CHINA GROVE
Come Grow with Us
An original town.

January 2024

Pavement Management Plan

Town of China Grove

2024 Pavement Management Plan

KCA | KISINGER CAMPO & ASSOCIATES

Kisinger Campo & Associates, Corp.
305 S. Main Street
Kannapolis, NC 28081
Firm License C-1506

Roger D. Jones, PE
rjones2@kcaeng.com
C: 336.240.1952

Prepared For:

Town of China Grove
333 N Main Street
China Grove, NC 28203

China Grove Manager: **Franklin D. Gover, III | AICP, CLGFO, MPA, CFM**
China Grove GIS Planner: **Alana Sweatt, GISP**

China Grove Town Council:

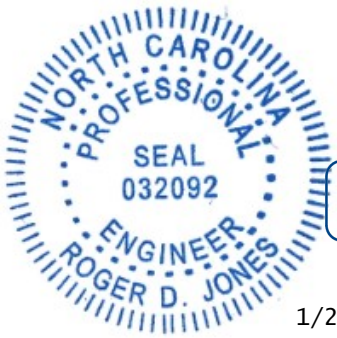
Rodney Philips, Mayor
Wayne Starnes, Mayor Pro-Tem
Don Bringle
Arthur Heggins
Cheryl Sheets
Lee Withers

Prepared By:

Kisinger Campo & Associates, Corp.
305 S Main Street
Kannapolis, NC 28081
Firm License C-1506

KCA Project Number: 005-202318.00

Engineer of Record: **Roger D. Jones, PE**
Database Management: **David Hubert, GISP**
Pavement Inspection: **Roger Jones, PE**
Cody Harward, EI
Cody Funderburk



DocuSigned by:
Roger D. Jones
6419F089B2C747C...
1/29/2024

Roger D. Jones, PE
North Carolina Registration 032092

Executive Summary

This project is the 2024 Pavement Management Plan (PMP) for asphalt roadways owned and maintained by China Grove. A pavement management system is a tool, or set of tools, that specifically focus on a single asset – pavement. The goal of the system is to assist China Grove to maintain their network of safe and serviceable pavements in a cost-effective manner. Kisinger Campo and Associates Corp (KCA) worked in partnership with China Grove staff in the development of the Pavement Management Plan (PMP) to evaluate **20.4** centerline miles in China Grove's Street inventory using the methodologies specified in ASTM D6433 Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys.

All data collected was entered into PAVER™ v7.0.11 for the determination of the overall Pavement Condition Index (PCI) of the roads.

Overall Project Goals include:

- ✓ Assessment of existing observable physical condition in accordance with ASTM D6433-03 Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys;
- ✓ Create PAVERtm database including historic projects, maintenance cost and strategies, and budget analyses;
- ✓ Development of a report detailing the recommended Maintenance and Rehabilitation Plan, including the Maintenance Strategy Policy for China Grove streets;
- ✓ Development of a PMP that will provide the basis of a Five-Year Capital Improvement Program (CIP) for roadway improvements.

Existing pavement condition was determined in accordance with ASTM D6433 *Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys.* The overall area weighted average Pavement Condition Index (PCI) for the asphalt roads was determined to be **58**. Qualitatively this score is considered ***fair***. Predominant distress types found during inspection were alligator cracking, block cracking, longitudinal and transverse cracking, weathering, and rutting. Based on length of each road segment and the calculated PCI, 18.2% of China Grove's asphalt network is in *Good* condition*, 22.3% is in Satisfactory* condition, 37.8% is in *Fair* condition, 17.1% is in *Poor* condition and 4.6% of the pavement network is *Failing*.

Currently, China Grove uses Powell Bill funds to contract routine maintenance of sidewalks, curb & gutter, and street repairs. China Grove Staff forecasts current pavement budget at $120,000 annually.

Using the pavement survey, approximately $147,000-$253,000 of current maintenance has been identified to stabilize and slow an overall decline in network-level pavement condition.

Planning budget scenarios were run to evaluate various budget level's impact on projected network-level pavement conditions. The analysis indicates to improve the overall street condition, China Grove needs to develop a funding source to provide $240,000 per year to resurface and rejuvenate pavement.

China Grove Recommendations:

- ✓ Use available Powell Bill funds to hire an experienced company to apply rejuvenator to all streets that are equal to or greater than PCI 80. To achieve production pricing, minimum 50,000 square yards. To minimize mobilization cost, consider scheduling work when it is convenient for the contractor.
- ✓ Use available Powell Bill funds to hire a contractor to level ruts and sags in pavement simultaneously filling potholes. Using an experienced local company will likely be the most cost effective. For best outcomes, perform this operation in warmer temperatures.
- ✓ Use Paver to document pavement maintenance projects for future pavement surveys.
- ✓ When funds are available, use the Major Projects list to develop Repair & Resurfacing Contracts. The project list will require on-site measurements to quantify work for Contracts. The current estimated cost is a high-level overview.

For Pavement Preservation:

- ✓ In addition to the rejuvenation project on existing streets, use rejuvenator on newly resurfaced pavements. Apply rejuvenator initially on new asphalt and every 5 years thereafter on those pavements. Streets that are rejuvenated initially after resurfacing will benefit from at least one perhaps two future reapplications.
- ✓ If public is accepting and funds are limited, to extend the life of the pavement, contract crack sealing for larger block cracking and longitudinal & transverse cracking. To achieve best production pricing, fund projects for 50,000 lbs minimum. This preservation technique protects the subgrade from surface water intrusion and reduces potholes. Use crack sealing for streets that are five years or more from major work such as overlay or mat & seal. If a street is eligible for rejuvenation, apply the rejuvenator first -then perform crack sealing.

When Additional Funding Sources are Available for Repairs & Resurfacing:

- ✓ Use mat seal and overlay, or to minimize cost, use pavement preservation technique of mat and seal if public is accepting.
- ✓ Mill, Seal, and Overlay on curb and gutter streets that have already had one overlay or utilize mat and seal if public is accepting.
- ✓ Load test streets to determine if structural deficiencies exist prior to all mat seal and asphalt overlays. It is also recommended to load test prior to mat and seal treatments. These streets may require full depth base repairs (deep patching) prior to overlay treatments.

Contents

Introduction

Background

Based on 2022 Powell Bill Reporting (latest available) China Grove maintains 20.42 miles of streets.

Pavement typically represents the single most valuable physical asset owned and maintained by a municipality. In 2003, China Grove hired a consultant to survey the streets (17.06 miles). The consultant noted that 68% of the streets had some level of block cracking; almost 10% of streets had moderate or severe alligator cracking (this can be an indication of possible structural issues).

This report, the 2023 Pavement Management Plan, provides an update to the 2003 pavement study.

Goals of the project include:

- Assessment of existing observable physical condition in accordance with ASTM D6433-03 *Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys;*
- Create a PAVER^{tm} database including historic projects, maintenance cost and strategies, and budget analyses;
- Development of a report detailing the recommended Maintenance and Rehabilitation Plan, including the Maintenance Strategy Policy for China Grove Streets;
- Development of a PMP that will provide the basis of a Five Year Capital Improvement Program (CIP) for street improvements.

PAVER^{tm} Pavement Management System Overview

Pavement Management, like other Asset Management practices, follows a cyclical process that begins with a basic understanding of system to be evaluated – in this case the pavement network – and proceeds through recommendations. A Pavement Management System (PMS) is a set of defined procedures for collecting, analyzing, maintaining, and reporting pavement data. The intent of a PMS is to assist in finding optimum strategies for maintaining pavements in an acceptable condition over a given period of time for the least cost. In a PMS objective information and data is presented so that decisions made are consistent, cost-effective, and defensible. Many factors beyond the condition assessment can, and do, influence the decisions made as a result of the PMS. These factors may include policy and economic influences internal to China Grove and China Grove's citizens—the residents who live, work, and ultimately pay for the pavement assets. Ultimately a PMS provides the basis for an informed understanding of the consequences of alternative decisions.

A Pavement Management Plan (PMP) is the written findings and recommendations supporting the PMS. The primary intent of the PMP is to develop a network-wide understanding of the conditions of all the paved surfaces within the network. A secondary intent is to develop a prioritization scheme to rate the pavements relative to each other, eventually developing remediation projects.

China Grove's PMP has been developed to conform to the methodologies specified in the latest version of ***ASTM D6433-18 Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys.*** This Standard provides the procedural requirements for collecting and categorizing pavement distress data. All collected data were subsequently imported into a **PAVER^{tm} v7.0.11** software for analysis. **PAVER** provides the means to evaluate existing and future budgetary needs against current and projected pavement conditions. The **PAVER** system provides agencies with tools to assist in:

1 Developing an inventory of their pavement network
2 Conducting pavement distress surveys
3 Assessment of pavement conditions
4 Development of models enabling the prediction of future pavement conditions
5 Analysis of funding scenarios
6 Planning of maintenance and rehabilitation activities
7 Reporting of findings

Methodology

Network Definition and Inventory

The initial step in the development of the PMP was to define the extent of the pavement that will be included in the PMP. All streets within China Grove are subdivided into ***Networks***, ***Branches***, and ***Sections***. Each subdivision is described below:

Network

A pavement ***network*** is simply a logical grouping of pavements to be managed (*Pavement Management for Airports, Roads, and Parking Lots* by M.Y. Shahin, 2005). For China Groves's PMP, the logical grouping is simply defined as China Grove's paved and maintained streets. All roads included in the inventory are graphically shown in **Map 1 – Pavement Network** in **Appendix A**. China Grove established Primary, Secondary, and Tertiary Network Ranking.

Branches

Each network is separated into ***branches***. Branches are readily identifiable parts of the pavement network and have a distinct use. For China Grove, KCA simply defined each named road as a branch. Within the PAVER database, each branch is identified in two ways:

1. By a textual descriptor called the "Branch Name"
   This is the Branch or street name. Most agencies will have this in the centerline file already and GIS can be used to copy data into PAVER. If the names are compiled from multiple sources, consistency between the sources is important.
2. By a textual descriptor called the "Branch ID"
   The BranchID must be unique for each branch in the system. PAVER imposes a 10 character limit and will automatically assign a unique ID. Some agencies prefer to have their own numeric street ID or Asset ID number assigned to each Branch. KCA often will assign a BranchID based in the branch name and ensuring that the BranchID is unique.

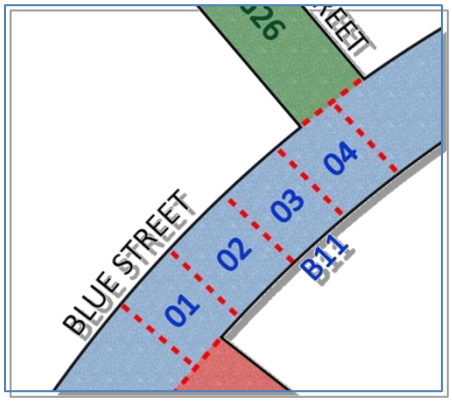
Sections

A pavement ***section*** is the smallest management unit for which road resurfacing will be planned. Sections typically share similar characteristics such as pavement structure, construction history, functional classification, and traffic (Shahin, 2005). Sections represent one of the most important elements within the network. Pavement conditions and work planning are aggregated at the section level. Like a branch, each section is uniquely identified. For China Grove, sections are defined from intersection to intersection, based on the GIS centerline shape file. This ensures consistency between the final PMP and GIS, and that pavements with similar characteristics are grouped as closely together as possible.

Sample Units

The quantity and quality of the ***collected*** data should be matched to the ***intended use*** of the data. This plan developed for China Grove is considered a network-level PMP based on ***ASTM D6433*** methodology. ASTM D6433 is based on the premise that reasonable accuracy (95% confidence) can be achieved without 100% inspection. To accomplish this accuracy, each pavement section is broken into ***sample units*** and inspections are conducted on a specified number of sample units within a section.

Figure 1: Sample Units



Sample units are a conveniently defined portion of a pavement section designated only for the purpose of pavement inspection (Shahin, 2005). A sample unit defined as 2,500 ± 1,000 square feet. Figure 1 illustrates how the Branch (***Blue Street***) is conveniently divided into a Section (***B11***) and then sample units (***01, 02, 03, and 04***).

The number of samples per section is determined using Network Level Sampling Criteria. Table 1 specifies the criteria KCA uses to determine the number of sample units to be inspected per section. A minimum of one sample unit per section is inspected. KCA takes the additional step to geolocate each sample so that subsequent distress surveys are assured to evaluate the same pavement surfaces. Future distress surveys should evaluate the same sample locations as this 2023 survey.

Table 1: Network Level Sampling Criteria

No. of Sample Units in Section	No. of Units to be Inspected
1 to 5	1
6 to 10	2
11 to 15	3
16 to 40	4
Over 40	10%

Distress Surveys

All field distress information is collected manually. KCA staff utilizes a proprietary software tool for recording and organizing the collected data prior to import into PAVER. This tool integrates the network GIS centerline data with Global Positioning System (GPS) data, enabling staff to quickly and accurately define sample units and collect applicable data. Photographic documentation of the inspected pavement is also integrated into the inspection protocol with the

sample location and photographic data geo-referenced and stored in a database distinct from PAVER. Distress data were subsequently imported into PAVER, avoiding manual entry and maximizing database accuracy.

Pavement Condition Index (PCI)

The ASTM D6433 methodology defines 20 different pavement distresses that are used in determining the Pavement Condition Index (PCI). The PCI is a quantitative descriptor of the overall pavement condition based upon the ***type***, ***aerial extent***, and ***severity*** of each observed distresses. Numerically the PCI ranges between 0 and 100. A PCI of 100 represents a pavement completely free of distress whereas a PCI of 0 corresponds to a pavement that is failing. Each distress type, extent and severity is assigned a deduct value or weighing factor. A deduct value of 0 indicates that the distress is not present and therefore has no effect on pavement condition, whereas a value of 100 represents serious distress.

A Pavement Condition Rating (PCR) is a qualitative descriptor associated with ranges of PCI and is useful when describing the general condition of pavements. Table 2 shows the range of PCI values to which each rating corresponds.

Structural Condition Index (SCI)

Like the PCI, the SCI is a quantitative descriptor of the pavement condition. The SCI however focuses on distresses that suggest that the roadway may be structurally deficient or that base failures are occurring. Table 3 lists the distress and severity levels that are used in the calculation of SCI for both asphalt and Portland cement pavements.

An analysis of the SCI along with the PCI is a very powerful tool in developing the PMP. Low PCIs and high SCIs suggest that the pavement may be structurally sound. Conversely, low PCIs and low SCIs indicate that the pavement likely has base-related failures. Each case would have very different repair strategies. The Structural Condition Rating (SCR), the qualitative descriptor associated with ranges of SCI, is also shown in Table 2 below.

Table 2: PCI and SCI Condition and Range

Pavement Condition Rating (PCR)	Pavement/ Structural Condition Index (PCI/SCI) Range	General Description
Good	**81-100**	Pavement has minor or no distresses and should require only routine maintenance.
Satisfactory	**61-80**	Pavement has scattered low-severity distresses that should require only routine maintenance.
Fair	**41-60**	Pavement has a combination of generally low- and medium-severity distresses. Near-term maintenance and repair needs may range from routine to major.
Poor	**21-40**	Pavement has low-, medium-, and high-severity distresses that probably cause operational problems. Near-term maintenance and repair needs may range from routine up to a requirement for reconstruction.
Failing	**0-20**	Pavement deterioration has progressed to the point that safe operations may be compromised and likely has operational problems; complete reconstruction of the road, including the base, may be needed.

