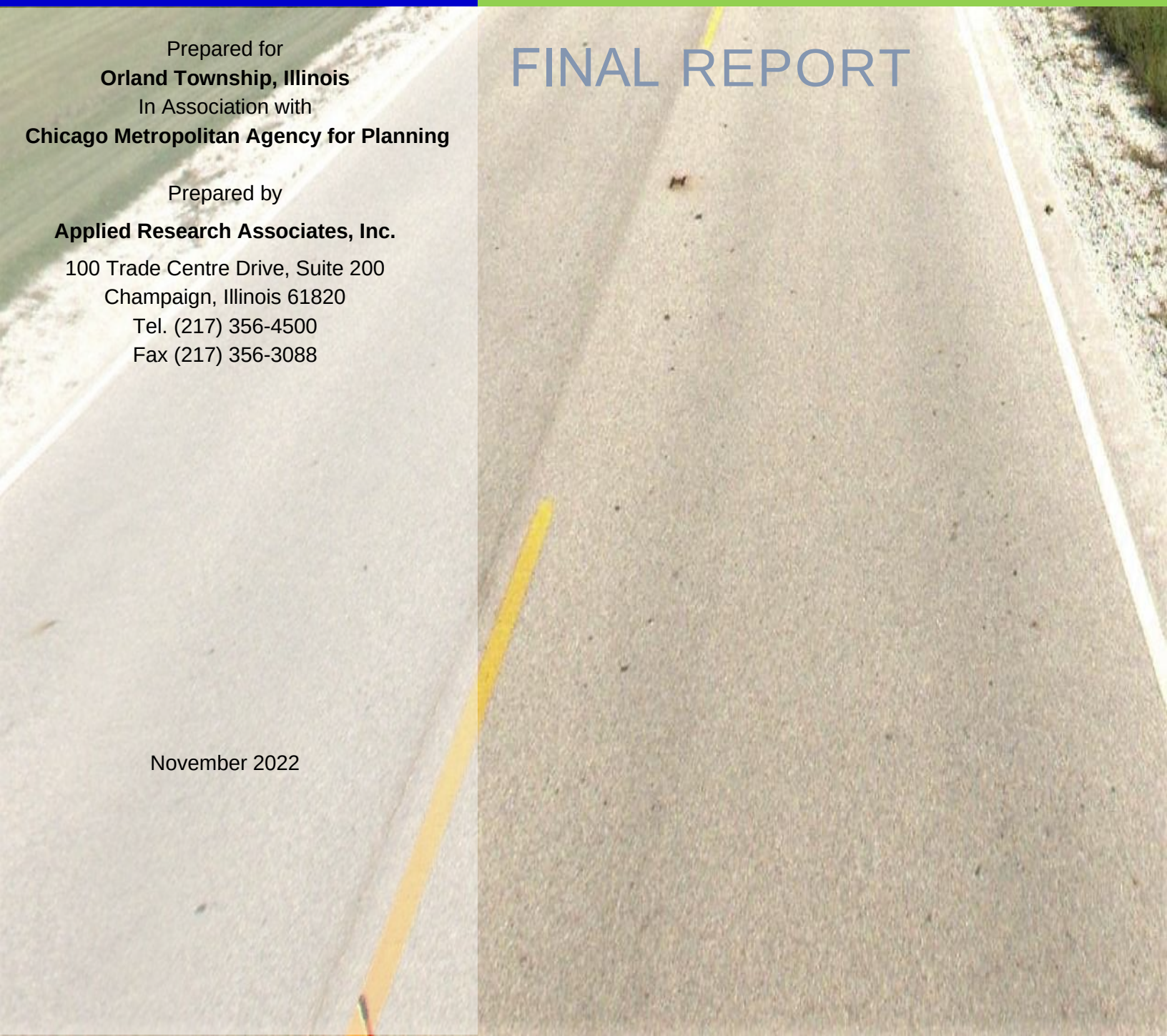
Pavement Data Collection and Pavement Management System Implementation for Orland Township, IL

FINAL REPORT



Prepared for
Orland Township, Illinois
In Association with
Chicago Metropolitan Agency for Planning

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November 2022

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List of Abbreviations

Abbreviation	Explanation
AADT -	Annual Average Daily Traffic
AC -	Asphalt Concrete
ADT -	Average Daily Traffic
AECOM -	The organization AECOM
ARA -	Applied Research Associates
ASTM -	American Society for Testing and Materials
CMAP -	Chicago Metropolitan Agency for Planning
DSV -	Digital Survey Vehicle
FHWA -	Federal Highway Administration
GIS -	Geographic Information System
GPS -	GLOBAL Positioning System
HMA -	Hot Mix Asphalt
IDOT -	Illinois Department of Transportation
IRI -	International Roughness Index
LCMS -	Laser Crack Measurement System
LTR -	Load Transfer Restoration
PCC -	Portland Cement Concrete
PCI -	Pavement Condition Index
PMS -	Pavement Management System
RSL -	Remaining Service Life
STA -	State Transportation Agencies

INTRODUCTION

1.1 Background

Chicago Metropolitan Agency for Planning (CMAP) selected ARA 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. Non-Federal aid routes are public roads that are not on the Federal-aid highway systems and classified as local roads or rural minor collectors. 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 pavements, scenarios evaluating the cost to meet different network-level pavement conditions, and recommended capital plans based on the selected pavement condition/spending scenarios. The pavement management plan for Orland Township includes summary tables, charts, graphics, and maps depicting current pavement conditions and forecasted pavement conditions under different scenarios. CMAP and AECOM staff managed the development of the pavement management plan in conjunction with Orland Township.

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

1.2 Project Kick-off and Records Review

ARA met with Orland Township, CMAP, and AECOM representatives for a project kick-off meeting on March 29, 2022. Based on the kick-off meeting and documents provided by Orland Township and CMAP, pavement data was collected in April 2022. The GIS shapefile was provided by CMAP and was used as the base map for the field data collection. The network segmentation provided in the GIS shapefile was the primary source of roadway inventory for the Orland Township's pavement management database. Orland Township responded with valuable information to a questionnaire, which was used by ARA to better understand the PMS inputs available from Orland Township and any specific project requirements. ARA worked with Orland Township to finalize treatment types, unit costs, and their annual budgets from 2023 through 2032 to plan future M&R activities. The following documents were reviewed as part of this effort:

- GIS shapefile for the local agency (Source: IDOT Centerline GIS shapefile)
- Network Segmentation for collection (Source: Orland Township)
- Review of network segmentation (Source: Orland Township)
- Completed Questionnaire (Source: Orland Township)

1.3 Network Segmentation

Orland Township manages approximately 21.5 miles of roadway pavements, consisting of asphalt pavements. The initial GIS shapefile consisted of 243 segments. However, 5 were not inspected during

data collection because the segments were inaccessible or non-existent. Hence, only 238 segments were inspected.

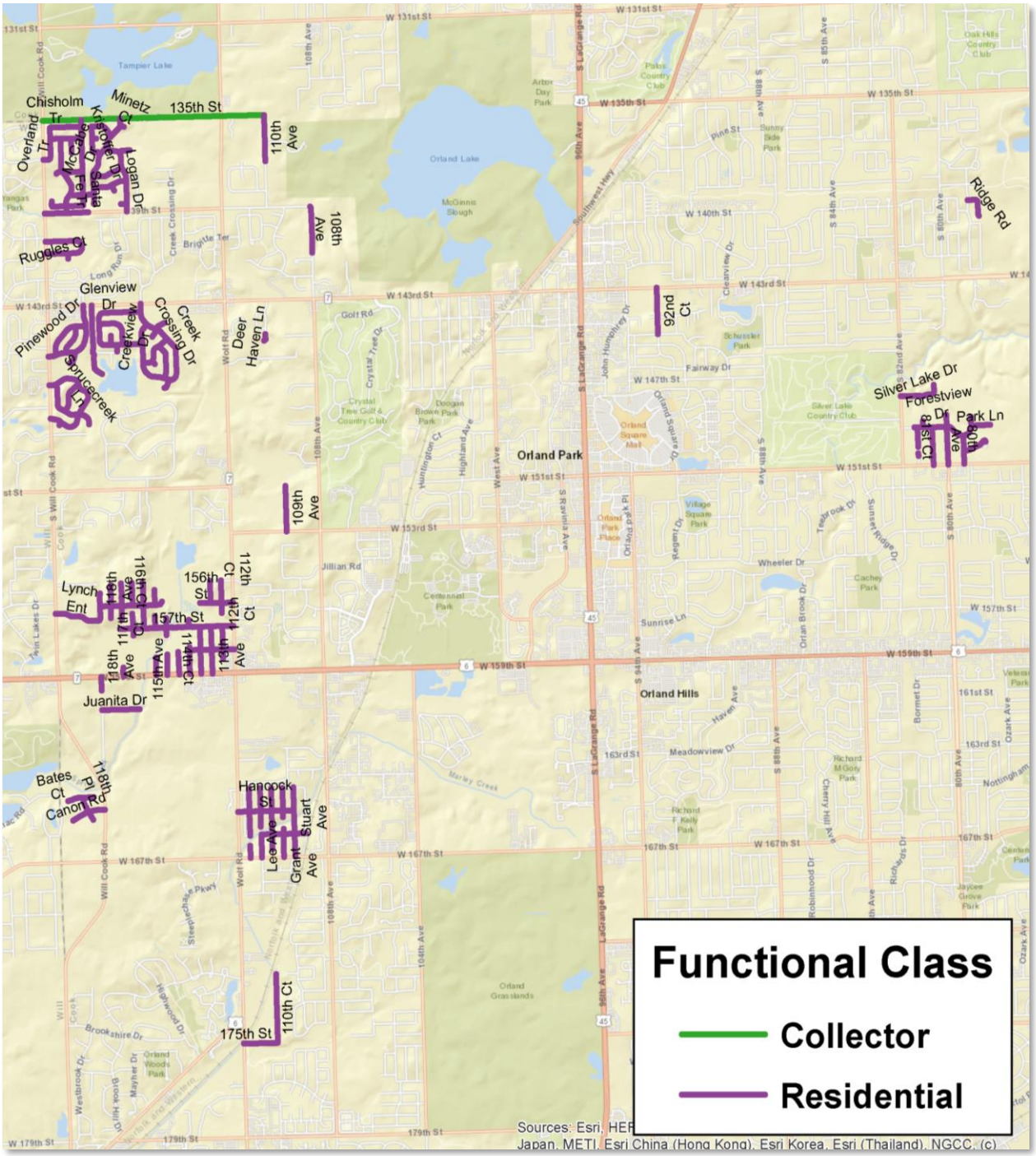


Figure 1. Orland Township's roadway network segmentation.

1.4 Traffic Data

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

Collectors gather traffic from local roads and funnel it to the arterial network. Collectors serve primarily intra-county travel and typical travel distances are shorter than on arterial routes. Collectors are broken down into two categories: Major Collectors and Minor Collectors. Generally, major collector routes are longer; have lower driveway densities; have higher speed limits; are spaced at greater intervals; have higher traffic volumes and may have more travel lanes than their minor collector counterparts.

The minimum spacing between two collector roadways in suburban areas of Illinois is ½ or 1 mile typically. In a densely populated urban area, two collector roadways might be found at ¼ mile spacing or less, but in most areas within the Chicago metropolitan region ¼ mile is considered an absolute minimum and requires significant justification in terms of the traffic patterns and land uses served. An exception is the case of paired one-way roads serving traffic moving in the opposite direction of each other. Projects on roadways with a minor collector functional classification and located outside of the adjusted urbanized area boundary are not eligible for federal-aid funding.

Local/residential roads primarily provide access to private properties and connect with higher classified routes. Design speeds are low, stub sections are common, and the main consideration is given to access needs. They offer the lowest level of mobility, have the shortest trip lengths, and through traffic is often deliberately discouraged. Local roads and streets are typically not eligible for federal-aid funding, though some bicycle and pedestrian projects on local roads and streets may be eligible for federal-aid funding.

Average daily traffic (ADT) data for Orland Township network was obtained from the following two resources:

- Illinois Department of Transportation (IDOT) transportation management system: http://www.gettingaroundillinois.com/gai.htm?mt=aadt.
- IDOT Traffic Count Database Systems: https://idot.ms2soft.com/tcds/tsearch.asp?loc=Idot&mod=

The maximum traffic volume in the Orland Township's network is 1,950 vehicles per day. Figure 2 shows the annual average daily traffic (AADT) data for the individual pavement sections.

Table 1. Orland Township's roadway network distribution.

Network/Functional Class	Length	Unit	Maximum AADT in 2022	Minimum AADT in 2022
Collector	1.24	miles	625	N/A
Local/ Residential	20.26	miles	1,950	175
Total Network	21.5	miles		

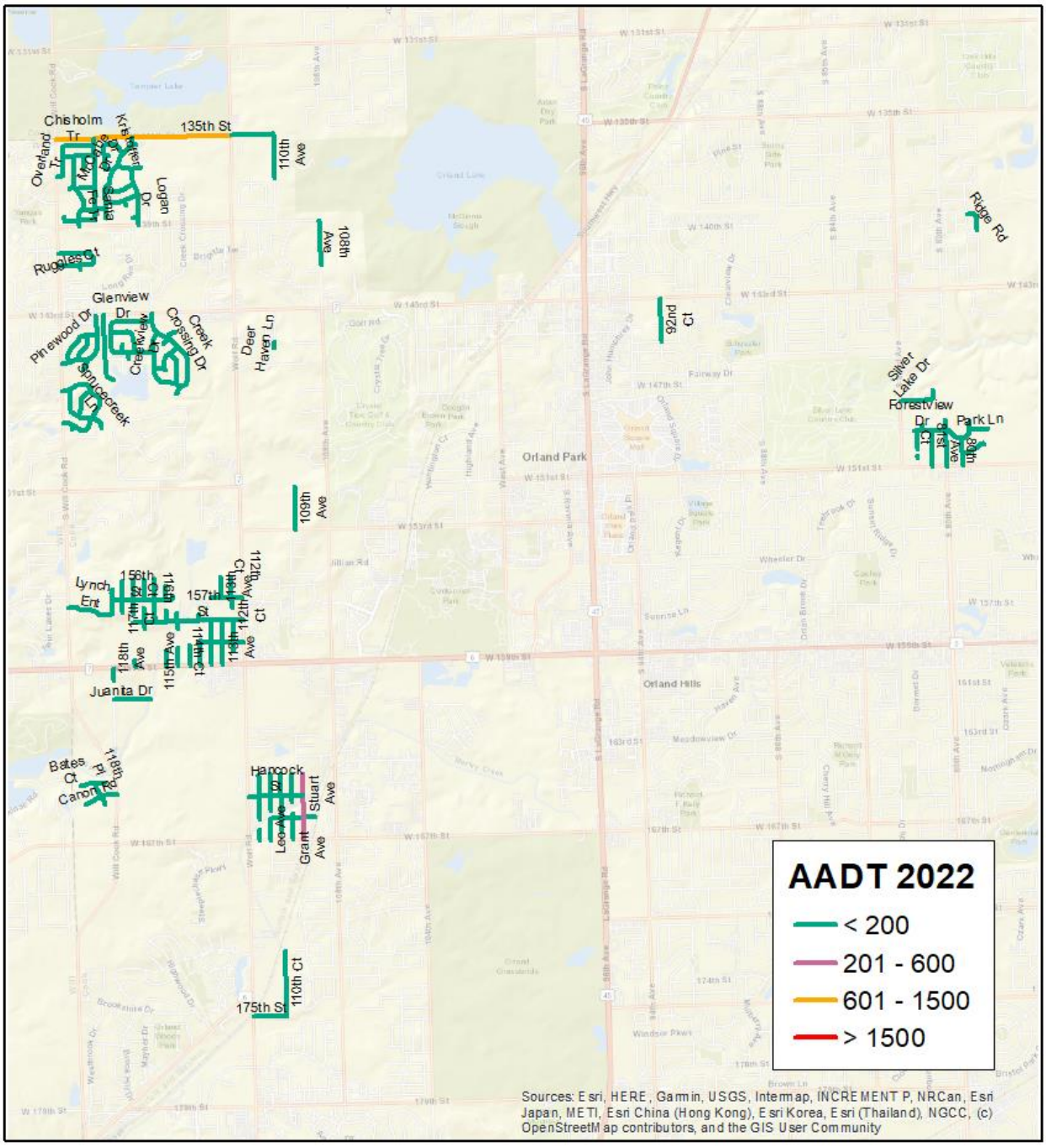


Figure 2. Orland Township's annual average daily traffic data.

2. FIELD DATA COLLECTION AND ASSESSMENT

2.1 Digital Survey Vehicle (DSV)

ARA collected geo-referenced images of the entire Orland Township roadway network using the DSV in April 2022. 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 Orland Township highways, ARA collected images in a single direction. In four-lane pavement sections, data was collected in the outermost lane in both directions.

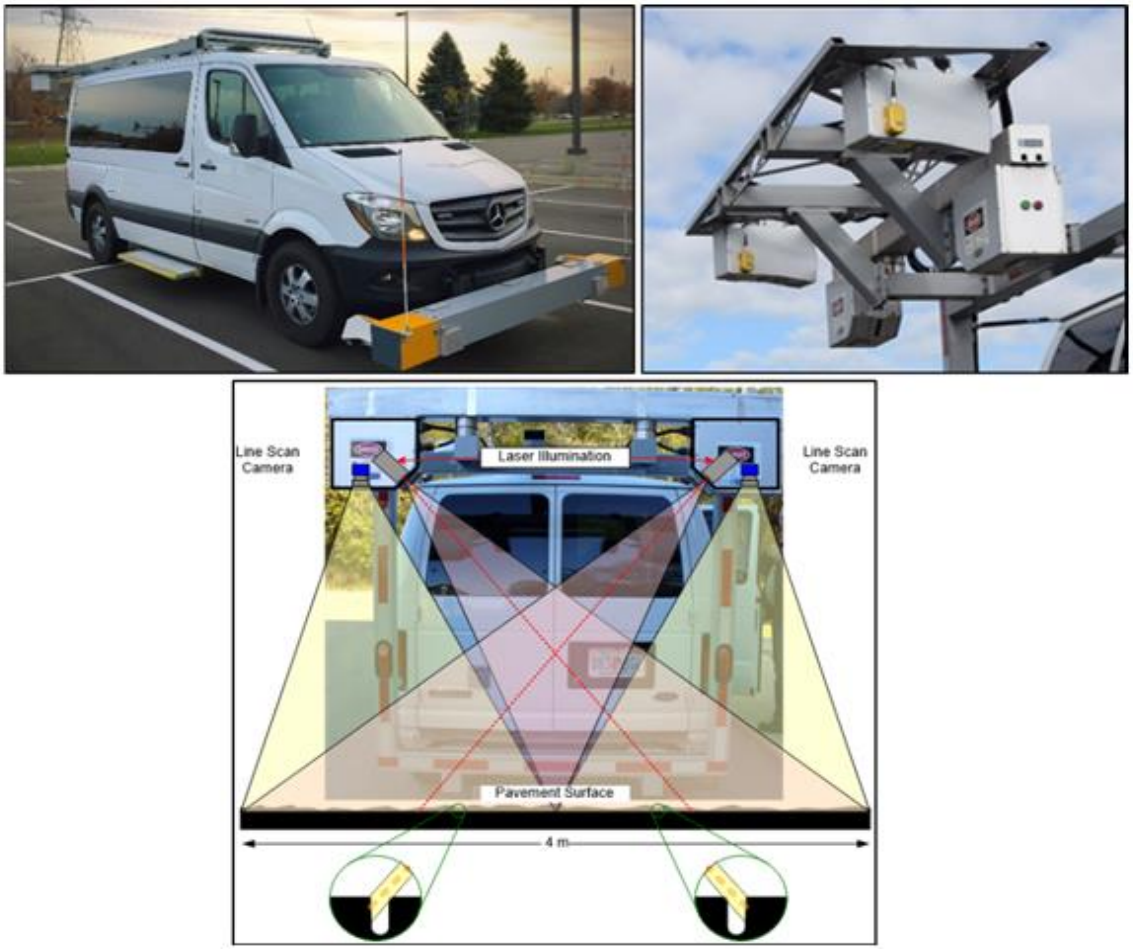


Figure 3. ARA's Laser Crack Measurement System (LCMS).

