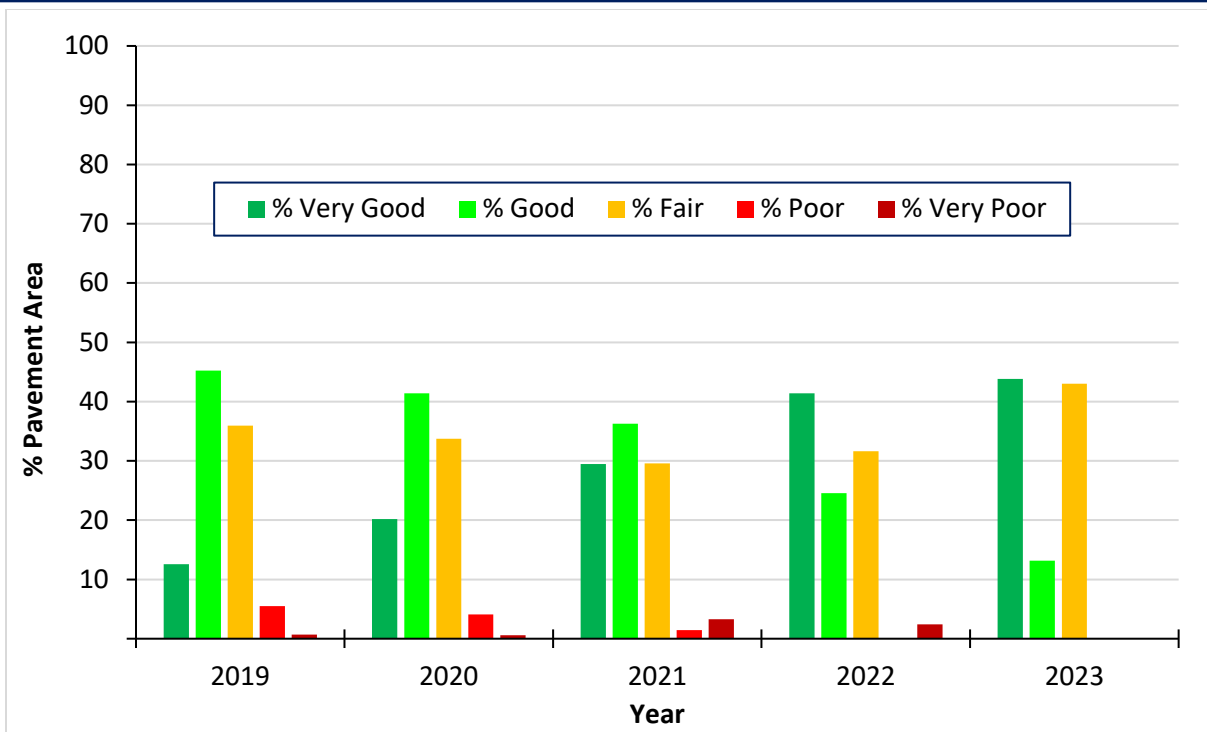


Figure 15. Village's Pavement Condition by Year with Current Funding Level (\$500K/Year).

#### 4.2 Consequence of Local Distress Maintenance

Consequence of Localized Distress Maintenance plan calculates the cost and resulting condition of immediate implementation of local M&R, for the year of the most recent inspection. Based on the 2018 pavement condition survey, this plan estimated that the PCI of 41 sections would increase by 1.3 points with an investment of about \$35,452. Put another way, the local M&R plan adds approximately an additional 6 months of life (based on the performance models) to about 67% of the network area. The local distress maintenance policy includes crack seals and patching. Details of the localized distress maintenance plan based on the 2018 condition survey can be found in Appendix A. Table 7 shows the cost and pavement condition data of the consequence of local distress maintenance plan.

Table 7. Details of Consequence of Local Distress Maintenance Plan.

Policy	Number Sections	Policy Cost	Avg of Start PCI	Avg of End PCI
Crack Sealing	41	\$34,506	66.6	67.9
Patching	1	\$946	31.0	34.0

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## 5. SUMMARY AND RECOMMENDATION

### 5.1 Summary

Pavement management can be defined as the systematic process of maintaining the pavements cost-effectively. The investment in pavement management system is rational considering a pavement management not only provides a consistent and rational management method to make decisions but also helps in optimal use of funds and reduces pavement rehabilitation, which results in extended pavement life and increased credibility with stakeholders.

In this effort to implement a pavement management system for the Village of Hodgkins, pavement data was collected with a state-of-the-art digital survey vehicle equipped with laser crack measurement system. Pavement images were used in automated condition survey process to assess the type, severity, and extent of the distresses. The pavement inspection data was imported to the PAVERTM software to determine the pavement condition index (PCI) and analyze the pavement network. This PAVERTM database provides a comprehensive inventory of pavement sections with all attributes that are required for pavement management.