Table 3: SCI Distress Types and Severity

	Distresses	Severity
Asphalt Cement	Alligator Cracking	Low, Medium, High
	Patching	Medium, High
	Potholes	Low, Medium, High
	Rutting	Medium, High
Portland Cement	Large Patching	Medium, High
	Corner Break	Low, Medium, High
	Divided Slab	Low, Medium, High
	Punchout	Medium, High

Condition Assessment

Both PCI and SCI were determined for each of the 274 individual pavement Sample locations and subsequently for the 197 roadway sections. The more common asphalt distresses found in China Grove include alligator cracking, block cracking, longitudinal and transverse cracking, weathering, and rutting. The distresses are further described as:

Weathering and Raveling –

Weathering is defined as the wearing-away of asphalt binder and fine-grained particles, whereas Raveling is the dislodging of coarse aggregate particles. Raveling may be caused by insufficient asphalt binder, poor mixture quality, insufficient compaction, segregation, or stripping.

Longitudinal/Transverse Cracking –

Longitudinal cracks are parallel to the pavement's centerline or laydown direction. They may be caused by poorly constructed paving lane joint, hardening of the asphalt, or daily temperature cycling. They can also be caused by a reflective crack caused by cracking beneath the surface course. Transverse cracks extend across the pavement at approximately right angles to the pavement centerline or direction of laydown. These types of cracks are not usually load-associated.

Block Cracking –

Block cracks are interconnected cracks that divide the pavement into approximately rectangular pieces. The blocks may range in size from approximately 1x1 foot to 10x10 feet. Block cracking is caused mainly by shrinkage of the asphalt concrete and daily temperature cycling, which results in daily stress/strain cycling. It is not load-associated. Block cracking usually indicates that the asphalt has hardened significantly. Block cracking normally occurs over a large portion of the pavement area, but sometimes will occur only in non-traffic areas.

Alligator Cracking -

Alligator or fatigue cracking is a series of interconnecting cracks caused by fatigue failure of the asphalt concrete surface under repeated traffic loading. Cracking begins at the bottom of the asphalt surface, or stabilized base, where tensile stress and strain are highest under a wheel load. The cracks propagate to the surface initially as a series of parallel longitudinal cracks. After repeated traffic loading, the cracks connect, forming many sided, sharp-angled pieces that develop a pattern resembling chicken wire or the skin of an alligator. The pieces are generally small and less than 1.5 feet on the longest side. It is important to note that Alligator cracking only occurs in areas subjected to repeated traffic loading, such as wheel paths. Pattern-type cracking that occurs over an entire area not subjected to loading is called "block cracking," which is not a load associated distress.

Edge Cracking -

Edge cracks are parallel to and usually within 1 to 1.5 feet of the outer edge of the pavement. Typically edge cracking is caused by poor subgrade compaction or materials and the associated traffic loading.

Network Summary

As mentioned previously, network inventory data generally remains static over time. The pavement network for China Grove asphalt is summarized in Table 4. A single network was defined consisting of 82 individual branches with 197 sections. The total length of the asphalt network is 20.4 centerline miles with an area over 2.6 million square feet.

Table 4: Network Summary

Number of Branches	82
Number of Sections	197
Total Mileage (asphalt)	20.4
Total Area (sq. ft. asphalt)	2,609,166
Average Section Width (ft.)	24.5
Average Section Length (ft.)	546.3
Average Number of Lanes per Section	2

Pavement Condition Index (PCI)

After the final importation of distress data, the PCI is calculated within PAVER for each sample. The results are then extrapolated to each section. **Map 2** in **Appendix A** shows the geographic distribution of PCI scores across the Roadway Network. The average PCI for all China Grove Streets in 2023 is **58**. Based on length of each street segment and the calculated PCI, 18.2% of China Grove's asphalt network is in ***Good*** condition, 22.3% is in ***Satisfactory*** condition, 37.8% is in ***Fair*** condition, 17.1% is in ***Poor*** condition, and 4.6% are ***Failing***.

Structural Condition Index (SCI)

SCI values for asphalt roads within the network is a numeric average of **74.4**. This score indicates that most streets within the network do not appear to have structural issues. **Map 3** in **Appendix A** shows the geographic distribution of SCI scores across the Street Network.

Table 5: Pavement Condition Summary

Pavement Condition Rating	Sections	Length (miles)	Pavement Area (SF)	Average PCI
80 to 100 - Good	38	3.7	460,464	88.2
60 to 80 - Satisfactory	45	4.5	622,090	71.0
40 to 60 - Fair	68	7.7	982,103	51.0
20 to 40 - Poor	36	3.5	435,302	32.9
0 to 20 - Failing	10	0.9	109,206	12.1
	197	20.4	2,609,166	57.5

Table 6: Structural Condition Summary

Structural Condition Rating	Sections	Length (miles)	Pavement Area (SF)	Average SCI
80 to 100 - Good	94	9.4	1,216,798	95.6
60 to 80 - Satisfactory	51	5.1	676,705	67.8
40 to 60 - Fair	35	4.2	519,539	50.1
20 to 40 - Poor	14	1.5	176,370	30.5
0 to 20 - Failing	3	0.2	19,754	8.4
	197	20.4	2,609,166	74.4

Figure 2: PCI Distribution

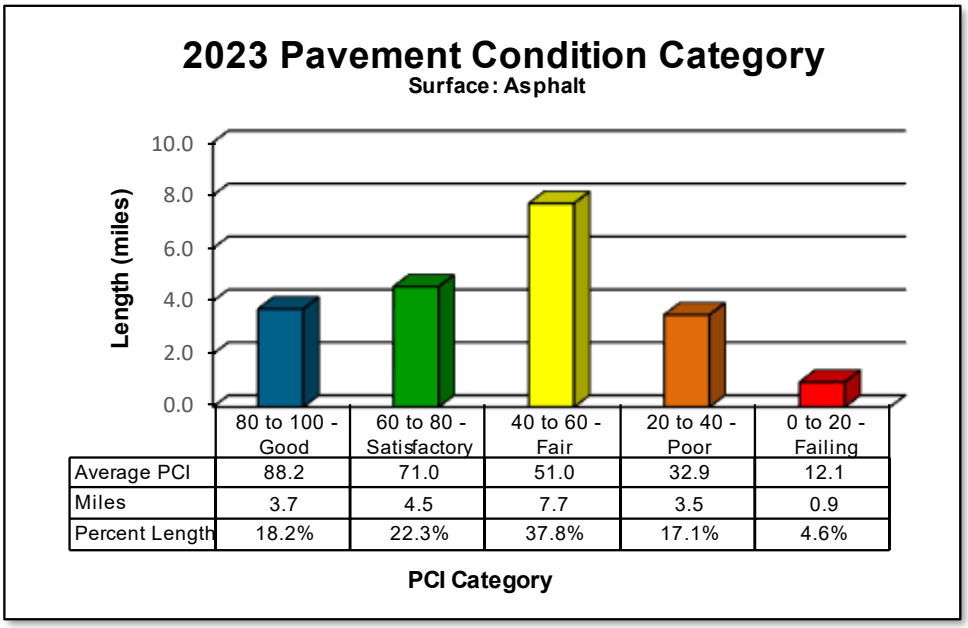
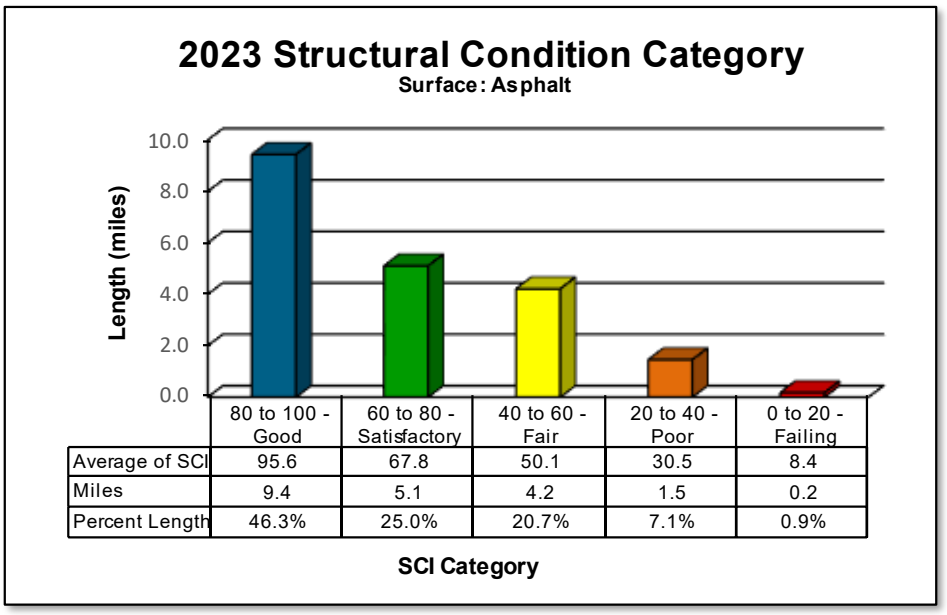


Figure 3: SCI Distribution



	80 to 100 - Good	60 to 80 - Satisfactory	40 to 60 - Fair	20 to 40 - Poor	0 to 20 - Failing
Average of SCI	95.6	67.8	50.1	30.5	8.4
Miles	9.4	5.1	4.2	1.5	0.2
Percent Length	46.3%	25.0%	20.7%	7.1%	0.9%

Cause of Deterioration

The analysis above is per the ASTM D6433 standard. From these index calculations it is apparent that the overall PCI is in fair condition, and structurally the streets are in satisfactory condition. Additional inferences can be made of the pavement condition based on the underlying causes of pavement distresses: ***Load***, ***Climate and Durability***, or ***Other*** factors.

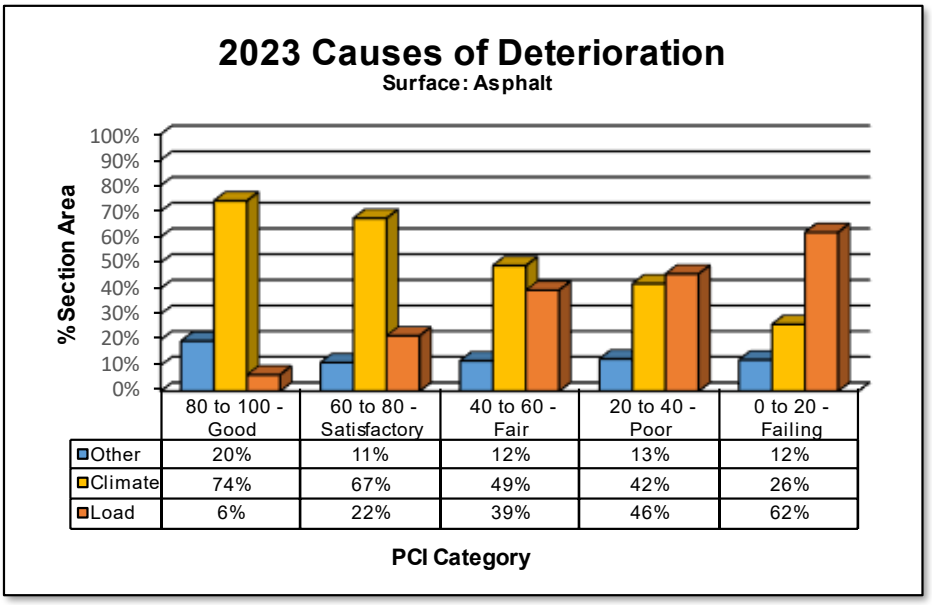
Load – Alligator Cracking, Edge Cracking, Potholes, Rutting, and Shoving

Climate and Durability – Block Cracking, Longitudinal and Transverse Cracking, Weathering, and Raveling

Other – Bleeding, Bumps and Sags, Corrugations, Depressions, Lane/Shoulder drop-off, Patching, Polished Aggregate, Railroad Crossings, Slippage Cracking, and Swelling

For the China Grove streets, 74% of the overall condition of the pavement can be attributed to climate and durability issues with the remaining 26% attributed to load or other issues.

Figure 4: Causes of Asphalt Deterioration



As will be discussed later in this report, one method to help reduce the effects of weathering and raveling is using preventive treatments such as a rejuvenator. The purpose of a rejuvenator is to soften the stiffness of the oxidized pavement surface and re-introduce maltenes to extend the life of the pavement.

Condition Prediction

The ability to forecast pavement conditions based on available funding is a key component of the PMP. This provides China Grove with the tools necessary to make informed decisions on selecting the correct pavement repair techniques, analyze various funding scenarios, and ultimately develop projects for the preservation or restoration of the paved surfaces.

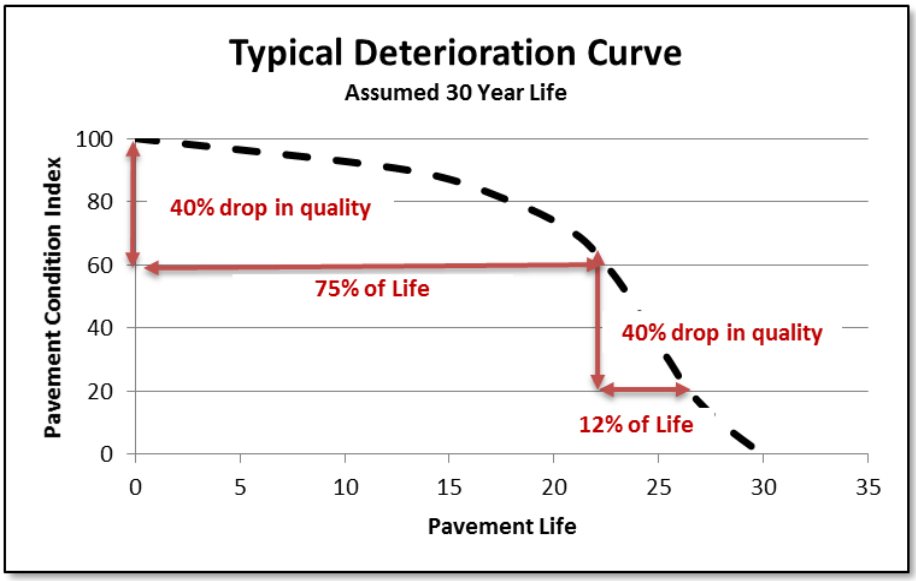
Development of Deterioration Models

Pavement will deteriorate. No matter how well a road is originally constructed, the effects of traffic loads and climate will take a toll on the road surface over time. The age of the pavement and the rate at which the deterioration occurs become important considerations when developing asset management strategies for the PMP.

Pavement Life-cycle

Figure 5 depicts a widely published pavement deterioration curve. Several conclusions can be drawn from this curve including the overall life expectancy of the pavement and the relative rate of deterioration based on the age of the pavement. The shape of the curve infers that early in pavement's life, the condition remains good for many years before any appreciable maintenance is needed. As a pavement passes the midpoint in its life-cycle, the rate of deterioration can rapidly increase. The curve shown in Figure 5 was derived based on an assumed 30-year life expectancy, and that 40% of a pavement's deterioration occurs within the first 75% of a pavement's expected life. The next 40% of the deterioration occurs very rapidly in only the next 12% of the life. This relationship of deterioration and time has been widely referenced as being typical of pavement deterioration. Additionally, the relationship suggests that conducting *preventative maintenance* early in the pavement's life cycle can delay significant deterioration and thereby save considerable funds when compared to conducting major maintenance later in the pavement's life.

