



Pavement Management Services

Final Report | 04.00199212

May 24, 2022

Submitted to:
City of Manvel, Texas

Submitted by:

Fugro USA Land, Inc.
8613 Cross Park Drive
Austin, Texas 78754





Fugro USA Land, Inc.
8613 Cross Park Drive
Austin, Texas 78754

May 24, 2022

Mr. Adewale Taiwo
Capital Projects Manager

City of Manvel
20025 Highway 6
Manvel, Texas 77578

Subject: Report for Roadway Network Inventory and PMS

Dear Mr. Taiwo,

Fugro USA Land, Inc. (Fugro) is pleased to submit this report on the pavement management services performed for the City of Manvel, Texas. The report provides detailed information on various project activities including pavement distress data collection, data processing, network level pavement condition, treatment cost, current backlog, budget analysis, the 5-year network level maintenance and rehabilitation treatment work plans, and the road widening projects.

Fugro appreciates the opportunity to serve the City and looks forward to providing additional pavement management services in the future.

Kind Regards,
Fugro USA Land, Inc.
TBPE Firm Registration No. F-299

A handwritten signature in blue ink, appearing to read "Farhang Jalali".

Farhang Jalali, Ph.D.
Project Manager

Table of Contents

1. Executive Summary	1
<hr/>	
2. Introduction	2
2.1 Project Objectives	2
<hr/>	
3. Field Data Collection and Analysis	3
3.1 Network Integration	3
3.2 Automated Distress and Pavement Data Collection	3
3.3 Profile Data Collection	5
3.4 Data Analysis and Quality Control	5
3.5 Calculation of Pavement Condition Indices	6
3.6 Discussion of Pavement Condition Indices	7
3.6.1 Distribution of Pavement Condition Scores	8
3.6.2 Distribution of IRI Scores	9
3.6.3 PCI Cumulative Frequency Distribution Over Pavement Types	12
3.6.4 PCI Cumulative Frequency Distribution Over Functional Classification	13
<hr/>	
4. Treatment Work Plan	14
4.1 Treatment Policy	14
4.2 Deterioration Curves	17
4.3 Budget Needs Analysis (Unconstrained)	17
4.4 Multi-Year Planning Development	18
4.5 Five-Year Treatment Plan	19
4.6 PCI Analysis for Various Budget Scenarios	26
4.8 Road Widening	29
<hr/>	
5. Recommendations	30
<hr/>	
6. Conditions	31
<hr/>	
7. References	31
<hr/>	
Appendix A. Field Comments	A-1

Appendix B. Network Condition Listings	B-1
Appendix C. Network Condition Maps	C-1
Appendix D. Current Needs	D-1
Appendix E. 5-Year Work Plan Listing (Scenario 2)	E-1
Appendix F. 5-Year Work Plan Maps (Scenario 2)	F-1
Appendix G – Road Widening Listing	G-1

List of Figures

Figure 3.1: Fugro ARAN	3
Figure 3.2: Network Distribution by Pavement Type and Functional Class	4
Figure 3.3: Vision Software Showing Pavement Distresses and Graphs	6
Figure 3.4: Relation between PCI Scores and Pavement Distresses	7
Figure 3.5: PCI Score Distribution by Pavement Type	9
Figure 3.6: PCI Score Distribution by Functional Class	9
Figure 3.7: IRI Score Distribution by Pavement Type	10
Figure 3.8: IRI Score Distribution by Functional Class	11
Figure 3.9: PCI Cumulative Frequency Distribution of Overall Network, ACP & PCC Roads	12
Figure 3.10: PCI Cumulative Frequency Distribution of Overall Network and Functional Classes	13
Figure 4.1: Recommended Decision Tree for the City of Manvel	15
Figure 4.2: Deterioration Curves for ACP and PCC	17
Figure 4.3: Distribution of Cost by Treatment Type and Year	19
Figure 4.4: PCI Distribution for "No Fund" Scenario	20
Figure 4.5: PCI Distribution for 10-Year Work Plan (Scenario 1)	21
Figure 4.6: PCI Distribution for 10-Year Work Plan (Scenario 2)	21
Table 4.3 Scenario 2 Workplan	22
Figure 4.7: PCI Comparisons between Different Scenarios for Overall Network	27
Figure 4.8: PCI Comparisons between Different Scenarios for Arterial & Collector Roads	27
Figure 4.9: PCI Comparisons between Different Scenarios for Local Roads	28

List of Tables

Table 3.1: Network Distribution by Pavement Type and Functional Class	4
Table 3.2: Pavement Condition Categories with their associated PCI Ranges	7
Table 3.3: PCI Scores by Pavement Types and Functional Class	8
Table 4.1: PCI Impacts and Unit Cost of Treatment Activities	16
Table 4.2: Budget Needs of the City Network	18
Table 4.3: Annual Cost of Treatment Plans for Each Scenario (in million dollars)	19

1. Executive Summary

Fugro is pleased to provide this report to the City of Manvel (City) as part of the pavement management services performed for the City. The report provides detailed information on various project activities including pavement distress data collection, data processing, network level pavement condition, treatment cost, current backlog, budget analysis, a 5-year network level maintenance and rehabilitation treatment work plan, and road-widening projects.

The pavement condition survey was conducted in February 2022 using Fugro's automated data collection system for the roadway inventories received from the City. The City provided an ArcGIS shapefile for the entire roadway network, which contained the list of City-maintained roads to be surveyed. From the City's shapefile, the estimated total mileage was 50.7 centerline miles which was equivalent to a total of 109.2 lane miles. Per the City's request and following the standard practice, one lane was collected for local roads and two lanes (one lane in each direction) were collected for collectors and arterials. This collection method ensured more than 50% sampling rate, which far exceeds the 10% sampling rate requirement set by ASTM D6433, *Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys*. Using this methodology, the final total collection length was approximately 51 test miles. Please note that some sections were not collected due to encountering private roads, gravel roads, and other exceptions. See Appendix A for field comments on the roads that were not collectable or collected with shortened lengths.

The collected distress data was processed in accordance with ASTM D6433. In addition, Pavement Condition Index (PCI) scores were calculated for the City's roadway network. The overall network PCI was 45 at the time of the survey, which falls into the "Poor" condition category. Since 93% of the network is asphalt concrete pavements, the overall PCI score mostly reflects the condition of the asphalt concrete pavements. Almost 67% of the entire surveyed network falls into the "Poor", "Very Poor", "Serious", and "Failed" condition categories. Also, the analysis showed that the arterial roads were in slightly better condition than the collector and local roads.

Based on the collected pavement distress condition data, Fugro investigated the impact of several scenarios on the future PCI scores for the City's network. A decision tree representing common maintenance strategies along with their unit costs was developed to implement in the Pavement Management System (PMS). Next, using the known PCI scores, decision tree, and performance models, a 5-year work plan was developed to improve the City's pavement condition. A full network treatment backlog analysis was also developed considering the "Unlimited" budget scenario. This report includes Fugro's recommendations for maintaining and improving the City's pavement network condition in the upcoming years.

Fugro has also discussed the need for future monitoring and necessary updates to the City's PMS database to maintain the validity of its analysis and reports. Periodic updates to the City's PMS are required to include additions to the pavement network, reflect changes in the maintenance budgets and policies, and change in pavement conditions with time. The implementation of an effective PMS is an ever-evolving process requiring feedback and continuous fine-tuning to keep the system up to date to meet the City's needs.

2. Introduction

The City contracted Fugro to perform a pavement condition survey and pavement management analysis for the City's maintained road network. The objectives of the project were twofold. The first objective was to develop maintenance and rehabilitation (M&R) strategies for improving the existing pavement infrastructure and provide an estimate of the needed budget. The second objective was to provide the City with a list of streets that need to be widened to 26 feet (ft).

Fugro conducted a pavement condition survey for the City using the automated distress data collection system to collect pavement distress information and ride quality measurements. This information was converted to ratings or indices for the City's road network. Additionally, those indices were used to report the health of the road network in terms of the Pavement Condition Index (PCI). The PCI score facilitates decision making for selecting appropriate treatments and timing for maintenance, rehabilitation, and reconstruction strategies.

The PMS software provides pavement management functions for reporting pavement condition, selecting projects in multi-year planning horizons, and developing estimated projections of treatment types and costs on a project-by-project basis. The PMS software is compliant with ASTM D6433.

2.1 Project Objectives

The objectives for this project include the following:

- Automatic and continuous measurement of pavement cracking, texture, rutting (both wheel path ruts), digital images, and dual-wheel path roughness data according to International Roughness Index (IRI) standards.
- Calculation of PCI for each surveyed road segment.
- Delivery of PCI data in a format compatible with the City's Geographic Information System (GIS) database.
- Pavement management data analysis and reporting. This includes multi-year budget driven and target driven M&R Work Plans.
- Prioritizing the road-widening projects based on road width, functional classification, and pavement condition information.

The report includes information on the pavement condition data collection and analysis efforts, which will assist the City personnel to update the City's PMS as their road network grows. This report also summarizes the existing pavement condition and network-level M&R recommendations. The following sections provide detailed information on completed project tasks.

3. Field Data Collection and Analysis

This section contains detailed information on project data collection and analysis activities.

3.1 Network Integration

Before initiating the data collection, the City’s road network along with the existing inventory information was reviewed. The City provided a geographic information system (GIS) database of their road camera inventory, which was used for developing the PMS database and for developing our routing (navigation) package for automated data collection. Fugro personnel reviewed the GIS database and resolved discrepancies before data collection, thus allowing for a more efficient field data collection process. The estimated total mileage in the City network was approximately 51 centerline miles.

3.2 Automated Distress and Pavement Data Collection

Fugro’s Automatic Road Analyzer (ARAN) was utilized to collect the pavement information including distress and ride quality, pavement type, geometrics (e.g., pavement length and width), and other roads’ attributes (e.g., shoulder and curb length). ARAN has a global positioning system (GPS) coupled with a distance measuring instrument (DMI) to record the collection location continuously. The ARAN collects right of way (ROW) images using the front facing high-definition camera on top of the vehicle and downward pavement images from the backside of the vehicle, covering approximately 14 feet wide pavement in one pass at prevailing speeds up to 70 miles per hour (mph). Each downward image is processed to provide pavement distress summaries that are tabulated for the entire road length. Distresses extracted from the images and sensors are used to calculate PCI values in accordance with the ASTM D6433 standard. A summary of the ARAN features is shown in Figure 3.1.

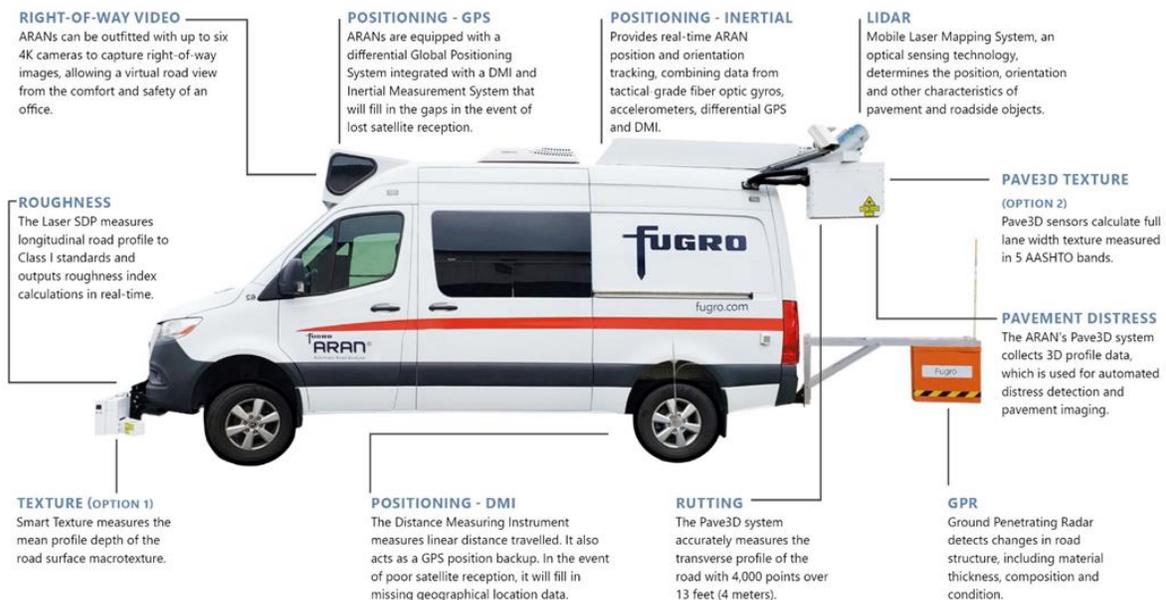


Figure 3.1: Fugro ARAN

The City provided an ArcGIS shapefile for the entire roadway network and designated the list of the City-maintained roads to be surveyed by Fugro. Fugro surveyed one lane in each direction for collectors and arterials and a single lane for local streets in February 2022. The total collection length was approximately 51 test miles, which was used to represent the City’s road network of 109.2 lane miles. Appendix A provides a list of observations made by the field crew for roads that could not be surveyed due to various reasons such as private ownership, construction, traffic, and other constraints.

Table 3.1 shows the breakdown of the entire network by functional class, including arterial, collector, and local, and by pavement type, including Asphalt Concrete Pavement (ACP) and Portland Cement Concrete Pavement (PCC). In addition, the network distributions by pavement type and functional class are presented in Figure 3.2.

Table 3.1: Network Distribution by Pavement Type and Functional Class (Collected and Analyzed)

Category	Functional Class	Centerline Miles	Lane-Miles	Percentage of the Entire Network (By Pavement Area)
ACP	Arterial	1.1	2.2	2.5%
	Collector	5.0	9.7	11.4%
	Local	34.8	70.2	79.4%
PCC	Arterial	1.5	4.4	5.3%
	Collector	0.2	0.4	0.6%
	Local	0.3	0.7	0.8%
Network	All	42.9	87.7	100%

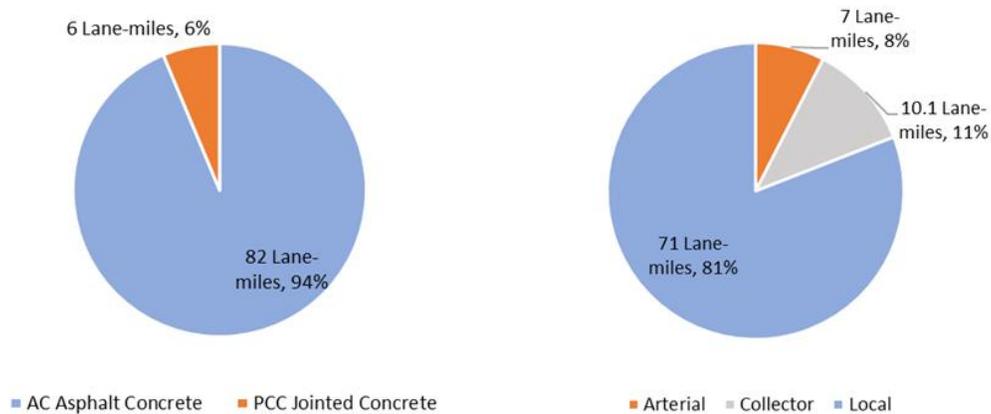


Figure 3.2: Network Distribution by Pavement Type and Functional Class

3.3 Profile Data Collection

As part of our automated pavement data collection, Fugro collected longitudinal profile data, which was used to provide ride quality information for the surveyed road network. Fugro calculated the International Roughness Index (IRI) in accordance with the ASTM E950 standard entitled *Standard Test Method for Measuring Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference*. Longitudinal profile data was collected at 1-inch intervals and summarized at 0.001-mile intervals. IRI was computed from the profile elevation data and an average value for each road segment, in inches per mile, was determined. The larger the IRI value is, the rougher the road “feels”.

In addition to the longitudinal profile collection, Fugro collected the transverse profiles for the surveyed road network. Transverse profile data was collected using a laser line system to accurately measure the transverse profile of the lane and determine rutting characteristics and irregularities in cross slope. The transverse profile was collected every 0.002 miles (10.56 feet) and summarized as an average “rut depth” for each wheel path. The rut depth data was rated in accordance with the ASTM D6433 standard and used in the calculation of PCI values.

IRI values and rut depth information were summarized by pavement sections and submitted to the City electronically along with the processed distress data.

3.4 Data Analysis and Quality Control

Fugro has long recognized the value of quality data and has developed various quality control measures to ensure the collecting of accurate and reliable data. These procedures, called Standard Operating Procedures (SOPs), were developed by Fugro for controlling quality both in the field and office. Road Survey Quality Control/Assurance SOPs and Post Processing and Reporting Control/Assurance SOPs are examples of procedures that Fugro has developed to ensure that our data collection and processing meet and exceeds the data quality required by our clients.

Road Survey Quality Control/Assurance SOPs include Fugro’s standard procedure for ARAN certification, real-time quality monitoring, ARAN Collection Software (ACS) verification, and daily quality assurance cycle. The real-time quality monitoring is accomplished by using quality control subsystems built into ARAN vehicles. Those subsystems alert ARAN operators if a sensor is recording out-of-range. The ACS interface controls all ARAN subsystems independently to ensure maximum flexibility and robustness during data collection and allows automated and manual review of the digital images to further ensure accuracy. In addition, a quality assurance cycle is performed daily on all subsystems to ensure each is operating properly. The data collected at the end of the day is also checked for completeness against log sheets and routing schedules.

Post Processing and Reporting Control/Assurance SOPs include Fugro’s standard procedure for data handling, data audits, and spot checks. The data handling SOP covers the control of all data collected and ensures that all original ARAN files are copied from the ARAN to removable hard drives, creating the redundancy necessary to safeguard the original field data. The data is then shipped to Fugro’s processing team. Also, Fugro ensures that accuracy is maintained by

performing audits and spot checks on a continuous and random basis throughout the overall data process workflow including incoming data, processing, and reporting.

Processing and analyzing the collected data are completed through Vision software, which was developed by Fugro to ensure a simple and accurate process for analyzing ARAN data and incorporating QC methodologies. Vision software is considered a customized digital condition rating system that can be configured based on user defined distress severity/extent and pertinent roadway attributes. The processed data can then be exported to a PMS or asset management system (AMS). Figure 3.3 shows an example of the Vision software window. For this project, Fugro exported the information into the PMS software to perform various analyses of the City’s road network.

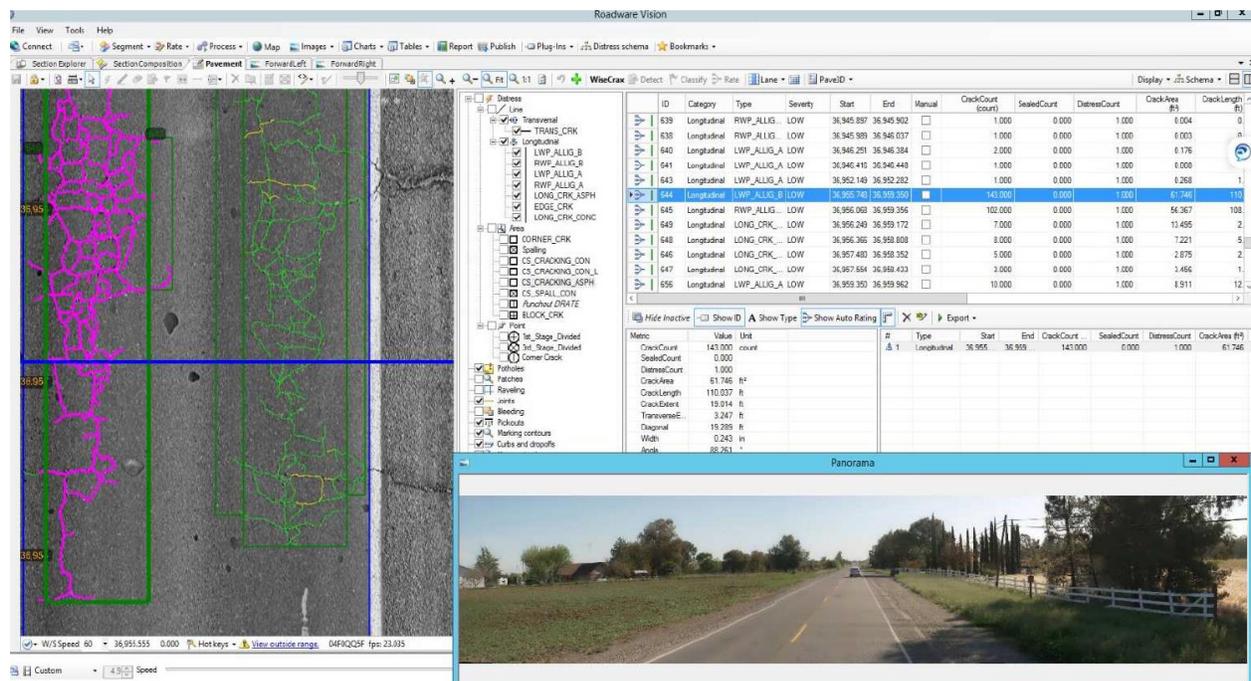


Figure 3.3: Vision Software Showing Pavement Distresses and Graphs

3.5 Calculation of Pavement Condition Indices

As mentioned previously, the collected pavement distresses were used to calculate PCI values for the City’s surveyed road network. PCI is calculated based on the type, severity, and extent of surface distresses. PCI uses a scale from 0 to 100, where 0 represents a completely failed pavement and 100 represents a pavement in perfect condition. The types of pavement distress that are collected and utilized for the determination of PCI values are described in ASTM D6433.

Each distress type includes a severity level (i.e., low, medium, and high) and has a different impact or “deduct” value for pavement condition, depending on its quantity (i.e., extent). Since each distress type has a different impact on pavement performance, deduct values are specific to individual distresses in accordance with the ASTM D6433 standard. High severity distresses and/or

high distress quantities result in more reductions in PCI scores. In general, deduct values for fatigue cracking are higher than deduct values of other types of cracking. Presence of load related fatigue cracking results in lower PCI scores, when compared with similar severities and extents for cracking associated with environmental conditions such as transverse cracking.

Appendix B contains the PCI values for pavement sections surveyed in February 2022. Appendix C contains the color-coded PCI and IRI maps for the surveyed sections.

3.6 Discussion of Pavement Condition Indices

In ASTM, pavement condition is defined using descriptive ratings such as Good, Satisfactory, Fair, Poor, Very Poor, Serious, and Failed. These descriptive ratings are tied to PCI ranges. Table 3.2 shows the pavement condition categories and their associated PCI ranges. The overall PCI score was 45 for the entire road network of the City at the time of the survey in February 2022, which falls in the “Poor” condition category.

Table 3.2: Pavement Condition Categories with their associated PCI Ranges

Condition	Failed	Serious	Very Poor	Poor	Fair	Satisfactory	Good
Range	< 10	10 - 24	25 - 39	40 - 54	55 - 69	70 - 84	85 - 100

Figure 3.4 illustrates the relationship between PCI scores and pavement distresses. As shown in this figure, an increase in distress quantities and severity levels results in a decrease in PCI scores.

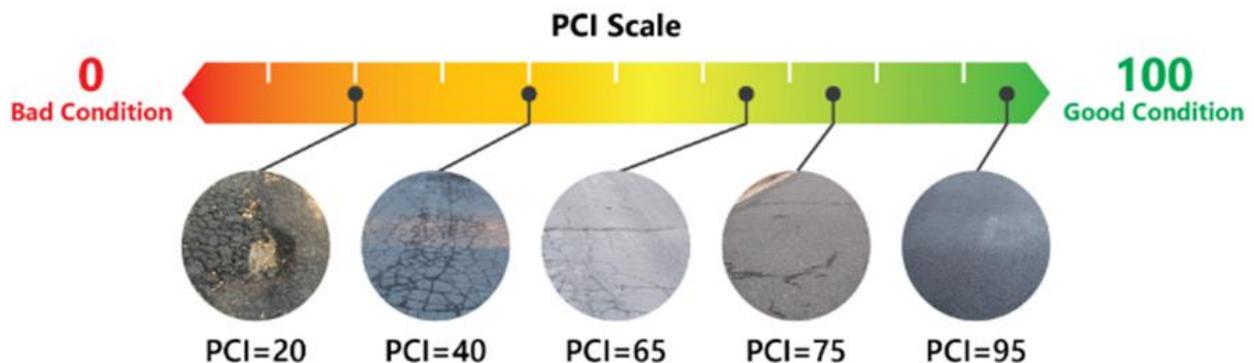


Figure 3.4: Relation between PCI Scores and Pavement Distresses

Table 3.3 contains the overall PCI scores for the surveyed network and by pavement type and functional class. ACP sections, with an average PCI of 42, are in the “Poor” condition category while PCC sections, with an average PCI of 79, fall in the “Satisfactory” condition category. It should be noted that the PCI scores in Table 3.3 are the weighted average PCI scores over the pavement section area.