Based on the October 2018 survey, the average pavement condition index (PCI) value for the Village is about 59.5, which indicates the pavement network is in overall 'fair' condition. Based on the Village's recommendation several five-year M&R funding analyses were performed using PAVERTM including: (a) do nothing (\$0/year), (b) keep funding level current (\$500K/year), (c) add moderate funding relative to current levels (\$600K/year), (d) maintain current condition (PCI =59.5), (e) funds to meet potential performance targets (PCI = 80), and (f) eliminate backlogs. It was found that no pavement section would be in poor condition by 2023 with the current funding level while the average PCI of the network would increase to 72. It appears that the Village has required budget to improve the pavement network condition; however, the overall success would depend on the utilization of the decision developed by the pavement management system.

### 5.2 Recommendations

#### 5.2.1 Maintain current funding level

Currently about 44% of the pavement area is in fair condition. These pavement sections are in a transition state to be in poor condition in few years. Therefore, it is recommended to maintain the current funding level so that right treatment can be applied at right time. It is recommended that the Village should focus on applying routine preventive maintenance to pavement sections in 'good' and 'very good' condition to deter the deterioration of pavement condition. Preventive maintenance activities, such as crack sealing and localized patching, can cost-effectively extend the life of a pavement.

#### 5.2.2 Routine update of PAVERTM pavement management system

ARA recommends updating the PAVERTM pavement management system annually to record the major M&R, stopgap and localized preventive maintenance activities, and pavement inventory changes (i.e., section split, new roads, jurisdictional changes, etc.). Based on the yearly updates of M&R activities, the

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Village can perform M&R analysis with updated funding level (if available,) accounting for previous year(s) actual projects.

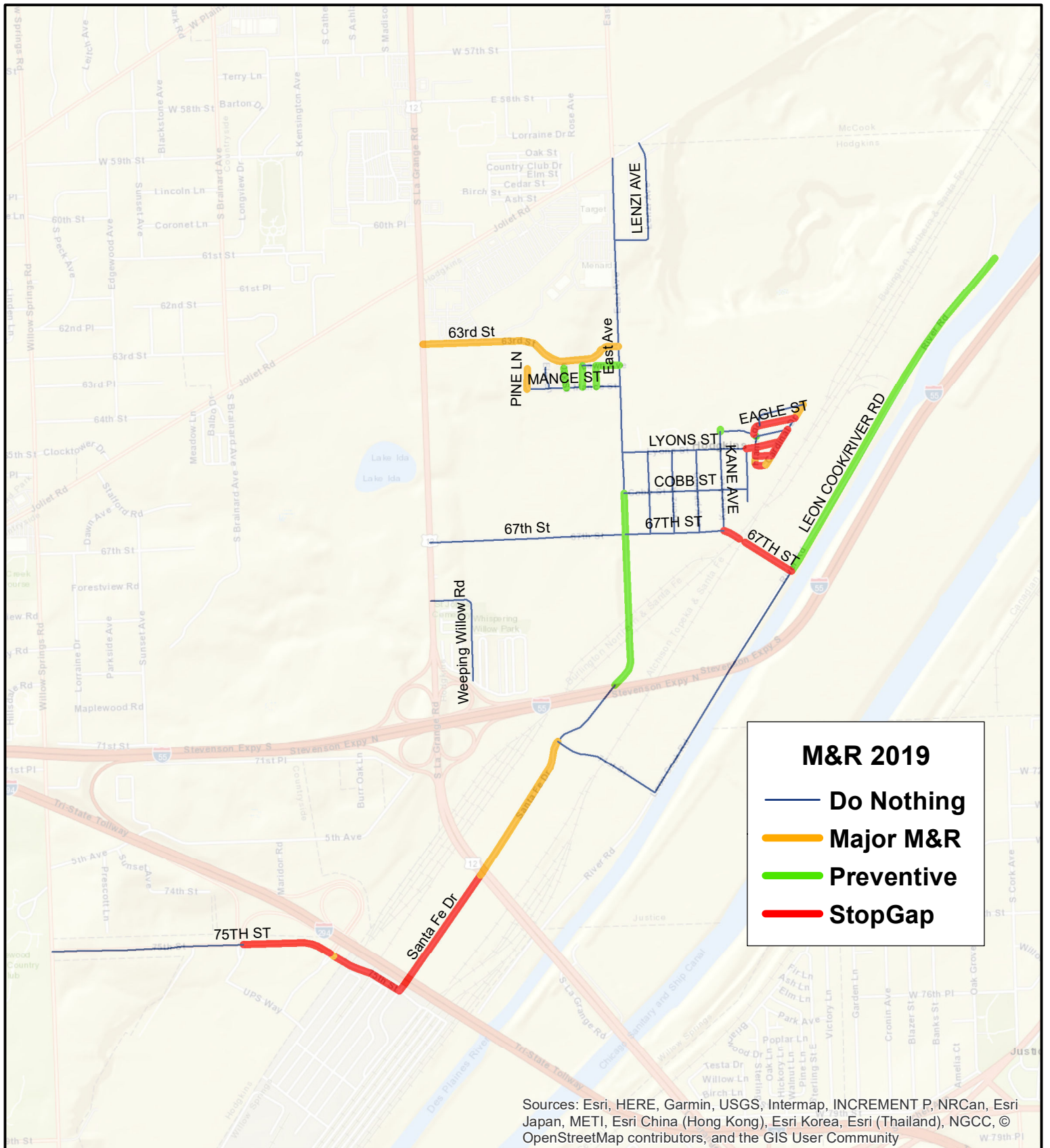
### 5.2.3 Routine pavement condition survey