Figure 5: Typical Deterioration Curve



Development of appropriate deterioration curves provide a basis for ***predictive*** condition forecasting. A typical curve such as the one discussed above can be used but may not accurately represent the specific conditions of China Grove's network. Deterioration models can be developed specific to a pavement network by evaluating historic PCI values against the age of the pavement. With sufficient data, multiple models may be developed based on the use of the street. The expected deterioration of arterial and collector streets may vary from a model developed for residential roads.

Construction History

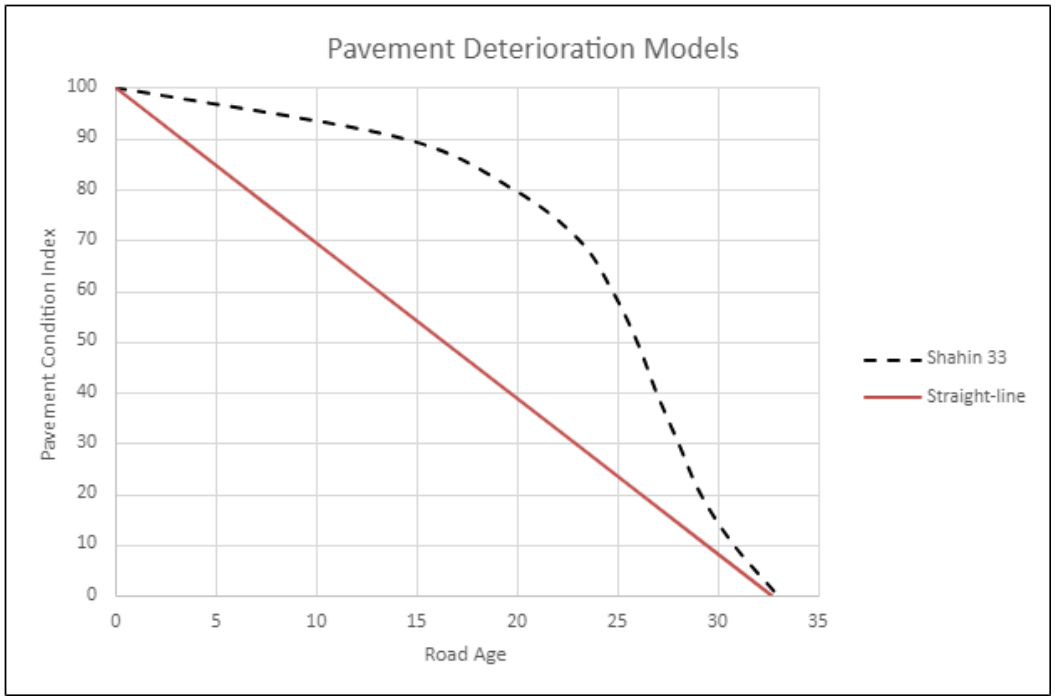
Historic construction data helps to define the deterioration curves by establishing the point in time when the pavement was new (time=0, PCI=100). Inspection data establish specific points along the deterioration curve. As additional inspections data is collected and work history added to the Pavement Management System, refinements can be made to the models improving the overall ability of the model to predict future conditions of the road network.

Going forward, China Grove can document maintenance activities such as rejuvenation, leveling, pothole filling, etc. and that will have a positive impact on the PCI. Dates of major maintenance activities can be used to establish the point in time when the pavement was new (time=0, PCI=100).

Model Review

KCA is using a straight-line model of deterioration based on a pavement life-cycle of 33 years. As additional inspection cycles are complete in future years and maintenance activities (major and minor) are documented, it is recommended that the deterioration model be re-evaluated and updated to reflect true conditions.

Figure 6: Deterioration Models



Pavement Treatment Selection

Selection of specific projects is an iterative process that must incorporate technical and non-technical information. Data collected in this PMP plays a very important role in the decision process, but as pointed out in *Pavement Management for Airports, Roads, and Parking Lots* by M.Y. Shahin, 2005, "the PCI by itself is not sufficient to identify the needed specific M&R type." A single numeric value such as the PCI can indicate a general level of M&R needs, but it is also important to understand the cause (structural, climate, or other) of individual distresses that make up the PCI score. Additionally, factors such as funding, political desires, citizen complaints, etc. often influence project selection.

At the network-level, the goals of the PMP are to gain an understanding of how pavement conditions can be expected to respond to programmatic funding levels, and to develop optimum combinations of potential pavement M&R treatments and network sections – the right treatment for the right location at the right time.

Short-term Maintenance and Rehabilitation Categories

PAVER uses several categories of M&R in the planning of potential pavement treatments. Specific treatment options can be suggested when the planning horizon, or the length of the planning time period is very short – typically less than one year. In these cases, the change in pavement conditions between distress identification and repair is negligible. Therefore, specific repair strategies or proposed actions can be specified with some certainty. M&R categories included as short term include Localized Safety and Localized Preventive. Note that both Localized Safety and Localized Preventive M&R activities are considered part of China Grove's routine maintenance program (utilizing Powell Bill Funds), not major capital maintenance. Each category is presented below for reference:

Localized Safety M&R

Localized Safety M&R is defined as the localized distress repair needed to keep the pavement operational in a safe condition. This type of maintenance has a very short planning horizon if any at all. It may also be referred to as safety maintenance, stop-gap maintenance, and operational maintenance. Table 7 lists distress severity and type along with proposed remediation actions for Localized Safety M&R.

Table 7: Localized Safety M&R Policy

	Description	Proposed Action
High	*BUMPS/SAGS*	Leveling, Shallow Patching
High	*CORRUGATION*	Shallow Patching
High	*LANE / SHOULDER DROP*	Shoulder leveling
High	*PATCH/UTILITY CUT*	Leveling, Shallow or Deep Patching
High & Medium	*POTHOLE*	Filling, Deep Patching
High	*RUTTING*	Leveling, Shallow Patching
High	*SHOVING*	Shallow Patching
High	*SLIPPAGE CRACKING*	Shallow Patching

Localized Preventive M&R

Localized Preventive M&R activities are performed with the primary objective of slowing the rate of deterioration and are applied at the location of individual distresses. For asphalt pavement it can include activities such as leveling, filling potholes, crack sealing, and deep and shallow patching. Localized PM differs from Global PM (described below) in that it typically is not applied to pavement outside of the location of the distress. Table 8 lists distress severity and type along with proposed remediation actions for Localized Preventive M&R.

Table 8: Localized Preventive M&R Policy

Severity	Description	Proposed Action
High & Medium	*ALLIGATOR CR*	Deep Patching (conduct load test)
High & Medium	*BLOCK CRACKING*	Crack Sealing
Medium	*BUMPS/SAGS*	Leveling or Shallow Patching
High	*BUMPS/SAGS*	Leveling or Deep Patching
High	*CORRUGATION*	Deep Patching
Medium	*CORRUGATION*	Shallow Patching
High & Medium	*DEPRESSION*	Leveling or Deep Patching
Medium	*EDGE CRACKING*	Crack Sealing
High	*EDGE CRACKING*	Shallow Patching
High	*JOINT REFLECTIVE CRACKING*	Shallow Patching
Medium	*JOINT REFLECTIVE CRACKING*	Crack Sealing
High & Medium	*LANE / SHOULDER DROP*	Shoulder leveling
High	*L & T CRACKING*	Crack Sealing or Shallow Patching
Medium	*L & T CRACKING*	Crack Sealing
High	*PATCH/UTILITY CUT*	Leveling or Deep Patching
High, Medium & Low	*POTHOLE*	Fill or Deep Patching
High	*RUTTING*	Leveling or Deep Patching
Medium	*RUTTING*	Leveling or Shallow Patching
High & Medium	*SHOVING*	Grinding (Localized)
High & Medium	*SLIPPAGE CRACKING*	Shallow Patching

.

Long-term Maintenance and Rehabilitation Categories

Long Term M&R categories include Global Preventive and Major. In these cases, the time between pavement distress identification and repair may be several years. The change in pavement condition, and even the change in identified distresses could be appreciable. Therefore, specific repair strategies or proposed actions are suggested as network-level planning guidelines. Field investigations will need to be performed to bring projects to contract-level.

Global Preventive M&R

Global Preventive M&R is a maintenance activity applied to entire pavement section to extend the pavement life and reduce cost of maintenance. China Grove has aging pavement which exhibits weathering. Rejuvenation is a cost-effective solution to reduce weathering. An emulsified liquid containing maltenes is sprayed across the entire pavement. This process reintroduces maltenes into the pavement to soften the pavement reducing oxidation and cracking, yielding a longer pavement life.

Table 9: Global Preventive M&R Policy

Severity	Description	Proposed Action
High, Medium & Low	*POLISHED AGGREGATE*	thin overlay
High, Medium & Low	*BLEEDING*	thin overlay (skin patch)
High, Medium & Low	*BLOCK CRACKING*	Crack seal, and/or Rejuvenation
High, Medium & Low	*WEATHERING / RAVELING*	Rejuvenation
High, Medium & Low	*L & T CRACKING*	Crack seal, and/or Rejuvenation

NOTE: Crackseal Block Cracking *except* very tight groups- less than 1'x1')

Major M&R

Major M&R are maintenance activities applied to the entire section and are intended to correct or improve existing structural or functional requirements of the paved surface. It is important to note that Major M&R are the only type of maintenance activities for which the PCI values are returned to 100 after the treatment is applied.

Major M&R Approach

PAVER allows the user to select different approaches to identify potential projects. The **Minimum PCI** approach is basically a worst-first approach. This approach does not optimize budget spending but rather determines the funding needed to maintain the pavement condition at or above a specified minimum PCI value. The minimum value can vary based on street type or can vary in time. For example, the targeted PCI value may rise over several years in order to fund the program. In this approach the Major M&R costs are applied to each road section when the PCI is projected to reach the specified minimum value. Once this point is reach and Major M&R is applied, the PCI score is reset to 100 and no further treatment is applied until the minimum PCI is once again reached.

The **Critical PCI** approach is based on the concept that it is more cost-effective to maintain pavements above the ***critical*** PCI rather than below. The critical PCI is the point in the life of the pavement where the condition begins to rapidly deteriorate. The critical PCI can also be viewed as the point where the cost of local preventive maintenance starts to significantly increase. Typically, the critical PCI ranges from 50 to 75. For purposes of this report KCA is using a critical PCI of 55. Using this approach, PAVER is attempting to optimize the M&R budget using the following priority of M&R categories:

1. Localized Safety measures (Considered part of China Groves routine operating budget utilizing Powell Bill Funds)
2. Localized Preventive (Considered part of China Grove's routine operating budget utilizing Powell Bill Funds)
3. Global Preventive (Rejuvenator, for use on newly resurfaced streets)
4. Major above critical PCI
5. Major below critical PCI

After checking a section's PCI score in relation to the critical PCI, PAVER checks for structural deficiency. Structural deficiency is defined for asphalt pavement in the critical PCI approach as:

- Alligator Cracking (L, M & H) >0.5%
- Patching (M & H) >10%
- Potholes (L, M & H) >0.1%
- Rutting (M & H) >1.0%

Pavement Treatment Matrix

Many agencies have developed simplified decision trees or decision matrices relating the general type of pavement M&R with distress conditions. These decision matrices can be used to assist in the project planning phase of pavement management. A generalized decision matrix developed for China Grove is depicted below and consists of the five PCI Groups including a consideration of structural deterioration.

Table 10: Decision Matrix for Asphalt

Treatment Type	Structural Deterioration	PCR Condition Group
No Work	No	100-80 (**Good**)
Localized Safety measures considered part of China Grove's routine operating budget utilizing Powell Bill Funds	Yes	
Localized Preventive measures considered part of China Grove's routine operating budget utilizing Powell Bill Funds	No	80-60(**Satisfactory**)
Localized Preventive measures considered part of China Grove's routine operating budget utilizing Powell Bill Funds	Yes	
Major Maintenance (above Critical PCI) – if funds available Seal and Overlay or Mill and Overlay	No	60-40 (**Fair**)
Major Maintenance (below Critical PCI) –Seal and Overlay or Mill and Overlay with Localized Base Repairs	Yes	
Major Maintenance (below Critical PCI) – Seal and Overlay or Mill Seal, and Overlay	No	40-20 (**Poor**)
Major Maintenance (below Critical PCI) – Seal and Overlay or Mill, Seal, and Overlay with Base Repairs	Yes	
Major Maintenance (below Critical PCI) – Seal and Overlay or Mill and Overlay	No	20-0 (**Failing**)
Major Maintenance (below Critical PCI) – Load Test then Seal and Overlay or Mill and Overlay with Base Repairs, or Full Depth Reclamation or Complete Reconstruction	Yes	

Funding Scenarios

PAVER uses cost per work type for project level and short-term planning. Cost per condition is used for long term planning and to estimate budget needs. These costs are entered in PAVER in policy tables. The cost data used in this report are based on historic and relative bid data provided by KCA for asphalt products. It is important to note that while these cost estimates are based on the best available information, they do not include additional expense items which may be necessary such as drainage improvements or improvements required to meet the Americans with Disabilities Act (ADA). In many cases these additional costs can substantially increase the overall funding necessary to complete individual projects.

Table 11 below is a summary of the unit costs used in this report to provide the foundation for conducting the budget analysis.