Table 3.3: PCI Scores by Pavement Types and Functional Class

Category	Functional Class	PCI
ACP	Arterial	56
	Collector	44
	Local	42
	Overall	42
PCC	Arterial	74
	Collector	98
	Local	98
	Overall	79
Network	Arterial	68
	Collector	47
	Local	42
	Overall	45

3.6.1 Distribution of Pavement Condition Scores

Figure 3.5 displays the road network PCI score distribution for each pavement type, as well as the overall surveyed road network as of February 2022. As shown in the figure, approximately 15%, 10%, and 8% of pavement sections are in the Fair, Satisfactory, and Good condition categories, respectively. About 67% of the surveyed roads fall into the Poor, Very Poor, Serious, or Failed condition categories with PCI scores below 55.

Figure 3.6 shows the PCI score distribution for each functional class. Arterial and collector roads are in a better condition than local roads. For local roads, approximately a third of the roads have a PCI score greater than 55.

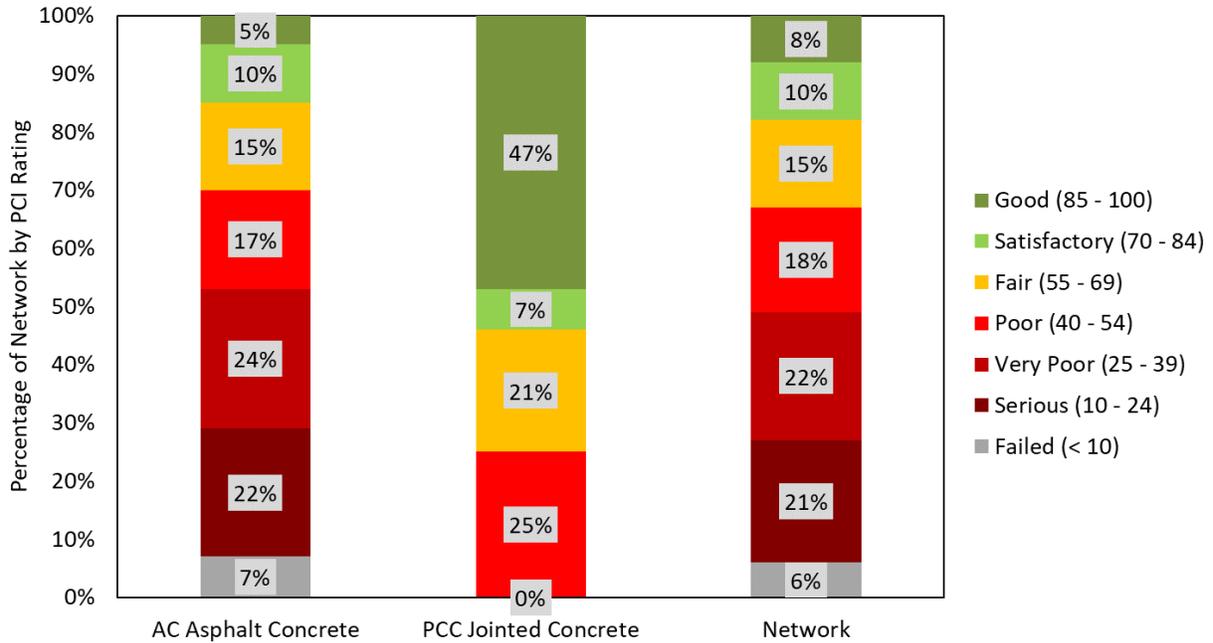


Figure 3.5: PCI Score Distribution by Pavement Type

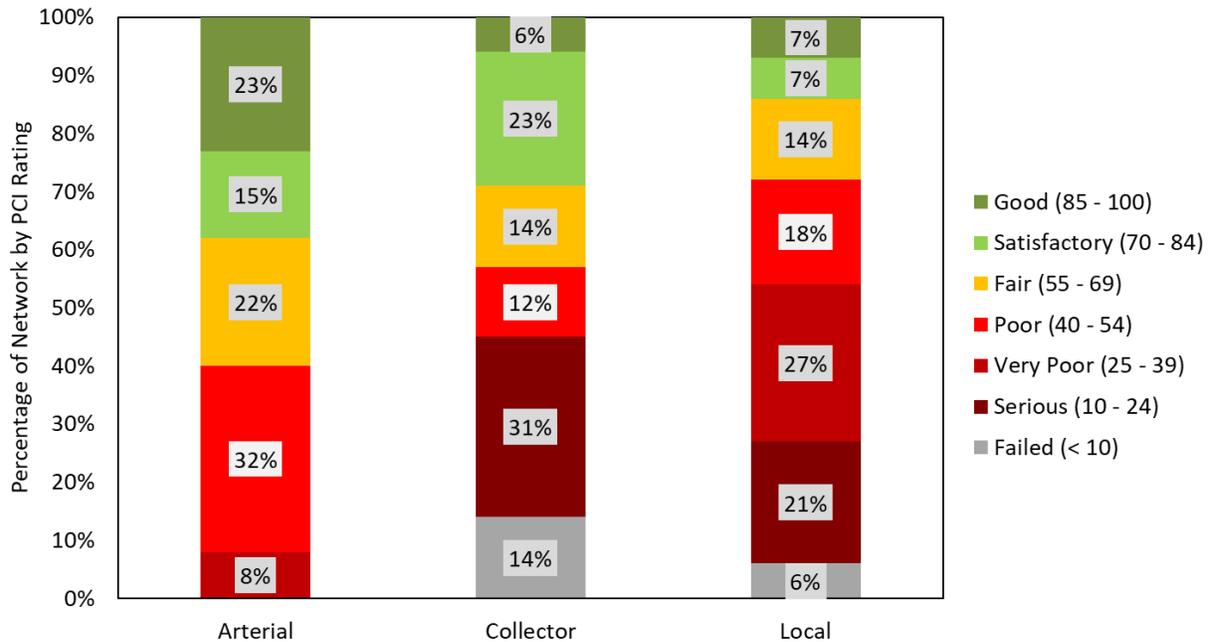


Figure 3.6: PCI Score Distribution by Functional Class

3.6.2 Distribution of IRI Scores

Figure 3.7 displays the road network IRI distribution by pavement type and for the overall road network surveyed in 2022. The threshold values used for each condition category are selected in

accordance with ASTM E1926 – *Standard Practice for Computing International Roughness Index of Roads from Longitudinal Profile Measurements*.

Approximately, 41% of the network exhibits an IRI value less than 200 in/mi. The acceptable IRI values for newly constructed pavements vary by agency as well as the type of facility and equipment used to collect the smoothness data. Typical IRI ranges for newly constructed ACP and PCC pavements are 52-66, and 57-72 in/mi, respectively; while roadways in poor conditions typically have IRI values over 250 in/mi.¹ About only 3% of the entire network exhibits IRI values greater than 400 in/mi, which is indicative of rough roads at vehicle speeds up to 56 mph (90 km/h). IRI values over 600 in/mi are indicative of very rough roads and comfortable driving on such roadways is hard to achieve even at slow speeds.

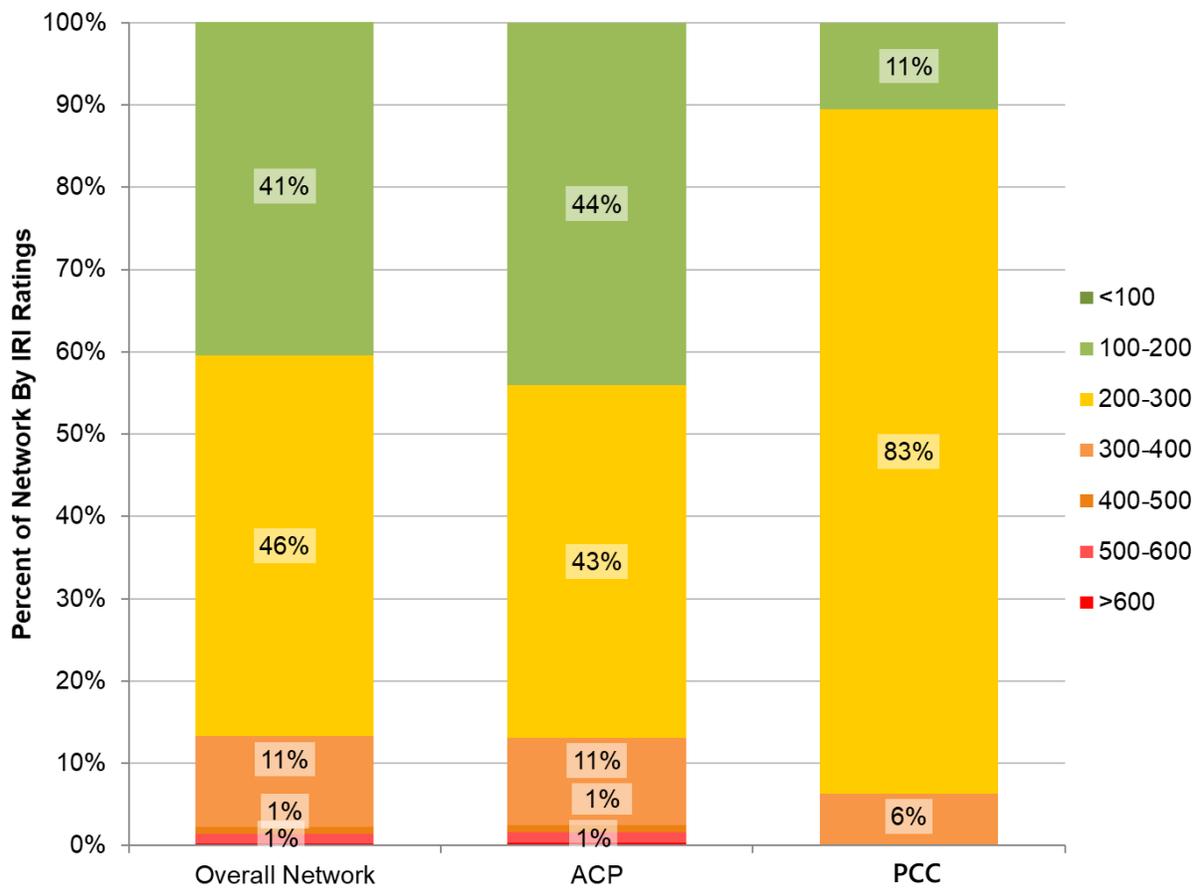


Figure 3.7: IRI Score Distribution by Pavement Type

Figure 3.8 shows the IRI score distribution by functional class and for the overall road network. Approximately, 96%, 95%, and 85% of the arterial, collector, and local roads, respectively, have an IRI value less than 300 in/mi.

¹ Measuring and Specifying Pavement Smoothness, Tech Brief, FHWA-HIF-16-032, June 2016
 Source: <https://www.fhwa.dot.gov/pavement/pubs/hif16032.pdf>

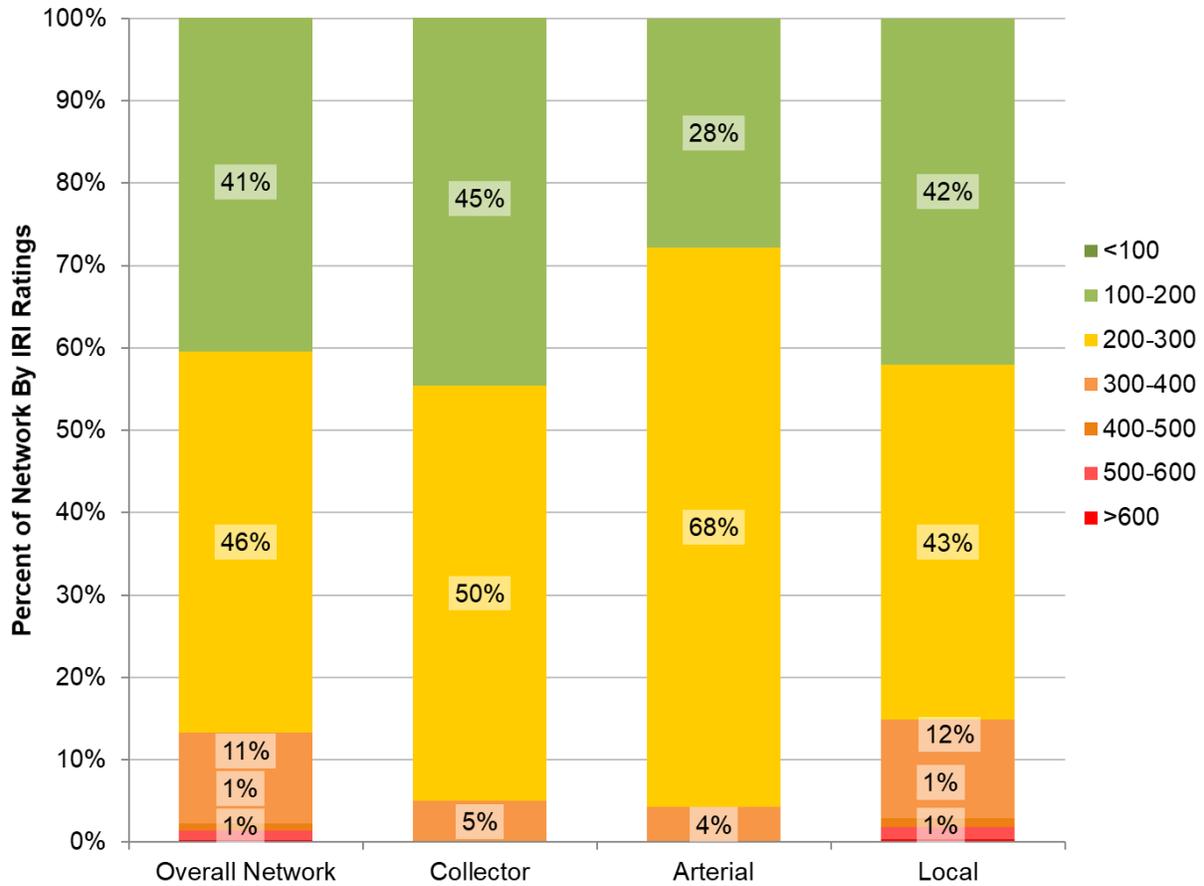


Figure 3.8: IRI Score Distribution by Functional Class

In accordance with ASTM E950, pavement ride quality information should be considered invalid when the collection speed is less than 12 mph due to stop signs, stop lights, traffic calming devices, and isolated traffic and construction activities. At speeds below approximately 12 miles per hour, modern vehicle suspension systems diminish minor pavement roughness before it can be translated to the vehicle chassis, thus affecting pavement ride. Such IRI values were flagged as invalid during the data collection for the City network, indicating that no valid data could be collected per ASTM E950. Fugro did not include sections with invalid data in the IRI information presented in Figures 3.7 and 3.8. The IRI value for the sections with invalid IRI is set to -1 in Appendix B.

3.6.3 PCI Cumulative Frequency Distribution Over Pavement Types

A cumulative frequency distribution plot is a convenient way to quickly review the overall network health and the condition of network subsets such as pavement types. A cumulative frequency distribution is developed by calculating the percent of the network in each condition rating, and then accumulating the percent from 0 to 100. The further the data is to the right side of the graph; the higher percentage of the network is in better condition. For example, in Figure 3.9, the curve for PCC roads (green curve) is to the right of the curve for ACP roads (red curve), which indicates that the PCC roads are in better condition than ACP roads. Approximately 64% of the ACP roads have a PCI score of less than 50. In contrast, there are no PCC roads with a PCI of less than 50. It should be noted that the PCI distributions of ACP roads (red curve) and overall network (blue curve) are closely correlated because of the high percentage of ACP sections (93%) within the surveyed roads.

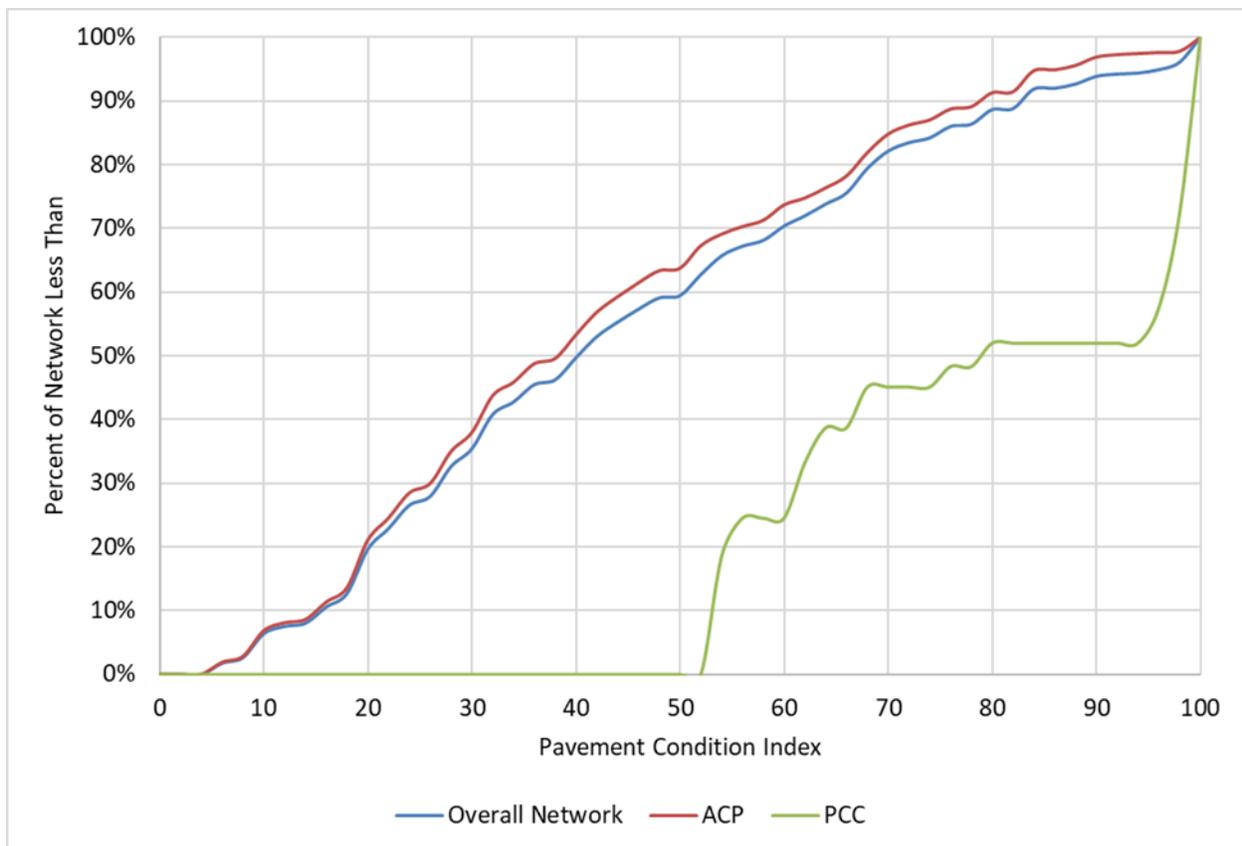


Figure 3.9: PCI Cumulative Frequency Distribution of Overall Network, ACP & PCC Roads

3.6.4 PCI Cumulative Frequency Distribution Over Functional Classification

Figure 3.10 shows the PCI cumulative frequency distribution plots for each functional classification as well as the overall network. It can be observed that the distribution curves for the local roads (red curve) and overall road network (blue curve) are almost identical as about 80% of the network consists of local roads. This implies that the condition of local roads has a great impact on the overall condition of the network. The distribution curve for the collector roads (green curve) shows that 35% of the roads have a PCI less than 30. The distribution curve for the arterial roads (purple curve) is on the right side of the other curves, which indicates a better condition of arterial roads compared to others.

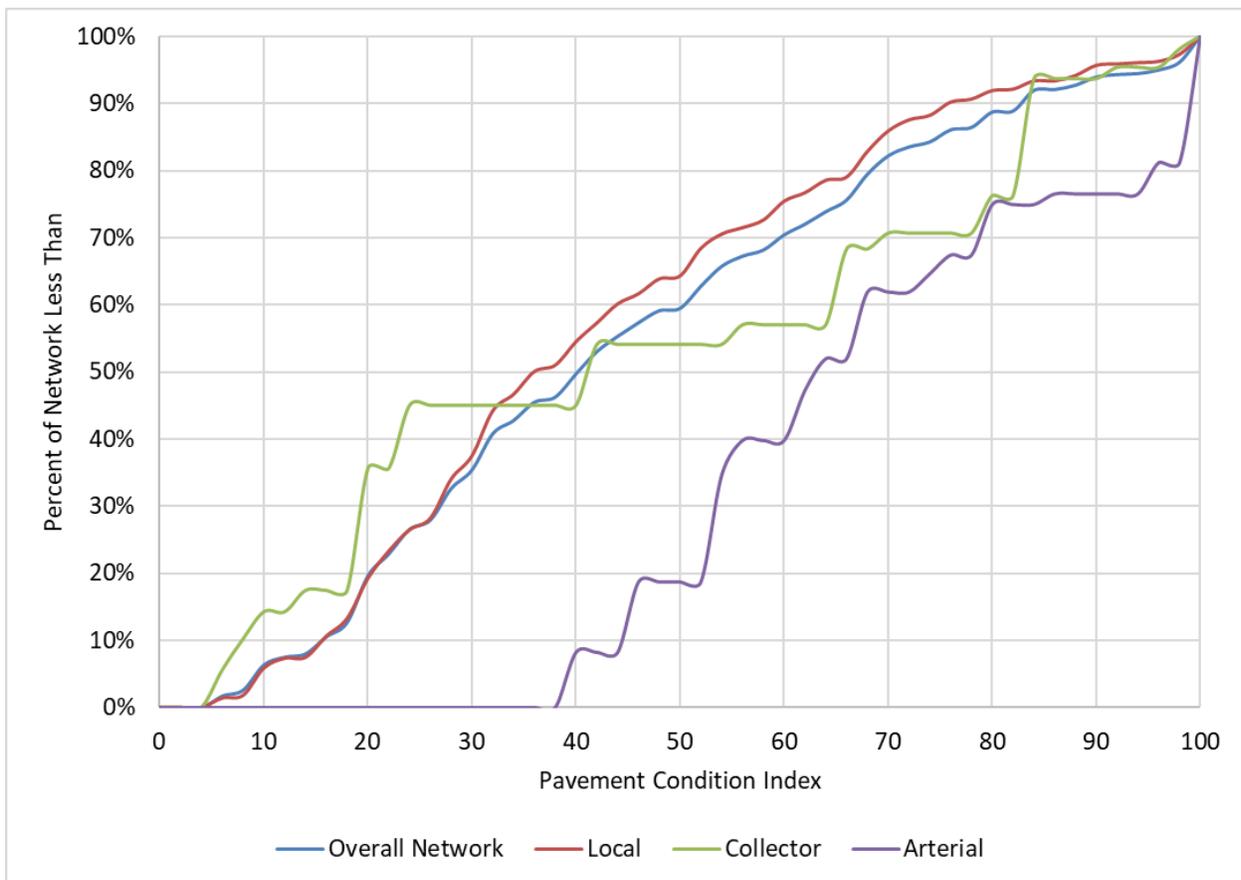


Figure 3.10: PCI Cumulative Frequency Distribution of Overall Network and Functional Classes

4. Treatment Work Plan

This section contains a detailed description of activities performed for developing a 5-year M&R work plan.

4.1 Treatment Policy

Pavement structures deteriorate like all other types of infrastructure with time. An appropriate multi-year M&R treatment work plan can reduce the pavement deterioration rate and extend its life. The objective of developing a multi-year M&R treatment plan is to apply the right treatment, at the right time, and for the right pavement condition.

Four types of treatments are applied to pavements depending on the pavement age and condition. The first type is preventive maintenance (e.g., crack seal, slurry seal, joint repair, etc.), which is applied at the early stage of pavement life to maintain the functional condition of pavements without increasing the structural capacity. Maintenance treatments stop water infiltration through pavement surfaces and negate the damage to the top surface and underlying layers (i.e., base and subgrade).

The second type is minor rehabilitation (e.g., thin overlay, full depth patching, dowel bar retrofit, etc.), which is introduced to address the top-down surface cracking, aging of pavements, and functional deficiencies without increasing the structural capacity.

The third type is major rehabilitation (e.g., thick mill and AC overlay, bounded PCC overlay, panel replacement, etc.), which is performed when pavement starts to deteriorate, not only functionally but also structurally. Major rehabilitation activities increase the structural capacity of the existing pavements and extend the pavement life.

When preventive maintenance, minor rehabilitation, and major rehabilitation activities become ineffective to address the pavement deteriorating conditions, the fourth type of treatment, reconstruction, is recommended to fix the poor pavement condition of the roadway.

Fugro considered the above treatment strategies along with the existing pavement conditions to develop a realistic M&R decision tree that City can implement. Based on these considerations, Fugro developed the decision tree shown in Figure 4.1 and discussed it thoroughly with the City before the start of PMS analyses. As shown in Figure 4.1, the recommended M&R strategies depend on pavement types and PCI values.

For the PMS analysis, treatments were applied to the sections with higher PCI values first (i.e., best first approach). This approach ensures optimum use of funds by keeping roads in a good state of repair.