The LCMS captures enhanced right-of-way images using a right-of-way camera system. The images were used to assess the surface condition of pavements using the Pavement Condition Index (PCI) methodology per ASTM D6433. In addition to the images, International Roughness Index (IRI) and rutting information were collected using a high-speed laser profiling sensor for all the segments. The weighted average IRI value of Orland Township network is 338 inch/mile. Figure 4 illustrates a scale that is recommended by the Federal Highway Administration (FHWA) as part of its Highway Performance

Monitoring System (HPMS) requirements. The HPMS requirements for roadway smoothness is relatively stringent because it represents networks that accommodate relatively speedy traffic.

IRI (in/mile)	Condition
0 – 95	Smooth
96 – 170	Marginal
171 – 220	Rough
Over 220	Unacceptable

Figure 4: IRI scale based on FHWA's HPMS requirements.

However, pavement roughness is subjective to human perception. The level of tolerance of roadway roughness is relatively higher for urban-street travelers because of lower operating speed than Interstate and US highways. Moreover, urban street smoothness is largely impacted by frequently intersecting streets, and localized roughness (e.g., manhole covers, railroad crossings, bridge approaches, roundabouts, etc.). Many of these items are not existent in Interstate or US highways. To account for these variabilities into pavement roughness estimation, a study was conducted by the District Department of Transportation (DDOT). The study was focused on IRI values of dense urban roadways of Washington D.C. As part of the study, a survey was conducted asking D.C. travelers to give their opinions on pavement smoothness based on the Weaver/AASHO scale. The ratings were directly used to establish a correlation between actual IRI value and perceived smoothness. The study proposed a new scale for the DDOT suggesting 188-318 in/mi for Collectors and 182-281 in/mi for Arterials as acceptable ranges.

2.2 Pavement Condition Index Procedure

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. A newly constructed pavement will have a PCI of 100 whereas a failed pavement will have a PCI of 10 or less. After construction, PCI starts to deteriorate with time due to traffic loads and volumes, climate, construction materials, and age. Examples of common traffic load-related distress are fatigue cracking, corner break, etc. whereas block cracking, longitudinal and transverse cracking, etc. are climate-related distresses.

PCI Value	Pavement Rating
100	
85	Good
70	Satisfactory
55	Fair
40	Poor
25	Very Poor
10	Serious
0	Failed

Figure 5. Pavement condition category based on the 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 provides 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 6. Some sample pavement surface images with representative PCI values are shown in Figure 7.

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.

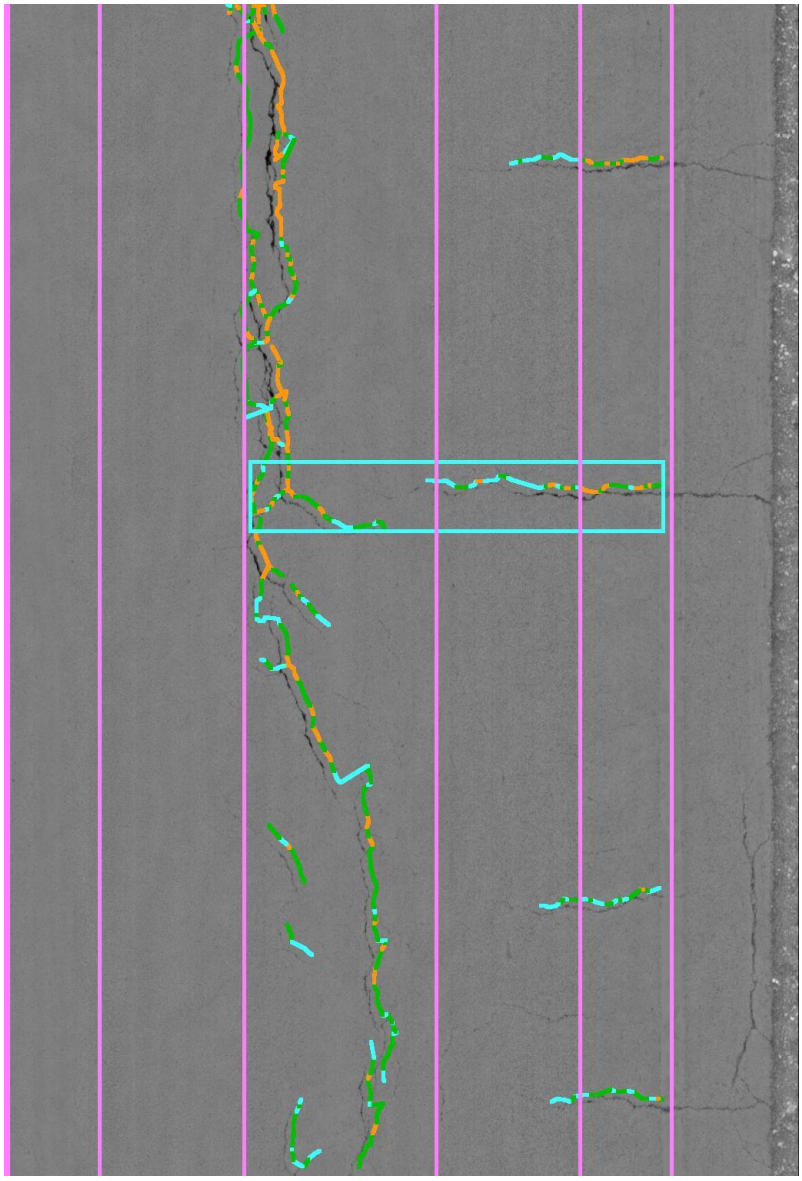


Figure 6. Pavement distress detection using LCMS system.

Figure 7. Sample pavement images with different PCI values ('Good' - 'Serious').

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. As mentioned earlier, five (5) sections listed below were not inspected because they were either inaccessible or non-existent.

- 114th Ave – Section ID: 130 – 0.02mi
- 115th Ave – Section ID: 160 – 0.08mi
- 117th Ave – Section ID: 154 – 0.01mi
- 156th Ave – Section ID: 161 – 0.02mi
- Sanctuary – Section ID: 83 – 0.40 mi

Based on the April 2022 pavement condition survey, the weighted average PCI of the network is 58.8, which represents a pavement network in "Fair" condition. ARA discussed the results of the PCI survey on June 29, 2022. Table 2 shows the pavement condition, percent area, number of sections, and number of sections by pavement surface type.

Table 2. Pavement condition, percent area, and the number of sections by pavement surface type.

Surface Type	Wt. Avg PCI	Pavement Area (SqFt)	% Area	Number of Sections
Asphalt Concrete (AC)	58.8	2,635,583	99.9	237
Portland Cement Concrete (PCC)	100.0	1,941	0.1	1

Figure 8 shows the distribution of network pavement area based on current pavement conditions. Per the latest survey, 1% of the network is in "Serious" condition, 23% of the network is in "Poor" or "Very Poor" condition, 18% in "fair" condition, and 59% of the network is in "Satisfactory" or "Good" condition. There were no sections in "Failed" condition at the time of survey.

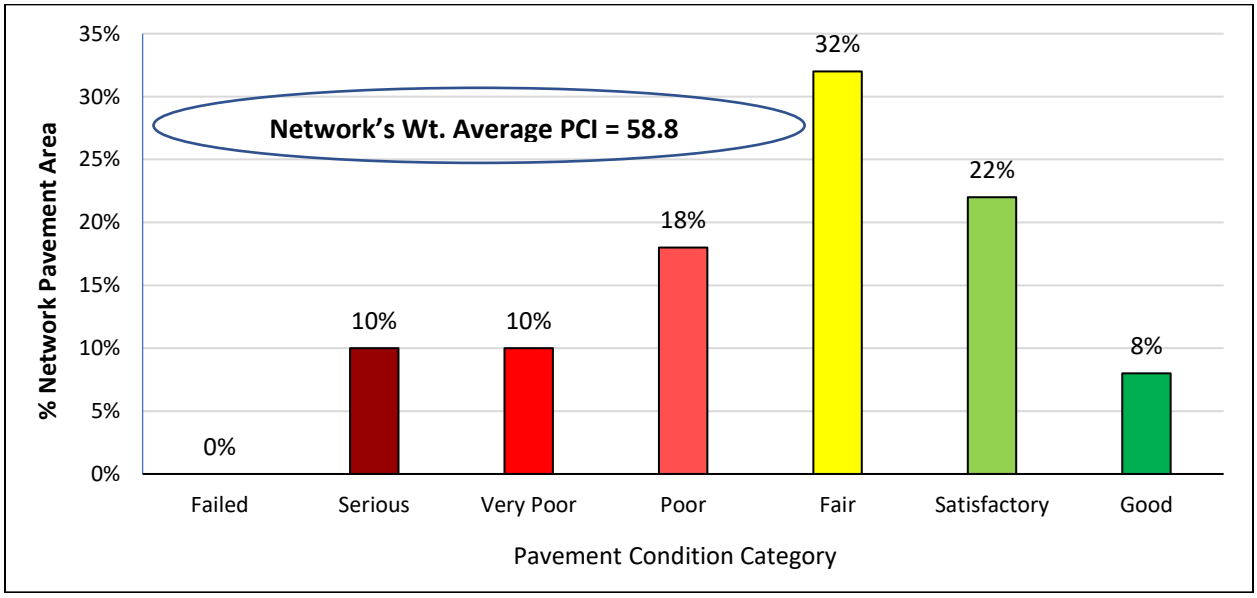


Figure 8. Distribution of network pavement area based on pavement condition.

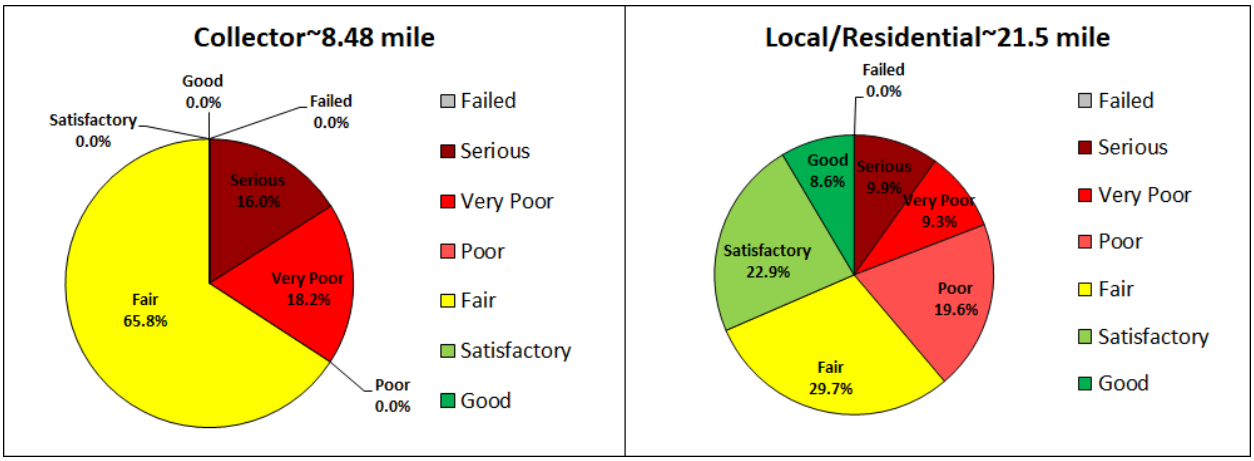


Figure 9. Pavement condition distribution based on functional class.

Figure 9 shows detailed distributions of pavement conditions among various PCI bands based on functional class. The majority of the roads was found to be in "Fair" condition in both functional classes. Roads that are in "Satisfactory" or "Fair" category have the potential of profiting the most from a pavement management program. Collector roads have significantly greater "Fair" and "serious" roads while having no "Satisfactory" and "Poor" roads compared to Residential roads.

Figure 10 shows the average pavement condition based on functional class. The collector pavement sections comprise about 5% of the network by pavement mileage and are in "Poor" condition with an average PCI value of 54.2. The major part (95% by pavement mileage) of the network consists of residential streets with an average PCI value of 59.1, which falls in the "Fair" band. The overall network PCI is influenced heavily by the residential road PCI scores since it has the largest weightage factor among the two functional classes. For context, of the 50+ agencies that have participated in the CMAP-PMS program, the typical agency had a network PCI in the range of 50-60. A GIS map with pavement conditions for individual segments is shown in Figure 11.

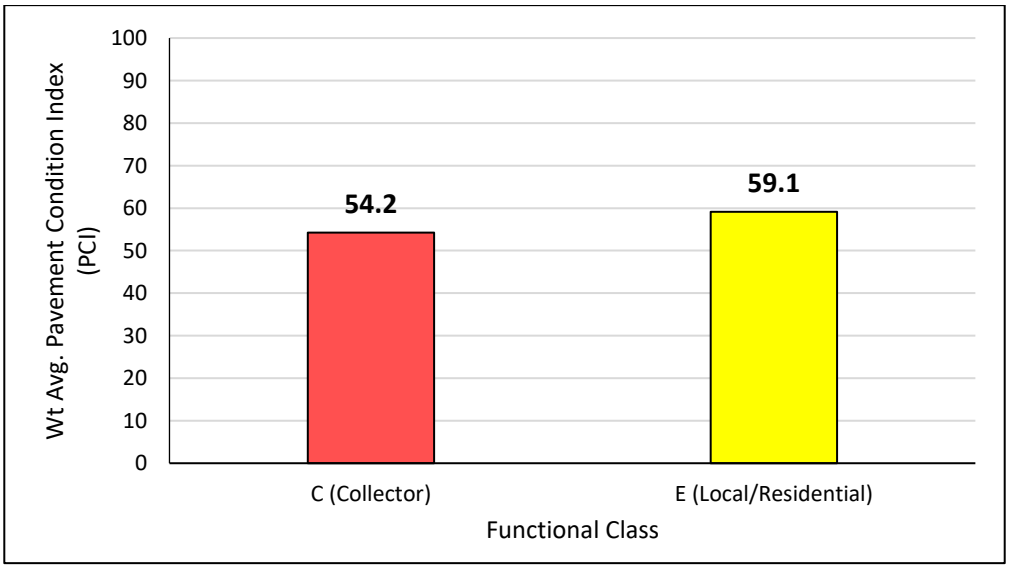


Figure 10. Average pavement condition index (PCI) based on functional class.

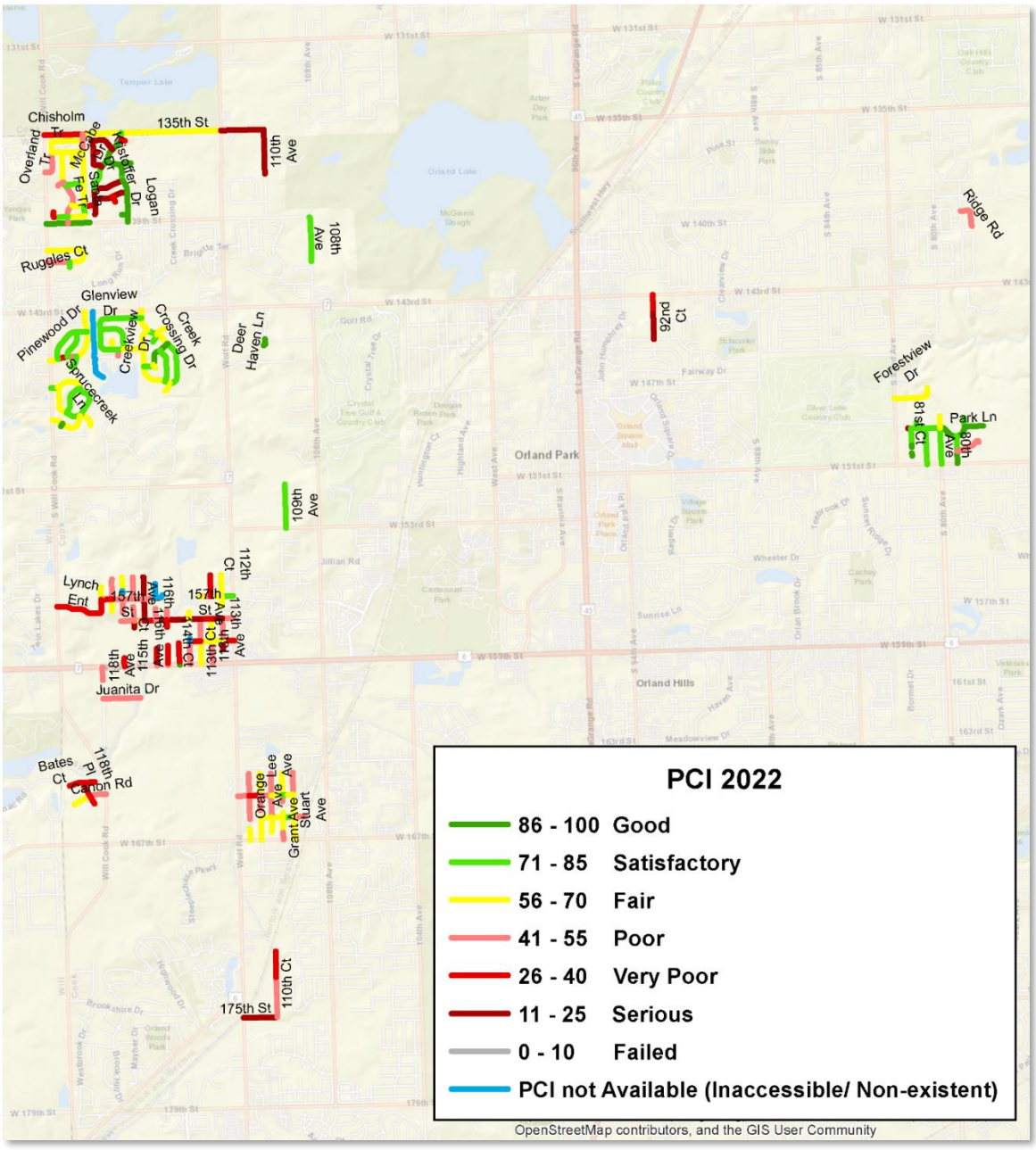


Figure 11. Orland Township's current pavement condition ratings.

3. PAVEMENT MANAGEMENT SYSTEM IMPLEMENTATION

ARA discussed the PMS analysis with Orland Township, CMAP, and AECOM on September 15, 2022. ARA discussed pavement performance models, treatment matrix, unit costs, and consequences of several funding scenarios. Based on the Orland Township's feedback on PMS analysis, ARA prepared the PMS analysis, and results are presented in this section.

ARA used PAVER™ pavement management software to implement a pavement management system (PMS) for Orland Township. 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 12 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 a 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, the work history module also follows the hierarchical structure. To update 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 a pavement performance model. Basically, it uses 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 creating multi-year network and project level M&R planning, scheduling, and budgeting. This module allows the users to create a consequence of the current funding level and generates funding scenarios for targeted PCI, backlog eliminations, etc.
- Reports — This module facilitates the generation of summary charts, latest condition maps, and user-defined reports. The users can pick and choose the attributes fields to create a report.