Table 11: Major M&R Unit Costs and PCI

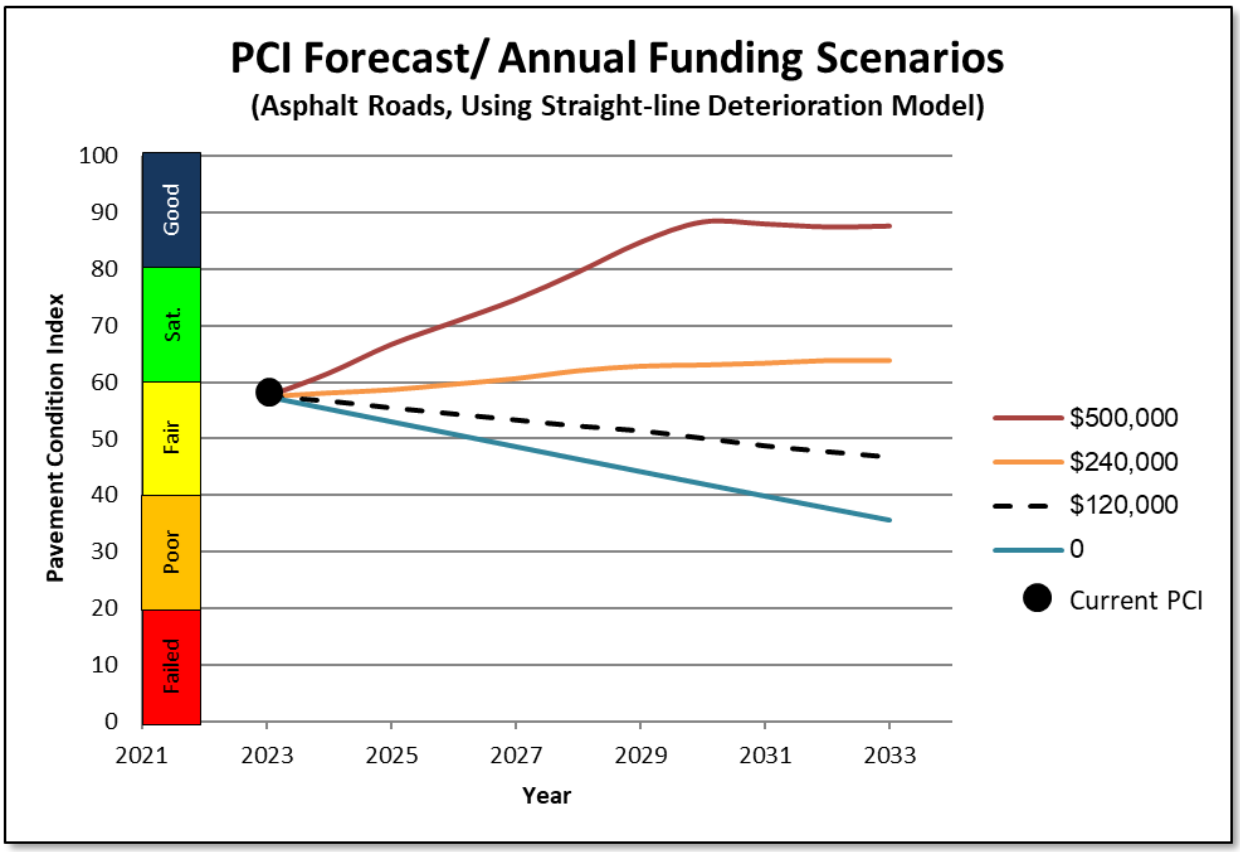
PCI	Typical M&R Strategy	Unit Cost per Sq. Ft. (Overlay/Seal) rejuvenation & crack seal > PCI 80	Unit Cost per Sq. Ft. (Mill, Seal, Overlay)
100	Rejuvenation	$0.14	$0.00
90	Preventive / Localized Repairs / Patching (crack seal, rejuvenation)	$0.24	$0.00
80		$0.34	$0.00
70	Overlay/Seal or Mill, Seal, and Overlay	$0.40	$0.00
60		$1.56	$2.34
50		$1.56	$2.34
40	Overlay/Seal or Mill, Seal, and Overlay includes some base repair	$1.56	$2.34
30		$1.56	$2.34
20		$2.06	$2.84
10		$2.31	$3.09
0		$2.56	$3.34

Budget Findings

Four different budget scenarios are presented below and provide an envelope of expected results based on potential funding levels. A $0-based scenario represents a “do nothing” option. $120,000 is the current budget China Grove Staff has for pavement management, $240,000, and $500,000 scenarios are also evaluated. Each forecast scenario assumes that 100% of the annual funding is applied to Major Maintenance & Rehabilitation (M&R) and Major Global Preventive. Based on the analysis, the network condition can be expected to deteriorate from current conditions if the funding level remains at $120,000 annually. Conversely, an increase of the network PCI can be expected if the funding in increased to $240,000 or more annually. The model predicts funding of $500,000 will raise and maintain the PCI in the *Good* range.

It is recommended to seek or raise funding to $240,000 per year. This realistic minimum would increase the current average PCI, moving Pavement Maintenance in a positive direction. The results of the funding evaluations are presented in Figure 7 below.

Figure 7: Budget / PCI Forecast



Maintenance and Rehabilitation Plan

Pavement Treatment Suggestions

Given current funding, China Grove should use Powell Bill Funds to rejuvenate weathered pavement that has a PCI of 80 or higher, then fill potholes, level ruts, sags, and depressions. Rejuvenation requires a specialty company. All Streets with a PCI of 80 or higher should have rejuvenator applied. The asphalt repairs can be accomplished most effectively using smaller local asphalt paving companies. KCA recommends finding up to three qualified local or nearby paving companies and let them bid the work. If your budget is less than $30,000 then licensing is not required. If your budget is greater than $30,000 licensing is required.

If funds are constrained and the public is accepting, the next level of recommended preservation treatment is crack sealing. This is effective to protect the subbase from water intrusion and slows/reduces/eliminates the formation of potholes. Use crack sealing on streets with larger block cracking, transverse and longitudinal cracking. Avoid crack sealing areas that are less than 1' x1'. China Grove will need to fund 50,000 lbs to get production pricing. Use a properly licensed qualified contractor with quality references (preferable NCDOT or municipal) for crack sealing. Use NCDOT approved materials for crack sealing. Use crack sealing if funding levels are low and if public is accepting. Treatment options that may be technically feasible may not be palatable to the residence due to treatment's impact on traffic or on the esthetics of the neighborhood.

Also, if the public is accepting, a proper street selection using mat and chipseal is an cost effective treatment especially to avoid milling.

KCA would welcome the opportunity to provide services to determine qualified bidders, develop contract, bid, and provide inspection services (including training staff) for asphalt repairs/overlays.

The following treatments are suggested to be included in China Grove's pavement maintenance program and are presented in very general terms.

Overlay / Mill and Overlay (Both cases with a mat seal)

This pavement treatment application is a process where a new layer of asphalt pavement is added to an existing surface, or the surface is milled, and replaced by a new layer of asphalt pavement. With the addition of a mat seal of 67 stone prior to overlay the pavement life can be greatly extended. Given the heavy cracking on most streets, a mat seal is needed to prevent/retard cracking reflecting through the new asphalt. When combined with preventive treatments such as a rejuvenator, the pavement life can be extended further.

Typically, an NCDOT asphalt specified pavement is applied in this process. The street is milled if the asphalt is above the gutter. The millings are taken to the asphalt plant for recycling. The street should be load tested after milling to ensure no full depth patching is needed. Once the surface area is milled away, the area is swept or cleaned with a pavement broom or surface vacuum truck. Then the area to receive '67 mat stone is prepared to receive the new surface by applying a thin asphalt emulsion tack coat. The '67 stone is placed in an even layer with a spreader and rolled. In the next step, the mat stone is tacked, and the new surface is placed with an asphalt paver. Finally, the placed pavement is immediately

compacted with a steel wheeled roller and followed by a pneumatic tire roller to compact the asphalt per the pavement specification being used on the project. Testing may occur and field inspection should be performed in this process to ensure the contractor has provided a satisfactory product and pavement in accordance with the pavement specification. This process is considered Major M&R because it provides replaced or additional structural capacity. As a result, the PCI of the roads is reset to 100.

Mill and Overlay with Deep Patching

This pavement treatment application is identical to the Mill and Overlay described above with the exception that base repairs may be necessary. Mat seal may not be needed. Base material may need to be removed and replaced or reworked to achieve the proper density and then overlaid with asphalt. It is assumed that some streets will require some level of patch repair. As a result, the PCI of the roads is reset to 100.

Full-Depth Reclamation and Cold In-place Recycling

Full-Depth Reclamation (FDR) and Cold In-place Recycling (CIR) are very similar processes. In both cases a portion of the base material is uniformly crushed, pulverized and blended with the existing surface asphalt to form a new composite base material. The new composite material can be mixed with an asphalt emulsion or calcium chloride to increase the stability of the new base. This process completely rehabilitates and reinforces the structural strength of the underlying base of the road. The new road base is then surfaced with conventional asphalt equipment. The major benefits in these methods are that the road base is rehabilitated, and majority of existing material are recycled on-site reducing/negating the expense of removing and disposing of the material off-site. As a result, the PCI of the roads is reset to 100.

Rejuvenation

As asphalt ages, the asphalt binder starts to oxidize and becomes brittle. This is the *weathering* process. The brittleness of the asphalt can cause the aggregate to dislodge. This is *raveling*. The purpose of a rejuvenator is to soften the stiffness of the oxidized pavement surface to extend the life of the pavement. The rejuvenator product must be able to soften the upper 3/8-inch to ½-inch and add maltenes into the pavement. Rejuvenators should be allied to relatively new asphalt and then re-applied periodically (every 5 years). Rejuvenation also has benefits for older pavements with a PCI at and above 80. If other maintenance procedures such as cracksealing or fog sealing are planned, these should occur after rejuvenation is completed. Depending on distress patterns, rejuvenator can be applied effectively two or three times. Over the course of the first 10-15 years, Rejuvenation typically boosts the PCI three points by slowing the deterioration.

Leveling

A small paving machine is used to level ruts, depressions, sags, and sunken utility cuts. As the paving crew is moving through an area, they can also fill potholes. This maintenance procedure will provide needed repairs, improve ride quality, and show the Town is aggressively repairing streets. This can have a positive impact on the PCI as it changes the distress pattern to light patching. Note: if major cracking is evident this may require full depth base repair prior to leveling. This type of work repairs current conditions and preps the street for future resurfacing.

Suggested Projects

Selection of specific projects is an iterative process that must incorporate technical and non-technical information. Data collected in this PMP plays a very important role in the decision process, but as pointed out in *Pavement Management for Airports, Roads, and Parking Lots* by M.Y. Shahin, 2005, "the PCI by itself is not sufficient to identify the needed specific M&R type." A single numeric value such as the PCI can indicate a general level of M&R needs, but it is also important to understand the cause (structural, climate, or other) of individual distresses that make up the PCI score. Additional factors such as funding, political desires, citizen complaints, etc. often influence policy and project decisions.

China Grove Projects were selected using Paver recommendations (long-term most cost-effective selections) and Town Staff / KCA guidance. Major throughfare streets were held off the current project list due to expense and to be able to pave end to end. A few streets were held because of remoteness to current projects to wait for future nearby streets to be added and one was held due to nearby residential construction.

China Grove Recommendations:

Localized Maintenance/Prevention Treatments:

- ✓ Use available Powell Bill funds ($120,000 per year) to rejuvenate pavements with a PCI of 80 or greater. (Review street selection with rejuvenation contractor's representative)
- ✓ Use available Powell Bill funds ($120,000 per year) to hire a contractor to level ruts, depressions, and sags in pavement while simultaneously filling potholes. Using an experienced local company will likely be the most cost effective. For best results, perform this work in warmer temperatures.
- ✓ If citizens are accepting and funding is constrained, use future Powell Bill funds to contract crack sealing for larger block cracking and longitudinal & transverse cracking. To achieve best production pricing fund 50,000 lbs minimum per contract. To be most cost effective, crack sealing should be used on streets that are not scheduled for resurfacing within 5 years.

Major Capital Maintenance:

- ✓ Develop funding for major repair/resurfacing projects. Economic Development may increase available funding opportunities. Realistically a minimum of $240,000 per year should be dedicated to Major.
- ✓ Use mat seal, and overlay or can use preservation technique of mat and surface treatment if public is accepting (less expensive treatment).
- ✓ Mill, Seal, and Overlay on curb and gutter streets that have already had one overlay or if public is accepting can use a mat and seal for overlay to avoid milling.
- ✓ Use rejuvenator for pavements recently resurfaced. Apply rejuvenator as soon as possible on new asphalt and reapply every 5 years thereafter (one or two applications)

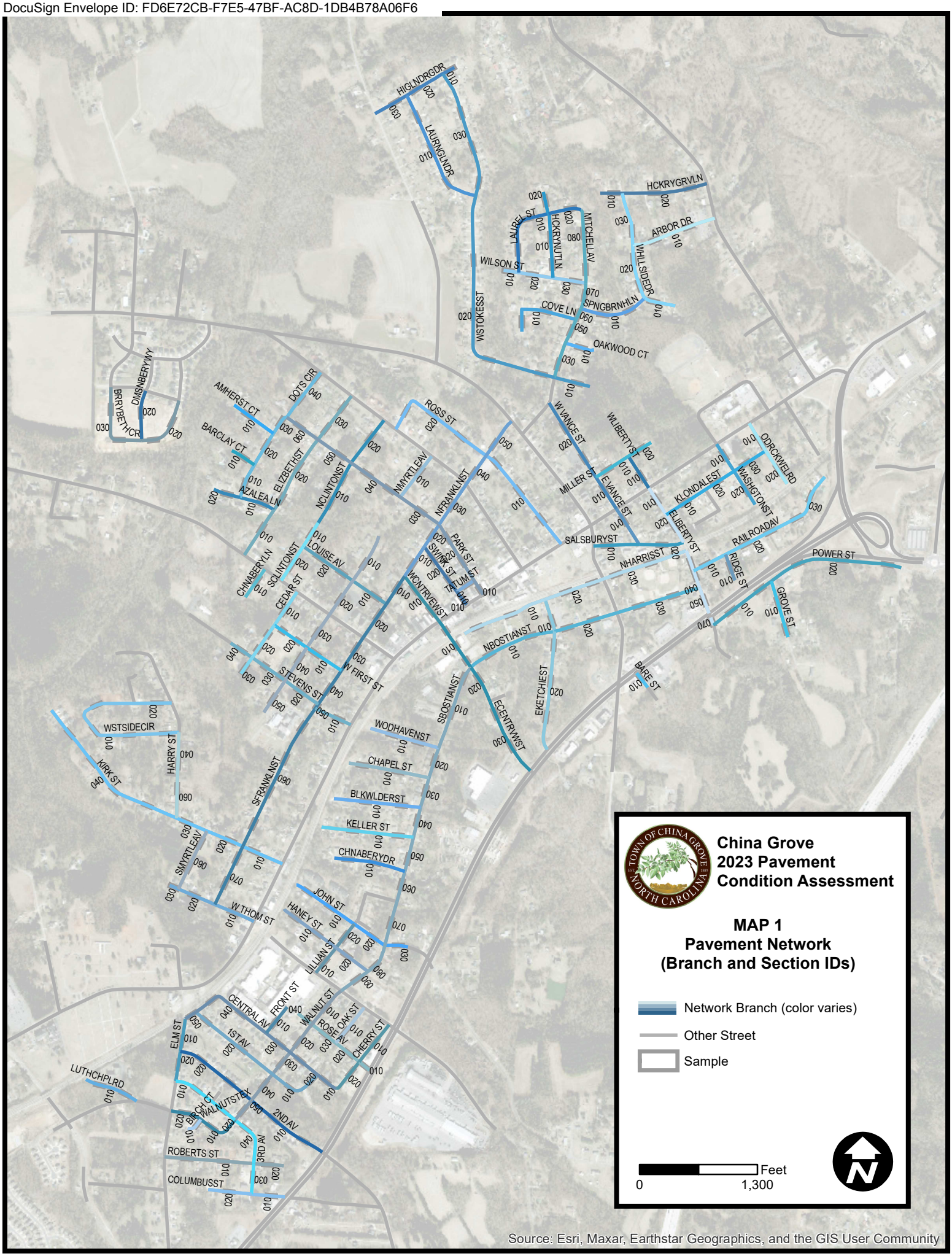
Load test streets to determine if structural deficiencies exist prior to mat and asphalt overlays. It is also recommended to load test prior to mat and seal treatments. To repair structural deficiencies, these streets may require full depth base repairs (deep patching) prior to overlay treatments.