For the Village of Hodgkins, it is an excellent initiative to establish a pavement management system with the cooperation of Chicago Metropolitan Agency for Planning (CMAP). To realize the greatest benefits of this holistic effort, it is recommended that the Village of Hodgkins continue to perform pavement condition surveys on a three to four-year cycle. The benefits of performing routine PCI surveys are many folded including:

- (a) A survey provides the current condition of the pavement network and helps determining the effectiveness of completed M&R activities performed in last few years,
- (b) Pavement performance models would be more accurate to predict future condition, and
- (c) Appropriate treatment and optimal funding allocation are possible to repair localized distresses based on the survey

## **Appendix — A**

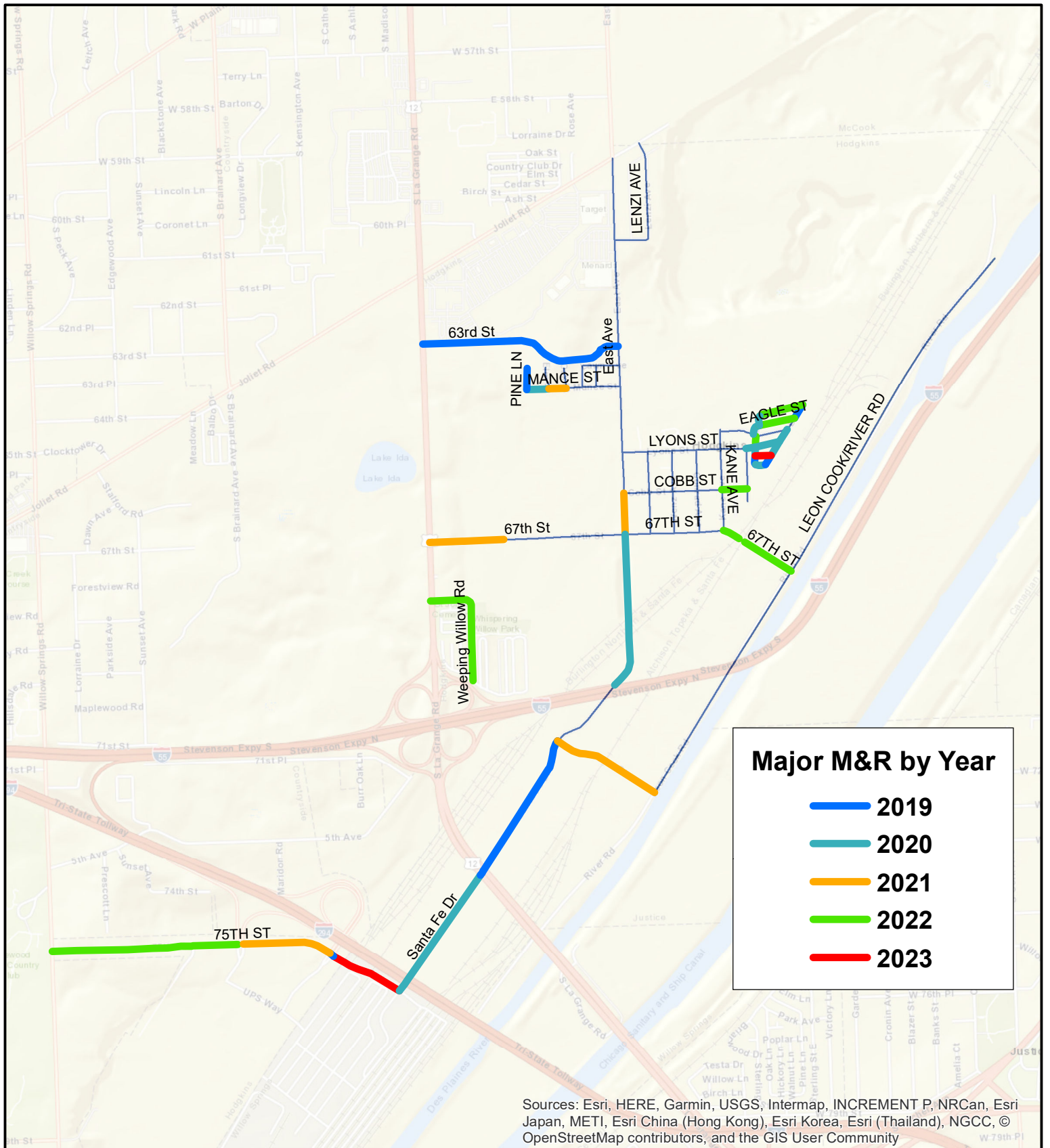
1. 2019 M&R Plan
2. 2019-2023 Major M&R Plan
3. 2019-2023 Stopgap and Localized Preventive Maintenance M&R Plan
4. 2019 Local Distress Maintenance Plan
5. List of Sections Selected for 2019-2023 Major M&R Plan
6. List of Pavement Sections with PCI