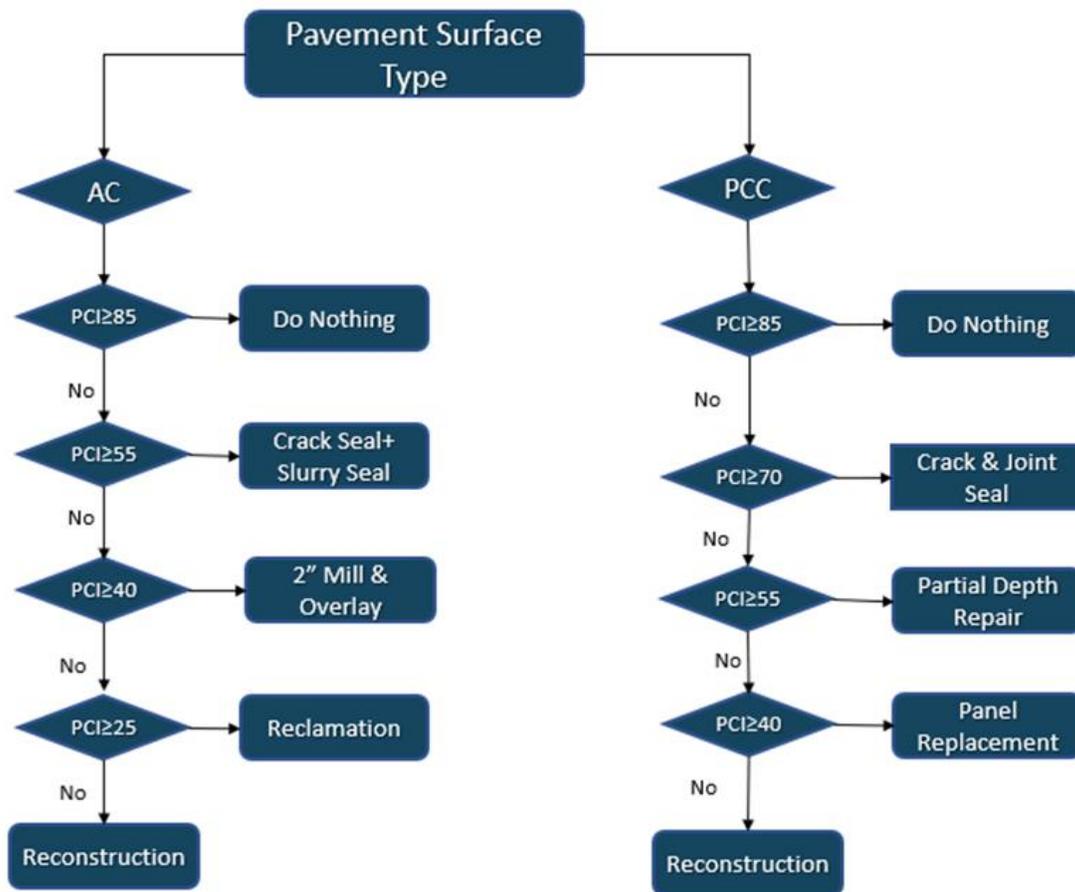


Figure 4.1: Recommended Decision Tree for the City of Manvel

Treatment types, PCI impacts of various treatments, and unit costs are summarized in Table 4.1. The impact of each pavement M&R action on improving PCI score varies by treatment type. Some treatments such as “crack seal” will show nominal improvements to the PCI scores for a relatively short period of time; while other treatments such as “2 inch Mill AC Overlay” will reset the PCI to 100 and have a much more significant impact on enhancing pavement life.

The treatment unit costs were determined based on the information provided by the City and Fugro’s experience with other local municipalities. An annual inflation rate of 3% was used in the PMS analysis.

Table 4.1: PCI Impacts and Unit Cost of Treatment Activities

Pavement Type	Treatment Type	PCI Impact	Unit Cost
ACP	Crack Seal + Slurry Seal (<i>Preventive Maintenance</i>)	Increase by 25 points	\$0.3 per sq. ft.
	Mill & 2" Overlay (<i>Minor Rehabilitation</i>)	Reset to 100	\$3.5 per sq. ft.
	Reclamation (<i>Major Rehabilitation</i>)	Reset to 100	\$4.5 per sq. ft.
	Reconstruction	Reset to 100	\$15 per sq. ft.
PCC	Crack Seal & Joint Seal ¹ (<i>Preventive Maintenance</i>)	Increase by 10 points	\$0.17 per lin. ft.
	Partial Depth Repair (<i>Minor Rehabilitation</i>)	Increase by 20 points	\$9 per sq. ft.
	Panel Replacement (<i>Major Rehabilitation</i>)	Reset to 100	\$12 per sq. ft.
	Reconstruction	Reset to 100	\$25 per sq. ft.

¹Crack seal & joint seal cost includes only the cost of material applied to 30% length of the section.

4.2 Deterioration Curves

Deterioration curves illustrate the decrease in PCI scores over time if a road is left without any treatment until failure. With this information, the future road condition can be predicted based on the current state and age of the pavements. Three deterioration curves were used for the analysis of the City's road network. One for asphalt pavements located in arterials and collectors, one for asphalt pavements for local roads, and a performance curve for concrete pavements. The deterioration curves shown in Figure 4.2 are the customized deterioration curves based on similar networks, historical data, and engineering judgment.

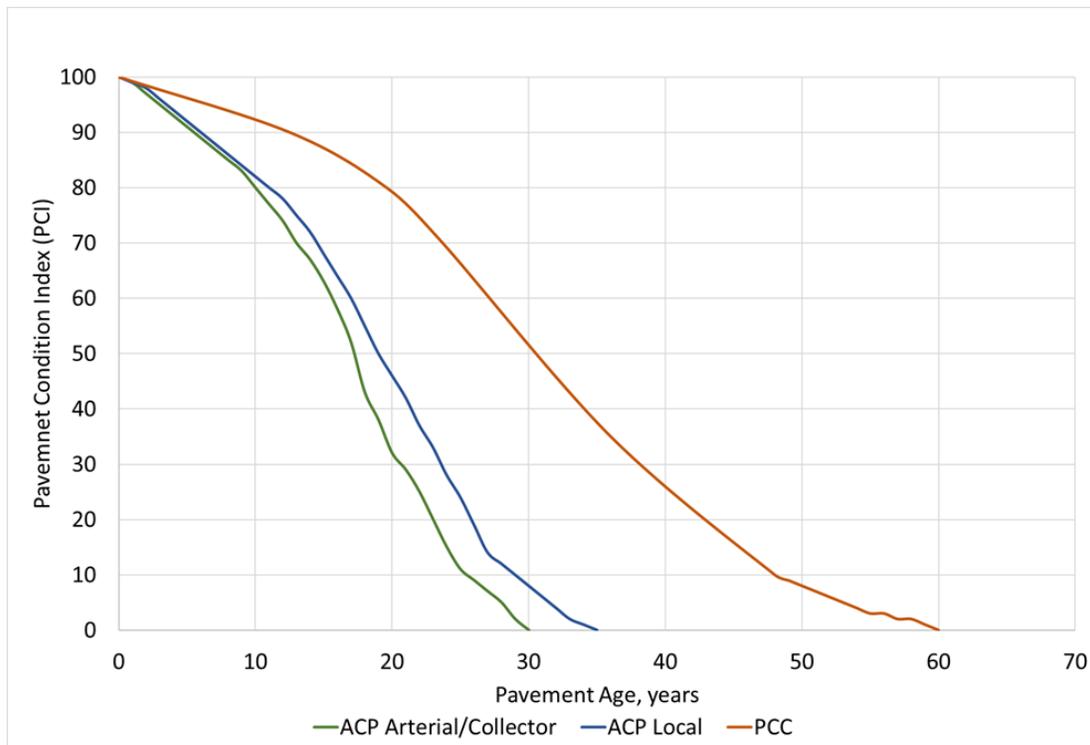


Figure 4.2: Deterioration Curves for ACP and PCC

4.3 Budget Needs Analysis (Unconstrained)

An unconstrained budget analysis provides the current budget needs for the network. The budget needs analysis represents the "ideal world" or unconstrained funding levels. Using an unlimited budget, a budget needs analysis was conducted by determining all the required M&R activities starting on January 1, 2023, which was the starting date of the PMS analysis in the software. An inflation factor of 3% was used to project the costs for the next five years.

Table 4.2 summarizes the approximate budget needs for the City's surveyed network. Unit costs used in this analysis were summarized in Table 4.1. The full budget needs analysis with unlimited budget is provided in Appendix D.

Table 4.2: Budget Needs of the City Network

Pavement Type/Treatment Type	2023 Budget Needs	Percentage of Total Budget
ACP - Crack Seal + Slurry Seal	\$348,643	1%
ACP - Mill & 2" Overlay	\$2,143,668	6%
ACP - Reclamation	\$5,184,906	15%
ACP - Reconstruction	\$25,214,051	73%
PCC - Crack/Joint Seal	\$244	0%
PCC - Partial Depth Repair	\$1,041,521	3%
PCC - Panel Replacement	\$654,842	2%
PCC - Reconstruction	\$0	0%
Grand Total	\$34,587,874	100%

4.4 Multi-Year Planning Development

Based on discussions with the City and the City’s review of the initial budget scenario results, the City requested Fugro to analyze two scenarios: Scenario 1 - maintain the current PCI (45) for the next five years and Scenario 2 - increase the overall PCI by 5 points over the next 5 years from 45 to 50. The total estimated cost for each scenario is discussed in the following sections. The results of these scenarios are also compared with unlimited and do nothing (no fund) scenarios.

The following items were discussed with the City before the start of the analysis:

- The No Fund scenario and Unlimited budget scenario were performed for budget need analysis and backlog analysis.
- The PCC crack sealing is done in-house and only the cost of materials has been considered in the calculations.
- The City requested Fugro to incorporate road widening in the work plan. The City would like to widen roads narrower than 26 ft that are also in need of major M&R work. This item is discussed further in Section 4.8.

4.5 Five-Year Treatment Plan

A 5-year treatment plan was developed to estimate the cost of maintaining the current PCI (Scenario 1) and increasing PCI by 5 (Scenario 2). For the PMS analysis, the start date was set as January 1, 2023. Table 4.3 shows the annual cost for each scenario.

Table 4.3: Annual Cost of Treatment Plans for Each Scenario (in million dollars)

Scenario	2023	2024	2025	2026	2027	Total
Scenario 1 (PCI 45)	0.44	1.4	1.56	0.83	0.73	4.96
Scenario 2 (PCI 50)	0.93	2.31	1.27	1.19	3.03	8.72

The cost distribution for Scenario 1 and Scenario 2 with the policy of “best first” is shown in Figure 4.3. For the first four years in both scenarios, the primary treatments are preventive maintenance and rehabilitation. However, for year 5, Scenario 2 (Increase PCI by 5) has almost all the funding for reconstruction. Scenario 1 (Maintain Current PCI) continues with preventive maintenance and rehabilitation for year 5.

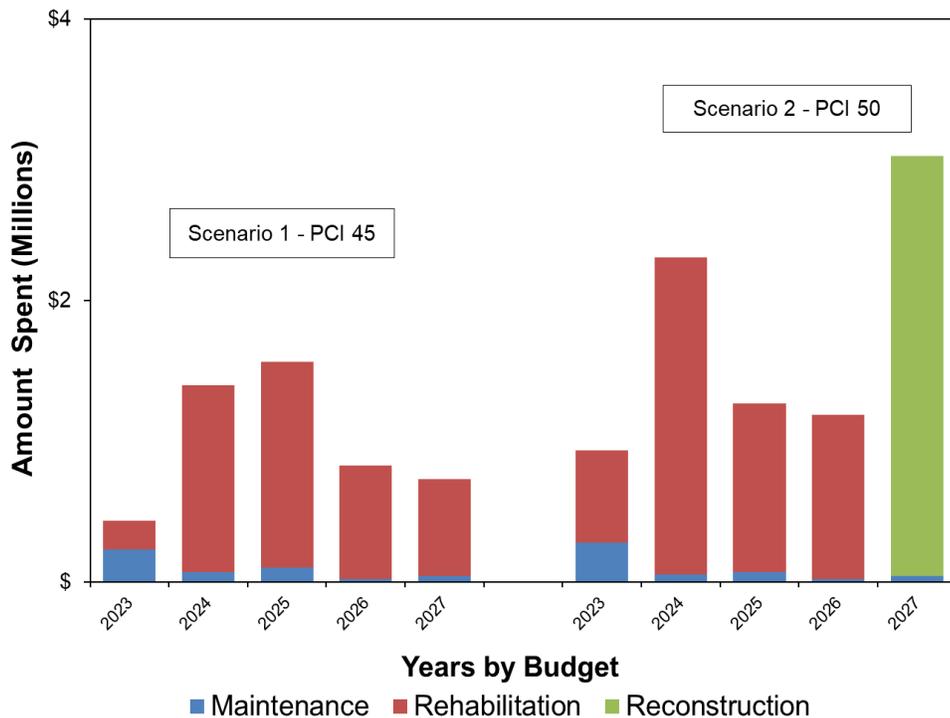


Figure 4.3. Distribution of Cost by Treatment Type and Year

As part of the PMS analysis, the distribution of PCI scores through the 5-year work plan was estimated for the scenarios. Figure 4.4 shows the PCI distribution by segment area for the “No Fund” scenario. Under this scenario, the total area percentage below the Fair condition category (i.e., Poor, Very Poor, Serious, and Failed) increases during the 5-year planning horizon as the sections with better conditions are deteriorating and fall into lower condition categories over time. The percentage of the Poor, Very Poor, Serious, and Failed condition categories will increase from 68% in year 1 to 84% in year 5.

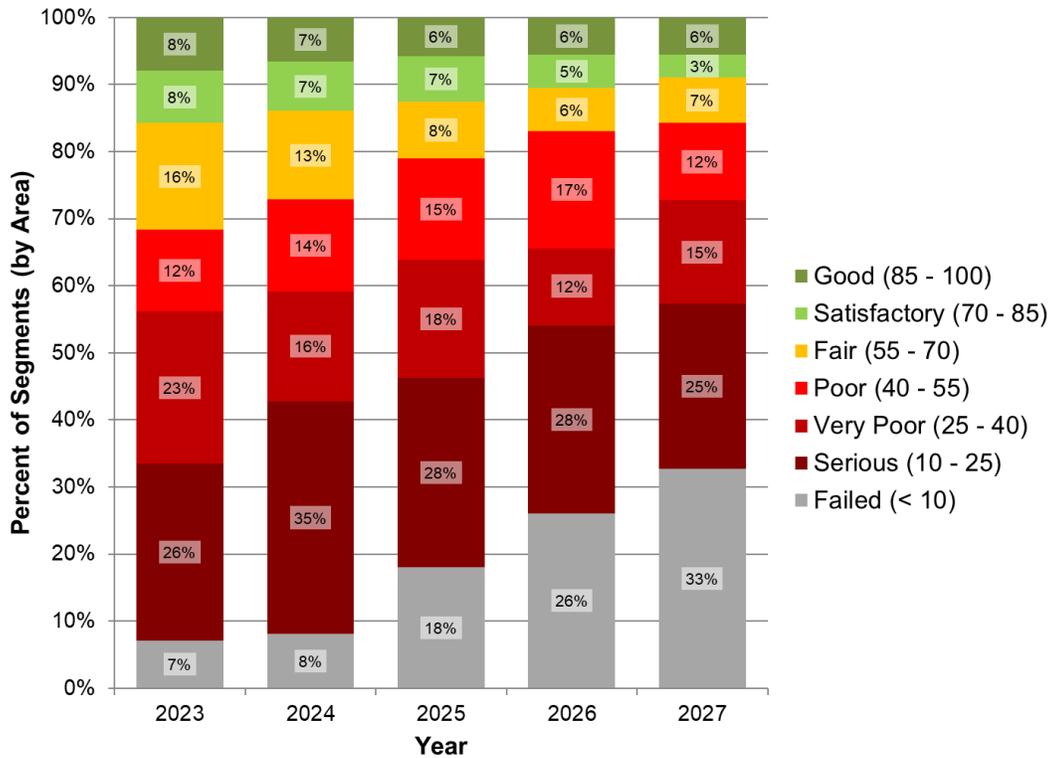


Figure 4.4: PCI Distribution for “No Fund” Scenario

Figures 4.5 and 4.6 show the PCI distribution by segment area for Scenario 1 and Scenario 2, respectively. In general, the combined percentage of the sections in Good and Satisfactory condition increases over the years. A comparison between Figure 4.5 and Figure 4.6 shows that the area percentage below the Fair condition category (i.e., Poor, Very Poor, Serious, and Failed) under Scenario 2 is less than those under Scenario 1 in all years. Also, the percentage of “Good” and “Satisfactory” roads under Scenario 2 is greater than in Scenario 1. This is an expected observation given that the final objective of PCI for each scenario (i.e., PCI equal to 45 for Scenario 1 and PCI equal to 50 for Scenario 2).

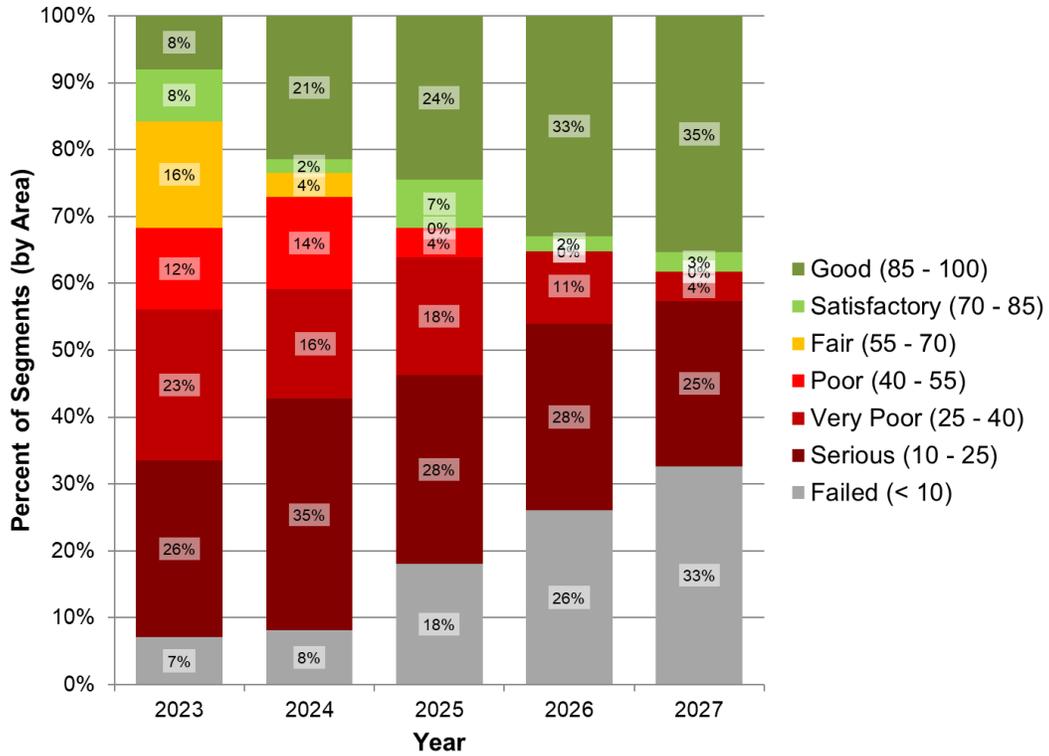


Figure 4.5: PCI Distribution for 10-Year Work Plan (Scenario 1)

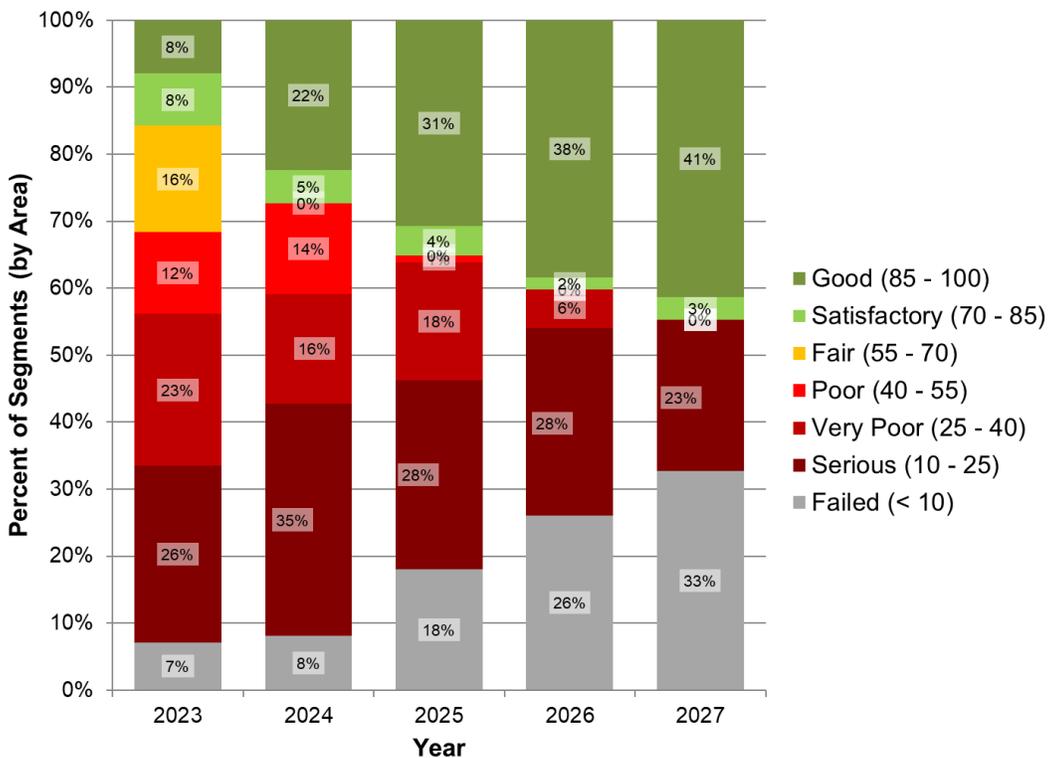


Figure 4.6: PCI Distribution for 10-Year Work Plan (Scenario 2)

As requested by the City, treatment activities for the 5-year work plan based on the budget Scenario 2 are presented in Table 4.3. Appendix E presents the same information with more details including pavement type, pavement area, and PCI conditions before and after applying the treatment. Likewise, Appendix F presents this information visually using maps.