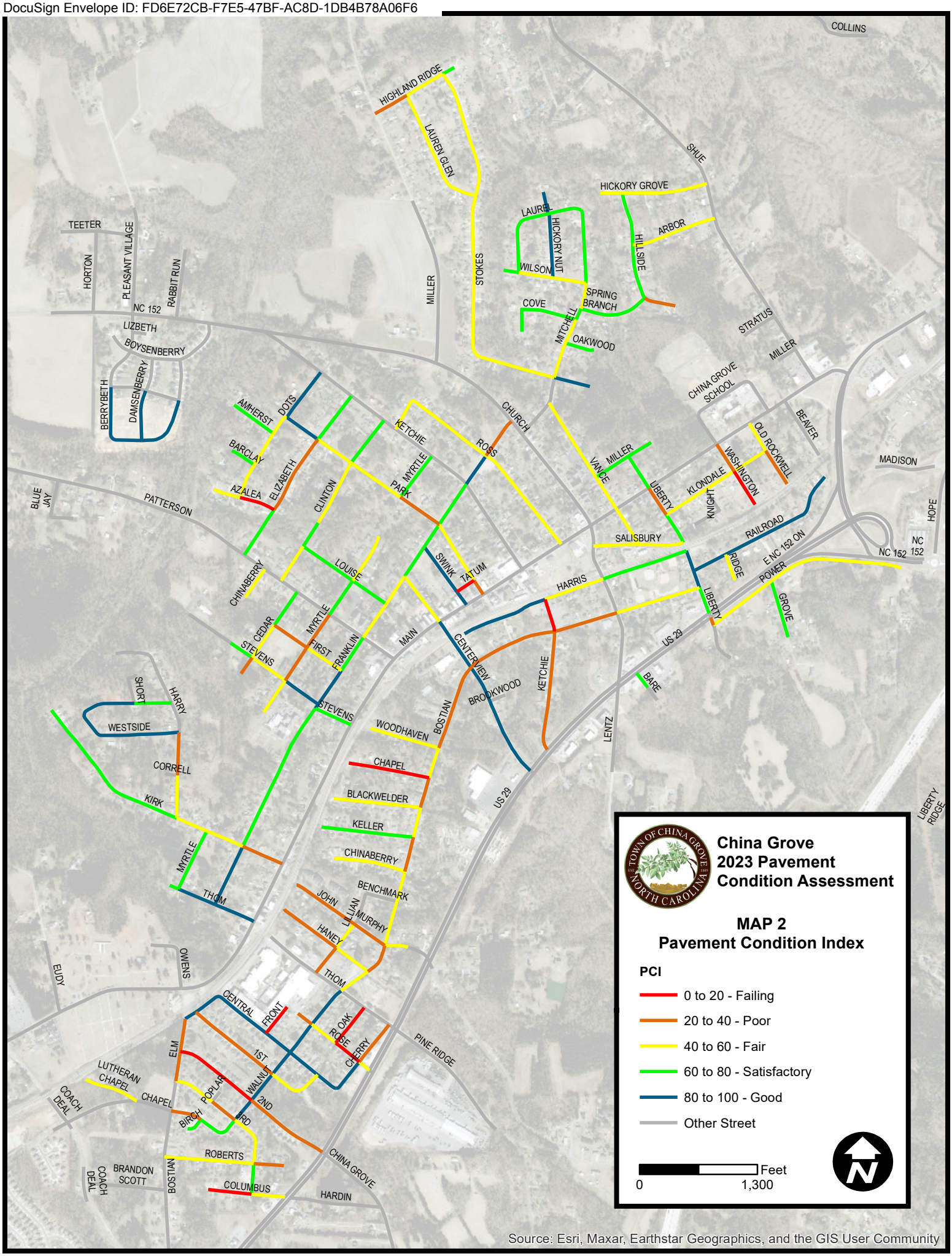
Appendix B contains lists of streets for rejuvenation and asphalt leveling repair projects. Appendix B also contains specific road sections that were selected as potential resurfacing projects to be completed over five years using Powell Bill funds (after rejuvenation and leveling repairs are completed). These projects were planned assuming a target budget of approximately $120,000 of Powell Bill funds each year for the next seven years. For resurfacing and cost efficiency the annual project budget exceeds $120,000 in some years. The total expenditure over five to seven years is estimated to be $600,000- $840,000. After rejuvenation and asphalt leveling projects, funding should be dedicated to Major Maintenance and Repair (M&R) and Global Preventative on new pavements.

Long-term Project Analysis

Using high level network analysis, an estimated minimum cost of $4,500,000 is required to bring all streets to a PCI of 100. Currently the Paver program estimates $240,000 per year is needed to maintain and improve the street conditions, increasing the PCI. (see figure 7). Using $120,000 per year for pavement preservation (Rejuvenation & Leveling/Potholes), then Major M&R (resurfacing) with Global Preventive (rejuvenation) on newly resurfaced streets, will slow deterioration to allow time for further funding to be developed.

Appendix A - Maps





China Grove 2023 Pavement Condition Assessment

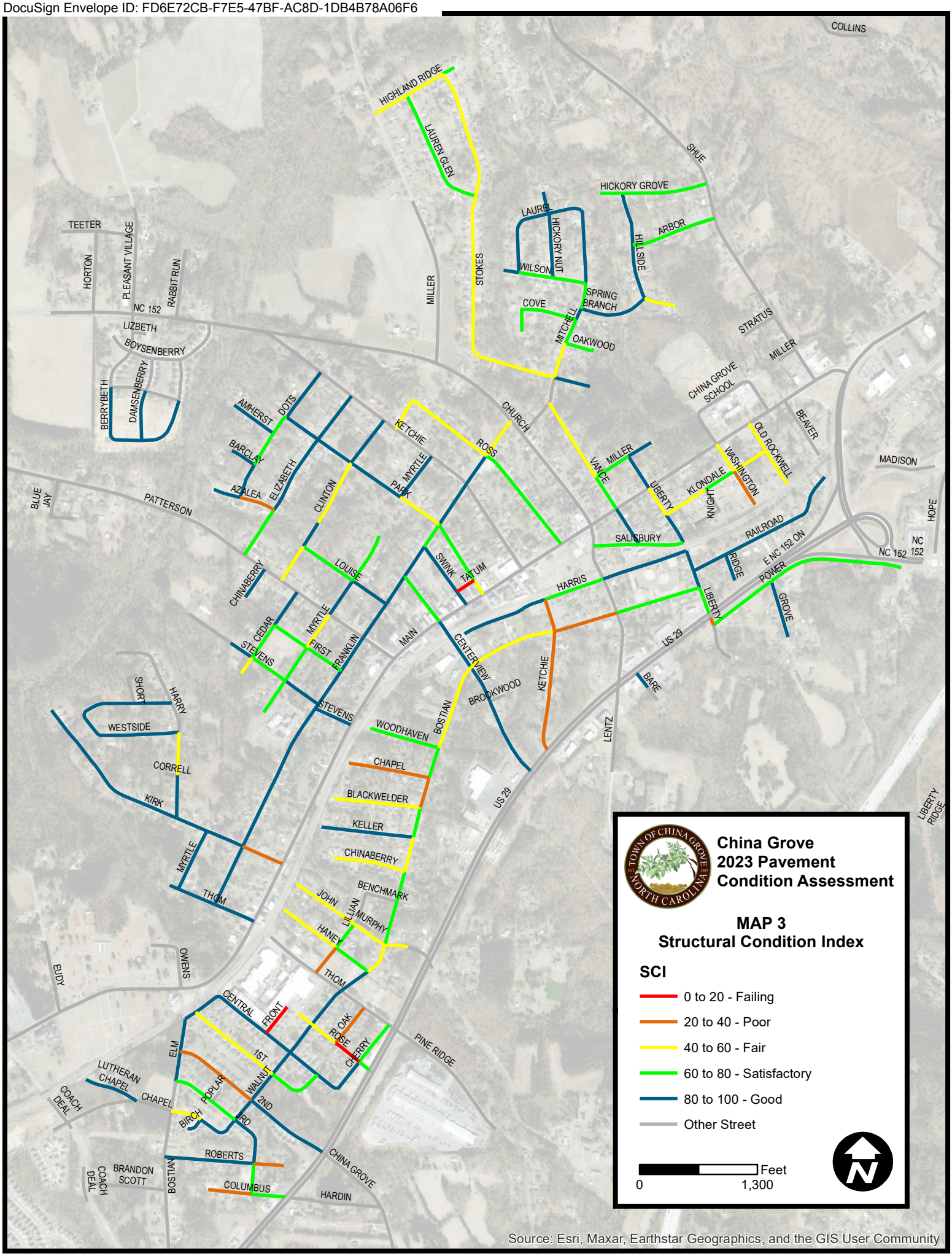
MAP 2
Pavement Condition Index

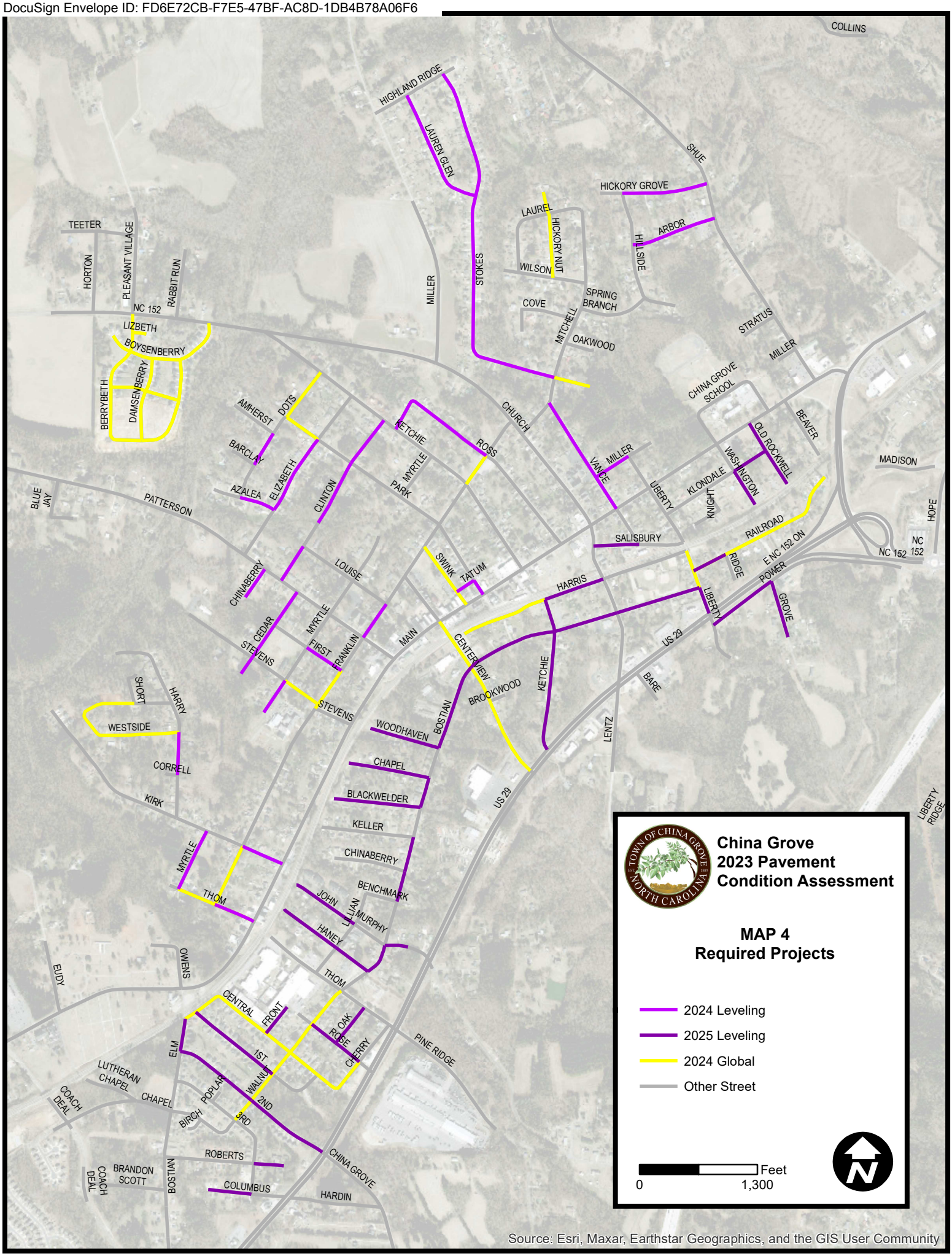
PCI

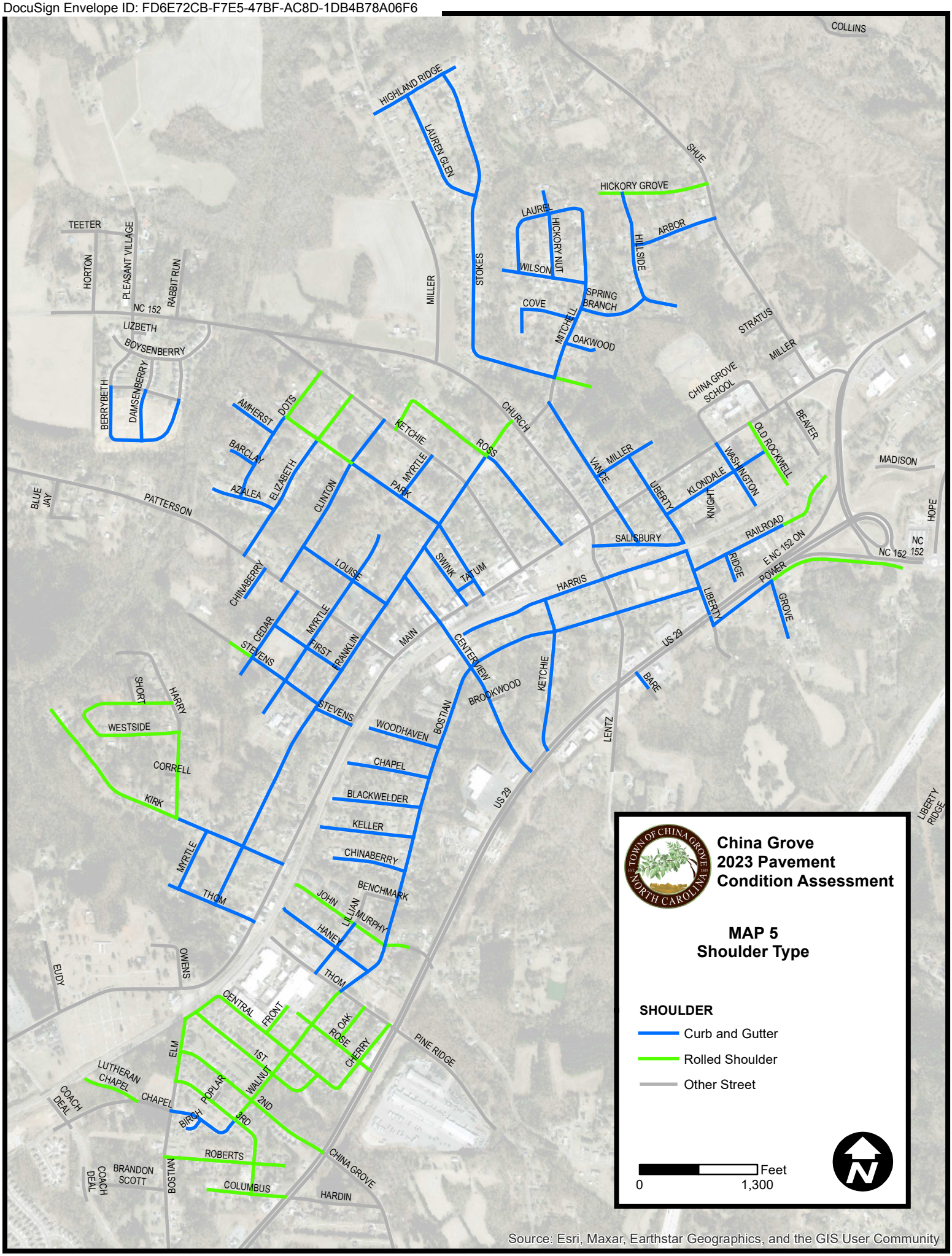
- 0 to 20 - Failing
- 20 to 40 - Poor
- 40 to 60 - Fair
- 60 to 80 - Satisfactory
- 80 to 100 - Good
- Other Street