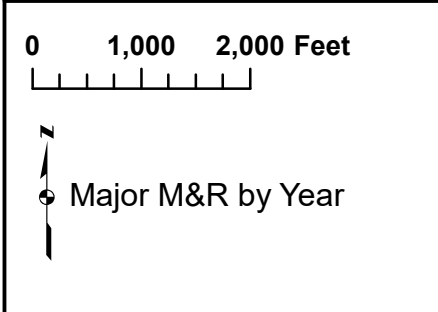
**Village of Hodgkins, Illinois**





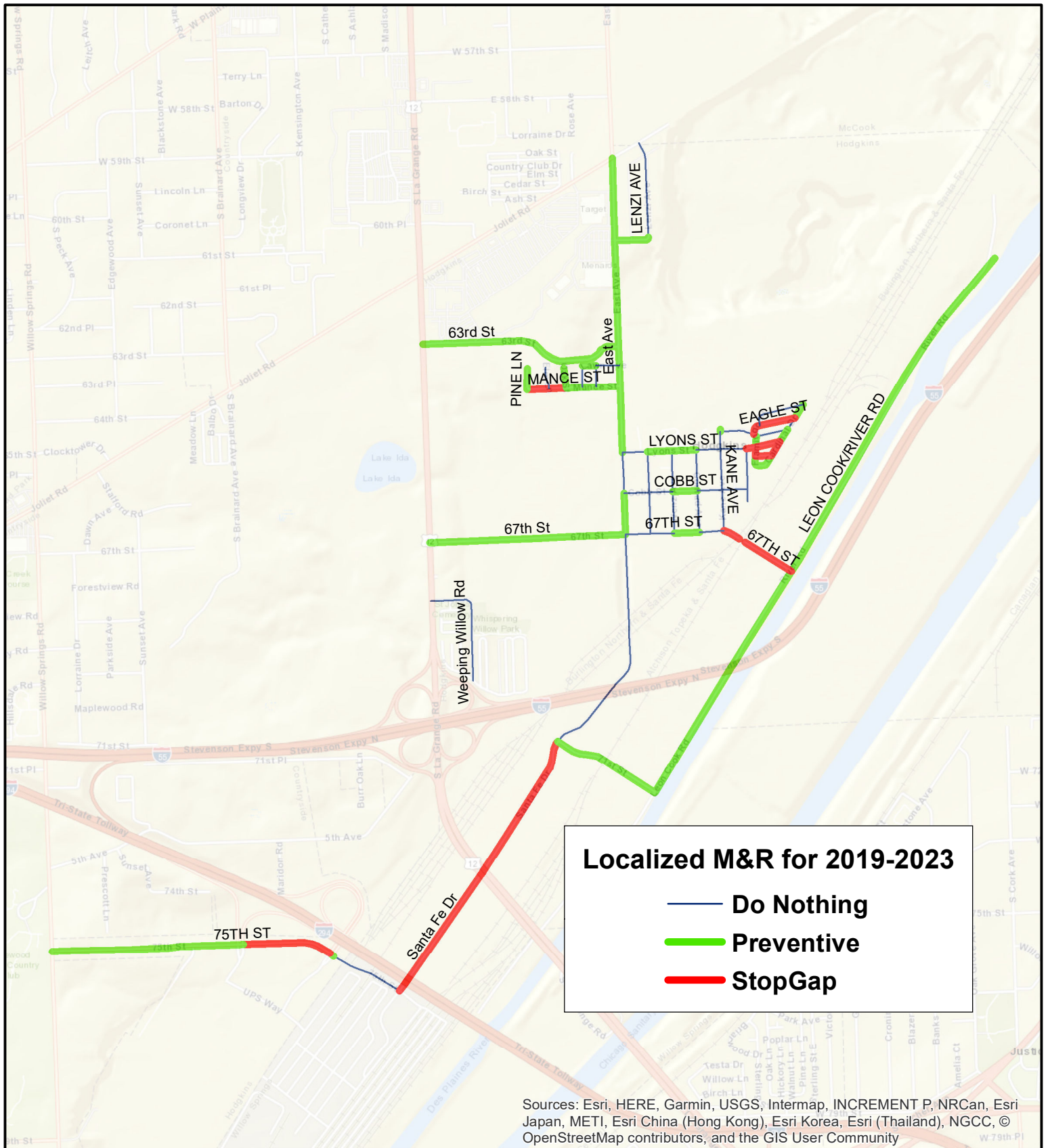


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# Village of Hodgkins, Illinois