Table 4.3 Scenario 2 Workplan

Functional Class/Street Name	Plan Year					Grand Total
	2023	2024	2025	2026	2027	
Arterial	\$671,518	\$1,073,716	\$5,837	\$212,366	\$165	\$1,963,603
LEWIS LN from CINDY DR to PETRY LN	\$1,979					\$1,979
LEWIS LN from MCCOY DR to WILSON RD	\$5,471					\$5,471
LEWIS LN from PETRY LN to PALMETTO ST	\$5,564		\$5,743			\$11,307
LEWIS LN from SCHOOL RD to CEMETRY RD				\$212,105		\$212,105
LEWIS LN from WILSON RD to CINDY DR	\$3,419					\$3,419
MCCOY RD from CHARLOTTE DR to LEWIS LN		\$280,396				\$280,396
MCCOY RD from CHARLOTTE DR to TANKERSLEY RD	\$155	\$164				\$320
MCCOY RD from LEWIS LN to CHARLOTTE DR		\$282,232				\$282,232
MCCOY RD from LEWIS LN to MORRIS AVE		\$250,169				\$250,169
MCCOY RD from MORRIS AVE to LEWIS LN		\$260,181				\$260,181
MERIDIANA PKWY from JORDAN RD to KREUZER RD	\$203,186	\$177				\$203,363
MERIDIANA PKWY from KREUZER RD to BISSELL RD	\$276,933	\$248		\$262		\$277,443
MERIDIANA PKWY from MORRIS AVE to ROGERS RD	\$89		\$94			\$183
MERIDIANA PKWY from ROGERS RD to BISSELL RD	\$174,722	\$148			\$165	\$175,035
Collector	\$69,797	\$22,189	\$3,330	\$89,885	\$965,849	\$1,151,050
BISSELL RD from MASTERS RD to RUSSELL ST	\$2,542					\$2,542
BISSELL RD from RUSSELL ST to 2952 FT W/O AMANDA LN	\$17,032					\$17,032
CLARK RD from KIRCHNER RD to JORDAN RD					\$960,913	\$960,913

Functional Class/Street Name	Plan Year					Grand Total
	2023	2024	2025	2026	2027	
JORDAN RD from COOK RD to 1400 SE/O COOK RD	\$10,611					\$10,611
JORDAN RD from MAGNOLIA ST to SHERRI CIR			\$3,330			\$3,330
JORDAN RD from MASTERS RD to MAGNOLIA ST	\$4,501				\$4,936	\$9,437
JORDAN RD from MERIDIANA PKWY to MASTERS RD	\$21,495	\$22,189				\$43,684
JORDAN RD from SHERRI CIR EAST to COOK RD	\$13,616					\$13,616
JORDAN RD from SHERRI CIR WEST to SHERRI CIR EAST				\$89,885		\$89,885
Local	\$192,464	\$1,211,676	\$1,258,265	\$884,369	\$2,061,489	\$5,608,263
1ST ST from LOUISIANA ST to 485 FT E/O LOUISIANA ST			\$68,034			\$68,034
ACORN DR from HANSELMAN RD to EAST END			\$320,759			\$320,759
ALABAMA ST from GEORGIA ST to CREST RIDGE DR		\$81,029				\$81,029
BISSELL RD from 2952 FT W/O AMANDA LN to AMANDA LN	\$17,137			\$18,243		\$35,381
BISSELL RD from AMANDA LN to BRIARCREST ST	\$6,194	\$6,394				\$12,588
BISSELL RD from BRIARCREST ST to 1187 FT E/O BRIARCREST ST	\$7,001					\$7,001
BURNETT RD from CUL DE SAC W/O KIRCHNER RD to 1379 FT E/O KIRCHNER			\$151,719			\$151,719
CEDAR from MASTERS RD to 420 FT E/O MASTERS RD					\$162,392	\$162,392
CEMETERY RD from SCOTT ST to CEMETERY RD			\$149,023			\$149,023
CREEK DR from PINE ST to HORSE SHOE DR	\$5,671					\$5,671
CREST RIDGE DR from CEMETERY RD to CEMETERY RD	\$21,955		\$22,663			\$44,618
DALMOLIN from SCOTT AVE to 1000 FT N/O SCOTT AVE		\$81,494				\$81,494

Functional Class/Street Name	Plan Year					Grand Total
	2023	2024	2025	2026	2027	
DEL BELLO LN from 4589 ft west of Del Bello RD to Del Bello RD	\$12,438		\$12,839			\$25,277
DEL BELLO RD from DEL BELLO BLVD to LIRA ROAD		\$2,580				\$2,580
DEL BELLO RD from Del Bello LN to 1290 ft North of Del Bello LN	\$8,555					\$8,555
DEL BELLO RD from DEL BELLO SPUR to PATTERSON RD	\$10,955					\$10,955
DEL BELLO RD from LIRA RD to DEL BELLO LN	\$3,561				\$3,905	\$7,466
DEL BELLO RD from MASTERS RD to DEL BELLO SPUR	\$9,353					\$9,353
DEL BELLO RD from PATTERSON RD to DEL BELLO BLVD		\$90,925				\$90,925
ELM ST from MORRIS AVE to LARGE AVE	\$2,777		\$2,867			\$5,644
FLORA from 2300 FT W/O CEMETERY RD to CEMETERY RD	\$10,617				\$11,644	\$22,261
HAL MCLAIN RD from AIRPARK RD to FREY RD				\$43,932		\$43,932
HAL MCLAIN RD from KELLY ST to 1910 FT N/O KELLY ST		\$164,353				\$164,353
Hanselman RD from OAKCREST DR to ACORN DR					\$171,688	\$171,688
Hanselman RD from TWIN OKAS DR to OAKCREST DR	\$3,955					\$3,955
HORSE SHOE DR from CROSSSHEILD RD to CREEK RD		\$2,291				\$2,291
HORSE SHOE DR from PINE ST to CROSSSHEILD RD		\$8,372				\$8,372
LARGE AVE from ELM ST to 456 FT E/O ELM ST	\$3,115	\$3,215				\$6,330
LARGE AVE from PALMETTO ST to RUSSELL ST	\$8,568					\$8,568
LARGE AVE from RUSSELL ST to SCHOOL RD			\$2,587			\$2,587
LOUISIANA ST from 1ST ST to 2ND ST				\$92,863		\$92,863
LOUISIANA ST from 2ND ST to WOLFE LN	\$14,255				\$15,635	\$29,890

Functional Class/Street Name	Plan Year					Grand Total
	2023	2024	2025	2026	2027	
LOUISIANA ST from MISSISSIPPI ST to 1ST ST	\$14,254					\$14,254
LOVERS LN from CLARK RD to 1667 FT N/O CLARK RD					\$676,325	\$676,325
LUM RD from FURNACE RD to 527 FT N/E OF FURNACE RD		\$43,980				\$43,980
Manvel Sandy Point RD from MASTERS RD to Hanselman RD			\$191,712			\$191,712
MASTERS RD from BOOTH BLACE RD to REED LN	\$7,510				\$8,237	\$15,746
MASTERS RD from E/O OF GATES LP to UZZELL RD			\$204,691			\$204,691
MASTERS RD from JORDAN RD to TAYLOR ST			\$111,485			\$111,485
MASTERS RD from KEMP ST to BISSELL RD		\$32,149				\$32,149
MASTERS RD from REED LN to JORDAN RD	\$11,732		\$12,110			\$23,842
MASTERS RD from TAYLOR ST to KING ST				\$42,836		\$42,836
MISSISSIPPI from MORRIS AVE to LOUISIANA ST		\$181,474				\$181,474
OAK HILL from MASTERS RD to FURNACE RD		\$144,206				\$144,206
PALMETTO ST from LARGE AVE to CANAAN ST			\$4,868			\$4,868
PINE ST from HORSE SHOE DR to CREEK DR	\$5,268					\$5,268
PINE ST from MORRIS AVE to HORSE SHOE DR					\$1,011,662	\$1,011,662
ROGERS RD from ELM ST to CEMETERY RD				\$160,076		\$160,076
ROGERS RD from LOUDEN ST to WILSON RD			\$2,909			\$2,909
ROGERS RD from MAGNOLIA ST to ELM ST				\$32,672		\$32,672
ROGERS RD from MASTERS RD to RUSSELL ST		\$27,244				\$27,244
ROGERS RD from PALMETTO RD to SPILLANE ST				\$2,635		\$2,635
ROGERS RD from SPILLANE ST to MASTERS RD	\$2,531					\$2,531



Functional Class/Street Name	Plan Year					Grand Total
	2023	2024	2025	2026	2027	
SCHOOL RD from MORRIS AVE to LARGE AVE	\$2,522					\$2,522
SHERRI CIR from JORDAN RD to JORDAN RD		\$269,653				\$269,653
STEVENS RD from 1400 FT W/O MASON RD to MASON RD		\$9,676				\$9,676
STEVENS RD from MASON RD to IOWA LN		\$62,641				\$62,641
TAYLOR ST from MASTERS RD to RUSSELL ST	\$2,540					\$2,540
TAYLOR ST from RUSSELL ST to MAGNOLIA ST				\$44,183		\$44,183
Twin Oaks DR from HANSELMAN RD to EAST END				\$256,789		\$256,789
UZZELL RD from VALUSEK RD to MASTERS RD				\$190,142		\$190,142
Grand Total	\$933,779	\$2,307,581	\$1,267,432	\$1,186,621	\$3,027,503	\$8,722,915

It should be noted that the PMS analysis performed on this project does not account for potential emergency repairs required due to unforeseen events such as flooding, utility repairs/placements, or over-loaded vehicles. Further improvements in the M&R plan may be made over time with improved performance models. A consistent data collection program will provide the necessary information to develop enhanced pavement deterioration models to reflect the local pavement performance trends in the City.

4.6 PCI Analysis for Various Budget Scenarios

The impacts of all analyzed scenarios on the network PCI scores are discussed in this section. Figure 4.7 shows the forecasted PCI values for the network. As stated earlier, the survey was conducted in February 2022 and the start date of the PMS analysis was set to January 1, 2023. For the “No Fund” scenario, the PCI decreases from 45 to 28 in 5 years and the overall network would be in the “Very Poor” condition category. For Scenario 1, a total budget of \$4.96 million is needed to maintain the PCI at 45. For Scenario 3, a total budget of \$8.72 million is needed to improve the PCI by 5 points.

Figures 4.8 and 4.9 show the PCI change under different scenarios for Arterial and Collector roads and Local roads, respectively. In these scenarios, the condition of Arterial and Collector roads is equal to or better than that of the Local roads condition.



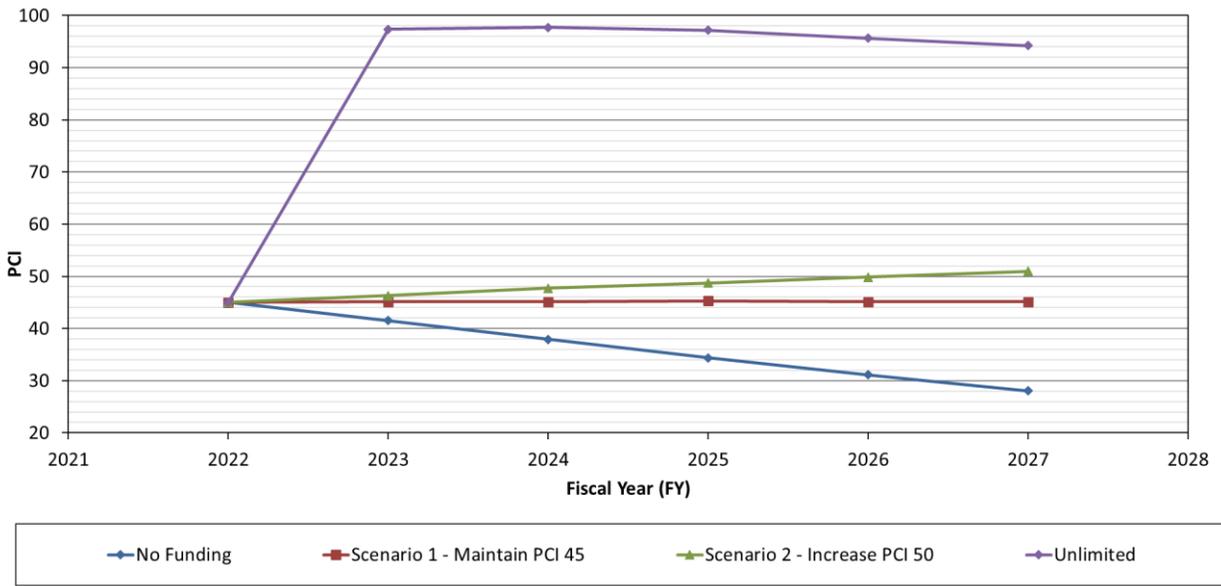


Figure 4.7: PCI Comparisons between Different Scenarios for Overall Network

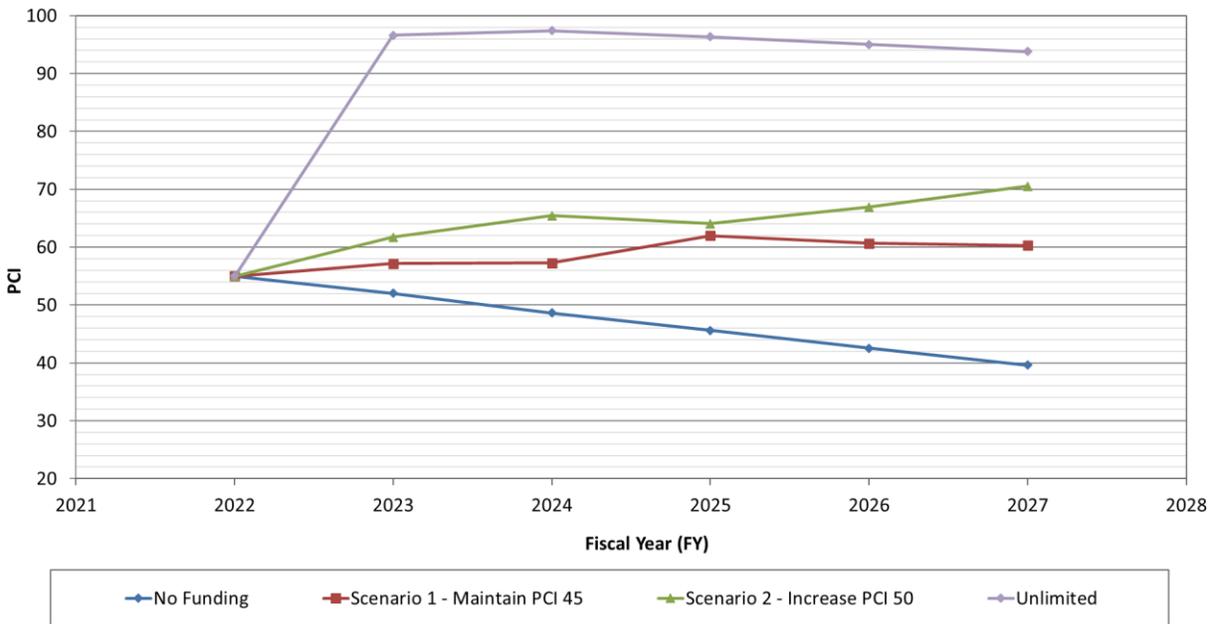


Figure 4.8: PCI Comparisons between Different Scenarios for Arterial & Collector Roads

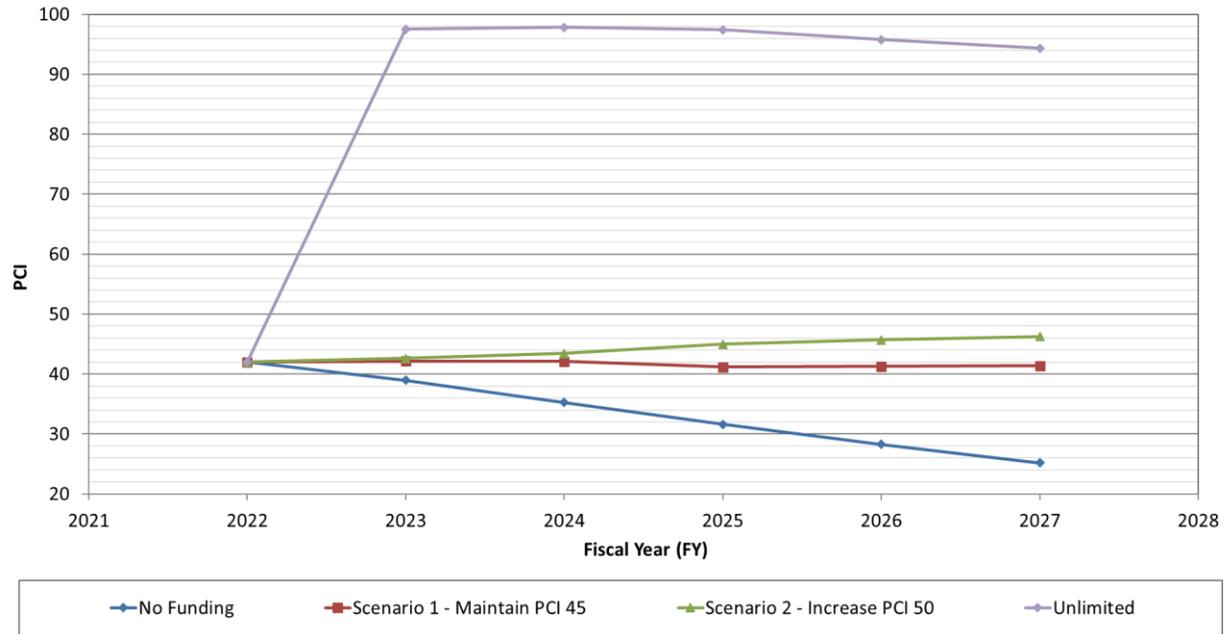


Figure 4.9: PCI Comparisons between Different Scenarios for Local Roads

4.8 Road Widening

As mentioned in Section 4.4, based on the City's interest in road widening a prioritized list of sections was developed for widening. Fugro used the following criteria: 1) if the total pavement width was less than 26 ft (i.e., width summation in both directions) and 2) if the section PCI was less than 40 and in need of treatment. The selected sections were then sorted by functional class and width as shown in Appendix G. The City's goal is to widen the roads to the 26 ft requirement at the time that major maintenance is also planned. The selected sections will be reclaimed and widened if their PCI is between 25 and 40 and will be reconstructed and widened if their PCI is less than 25.

It should be noted that the selected sections are all ACP and the cost of widening and treatment for these sections has been estimated as the sum of the treatment cost (based on the current width) and the cost of the extra construction (i.e., the difference of 26 ft and the current width multiplied by the length and unit cost of construction) since pavement structural layers should be constructed from the subgrade to the surface layer for the widened areas.

The list of candidate sections for widening is provided in Appendix G. Some of the sections in need of widening have already been selected in Scenario 2 as part of the 5-year work plan. For these sections, the cost of treatment is already calculated in the scenario, and therefore, only the cost of widening is added in Appendix G to avoid double counting. However, for other sections that are not part of the Scenario 2 work plan, both the treatment cost and widening cost were added up to derive a total widening cost estimate.

Based on the calculations for widening, it is estimated that City would need approximately \$34 million to bring all the City maintained roads to the 26 ft width standard. It should be noted that Fugro has not performed any right of way studies for this analysis. The cost of right of way acquisition in local/residential areas may increase the overall widening costs.

5. Recommendations

Several budgets and target driven scenarios have been discussed to provide 5-year M&R work plan options for the City. Fugro is making the following recommendations to the City:

- PMS analysis is an ongoing process. Fugro recommends that the City periodically reviews and updates its PMS program. Pavement maintenance and rehabilitation information need to be updated in the PMS database at least on an annual basis. Unit cost data for various M&R treatments should also be updated annually. The City's M&R Work Plan should be updated annually given its revised fiscal year and forecasted budgets.
- It is recommended that the City investigates the use of other innovative treatments such as full-depth reclamation, bonded concrete overlay, and whitetopping as potential future M&R strategies. Fugro can work with the City to develop an implementation plan (in a separate contract) if requested.
- It is recommended that the City collects a new round of pavement distress data at least every three years. Periodic collection of network distress data will greatly enhance the accuracy of network level multi-year plans and will result in significant cost savings for the City over time.
- It is recommended that the City considers adding additional pavement related data to its PMS database including structural layer thickness information (from Ground Penetrating Radar (GPR) studies) and pavement stiffness information (from Falling Weight Deflectometer (FWD) studies). This additional data can be used, in conjunction with the pavement distress data and road profiling data, to develop more comprehensive pavement condition indices such as an Overall Pavement Condition Index (OCI), which is used by several agencies throughout the State of Texas and across the US.
- Fugro recommends collecting data for ROW assets of the City including sidewalks, ramps, signals, signs, and pavement markings. Fugro recommends that the City collects ROW asset data every 3 to 5 years. Fugro can collect ROW asset data using its ARAN fleet at the same time as pavement distress data collection. Periodic collection and updates of the ROW asset inventory provides the City with the necessary information to develop and maintain an effective asset management system. With regular updates, the asset management system will help identify the current needs of the network and provide information for effective allocation of the City's budget to maintain existing assets or add new ones as necessary.

6. Conditions

The professional services that form the basis for this report have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable pavement engineers practicing in the same locality. No other warranty, expressed or implied, is made as the professional advice set forth.

The results, conclusions, and recommendations contained in this report are directed at and are intended to be utilized within the scope of work contained in the agreement executed by Fugro USA Land, Inc. and the client. This report is not intended to be used for any other purposes. Fugro USA Land, Inc. makes no claim or representation concerning any activity or condition falling outside the specified purposes to which this report is directed, said purposes being specifically limited to the scope of work as defined in said agreement. Inquiries as to said scope of work or concerning any activity or condition not specifically contained therein should be directed to Fugro USA Land, Inc. for a determination and, if necessary, further investigation.

7. References

- PAVER Asphalt Distress Manual: Pavement Distress Identification Guide for Asphalt-Surfaced Roads and Parking Lots. TR/104, U.S. Army Corps of Engineers Construction Engineering Research Laboratories, 1997.
- Shahin, M. Y. Pavement Management for Airports, Roads, and Parking Lots. Springer, Second Edition, 1994.
- ASTM D6433-20, Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys, ASTM International, West Conshohocken, PA, 2020.
- ASTM E950 / E950M-09(2018), Standard Test Method for Measuring the Longitudinal Profile of Travelled Surfaces with an Accelerometer-Established Inertial Profiling Reference, ASTM International, West Conshohocken, PA, 2018.
- ASTM E1926 – Standard Practice for Computing International Roughness Index of Roads from Longitudinal Profile Measurements, ASTM International, West Conshohocken, PA, 2015.

Appendix A. Field Comments

Road Segments Not Collected

*Fugro ID	R SECTION	Direction	Road Name	Expected Length	Collected Length	Comments
Near 138	100510	5	2ND ST	0.116	0	Uncollectable - Does not exist. Grass.
Near 153	100740	5	FREY RD	0.704	0	Uncollectable- does not exist
Near 164	100750	5	FURNACE	0.295	0	Uncollectable - does not exist
Near 101	100780	5	GILBOUGH RD	0.075	0	Uncollectable - does not exist
Near 153	100810	5	KELLY	0.163	0	Uncollectable - does not exist
Near 153	100810	5	KELLY	0.032	0	Uncollectable - does not exist
Near 153	100980	5	RYAN RD	0.054	0	Uncollectable - does not exist
Near 153	101030	5	STARDUSTER	0.109	0	Uncollectable - does not exist
Total				1.548		

**For Fugro IDs identified as "near", a unique id was not defined since nothing was collected for these sections. A reference near the area is provided for ease of identifying the location.*

Road Segments Collected Short

*Fugro ID	R SECTION	Road Name	Routed Length	Collected Length	Difference	Comments
41	100010	ALLELUIA TRL	0.651	0.591	0.06	Ended Earlier, Dead end
NA	100030	BISSELL RD	0.582	0.355	0.227	Started Late, Gravel road - Pavement type MISC.
201	100040	BISSELL RD	2.19	2.112	0.078	Started Late, Gravel road
201	100046	BISSELL RD	1.185	1.105	0.08	Ended Early, Gravel road
28	100050	BOOTH PLACE RD	0.22	0.203	0.017	Started Late, Dead End
49	100090	COOK RD	0.326	0.259	0.067	Ended Early, Closed Gate
47	100140	JORDAN RD	2.596	2.277	0.319	Ended Early, Closed Gate
63	100160	KING ST	0.935	0.922	0.013	Started Late, Dead End
42, 43, 44	100190	KIRCHNER RD	0.643	0.636	0.007	Started Late, Dead End
58	100200	KREUZER	0.258	0.246	0.012	Started Late, Dead End
NA	100230	MAGNOLIA ST	0.072	0.038	0.034	Ended Early, Gravel Road - Pavement type MISC.
NA	100270	MAYWALD ST	0.103	0.092	0.011	Started Late, Dead end - Pavement type MISC.
NA	100370	SHAW RD	0.278	0.185	0.093	Started Late, Gravel road - Pavement type MISC.