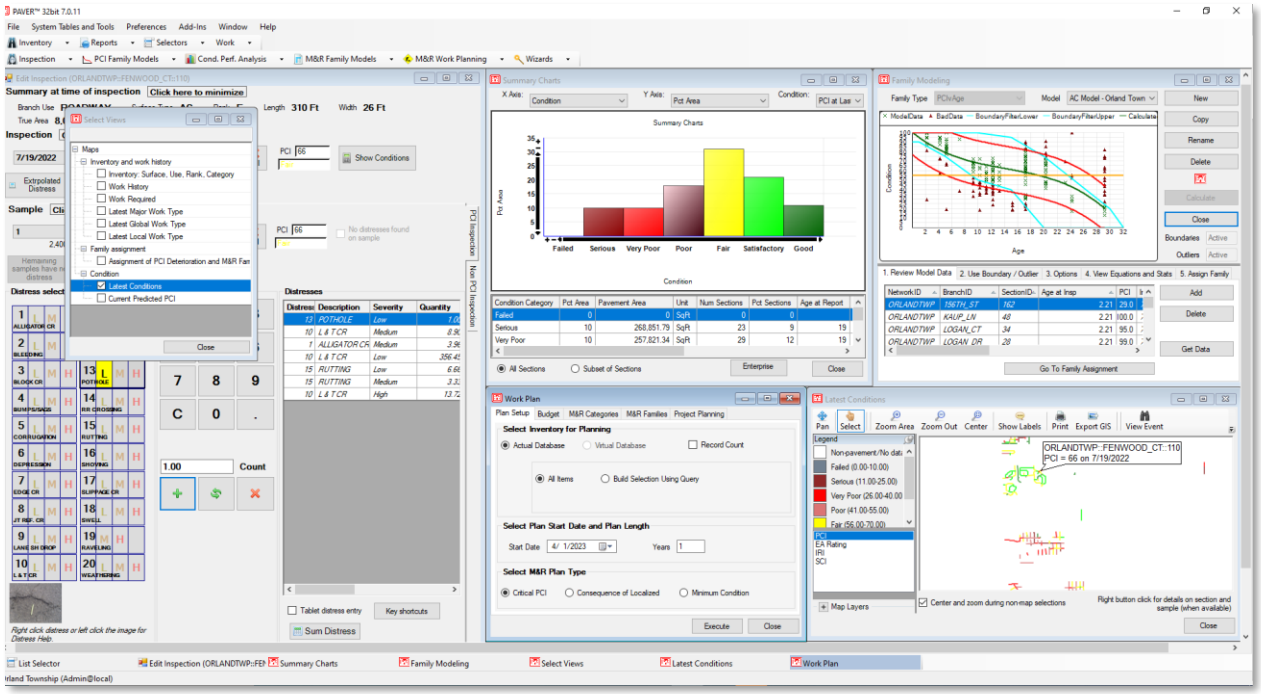


Figure 12. PAVER™ overview.

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 for new pavement and the date of resurfacing for an overlay or mill and overlay, 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 Orland Township, a PCI family model was developed for the asphalt (AC) surfaced pavements. The AC pavement performance model was developed based on the age data provided by Orland Township and the latest PCI conditions. The reliability of the model is expected to increase with future pavement inspection and age data. Figure 13 shows the PCI family model used for the AC pavements.

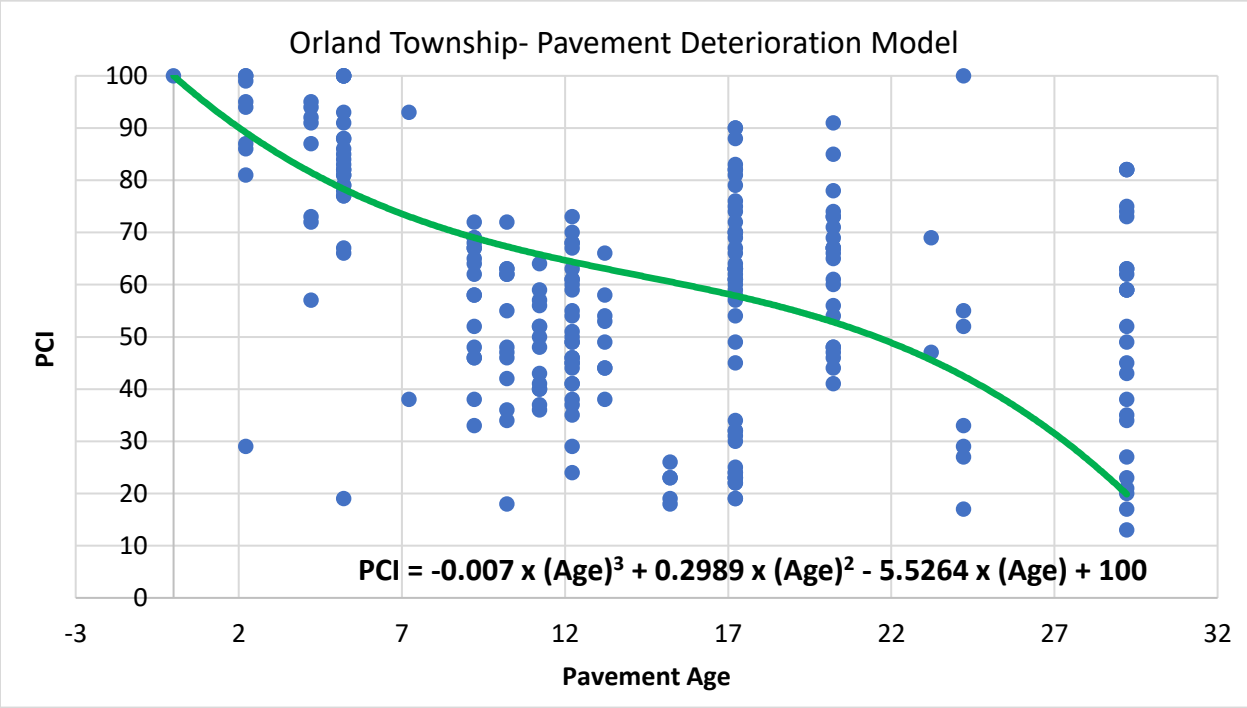


Figure 13. PCI family model for asphalt surfaced streets.

3.3 Treatment Matrix

Based on the pavement preservation and rehabilitation techniques currently used in Orland Township, and discussion with Orland Township, 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 Preventive, 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 Preventive* 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 preventive work. Applying any preventive work where the PCI is still above critical will save money and improve the pavement 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 3. Treatment matrix for Orland Township's Local/Residential Roads.

Treatment Matrix for Residential Roads			
PCI	**Localized Preventive**	**Localized Stop Gap**	**Major M&R**
0 25	No Localized Preventive Treatment Recommended	Patching and Repair	Full Reconstruction
40			3.0" Mill and Overlay
50			2.0" Mill & Overlay
80	Crack Seal and Distress Repair	No Localized Stop Gap/ Major M&R Recommended	No Major M&R Recommended
100			

Table 4. Treatment matrix for Orland Township's Collector Roads.

Treatment Matrix for Collector Roads			
PCI	**Localized Preventive**	**Localized Stop Gap**	**Major M&R**
0 25	No Localized Preventive Treatment Recommended	Patching and Repair	Full Reconstruction
45			4.0" Mill & Overlay
55			3.0" Mill & Overlay
80	Crack Seal and Distress Repair	No Localized Stop Gap/ Major M&R Recommended	No Major M&R Recommended
100			

As observed in Table 3 and Table 4, Residential pavement sections with PCI greater than 50 and Collector pavement sections with PCI greater than 55 are selected for localized preventive treatments such as crack sealing or distress repair. These PCI values are the critical values set for pavements based on their levels of importance (Functional Class). Sections with PCI values falling below the critical PCI values are assigned to stopgap works such as patching and repair. The stopgap candidates are already eligible for major M&R work as long as funding is available. PAVER™ assigns major M&R works to a subset of the below-critical sections depending on the availability of funding. The 2-inch and 3-inch Mill and Overlays are considered for the Residential Roads below PCI of 50 and 40, respectively. The Collector roads are set to receive 3-inch Mill and overlay a little early (as soon as the PCI drops below 55) and 4-inch Mill and Overlay below 45.

3.4 Unit Costs

ARA used the unit costs presented in Table 5 for developing different budget scenarios and a Capital Improvement Plan (CIP). Some of the costs were directly provided by Orland Township. Some of these costs were discussed with Orland Township during the PMS analysis results meeting on September 15, 2022. Orland Township reviewed and approved the unit costs. Costs were determined based on a square yard or linear foot basis. The unit costs used for PAVER™ analysis are shown in Table 5. To run the PMS analysis in the future, the unit costs can be updated based on the available unit price of materials and construction.

Table 5. Treatment unit costs for Orland Township.

Treatment Type	Unit Cost
Distress Repair & Crack Seal-AC	$ 1.50/ft.
2.00" Mill and Overlay-AC	$ 21.96/SY
3.00" Mill and Overlay-AC	$ 24.03/SY
4.00" Mill and Overlay-AC	$ 35.73/SY
Partial Depth Patching-AC	$ 30.00/SY
Full Depth Patching-AC	$ 60.00/SY
Reconstruction-AC	$ 99.00/SY

3.5 Annual Budget

Orland Township provided its total budget from 2023-2032 as shown below:

- 2023 - $300,000
- 2024 - $300,000
- 2025 - $300,000
- 2026 - $300,000
- 2027 - $300,000
- 2028 - $300,000
- 2029 - $300,000
- 2030 - $300,000
- 2031 - $300,000
- 2032 - $300,000

Per discussion with Orland Township, ARA allocated 20% of the budget for preventive maintenance activities each year, and 80% for Major M&R activities. The assumed budget allocation from 2023 to 2032 is shown below in Figure 14.

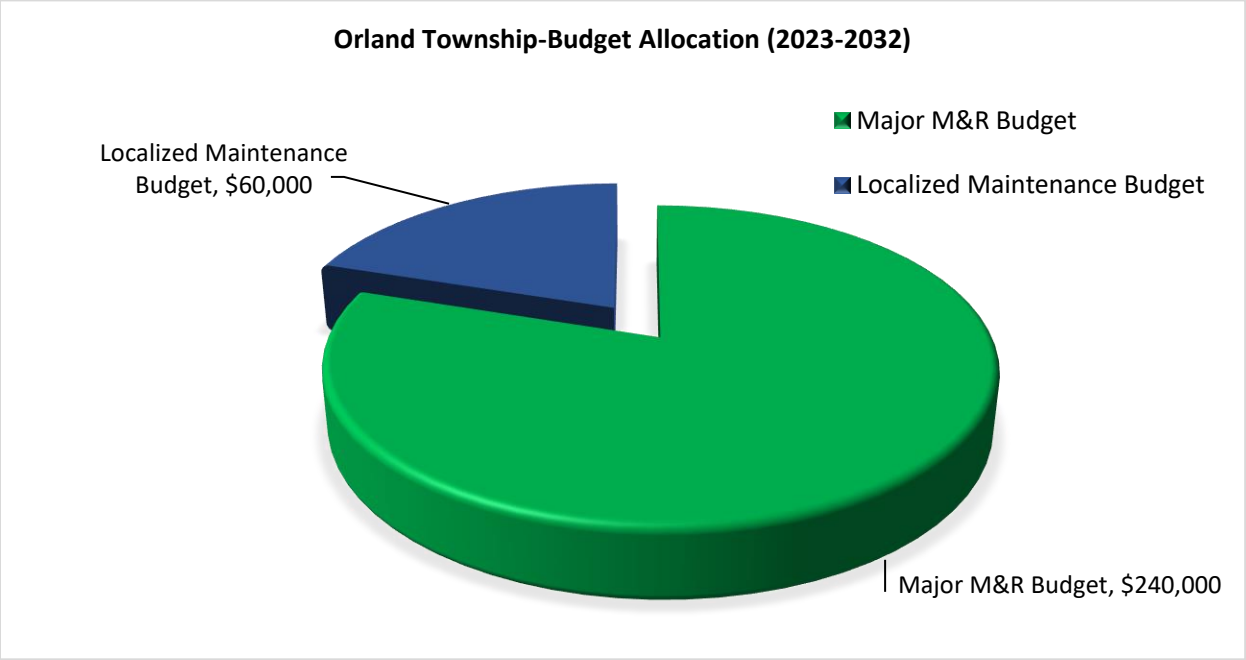


Figure 14. Assumed budget allocation for 10 years (2023-2032).

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 by specifying a target PCI.

For Orland Township, the M&R funding analyses were based on the roadway inventory approved by Orland Township, unit costs discussed with Orland Township, and the Orland Township's existing Major M&R policies. An inflation rate of 3% was used for all analyses. PCI family curves were developed based on existing pavement age and collected condition data. The critical PCI value was set to 60 for Residential and 65 for Collector roads. The critical PCI value represents the condition at or below which Major M&R is recommended. The following 10-year M&R funding scenarios were evaluated:

- Eliminate backlogs
- Increase current funding
- Maintain current condition (PCI = 58.8)
- Keep funding level current
- Do nothing

These 10-year scenarios represent different network-level funding scenarios of major M&R work either with a budget-driven or condition-driven goal. Budget-driven scenarios use a budget and distribute that over 10 years while the Condition-driven scenarios run multiple iterations to achieve certain goals such as backlog elimination, achieving a target PCI, etc. In this prioritization process, PAVER™ selects projects that have the potential of resulting better benefit/cost ratio.

4.1 Funding Scenario Results

Using the M&R Working Plans module, different funding scenarios were generated. Based on the information provided by Orland Township, it was assumed that 95% of the current funding (Avg. $240K/yr) would be spent on major M&R and pavement preservation activities.

Table 6 and Figure 15 display the effect of different funding levels on the average pavement condition of Orland Township network. From Table 6 and Figure 15, it can be observed that the current M&R funding level is less than what is required for maintaining the current condition over next ten years. Providing a budget to eliminate backlogs will result in an average PCI of 72.2 after ten years, while not spending any funds on the M&R program will deteriorate the network to an average PCI of 34.1 after ten years.

Table 6. Predicted PCI based on funding scenarios.

Year	$850K/year - Eliminate Backlogs	$590K/year - Increase Current Fund	$370/year - Maintain Current Condition	$240K/year - Maintain Current Fund	$0/yr Do Nothing
2022	58.8	58.8	58.8	58.8	58.8
2023	64.2	61.7	60.0	58.9	56.8
2024	66.9	62.7	60.2	58.1	53.9
2025	66.8	63.4	60.0	57.1	51.1
2026	66.5	62.2	58.6	55.4	48.2
2027	67.9	62.5	58.3	55.1	45.5
2028	68.5	62.3	57.4	53.6	43.1
2029	69.5	62.9	57.2	52.7	40.7
2030	70.3	63.1	56.9	51.8	38.4
2031	72.4	64.7	57.4	51.6	36.2
2032	72.2	64.6	57.7	51.1	34.1

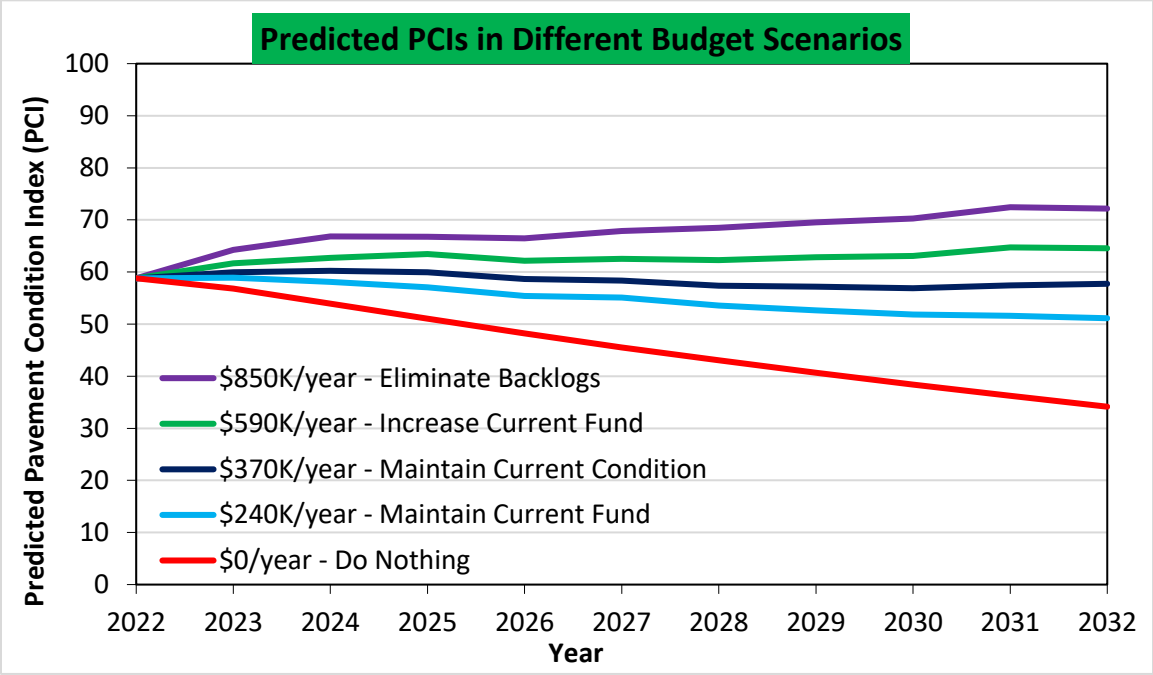


Figure 15. Effect of funding level on Orland Township's pavement condition.

Table 7 and Figure 16 show the amount of funding required to achieve target PCI values for various funding scenarios. To eliminate backlogs, it is required to invest about $850K/year for major M&R for ten years. This cost includes only pavement material costs and no other additional repair costs for sidewalks, curbs etc. or professional services costs related to construction such as planning, design, traffic control, etc. The cost is only limited to the pavement (curb to curb) itself. Maintaining the current M&R funding (Avg. $240K/yr) will result in a PCI of 51.1 by 2032.

Table 7. Total funded budget requirements per year based on funding scenarios.

Year	$850K/year - Eliminate Backlogs	$590K/year - Increase Current Fund	$370/year - Maintain Current Condition	$240K/year - Maintain Current Fund	$0/yr Do Nothing
2023	$881,755	$596,762	$377,160	$239,149	$0.00
2024	$865,556	$591,707	$378,769	$232,830	$0.00
2025	$857,744	$587,614	$373,179	$239,283	$0.00
2026	$869,541	$592,022	$357,461	$227,316	$0.00
2027	$877,588	$585,627	$368,548	$222,525	$0.00
2028	$883,479	$589,737	$370,191	$229,226	$0.00
2029	$857,027	$585,711	$371,938	$232,989	$0.00
2030	$881,309	$567,511	$378,132	$238,264	$0.00
2031	$869,568	$595,518	$366,631	$231,647	$0.00
2032	$698,338	$593,527	$377,537	$234,864	$0.00

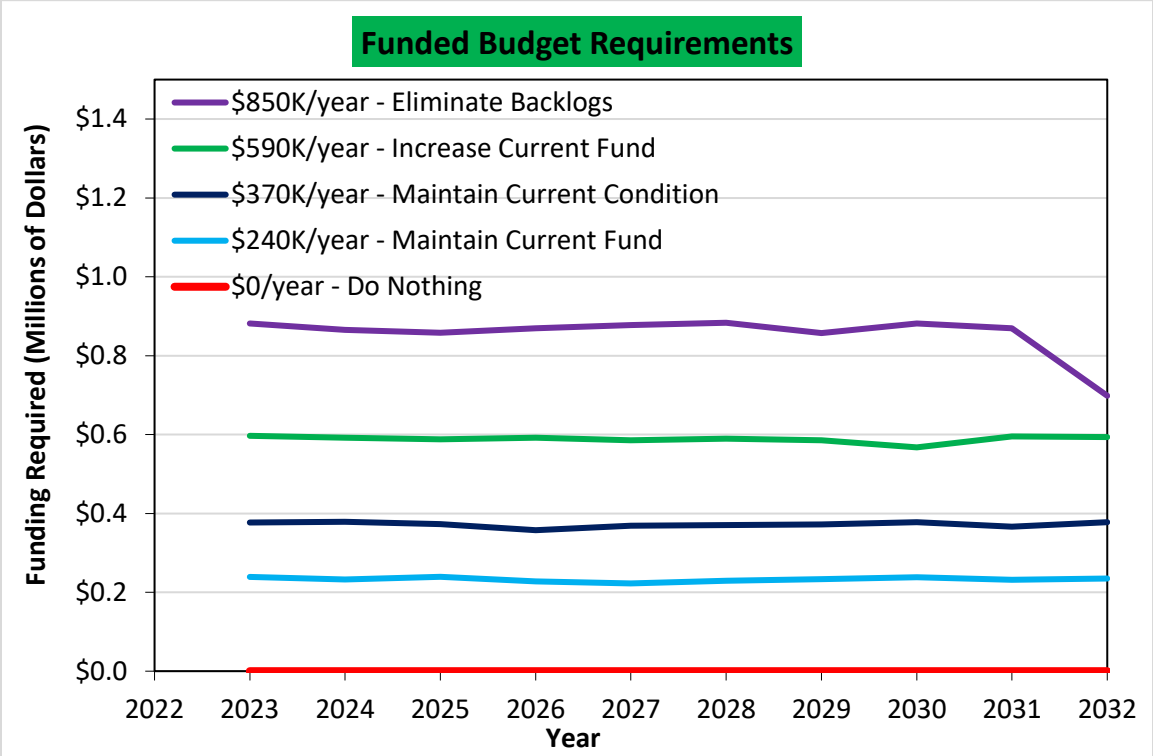


Figure 16. Total funded budget requirements per year based on funding scenarios.