**Localized M&R for 2019-2023**

- Do Nothing
- Preventive
- StopGap

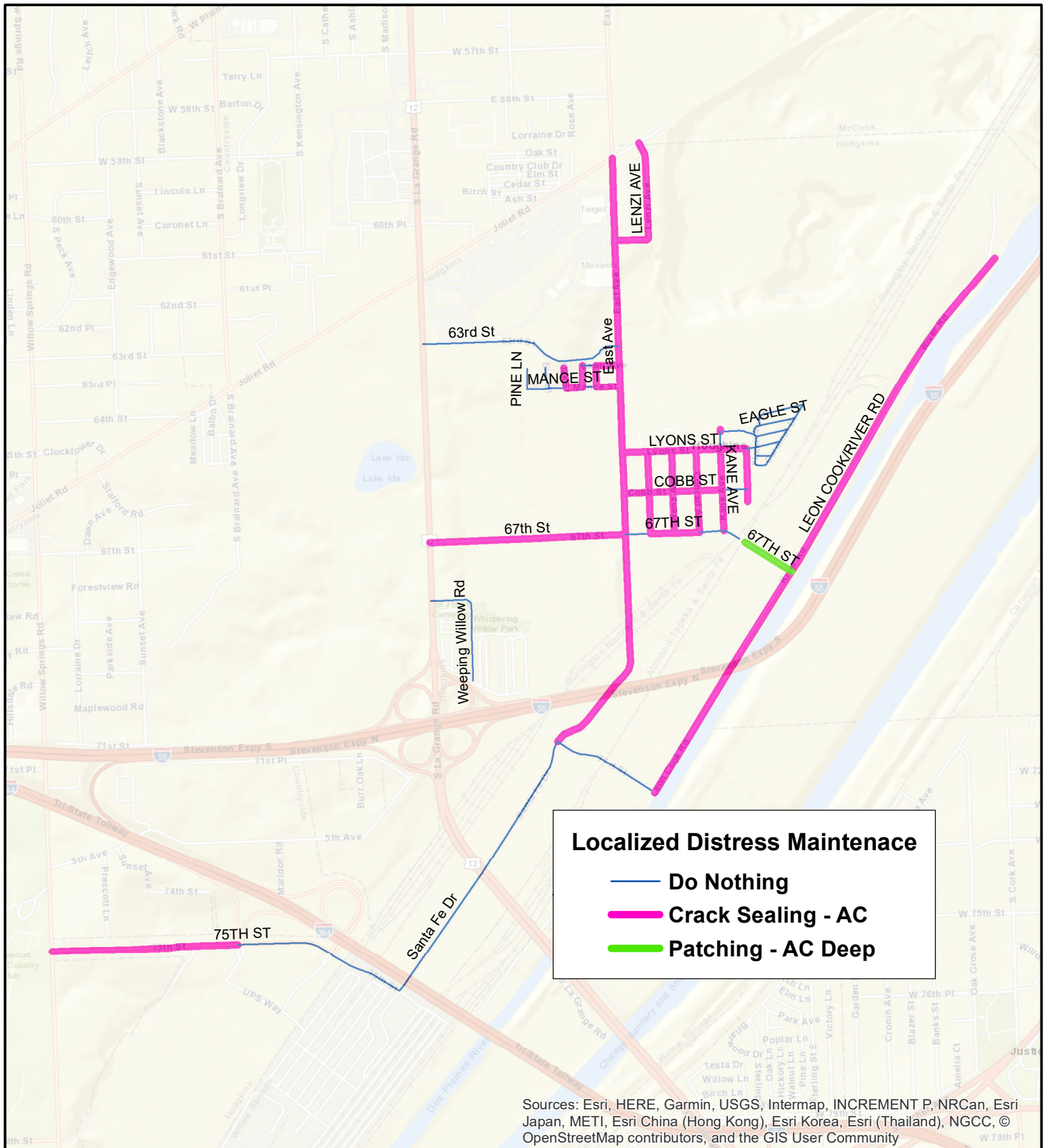
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

0 1,000 2,000 Feet

Localized M&R 2019-2023

**Village of Hodgkins, Illinois**





**Localized Distress Maintenance**

- Do Nothing
- Crack Sealing - AC
- Patching - AC Deep

Sources: Esri, HERE, Garmin, USGS; Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