*Fugro ID	R SECTION	Road Name	Routed Length	Collected Length	Difference	Comments
NA	100390	SPRAGUE ST	0.298	0.227	0.071	Ended Early, Muddy Road - Pavement type MISC.
15	100450	UZZELL RD	1.087	0.831	0.256	Ended Early, Gate
NA	100460	VALUSEK RD	0.404	0.041	0.363	Started Late, Gravel road - Pavement type MISC.
NA	100470	WILSON DR	0.582	0.536	0.046	Ended Early, Gate - Pavement Type MISC.
NA	100560	CARPENTER RD	0.23	0.143	0.087	Started Late, Dead End Start- Pavement Type MISC.
Near 123	100580	CEMETERY RD	1.723	1.654	0.069	Ended Early, Gravel Road
Near 149	100620	CREEK DR	0.31	0.273	0.037	Started Late, Gravel road;End Earlier, Gravel Road
Near cross section of 123 & 133	100630	CREST RIDGE DR	0.7	0.534	0.166	Ended Early, Road Doesn't Exists
NA	100640	CROSSFIELD RD	0.232	0.078	0.154	Ended Early, Private Road
129	100650	DALMOLIN	0.421	0.383	0.038	Started Late, Dead End Start
159	100660	DEL BELLO BLVD	0.306	0.114	0.192	Ended Early, Closed Gate
Near 830	100720	ELM ST	0.068	0.045	0.023	Ended Early, Gravel Road
122	100730	FLORA	0.446	0.282	0.164	Started Late, Dead End Start
154	100790	HAL MCLAIN RD	0.596	0.573	0.023	Gap, Closed Gate
Near 82	100850	LOUDEN ST	0.073	0.057	0.016	Started Late, Dead End Start
101	100910	PALMETTO RD	0.136	0.108	0.028	Ended Early, Gravel Road
105	100940	PETRY LN	0.141	0.118	0.023	Ended Early, Dead End
145	100950	PINE ST	0.739	0.621	0.118	Started Late, Dead End Start
156	100960	POLLARD DR	0.515	0.387	0.128	Ended Early, Dead End
Near 84	101020	SPILLANE ST	0.071	0.056	0.015	Ended Early, Gravel Road
Total					3.035	

**For Fugro IDs identified as "near", a unique id was not defined since nothing was collected for these sections. A reference near the area is provided for ease of identifying the location.*

Appendix B. Network Condition Listings

Network Condition Listings

Fugro Unique ID	Road Name	BEG_DESC	END_DESC	Pavement Length (ft)	Pavement Area (ft ²)	Pavement Type	Functional Class	Inspection Date	PCI	IRI
205	LEWIS LN	MCCOY DR	WILSON RD	723	17,649	ACP	Arterial	2/19/2022	79	166
206	LEWIS LN	WILSON RD	CINDY DR	452	11,028	ACP	Arterial	2/19/2022	73	166
207	LEWIS LN	CINDY DR	PETRY LN	257	6,384	ACP	Arterial	2/19/2022	84	146
208	LEWIS LN	PETRY LN	PALMETTO ST	729	17,947	ACP	Arterial	2/19/2022	67	185
209	LEWIS LN	PALMETTO ST	SCHOOL RD	1,453	33,138	ACP	Arterial	2/19/2022	39	274
210	LEWIS LN	SCHOOL RD	CEMETRY RD	2,164	42,252	ACP	Arterial	2/19/2022	45	194
55	MCCOY RD	LEWIS LN	MORRIS AVE	1,793	19,823	PCC	Arterial	2/19/2022	53	186
56	MCCOY RD	CHARLOTTE DR	LEWIS LN	1,800	22,218	PCC	Arterial	2/19/2022	54	222
57	MCCOY RD	TANKERSLEY RD	CHARLOTTE DR	892	10,969	PCC	Arterial	2/19/2022	100	213
195	MCCOY RD	MORRIS AVE	LEWIS LN	1,818	20,617	PCC	Arterial	2/19/2022	55	208
196	MCCOY RD	LEWIS LN	CHARLOTTE DR	1,793	22,364	PCC	Arterial	2/19/2022	53	205
197	MCCOY RD	CHARLOTTE DR	TANKERSLEY RD	892	11,149	PCC	Arterial	2/19/2022	74	244
51	MERIDIANA PKWY	KREUZER RD	JORDAN RD	937	21,864	PCC	Arterial	2/19/2022	100	332
52	MERIDIANA PKWY	BISSELL RD	KREUZER RD	1,338	31,586	PCC	Arterial	2/19/2022	100	282
53	MERIDIANA PKWY	ROGERS RD	BISSELL RD	806	19,012	PCC	Arterial	2/19/2022	63	278
54	MERIDIANA PKWY	MORRIS AVE	ROGERS RD	526	12,727	PCC	Arterial	2/19/2022	80	215
191	MERIDIANA PKWY	JORDAN RD	KREUZER RD	952	22,110	PCC	Arterial	2/19/2022	67	293
192	MERIDIANA PKWY	KREUZER RD	BISSELL RD	1,337	30,134	PCC	Arterial	2/19/2022	62	278
193	MERIDIANA PKWY	BISSELL RD	ROGERS RD	829	18,901	PCC	Arterial	2/19/2022	95	295
194	MERIDIANA PKWY	ROGERS RD	MORRIS AVE	503	11,571	PCC	Arterial	2/19/2022	100	229
201	BISSELL RD	203 W/O MERIDIANA PKWY	SPRAGUE ST	1,295	28,403	ACP	Collector	2/19/2022	7	301
202	BISSELL RD	SPRAGUE ST	MASTERS RD	1,461	34,198	ACP	Collector	2/19/2022	6	261
203	BISSELL RD	MASTERS RD	RUSSELL ST	364	8,200	ACP	Collector	2/19/2022	82	205
204	BISSELL RD	RUSSELL ST	2952 FT W/O AMANDA LN	2,598	54,940	ACP	Collector	2/19/2022	83	193
199	CHARLOTTE	MCCOY RD	CINDY DR	1,358	24,768	ACP	Collector	2/19/2022	8	266
200	CHARLOTTE	CINDY DR	MASTERS RD	1,049	19,513	ACP	Collector	2/19/2022	13	251
59	CHARLOTTE ST	MCCOY RD	LIVINGSTON DR	996	12,352	PCC	Collector	2/19/2022	96	228
198	CHARLOTTE ST	LIVINGSTON DR	MCCOY RD	995	11,741	PCC	Collector	2/19/2022	100	243
182	CLARK RD	KIRCHNER RD	JORDAN RD	2,312	55,737	ACP	Collector	2/19/2022	41	161
211	DOGWOOD AVE	POLLARD DR	MASTERS RD	4,756	111,622	ACP	Collector	2/19/2022	20	272
183	JORDAN RD	CLARK RD	MERIDIANA PKWY (start of PCC)	2,468	57,705	ACP	Collector	2/19/2022	23	181
184	JORDAN RD	MERIDIANA PKWY (start of PCC)	MERIDIANA PKWY (end of PCC)	179	4,471	PCC	Collector	2/19/2022	97	180
185	JORDAN RD	MERIDIANA PKWY	MASTERS RD	3,012	69,340	ACP	Collector	2/19/2022	65	260
186	JORDAN RD	MASTERS RD	MAGNOLIA ST	618	14,518	ACP	Collector	2/19/2022	70	144
187	JORDAN RD	MAGNOLIA ST	SHERRI CIR	441	10,406	ACP	Collector	2/19/2022	90	158
188	JORDAN RD	SHERRI CIR WEST	SHERRI CIR EAST	778	17,905	ACP	Collector	2/19/2022	54	182
189	JORDAN RD	SHERRI CIR EAST	COOK RD	1,781	43,924	ACP	Collector	2/19/2022	83	161
190	JORDAN RD	COOK RD	1400 SE/O COOK RD	1,414	34,229	ACP	Collector	2/19/2022	79	228
140	1ST ST	LOUISIANA ST	485 FT E/O LOUISIANA ST	559	13,970	ACP	Local	2/19/2022	52	203
10	ACORN DR	HANSELMAN RD	EAST END	2,610	65,864	ACP	Local	2/19/2022	50	137
142	AIRPARK RD	WOLFE LN	HAL MCCLAIN RD	589	12,951	ACP	Local	2/19/2022	17	456
143	AIRPARK RD	HAL MCCLAIN RD	CUL DE SAC	354	7,299	ACP	Local	2/19/2022	23	373
133	ALABAMA ST	GEORGIA ST	CREST RIDGE DR	920	22,019	ACP	Local	2/19/2022	59	200
40	ALLELUJA TRL	IOWA LN	KIRCHNER RD	1,977	36,028	ACP	Local	2/19/2022	33	192
41	ALLELUJA TRL	KIRCHNER RD	1379 FT E/O KIRCHNER	1,075	21,759	ACP	Local	2/19/2022	10	207
77	AMANDA LN	798 FT S/O JANE ST	JANE ST	804	18,965	ACP	Local	2/19/2022	10	372

Network Condition Listings

Fugro Unique ID	Road Name	BEG_DESC	END_DESC	Pavement Length (ft)	Pavement Area (ft ²)	Pavement Type	Functional Class	Inspection Date	PCI	IRI
78	AMANDA LN	JANE ST	BISSELL RD	1,155	25,868	ACP	Local	2/19/2022	40	190
180	BELCHER RD	HAL McCLAIN RD	MASTERS RD	6,671	156,241	ACP	Local	2/19/2022	31	232
73	BISSELL RD	2952 FT W/O AMANDA LN	AMANDA LN	2,951	55,282	ACP	Local	2/19/2022	69	207
74	BISSELL RD	AMANDA LN	BRIARCREST ST	1,041	19,981	ACP	Local	2/19/2022	65	192
75	BISSELL RD	BRIARCREST ST	1187 FT E/O BRIARCREST ST	1,190	22,583	ACP	Local	2/19/2022	72	153
28	BOOTH PLACE RD	1136 FT W/O MASTERS RD	MASTERS RD	1,050	27,191	ACP	Local	2/19/2022	21	245
79	BRIARCREST ST	2955 FT S/O BISSELL RD	BISSELL RD	2,972	70,955	ACP	Local	2/19/2022	15	225
46	BURNETT RD	CUL DE SAC W/O KIRCHNER RD	1379 FT E/O KIRCHNER	1,240	31,154	ACP	Local	2/19/2022	52	145
109	CEDAR	MASTERS RD	420 FT E/O MASTERS RD	357	9,420	ACP	Local	2/19/2022	42	-1
118	CEMETERY RD	ROGERS RD	LEWIS LN	2,146	48,536	ACP	Local	2/19/2022	17	380
119	CEMETERY RD	LEWIS LN	GEORGIA ST	670	15,678	ACP	Local	2/19/2022	32	268
120	CEMETERY RD	GEORGIA ST	CREST RIDGE DR	1,155	27,210	ACP	Local	2/19/2022	36	288
121	CEMETERY RD	CREST RIDGE DR	SCOTT ST	1,212	26,662	ACP	Local	2/19/2022	38	256
124	CEMETERY RD	CEMETERY RD	CREST RIDGE DR	388	8,689	ACP	Local	2/19/2022	21	430
126	CEMETERY RD	SCOTT ST	CEMETERY RD	1,308	30,600	ACP	Local	2/19/2022	51	180
106	CINDY	LEWIS LN	CHARLOTTE DR	1,843	44,965	ACP	Local	2/19/2022	40	258
49	COOK RD	742 FT S/O COOK RD	COOKRD	407	8,457	ACP	Local	2/19/2022	5	260
50	COOK RD	COOK RD	937 FT N/O COOKRD	937	17,988	ACP	Local	2/19/2022	41	299
148	CREEK DR	374 FT NW/O PINE ST	PINE ST	296	6,806	ACP	Local	2/19/2022	18	-1
149	CREEK DR	PINE ST	HORSE SHOE DR	709	18,292	ACP	Local	2/19/2022	76	165
123	CREST RIDGE DR	CEMETERY RD	CEMETERY RD	3,046	70,822	ACP	Local	2/19/2022	67	177
128	DALMOLIN	SCOTT ST	SCOTT AVE	1,179	22,436	ACP	Local	2/19/2022	29	266
129	DALMOLIN	SCOTT AVE	1000 FT N/O SCOTT AVE	956	22,145	ACP	Local	2/19/2022	57	168
159	DEL BELLO BLVD	POLLARD DR	DEL BELLO BLVD	581	13,156	ACP	Local	2/19/2022	38	178
166	DEL BELLO LN	4589 ft west of Del Bello RD	Del Bello RD	2,261	40,122	ACP	Local	2/19/2022	66	161
160	DEL BELLO RD	Del Bello LN	1290 ft North of Del Bello LN	1,437	27,598	ACP	Local	2/19/2022	79	186
161	DEL BELLO RD	LIRA RD	DEL BELLO LN	592	11,487	ACP	Local	2/19/2022	70	138
162	DEL BELLO RD	DEL BELLO BLVD	LIRA ROAD	411	8,061	ACP	Local	2/19/2022	89	136
163	DEL BELLO RD	PATTERSON RD	DEL BELLO BLVD	1,261	24,708	ACP	Local	2/19/2022	58	177
164	DEL BELLO RD	DEL BELLO SPUR	PATTERSON RD	1,840	35,338	ACP	Local	2/19/2022	75	149
165	DEL BELLO RD	MASTERS RD	DEL BELLO SPUR	1,603	30,170	ACP	Local	2/19/2022	83	128
158	DEL BELLO SPUR	POLLARD DR	DEL BELLO SPUR	3,674	83,570	ACP	Local	2/19/2022	27	260
114	ELM ST	MORRIS AVE	LARGE AVE	337	8,959	ACP	Local	2/19/2022	66	-1
122	FLORA	2300 FT W/O CEMETERY RD	CEMETERY RD	1,451	34,248	ACP	Local	2/19/2022	70	194
172	FURNACE RD	OAK HILL	LUM RD	1,114	27,978	ACP	Local	2/19/2022	30	367
173	FURNACE RD	LUM RD	OLD CHOCOLATE BAYOU RD	1,706	37,623	ACP	Local	2/19/2022	27	263
0	GATES LP	MASTERS RD	MASTERS RD	2,714	47,806	ACP	Local	2/19/2022	16	260
131	GEORGIA	CEMETERY RD	ALABAMA ST	718	16,945	ACP	Local	2/19/2022	40	252
132	GEORGIA	ALABAMA ST	MISSISSIPPI ST	874	19,551	ACP	Local	2/19/2022	22	232
152	HAL McCLAIN RD	AIRPARK RD	FREY RD	372	8,751	ACP	Local	2/19/2022	47	121
153	HAL McCLAIN RD	FREY RD	KELLY ST	684	15,732	ACP	Local	2/19/2022	36	195
154	HAL McCLAIN RD	KELLY ST	1910 FT N/O KELLY ST	1,909	44,661	ACP	Local	2/19/2022	62	252
5	Hanselman RD	LIVE OAK CT	MASTERS RD	2,760	56,028	ACP	Local	2/19/2022	36	165
6	Hanselman RD	ACORN DR	LIVE OAK CT	945	20,315	ACP	Local	2/19/2022	20	238
7	Hanselman RD	OAKCREST DR	ACORN DR	514	9,959	ACP	Local	2/19/2022	44	141
8	Hanselman RD	TWIN OKAS DR	OAKCREST DR	665	12,758	ACP	Local	2/19/2022	83	117

Network Condition Listings

Fugro Unique ID	Road Name	BEG_DESC	END_DESC	Pavement Length (ft)	Pavement Area (ft ²)	Pavement Type	Functional Class	Inspection Date	PCI	IRI
146	HORSE SHOE DR	PINE ST	CROSSSHEILD RD	1,125	26,162	ACP	Local	2/19/2022	88	250
147	HORSE SHOE DR	CROSSSHEILD RD	CREEK RD	320	7,159	ACP	Local	2/19/2022	87	180
35	IOWA LN	STEVENS RD	SHAW RD	1,343	26,429	ACP	Local	2/19/2022	19	222
36	IOWA LN	SHAW RD	BISSELL RD	238	4,857	ACP	Local	2/19/2022	26	562
37	IOWA LN	BISSELL RD	MORRIS AVE	1,428	27,774	ACP	Local	2/19/2022	24	295
76	JANE ST	1106 FT W/O AMANDA LN	AMANDA LN	1,098	27,011	ACP	Local	2/19/2022	9	258
47	JORDAN RD	1400 SE/O COOK RD	SE END	1,012	21,250	ACP	Local	2/19/2022	18	329
72	KEMP ST	MASTERS RD	RUSSELL ST	354	7,996	ACP	Local	2/19/2022	20	-1
61	KING ST	683 FT W/O SPRAGUE ST	SPRAGUE ST	628	13,686	ACP	Local	2/19/2022	32	301
62	KING ST	SPRAGUE ST	MASTERS RD	1,808	43,375	ACP	Local	2/19/2022	18	373
63	KING ST	RUSSELL ST	2366 FT E/O RUSSELL ST	2,300	50,542	ACP	Local	2/19/2022	18	362
17	KINGS CIR	S/O KINGS CIR	N/O KINGS CIR	523	12,517	ACP	Local	2/19/2022	28	485
16	KINGS DR	KINGS DR	KINGS CIR	1,919	35,504	ACP	Local	2/19/2022	27	269
42	KIRCHNER RD	CLARK RD	BURNETT RD	874	19,765	ACP	Local	2/19/2022	32	219
43	KIRCHNER RD	BURNETT RD	ALLELUIA TRL	1,489	35,174	ACP	Local	2/19/2022	15	247
44	KIRCHNER RD	384 FT N/O ALLELUIA TRL	ALLELUIA TRL	382	8,330	ACP	Local	2/19/2022	19	159
58	KREUZER	1333 FT W/O MERIDIANA PKWY	MERIDIANA PKWY	1,257	30,441	ACP	Local	2/19/2022	38	292
90	LARGE AVE	MCCOY AVE	WILSON RD	729	17,778	ACP	Local	2/19/2022	100	163
91	LARGE AVE	WILSON RD	PALMETTO ST	1,437	35,345	ACP	Local	2/19/2022	100	199
92	LARGE AVE	PALMETTO ST	RUSSELL ST	1,111	27,640	ACP	Local	2/19/2022	73	318
93	LARGE AVE	RUSSELL ST	SCHOOL RD	348	8,083	ACP	Local	2/19/2022	91	217
94	LARGE AVE	SCHOOL RD	ELM ST	360	8,210	ACP	Local	2/19/2022	95	214
95	LARGE AVE	ELM ST	456 FT E/O ELM ST	455	10,048	ACP	Local	2/19/2022	63	286
168	LIRA RD	DEL BELLO RD	TAMMY DR	525	11,872	ACP	Local	2/19/2022	37	215
169	LIRA RD	TAMMY DR	1015 FT NE/O TAMMY DR	1,016	23,354	ACP	Local	2/19/2022	10	294
9	LIVE OAK CT	HANSELMAN RD	EAST END	1,661	40,113	ACP	Local	2/19/2022	18	229
137	LOUISIANA ST	MISSISSIPPI ST	1ST ST	1,782	45,981	ACP	Local	2/19/2022	75	182
138	LOUISIANA ST	1ST ST	2ND ST	717	18,499	ACP	Local	2/19/2022	49	223
139	LOUISIANA ST	2ND ST	WOLFE LN	1,807	45,985	ACP	Local	2/19/2022	70	209
30	LOVERS LN	CLARK RD	1667 FT N/O CLARK RD	1,683	39,230	ACP	Local	2/19/2022	42	159
175	LUM RD	FURNACE RD	527 FT N/E OF FURNACE RD	506	11,951	ACP	Local	2/19/2022	60	157
68	MAGNOLIA ST	JORDAN RD	TAYLOR ST	1,050	24,761	ACP	Local	2/19/2022	12	559
1	Manvel Sandy Point RD	MASTERS RD	Hanselman RD	2,662	50,584	ACP	Local	2/19/2022	53	142
32	MASON RD	1239 FT S/O STEVENS RD	STEVENS RD	1,232	27,556	ACP	Local	2/19/2022	30	180
2	MASTERS RD	Hanselman RD	W/O OF GATES LP	1,802	35,252	ACP	Local	2/19/2022	27	186
3	MASTERS RD	W/O OF GATES LP	E/O OF GATES LP	1,372	27,160	ACP	Local	2/19/2022	37	125
4	MASTERS RD	E/O OF GATES LP	UZZELL RD	2,061	42,031	ACP	Local	2/19/2022	51	212
19	MASTERS RD	UZZELL RD	BOOTH BLACE RD	1,942	41,831	ACP	Local	2/19/2022	39	189
20	MASTERS RD	BOOTH BLACE RD	REED LN	1,188	24,225	ACP	Local	2/19/2022	70	114
21	MASTERS RD	REED LN	JORDAN RD	1,762	37,845	ACP	Local	2/19/2022	66	120
22	MASTERS RD	JORDAN RD	TAYLOR ST	1,090	22,892	ACP	Local	2/19/2022	52	134
23	MASTERS RD	TAYLOR ST	KING ST	368	8,533	ACP	Local	2/19/2022	45	168
24	MASTERS RD	KING ST	KEMP ST	366	8,263	ACP	Local	2/19/2022	32	236
25	MASTERS RD	KEMP ST	BISSELL RD	361	8,736	ACP	Local	2/19/2022	58	125
26	MASTERS RD	BISSELL RD	ROGERS RD	1,079	24,360	ACP	Local	2/19/2022	32	168
27	MASTERS RD	ROGERS RD	MORRIS AVE	346	8,154	PCC	Local	2/19/2022	100	302

Network Condition Listings

Fugro Unique ID	Road Name	BEG_DESC	END_DESC	Pavement Length (ft)	Pavement Area (ft ²)	Pavement Type	Functional Class	Inspection Date	PCI	IRI
134	MISSISSIPPI	MORRIS AVE	LOUISIANA ST	2,115	49,314	ACP	Local	2/19/2022	63	194
135	MISSISSIPPI	LOUISIANA ST	GEORGIA ST	551	10,798	ACP	Local	2/19/2022	31	154
136	MISSISSIPPI	GEORGIA ST	1937 FT N/O GEORGIA ST	1,950	40,868	ACP	Local	2/19/2022	36	170
174	OAK HILL	MASTERS RD	FURNACE RD	1,650	39,187	ACP	Local	2/19/2022	54	166
11	Oakcrest DR	HANSELMAN RD	EAST END	2,399	55,286	ACP	Local	2/19/2022	21	325
176	OLD CHOCOLATE BAYOU	PATTERSON RD	1628 FT. NW/O PATTERSON RD	1,623	33,435	ACP	Local	2/19/2022	22	215
177	OLD CHOCOLATE BAYOU	FURNACE RD	PATTERSON RD	1,655	34,766	ACP	Local	2/19/2022	10	230
178	OLD CHOCOLATE BAYOU	MASTERS RD	FURNACE RD	1,643	33,813	ACP	Local	2/19/2022	26	209
101	PALMETTO RD	S/W OF ROGERS RD	ROGERS RD	222	5,722	ACP	Local	2/19/2022	12	-1
102	PALMETTO ST	PALMETTO RD	LARGE AVE	655	14,872	ACP	Local	2/19/2022	29	383
103	PALMETTO ST	LARGE AVE	CANAAN ST	698	15,212	ACP	Local	2/19/2022	89	512
171	PATTERSON RD	DEL BELLO RD	OLD CHOCOLATE BAYOU RD	4,299	86,738	ACP	Local	2/19/2022	22	162
80	Pearland Sites RD	ALVIN MANVEL RD	HIGHWAY 6	1,373	32,677	ACP	Local	2/19/2022	38	281
105	PETRY LN	725 FT S/O LEWIS LN	LEWIS LN	623	14,080	ACP	Local	2/19/2022	30	229
144	PINE ST	MORRIS AVE	HORSE SHOE DR	2,504	58,681	ACP	Local	2/19/2022	44	142
145	PINE ST	HORSE SHOE DR	CREEK DR	702	16,993	ACP	Local	2/19/2022	80	216
156	POLLARD DR	1047 ft SOUTH OF DEL BELLO SPUR	DEL BELLO SPUR	396	8,149	ACP	Local	2/19/2022	4	372
157	POLLARD DR	DEL BELLO SPUR	DEL BELLO BLVD	1,596	35,051	ACP	Local	2/19/2022	12	211
29	REED LN	MASTERS RD	1477 FT E/O MASTERS RD	1,452	33,091	ACP	Local	2/19/2022	10	354
81	ROGERS RD	MCCOY DR	LOUDEN ST	344	8,867	ACP	Local	2/19/2022	96	253
82	ROGERS RD	LOUDEN ST	WILSON RD	355	9,091	ACP	Local	2/19/2022	89	344
83	ROGERS RD	WILSON RD	PALMETTO RD	1,452	36,585	ACP	Local	2/19/2022	100	216
84	ROGERS RD	PALMETTO RD	SPILLANE ST	363	7,986	ACP	Local	2/19/2022	93	188
85	ROGERS RD	SPILLANE ST	MASTERS RD	371	8,164	ACP	Local	2/19/2022	80	201
86	ROGERS RD	MASTERS RD	RUSSELL ST	363	7,403	ACP	Local	2/19/2022	61	254
87	ROGERS RD	RUSSELL ST	MAGNOLIA ST	364	6,703	ACP	Local	2/19/2022	28	353
88	ROGERS RD	MAGNOLIA ST	ELM ST	358	6,508	ACP	Local	2/19/2022	45	259
89	ROGERS RD	ELM ST	CEMETERY RD	1,795	31,888	ACP	Local	2/19/2022	48	297
69	RUSSELL ST	TAYLOR ST	KING ST	355	8,728	ACP	Local	2/19/2022	27	253
70	RUSSELL ST	KING ST	KEMP ST	362	8,394	ACP	Local	2/19/2022	25	538
71	RUSSELL ST	KEMP ST	BISSELL RD	362	8,531	ACP	Local	2/19/2022	5	682
110	RUSSELL ST	370 FT S/O ROGERS RD	ROGERS RD	347	8,821	ACP	Local	2/19/2022	41	-1
111	RUSSELL ST	ROGERS RD	LARGE AVE	656	15,608	ACP	Local	2/19/2022	21	223
115	SCHOOL RD	MORRIS AVE	LARGE AVE	325	8,135	ACP	Local	2/19/2022	84	-1
116	SCHOOL RD	LARGE AVE	LEWIS LN	1,456	34,509	PCC	Local	2/19/2022	97	262
127	SCOTT AVE	MASTERS RD	DALMOLIN RD	2,607	51,491	ACP	Local	2/19/2022	33	177
130	SCOTT AVE	CEMETRY RD	SCOTT AVE	1,502	28,525	ACP	Local	2/19/2022	19	200
48	SHERRI CIR	JORDAN RD	JORDAN RD	2,877	73,275	ACP	Local	2/19/2022	60	151
65	SPRAGUE ST	KING ST	BISSELL RD	777	20,034	ACP	Local	2/19/2022	24	140
33	STEVENS RD	1400 FT W/O MASON RD	MASON RD	1,402	30,237	ACP	Local	2/19/2022	88	210
34	STEVENS RD	MASON RD	IOWA LN	738	17,022	ACP	Local	2/19/2022	63	264
170	TAMMY DR	LIRA RD	1090 FT N/O LIRA RD	1,088	24,367	ACP	Local	2/19/2022	15	307
60	TANKERSLEY RD	MCCOY DR	MASTERS RD	2,396	58,418	ACP	Local	2/19/2022	29	399
155	TAXI WAY THREE	FREY RD	740 FT E/O FREY RD	709	14,472	ACP	Local	2/19/2022	100	300
66	TAYLOR ST	MASTERS RD	RUSSELL ST	366	8,194	ACP	Local	2/19/2022	81	321
67	TAYLOR ST	RUSSELL ST	MAGNOLIA ST	344	8,801	ACP	Local	2/19/2022	46	372