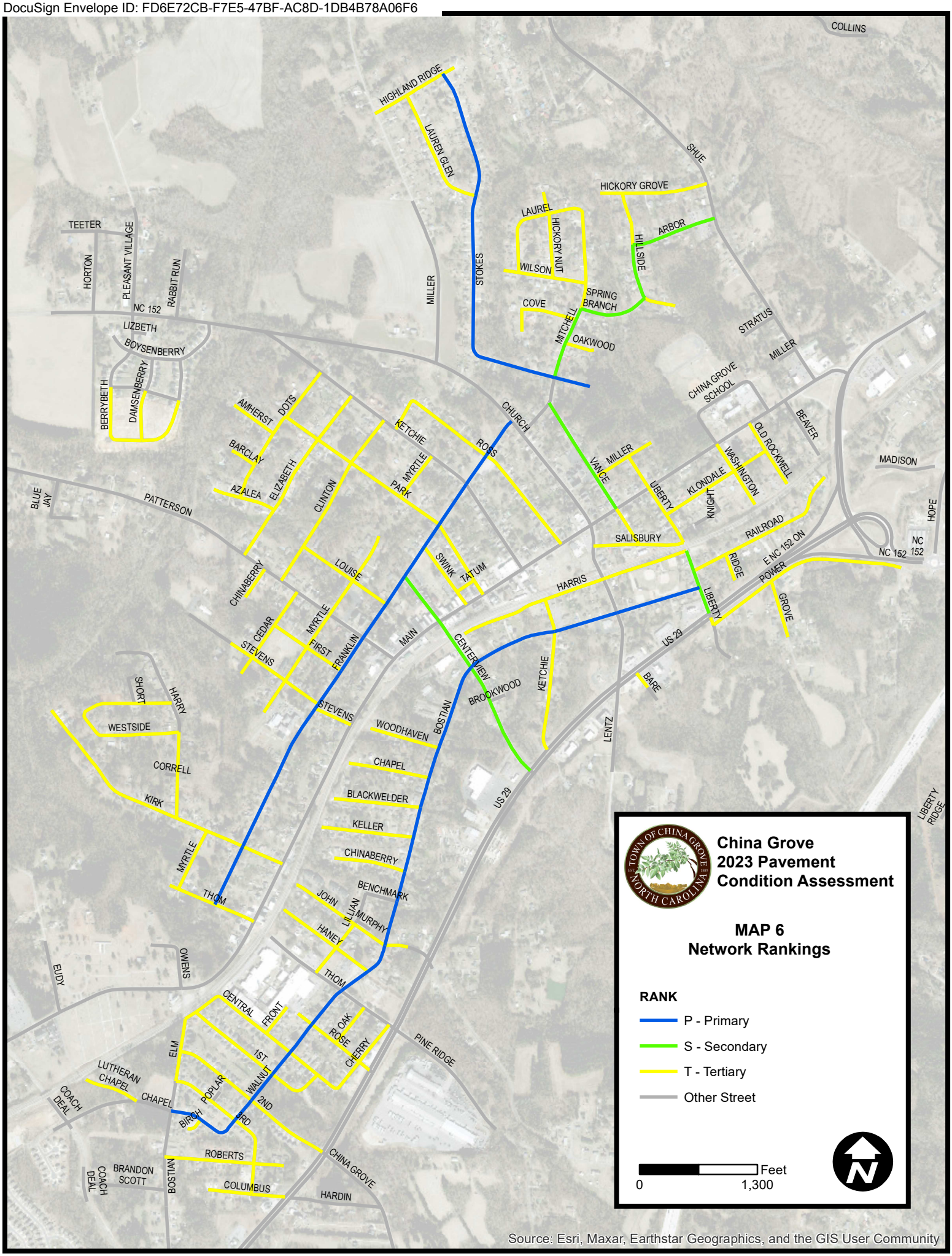
0 1,300 Feet

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

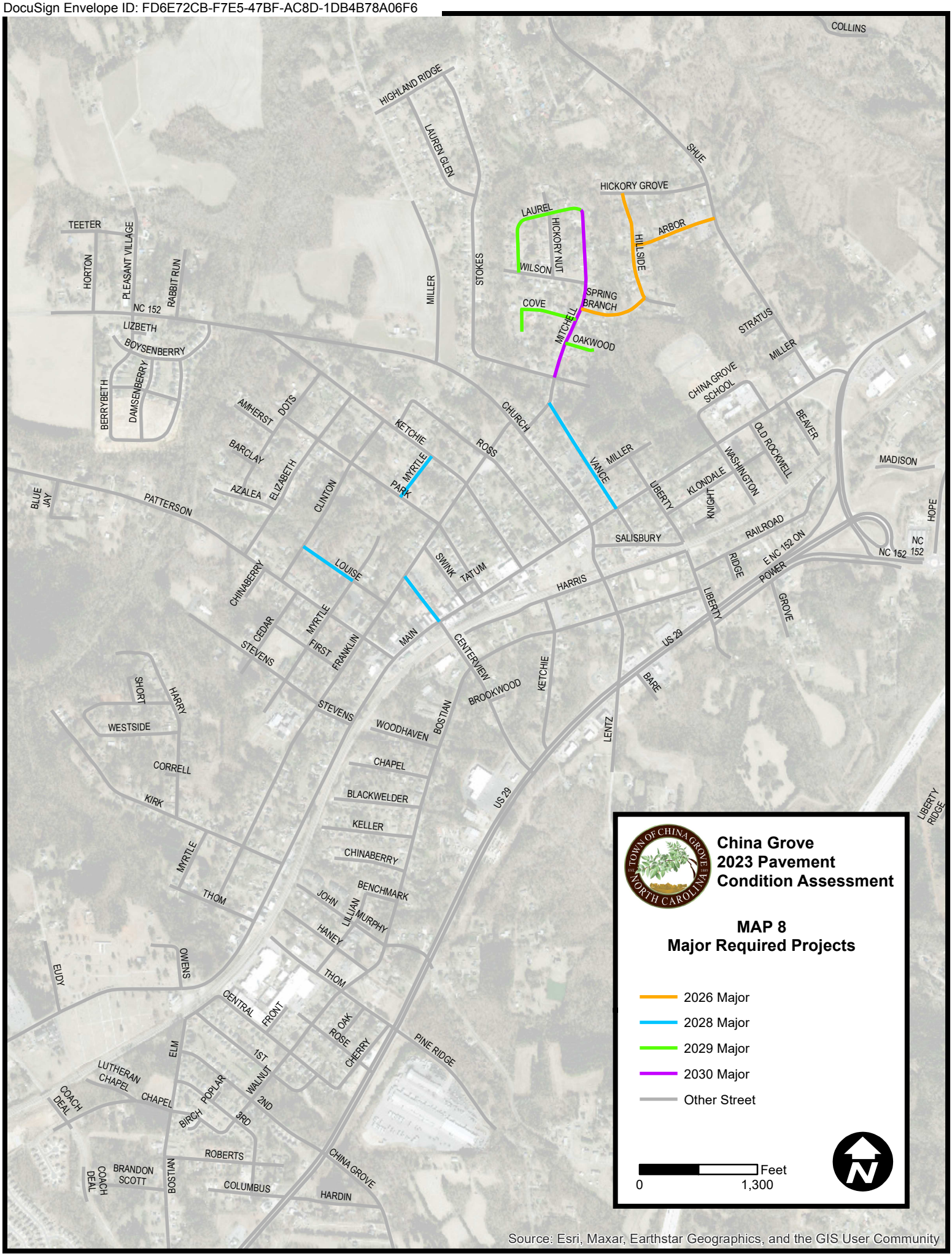





COLLINS
HIGHLAND RIDGE
LAUREN GLEN
SHUE
HICKORY GROVE
LAUREL
HICKORY NUT
ARBOR
HILLSIDE
WILSON
SPRING BRANCH
COVE
MITCHELL
OAKWOOD
STOKES
MILLER
TEETER
HORTON
PLEASANT VILLAGE
RABBIT RUN
NC 152
LIZBETH
BOYSENBERRY
BERRYBETH
DAMSENBERRY
STRATUS
CHINA GROVE SCHOOL
BEAVER
OLD ROCKWELL
WASHINGTON
KLONDALE
KNIGHT
LIBERTY
VANCE
MADISON
HOPE
AMHERST
DOTS
BARCLAY
AZALEA
ELIZABETH
CLINTON
KETCHIE
ROSS
CHURCH
MYRTLE
PARK
BLUE JAY
PATTERSON
SALISBURY
RAILROAD
E NC 152 ON
NC 152
RIDGE
POWER
GROVE
CHINABERRY
LOUISE
SWINK
TATUM
HARRIS
CEDAR
MYRTLE
FIRST
FRANKLIN
MAIN
CENTERVIEW
STEVENS
SHORT
HARRY
WESTSIDE
CORRELL
KIRK
WOODHAVEN
BOSTIAN
BROOKWOOD
KETCHIE
US 29
BARE
LENTZ
CHAPEL
BLACKWELDER
KELLER
CHINABERRY
BENCHMARK
JOHN
LILLIAN
MURPHY
HANEY
THOM
OWENS
EUDY
LIBERTY RIDGE
CENTRAL
FRONT
OAK
ROSE
CHERRY
PINE RIDGE
ELM
1ST
WALNUT
2ND
3RD
POPLAR
BIRCH
LUTHERAN CHAPEL
CHAPEL
COACH DEAL
ROBERTS
BRANDON SCOTT
COLUMBUS
CHINA GROVE
HARDIN
TOWN OF CHINA GROVE NORTH CAROLINA
China Grove
2023 Pavement
Condition Assessment
MAP 5
Shoulder Type
SHOULDER
Curb and Gutter
Rolled Shoulder
Other Street
Feet
0
1,300
N
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community




China Grove
2023 Pavement
Condition Assessment
MAP 7
Polished Aggregate
Polished Aggregate
Other Street
Feet
0
1,300
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
COLLINS
HIGHLAND RIDGE
LAUREN GLEN
SHUE
HICKORY GROVE
LAUREL
HICKORY NUT
ARBOR
HILLSIDE
TEETER
PLEASANT VILLAGE
HORTON
RABBIT RUN
NC 152
LIZBETH
BOYSENBERRY
BERRYBETH
DAMSENBERRY
MILLER
STOKES
WILSON
COVE
SPRING BRANCH
MITCHELL
OAKWOOD
STRATUS
CHINA GROVE SCHOOL
BEAVER
OLD ROCKWELL
WASHINGTON
KLONDALE
KNIGHT
LIBERTY
VANCE
MADISON
HOPE
AMHERST
DOTS
BARCLAY
AZALEA
ELIZABETH
CLINTON
KETCHIE
ROSS
CHURCH
MYRTLE
PARK
BLUE JAY
PATTERSON
SALISBURY
RAILROAD
E NC 152 ON
NC 152
RIDGE
POWER
GROVE
CHINABERRY
LOUISE
SWINK
TATUM
HARRIS
CEDAR
STEVENS
MYRTLE
FIRST
FRANKLIN
MAIN
CENTERVIEW
BROOKWOOD
KETCHIE
US 29
BARE
LENTZ
SHORT
HARRY
WESTSIDE
CORRELL
KIRK
WOODHAVEN
BOSTIAN
CHAPEL
BLACKWELDER
KELLER
CHINABERRY
BENCHMARK
JOHN
LILLIAN
MURPHY
HANEY
THOM
OWENS
EUDY
CENTRAL
FRONT
OAK
ROSE
CHERRY
PINE RIDGE
ELM
1ST
WALNUT
2ND
3RD
LUTHERAN CHAPEL
CHAPEL
POPLAR
BIRCH
COACH DEAL
ROBERTS
BRANDON SCOTT
COLUMBUS
HARDIN
CHINA GROVE
LIBERTY RIDGE



Appendix B – Suggested Projects

2024 Network Level Rejuvenation Project List

2024 NETWORK LEVEL REJUVENATION PROJECT LIST

Branch Name	Section ID	From	To	Area (Sq Ft)	PCI	Estimated Rejuvenation Cost
BERRYBETH CIR	020	GOOSEBERRY TR	DAMSENBERRY WAY	16,349	93.8	$2,289
BERRYBETH CIR	030	DAMSENBERRY WAY	GOOSEBERRY TR	21,554	98.8	$3,018
CENTRAL AV	030	WALNUT ST	FRONT ST	7,144	93.1	$1,000
CENTRAL AV	010	CHERRY ST	1ST AV	4,566	92.8	$639
CENTRAL AV	040	FRONT ST	1ST AV	19,415	92.5	$2,718
CENTRAL AV	020	1ST AV	WALNUT ST	7,420	84.6	$1,039
CENTRAL AV	050	1ST AV	ELM ST	2,770	90.5	$388
CHERRY ST	020	ROSE AV	CENTRAL AV	7,096	92.7	$993
DAMSENBERRY WAY	020	GOOSEBERRY TR	BERRYBETH CIR	13,349	98.6	$1,869
DOTS CIR	040	PARK ST	W KETCHIE ST	11,840	82.1	$1,658
E CENTERVIEW ST	020	N BOSTIAN ST/S BOSTIAN ST	BROOKWOOD CIR	13,250	87.4	$1,855
E CENTERVIEW ST	010	N MAIN ST/S MAIN ST/W CENTERVIEW ST	N BOSTIAN ST/S BOSTIAN ST	22,138	87.5	$3,099
E CENTERVIEW ST	030	BROOKWOOD CIR	N US 29 HWY/S US 29 HWY	27,744	91.6	$3,884
E LIBERTY ST	030	N HARRIS ST	RAILROAD AV	6,150	87.4	$861
E LIBERTY ST	040	RAILROAD AV	N BOSTIAN ST	5,099	87.6	$714
HICKORY NUT LN	020	LAUREL ST	CUL-DE-SAC	6,924	82.3	$969
HICKORY NUT LN	010	WILSON ST	LAUREL ST	19,910	85.1	$2,787
N FRANKLIN ST	040	W KETCHIE ST	ROSS ST	11,554	82.2	$1,618
N HARRIS ST	010	DEAD END	E KETCHIE ST	20,346	91.3	$2,848
PARK ST	060	ELIZABETH ST	DOTS CIR	8,028	82.8	$1,124
RAILROAD AV	010	E LIBERTY ST	RIDGE ST	10,294	80.8	$1,441
RAILROAD AV	030	HUFFMAN ST	CUL-DE-SAC	12,995	86.0	$1,819
RAILROAD AV	020	RIDGE ST	HUFFMAN ST	18,992	89.0	$2,659
S FRANKLIN ST	040	W FIRST ST	STEVENS ST	13,537	81.4	$1,895
S FRANKLIN ST	050	STEVENS ST	STEVENS ST	1,671	80.4	$234
S FRANKLIN ST	070	KIRK ST	W THOM ST	21,335	81.5	$2,987
STEVENS ST	020	S FRANKLIN ST	S MYRTLE AV	11,637	83.8	$1,629
SWINK ST	010	N MAIN ST	TATUM ST	4,294	94.8	$601
SWINK ST	020	TATUM ST	N FRANKLIN ST	14,681	94.8	$2,055
W THOM ST	010	S MAIN ST	S FRANKLIN ST	12,202	83.9	$1,708
W THOM ST	020	S FRANKLIN ST	S MYRTLE AV	11,420	88.4	$1,599
WALNUT ST	020	ROSE AV	CENTRAL AV	7,458	90.5	$1,044
WALNUT ST	030	CENTRAL AV	1ST AV	5,578	81.2	$781
WALNUT ST	050	2ND AV	3RD AV/WALNUT ST EX	5,060	93.4	$708
WALNUT ST	040	1ST AV	2ND AV	7,045	86.8	$986
WALNUT ST	010	E THOM ST/S BOSTIAN ST	ROSE AV	10,317	94.2	$1,444
W STOKES ST	010	DEAD END	MITCHELL AV	9,298	90.0	$1,302
WESTSIDE CIR	010	HARRY ST	SHORT ST	30,004	86.2	$4,201
				460,464	**sq ft total**	**$64,465**
		50,000 sy minimum for production pricing - this list meets that threshold		51,163	sy yds total	