**Village of Hodgkins, Illinois**



0 1,000 2,000 Feet



Localized Distress Maintenance 2019

## List of Pavement Section Selected for Major M&R by Year

Year	Branch ID	Section ID	From	To	Fun_Class	Length (ft)	Width (ft)	Pave_Type	Const_Date
2019	63rd_St	23632	S La Grange Rd	East Ave	Collector	2,807	36	AC	01-01-2009
2019	75TH_ST	10623	UPS Way	UPS Way	Collector	61	40	AC	01-01-2006
2019	CARDINA_DR	28034	Wren Ave	Canary Ln	Residential	144	24	AC	01-01-2000
2019	CARDINA_DR	28037	Eagle St	Pelican Dr	Residential	215	24	AC	01-01-2000
2019	FLAMING_DR	27624	Canary Ln	Wren Ave	Residential	124	15	AC	01-01-2000
2019	PINE_LN	29120	Mance St	Cul-de-sac	Residential	289	24	AC	01-01-2000
2019	Santa_F_Dr	11050	Leon Cooker Dr-71st	S La Grange Rd	Collector	2,118	34	AC	01-01-2000
2020	CARDINA_DR	28036	Martin Dr	Falcon St	Residential	196	24	AC	01-01-2000
2020	CARDINA_DR	28038	Canary Ln	Martin Dr	Residential	221	24	AC	01-01-2000
2020	EAGLE_ST	28551	Flamingo Dr	Pelican Dr	Residential	161	15	AC	01-01-2000
2020	FLAMING_DR	27623	Martin Dr	Canary Ln	Residential	118	15	AC	01-01-2000
2020	FLAMING_DR	28845	Eagle St	Pelican Dr	Residential	137	15	AC	01-01-2000
2020	LYONS_ST	82585	Kimball Ave	Flamingo Dr	Residential	124	40	AC	01-01-2009
2020	MANCE_ST	28966	Pine Ln	Elm Ln	Residential	300	30	AC	01-01-2000
2020	MARTIN_DR	28206	Flamingo Dr	Cardinal Dr	Residential	339	18	AC	01-01-2000
2020	Santa_F_Dr	11047	67th St	Stevenson Expy-I55	Collector	2,123	36	AC	01-01-2000
2020	Santa_F_Dr	11049	S La Grange Rd	75th St	Collector	1,920	34	AC	01-01-2000
2020	WREN_AVE	27867	Flamingo Dr	Cardinal Dr	Residential	136	18	AC	01-01-2000
2021	67th_St	9651	US Rte 45	Theodore Stone Forest Entran	Collector	1,007	45	AC	01-01-2005
2021	75TH_ST	10624	I-294 Entrance Rd	UPS Way	Collector	1,210	40	AC	01-01-2006
2021	East_Ave	11045	Cobb St	67th St	Collector	561	36	AC	01-01-2012
2021	LEON_CO_RD	23546	Leon Cook Dr	Santa Fe Dr	Collector	1,509	34	AC	01-01-2000
2021	MANCE_ST	28970	Walnut Ln	Fransean Ln	Residential	233	30	AC	01-01-2000
2022	67TH_ST	101230	Kane Ave	Rail Crossing	Residential	239	36	AC	01-01-2000
2022	67TH_ST	101320	Rail Crossing	River Rd	Residential	746	36	AC	01-01-2000
2022	75TH_ST	10621	Willow Springs Rd	UPS Way	Collector	2,524	38	AC	01-01-2006
2022	COBB_ST	100867	Kane Ave	Kimball Ave	Residential	349	28	AC	01-01-2009
2022	EAGLE_ST	28552	Pelican Dr	Cardinal Dr	Residential	487	15	AC	01-01-2000

Year	Branch ID	Section ID	From	To	Fun_Class	Length (ft)	Width (ft)	Pave_Type	Const_Date
2022	FLAMING_DR	27622	Falcon St	Martin Dr	Residential	142	15	AC	01-01-2000
2022	PELICAN_DR	28701	Flamingo Dr	Cardinal Dr	Residential	603	15	AC	01-01-2000
2022	Weeping_Rd	32985	S La Grange Rd	Weeping Willow Rd	Residential	1,620	38	AC	01-01-1999
2023	75TH_ST	10622	UPS Way	Santa Fe Dr	Collector	1,018	40	AC	01-01-2006
2023	CANARY_LN	28370	Flamingo Dr	Cardinal Dr	Residential	217	18	AC	01-01-2000