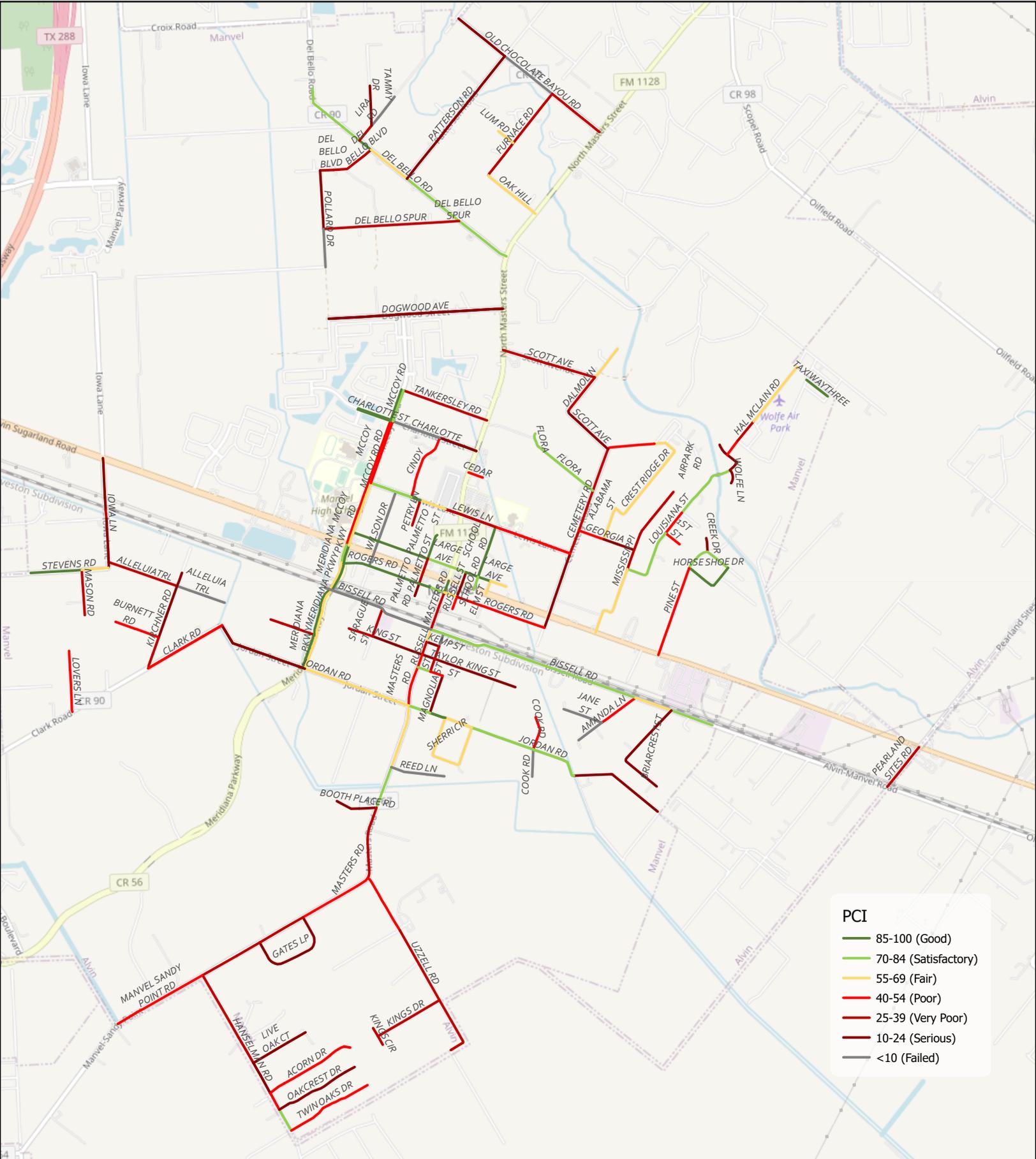
Network Condition Listings

Fugro Unique ID	Road Name	BEG_DESC	END_DESC	Pavement Length (ft)	Pavement Area (ft ²)	Pavement Type	Functional Class	Inspection Date	PCI	IRI
12	Twin Oaks DR	HANSELMAN RD	EAST END	2,435	51,153	ACP	Local	2/19/2022	48	227
13	UZZELL RD	VALUSEK RD	MASTERS RD	1,685	37,877	ACP	Local	2/19/2022	44	171
14	UZZELL RD	KINGS DR	VALUSEK RD	2,193	35,312	ACP	Local	2/19/2022	27	176
15	UZZELL RD	1719 FT S/O KINGS DR	KINGS DR	418	9,436	ACP	Local	2/19/2022	25	407
96	WILSON DR	852 FT S/O ROGERS RD	ROGERS RD	371	9,043	ACP	Local	2/19/2022	9	595
98	WILSON DR	ROGERS RD	LARGE AVE	710	16,623	ACP	Local	2/19/2022	7	284
99	WILSON DR	LARGE AVE	LEWIS LN	1,434	32,128	ACP	Local	2/19/2022	5	275
141	WOLFE LN	LOUISIANA ST	484 FT SE/O LOUISIANA ST	378	8,760	ACP	Local	2/19/2022	23	675

Appendix C. Network Condition Maps

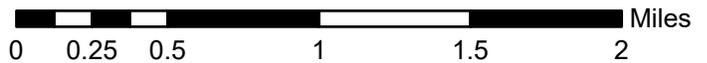


City of Manvel, TX PCI Map - Feb 2022

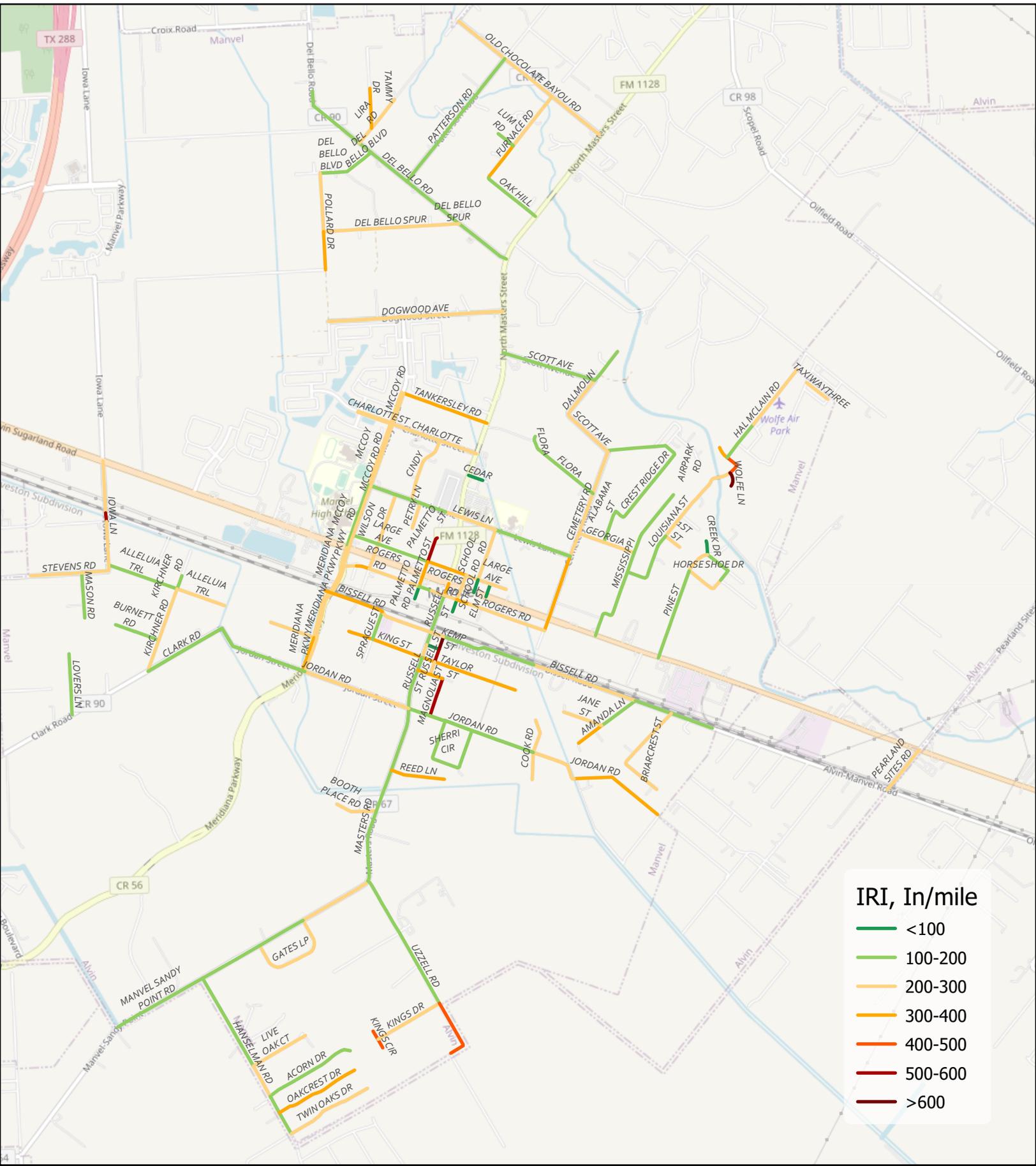


Fugro USA Land, Inc.
Date of Compilation: 05/16/2022

Scale: 1:40,000

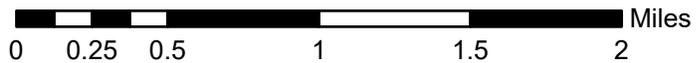


City of Manvel, TX International Roughness Index Map - Feb 2022



Fugro USA Land, Inc.
Date of Compilation: 05/16/2022

Scale: 1:40,000



Appendix D. Current Needs

Network Level Needs Assessment

Fugro Unique ID	Street Name	BEG_DESC	END_DESC	Pavement Type	Functional Class	Pavement Area (ft ²)	Plan Year	Treatment	Treatment Cost (\$)	Before PCI	Improved PCI
140	1ST ST	LOUISIANA ST	485 FT E/O LOUISIANA ST	ACP	Local	13,970	2023	AC - Mill & 2" Overlay	\$49,873	48	100
10	ACORN DR	HANSELMAN RD	EAST END	ACP	Local	65,864	2023	AC - Mill & 2" Overlay	\$235,135	47	100
143	AIRPARK RD	HAL MCCLAIN RD	CUL DE SAC	ACP	Local	7,299	2023	AC - Reconstruction	\$111,815	19	100
142	AIRPARK RD	WOLFE LN	HAL MCCLAIN RD	ACP	Local	12,951	2023	AC - Reconstruction	\$198,415	13	100
133	ALABAMA ST	GEORGIA ST	CREST RIDGE DR	ACP	Local	22,019	2023	AC - Crack/Slurry Seal	\$6,826	55	80
40	ALLELUIA TRL	IOWA LN	KIRCHNER RD	ACP	Local	36,028	2023	AC - Reclamation	\$165,369	28	100
41	ALLELUIA TRL	KIRCHNER RD	1379 FT E/O KIRCHNER	ACP	Local	21,759	2023	AC - Reconstruction	\$333,352	8	100
78	AMANDA LN	JANE ST	BISSELL RD	ACP	Local	25,868	2023	AC - Reclamation	\$118,732	36	100
77	AMANDA LN	798 FT S/O JANE ST	JANE ST	ACP	Local	18,965	2023	AC - Reconstruction	\$290,544	8	100
180	BELCHER RD	HAL MCCLAIN RD	MASTERS RD	ACP	Local	156,241	2023	AC - Reclamation	\$717,147	27	100
73	BISSELL RD	2952 FT W/O AMANDA LN	AMANDA LN	ACP	Local	55,282	2023	AC - Crack/Slurry Seal	\$17,137	66	91
74	BISSELL RD	AMANDA LN	BRIARCREST ST	ACP	Local	19,981	2023	AC - Crack/Slurry Seal	\$6,194	61	86
75	BISSELL RD	BRIARCREST ST	1187 FT E/O BRIARCREST ST	ACP	Local	22,583	2023	AC - Crack/Slurry Seal	\$7,001	68	93
201	BISSELL RD	203 W/O MERIDIANA PKWY	SPRAGUE ST	ACP	Collector	28,403	2023	AC - Reconstruction	\$435,132	6	100
204	BISSELL RD	RUSSELL ST	2952 FT W/O AMANDA LN	ACP	Collector	54,940	2023	AC - Crack/Slurry Seal	\$17,032	81	100
203	BISSELL RD	MASTERS RD	RUSSELL ST	ACP	Collector	8,200	2023	AC - Crack/Slurry Seal	\$2,542	80	100
202	BISSELL RD	SPRAGUE ST	MASTERS RD	ACP	Collector	34,198	2023	AC - Reconstruction	\$523,918	3	100
28	BOOTH PLACE RD	1136 FT W/O MASTERS RD	MASTERS RD	ACP	Local	27,191	2023	AC - Reconstruction	\$416,572	16	100
79	BRIARCREST ST	2955 FT S/O BISSELL RD	BISSELL RD	ACP	Local	70,955	2023	AC - Reconstruction	\$1,087,023	13	100
46	BURNETT RD	CUL DE SAC W/O KIRCHNER RD	1379 FT E/O KIRCHNER	ACP	Local	31,154	2023	AC - Mill & 2" Overlay	\$111,219	48	100
109	CEDAR	MASTERS RD	420 FT E/O MASTERS RD	ACP	Local	9,420	2023	AC - Reclamation	\$43,236	38	100
119	CEMETERY RD	LEWIS LN	GEORGIA ST	ACP	Local	15,678	2023	AC - Reclamation	\$71,962	27	100
126	CEMETERY RD	SCOTT ST	CEMETERY RD	ACP	Local	30,600	2023	AC - Mill & 2" Overlay	\$109,243	47	100
118	CEMETERY RD	ROGERS RD	LEWIS LN	ACP	Local	48,536	2023	AC - Reconstruction	\$743,573	14	100
121	CEMETERY RD	CREST RIDGE DR	SCOTT ST	ACP	Local	26,662	2023	AC - Reclamation	\$122,378	34	100
120	CEMETERY RD	GEORGIA ST	CREST RIDGE DR	ACP	Local	27,210	2023	AC - Reclamation	\$124,893	32	100
124	CEMETERY RD	CEMETERY RD	CREST RIDGE DR	ACP	Local	8,689	2023	AC - Reconstruction	\$133,115	17	100
200	CHARLOTTE	CINDY DR	MASTERS RD	ACP	Collector	19,513	2023	AC - Reconstruction	\$298,945	10	100
199	CHARLOTTE	MCCOY RD	CINDY DR	ACP	Collector	24,768	2023	AC - Reconstruction	\$379,447	7	100
106	CINDY	LEWIS LN	CHARLOTTE DR	ACP	Local	44,965	2023	AC - Reclamation	\$206,390	36	100
182	CLARK RD	KIRCHNER RD	JORDAN RD	ACP	Collector	55,737	2023	AC - Reclamation	\$255,835	37	100
50	COOK RD	COOK RD	937 FT N/O COOKRD	ACP	Local	17,988	2023	AC - Reclamation	\$82,567	37	100
49	COOK RD	742 FT S/O COOK RD	COOKRD	ACP	Local	8,457	2023	AC - Reconstruction	\$129,566	4	100
148	CREEK DR	374 FT NW/O PINE ST	PINE ST	ACP	Local	6,806	2023	AC - Reconstruction	\$104,263	14	100
149	CREEK DR	PINE ST	HORSE SHOE DR	ACP	Local	18,292	2023	AC - Crack/Slurry Seal	\$5,671	74	99
123	CREST RIDGE DR	CEMETERY RD	CEMETERY RD	ACP	Local	70,822	2023	AC - Crack/Slurry Seal	\$21,955	64	89
128	DALMOLIN	SCOTT ST	SCOTT AVE	ACP	Local	22,436	2023	AC - Reclamation	\$102,982	25	100
129	DALMOLIN	SCOTT AVE	1000 FT N/O SCOTT AVE	ACP	Local	22,145	2023	AC - Mill & 2" Overlay	\$79,058	53	100
159	DEL BELLO BLVD	POLLARD DR	DEL BELLO BLVD	ACP	Local	13,156	2023	AC - Reclamation	\$60,385	34	100
166	DEL BELLO LN	4589 ft west of Del Bello RD	Del Bello RD	ACP	Local	40,122	2023	AC - Crack/Slurry Seal	\$12,438	63	88
164	DEL BELLO RD	DEL BELLO SPUR	PATTERSON RD	ACP	Local	35,338	2023	AC - Crack/Slurry Seal	\$10,955	72	97
161	DEL BELLO RD	LIRA RD	DEL BELLO LN	ACP	Local	11,487	2023	AC - Crack/Slurry Seal	\$3,561	67	92
160	DEL BELLO RD	Del Bello LN	1290 ft North of Del Bello LN	ACP	Local	27,598	2023	AC - Crack/Slurry Seal	\$8,555	77	100
165	DEL BELLO RD	MASTERS RD	DEL BELLO SPUR	ACP	Local	30,170	2023	AC - Crack/Slurry Seal	\$9,353	82	100
163	DEL BELLO RD	PATTERSON RD	DEL BELLO BLVD	ACP	Local	24,708	2023	AC - Mill & 2" Overlay	\$88,207	53	100
158	DEL BELLO SPUR	POLLARD DR	DEL BELLO SPUR	ACP	Local	83,570	2023	AC - Reconstruction	\$1,280,295	24	100
211	DOGWOOD AVE	POLLARD DR	MASTERS RD	ACP	Collector	111,622	2023	AC - Reconstruction	\$1,710,055	16	100
114	ELM ST	MORRIS AVE	LARGE AVE	ACP	Local	8,959	2023	AC - Crack/Slurry Seal	\$2,777	63	88
122	FLORA	2300 FT W/O CEMETERY RD	CEMETERY RD	ACP	Local	34,248	2023	AC - Crack/Slurry Seal	\$10,617	67	92
172	FURNACE RD	OAK HILL	LUM RD	ACP	Local	27,978	2023	AC - Reclamation	\$128,417	26	100
173	FURNACE RD	LUM RD	OLD CHOCOLATE BAYOU RD	ACP	Local	37,623	2023	AC - Reconstruction	\$576,384	23	100
0	GATES LP	MASTERS RD	MASTERS RD	ACP	Local	47,806	2023	AC - Reconstruction	\$732,394	13	100

Network Level Needs Assessment

Fugro Unique ID	Street Name	BEG_DESC	END_DESC	Pavement Type	Functional Class	Pavement Area (ft ²)	Plan Year	Treatment	Treatment Cost (\$)	Before PCI	Improved PCI
131	GEORGIA	CEMETERY RD	ALABAMA ST	ACP	Local	16,945	2023	AC - Reclamation	\$77,777	36	100
132	GEORGIA	ALABAMA ST	MISSISSIPPI ST	ACP	Local	19,551	2023	AC - Reconstruction	\$299,529	17	100
152	HAL MCLAIN RD	AIRPARK RD	FREY RD	ACP	Local	8,751	2023	AC - Mill & 2" Overlay	\$31,243	43	100
153	HAL MCLAIN RD	FREY RD	KELLY ST	ACP	Local	15,732	2023	AC - Reclamation	\$72,210	32	100
154	HAL MCLAIN RD	KELLY ST	1910 FT N/O KELLY ST	ACP	Local	44,661	2023	AC - Crack/Slurry Seal	\$13,845	58	83
8	Hanselman RD	TWIN OKAS DR	OAKCREST DR	ACP	Local	12,758	2023	AC - Crack/Slurry Seal	\$3,955	81	100
6	Hanselman RD	ACORN DR	LIVE OAK CT	ACP	Local	20,315	2023	AC - Reconstruction	\$311,223	15	100
7	Hanselman RD	OAKCREST DR	ACORN DR	ACP	Local	9,959	2023	AC - Reclamation	\$45,710	40	100
5	Hanselman RD	LIVE OAK CT	MASTERS RD	ACP	Local	56,028	2023	AC - Reclamation	\$257,170	32	100
37	IOWA LN	BISSELL RD	MORRIS AVE	ACP	Local	27,774	2023	AC - Reconstruction	\$425,495	19	100
36	IOWA LN	SHAW RD	BISSEL RD	ACP	Local	4,857	2023	AC - Reconstruction	\$74,412	23	100
35	IOWA LN	STEVENS RD	SHAW RD	ACP	Local	26,429	2023	AC - Reconstruction	\$404,898	15	100
76	JANE ST	1106 FT W/O AMANDA LN	AMANDA LN	ACP	Local	27,011	2023	AC - Reconstruction	\$413,805	7	100
185	JORDAN RD	MERIDIANA PKWY	MASTERS RD	ACP	Collector	69,340	2023	AC - Crack/Slurry Seal	\$21,495	62	87
183	JORDAN RD	CLARK RD	MERIDIANA PKWY (start of PCC)	ACP	Collector	57,705	2023	AC - Reconstruction	\$66,885	19	100
186	JORDAN RD	MASTERS RD	MAGNOLIA ST	ACP	Collector	14,518	2023	AC - Crack/Slurry Seal	\$4,501	67	92
190	JORDAN RD	COOK RD	1400 SE/O COOK RD	ACP	Collector	34,229	2023	AC - Crack/Slurry Seal	\$10,611	76	100
189	JORDAN RD	SHERRI CIR EAST	COOK RD	ACP	Collector	43,924	2023	AC - Crack/Slurry Seal	\$13,616	80	100
47	JORDAN RD	1400 SE/O COOK RD	SE END	ACP	Local	21,250	2023	AC - Reconstruction	\$325,548	14	100
188	JORDAN RD	SHERRI CIR WEST	SHERRI CIR EAST	ACP	Collector	17,905	2023	AC - Mill & 2" Overlay	\$63,922	47	100
72	KEMP ST	MASTERS RD	RUSSELL ST	ACP	Local	7,996	2023	AC - Reconstruction	\$122,497	16	100
63	KING ST	RUSSELL ST	2366 FT E/O RUSSELL ST	ACP	Local	50,542	2023	AC - Reconstruction	\$774,296	14	100
61	KING ST	683 FT W/O SPRAGUE ST	SPRAGUE ST	ACP	Local	13,686	2023	AC - Reclamation	\$62,819	28	100
62	KING ST	SPRAGUE ST	MASTERS RD	ACP	Local	43,375	2023	AC - Reconstruction	\$664,502	14	100
17	KINGS CIR	S/O KINGS CIR	N/O KINGS CIR	ACP	Local	12,517	2023	AC - Reconstruction	\$191,760	25	100
16	KINGS DR	KINGS DR	KINGS CIR	ACP	Local	35,504	2023	AC - Reconstruction	\$543,917	23	100
42	KIRCHNER RD	CLARK RD	BURNETT RD	ACP	Local	19,765	2023	AC - Reclamation	\$90,720	28	100
43	KIRCHNER RD	BURNETT RD	ALLELUIA TRL	ACP	Local	35,174	2023	AC - Reconstruction	\$538,864	13	100
44	KIRCHNER RD	384 FT N/O ALLELUIA TRL	ALLELUIA TRL	ACP	Local	8,330	2023	AC - Reconstruction	\$127,613	15	100
58	KREUZER	1333 FT W/O MERIDIANA PKWY	MERIDIANA PKWY	ACP	Local	30,441	2023	AC - Reclamation	\$139,726	34	100
92	LARGE AVE	PALMETTO ST	RUSSELL ST	ACP	Local	27,640	2023	AC - Crack/Slurry Seal	\$8,568	70	95
95	LARGE AVE	ELM ST	456 FT E/O ELM ST	ACP	Local	10,048	2023	AC - Crack/Slurry Seal	\$3,115	59	84
207	LEWIS LN	CINDY DR	PETRY LN	ACP	Arterial	6,384	2023	AC - Crack/Slurry Seal	\$1,979	82	100
210	LEWIS LN	SCHOOL RD	CEMETRY RD	ACP	Arterial	42,252	2023	AC - Reclamation	\$193,936	40	100
206	LEWIS LN	WILSON RD	CINDY DR	ACP	Arterial	11,028	2023	AC - Crack/Slurry Seal	\$3,419	70	95
209	LEWIS LN	PALMETTO ST	SCHOOL RD	ACP	Arterial	33,138	2023	AC - Reclamation	\$152,105	34	100
205	LEWIS LN	MCCOY DR	WILSON RD	ACP	Arterial	17,649	2023	AC - Crack/Slurry Seal	\$5,471	77	100
208	LEWIS LN	PETRY LN	PALMETTO ST	ACP	Arterial	17,947	2023	AC - Crack/Slurry Seal	\$5,564	64	89
169	LIRA RD	TAMMY DR	1015 FT NE/O TAMMY DR	ACP	Local	23,354	2023	AC - Reconstruction	\$357,779	8	100
168	LIRA RD	DEL BELLO RD	TAMMY DR	ACP	Local	11,872	2023	AC - Reclamation	\$54,492	33	100
9	LIVE OAK CT	HANSELMAN RD	EAST END	ACP	Local	40,113	2023	AC - Reconstruction	\$614,527	14	100
138	LOUISIANA ST	1ST ST	2ND ST	ACP	Local	18,499	2023	AC - Mill & 2" Overlay	\$66,040	45	100
137	LOUISIANA ST	MISSISSIPPI ST	1ST ST	ACP	Local	45,981	2023	AC - Crack/Slurry Seal	\$14,254	73	98
139	LOUISIANA ST	2ND ST	WOLFE LN	ACP	Local	45,985	2023	AC - Crack/Slurry Seal	\$14,255	66	91
30	LOVERS LN	CLARK RD	1667 FT N/O CLARK RD	ACP	Local	39,230	2023	AC - Reclamation	\$180,066	38	100
175	LUM RD	FURNACE RD	527 FT N/E OF FURNACE RD	ACP	Local	11,951	2023	AC - Crack/Slurry Seal	\$3,705	55	80
68	MAGNOLIA ST	JORDAN RD	TAYLOR ST	ACP	Local	24,761	2023	AC - Reconstruction	\$379,335	10	100
1	Manvel Sandy Point RD	MASTERS RD	Hanselman RD	ACP	Local	50,584	2023	AC - Mill & 2" Overlay	\$180,584	49	100
32	MASON RD	1239 FT S/O STEVENS RD	STEVENS RD	ACP	Local	27,556	2023	AC - Reclamation	\$126,484	26	100
25	MASTERS RD	KEMP ST	BISSELL RD	ACP	Local	8,736	2023	AC - Mill & 2" Overlay	\$31,188	54	100
4	MASTERS RD	E/O OF GATES LP	UZZELL RD	ACP	Local	42,031	2023	AC - Mill & 2" Overlay	\$150,051	48	100
19	MASTERS RD	UZZELL RD	BOOTH BLACE RD	ACP	Local	41,831	2023	AC - Reclamation	\$192,005	35	100