Table 8 and Figure 17 show the total unfunded budget per year based on the funding scenarios. It can be seen that about $4.5M is required in 2023 to eliminate the backlogs, while doing nothing will generate a backlog of $17M by 2032. Current major M&R funding will sustain a backlog of about $10M by 2032.

Table 8. Total unfunded budget requirements per year based on funding scenarios.

Year	$850K/year - Eliminate Backlogs	$590K/year - Increase Current Fund	$370/year - Maintain Current Condition	$240K/year - Maintain Current Fund	$0/yr Do Nothing
2023	$4,513,168	$4,798,160	$5,017,762	$5,155,773	$5,394,923
2024	$4,218,013	$4,888,106	$5,327,234	$5,615,324	$6,148,104
2025	$3,930,946	$5,213,982	$5,901,254	$6,457,275	$7,381,954
2026	$3,231,515	$5,050,497	$6,715,365	$7,402,394	$8,786,576
2027	$2,566,159	$4,731,670	$6,663,564	$7,990,818	$9,713,486
2028	$1,816,759	$4,340,977	$6,550,374	$8,441,493	$11,403,484
2029	$1,337,363	$4,208,624	$6,698,076	$8,784,878	$13,188,672
2030	$748,106	$4,019,304	$6,772,818	$9,062,092	$14,428,169
2031	$541,114	$4,184,497	$7,249,504	$9,742,440	$16,099,740
2032	$0	$3,812,336	$7,185,283	$9,895,680	$17,076,230

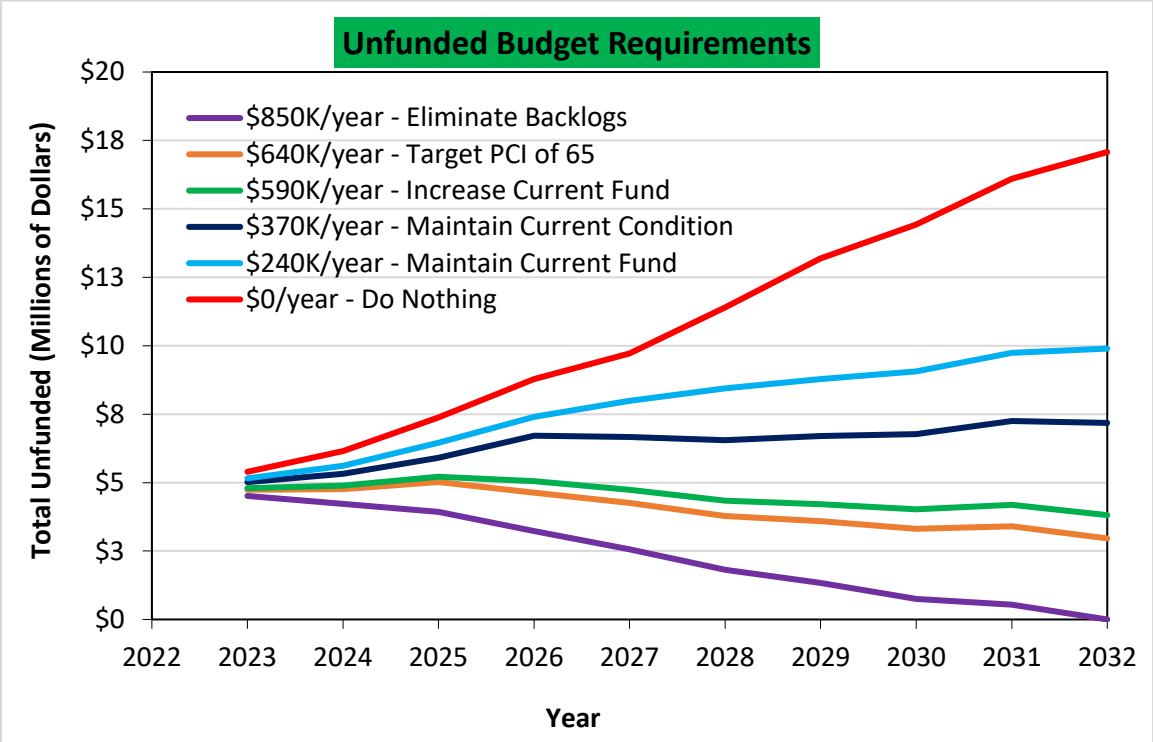


Figure 17. Total unfunded budget requirements per year based on funding scenarios.

The 10-Year major M&R plan based on the eliminate backlogs, current funding, and 2023 localized distress maintenance plans are provided in Appendix A. Figure 18 shows the network condition distribution for the next ten years with the current funding level. Currently, about 38% of the pavement

network is in 'Very Poor' or worse condition. With current funding, the average PCI of the network is expected to be 51.1 in 2032; a decrease of 7.7 PCI points from the 2022 average PCI.

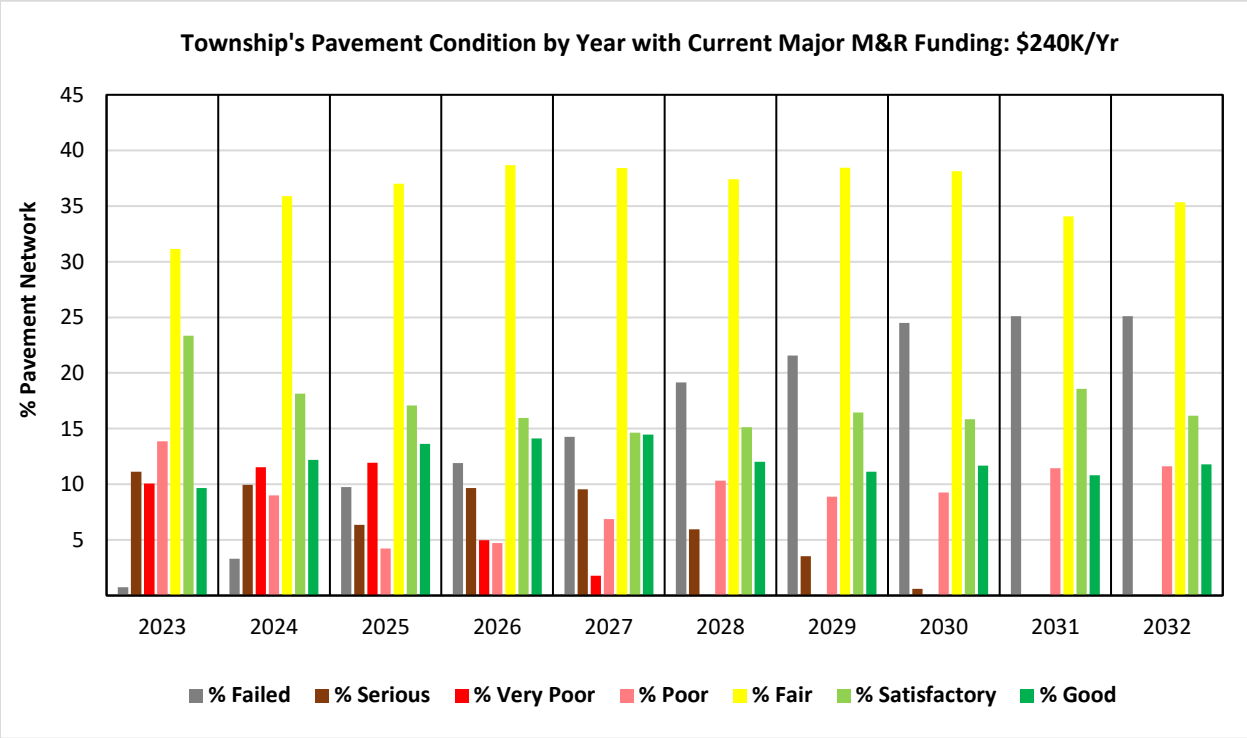


Figure 18. Pavement condition by year with current major M&R funding.

Based on the most recent inspection, about 62% of the network is "Fair" or better. However, the analysis suggests that if the provided M&R recommendations are followed, only about 63% (Figure 18) of the network will be in "Fair" or better condition by 2032 with the current funding (Avg. $240K/yr). On the other hand, the "Failed" percentage will continue to increase. This is an approach to keep the better roads in better condition using the money available now and let the worse roads deteriorate until substantial funding is available. The cost of repair increases as the condition falls. Therefore, worse roads will cost more to fix whereas better roads will cost a fraction of that. Thus, more mileage of better quality is assured rather than few roads consuming the entire M&R budget. Table 9 presents the total ten-year costs for the funded projects and the remaining M&R backlogs in 2032.

Table 9. Total 10-Year Costs for Various Funding Scenarios

Funding Scenario	Total 10-Year M&R Costs (2023-2032)	Remaining M&R Backlogs in 2032	Total 10-Year Costs	Predicted PCI 2032
$850K/year - Eliminate Backlogs	$8.5	$0.0	$8.5	72
$590K/year - Increase Current Fund	$5.9	$3.8	$9.7	65
$370K/year - Maintain Current Condition	$3.7	$7.2	$10.9	58
$240K/year - Maintain Current Fund	$2.3	$9.9	$12.2	51
$0/year - Do Nothing	$0.0	$17.1	$17.1	34

1. 'M&R Backlogs' refers to the amount required to resurface/reconstruct all pavements at or below their critical PCI value.
2. 'Total 10-Year Costs' refers to the sum of 10-year major M&R expenses and remaining backlogs at the end of 10-year period.
3. Current network weighted average PCI is 58.8

4.2 Consequence of Localized Distress Maintenance

The consequence of a 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 2022 pavement condition survey, the localized preventive plan estimated that PCI of 115 sections would increase by 7.4 points with an investment of $154,016. Similarly, the localized stopgap plan estimated that PCI of 27 sections would increase by 0.9 points with an investment of $$3,421. The details of the localized distress maintenance plan based on the 2021 condition survey can be found in Appendix A.

Table 10 shows the cost and pavement condition data resulting from the consequence of localized distress maintenance plan.

Table 11 shows the details of the local distress maintenance plan for 2023.

Table 10. Details of the consequence of local distress maintenance plan

Number Sections	Policy Cost	Wt. Avg. of PCI before Maintenance	Wt. Avg. of PCI after Maintenance
115 (Localized Preventive)	$154,016	70.8	78.2
27 (Localized Stopgap)	$3,421	34.0	34.9

Table 11. Details of the local distress maintenance plan 2023

Work Description	Work Quantity	Work Units	Work Cost
Patching - AC Deep	9,711	SqFt	$32,337
Patching - AC Shallow	15,637	SqFt	$104,299
Crack Sealing - AC	13,867	Ft	$20,800
		Total =	$157,437

5. SUMMARY AND RECOMMENDATION

5.1 Summary

Pavement management can be defined as the systematic process of maintaining pavements cost-effectively. The investment in pavement management system is rational considering 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 Orland Township, pavement data was collected with a state-of-the-art digital survey vehicle equipped with a laser crack measurement system. Pavement images were used in an automated condition survey process to assess the type, severity, and extent of the distresses. The pavement inspection data was imported to the PAVER™ software to determine the pavement condition index (PCI) and analyze the pavement network. This PAVER database provides a comprehensive inventory of pavement sections with all attributes that are required for pavement management.

Based on the April 2022 survey, the average pavement condition index (PCI) value for Orland Township is about 58.8, which indicates the pavement network is in overall "Fair" condition. Based on the Orland Township's recommendation, several ten-year M&R funding analyses were performed using PAVER™ including (a) do nothing ($0/year), (b) keep funding level current ($240K/yr), (c) maintain current condition (370K/yr), (d) increase the current funding ($590K/yr), and (f) eliminate backlogs (850K/yr).

It was found that the Orland Township's existing funding level is inadequate to maintain the current pavement condition level for the next ten years. Pavement treatments are less expensive as well as more rewarding when the condition is still better. As soon as the condition starts to deteriorate further, required treatments become costlier and less rewarding in terms of PCI improvement.

5.2 Recommendations

5.2.1 Better utilization of available funds by performing timely repairs

Currently, 20% of the pavement area is in "Very Poor" or "Serious" condition and 18% area is in "Poor" condition. The backlog is expected to increase every year with the current level of funding. It was determined that about Avg. $370K/year of funding is needed to maintain the current condition of the pavement network. It is recommended that Orland Township should focus on applying routine preventive maintenance to the pavement sections in "Satisfactory" and "Good" 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 PAVER™ pavement management system

ARA recommends updating the PAVER 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, Orland Township can perform M&R analysis with an updated funding level (if available), accounting for the previous year(s) actual projects.

5.2.3 Routine pavement condition survey

For Orland Township, it is an excellent initiative to establish a pavement management system with the cooperation of the Chicago Metropolitan Agency for Planning (CMAP). To realize the greatest benefit from this holistic effort, it is recommended that Orland Township 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 determine the effectiveness of completed M&R activities performed in the last few years,
(b) Pavement performance models would be more accurate to predict the future condition, and
(c) Appropriate treatment and optimal funding allocation are possible to repair localized distresses based on the survey

The most recent PAVER™ analysis provides Orland Township with necessary information based on the latest pavement condition inspection. Orland Township can make more informed decisions with the data provided as well as make necessary changes to the strategy towards maintaining a better performing pavement network. PAVER™ analysis is a combination of several objectively gathered information such as pavement condition, functional class, traffic, etc. The analysis results provide an additional tool in the “tool-belt” to consider along with the many other factors that impact project-level decisions. The recommendations provided by PAVER™ are not absolute in nature. These recommendations can be considered as suggestions and final action plans should be made with proper engineering judgements and agency goals.

6. PAVEMENT PRESERVATION

Pavement preservation is a proactive method to keep pavements in good condition with lower costs. This approach includes work that is planned and performed to improve or retain the condition of the pavement in a state of good repair. The various pavement preservation techniques used in the state are also available in the local roads and streets manual (*https://idot.illinois.gov/Assets/uploads/files/Doing-Business/Manuals-Split/Local-Roads-and-Streets/Chapter%2045.pdf*) of IDOT. Preservation activities generally do not increase the structural strength but do restore pavements' overall condition. The intended purpose of a pavement preservation program is to maintain or restore the surface characteristics of pavements and to extend service life of the pavements being managed. However, the improvements are such that there is no increase in strength, but they can have a positive impact on the structural capacity by slowing deterioration. The Federal Highway Administration (FHWA) Office of Asset Management provided the following guidance regarding pavement preservation definitions in a memorandum dated September 12, 2005:

Pavement preservation represents a proactive approach to maintain our existing highways. It enables State Transportation agencies (STAs) to reduce costly, time-consuming rehabilitation and reconstruction projects and the associated traffic disruptions. With timely preservation, we can provide the traveling public with improved safety and mobility, reduced congestion, and smoother, longer-lasting pavements. This is the true goal of pavement preservation, a goal in which the FHWA, through its partnership with the States, local agencies, industry organizations, and other interested stakeholders, is committed to achieving.

The main component of pavement preservation is preventive maintenance. As defined by FHWA, preventive maintenance is a 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 general philosophy of the use of preventive maintenance treatments is to “apply the right treatment, to the right pavement, at the right time.” These practices result in an outcome of “keeping good roads in good condition.”

When activities (e.g., crack sealing, filling, application of seal coats) are placed on the pavement at the right time they are examples of preventive maintenance treatments. Preventive maintenance should be applied to pavements in good condition having significant remaining service life (RSL). It applies cost-effective treatments to the surface or near-surface of structurally sound pavements. Examples include the following:

- Crack sealing
- Patching (Partial and Full depth)
- Rejuvenator/ Reclamite
- Microsurfacing
- Concrete Diamond Grinding

Based on the pavement condition assessment results the following treatment has been selected to describe in this section:

- Bituminous-Surfaced Pavements
    - Asphalt Rejuvenator i.e., reclamite
        - This treatment can be applied globally in Orland Township network at the very early stage of newly constructed pavement or after placing a new surfaPagece.
    - Crack Filling/Crack Sealing
        - Sealing/filling cracks in asphalt and pavement prevent the intrusion of water into the pavement structure and decrease the deterioration of pavement conditions.
    - Microsurfacing
        - This treatment can be applied to pavements having relatively higher PCI and minimal distresses.
    - Patching
        - Asphalt patches are used for treating localized distresses from worsening.
- Concrete-Surfaced Pavements
    - Joint/Crack Sealing
        - Cracking sealing in concrete pavement prevents the entry of water beneath the concrete slab and helps to prevent pumping.
    - Concrete Diamond Grinding
        - Diamond grinding can be used for addressing concrete faulting ad surface irregularities so that a smooth riding surface is restored.
    - Patching
        - Concrete patching can be used to treat individual slab distresses or joint distresses such as spalling.

AC - Crack Filling and Crack Sealing	Evaluation Factors			
	Climate	Traffic	Pavement Condition	Not Applicable To
These treatments are intended primarily to prevent the intrusion of moisture through existing cracks. Crack sealing refers to a sealant operation that addresses "working" cracks, i.e., those that open and close with changes in temperature. It typically implies high-quality materials and good preparation. Crack filling is for cracks that undergo little movement. Sealants used are typically thermo-plastic (bituminous) materials that soften upon heating and harden upon cooling.	Treatment can perform well in all climatic conditions. However, sealants perform best in the dryer and warmer environments that do not undergo large daily temperature changes.	Performance is not significantly affected by varying ADT or truck levels.	**Functional/Other:** • Longitudinal cracking • Minor block cracking • Transverse cracking **Structural:** Adds no structural benefit, but does reduce moisture infiltration through cracks. Only practical if the extent of cracking is minimal and if there is little to no structural cracking.	• Structural failure (i.e., extensive fatigue cracking or high severity rutting) • Extensive pavement deterioration, little remaining life
Construction Considerations	Placement should be done during cool, dry weather conditions. Proper crack cleaning is essential to a good bond and maximum performance. Some agencies also use hot compressed air lance prior to sealing.			
Expected Life	2 to 6 years.			
Typical Costs	$0.30 to $1.50 per linear ft for crack sealing, including routing; $0.30 per linear ft for crack filling. Costs are slightly higher for small jobs.			

PCC - Joint Resealing and Crack Sealing	Evaluation Factors			
	Climate	Traffic	Pavement Condition	Not Applicable To
Resealing of transverse joints and sealing of cracks in PCC pavements is intended to minimize the infiltration of surface water into the underlying pavement structure and to prevent the intrusion of incompressibles into the joint. A range of materials including bituminous, silicone, and neoprene are used in designed configurations.	The sealing of PCC pavement joints and cracks performs well in all climatic conditions. Sealant performance is affected by environmental conditions and the performance of sealed and unsealed pavement structures probably varies within environmental regions.	• Performance is not affected by different ADT or percent trucks. • Silicone sealants that are not properly recessed are more likely to fail in the wheel path.	**Functional/Other** ongitudinal and transverse racking (L) nsealed or partially sealed oints. **Structural** No direct structural benefit, but may reduce the rate of structural deterioration. Crack sealing is not an effective method of repairing cracked slabs but may be useful in preventing further deterioration.	Different materials can be expected to perform for different durations. Material selection should be based on the expected time until the next treatment.
Site Restrictions	The sealant reservoir should be clean and dry. Variable width reservoirs may cause a problem where backer rods are specified.			
Construction Considerations	Sealant performance is dependent on many construction factors, including material type and placement geometry, and application in a clean and dry environment.			
Expected Life	7 to 8 years.			
Typical Costs	$0.75 to $1.25 per linear ft for hot-pour rubberized materials and from about $1.00 to $2.00 per linear ft for silicone materials.			