## List of Pavement Sections with PCI

BranchID	SectionID	From	To	Fun_class	Length (ft)	Width (ft)	AADT	Pave_Type	Const_Date	PCI
63rd_St	23632	S La Grange Rd	East Ave	Collector	2,807	36	1,550	AC	01-01-2009	53
67TH_ST	101320	Rail Crossing	River Rd	Residential	746	36	555	AC	01-01-2000	31
67th_St	9651	US Rte 45	Theodore Stone Forest E	Collector	1,007	45	10,250	AC	01-01-2005	59
67TH_ST	101229	East Ave	Chester Ave	Residential	338	36	555	AC	01-01-2009	54
67th_St	9652	Theodore Stone Forest E	Santa Fe Dr	Collector	1,649	38	10,250	AC	01-01-2005	72
67TH_ST	101233	Chester Ave	Wenz Ave	Residential	328	36	555	AC	01-01-2009	72
67TH_ST	101232	Conard Ave	Kane Ave	Residential	333	36	555	AC	01-01-2009	82
67TH_ST	101231	Wenz Ave	Conard Ave	Residential	337	36	555	AC	01-01-2009	78
67TH_ST	101230	Kane Ave	Rail Crossing	Residential	239	36	555	AC	01-01-2000	24
75TH_ST	10625	UPS Way	UPS Way	Collector	77	40	6,600	AC	01-01-2006	71
75TH_ST	10622	UPS Way	Santa Fe Dr	Collector	1,018	40	6,600	AC	01-01-2006	25
75TH_ST	10624	I-294 Entrance Rd	UPS Way	Collector	1,210	40	6,600	AC	01-01-2006	44
75TH_ST	10623	UPS Way	UPS Way	Collector	61	40	6,600	AC	01-01-2006	54
75TH_ST	10621	Willow Springs Rd	UPS Way	Collector	2,524	38	6,600	AC	01-01-2006	63
CANARY_LN	28370	Flamingo Dr	Cardinal Dr	Residential	217	18	555	AC	01-01-2000	10
CARDINA_DR	28037	Eagle St	Pelican Dr	Residential	215	24	555	AC	01-01-2000	42
CARDINA_DR	28038	Canary Ln	Martin Dr	Residential	221	24	555	AC	01-01-2000	30
CARDINA_DR	27159	Robin St	Eagle St	Residential	460	14	555	AC	01-01-2000	53
CARDINA_DR	27160	Eagle St	Flamingo Dr	Residential	48	14	555	AC	01-01-2000	71
CARDINA_DR	28034	Wren Ave	Canary Ln	Residential	144	24	555	AC	01-01-2000	42
CARDINA_DR	28036	Martin Dr	Falcon St	Residential	196	24	555	AC	01-01-2000	34
CARDINA_DR	28035	Falcon St	Eagle St	Residential	182	24	555	AC	01-01-2000	51
CATHERI_DR	82194	East Ave	Lenzi Ave	Residential	472	24	555	AC	01-01-2010	75
CHESTER_VE	56609	Lyons St	Cobb St	Residential	555	34	555	AC	01-01-2009	69
CHESTER_VE	56610	Cobb St	67th St	Residential	557	34	555	AC	01-01-2009	65
COBB_ST	100865	East Ave	Chester Ave	Residential	338	28	555	AC	01-01-2009	69
COBB_ST	100869	Chester Ave	Wenz Ave	Residential	323	28	555	AC	01-01-2009	65
COBB_ST	100866	Wenz Ave	Conard Ave	Residential	330	28	555	AC	01-01-2009	69
COBB_ST	100868	Conard Ave	Kane Ave	Residential	338	34	555	AC	01-01-2009	66
COBB_ST	100867	Kane Ave	Kimball Ave	Residential	349	28	555	AC	01-01-2009	47
CONRAD_VE	40248	Cobb St	67th St	Residential	565	34	555	AC	01-01-2009	73