2024 NETWORK LEVEL REJUVENATION PROJECT LIST

RECENT NOVEMBER ADDITIONS AFTER EVALUATION WAS COMPLETED

Name	From	To	Area (Sq Ft)	PCI	Estimated Rejuvenation Cost
BERRYBETH CIR	W CHURCH ST	GOOSEBERRY TRAIL	20,760	100*	$2,906
BERRYBETH CIR	BOYSENBERRY DR	GOOSEBERRY TRAIL	11,016	100*	$1,542
LIZBETH LN	BERRYBETH CIR	CUL DE SAC	4,268	100*	$598
BOYSENBERRY DR	W CHURCH ST	CUL DE SAC	30,668	100*	$4,294
GOOSEBERRY TRAIL	BERRYBETH CIR	DEAD END	20,570	100*	$2,880
DAMSENBERRY WAY	BOYSENBERRY DR	GOOSEBERRY TRAIL	7,964	100*	$1,115

*PCI estimated - these streets just recevied FDR and asphalt overlay

95,246 sq ft total — **$13,334**

10,583 sy yds total

COMBINED PROJECT TOTAL **555,710 sq ft total** — **$77,799**

61,746 sy yds total

4.47 miles total

2024-2025 Asphalt Leveling and Pothole Repair Network Level List

2024-2025 ASPHALT LEVELING AND POTHOLE REPAIR NETWORK LEVEL LIST

Branch Name	Section ID	From	To	Distress Description	Sample Distress Quantity	Distress Quantity Units	Severity	Sample Repair Costs*
BERRYBETH CIR	030	DAMSENBERRY WAY	GOOSEBERRY TR	PATCH/UT CUT	11	SqFt	L	$36
BERRYBETH CIR	030	DAMSENBERRY WAY	GOOSEBERRY TR	PATCH/UT CUT	15	SqFt	L	$50
HICKORY GROVE LN	020	W HILLSIDE DR	SHUE RD	RUTTING	48	SqFt	L	$158
ARBOR DR	010	W HILLSIDE DR	SHUE RD	DEPRESSION	12	SqFt	M	$40
ARBOR DR	010	W HILLSIDE DR	SHUE RD	PATCH/UT CUT	63	SqFt	H	$208
ARBOR DR	010	W HILLSIDE DR	SHUE RD	PATCH/UT CUT	72	SqFt	L	$238
SPRING BRANCH LN	010	MITCHELL AV	W HILLSIDE DR	PATCH/UT CUT	24	SqFt	L	$79
MITCHELL AV	080	WILSON ST	LAUREL ST	PATCH/UT CUT	135	SqFt	L	$446
HICKORY NUT LN	010	WILSON ST	LAUREL ST	PATCH/UT CUT	84	SqFt	L	$277
HICKORY NUT LN	020	LAUREL ST	CUL-DE-SAC	PATCH/UT CUT	52	SqFt	L	$172
LAUREL ST	010	WILSON ST	HICKORY NUT LN	PATCH/UT CUT	18	SqFt	L	$59
LAUREL ST	010	WILSON ST	HICKORY NUT LN	DEPRESSION	16	SqFt	L	$53
LAUREN GLEN DR	010	W STOKES ST	HIGHLAND RIDGE DR	DEPRESSION	20	SqFt	M	$66
LAUREN GLEN DR	010	W STOKES ST	HIGHLAND RIDGE DR	PATCH/UT CUT	254	SqFt	M	$838
W STOKES ST	030	LAUREN GLEN DR	HIGHLAND RIDGE DR	DEPRESSION	40	SqFt	M	$132
W STOKES ST	030	LAUREN GLEN DR	HIGHLAND RIDGE DR	DEPRESSION	16	SqFt	L	$53
W STOKES ST	020	MITCHELL AV	LAUREN GLEN DR	POTHOLE	1	Count	M	$5
W STOKES ST	020	MITCHELL AV	LAUREN GLEN DR	DEPRESSION	176	SqFt	M	$581
W STOKES ST	020	MITCHELL AV	LAUREN GLEN DR	RUTTING	203	SqFt	L	$670
W STOKES ST	020	MITCHELL AV	LAUREN GLEN DR	RUTTING	287	SqFt	H	$947
W STOKES ST	020	MITCHELL AV	LAUREN GLEN DR	RUTTING	368	SqFt	M	$1,214
W STOKES ST	010	DEAD END	MITCHELL AV	PATCH/UT CUT	110	SqFt	L	$363
W VANCE ST	010	E VANCE ST/N MAIN ST	MILLER ST	PATCH/UT CUT	26	SqFt	M	$86
W VANCE ST	020	MILLER ST	MITCHELL AV	PATCH/UT CUT	185	SqFt	M	$611
MILLER ST	010	W VANCE ST	W LIBERTY ST	PATCH/UT CUT	26	SqFt	M	$86
ROSS ST	020	N FRANKLIN ST	W KETCHIE ST	RUTTING	44	SqFt	L	$145
ROSS ST	020	N FRANKLIN ST	W KETCHIE ST	RUTTING	42	SqFt	H	$139
ROSS ST	020	N FRANKLIN ST	W KETCHIE ST	RUTTING	36	SqFt	M	$119
ROSS ST	020	N FRANKLIN ST	W KETCHIE ST	PATCH/UT CUT	71	SqFt	L	$234
N FRANKLIN ST	050	ROSS ST	W CHURCH ST	POTHOLE	1	Count	L	$5
PARK ST	010	N MAIN ST	TATUM ST	PATCH/UT CUT	60	SqFt	M	$198
PARK ST	010	N MAIN ST	TATUM ST	POTHOLE	2	Count	L	$10
PARK ST	040	N MYRTLE AV	N CLINTON ST	PATCH/UT CUT	70	SqFt	L	$231
TATUM ST	010	SWINK ST	PARK ST	DEPRESSION	16	SqFt	H	$53
TATUM ST	010	SWINK ST	PARK ST	DEPRESSION	25	SqFt	M	$83

2024-2025 ASPHALT LEVELING AND POTHOLE REPAIR NETWORK LEVEL LIST

Branch Name	Section ID	From	To	Distress Description	Sample Distress Quantity	Distress Quantity Units	Severity	Sample Repair Costs*
TATUM ST	010	SWINK ST	PARK ST	POTHOLE	100	Count	H	$500
N CLINTON ST	020	PARK ST	W KETCHIE ST	PATCH/UT CUT	10	SqFt	M	$33
N CLINTON ST	020	PARK ST	W KETCHIE ST	DEPRESSION	36	SqFt	L	$119
N CLINTON ST	020	PARK ST	W KETCHIE ST	PATCH/UT CUT	260	SqFt	L	$858
N CLINTON ST	010	S CLINTON ST	PARK ST	DEPRESSION	75	SqFt	L	$248
N CLINTON ST	010	S CLINTON ST	PARK ST	DEPRESSION	75	SqFt	M	$248
N CLINTON ST	010	S CLINTON ST	PARK ST	PATCH/UT CUT	36	SqFt	L	$119
N CLINTON ST	010	S CLINTON ST	PARK ST	DEPRESSION	30	SqFt	L	$99
N CLINTON ST	010	S CLINTON ST	PARK ST	PATCH/UT CUT	367	SqFt	L	$1,211
ELIZABETH ST	020	AZALEA LN	PARK ST	POTHOLE	1	Count	L	$5
ELIZABETH ST	020	AZALEA LN	PARK ST	PATCH/UT CUT	7	SqFt	M	$23
AZALEA LN	010	ELIZABETH ST	DOTS CIR	PATCH/UT CUT	12	SqFt	H	$40
BARCLAY CT	010	DOTS CIR	CUL-DE-SAC	PATCH/UT CUT	50	SqFt	L	$165
DOTS CIR	030	AMHERST CT	PARK ST	PATCH/UT CUT	34	SqFt	L	$112
DOTS CIR	020	BARCLAY CT	AMHERST CT	PATCH/UT CUT	51	SqFt	H	$168
DOTS CIR	020	BARCLAY CT	AMHERST CT	PATCH/UT CUT	68	SqFt	M	$224
S CLINTON ST	010	N CLINTON ST	LOUISE AV	DEPRESSION	20	SqFt	L	$66
S CLINTON ST	010	N CLINTON ST	LOUISE AV	PATCH/UT CUT	88	SqFt	L	$290
S CLINTON ST	020	LOUISE AV	PATTERSON ST	DEPRESSION	10	SqFt	L	$33
S CLINTON ST	020	LOUISE AV	PATTERSON ST	POTHOLE	10	Count	L	$50
S CLINTON ST	020	LOUISE AV	PATTERSON ST	PATCH/UT CUT	77	SqFt	L	$254
S CLINTON ST	020	LOUISE AV	PATTERSON ST	PATCH/UT CUT	16	SqFt	M	$53
LOUISE AV	010	S FRANKLIN ST	S MYRTLE AV	POTHOLE	2	Count	L	$10
S FRANKLIN ST	020	LOUISE AV	PATTERSON ST	PATCH/UT CUT	66	SqFt	M	$218
S FRANKLIN ST	020	LOUISE AV	PATTERSON ST	PATCH/UT CUT	982	SqFt	L	$3,241
CHINABERRY LN	010	PATTERSON ST	DEAD END	PATCH/UT CUT	20	SqFt	M	$66
CHINABERRY LN	010	PATTERSON ST	DEAD END	PATCH/UT CUT	130	SqFt	L	$429
CEDAR ST	010	PATTERSON ST	W FIRST ST	PATCH/UT CUT	56	SqFt	M	$185
CEDAR ST	010	PATTERSON ST	W FIRST ST	PATCH/UT CUT	138	SqFt	L	$455
CEDAR ST	020	W FIRST ST	STEVENS ST	RUTTING	88	SqFt	H	$290
CEDAR ST	030	STEVENS ST	DEAD END	PATCH/UT CUT	18	SqFt	M	$59
CEDAR ST	030	STEVENS ST	DEAD END	RUTTING	72	SqFt	M	$238
CEDAR ST	030	STEVENS ST	DEAD END	DEPRESSION	24	SqFt	H	$79
S MYRTLE AV	010	CUL-DE-SAC	LOUISE AV	DEPRESSION	15	SqFt	L	$50
S MYRTLE AV	020	LOUISE AV	PATTERSON ST	POTHOLE	1	Count	L	$5

2024-2025 ASPHALT LEVELING AND POTHOLE REPAIR NETWORK LEVEL LIST

Branch Name	Section ID	From	To	Distress Description	Sample Distress Quantity	Distress Quantity Units	Severity	Sample Repair Costs*
S MYRTLE AV	030	PATTERSON ST	W FIRST ST	PATCH/UT CUT	45	SqFt	L	$149
S MYRTLE AV	030	PATTERSON ST	W FIRST ST	POTHOLE	1	Count	L	$5
S MYRTLE AV	030	PATTERSON ST	W FIRST ST	DEPRESSION	90	SqFt	L	$297
S MYRTLE AV	050	STEVENS ST	DEAD END	RUTTING	120	SqFt	M	$396
W FIRST ST	010	S FRANKLIN ST	S MYRTLE AV	PATCH/UT CUT	300	SqFt	L	$990
W FIRST ST	010	S FRANKLIN ST	S MYRTLE AV	PATCH/UT CUT	306	SqFt	M	$1,010
S FRANKLIN ST	060	STEVENS ST	KIRK ST	DEPRESSION	4	SqFt	L	$13
S FRANKLIN ST	060	STEVENS ST	KIRK ST	BUMPS/SAGS	2	Ft	L	$7
S FRANKLIN ST	030	PATTERSON ST	W FIRST ST	DEPRESSION	25	SqFt	L	$83
S FRANKLIN ST	030	PATTERSON ST	W FIRST ST	PATCH/UT CUT	72	SqFt	L	$238
S FRANKLIN ST	040	W FIRST ST	STEVENS ST	DEPRESSION	4	SqFt	L	$13
S FRANKLIN ST	060	STEVENS ST	KIRK ST	BUMPS/SAGS	2	Ft	L	$7
WESTSIDE CIR	010	HARRY ST	SHORT ST	DEPRESSION	21	SqFt	L	$69
WESTSIDE CIR	010	HARRY ST	SHORT ST	DEPRESSION	8	SqFt	L	$26
WESTSIDE CIR	020	SHORT ST	HARRY ST	DEPRESSION	15	SqFt	L	$50
HARRY ST	040	WESTSIDE CIR	CORRELL ST	PATCH/UT CUT	12	SqFt	M	$40
HARRY ST	040	WESTSIDE CIR	CORRELL ST	PATCH/UT CUT	36	SqFt	L	$119
HARRY ST	040	WESTSIDE CIR	CORRELL ST	PATCH/UT CUT	80	SqFt	H	$264
HARRY ST	040	WESTSIDE CIR	CORRELL ST	DEPRESSION	267	SqFt	L	$881
KIRK ST	040	HARRY ST	DEAD END	PATCH/UT CUT	648	SqFt	L	$2,138
KIRK ST	010	S MAIN ST	S FRANKLIN ST	PATCH/UT CUT	45	SqFt	H	$149
KIRK ST	010	S MAIN ST	S FRANKLIN ST	PATCH/UT CUT	40	SqFt	M	$132
KIRK ST	010	S MAIN ST	S FRANKLIN ST	PATCH/UT CUT	125	SqFt	L	$413
S MYRTLE AV	060	KIRK ST	W THOM ST	PATCH/UT CUT	66	SqFt	M	$218
S MYRTLE AV	060	KIRK ST	W THOM ST	PATCH/UT CUT	162	SqFt	L	$535
W THOM ST	010	S MAIN ST	S FRANKLIN ST	PATCH/UT CUT	30	SqFt	M	$99
W THOM ST	010	S MAIN ST	S FRANKLIN ST	PATCH/UT CUT	20	SqFt	L	$66
W THOM ST	030	S MYRTLE AV	DEAD END	DEPRESSION	138	SqFt	L	$455