Network Level Needs Assessment

Fugro Unique ID	Street Name	BEG_DESC	END_DESC	Pavement Type	Functional Class	Pavement Area (ft ²)	Plan Year	Treatment	Treatment Cost (\$)	Before PCI	Improved PCI
22	MASTERS RD	JORDAN RD	TAYLOR ST	ACP	Local	22,892	2023	AC - Mill & 2" Overlay	\$81,725	48	100
20	MASTERS RD	BOOTH BLACE RD	REED LN	ACP	Local	24,225	2023	AC - Crack/Slurry Seal	\$7,510	66	91
3	MASTERS RD	W/O OF GATES LP	E/O OF GATES LP	ACP	Local	27,160	2023	AC - Reclamation	\$124,663	33	100
24	MASTERS RD	KING ST	KEMP ST	ACP	Local	8,263	2023	AC - Reclamation	\$37,925	28	100
23	MASTERS RD	TAYLOR ST	KING ST	ACP	Local	8,533	2023	AC - Mill & 2" Overlay	\$30,463	41	100
21	MASTERS RD	REED LN	JORDAN RD	ACP	Local	37,845	2023	AC - Crack/Slurry Seal	\$11,732	63	88
26	MASTERS RD	BISSELL RD	ROGERS RD	ACP	Local	24,360	2023	AC - Reclamation	\$111,812	28	100
2	MASTERS RD	Hanselman RD	W/O OF GATES LP	ACP	Local	35,252	2023	AC - Reconstruction	\$540,061	24	100
56	MCCOY RD	CHARLOTTE DR	LEWIS LN	PCC	Arterial	22,218	2023	PCC - Panel Replacement	\$272,175	51	100
195	MCCOY RD	MORRIS AVE	LEWIS LN	PCC	Arterial	20,617	2023	PCC - Panel Replacement	\$252,553	52	100
196	MCCOY RD	LEWIS LN	CHARLOTTE DR	PCC	Arterial	22,364	2023	PCC - Panel Replacement	\$273,958	51	100
55	MCCOY RD	LEWIS LN	MORRIS AVE	PCC	Arterial	19,823	2023	PCC - Panel Replacement	\$242,834	50	100
197	MCCOY RD	CHARLOTTE DR	TANKERSLEY RD	PCC	Arterial	11,149	2023	PCC - Crack/Joint Seal	\$155	72	82
191	MERIDIANA PKWY	JORDAN RD	KREUZER RD	PCC	Arterial	22,110	2023	PCC - Partial Depth Repair	\$203,186	65	85
192	MERIDIANA PKWY	KREUZER RD	BISSELL RD	PCC	Arterial	30,134	2023	PCC - Partial Depth Repair	\$276,933	60	80
54	MERIDIANA PKWY	MORRIS AVE	ROGERS RD	PCC	Arterial	12,727	2023	PCC - Crack/Joint Seal	\$89	78	88
53	MERIDIANA PKWY	ROGERS RD	BISSELL RD	PCC	Arterial	19,012	2023	PCC - Partial Depth Repair	\$174,722	61	81
134	MISSISSIPPI	MORRIS AVE	LOUISIANA ST	ACP	Local	49,314	2023	AC - Crack/Slurry Seal	\$15,287	59	84
136	MISSISSIPPI	GEORGIA ST	1937 FT N/O GEORGIA ST	ACP	Local	40,868	2023	AC - Reclamation	\$187,586	32	100
135	MISSISSIPPI	LOUISIANA ST	GEORGIA ST	ACP	Local	10,798	2023	AC - Reclamation	\$49,561	27	100
174	OAK HILL	MASTERS RD	FURNACE RD	ACP	Local	39,187	2023	AC - Mill & 2" Overlay	\$139,896	50	100
11	Oakcrest DR	HANSELMAN RD	EAST END	ACP	Local	55,286	2023	AC - Reconstruction	\$846,980	16	100
177	OLD CHOCOLATE BAYOU RD	FURNACE RD	PATTERSON RD	ACP	Local	34,766	2023	AC - Reconstruction	\$532,620	8	100
178	OLD CHOCOLATE BAYOU RD	MASTERS RD	FURNACE RD	ACP	Local	33,813	2023	AC - Reconstruction	\$518,021	22	100
176	OLD CHOCOLATE BAYOU RD	PATTERSON RD	1628 FT. NW/O PATTERSON RD	ACP	Local	33,435	2023	AC - Reconstruction	\$512,230	18	100
101	PALMETTO RD	S/W OF ROGERS RD	ROGERS RD	ACP	Local	5,722	2023	AC - Reconstruction	\$87,667	10	100
102	PALMETTO ST	PALMETTO RD	LARGE AVE	ACP	Local	14,872	2023	AC - Reclamation	\$68,262	25	100
171	PATTERSON RD	DEL BELLO RD	OLD CHOCOLATE BAYOU RD	ACP	Local	86,738	2023	AC - Reconstruction	\$1,328,825	18	100
80	Pearland Sites RD	ALVIN MANVEL RD	HIGHWAY 6	ACP	Local	32,677	2023	AC - Reclamation	\$149,989	34	100
105	PETRY LN	725 FT S/O LEWIS LN	LEWIS LN	ACP	Local	14,080	2023	AC - Reclamation	\$64,626	26	100
145	PINE ST	HORSE SHOE DR	CREEK DR	ACP	Local	16,993	2023	AC - Crack/Slurry Seal	\$5,268	78	100
144	PINE ST	MORRIS AVE	HORSE SHOE DR	ACP	Local	58,681	2023	AC - Mill & 2" Overlay	\$209,492	40	100
157	POLLARD DR	DEL BELLO SPUR	DEL BELLO BLVD	ACP	Local	35,051	2023	AC - Reconstruction	\$536,986	10	100
156	POLLARD DR	1047 ft SOUTH OF DEL BELLO SPUR	DEL BELLO SPUR	ACP	Local	8,149	2023	AC - Reconstruction	\$124,849	3	100
29	REED LN	MASTERS RD	1477 FT E/O MASTERS RD	ACP	Local	33,091	2023	AC - Reconstruction	\$506,951	8	100
85	ROGERS RD	SPILLANE ST	MASTERS RD	ACP	Local	8,164	2023	AC - Crack/Slurry Seal	\$2,531	78	100
87	ROGERS RD	RUSSELL ST	MAGNOLIA ST	ACP	Local	6,703	2023	AC - Reconstruction	\$102,691	25	100
86	ROGERS RD	MASTERS RD	RUSSELL ST	ACP	Local	7,403	2023	AC - Crack/Slurry Seal	\$2,295	56	81
89	ROGERS RD	ELM ST	CEMETERY RD	ACP	Local	31,888	2023	AC - Mill & 2" Overlay	\$113,839	44	100
88	ROGERS RD	MAGNOLIA ST	ELM ST	ACP	Local	6,508	2023	AC - Mill & 2" Overlay	\$23,235	42	100
111	RUSSELL ST	ROGERS RD	LARGE AVE	ACP	Local	15,608	2023	AC - Reconstruction	\$239,115	17	100
71	RUSSELL ST	KEMP ST	BISSELL RD	ACP	Local	8,531	2023	AC - Reconstruction	\$130,701	3	100
69	RUSSELL ST	TAYLOR ST	KING ST	ACP	Local	8,728	2023	AC - Reconstruction	\$133,714	24	100
70	RUSSELL ST	KING ST	KEMP ST	ACP	Local	8,394	2023	AC - Reconstruction	\$128,593	21	100
110	RUSSELL ST	370 FT S/O ROGERS RD	ROGERS RD	ACP	Local	8,821	2023	AC - Reclamation	\$40,490	37	100
115	SCHOOL RD	MORRIS AVE	LARGE AVE	ACP	Local	8,135	2023	AC - Crack/Slurry Seal	\$2,522	82	100
127	SCOTT AVE	MASTERS RD	DALMOLIN RD	ACP	Local	51,491	2023	AC - Reclamation	\$236,345	29	100
130	SCOTT AVE	CEMETRY RD	SCOTT AVE	ACP	Local	28,525	2023	AC - Reconstruction	\$437,001	15	100
48	SHERRI CIR	JORDAN RD	JORDAN RD	ACP	Local	73,275	2023	AC - Crack/Slurry Seal	\$22,715	55	80
65	SPRAGUE ST	KING ST	BISSELL RD	ACP	Local	20,034	2023	AC - Reconstruction	\$306,916	20	100
34	STEVENS RD	MASON RD	IOWA LN	ACP	Local	17,022	2023	AC - Crack/Slurry Seal	\$5,277	59	84
170	TAMMY DR	LIRA RD	1090 FT N/O LIRA RD	ACP	Local	24,367	2023	AC - Reconstruction	\$373,298	13	100

Network Level Needs Assessment

Fugro Unique ID	Street Name	BEG_DESC	END_DESC	Pavement Type	Functional Class	Pavement Area (ft ²)	Plan Year	Treatment	Treatment Cost (\$)	Before PCI	Improved PCI
60	TANKERSLEY RD	MCCOY DR	MASTERS RD	ACP	Local	58,418	2023	AC - Reclamation	\$268,136	25	100
66	TAYLOR ST	MASTERS RD	RUSSELL ST	ACP	Local	8,194	2023	AC - Crack/Slurry Seal	\$2,540	79	100
67	TAYLOR ST	RUSSELL ST	MAGNOLIA ST	ACP	Local	8,801	2023	AC - Mill & 2" Overlay	\$31,421	42	100
12	Twin Oaks DR	HANSELMAN RD	EAST END	ACP	Local	51,153	2023	AC - Mill & 2" Overlay	\$182,617	44	100
15	UZZELL RD	1719 FT S/O KINGS DR	KINGS DR	ACP	Local	9,436	2023	AC - Reconstruction	\$144,552	21	100
13	UZZELL RD	VALUSEK RD	MASTERS RD	ACP	Local	37,877	2023	AC - Mill & 2" Overlay	\$135,220	41	100
14	UZZELL RD	KINGS DR	VALUSEK RD	ACP	Local	35,312	2023	AC - Reconstruction	\$540,981	24	100
98	WILSON DR	ROGERS RD	LARGE AVE	ACP	Local	16,623	2023	AC - Reconstruction	\$254,661	5	100
96	WILSON DR	852 FT S/O ROGERS RD	ROGERS RD	ACP	Local	9,043	2023	AC - Reconstruction	\$138,533	7	100
99	WILSON DR	LARGE AVE	LEWIS LN	ACP	Local	32,128	2023	AC - Reconstruction	\$492,199	3	100
141	WOLFE LN	LOUISIANA ST	484 FT SE/O LOUISIANA ST	ACP	Local	8,760	2023	AC - Reconstruction	\$134,208	19	100
133	ALABAMA ST	GEORGIA ST	CREST RIDGE DR	ACP	Local	22,019	2024	AC - Crack/Slurry Seal	\$7,046	78	100
74	BISSELL RD	AMANDA LN	BRIARCREST ST	ACP	Local	19,981	2024	AC - Crack/Slurry Seal	\$6,394	84	100
162	DEL BELLO RD	DEL BELLO BLVD	LIRA ROAD	ACP	Local	8,061	2024	AC - Crack/Slurry Seal	\$2,580	85	100
154	HAL MCLAIN RD	KELLY ST	1910 FT N/O KELLY ST	ACP	Local	44,661	2024	AC - Crack/Slurry Seal	\$14,292	81	100
147	HORSE SHOE DR	CROSSSHEILD RD	CREEK RD	ACP	Local	7,159	2024	AC - Crack/Slurry Seal	\$2,291	84	100
146	HORSE SHOE DR	PINE ST	CROSSSHEILD RD	ACP	Local	26,162	2024	AC - Crack/Slurry Seal	\$8,372	84	100
185	JORDAN RD	MERIDIANA PKWY	MASTERS RD	ACP	Collector	69,340	2024	AC - Crack/Slurry Seal	\$22,189	85	100
95	LARGE AVE	ELM ST	456 FT E/O ELM ST	ACP	Local	10,048	2024	AC - Crack/Slurry Seal	\$3,215	82	100
175	LUM RD	FURNACE RD	527 FT N/E OF FURNACE RD	ACP	Local	11,951	2024	AC - Crack/Slurry Seal	\$3,824	78	100
197	MCCOY RD	CHARLOTTE DR	TANKERSLEY RD	PCC	Arterial	11,149	2024	PCC - Crack/Joint Seal	\$164	81	91
191	MERIDIANA PKWY	JORDAN RD	KREUZER RD	PCC	Arterial	22,110	2024	PCC - Crack/Joint Seal	\$177	83	93
192	MERIDIANA PKWY	KREUZER RD	BISSELL RD	PCC	Arterial	30,134	2024	PCC - Crack/Joint Seal	\$248	77	87
53	MERIDIANA PKWY	ROGERS RD	BISSELL RD	PCC	Arterial	19,012	2024	PCC - Crack/Joint Seal	\$148	78	88
134	MISSISSIPPI	MORRIS AVE	LOUISIANA ST	ACP	Local	49,314	2024	AC - Crack/Slurry Seal	\$15,780	82	100
86	ROGERS RD	MASTERS RD	RUSSELL ST	ACP	Local	7,403	2024	AC - Crack/Slurry Seal	\$2,369	79	100
48	SHERRI CIR	JORDAN RD	JORDAN RD	ACP	Local	73,275	2024	AC - Crack/Slurry Seal	\$23,448	78	100
34	STEVENS RD	MASON RD	IOWA LN	ACP	Local	17,022	2024	AC - Crack/Slurry Seal	\$5,447	82	100
33	STEVENS RD	1400 FT W/O MASON RD	MASON RD	ACP	Local	30,237	2024	AC - Crack/Slurry Seal	\$9,676	85	100
123	CREST RIDGE DR	CEMETERY RD	CEMETERY RD	ACP	Local	70,822	2025	AC - Crack/Slurry Seal	\$22,663	85	100
166	DEL BELLO LN	4589 ft west of Del Bello RD	Del Bello RD	ACP	Local	40,122	2025	AC - Crack/Slurry Seal	\$12,839	84	100
114	ELM ST	MORRIS AVE	LARGE AVE	ACP	Local	8,959	2025	AC - Crack/Slurry Seal	\$2,867	84	100
187	JORDAN RD	MAGNOLIA ST	SHERRI CIR	ACP	Collector	10,406	2025	AC - Crack/Slurry Seal	\$3,330	84	100
93	LARGE AVE	RUSSELL ST	SCHOOL RD	ACP	Local	8,083	2025	AC - Crack/Slurry Seal	\$2,587	85	100
208	LEWIS LN	PETRY LN	PALMETTO ST	ACP	Arterial	17,947	2025	AC - Crack/Slurry Seal	\$5,743	85	100
21	MASTERS RD	REED LN	JORDAN RD	ACP	Local	37,845	2025	AC - Crack/Slurry Seal	\$12,110	84	100
54	MERIDIANA PKWY	MORRIS AVE	ROGERS RD	PCC	Arterial	12,727	2025	PCC - Crack/Joint Seal	\$94	85	95
103	PALMETTO ST	LARGE AVE	CANAAN ST	ACP	Local	15,212	2025	AC - Crack/Slurry Seal	\$4,868	83	100
82	ROGERS RD	LOUDEN ST	WILSON RD	ACP	Local	9,091	2025	AC - Crack/Slurry Seal	\$2,909	83	100
73	BISSELL RD	2952 FT W/O AMANDA LN	AMANDA LN	ACP	Local	55,282	2026	AC - Crack/Slurry Seal	\$18,243	85	100
192	MERIDIANA PKWY	KREUZER RD	BISSELL RD	PCC	Arterial	30,134	2026	PCC - Crack/Joint Seal	\$262	84	94
84	ROGERS RD	PALMETTO RD	SPILLANE ST	ACP	Local	7,986	2026	AC - Crack/Slurry Seal	\$2,635	85	100
161	DEL BELLO RD	LIRA RD	DEL BELLO LN	ACP	Local	11,487	2027	AC - Crack/Slurry Seal	\$3,905	84	100
122	FLORA	2300 FT W/O CEMETERY RD	CEMETERY RD	ACP	Local	34,248	2027	AC - Crack/Slurry Seal	\$11,644	84	100
186	JORDAN RD	MASTERS RD	MAGNOLIA ST	ACP	Collector	14,518	2027	AC - Crack/Slurry Seal	\$4,936	84	100
139	LOUISIANA ST	2ND ST	WOLFE LN	ACP	Local	45,985	2027	AC - Crack/Slurry Seal	\$15,635	83	100
20	MASTERS RD	BOOTH BLACE RD	REED LN	ACP	Local	24,225	2027	AC - Crack/Slurry Seal	\$8,237	83	100
53	MERIDIANA PKWY	ROGERS RD	BISSELL RD	PCC	Arterial	19,012	2027	PCC - Crack/Joint Seal	\$165	84	94

Needs Summary

Functional Class/Treatment Type	Plan Year					Grand Total
	2023	2024	2025	2026	2027	
Arterial	\$2,059,080	\$738	\$5,837	\$262	\$165	\$2,066,081
AC - Crack/Slurry Seal	\$16,432	\$0	\$5,743	\$0	\$0	\$22,175
AC - Reclamation	\$346,041	\$0	\$0	\$0	\$0	\$346,041
PCC - Crack/Joint Seal	\$244	\$738	\$94	\$262	\$165	\$1,502
PCC - Panel Replacement	\$1,041,521	\$0	\$0	\$0	\$0	\$1,041,521
PCC - Partial Depth Repair	\$654,842	\$0	\$0	\$0	\$0	\$654,842
Collector	\$3,803,937	\$22,189	\$3,330	\$0	\$4,936	\$3,834,392
AC - Crack/Slurry Seal	\$69,797	\$22,189	\$3,330	\$0	\$4,936	\$100,252
AC - Mill & 2" Overlay	\$63,922	\$0	\$0	\$0	\$0	\$63,922
AC - Reclamation	\$255,835	\$0	\$0	\$0	\$0	\$255,835
AC - Reconstruction	\$3,414,383	\$0	\$0	\$0	\$0	\$3,414,383
Local	\$28,724,857	\$104,734	\$60,842	\$20,879	\$39,421	\$28,950,733
AC - Crack/Slurry Seal	\$262,414	\$104,734	\$60,842	\$20,879	\$39,421	\$488,290
AC - Mill & 2" Overlay	\$2,079,746	\$0	\$0	\$0	\$0	\$2,079,746
AC - Reclamation	\$4,583,030	\$0	\$0	\$0	\$0	\$4,583,030
AC - Reconstruction	\$21,799,668	\$0	\$0	\$0	\$0	\$21,799,668
Grand Total	\$34,587,874	\$127,661	\$70,010	\$21,140	\$44,522	\$34,851,207

Appendix E. 5-Year Work Plan Listing (Scenario 2)

Network Level Work Plan - Scenario 2 (Increase PCI to 50 by 2027)