Asphalt Patching	Evaluation Factors			
	Climate	Traffic	Pavement Condition	Not Applicable To
Asphalt Patches are common method of treating localized distress. HMA patches can either be Full-depth or partial-depth. Full-depth patches are necessary where the entire depth of pavement is distressed. Partial-depth patches are necessary where the distress is only limited to the pavement surface	Preferably during dryer and warmer months. Cold patches can be used for temporary pothole fixes.	Traffic control is needed. Reduced roadway capacity should be evaluated. Traffic can return to a patched pavement once it cools off to 140^0F	**Partial Depth Repairs** • Shallow potholes • Weathering and Ravelling • Block Cracking **Full Depth Repairs** • Depressions • Pumping • Bottom-up fatigue cracking (thin pavement structure) • Underlying stripping	• Thermal cracking • Extensive pavement deterioration, little or no remaining life
Site Restrictions	Appropriate traffic control			
Construction Considerations	• Patch boundary should be clearly defined • Remove distressed materials and repair saturated subgrade soil or correct the main cause of distress • Repair should extend 12 inches into the non-distressed pavement • Apply tack coat on all the vertical and horizontal surfaces before placing the patch and compact the patch. • Compact quickly after placing the patch to ensure maximum compaction • Avoiding vibratory compaction under 175^0F • Maximum lift thickness is 3 inch. • Avoid leaving a thin strip of asphalt pavement (less than 18 inches wide) along the pavement edge. It is better to extend the repair to the pavement edge. • For small patches, use a jackhammer with a spade bit or a masonry saw. Make vertical cuts through the full depth of the asphalt pavement surface. If a jackhammer is used, work from the center of the patch area outward to avoid damaging good pavement. • For medium to large patches, use a diamond-bladed saw to cut the edges. If the distress is only at the surface and the pavement is thick enough, consider a partial-depth cut for thick asphalt pavement surfaces to retain some interlock with the remaining structure.			
Expected Life	A provisional maintenance before major M&R. A patch itself can last longer without increasing the overall life of an entire pavement section. Therefore, the expected life should be evaluated on a case by case basis.			
Typical Costs	• AC Patch –Partial Depth - $20.00-25.00/SY • AC Patch –Full depth - $40.00-50.00/SY			

Concrete Patching	Evaluation Factors			
	Climate	Traffic	Pavement Condition	Not Applicable To
Full-depth repairs are effective at correcting slab distress that extend beyond one-third the pavement depth such as longitudinal and transverse cracking, corner breaks, and joint spalling. Partial-depth repairs are primarily used to correct joint spalling. They can also be used to correct localized areas of distress that are limited to the upper 1/3 of the slab thickness.	Preferably during dryer seasons	High early strength concretes are used in cases where it is not desirable to close a lane overnight. Partial Depth Repairs are suitable under all traffic conditions.	<u>Full Depth Repairs</u> Localized distresses and to prepare distressed PCC pavements for a structural overlay to avoid premature failure of the overlay. <u>Partial Depth Repairs</u> To correct joint spalling caused by the intrusion of incompressible materials into the joints, localized areas of scaling, weak concrete, clay balls, or high steel, and the use of joint inserts.	• Widespread deterioration • Structurally deficient pavement. • Nearing the end of its fatigue life
Site Restrictions	None			
Construction Considerations	<u>Full Depth Repair</u> During construction, it is very important to properly prepare the base, restore joint load-transfer, and finish, texture, and cure the new material per governing specifications. <u>Partial Depth Repair</u> During construction, it is very important to properly determine repair boundaries, prepare the patch area, and finish, texture, and cure the new material per governing specifications. If distress is found to extend below the upper 1/3 of the slab, or if steel is exposed, a full-depth repair is required. Partial-depth patches should be a minimum of 4 in (10 cm) by 12 in (30 m).			
Expected Life	5 to 15 years			
Typical Costs	• PCC Patch –Full Depth - $225/SY • PCC Patch –Partial depth - $63/SY			

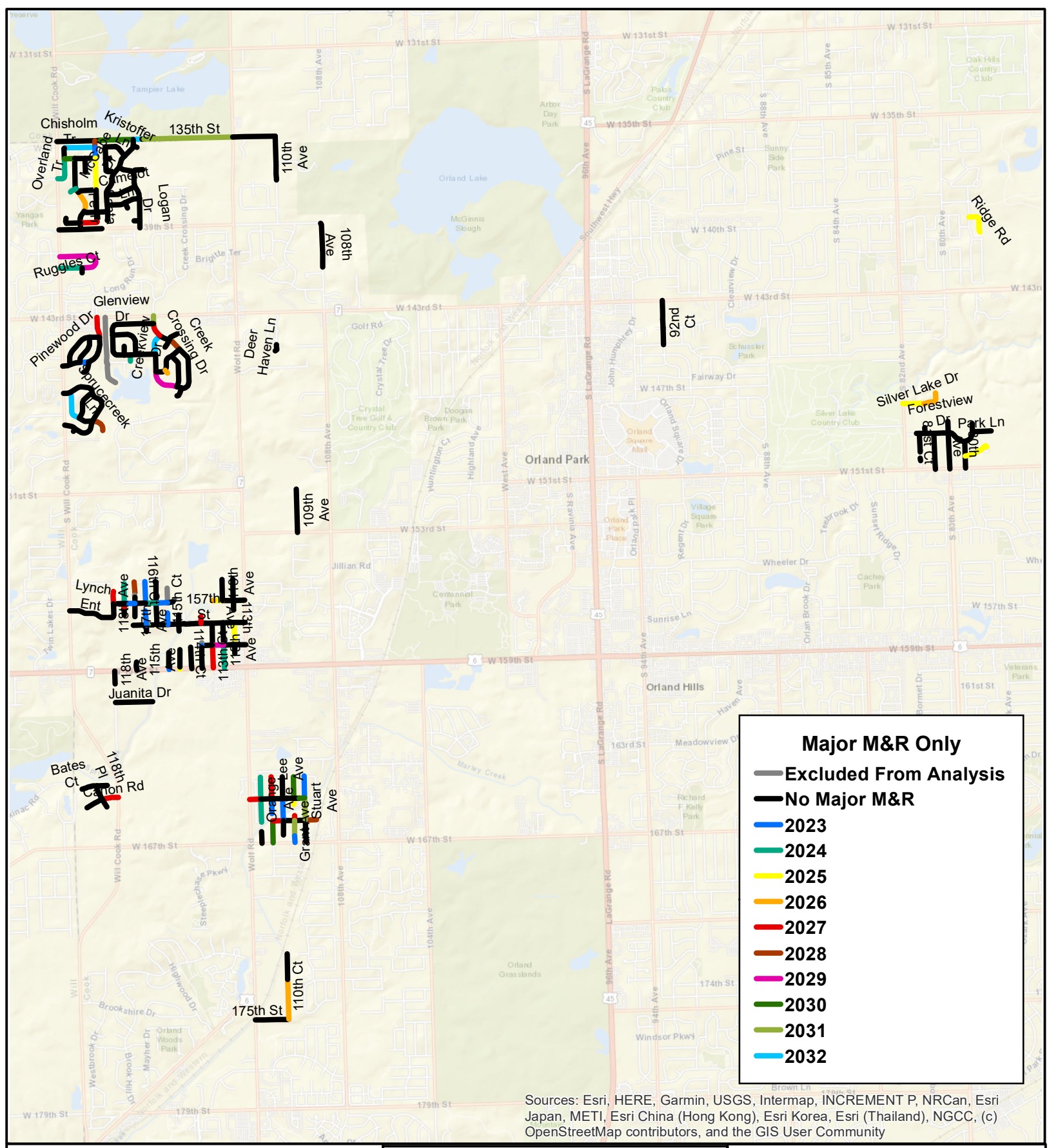
Asphalt Rejuvenator/Reclamite	Evaluation Factors			
	Climate	Traffic	Pavement Condition	Not Applicable To
According to the National Center for Pavement Preservation, "a true asphalt rejuvenator is a maltene-based petroleum product which has the ability to absorb or penetrate into an asphaltic concrete pavement and restore those reactive components (maltenes) that have been lost from the asphalt cement binder due to the natural process of oxidation. Reclamite is an asphalt pavement rejuvenator which is a maltene-based petroleum product.	• shall not be applied to a wet surface or when rain is occurring • shall not be applied when the temperature is less than 40° in the shade	Traffic control shall continue until the area has been sanded and the resultant surface is not slippery or dangerous to vehicular travel	Newly constructed pavements (0-3 years)	On older pavements, it will reverse the effects of aging due to reverse the effects of aging due to environmental damage from sunlight and environmental damage from sunlight and water intrusion.
Construction Considerations	All manufactured sand used during the treatment must be removed no later than 24 hours after the treatment of a roadway.			
Expected Life	Add 5 to 10 years of extra service life to the treated pavement			
Typical Costs	$0.94/Sq. Yd.			

Microsurfacing	Evaluation Factors			
	Climate	Traffic	Pavement Condition	Not Applicable To
Microsurfacing is basically a slurry seal with an accelerated setting capability. It consists of the application of a mixture of water, asphalt emulsion, aggregate (very small crushed rock), and chemical additives to an existing asphalt concrete pavement surface. Polymer is commonly added to the asphalt emulsion to provide better mixture properties. The major difference between slurry seal and Microsurfacing is in how they "break" or harden.	• Not applicable during a rain event. • Not applicable in excessively cold temperature. • Atmospheric temperature is at least. 10^0C (50^0F) and rising. • Pavements that have a lot of shade.	• Applicable to high traffic situations. • Traffic can be allowed to roll when a person's full weight can be placed on the pavement without the aggregates sticking to the shoe.	• Low to Moderate level of distress. • Structurally sound pavement.	• Highly distressed pavement. • High longitudinal roughness. • Structurally deficient pavement. • Subgrade rut. • Ruts above 2-in deep.
Site Restrictions	Lane closure is needed.			
Construction Considerations	• Spread microsurfacing materials only when the atmospheric temperature is at least 10^0C (50^0F) and rising. • Throughly cleaned surface and slightly dampened prior placing the mixture. • Ruts deeper than ½-in shall be filled separately.			
Expected Life	6-8 years			
Typical Costs	$2.75/ yd^2			

Concrete Diamond Grinding	Evaluation Factors			
	Climate	Traffic	Pavement Condition	Not Applicable To
Diamond grinding is effective at removing joint faulting and other surface irregularities to restore a smooth-riding surface and increase pavement surface friction.	Not recommended during excessively cold or hot temperature.	Grinding may be used to remove faulting. If the root cause is not addressed, faulting can reoccur due to the continued application of truck traffic. If used to restore friction to a polished pavement (due to vehicle traffic), heavy volumes of traffic may cause the problem to reoccur.	Note that diamond grinding is a surface repair method because it corrects the existing faulting and wear of PCC pavements. It does nothing to correct pavement distress mechanisms. Therefore, grinding usually is performed in combination with other rehabilitation methods to both repair certain pavement distresses and prevent their recurrence.	• High severity faulting. • Structurally deficient pavement. • Mid panel cracks or corner breaks. • Material related distresses. • Softer aggregate.
Site Restrictions	Moving Lane Closure is needed.			
Construction Considerations	Typically constructed with a moving lane closure with traffic operating in the adjacent lanes. Diamond grinding should be used in conjunction with all restoration techniques including load-transfer restoration, full- and partial depth repair, cross stitching, and subsealing/undersealing.			
Expected Life	8-15 years			
Typical Costs	$4.00/ft			

Appendix — A

1. 2023-2032 Major M&R Plan Based on Current Funding
2. 2023 Localized Distress Maintenance Plan
3. 2023-2032 Major M&R Plan Based on “Eliminate Backlog” Funding
4. Pavement Surface Type
5. 2022 Pavement Condition Index (PCI)
6. 2022 International Roughness Index (IRI)
7. List of Sections Selected for 2023-2032 Major M&R Plan Based on Current Funding
8. List of Pavement Sections with 2021 PCI and IRI values
9. Details of the 2023 Localized Distress Maintenance Plan



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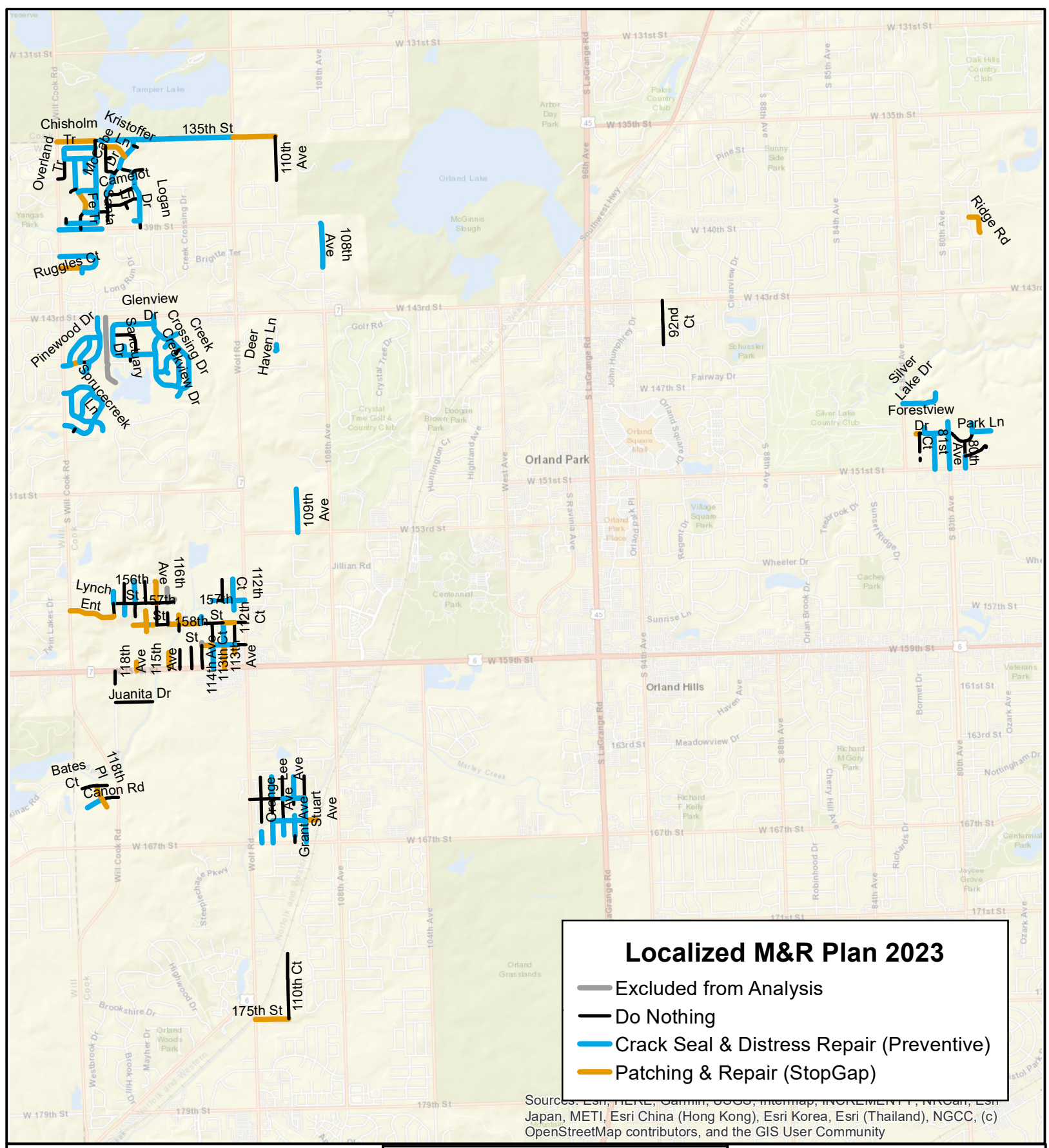
Major M&R 2023-2032
Based on Current Funding

Orland Township, IL

ARA



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

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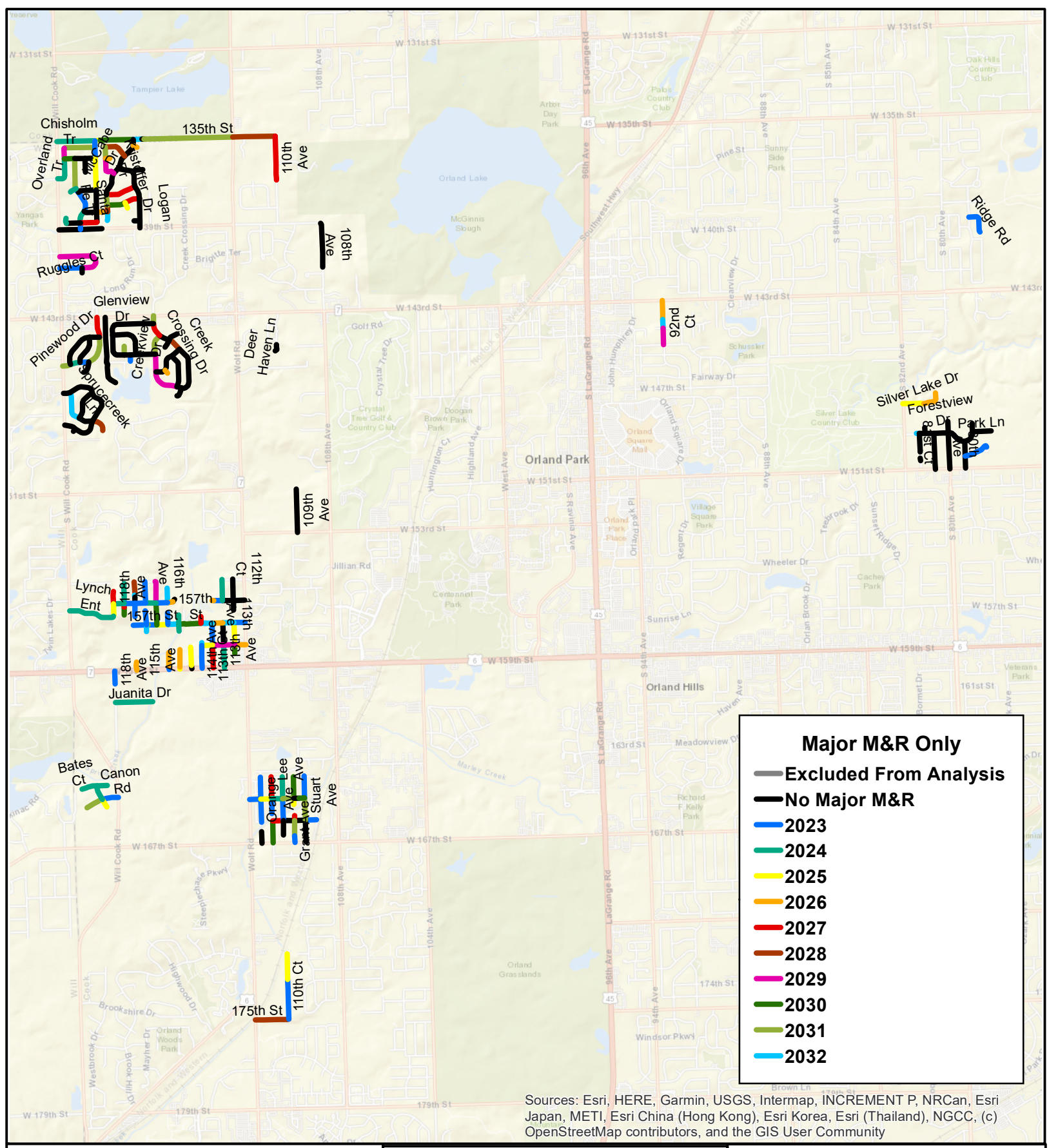
Localized Maintenance Plan 2023

Orland Township, IL

ARA



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Major M&R 2023-2032 Based on Eliminate Backlog Funding