$27,784

2024-2025 ASPHALT LEVELING AND POTHOLE REPAIR NETWORK LEVEL LIST

Branch Name	Section ID	From	To	Distress Description	Sample Distress Quantity	Distress Quantity Units	Severity	Sample Repair Costs*
COLUMBUS ST	010	S US 29 HWY	3RD AV	POTHOLE	1	Count	L	$5
COLUMBUS ST	020	3RD AV	DEAD END	RUTTING	148	SqFt	H	$488
COLUMBUS ST	020	3RD AV	DEAD END	RUTTING	50	SqFt	L	$165
ROBERTS ST	020	3RD AV	DEAD END	DEPRESSION	70	SqFt	M	$231
3RD AV	030	ROBERTS ST	COLUMBUS ST	POTHOLE	2	Count	L	$10
3RD AV	030	ROBERTS ST	COLUMBUS ST	PATCH/UT CUT	17	SqFt	L	$56
3RD AV	040	WALNUT ST/WALNUT ST EX	ROBERTS ST	DEPRESSION	112	SqFt	L	$370
2ND AV	010	S US 29 HWY	WALNUT ST	DEPRESSION	48	SqFt	L	$158
2ND AV	10	S US 29 HWY	WALNUT ST	POTHOLE	1	Count	L	$5
2ND AV	020	ELM ST	WALNUT ST	POTHOLE	3	Count	L	$15
2ND AV	020	ELM ST	WALNUT ST	PATCH/UT CUT	104	SqFt	L	$343
2ND AV	020	ELM ST	WALNUT ST	PATCH/UT CUT	9	SqFt	L	$30
2ND AV	020	ELM ST	WALNUT ST	POTHOLE	2	Count	L	$10
2ND AV	020	ELM ST	WALNUT ST	RUTTING	400	SqFt	M	$1,320
ELM ST	010	CENTRAL AV	2ND AV	PATCH/UT CUT	66	SqFt	L	$218
ELM ST	010	CENTRAL AV	2ND AV	BUMPS/SAGS	110	Ft	M	$363
ELM ST	020	2ND AV	3RD AV/BOSTIAN RD	BUMPS/SAGS	60	Ft	L	$198
1ST AV	010	WALNUT ST	CENTRAL AV	PATCH/UT CUT	336	SqFt	L	$1,109
1ST AV	020	CENTRAL AV	WALNUT ST	RUTTING	180	SqFt	M	$594
1ST AV	020	CENTRAL AV	WALNUT ST	PATCH/UT CUT	270	SqFt	L	$891
1ST AV	020	CENTRAL AV	WALNUT ST	BUMPS/SAGS	4	Ft	M	$15
FRONT ST	010	CENTRAL AV	PARKING LOT	RUTTING	372	SqFt	H	$1,228
FRONT ST	010	CENTRAL AV	PARKING LOT	BUMPS/SAGS	15	Ft	M	$49
ROSE AV	020	CHERRY ST	OAK ST	RUTTING	220	SqFt	H	$726
ROSE AV	020	CHERRY ST	OAK ST	PATCH/UT CUT	15	SqFt	M	$50
ROSE AV	020	CHERRY ST	OAK ST	RUTTING	164	SqFt	L	$541
ROSE AV	030	OAK ST	WALNUT ST	PATCH/UT CUT	20	SqFt	L	$66
ROSE AV	30	OAK ST	WALNUT ST	DEPRESSION	20	SqFt		$66
OAK ST	010	E THOM ST	ROSE AV	BUMPS/SAGS	50	Ft	M	$165
OAK ST	010	E THOM ST	ROSE AV	RUTTING	260	SqFt	H	$858
HANEY ST	010	DEAD END	LILLIAN ST	RUTTING	52	SqFt	H	$172
HANEY ST	010	DEAD END	LILLIAN ST	PATCH/UT CUT	22	SqFt	M	$73
HANEY ST	010	DEAD END	LILLIAN ST	RUTTING	60	SqFt	H	$198
HANEY ST	010	DEAD END	LILLIAN ST	PATCH/UT CUT	40	SqFt	H	$132
HANEY ST	020	LILLIAN ST	S BOSTIAN ST	PATCH/UT CUT	99	SqFt	H	$327

2024-2025 ASPHALT LEVELING AND POTHOLE REPAIR NETWORK LEVEL LIST

Branch Name	Section ID	From	To	Distress Description	Sample Distress Quantity	Distress Quantity Units	Severity	Sample Repair Costs*
LILLIAN ST	010	E THOM ST	HANEY ST	POTHOLE	1	Count	L	$5
JOHN ST	010	DEAD END	LILLIAN ST	BUMPS/SAGS	4	Ft	M	$13
JOHN ST	010	DEAD END	LILLIAN ST	PATCH/UT CUT	15	SqFt	H	$50
JOHN ST	010	DEAD END	LILLIAN ST	PATCH/UT CUT	115	SqFt	M	$380
JOHN ST	020	LILLIAN ST	S BOSTIAN ST	DEPRESSION	238	SqFt	L	$785
JOHN ST	030	S BOSTIAN ST		RUTTING	120	SqFt	M	$396
S BOSTIAN ST	010	E CENTERVIEW ST/N BOSTIAN ST	WOODHAVEN ST	RUTTING	136	SqFt	M	$449
S BOSTIAN ST	010	E CENTERVIEW ST/N BOSTIAN ST	WOODHAVEN ST	BUMPS/SAGS	15	Ft	L	$49
S BOSTIAN ST	030	CHAPEL ST	BLACKWELDER ST	RUTTING	127	SqFt	H	$419
S BOSTIAN ST	040	BLACKWELDER ST	KELLER ST	BUMPS/SAGS	36	Ft	L	$119
S BOSTIAN ST	050	KELLER ST	CHINABERRY DR	PATCH/UT CUT	8	SqFt	M	$26
S BOSTIAN ST	060	CHINABERRY DR	BENCHMARK LN	POTHOLE	1	Count	L	$5
S BOSTIAN ST	060	CHINABERRY DR	BENCHMARK LN	DEPRESSION	18	SqFt	M	$59
S BOSTIAN ST	070	BENCHMARK LN	JOHN ST	DEPRESSION	12	SqFt	L	$40
S BOSTIAN ST	080	JOHN ST	HANEY ST	BUMPS/SAGS	8	Ft	M	$26
BLACKWELDER ST	010	CUL-DE-SAC	S BOSTIAN ST	RUTTING	125	SqFt	H	$413
BLACKWELDER ST	010	CUL-DE-SAC	S BOSTIAN ST	DEPRESSION	77	SqFt	L	$254
CHAPEL ST	010	CUL-DE-SAC	S BOSTIAN ST	PATCH/UT CUT	2,217	SqFt	M	$7,316
CHAPEL ST	010	CUL-DE-SAC	S BOSTIAN ST	BUMPS/SAGS	9	Ft	M	$30
CHAPEL ST	010	CUL-DE-SAC	S BOSTIAN ST	PATCH/UT CUT	238	SqFt	M	$785
CHAPEL ST	010	CUL-DE-SAC	S BOSTIAN ST	PATCH/UT CUT	156	SqFt	H	$515
CHAPEL ST	010	CUL-DE-SAC	S BOSTIAN ST	DEPRESSION	161	SqFt	M	$531
CHAPEL ST	010	CUL-DE-SAC	S BOSTIAN ST	DEPRESSION	148	SqFt	M	$488
WOODHAVEN ST	010	CUL-DE-SAC	S BOSTIAN ST	RUTTING	104	SqFt	M	$343
S BOSTIAN ST	010	E CENTERVIEW ST/N BOSTIAN ST	WOODHAVEN ST	RUTTING	220	SqFt	M	$726
N BOSTIAN ST	010	E CENTERVIEW ST/S BOSTIAN ST	E KETCHIE ST	BUMPS/SAGS	26	Ft	L	$86
N BOSTIAN ST	010	E CENTERVIEW ST/S BOSTIAN ST	E KETCHIE ST	RUTTING	144	SqFt	L	$475
N BOSTIAN ST	020	E KETCHIE ST	E CHURCH ST	PATCH/UT CUT	24	SqFt	H	$79
N BOSTIAN ST	020	E KETCHIE ST	E CHURCH ST	PATCH/UT CUT	135	SqFt	M	$446
N BOSTIAN ST	020	E KETCHIE ST	E CHURCH ST	PATCH/UT CUT	12	SqFt	H	$40
N BOSTIAN ST	020	E KETCHIE ST	E CHURCH ST	RUTTING	284	SqFt	M	$937
N BOSTIAN ST	020	E KETCHIE ST	E CHURCH ST	RUTTING	130	SqFt	L	$429
N BOSTIAN ST	020	E KETCHIE ST	E CHURCH ST	POTHOLE	2	Count	L	$10
N BOSTIAN ST	030	E CHURCH ST	E LIBERTY ST	PATCH/UT CUT	20	SqFt	H	$66
N BOSTIAN ST	030	E CHURCH ST	E LIBERTY ST	DEPRESSION	110	SqFt	H	$363

2024-2025 ASPHALT LEVELING AND POTHOLE REPAIR NETWORK LEVEL LIST

Branch Name	Section ID	From	To	Distress Description	Sample Distress Quantity	Distress Quantity Units	Severity	Sample Repair Costs*
N BOSTIAN ST	030	E CHURCH ST	E LIBERTY ST	DEPRESSION	48	SqFt	M	$158
E CENTERVIEW ST	030	BROOKWOOD CIR	N US 29 HWY/S US 29 HWY	PATCH/UT CUT	70	SqFt	L	$231
E KETCHIE ST	010	N HARRIS ST	N BOSTIAN ST	RUTTING	243	SqFt	H	$802
E KETCHIE ST	010	N HARRIS ST	N BOSTIAN ST	DEPRESSION	8	SqFt	M	$26
E KETCHIE ST	020	N BOSTIAN ST	N US 29 HWY	RUTTING	208	SqFt	H	$686
E KETCHIE ST	020	N BOSTIAN ST	N US 29 HWY	PATCH/UT CUT	84	SqFt	M	$277
E KETCHIE ST	020	N BOSTIAN ST	N US 29 HWY	POTHOLE	1	Count	L	$5
E KETCHIE ST	020	N BOSTIAN ST	N US 29 HWY	PATCH/UT CUT	294	SqFt	L	$970
E KETCHIE ST	020	N BOSTIAN ST	N US 29 HWY	RUTTING	162	SqFt	M	$535
E KETCHIE ST	020	N BOSTIAN ST	N US 29 HWY	PATCH/UT CUT	280	SqFt	H	$924
E KETCHIE ST	020	N BOSTIAN ST	N US 29 HWY	BUMPS/SAGS	15	Ft	M	$49
N HARRIS ST	020	E KETCHIE ST	E CHURCH ST	PATCH/UT CUT	145	SqFt	H	$479
E LIBERTY ST	050	N BOSTIAN ST	N US 29 HWY	PATCH/UT CUT	50	SqFt	L	$165
E LIBERTY ST	050	N BOSTIAN ST	N US 29 HWY	RUTTING	79	SqFt	M	$261
POWER ST	010	E LIBERTY ST	GROVE ST	RUTTING	250	SqFt	L	$825
GROVE ST	010	POWER ST	HEGLAR ST	PATCH/UT CUT	40	SqFt	M	$132
BARE ST	010	N US 29 HWY	DEAD END	POTHOLE	2	Count	L	$10
RAILROAD AV	010	E LIBERTY ST	RIDGE ST	PATCH/UT CUT	70	SqFt	L	$231
RAILROAD AV	010	E LIBERTY ST	RIDGE ST	PATCH/UT CUT	36	SqFt	M	$119
RIDGE ST	010	RAILROAD AV	DEAD END	PATCH/UT CUT	130	SqFt	L	$429
RIDGE ST	010	RAILROAD AV	DEAD END	DEPRESSION	4	SqFt	L	$13
E VANCE ST	010	N MAIN ST/W VANCE ST	SALISBURY ST	PATCH/UT CUT	370	SqFt	L	$1,221
SALISBURY ST	010	E CHURCH ST	E VANCE ST	RUTTING	132	SqFt	L	$436
SALISBURY ST	020	E VANCE ST	E LIBERTY ST	PATCH/UT CUT	884	SqFt	L	$2,917
SALISBURY ST	020	E VANCE ST	E LIBERTY ST	POTHOLE	3	Count	L	$15
WASHINGTON ST	020	KLONDALE ST	DEAD END	POTHOLE	1	Count	L	$5
WASHINGTON ST	020	KLONDALE ST	DEAD END	POTHOLE	6	Count	M	$30
WASHINGTON ST	020	KLONDALE ST	DEAD END	DEPRESSION	56	SqFt	H	$185
KLONDALE ST	020	KNIGHT ST	WASHINGTON ST	PATCH/UT CUT	28	SqFt	L	$92
KLONDALE ST	030	WASHINGTON ST	OLD ROCKWELL RD	PATCH/UT CUT	32	SqFt	L	$106
KLONDALE ST	030	WASHINGTON ST	OLD ROCKWELL RD	RUTTING	36	SqFt	L	$119
KLONDALE ST	030	WASHINGTON ST	OLD ROCKWELL RD	PATCH/UT CUT	44	SqFt	H	$145
OLD ROCKWELL RD	010	N MAIN ST	KLONDALE ST	PATCH/UT CUT	13	SqFt	M	$43
OLD ROCKWELL RD	010	N MAIN ST	KLONDALE ST	PATCH/UT CUT	20	SqFt	L	$66
OLD ROCKWELL RD	010	N MAIN ST	KLONDALE ST	RUTTING	73	SqFt	H	$241

2024-2025 ASPHALT LEVELING AND POTHOLE REPAIR NETWORK LEVEL LIST

Branch Name	Section ID	From	To	Distress Description	Sample Distress Quantity	Distress Quantity Units	Severity	Sample Repair Costs*
OLD ROCKWELL RD	020	KLONDALE ST	DEAD END	RUTTING	138	SqFt	L	$455

$41,801

***NOTE: THIS $ AMOUNT IS FOR SAMPLE AREA ONLY - ACTUAL COST FOR ENTIRE SECTION AREA WILL LIKELY BE HIGHER - NEED TO FIELD VERIFY ENTIRE SECTION**

$69,584 TO $175,000

***NOTE: THIS IS A HIGH LEVEL NETWORK SURVEY. FOR PROJECT LEVEL NEED TO CHECK COMPLETE STREET SECTIONS ABOVE AND RIDE OTHER STREETS NOT LISTED TO DEVELOP A COMPREHENSIVE LIST OF REPAIRS**

2026-2030 Resurfacing List

2026-2030 RESURFACING LIST*

Street Name	From	To	Network Level Estimated Resurfacing Cost*	Consultant Recommended Resurfacing year	
SPRING BRANCH LN	MITCHELL AVE	W HILLSIDE DR		1	yr 2026
W HILLSIDE DR	SPRING BRANCH LN	ARBOR DR		1	
W HILLSIDE DR	ARBOR DR	HICKORY GROVE LN		1	
ARBOR DR	W HILLSIDE DR	SHUE RD		1	
			$125,000	**0.553**	**miles**
				Hold yr 2027	
				to build funding	
LOUISE AV	S MYRTLE AVE	S CLINTON		3	yr 2028
N MYRTLE AVE	PARK ST	W KETCHIE ST		3	
W CENTERVIEW ST	E CENTERVIEW ST/N MAIN ST	N FRANKLIN ST/ S FRANKLIN ST		3	
W VANCE ST	E VANCE ST/N MAIN ST	MILLER ST		3	
W VANCE ST	MILLER ST	MITCHELL AV		3	
			$171,000.00	**0.615**	**miles**
LAUREL ST	WILSON ST	HICKORY NUT LN		4	yr 2029
OAKWOOD CT	CUL-DE-SAC	MITCHELL AVE		4	
COVE LN	MITCHELL AVE	CUL-DE-SAC		4	
LAUREL ST	HICKORY NUT LN	MITCHELL AVE		4	
			$111,000.00	**0.563**	**miles**
MITCHELL AV	W STOKES ST	OAKWOOD CT		5	yr 2030
MITCHELL AV	OAKWOOD CT	COVE LN		5	
MITCHELL AV	COVE LN	SPRING BRANCH LN		5	
MITCHELL AV	WILSON ST	LAUREL ST		5	
MITCHELL AV	SPRING BRANCH LN	WILSON ST		5	
			$89,000.00	**0.463**	**miles**
			$496,000.00	**2.19**	**miles total**

***NETWORK LEVEL - HIGH LEVEL COST ESTIMATES NEED TO BE REEVALUATED FOR CONTRACT BID LEVEL**