BranchID	SectionID	From	To	Fun_class	Length (ft)	Width (ft)	AADT	Pave_Type	Const_Date	PCI
CONRAD_VE	40247	Lyons St	Cobb St	Residential	551	34	555	AC	01-01-2009	71
EAGLE_ST	28551	Flamingo Dr	Pelican Dr	Residential	161	15	555	AC	01-01-2000	31
EAGLE_ST	28552	Pelican Dr	Cardinal Dr	Residential	487	15	555	AC	01-01-2000	19
East_Ave	11042	Mance St	Lyons St	Collector	897	36	8,500	AC	01-01-2012	78
East_Ave	11044	Lyons St	Cobb St	Collector	551	36	8,500	AC	01-01-2012	79
East_Ave	11043	63rd St	Lawn Ave	Collector	253	36	8,500	AC	01-01-2012	75
East_Ave	11046	Lenzi Ave	63rd St	Collector	1,439	36	8,500	AC	01-01-2012	68
East_Ave	11041	Lawn Ave	Mance St	Collector	295	36	8,500	AC	01-01-2012	79
East_Ave	11040	Joliet Rd	Lenzi Ave	Collector	1,123	45	8,500	AC	01-01-2012	72
East_Ave	11045	Cobb St	67th St	Collector	561	36	8,500	AC	01-01-2012	59
ELM_LN	29243	Mance St	Cul-de-sac	Residential	303	18	555	AC	01-01-2000	50
FALCON_ST	27391	Flamingo Dr	Cardinal Dr	Residential	434	20	555	AC	01-01-2000	50
FLAMING_DR	27623	Martin Dr	Canary Ln	Residential	118	15	555	AC	01-01-2000	9
FLAMING_DR	28845	Eagle St	Pelican Dr	Residential	137	15	555	AC	01-01-2000	43
FLAMING_DR	27624	Canary Ln	Wren Ave	Residential	124	15	555	AC	01-01-2000	37
FLAMING_DR	27622	Falcon St	Martin Dr	Residential	142	15	555	AC	01-01-2000	46
KANE_AVE	40709	Cardinal Dr	Lyons St	Residential	238	36	555	AC	01-01-2009	51
KANE_AVE	40707	Lyons St	Cobb St	Residential	551	37	555	AC	01-01-2009	73
KANE_AVE	40708	Cobb St	67th St	Residential	557	37	555	AC	01-01-2009	76
KANE_AVE	40706	Cardinal Dr	Cul-de-sac	Residential	25	36	555	AC	01-01-2000	78
KIMBALL_VE	40927	Cobb St	Cul-de-sac	Residential	169	34	555	AC	01-01-2009	79
KIMBALL_VE	40926	Lyons St	Cobb St	Residential	551	34	555	AC	01-01-2009	70
LAWN_AVE	29716	Sharon Ln	Roger Ln	Residential	187	18	555	AC	01-01-2000	78
LAWN_AVE	29717	Roger Ln	East Ave	Residential	317	18	555	AC	01-01-2000	58
LENZI_AVE	56752	Lenzi Ave-Truck Center In	Joliet Rd	Residential	1,308	26	555	AC	01-01-2010	61
LEON_CO_RD	23546	Leon Cook Dr	Santa Fe Dr	Collector	1,509	34	2,700	PCC	01-01-2000	60
LEON_CO_RD	23547	67th St	Leon Cook Dr-71st St	Collector	3,531	36	2,700	AC	01-01-2002	70
LEON_CO_RD	23545	Hodgkins Limit	67th St	Collector	5,088	34	2,700	AC	01-01-2000	57
LYONS_ST	82583	East Ave	Chester Ave	Residential	341	40	555	AC	01-01-2009	73
LYONS_ST	82587	Conard Ave	Kane Ave	Residential	330	40	555	AC	01-01-2009	70
LYONS_ST	82588	Chester Ave	Wenz Ave	Residential	331	40	555	AC	01-01-2009	78
LYONS_ST	82585	Kimball Ave	Flamingo Dr	Residential	124	40	555	AC	01-01-2009	29
LYONS_ST	82586	Wenz Ave	Conard Ave	Residential	330	40	555	AC	01-01-2009	76
LYONS_ST	82584	Kane Ave	Kimball Ave	Residential	354	32	555	AC	01-01-2009	81

BranchID	SectionID	From	To	Fun_class	Length (ft)	Width (ft)	AADT	Pave_Type	Const_Date	PCI
MANCE_ST	28967	Roger Ln	East Ave	Residential	322	36	555	AC	01-01-2000	65
MANCE_ST	28969	Sharon Ln	Roger Ln	Residential	191	30	555	AC	01-01-2000	67
MANCE_ST	28970	Walnut Ln	Fransean Ln	Residential	233	30	555	AC	01-01-2000	44
MANCE_ST	28966	Pine Ln	Elm Ln	Residential	300	30	555	AC	01-01-2000	43
MANCE_ST	28968	Fransean Ln	Sharon Ln	Residential	218	30	555	AC	01-01-2000	73
MARTIN_DR	28206	Flamingo Dr	Cardinal Dr	Residential	339	18	555	AC	01-01-2000	32
OAK_ST	29369	Mance St	Cul-de-sac	Residential	277	18	555	AC	01-01-2000	62
PELICAN_DR	28701	Flamingo Dr	Cardinal Dr	Residential	603	15	555	AC	01-01-2000	46
PINE_LN	29120	Mance St	Cul-de-sac	Residential	289	24	555	AC	01-01-2000	40
ROGER_LN	29612	Mance St	Lawn Dr	Residential	298	18	555	AC	01-01-2000	62
Santa_F_Dr	11048	Stevenson Expy-I55	Leon Cooker Dr-71st St	Collector	1,110	36	8,500	AC	01-01-2000	84
Santa_F_Dr	11049	S La Grange Rd	75th St	Collector	1,920	34	8,500	AC	01-01-2000	45
Santa_F_Dr	11050	Leon Cooker Dr-71st St	S La Grange Rd	Collector	2,118	34	8,500	AC	01-01-2000	48
Santa_F_Dr	11047	67th St	Stevenson Expy-I55	Collector	2,123	36	8,500	AC	01-01-2000	58
SHARON_LN	29503	Mance St	Lawn Dr	Residential	301	18	555	AC	01-01-2000	64
Weeping_Rd	32985	S La Grange Rd	Weeping Willow Rd	Residential	1,620	38	555	AC	01-01-1999	47
WENZ_AVE	56221	Lyons St	Cobb St	Residential	553	34	555	AC	01-01-2009	65
WENZ_AVE	56222	Cobb St	67th St	Residential	566	34	555	AC	01-01-2009	65
WREN_AVE	27867	Flamingo Dr	Cardinal Dr	Residential	136	18	555	AC	01-01-2000	35