Orland Township, IL

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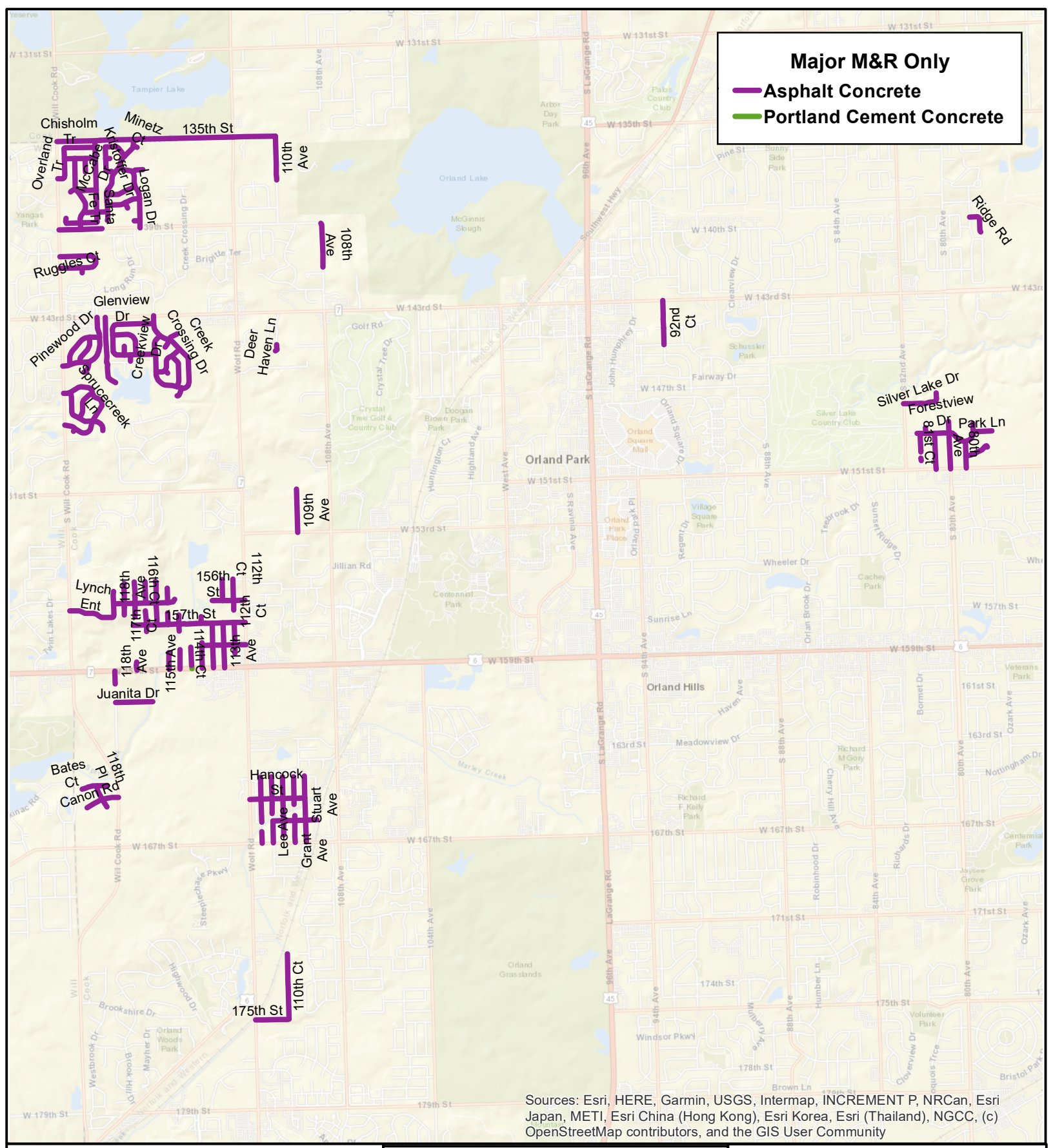

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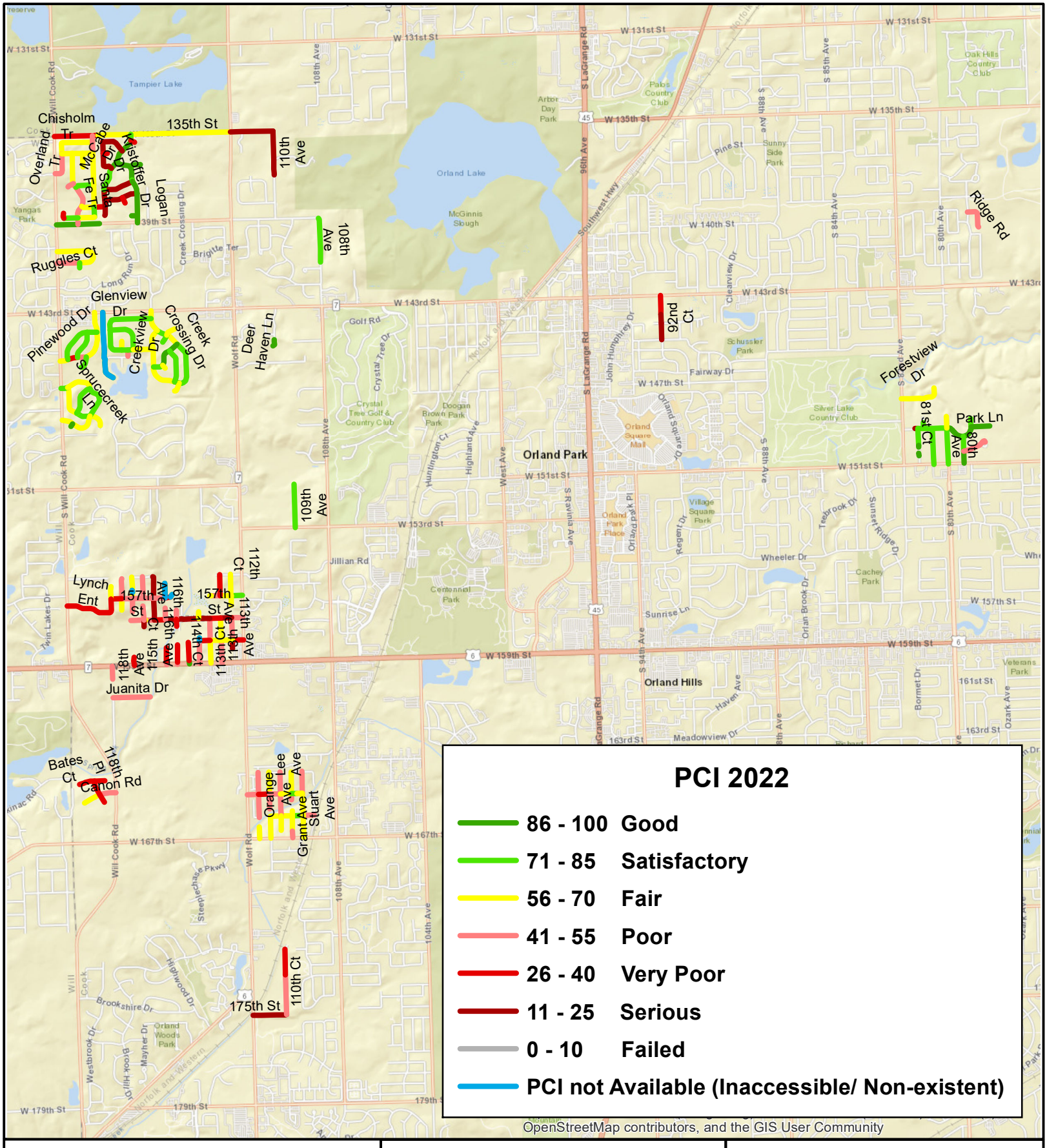
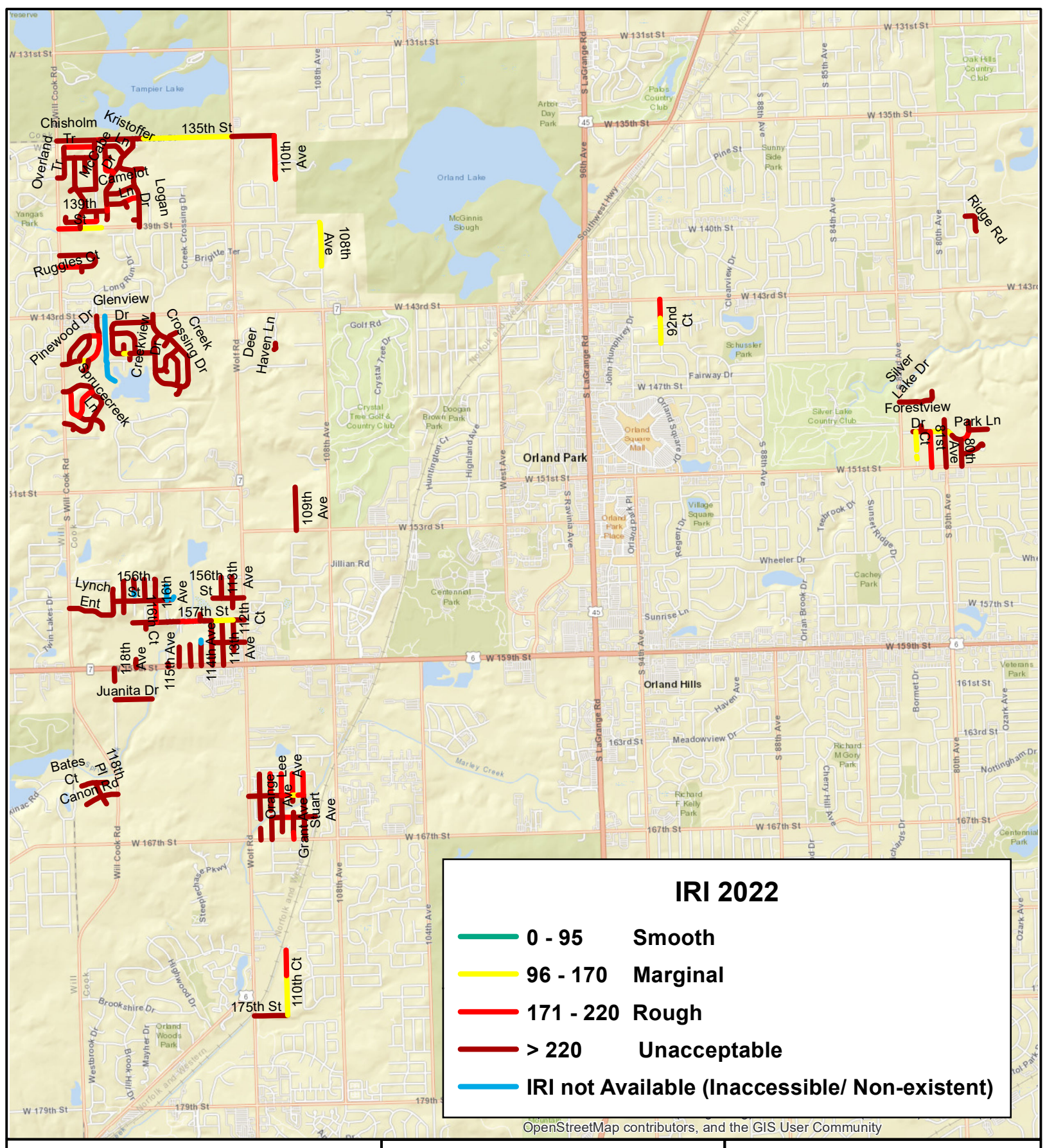
Pavement Surface Type

Orland Township, IL


PCI 2022
86 - 100 Good
71 - 85 Satisfactory
56 - 70 Fair
41 - 55 Poor
26 - 40 Very Poor
11 - 25 Serious
0 - 10 Failed
PCI not Available (Inaccessible/ Non-existent)
OpenStreetMap contributors, and the GIS User Community
0 2,700 5,400 Feet
N
PCI 2022
Orland Township
ARA



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IRI 2022

Orland Township

ARA

List of Sections Selected for 2023-2032 Major M&R Plan Based on Current Funding

Year	Branch ID	Section ID	PCI Before	Area (sqft)	Cost	Functional Class	Surface Type	Length (ft)	Width (ft)	Work Type
2023	114TH_AVE	131	42.8	839	$2,241	Residential	AC	52	16	2.0" Mill & Overlay
2023	115TH_CT	114	50.5	1,810	$2,610	Residential	AC	101	18	2.0" Mill & Overlay
2023	115TH_CT	146	47.2	6,298	$16,817	Residential	AC	350	18	2.0" Mill & Overlay
2023	116TH_CT	145	49.4	8,445	$22,548	Residential	AC	422	20	2.0" Mill & Overlay
2023	116TH_CT	152	48.3	12,835	$34,271	Residential	AC	642	20	2.0" Mill & Overlay
2023	156TH_ST	163	47.2	6,755	$18,035	Residential	AC	338	20	2.0" Mill & Overlay
2023	156TH_ST	166	47.2	6,566	$17,532	Residential	AC	328	20	2.0" Mill & Overlay
2023	GRANT_AVE	198	50.5	5,277	$7,608	Residential	AC	203	26	2.0" Mill & Overlay
2023	LEE_AVE	200	50.5	10,451	$15,068	Residential	AC	435	24	2.0" Mill & Overlay
2023	NATCHEZ_TR	56	47.2	8,339	$22,266	Residential	AC	321	26	2.0" Mill & Overlay
2023	PAW_PAW_AV	194	50.5	17,210	$24,813	Residential	AC	662	26	2.0" Mill & Overlay
2023	PINEWOOD_D	76	50.5	6,754	$9,738	Residential	AC	260	26	2.0" Mill & Overlay
2023	STUART_AVE	190	48.3	17,079	$45,600	Residential	AC	657	26	2.0" Mill & Overlay
2024	113TH_AVE	123	50.5	12,332	$16,958	Residential	AC	685	18	2.0" Mill & Overlay
2024	117TH_CT	159	50.5	10,719	$14,740	Residential	AC	596	18	2.0" Mill & Overlay
2024	156TH_ST	164	49.3	6,290	$17,298	Residential	AC	314	20	2.0" Mill & Overlay
2024	DUSTY_TR	22	50.5	4,978	$6,846	Residential	AC	191	26	2.0" Mill & Overlay
2024	ORANGE_AVE	201	43.0	15,760	$43,342	Residential	AC	657	24	2.0" Mill & Overlay
2024	ORANGE_AVE	202	43.0	16,527	$45,452	Residential	AC	689	24	2.0" Mill & Overlay
2024	OVERLAND_T	51	50.5	20,006	$27,510	Residential	AC	769	26	2.0" Mill & Overlay
2024	RUGGLES_CT	11	43.0	17,134	$47,120	Residential	AC	659	26	2.0" Mill & Overlay
2024	WOODLAKE_L	84	44.3	4,933	$13,566	Residential	AC	190	26	2.0" Mill & Overlay
2025	112TH_CT	124	49.5	11,874	$33,635	Residential	AC	660	18	2.0" Mill & Overlay
2025	115TH_AVE	116	49.5	1,166	$3,303	Residential	AC	65	18	2.0" Mill & Overlay
2025	156TH_ST	173	39.6	5,089	$21,432	Residential	AC	254	20	3.0" Mill & Overlay
2025	157TH_ST	140	29.8	2,059	$8,673	Residential	AC	103	20	3.0" Mill & Overlay
2025	GRANT_AVE	192	49.5	4,858	$13,761	Residential	AC	187	26	2.0" Mill & Overlay
2025	NATCHEZ_TR	57	50.9	24,730	$9,807	Residential	AC	951	26	2.0" Mill & Overlay
2025	RIDGE_RD	215	39.6	13,095	$55,151	Residential	AC	728	18	3.0" Mill & Overlay
2025	SILVER_CT	232	38.2	21,024	$88,544	Residential	AC	751	28	3.0" Mill & Overlay
2025	SILVER_LAK	216	50.9	12,549	$4,977	Residential	AC	627	20	2.0" Mill & Overlay
2026	110TH_CT	180	34.1	23,694	$102,783	Residential	AC	1185	20	3.0" Mill & Overlay
2026	156TH_ST	174	50.0	1,018	$2,880	Residential	AC	51	20	2.0" Mill & Overlay
2026	SANTA_FE_T	15	34.1	16,679	$72,352	Residential	AC	642	26	3.0" Mill & Overlay
2026	SILVER_LAK	217	50.0	14,305	$40,485	Residential	AC	596	24	2.0" Mill & Overlay
2026	VALLEY_VIE	108	50.0	3,115	$8,816	Residential	AC	120	26	2.0" Mill & Overlay
2027	113TH_CT	120	49.3	13,631	$40,962	Residential	AC	682	20	2.0" Mill & Overlay
2027	114TH_AVE	149	51.0	3,321	$399	Residential	AC	208	16	2.0" Mill & Overlay
2027	117TH_CT	158	51.0	2,081	$250	Residential	AC	116	18	2.0" Mill & Overlay
2027	118TH_AVE	168	51.0	7,402	$890	Residential	AC	370	20	2.0" Mill & Overlay
2027	CANON_RD	209	27.7	11,811	$52,773	Residential	AC	492	24	3.0" Mill & Overlay
2027	CREEK_CROS	94	49.3	10,951	$32,910	Residential	AC	421	26	2.0" Mill & Overlay
2027	GRANT_AVE	196	49.3	3,838	$11,533	Residential	AC	148	26	2.0" Mill & Overlay
2027	HANCOCK_ST	203	27.7	8,838	$39,489	Residential	AC	340	26	3.0" Mill & Overlay
2027	LEE_AVE	199	51.0	15,721	$1,890	Residential	AC	655	24	2.0" Mill & Overlay
2027	OLD_SPANIS	60	51.0	13,080	$1,572	Residential	AC	503	26	2.0" Mill & Overlay
2027	PINEWOOD_D	78	51.0	15,496	$1,863	Residential	AC	596	26	2.0" Mill & Overlay
2027	SANTA_FE_T	18	27.7	3,352	$14,978	Residential	AC	129	26	3.0" Mill & Overlay
2027	SHERMAN_ST	184	49.3	7,659	$23,016	Residential	AC	319	24	2.0" Mill & Overlay
2028	117TH_AVE	153	50.4	7,963	$14,542	Residential	AC	332	24	2.0" Mill & Overlay
2028	CREEK_CROS	92	50.4	10,933	$19,966	Residential	AC	420	26	2.0" Mill & Overlay
2028	NATCHEZ_TR	55	20.4	5,402	$68,883	Residential	AC	208	26	Full Reconstruction
2028	OAKCREEK	64	50.4	12,368	$22,587	Residential	AC	476	26	2.0" Mill & Overlay
2028	SHERMAN_ST	187	22.4	8,097	$103,249	Residential	AC	337	24	Full Reconstruction
2029	158TH_ST	128	49.9	6,008	$19,153	Residential	AC	334	18	2.0" Mill & Overlay
2029	CREEKVIEW	89	49.9	23,073	$73,559	Residential	AC	887	26	2.0" Mill & Overlay
2029	RUGGLES_CT	10	49.9	43,999	$140,277	Residential	AC	1692	26	2.0" Mill & Overlay
2030	135TH_ST	3	54.3	27,766	$91,178	Collector	AC	992	28	3.0" Mill & Overlay
2030	GRANT_AVE	191	49.4	16,769	$55,066	Residential	AC	645	26	2.0" Mill & Overlay
2030	HANCOCK_ST	208	49.4	4,176	$13,715	Residential	AC	161	26	2.0" Mill & Overlay
2030	LEE_AVE	183	49.4	15,815	$51,934	Residential	AC	659	24	2.0" Mill & Overlay
2030	OREGON_TR	52	49.4	8,031	$26,371	Residential	AC	309	26	2.0" Mill & Overlay
2031	135TH_ST	6	54.9	58,696	$198,530	Collector	AC	2668	22	3.0" Mill & Overlay
2031	157TH_ST	142	48.9	1,030	$3,483	Residential	AC	51	20	2.0" Mill & Overlay

List of Sections Selected for 2023-2032 Major M&R Plan Based on Current Funding

Year	Branch ID	Section ID	PCI Before	Area (sqft)	Cost	Functional Class	Surface Type	Length (ft)	Width (ft)	Work Type
2031	CREEK_CROS	95	50.8	5,874	$4,967	Residential	AC	226	26	2.0" Mill & Overlay
2031	GRANT_AVE	197	50.8	11,873	$10,040	Residential	AC	457	26	2.0" Mill & Overlay
2031	STUART_AVE	189	50.8	17,300	$14,628	Residential	AC	665	26	2.0" Mill & Overlay
2032	135TH_ST	4	54.2	7,470	$26,026	Collector	AC	267	28	3.0" Mill & Overlay
2032	CHISHOLM_T	49	46.3	23,896	$83,248	Residential	AC	919	26	2.0" Mill & Overlay
2032	CREEKVIEW	87	46.3	16,013	$55,786	Residential	AC	616	26	2.0" Mill & Overlay
2032	SPRUCECREE	66	50.1	23,299	$69,805	Residential	AC	896	26	2.0" Mill & Overlay

List of 2022 PCI & IRI Values

NetworkID	BranchID	SectionID	Surface Type	Length (ft)	Width (ft)	Last Inspection Date	IRI (in/hr)	PCI	PCI Category
ORLANDTWP	108TH_AVE	9	AC	1327	20	07-19-2022	163	77	Satisfactory
ORLANDTWP	109TH_AVE	178	AC	1303	22	07-19-2022	302	85	Satisfactory
ORLANDTWP	110TH_AVE	8	AC	1323	20	07-19-2022	202	23	Serious
ORLANDTWP	110TH_CT	180	AC	1185	20	07-19-2022	165	47	Poor
ORLANDTWP	110TH_CT	181	AC	773	20	07-19-2022	220	34	Very Poor
ORLANDTWP	112TH_CT	124	AC	660	18	07-19-2022	426	55	Poor
ORLANDTWP	112TH_CT	125	AC	259	18	07-19-2022	385	17	Serious
ORLANDTWP	112TH_CT	176	AC	638	20	07-19-2022	245	68	Fair
ORLANDTWP	112TH_CT	177	AC	288	20	07-19-2022	446	68	Fair
ORLANDTWP	113TH_AVE	122	AC	667	18	07-19-2022	327	66	Fair
ORLANDTWP	113TH_AVE	123	AC	685	18	07-19-2022	491	54	Poor
ORLANDTWP	113TH_AVE	175	AC	636	20	07-19-2022	463	37	Very Poor
ORLANDTWP	113TH_CT	120	AC	682	20	07-19-2022	282	58	Fair
ORLANDTWP	113TH_CT	121	AC	663	20	07-19-2022	266	44	Poor
ORLANDTWP	114TH_AVE	130	AC	93	16	N/A	N/A	N/A	N/A
ORLANDTWP	114TH_AVE	131	AC	52	16	07-19-2022	964	45	Poor
ORLANDTWP	114TH_AVE	132	AC	629	16	07-19-2022	352	45	Poor
ORLANDTWP	114TH_AVE	149	AC	208	16	07-19-2022	376	59	Fair
ORLANDTWP	114TH_CT	118	PCC	108	18	07-19-2022	861	100	Good
ORLANDTWP	114TH_CT	119	AC	539	18	07-19-2022	346	33	Very Poor
ORLANDTWP	115TH_AVE	116	AC	65	18	07-19-2022	405	55	Poor
ORLANDTWP	115TH_AVE	117	AC	518	18	07-19-2022	533	27	Very Poor
ORLANDTWP	115TH_AVE	147	AC	263	20	07-19-2022	1431	41	Poor
ORLANDTWP	115TH_AVE	148	AC	209	20	07-19-2022	1625	38	Very Poor
ORLANDTWP	115TH_AVE	160	AC	426	24	N/A	N/A	N/A	N/A
ORLANDTWP	115TH_CT	114	AC	101	18	07-19-2022	596	52	Poor
ORLANDTWP	115TH_CT	115	AC	402	18	07-19-2022	1308	29	Very Poor
ORLANDTWP	115TH_CT	146	AC	350	18	07-19-2022	2262	49	Poor
ORLANDTWP	116TH_AVE	150	AC	652	22	07-19-2022	220	23	Serious
ORLANDTWP	116TH_AVE	151	AC	661	22	07-19-2022	560	18	Serious
ORLANDTWP	116TH_CT	144	AC	195	20	07-19-2022	408	24	Serious
ORLANDTWP	116TH_CT	145	AC	422	20	07-19-2022	1071	51	Poor
ORLANDTWP	116TH_CT	152	AC	642	20	07-19-2022	273	50	Poor
ORLANDTWP	117TH_AVE	113	AC	250	18	07-19-2022	329	29	Very Poor
ORLANDTWP	117TH_AVE	153	AC	332	24	07-19-2022	500	60	Fair
ORLANDTWP	117TH_AVE	154	AC	62	20	N/A	N/A	N/A	N/A
ORLANDTWP	117TH_AVE	155	AC	187	20	07-19-2022	N/A	70	Fair
ORLANDTWP	117TH_AVE	156	AC	391	20	07-19-2022	1821	46	Poor
ORLANDTWP	117TH_CT	157	AC	231	18	07-19-2022	241	62	Fair
ORLANDTWP	117TH_CT	158	AC	116	18	07-19-2022	1285	59	Fair
ORLANDTWP	117TH_CT	159	AC	596	18	07-19-2022	388	54	Poor
ORLANDTWP	118TH_AVE	112	AC	390	20	07-19-2022	754	45	Poor
ORLANDTWP	118TH_AVE	168	AC	370	20	07-19-2022	440	59	Fair
ORLANDTWP	118TH_AVE	169	AC	377	20	07-19-2022	369	35	Very Poor

List of 2022 PCI & IRI Values

NetworkID	BranchID	SectionID	Surface Type	Length (ft)	Width (ft)	Last Inspection Date	IRI (in/hr)	PCI	PCI Category
ORLANDTWP	118TH_PL	211	AC	265	24	07-19-2022	396	36	Very Poor
ORLANDTWP	118TH_PL	212	AC	448	24	07-19-2022	286	40	Very Poor
ORLANDTWP	135TH_ST	1	AC	1140	20	07-19-2022	279	38	Very Poor
ORLANDTWP	135TH_ST	2	AC	157	20	07-19-2022	219	33	Very Poor
ORLANDTWP	135TH_ST	3	AC	992	28	07-19-2022	222	65	Fair
ORLANDTWP	135TH_ST	4	AC	267	28	07-19-2022	223	68	Fair
ORLANDTWP	135TH_ST	5	AC	53	22	07-19-2022	491	66	Fair
ORLANDTWP	135TH_ST	6	AC	2668	22	07-19-2022	142	67	Fair
ORLANDTWP	135TH_ST	7	AC	1269	18	07-19-2022	775	23	Serious
ORLANDTWP	139TH_ST	13	AC	648	24	07-19-2022	212	92	Good
ORLANDTWP	139TH_ST	14	AC	640	24	07-19-2022	136	94	Good
ORLANDTWP	156TH_ST	161	AC	87	20	N/A	N/A	N/A	N/A
ORLANDTWP	156TH_ST	162	AC	174	20	07-19-2022	399	29	Very Poor
ORLANDTWP	156TH_ST	163	AC	338	20	07-19-2022	539	49	Poor
ORLANDTWP	156TH_ST	164	AC	314	20	07-19-2022	299	53	Poor
ORLANDTWP	156TH_ST	165	AC	317	20	07-19-2022	225	44	Poor
ORLANDTWP	156TH_ST	166	AC	328	20	07-19-2022	470	49	Poor
ORLANDTWP	156TH_ST	167	AC	317	20	07-19-2022	223	38	Very Poor
ORLANDTWP	156TH_ST	171	AC	334	20	07-19-2022	487	73	Satisfactory
ORLANDTWP	156TH_ST	172	AC	330	20	07-19-2022	254	67	Fair
ORLANDTWP	156TH_ST	173	AC	254	20	07-19-2022	719	48	Poor
ORLANDTWP	156TH_ST	174	AC	51	20	07-19-2022	N/A	57	Fair
ORLANDTWP	157TH_ST	133	AC	334	20	07-19-2022	555	43	Poor
ORLANDTWP	157TH_ST	134	AC	334	20	07-19-2022	161	21	Serious
ORLANDTWP	157TH_ST	135	AC	331	20	07-19-2022	144	27	Very Poor
ORLANDTWP	157TH_ST	136	AC	328	20	07-19-2022	278	20	Serious
ORLANDTWP	157TH_ST	137	AC	666	20	07-19-2022	192	23	Serious
ORLANDTWP	157TH_ST	138	AC	328	20	07-19-2022	392	17	Serious
ORLANDTWP	157TH_ST	139	AC	336	20	07-19-2022	586	34	Very Poor
ORLANDTWP	157TH_ST	140	AC	103	20	07-19-2022	522	41	Poor
ORLANDTWP	157TH_ST	141	AC	154	20	07-19-2022	295	44	Poor
ORLANDTWP	157TH_ST	142	AC	51	20	07-19-2022	227	63	Fair
ORLANDTWP	157TH_ST	143	AC	391	20	07-19-2022	387	46	Poor
ORLANDTWP	158TH_ST	126	AC	331	24	07-19-2022	320	32	Very Poor
ORLANDTWP	158TH_ST	127	AC	326	18	07-19-2022	350	61	Fair
ORLANDTWP	158TH_ST	128	AC	334	18	07-19-2022	391	61	Fair
ORLANDTWP	158TH_ST	129	AC	328	18	07-19-2022	1265	35	Very Poor
ORLANDTWP	175TH_ST	179	AC	1000	20	07-19-2022	375	13	Serious
ORLANDTWP	80TH_AVE	233	AC	1083	24	07-19-2022	230	79	Satisfactory
ORLANDTWP	80TH_AVE	234	AC	337	24	07-19-2022	424	69	Fair
ORLANDTWP	81ST_AVE	235	AC	1076	28	07-19-2022	220	84	Satisfactory
ORLANDTWP	81ST_CT	237	AC	508	26	07-19-2022	131	82	Satisfactory
ORLANDTWP	81ST_CT	238	AC	51	26	07-19-2022	145	86	Good
ORLANDTWP	81ST_CT	239	AC	75	26	07-19-2022	138	91	Good

List of 2022 PCI & IRI Values

NetworkID	BranchID	SectionID	Surface Type	Length (ft)	Width (ft)	Last Inspection Date	IRI (in/hr)	PCI	PCI Category
ORLANDTWP	92ND_CT	240	AC	571	24	07-19-2022	191	26	Very Poor
ORLANDTWP	92ND_CT	241	AC	260	22	07-19-2022	107	19	Serious
ORLANDTWP	92ND_CT	242	AC	492	22	07-19-2022	160	18	Serious
ORLANDTWP	BATES_CT	213	AC	305	24	07-19-2022	313	37	Very Poor
ORLANDTWP	BATES_CT	214	AC	459	24	07-19-2022	282	40	Very Poor
ORLANDTWP	BIRCHCREEK	72	AC	100	26	07-19-2022	661	91	Good
ORLANDTWP	BROOKVIEW	86	AC	1184	26	07-19-2022	357	76	Satisfactory
ORLANDTWP	CALIFORNIA	21	AC	548	26	07-19-2022	501	73	Satisfactory
ORLANDTWP	CAMELOT_CT	35	AC	176	26	07-19-2022	523	34	Very Poor
ORLANDTWP	CAMELOT_LN	25	AC	546	26	07-19-2022	268	19	Serious
ORLANDTWP	CAMELOT_LN	26	AC	454	26	07-19-2022	218	25	Serious
ORLANDTWP	CANON_RD	209	AC	492	24	07-19-2022	322	46	Poor
ORLANDTWP	CANON_RD	210	AC	517	24	07-19-2022	394	63	Fair
ORLANDTWP	CHISHOLM_T	49	AC	919	26	07-19-2022	196	63	Fair
ORLANDTWP	CREEK_CROS	91	AC	1420	26	07-19-2022	300	75	Satisfactory
ORLANDTWP	CREEK_CROS	92	AC	420	26	07-19-2022	316	60	Fair
ORLANDTWP	CREEK_CROS	93	AC	311	26	07-19-2022	450	74	Satisfactory
ORLANDTWP	CREEK_CROS	94	AC	421	26	07-19-2022	409	58	Fair
ORLANDTWP	CREEK_CROS	95	AC	226	26	07-19-2022	514	64	Fair
ORLANDTWP	CREEK_CROS	106	AC	283	26	07-19-2022	326	69	Fair
ORLANDTWP	CREEKVIEW	87	AC	616	26	07-19-2022	272	63	Fair
ORLANDTWP	CREEKVIEW	88	AC	536	26	07-19-2022	248	61	Fair
ORLANDTWP	CREEKVIEW	89	AC	887	26	07-19-2022	300	61	Fair
ORLANDTWP	CREEKVIEW	90	AC	135	26	07-19-2022	258	90	Good
ORLANDTWP	CREEKWOOD	82	AC	839	26	07-19-2022	252	82	Satisfactory
ORLANDTWP	DEER_HAVEN	243	AC	208	32	07-19-2022	336	93	Good
ORLANDTWP	DUSTY_TR	22	AC	191	26	07-19-2022	866	54	Poor
ORLANDTWP	FENVIEW_CT	109	AC	248	26	07-19-2022	381	72	Satisfactory
ORLANDTWP	FENWOOD_C	110	AC	310	26	07-19-2022	424	66	Fair
ORLANDTWP	FORESTVIEW	218	AC	90	28	07-19-2022	326	19	Serious
ORLANDTWP	FORESTVIEW	219	AC	127	28	07-19-2022	193	77	Satisfactory
ORLANDTWP	FORESTVIEW	220	AC	42	28	07-19-2022	197	78	Satisfactory
ORLANDTWP	FORESTVIEW	221	AC	268	28	07-19-2022	383	83	Satisfactory
ORLANDTWP	FORESTVIEW	222	AC	432	28	07-19-2022	151	82	Satisfactory
ORLANDTWP	FORESTVIEW	223	AC	106	28	07-19-2022	519	100	Good
ORLANDTWP	FORESTVIEW	224	AC	106	28	07-19-2022	100	100	Good
ORLANDTWP	FORESTVIEW	225	AC	53	28	07-19-2022	124	100	Good
ORLANDTWP	FORESTVIEW	226	AC	317	28	07-19-2022	274	93	Good
ORLANDTWP	FORESTVIEW	227	AC	410	28	07-19-2022	187	100	Good
ORLANDTWP	FORESTVIEW	228	AC	252	28	07-19-2022	296	81	Satisfactory
ORLANDTWP	GLENVIEW_D	96	AC	1189	26	07-19-2022	234	74	Satisfactory
ORLANDTWP	GRANT_AVE	191	AC	645	26	07-19-2022	180	62	Fair
ORLANDTWP	GRANT_AVE	192	AC	187	26	07-19-2022	501	55	Poor
ORLANDTWP	GRANT_AVE	196	AC	148	26	07-19-2022	551	58	Fair

List of 2022 PCI & IRI Values

NetworkID	BranchID	SectionID	Surface Type	Length (ft)	Width (ft)	Last Inspection Date	IRI (in/hr)	PCI	PCI Category
ORLANDTWP	GRANT_AVE	197	AC	457	26	07-19-2022	239	64	Fair
ORLANDTWP	GRANT_AVE	198	AC	203	26	07-19-2022	176	52	Poor
ORLANDTWP	HANCOCK_ST	203	AC	340	26	07-19-2022	444	46	Poor
ORLANDTWP	HANCOCK_ST	204	AC	325	26	07-19-2022	272	36	Very Poor
ORLANDTWP	HANCOCK_ST	205	AC	326	26	07-19-2022	374	42	Poor
ORLANDTWP	HANCOCK_ST	206	AC	335	26	07-19-2022	199	63	Fair
ORLANDTWP	HANCOCK_ST	207	AC	161	26	07-19-2022	152	72	Satisfactory
ORLANDTWP	HANCOCK_ST	208	AC	161	26	07-19-2022	195	62	Fair
ORLANDTWP	JUANITA_DR	111	AC	1115	24	07-19-2022	250	41	Poor
ORLANDTWP	KAUP_LN	48	AC	324	24	07-19-2022	236	100	Good
ORLANDTWP	KRISTOFFER	45	AC	706	24	07-19-2022	316	23	Serious
ORLANDTWP	KRISTOFFER	46	AC	345	24	07-19-2022	347	19	Serious
ORLANDTWP	KRISTOFFER	47	AC	637	24	07-19-2022	203	22	Serious
ORLANDTWP	KRISTOFFER	63	AC	128	24	07-19-2022	717	30	Very Poor
ORLANDTWP	LAKEWOOD_	97	AC	303	26	07-19-2022	254	82	Satisfactory
ORLANDTWP	LAKEWOOD_	98	AC	598	26	07-19-2022	223	75	Satisfactory
ORLANDTWP	LEE_AVE	183	AC	659	24	07-19-2022	249	62	Fair
ORLANDTWP	LEE_AVE	199	AC	655	24	07-19-2022	209	59	Fair
ORLANDTWP	LEE_AVE	200	AC	435	24	07-19-2022	242	52	Poor
ORLANDTWP	LOGAN_CT	34	AC	176	26	07-19-2022	465	95	Good
ORLANDTWP	LOGAN_DR	28	AC	441	26	07-19-2022	252	99	Good
ORLANDTWP	LOGAN_DR	29	AC	394	26	07-19-2022	223	87	Good
ORLANDTWP	LOGAN_DR	30	AC	49	26	07-19-2022	N/A	81	Satisfactory
ORLANDTWP	LOGAN_DR	31	AC	394	26	07-19-2022	644	86	Good
ORLANDTWP	LOGAN_DR	32	AC	663	26	07-19-2022	223	94	Good
ORLANDTWP	LOGAN_DR	33	AC	204	26	07-19-2022	353	100	Good
ORLANDTWP	LYNCH_ENT	170	AC	1370	26	07-19-2022	223	38	Very Poor
ORLANDTWP	MAPLECREEK	69	AC	1045	26	07-19-2022	535	74	Satisfactory
ORLANDTWP	MARK_LN	27	AC	897	26	07-19-2022	354	22	Serious
ORLANDTWP	MCCABE_DR	36	AC	265	26	07-19-2022	438	24	Serious
ORLANDTWP	MCCABE_DR	37	AC	193	26	07-19-2022	195	24	Serious
ORLANDTWP	MCCABE_DR	38	AC	315	26	07-19-2022	316	23	Serious
ORLANDTWP	MCCABE_DR	39	AC	707	26	07-19-2022	244	72	Satisfactory
ORLANDTWP	MCCABE_DR	40	AC	235	26	07-19-2022	243	95	Good
ORLANDTWP	MCCABE_DR	41	AC	379	26	07-19-2022	386	87	Good
ORLANDTWP	MCCABE_DR	42	AC	426	26	07-19-2022	283	91	Good
ORLANDTWP	MCCABE_DR	43	AC	182	26	07-19-2022	392	73	Satisfactory
ORLANDTWP	MEADOW_LN	230	AC	437	28	07-19-2022	299	81	Satisfactory
ORLANDTWP	MEADOW_LN	231	AC	368	28	07-19-2022	318	88	Good
ORLANDTWP	MESQUITE_D	107	AC	1005	26	07-19-2022	296	83	Satisfactory
ORLANDTWP	MID_PINECR	73	AC	901	26	07-19-2022	212	71	Satisfactory
ORLANDTWP	MINETZ_CT	44	AC	127	24	07-19-2022	N/A	32	Very Poor
ORLANDTWP	N_PINECREE	67	AC	198	26	07-19-2022	385	85	Satisfactory
ORLANDTWP	N_PINECREE	68	AC	822	26	07-19-2022	271	67	Fair

List of 2022 PCI & IRI Values

NetworkID	BranchID	SectionID	Surface Type	Length (ft)	Width (ft)	Last Inspection Date	IRI (in/hr)	PCI	PCI Category
ORLANDTWP	NATCHEZ_TR	55	AC	208	26	07-19-2022	385	45	Poor
ORLANDTWP	NATCHEZ_TR	56	AC	321	26	07-19-2022	266	49	Poor
ORLANDTWP	NATCHEZ_TR	57	AC	951	26	07-19-2022	701	56	Fair
ORLANDTWP	NATCHEZ_TR	58	AC	663	26	07-19-2022	1435	67	Fair
ORLANDTWP	NATCHEZ_TR	59	AC	299	26	07-19-2022	452	78	Satisfactory
ORLANDTWP	OAKCREEK	64	AC	476	26	07-19-2022	282	60	Fair
ORLANDTWP	OLD_POST_R	20	AC	408	26	07-19-2022	305	70	Fair
ORLANDTWP	OLD_SPANIS	60	AC	503	26	07-19-2022	214	59	Fair
ORLANDTWP	OLD_SPANIS	61	AC	425	26	07-19-2022	270	73	Satisfactory
ORLANDTWP	ORANGE_AVI	182	AC	340	24	07-19-2022	259	67	Fair
ORLANDTWP	ORANGE_AVI	201	AC	657	24	07-19-2022	375	48	Poor
ORLANDTWP	ORANGE_AVI	202	AC	689	24	07-19-2022	312	48	Poor
ORLANDTWP	OREGON_TR	52	AC	309	26	07-19-2022	325	62	Fair
ORLANDTWP	OREGON_TR	53	AC	314	26	07-19-2022	225	67	Fair
ORLANDTWP	OREGON_TR	54	AC	309	26	07-19-2022	232	70	Fair
ORLANDTWP	OVERLAND_T	50	AC	326	26	07-19-2022	243	61	Fair
ORLANDTWP	OVERLAND_T	51	AC	769	26	07-19-2022	242	54	Poor
ORLANDTWP	PARK_LN	229	AC	558	20	07-19-2022	245	88	Good
ORLANDTWP	PAW_PAW_A	193	AC	649	26	07-19-2022	178	43	Poor
ORLANDTWP	PAW_PAW_A	194	AC	662	26	07-19-2022	272	52	Poor
ORLANDTWP	PAW_PAW_A	195	AC	428	26	07-19-2022	325	67	Fair
ORLANDTWP	PINEVIEW_C	85	AC	266	26	07-19-2022	291	63	Fair
ORLANDTWP	PINEVIEW_D	99	AC	281	26	07-19-2022	275	82	Satisfactory
ORLANDTWP	PINEVIEW_D	100	AC	178	26	07-19-2022	169	82	Satisfactory
ORLANDTWP	PINEVIEW_D	101	AC	167	26	07-19-2022	362	81	Satisfactory
ORLANDTWP	PINEVIEW_D	102	AC	588	26	07-19-2022	226	70	Fair
ORLANDTWP	PINEWOOD_(	81	AC	371	26	07-19-2022	256	82	Satisfactory
ORLANDTWP	PINEWOOD_	74	AC	241	26	07-19-2022	256	63	Fair
ORLANDTWP	PINEWOOD_	75	AC	287	26	07-19-2022	307	38	Very Poor
ORLANDTWP	PINEWOOD_	76	AC	260	26	07-19-2022	169	52	Poor
ORLANDTWP	PINEWOOD_	77	AC	885	26	07-19-2022	188	63	Fair
ORLANDTWP	PINEWOOD_	78	AC	596	26	07-19-2022	222	59	Fair
ORLANDTWP	RIDGE_RD	215	AC	728	18	07-19-2022	368	48	Poor
ORLANDTWP	RUGGLES_CT	10	AC	1692	26	07-19-2022	257	61	Fair
ORLANDTWP	RUGGLES_CT	11	AC	659	26	07-19-2022	217	48	Poor
ORLANDTWP	S_PINECREE	70	AC	794	26	07-19-2022	226	67	Fair
ORLANDTWP	S_PINECREE	71	AC	331	26	07-19-2022	704	69	Fair
ORLANDTWP	SANCTUARY	83	AC	2093	28	N/A	N/A	N/A	N/A
ORLANDTWP	SANTA_FE_T	15	AC	642	26	07-19-2022	287	47	Poor
ORLANDTWP	SANTA_FE_T	16	AC	197	26	07-19-2022	598	44	Poor
ORLANDTWP	SANTA_FE_T	17	AC	382	26	07-19-2022	404	41	Poor
ORLANDTWP	SANTA_FE_T	18	AC	129	26	07-19-2022	744	46	Poor
ORLANDTWP	SANTA_FE_T	19	AC	906	26	07-19-2022	223	63	Fair
ORLANDTWP	SHERMAN_ST	184	AC	319	24	07-19-2022	237	58	Fair

List of 2022 PCI & IRI Values

NetworkID	BranchID	SectionID	Surface Type	Length (ft)	Width (ft)	Last Inspection Date	IRI (in/hr)	PCI	PCI Category
ORLANDTWP	SHERMAN_ST	185	AC	335	24	07-19-2022	216	69	Fair
ORLANDTWP	SHERMAN_ST	186	AC	325	24	07-19-2022	429	72	Satisfactory
ORLANDTWP	SHERMAN_ST	187	AC	337	24	07-19-2022	296	46	Poor
ORLANDTWP	SILVER_CT	232	AC	751	28	07-19-2022	270	47	Poor
ORLANDTWP	SILVER_LAK	216	AC	627	20	07-19-2022	319	56	Fair
ORLANDTWP	SILVER_LAK	217	AC	596	24	07-19-2022	342	57	Fair
ORLANDTWP	SPANISH_CT	62	AC	143	26	07-19-2022	324	38	Very Poor
ORLANDTWP	SPRUCECREE	65	AC	419	26	07-19-2022	332	73	Satisfactory
ORLANDTWP	SPRUCECREE	66	AC	896	26	07-19-2022	207	65	Fair
ORLANDTWP	STAGE_COAC	23	AC	378	28	07-19-2022	729	66	Fair
ORLANDTWP	STAGE_COAC	24	AC	323	28	07-19-2022	355	31	Very Poor
ORLANDTWP	STREAMWOC	79	AC	306	26	07-19-2022	195	81	Satisfactory
ORLANDTWP	STREAMWOC	80	AC	1116	26	07-19-2022	229	74	Satisfactory
ORLANDTWP	STUART_AVE	188	AC	658	26	07-19-2022	663	69	Fair
ORLANDTWP	STUART_AVE	189	AC	665	26	07-19-2022	558	64	Fair
ORLANDTWP	STUART_AVE	190	AC	657	26	07-19-2022	174	50	Poor
ORLANDTWP	SUNNY_LN	236	AC	175	18	07-19-2022	419	79	Satisfactory
ORLANDTWP	UNMARKED	12	AC	151	24	07-19-2022	634	75	Satisfactory
ORLANDTWP	VALLEY_VIE	103	AC	286	26	07-19-2022	309	79	Satisfactory
ORLANDTWP	VALLEY_VIE	104	AC	538	26	07-19-2022	306	88	Good
ORLANDTWP	VALLEY_VIE	105	AC	293	26	07-19-2022	584	90	Good
ORLANDTWP	VALLEY_VIE	108	AC	120	26	07-19-2022	521	57	Fair
ORLANDTWP	WOODLAKE_	84	AC	190	26	07-19-2022	475	49	Poor

List of Sections Selected under 2023 Localized Maintenance Plan

BranchID	SectionID	Distress Code	Description	Severity	Distress Qty	Distress Unit	Percent Distress	Work Description	Functional Class	Surface Type	Section Width (ft)	Length (ft)	Last Insp Date	Work Qty	Work Unit	Unit Cost	Work Cost
108TH_AVE	9	10	L & T CR	Medium	43	Ft	0.16	Crack Sealing - AC	Residential	AC	20	1,327	07-19-2022	43	Ft	$ 1.50	$65
108TH_AVE	9	15	RUTTING	High	11	SqFt	0.04	Patching - AC Deep	Residential	AC	20	1,327	07-19-2022	11	SqFt	$ 3.33	$37
108TH_AVE	9	13	POTHOLE	Low	3	Count	0.01	Patching - AC Deep	Residential	AC	20	1,327	07-19-2022	10	SqFt	$ 3.33	$33
108TH_AVE	9	15	RUTTING	Medium	6	SqFt	0.02	Patching - AC Shallow	Residential	AC	20	1,327	07-19-2022	5	SqFt	$ 6.67	$37
109TH_AVE	178	10	L & T CR	High	29	Ft	0.10	Patching - AC Shallow	Residential	AC	22	1,303	07-19-2022	96	SqFt	$ 6.67	$636
109TH_AVE	178	1	ALLIGATOR CR	High	5	SqFt	0.02	Patching - AC Deep	Residential	AC	22	1,303	07-19-2022	17	SqFt	$ 3.33	$59
109TH_AVE	178	13	POTHOLE	Low	2	Count	0.01	Patching - AC Deep	Residential	AC	22	1,303	07-19-2022	5	SqFt	$ 3.33	$18
109TH_AVE	178	15	RUTTING	Medium	37	SqFt	0.13	Patching - AC Shallow	Residential	AC	22	1,303	07-19-2022	37	SqFt	$ 6.67	$245
109TH_AVE	178	10	L & T CR	Medium	87	Ft	0.30	Crack Sealing - AC	Residential	AC	22	1,303	07-19-2022	87	Ft	$ 1.50	$130
112TH_CT	125	15	RUTTING	High	66	SqFt	1.42	Patching - AC Shallow	Residential	AC	18	259	07-19-2022	67	SqFt	$ 6.67	$442
112TH_CT	176	15	RUTTING	Medium	5	SqFt	0.04	Patching - AC Shallow	Residential	AC	20	638	07-19-2022	5	SqFt	$ 6.67	$33
112TH_CT	176	10	L & T CR	High	5	Ft	0.04	Patching - AC Shallow	Residential	AC	20	638	07-19-2022	16	SqFt	$ 6.67	$104
112TH_CT	176	1	ALLIGATOR CR	Medium	46	SqFt	0.36	Patching - AC Deep	Residential	AC	20	638	07-19-2022	78	SqFt	$ 3.33	$258
112TH_CT	176	1	ALLIGATOR CR	High	20	SqFt	0.16	Patching - AC Deep	Residential	AC	20	638	07-19-2022	43	SqFt	$ 3.33	$142
112TH_CT	176	10	L & T CR	Medium	243	Ft	1.90	Crack Sealing - AC	Residential	AC	20	638	07-19-2022	243	Ft	$ 1.50	$364
112TH_CT	177	1	ALLIGATOR CR	Medium	29	SqFt	0.50	Patching - AC Deep	Residential	AC	20	288	07-19-2022	55	SqFt	$ 3.33	$182
112TH_CT	177	10	L & T CR	Medium	188	Ft	3.27	Crack Sealing - AC	Residential	AC	20	288	07-19-2022	188	Ft	$ 1.50	$282
113TH_AVE	122	1	ALLIGATOR CR	Medium	8	SqFt	0.07	Patching - AC Deep	Residential	AC	18	667	07-19-2022	24	SqFt	$ 3.33	$78
113TH_AVE	122	10	L & T CR	High	1	Ft	0.01	Patching - AC Shallow	Residential	AC	18	667	07-19-2022	3	SqFt	$ 6.67	$25
113TH_AVE	122	10	L & T CR	Medium	109	Ft	0.91	Crack Sealing - AC	Residential	AC	18	667	07-19-2022	109	Ft	$ 1.50	$164
113TH_AVE	122	15	RUTTING	Medium	10	SqFt	0.08	Patching - AC Shallow	Residential	AC	18	667	07-19-2022	10	SqFt	$ 6.67	$67
113TH_AVE	122	1	ALLIGATOR CR	High	83	SqFt	0.69	Patching - AC Deep	Residential	AC	18	667	07-19-2022	124	SqFt	$ 3.33	$412
113TH_AVE	123	15	RUTTING	High	5	SqFt	0.04	Patching - AC Shallow	Residential	AC	18	685	07-19-2022	5	SqFt	$ 6.67	$36
113TH_CT	120	1	ALLIGATOR CR	Medium	156	SqFt	1.14	Patching - AC Deep	Residential	AC	20	682	07-19-2022	210	SqFt	$ 3.33	$699
113TH_CT	120	10	L & T CR	High	15	Ft	0.11	Patching - AC Shallow	Residential	AC	20	682	07-19-2022	47	SqFt	$ 6.67	$319
113TH_CT	120	10	L & T CR	Medium	388	Ft	2.84	Crack Sealing - AC	Residential	AC	20	682	07-19-2022	388	Ft	$ 1.50	$582
113TH_CT	120	15	RUTTING	Medium	6	SqFt	0.04	Patching - AC Shallow	Residential	AC	20	682	07-19-2022	5	SqFt	$ 6.67	$39
113TH_CT	120	1	ALLIGATOR CR	High	46	SqFt	0.34	Patching - AC Deep	Residential	AC	20	682	07-19-2022	78	SqFt	$ 3.33	$256
114TH_AVE	149	13	POTHOLE	Low	1	Count	0.03	Patching - AC Deep	Residential	AC	16	208	07-19-2022	3	SqFt	$ 3.33	$12
114TH_AVE	149	10	L & T CR	Medium	146	Ft	4.39	Crack Sealing - AC	Residential	AC	16	208	07-19-2022	146	Ft	$ 1.50	$219
114TH_AVE	149	15	RUTTING	Medium	15	SqFt	0.46	Patching - AC Shallow	Residential	AC	16	208	07-19-2022	15	SqFt	$ 6.67	$103
114TH_AVE	149	1	ALLIGATOR CR	High	39	SqFt	1.18	Patching - AC Deep	Residential	AC	16	208	07-19-2022	68	SqFt	$ 3.33	$227
114TH_AVE	149	10	L & T CR	High	5	Ft	0.14	Patching - AC Shallow	Residential	AC	16	208	07-19-2022	16	SqFt	$ 6.67	$104
114TH_AVE	149	1	ALLIGATOR CR	Medium	3	SqFt	0.09	Patching - AC Deep	Residential	AC	16	208	07-19-2022	14	SqFt	$ 3.33	$46
115TH_AVE	147	15	RUTTING	High	5	SqFt	0.09	Patching - AC Shallow	Residential	AC	20	263	07-19-2022	4	SqFt	$ 6.67	$30
115TH_CT	115	15	RUTTING	High	4.74	SqFt	0.07	Patching - AC Shallow	Residential	AC	18	402	44761	4.31	SqFt	$ 6.67	31.91
116TH_AVE	151	15	RUTTING	High	25.19	SqFt	0.17	Patching - AC Shallow	Residential	AC	22	661	44761	24.76	SqFt	$ 6.67	168.25
116TH_CT	144	15	RUTTING	High	6.03	SqFt	0.15	Patching - AC Shallow	Residential	AC	20	195	44761	6.46	SqFt	$ 6.67	40.05
116TH_CT	145	15	RUTTING	High	20.34	SqFt	0.24	Patching - AC Shallow	Residential	AC	20	422	44761	20.45	SqFt	$ 6.67	136.02
117TH_AVE	113	15	RUTTING	High	18.73	SqFt	0.42	Patching - AC Shallow	Residential	AC	18	250	44761	18.3	SqFt	$ 6.67	125.11
117TH_AVE	153	10	L & T CR	High	0.52	Ft	0.01	Patching - AC Shallow	Residential	AC	24	332	44761	2.15	SqFt	$ 6.67	11.17
117TH_AVE	153	1	ALLIGATOR CR	Medium	67.7	SqFt	0.85	Patching - AC Deep	Residential	AC	24	332	44761	104.41	SqFt	$ 3.33	348.86
117TH_AVE	153	10	L & T CR	Medium	254.07	Ft	3.19	Crack Sealing - AC	Residential	AC	24	332	44761	253.94	Ft	$ 1.50	381.1
117TH_AVE	155	15	RUTTING	Medium	5.81	SqFt	0.15	Patching - AC Shallow	Residential	AC	20	187	44761	5.38	SqFt	$ 6.67	38.51
117TH_AVE	155	10	L & T CR	Medium	62.57	Ft	1.67	Crack Sealing - AC	Residential	AC	20	187	44761	62.66	Ft	$ 1.50	93.84
117TH_CT	157	1	ALLIGATOR CR	High	19	SqFt	0.45	Patching - AC Deep	Residential	AC	18	231	07-19-2022	40	SqFt	$ 3.33	$134
117TH_CT	157	1	ALLIGATOR CR	Medium	6	SqFt	0.15	Patching - AC Deep	Residential	AC	18	231	07-19-2022	20	SqFt	$ 3.33	$68
117TH_CT	157	10	L & T CR	Medium	130	Ft	3.13	Crack Sealing - AC	Residential	AC	18	231	07-19-2022	130	Ft	$ 1.50	$195
117TH_CT	158	1	ALLIGATOR CR	Medium	20.34	SqFt	0.98	Patching - AC Deep	Residential	AC	18	116	44761	41.98	SqFt	$ 3.33	141.56

List of Sections Selected under 2023 Localized Maintenance Plan

BranchID	SectionID	Distress Code	Description	Severity	Distress Qty	Distress Unit	Percent Distress	Work Description	Functional Class	Surface Type	Section Width (ft)	Length (ft)	Last Insp Date	Work Qty	Work Unit	Unit Cost	Work Cost
117TH_CT	158	10	L & T CR	Medium	13.09	Ft	0.63	Crack Sealing - AC	Residential	AC	18	116	44761	13.12	Ft	$ 1.50	19.62
118TH_AVE	168	15	RUTTING	Medium	19.27	SqFt	0.26	Patching - AC Shallow	Residential	AC	20	370	44761	19.38	SqFt	$ 6.67	128.57
118TH_AVE	168	10	L & T CR	Medium	185.2	Ft	2.5	Crack Sealing - AC	Residential	AC	20	370	44761	185.04	Ft	$ 1.50	277.8
118TH_AVE	168	10	L & T CR	High	12.76	Ft	0.17	Patching - AC Shallow	Residential	AC	20	370	44761	41.98	SqFt	$ 6.67	279.24
118TH_AVE	168	1	ALLIGATOR CR	Medium	25.4	SqFt	0.34	Patching - AC Deep	Residential	AC	20	370	44761	49.51	SqFt	$ 3.33	165.48
118TH_PL	211	15	RUTTING	High	6	SqFt	0.10	Patching - AC Shallow	Residential	AC	24	265	07-19-2022	6	SqFt	$ 6.67	$42
118TH_PL	212	15	RUTTING	High	7	SqFt	0.06	Patching - AC Shallow	Residential	AC	24	448	07-19-2022	6	SqFt	$ 6.67	$45
135TH_ST	1	15	RUTTING	High	11	SqFt	0.05	Patching - AC Shallow	Collector	AC	20	1,140	07-19-2022	11	SqFt	$ 6.67	$74
135TH_ST	3	13	POTHOLE	Low	2	Count	0.01	Patching - AC Deep	Collector	AC	28	992	07-19-2022	8	SqFt	$ 3.33	$24
135TH_ST	3	1	ALLIGATOR CR	Medium	162	SqFt	0.58	Patching - AC Deep	Collector	AC	28	992	07-19-2022	217	SqFt	$ 3.33	$724
135TH_ST	3	10	L & T CR	High	7	Ft	0.02	Patching - AC Shallow	Collector	AC	28	992	07-19-2022	23	SqFt	$ 6.67	$148
135TH_ST	3	10	L & T CR	Medium	33	Ft	0.12	Crack Sealing - AC	Collector	AC	28	992	07-19-2022	33	Ft	$ 1.50	$50
135TH_ST	3	15	RUTTING	High	16	SqFt	0.06	Patching - AC Deep	Collector	AC	28	992	07-19-2022	16	SqFt	$ 3.33	$52
135TH_ST	4	1	ALLIGATOR CR	High	10	SqFt	0.14	Patching - AC Deep	Collector	AC	28	267	07-19-2022	27	SqFt	$ 3.33	$90
135TH_ST	4	1	ALLIGATOR CR	Medium	3	SqFt	0.04	Patching - AC Deep	Collector	AC	28	267	07-19-2022	15	SqFt	$ 3.33	$49
135TH_ST	5	15	RUTTING	Medium	8	SqFt	0.69	Patching - AC Shallow	Residential	AC	22	53	07-19-2022	9	SqFt	$ 6.67	$54
135TH_ST	6	15	RUTTING	Medium	55	SqFt	0.09	Patching - AC Shallow	Collector	AC	22	2,668	07-19-2022	55	SqFt	$ 6.67	$365
135TH_ST	6	10	L & T CR	Medium	179	Ft	0.31	Crack Sealing - AC	Collector	AC	22	2,668	07-19-2022	179	Ft	$ 1.50	$269
135TH_ST	6	15	RUTTING	High	31	SqFt	0.05	Patching - AC Deep	Collector	AC	22	2,668	07-19-2022	31	SqFt	$ 3.33	$103
135TH_ST	6	10	L & T CR	High	66	Ft	0.11	Patching - AC Shallow	Collector	AC	22	2,668	07-19-2022	215	SqFt	$ 6.67	$1,435
135TH_ST	6	1	ALLIGATOR CR	Medium	103	SqFt	0.18	Patching - AC Deep	Collector	AC	22	2,668	07-19-2022	147	SqFt	$ 3.33	$493
135TH_ST	6	1	ALLIGATOR CR	High	15	SqFt	0.03	Patching - AC Deep	Collector	AC	22	2,668	07-19-2022	34	SqFt	$ 3.33	$114