Fugro Unique ID	Street Name	BEG_DESC	END_DESC	Pavement Type	Functional Class	Pavement Area (ft ²)	Plan Year	Treatment	Treatment Cost (\$)	Before PCI	Improved PCI
205	LEWIS LN	MCCOY DR	WILSON RD	ACP	Arterial	17,649	2023	AC - Crack/Slurry Seal	\$5,471	77	100
206	LEWIS LN	WILSON RD	CINDY DR	ACP	Arterial	11,028	2023	AC - Crack/Slurry Seal	\$3,419	70	95
207	LEWIS LN	CINDY DR	PETRY LN	ACP	Arterial	6,384	2023	AC - Crack/Slurry Seal	\$1,979	82	100
208	LEWIS LN	PETRY LN	PALMETTO ST	ACP	Arterial	17,947	2023	AC - Crack/Slurry Seal	\$5,564	64	89
197	MCCOY RD	CHARLOTTE DR	TANKERSLEY RD	PCC	Arterial	11,149	2023	PCC - Crack/Joint Seal	\$155	72	82
53	MERIDIANA PKWY	ROGERS RD	BISSELL RD	PCC	Arterial	19,012	2023	PCC - Partial Depth Repair	\$174,722	61	81
54	MERIDIANA PKWY	MORRIS AVE	ROGERS RD	PCC	Arterial	12,727	2023	PCC - Crack/Joint Seal	\$89	78	88
191	MERIDIANA PKWY	JORDAN RD	KREUZER RD	PCC	Arterial	22,110	2023	PCC - Partial Depth Repair	\$203,186	65	85
192	MERIDIANA PKWY	KREUZER RD	BISSELL RD	PCC	Arterial	30,134	2023	PCC - Partial Depth Repair	\$276,933	60	80
203	BISSELL RD	MASTERS RD	RUSSELL ST	ACP	Collector	8,200	2023	AC - Crack/Slurry Seal	\$2,542	80	100
204	BISSELL RD	RUSSELL ST	2952 FT W/O AMANDA LN	ACP	Collector	54,940	2023	AC - Crack/Slurry Seal	\$17,032	81	100
185	JORDAN RD	MERIDIANA PKWY	MASTERS RD	ACP	Collector	69,340	2023	AC - Crack/Slurry Seal	\$21,495	62	87
186	JORDAN RD	MASTERS RD	MAGNOLIA ST	ACP	Collector	14,518	2023	AC - Crack/Slurry Seal	\$4,501	67	92
189	JORDAN RD	SHERRI CIR EAST	COOK RD	ACP	Collector	43,924	2023	AC - Crack/Slurry Seal	\$13,616	80	100
190	JORDAN RD	COOK RD	1400 SE/O COOK RD	ACP	Collector	34,229	2023	AC - Crack/Slurry Seal	\$10,611	76	100
73	BISSELL RD	2952 FT W/O AMANDA LN	AMANDA LN	ACP	Local	55,282	2023	AC - Crack/Slurry Seal	\$17,137	66	91
74	BISSELL RD	AMANDA LN	BRIARCREST ST	ACP	Local	19,981	2023	AC - Crack/Slurry Seal	\$6,194	61	86
75	BISSELL RD	BRIARCREST ST	1187 FT E/O BRIARCREST ST	ACP	Local	22,583	2023	AC - Crack/Slurry Seal	\$7,001	68	93
149	CREEK DR	PINE ST	HORSE SHOE DR	ACP	Local	18,292	2023	AC - Crack/Slurry Seal	\$5,671	74	99
123	CREST RIDGE DR	CEMETERY RD	CEMETERY RD	ACP	Local	70,822	2023	AC - Crack/Slurry Seal	\$21,955	64	89
166	DEL BELLO LN	4589 ft west of Del Bello RD	Del Bello RD	ACP	Local	40,122	2023	AC - Crack/Slurry Seal	\$12,438	63	88
160	DEL BELLO RD	Del Bello LN	1290 ft North of Del Bello LN	ACP	Local	27,598	2023	AC - Crack/Slurry Seal	\$8,555	77	100
161	DEL BELLO RD	LIRA RD	DEL BELLO LN	ACP	Local	11,487	2023	AC - Crack/Slurry Seal	\$3,561	67	92
164	DEL BELLO RD	DEL BELLO SPUR	PATTERSON RD	ACP	Local	35,338	2023	AC - Crack/Slurry Seal	\$10,955	72	97
165	DEL BELLO RD	MASTERS RD	DEL BELLO SPUR	ACP	Local	30,170	2023	AC - Crack/Slurry Seal	\$9,353	82	100
114	ELM ST	MORRIS AVE	LARGE AVE	ACP	Local	8,959	2023	AC - Crack/Slurry Seal	\$2,777	63	88
122	FLORA	2300 FT W/O CEMETERY RD	CEMETERY RD	ACP	Local	34,248	2023	AC - Crack/Slurry Seal	\$10,617	67	92
8	Hanselman RD	TWIN OKAS DR	OAKCREST DR	ACP	Local	12,758	2023	AC - Crack/Slurry Seal	\$3,955	81	100
92	LARGE AVE	PALMETTO ST	RUSSELL ST	ACP	Local	27,640	2023	AC - Crack/Slurry Seal	\$8,568	70	95
95	LARGE AVE	ELM ST	456 FT E/O ELM ST	ACP	Local	10,048	2023	AC - Crack/Slurry Seal	\$3,115	59	84
137	LOUISIANA ST	MISSISSIPPI ST	1ST ST	ACP	Local	45,981	2023	AC - Crack/Slurry Seal	\$14,254	73	98
139	LOUISIANA ST	2ND ST	WOLFE LN	ACP	Local	45,985	2023	AC - Crack/Slurry Seal	\$14,255	66	91
20	MASTERS RD	BOOTH BLACE RD	REED LN	ACP	Local	24,225	2023	AC - Crack/Slurry Seal	\$7,510	66	91
21	MASTERS RD	REED LN	JORDAN RD	ACP	Local	37,845	2023	AC - Crack/Slurry Seal	\$11,732	63	88
145	PINE ST	HORSE SHOE DR	CREEK DR	ACP	Local	16,993	2023	AC - Crack/Slurry Seal	\$5,268	78	100
85	ROGERS RD	SPILLANE ST	MASTERS RD	ACP	Local	8,164	2023	AC - Crack/Slurry Seal	\$2,531	78	100
115	SCHOOL RD	MORRIS AVE	LARGE AVE	ACP	Local	8,135	2023	AC - Crack/Slurry Seal	\$2,522	82	100
66	TAYLOR ST	MASTERS RD	RUSSELL ST	ACP	Local	8,194	2023	AC - Crack/Slurry Seal	\$2,540	79	100
55	MCCOY RD	LEWIS LN	MORRIS AVE	PCC	Arterial	19,823	2024	PCC - Panel Replacement	\$250,169	48	100
56	MCCOY RD	CHARLOTTE DR	LEWIS LN	PCC	Arterial	22,218	2024	PCC - Panel Replacement	\$280,396	48	100
195	MCCOY RD	MORRIS AVE	LEWIS LN	PCC	Arterial	20,617	2024	PCC - Panel Replacement	\$260,181	50	100
196	MCCOY RD	LEWIS LN	CHARLOTTE DR	PCC	Arterial	22,364	2024	PCC - Panel Replacement	\$282,232	48	100
197	MCCOY RD	CHARLOTTE DR	TANKERSLEY RD	PCC	Arterial	11,149	2024	PCC - Crack/Joint Seal	\$164	81	91
53	MERIDIANA PKWY	ROGERS RD	BISSELL RD	PCC	Arterial	19,012	2024	PCC - Crack/Joint Seal	\$148	78	88
191	MERIDIANA PKWY	JORDAN RD	KREUZER RD	PCC	Arterial	22,110	2024	PCC - Crack/Joint Seal	\$177	83	93
192	MERIDIANA PKWY	KREUZER RD	BISSELL RD	PCC	Arterial	30,134	2024	PCC - Crack/Joint Seal	\$248	77	87
185	JORDAN RD	MERIDIANA PKWY	MASTERS RD	ACP	Collector	69,340	2024	AC - Crack/Slurry Seal	\$22,189	85	100
133	ALABAMA ST	GEORGIA ST	CREST RIDGE DR	ACP	Local	22,019	2024	AC - Mill & 2" Overlay	\$81,029	50	100
74	BISSELL RD	AMANDA LN	BRIARCREST ST	ACP	Local	19,981	2024	AC - Crack/Slurry Seal	\$6,394	84	100
129	DALMOLIN	SCOTT AVE	1000 FT N/O SCOTT AVE	ACP	Local	22,145	2024	AC - Mill & 2" Overlay	\$81,494	48	100
162	DEL BELLO RD	DEL BELLO BLVD	LIRA ROAD	ACP	Local	8,061	2024	AC - Crack/Slurry Seal	\$2,580	85	100
163	DEL BELLO RD	PATTERSON RD	DEL BELLO BLVD	ACP	Local	24,708	2024	AC - Mill & 2" Overlay	\$90,925	49	100

Network Level Work Plan - Scenario 2 (Increase PCI to 50 by 2027)

Fugro Unique ID	Street Name	BEG_DESC	END_DESC	Pavement Type	Functional Class	Pavement Area (ft ²)	Plan Year	Treatment	Treatment Cost (\$)	Before PCI	Improved PCI
154	HAL MCLAIN RD	KELLY ST	1910 FT N/O KELLY ST	ACP	Local	44,661	2024	AC - Mill & 2" Overlay	\$164,353	53	100
146	HORSE SHOE DR	PINE ST	CROSSSHEILD RD	ACP	Local	26,162	2024	AC - Crack/Slurry Seal	\$8,372	84	100
147	HORSE SHOE DR	CROSSSHEILD RD	CREEK RD	ACP	Local	7,159	2024	AC - Crack/Slurry Seal	\$2,291	84	100
95	LARGE AVE	ELM ST	456 FT E/O ELM ST	ACP	Local	10,048	2024	AC - Crack/Slurry Seal	\$3,215	82	100
175	LUM RD	FURNACE RD	527 FT N/E OF FURNACE RD	ACP	Local	11,951	2024	AC - Mill & 2" Overlay	\$43,980	50	100
25	MASTERS RD	KEMP ST	BISSELL RD	ACP	Local	8,736	2024	AC - Mill & 2" Overlay	\$32,149	49	100
134	MISSISSIPPI	MORRIS AVE	LOUISIANA ST	ACP	Local	49,314	2024	AC - Mill & 2" Overlay	\$181,474	54	100
174	OAK HILL	MASTERS RD	FURNACE RD	ACP	Local	39,187	2024	AC - Mill & 2" Overlay	\$144,206	46	100
86	ROGERS RD	MASTERS RD	RUSSELL ST	ACP	Local	7,403	2024	AC - Mill & 2" Overlay	\$27,244	51	100
48	SHERRI CIR	JORDAN RD	JORDAN RD	ACP	Local	73,275	2024	AC - Mill & 2" Overlay	\$269,653	50	100
33	STEVENS RD	1400 FT W/O MASON RD	MASON RD	ACP	Local	30,237	2024	AC - Crack/Slurry Seal	\$9,676	85	100
34	STEVENS RD	MASON RD	IOWA LN	ACP	Local	17,022	2024	AC - Mill & 2" Overlay	\$62,641	54	100
208	LEWIS LN	PETRY LN	PALMETTO ST	ACP	Arterial	17,947	2025	AC - Crack/Slurry Seal	\$5,743	85	100
54	MERIDIANA PKWY	MORRIS AVE	ROGERS RD	PCC	Arterial	12,727	2025	PCC - Crack/Joint Seal	\$94	85	95
187	JORDAN RD	MAGNOLIA ST	SHERRI CIR	ACP	Collector	10,406	2025	AC - Crack/Slurry Seal	\$3,330	84	100
140	1ST ST	LOUISIANA ST	485 FT E/O LOUISIANA ST	ACP	Local	13,970	2025	AC - Reclamation	\$68,034	40	100
10	ACORN DR	HANSELMAN RD	EAST END	ACP	Local	65,864	2025	AC - Reclamation	\$320,759	38	100
46	BURNETT RD	CUL DE SAC W/O KIRCHNER RD	1379 FT E/O KIRCHNER	ACP	Local	31,154	2025	AC - Reclamation	\$151,719	39	100
126	CEMETERY RD	SCOTT ST	CEMETERY RD	ACP	Local	30,600	2025	AC - Reclamation	\$149,023	39	100
123	CREST RIDGE DR	CEMETERY RD	CEMETERY RD	ACP	Local	70,822	2025	AC - Crack/Slurry Seal	\$22,663	85	100
166	DEL BELLO LN	4589 ft west of Del Bello RD	Del Bello RD	ACP	Local	40,122	2025	AC - Crack/Slurry Seal	\$12,839	84	100
114	ELM ST	MORRIS AVE	LARGE AVE	ACP	Local	8,959	2025	AC - Crack/Slurry Seal	\$2,867	84	100
93	LARGE AVE	RUSSELL ST	SCHOOL RD	ACP	Local	8,083	2025	AC - Crack/Slurry Seal	\$2,587	85	100
1	Manvel Sandy Point RD	MASTERS RD	Hanselman RD	ACP	Local	50,584	2025	AC - Mill & 2" Overlay	\$191,712	40	100
4	MASTERS RD	E/O OF GATES LP	UZZELL RD	ACP	Local	42,031	2025	AC - Reclamation	\$204,691	39	100
21	MASTERS RD	REED LN	JORDAN RD	ACP	Local	37,845	2025	AC - Crack/Slurry Seal	\$12,110	84	100
22	MASTERS RD	JORDAN RD	TAYLOR ST	ACP	Local	22,892	2025	AC - Reclamation	\$111,485	40	100
103	PALMETTO ST	LARGE AVE	CANAAN ST	ACP	Local	15,212	2025	AC - Crack/Slurry Seal	\$4,868	83	100
82	ROGERS RD	LOUDEN ST	WILSON RD	ACP	Local	9,091	2025	AC - Crack/Slurry Seal	\$2,909	83	100
210	LEWIS LN	SCHOOL RD	CEMETERY RD	ACP	Arterial	42,252	2026	AC - Reclamation	\$212,105	27	100
192	MERIDIANA PKWY	KREUZER RD	BISSELL RD	PCC	Arterial	30,134	2026	PCC - Crack/Joint Seal	\$262	84	94
188	JORDAN RD	SHERRI CIR WEST	SHERRI CIR EAST	ACP	Collector	17,905	2026	AC - Reclamation	\$89,885	30	100
73	BISSELL RD	2952 FT W/O AMANDA LN	AMANDA LN	ACP	Local	55,282	2026	AC - Crack/Slurry Seal	\$18,243	85	100
152	HAL MCLAIN RD	AIRPARK RD	FREY RD	ACP	Local	8,751	2026	AC - Reclamation	\$43,932	29	100
138	LOUISIANA ST	1ST ST	2ND ST	ACP	Local	18,499	2026	AC - Reclamation	\$92,863	32	100
23	MASTERS RD	TAYLOR ST	KING ST	ACP	Local	8,533	2026	AC - Reclamation	\$42,836	27	100
84	ROGERS RD	PALMETTO RD	SPILLANE ST	ACP	Local	7,986	2026	AC - Crack/Slurry Seal	\$2,635	85	100
88	ROGERS RD	MAGNOLIA ST	ELM ST	ACP	Local	6,508	2026	AC - Reclamation	\$32,672	28	100
89	ROGERS RD	ELM ST	CEMETERY RD	ACP	Local	31,888	2026	AC - Reclamation	\$160,076	31	100
67	TAYLOR ST	RUSSELL ST	MAGNOLIA ST	ACP	Local	8,801	2026	AC - Reclamation	\$44,183	29	100
12	Twin Oaks DR	HANSELMAN RD	EAST END	ACP	Local	51,153	2026	AC - Reclamation	\$256,789	31	100
13	UZZELL RD	VALUSEK RD	MASTERS RD	ACP	Local	37,877	2026	AC - Reclamation	\$190,142	27	100
53	MERIDIANA PKWY	ROGERS RD	BISSELL RD	PCC	Arterial	19,012	2027	PCC - Crack/Joint Seal	\$165	84	94
182	CLARK RD	KIRCHNER RD	JORDAN RD	ACP	Collector	55,737	2027	AC - Reconstruction	\$960,913	19	100
186	JORDAN RD	MASTERS RD	MAGNOLIA ST	ACP	Collector	14,518	2027	AC - Crack/Slurry Seal	\$4,936	84	100
109	CEDAR	MASTERS RD	420 FT E/O MASTERS RD	ACP	Local	9,420	2027	AC - Reconstruction	\$162,392	20	100
161	DEL BELLO RD	LIRA RD	DEL BELLO LN	ACP	Local	11,487	2027	AC - Crack/Slurry Seal	\$3,905	84	100
122	FLORA	2300 FT W/O CEMETERY RD	CEMETERY RD	ACP	Local	34,248	2027	AC - Crack/Slurry Seal	\$11,644	84	100
7	Hanselman RD	OAKCREST DR	ACORN DR	ACP	Local	9,959	2027	AC - Reconstruction	\$171,688	22	100
139	LOUISIANA ST	2ND ST	WOLFE LN	ACP	Local	45,985	2027	AC - Crack/Slurry Seal	\$15,635	83	100
30	LOVERS LN	CLARK RD	1667 FT N/O CLARK RD	ACP	Local	39,230	2027	AC - Reconstruction	\$676,325	20	100
20	MASTERS RD	BOOTH BLACE RD	REED LN	ACP	Local	24,225	2027	AC - Crack/Slurry Seal	\$8,237	83	100

Network Level Work Plan - Scenario 2 (Increase PCI to 50 by 2027)

Fugro Unique ID	Street Name	BEG_DESC	END_DESC	Pavement Type	Functional Class	Pavement Area (ft ²)	Plan Year	Treatment	Treatment Cost (\$)	Before PCI	Improved PCI
144	PINE ST	MORRIS AVE	HORSE SHOE DR	ACP	Local	58,681	2027	AC - Reconstruction	\$1,011,662	22	100

Summary Table

Functional Class/Treatment Type	Plan Year					Grand Total
	2023	2024	2025	2026	2027	
Arterial	\$671,518	\$1,073,716	\$5,837	\$212,366	\$165	\$1,963,603
AC - Crack/Slurry Seal	\$16,432	\$0	\$5,743	\$0	\$0	\$22,175
AC - Reclamation	\$0	\$0	\$0	\$212,105	\$0	\$212,105
PCC - Crack/Joint Seal	\$244	\$738	\$94	\$262	\$165	\$1,502
PCC - Panel Replacement	\$0	\$1,072,979	\$0	\$0	\$0	\$1,072,979
PCC - Partial Depth Repair	\$654,842	\$0	\$0	\$0	\$0	\$654,842
Collector	\$69,797	\$22,189	\$3,330	\$89,885	\$965,849	\$1,151,050
AC - Crack/Slurry Seal	\$69,797	\$22,189	\$3,330	\$0	\$4,936	\$100,252
AC - Reclamation	\$0	\$0	\$0	\$89,885	\$0	\$89,885
AC - Reconstruction	\$0	\$0	\$0	\$0	\$960,913	\$960,913
Local	\$192,464	\$1,211,676	\$1,258,265	\$884,369	\$2,061,489	\$5,608,263
AC - Crack/Slurry Seal	\$192,464	\$32,528	\$60,842	\$20,879	\$39,421	\$346,134
AC - Mill & 2" Overlay	\$0	\$1,179,148	\$191,712	\$0	\$0	\$1,370,860
AC - Reclamation	\$0	\$0	\$1,005,711	\$863,491	\$0	\$1,869,201
AC - Reconstruction	\$0	\$0	\$0	\$0	\$2,022,068	\$2,022,068
Grand Total	\$933,779	\$2,307,581	\$1,267,432	\$1,186,621	\$3,027,503	\$8,722,915

Appendix F. 5-Year Work Plan Maps (Scenario 2)

City of Manvel, TX - Year 2024 Workplan

For scenario 2: Increasing PCI by 5 points in 5 years



Year 2

- AC - Crack/Slurry Seal
- AC - Mill & 2" Overlay
- PCC - Crack/Joint Seal
- PCC - Panel Replacement



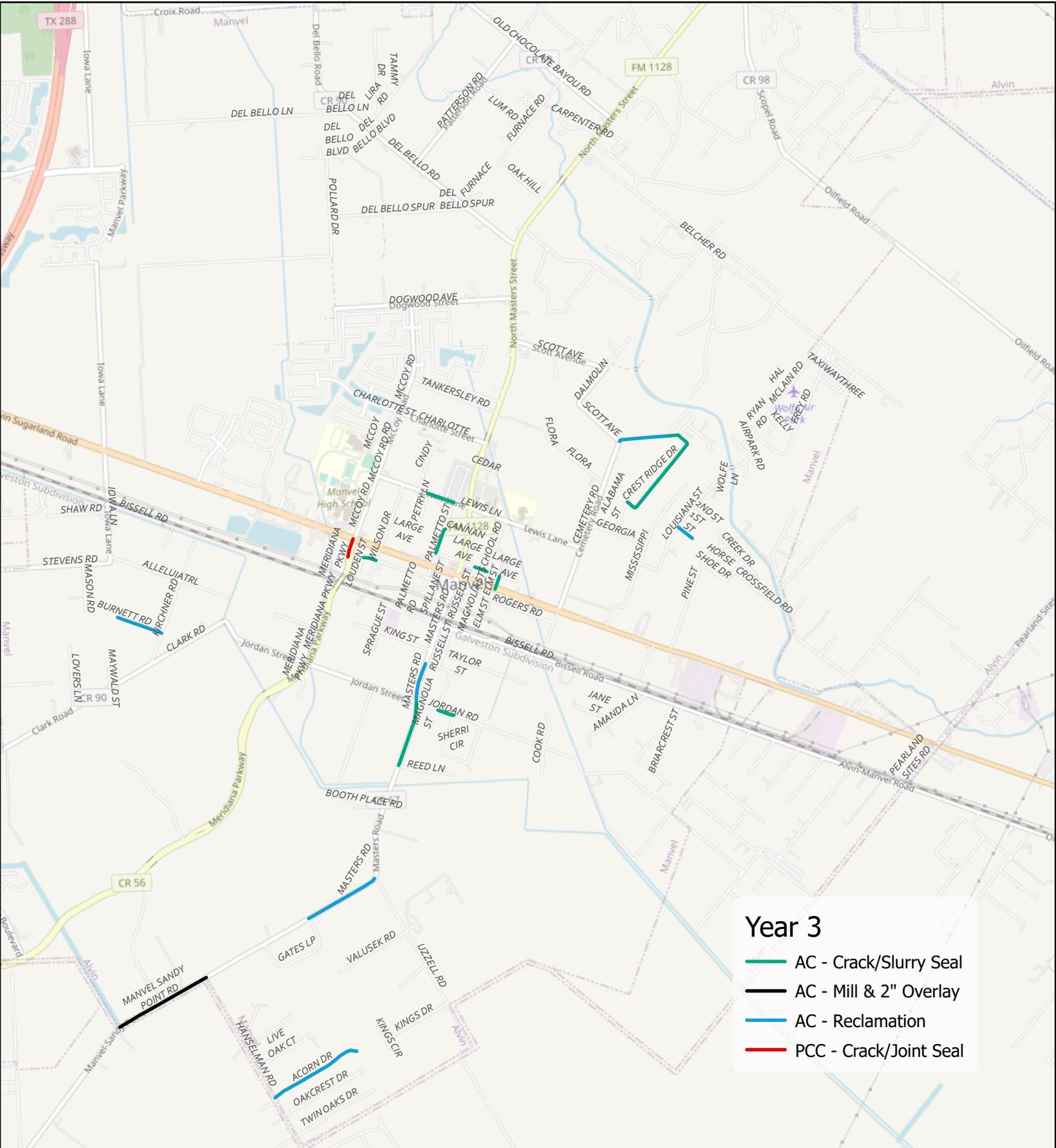
Fugro USA Land, Inc.
Date of Compilation: 05/13/2022

Scale: 1:40,000



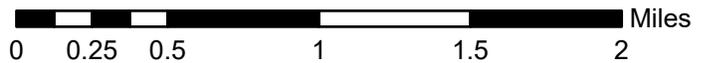
City of Manvel, TX - Year 2025 Workplan

For scenario 2: Increasing PCI by 5 points in 5 years



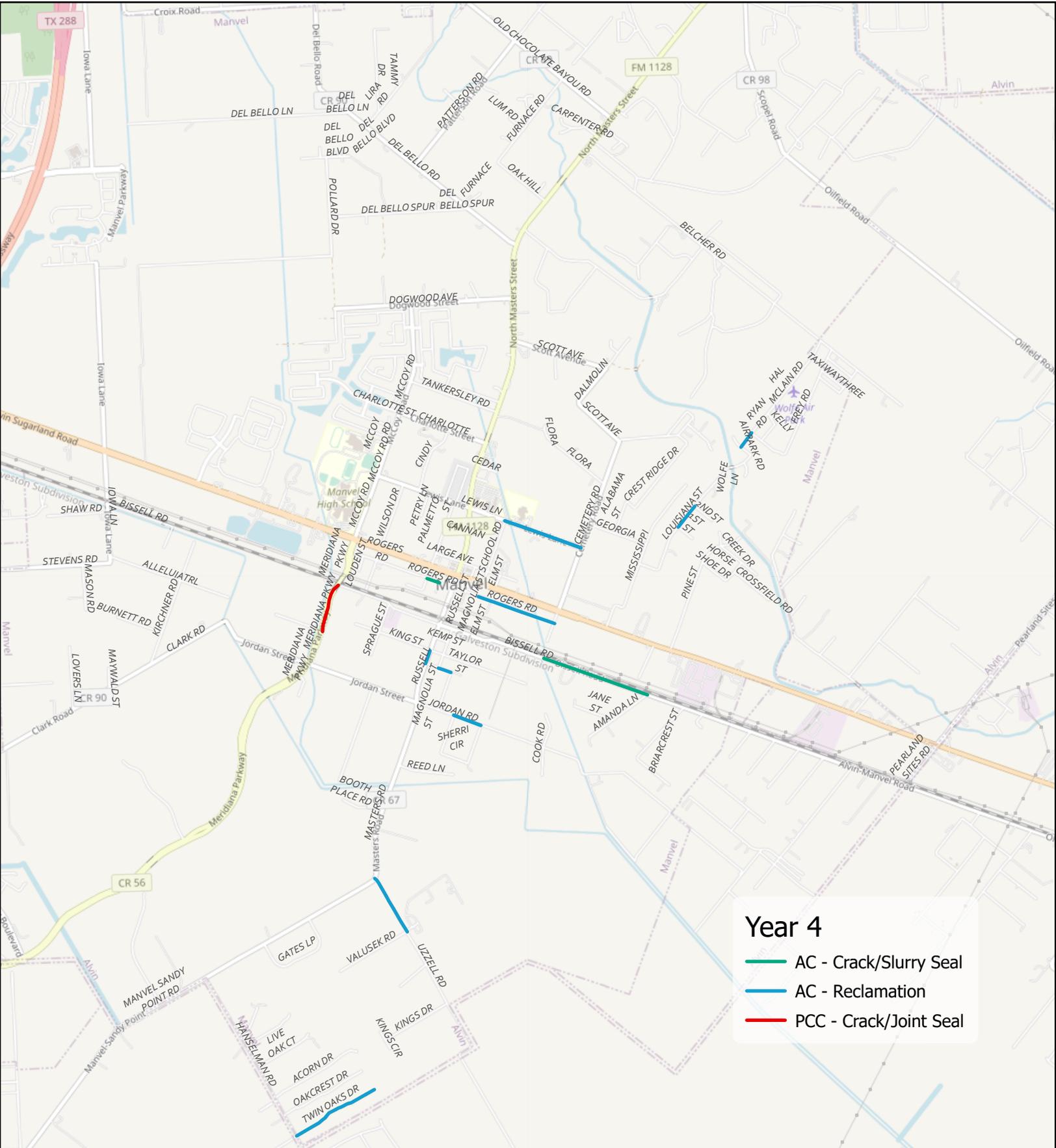
Fugro USA Land, Inc.
Date of Compilation: 05/13/2022

Scale: 1:40,000



City of Manvel, TX - Year 2026 Workplan

For scenario 2: Increasing PCI by 5 points in 5 years



Fugro USA Land, Inc.
Date of Compilation: 05/13/2022

Scale: 1:40,000



City of Manvel, TX - Year 2027 Workplan

For scenario 2: Increasing PCI by 5 points in 5 years



Fugro USA Land, Inc.
Date of Compilation: 05/13/2022

Scale: 1:40,000



Appendix G – Road Widening Listing

Road Widening Project Listing

Fugro Unique ID	Road Name	BEG_DESC	END_DESC	Total Pavement Width	Pavement Length (ft)	Pavement Area (ft ²)	Pavement Type	Functional Class	2022 PCI	in workplan for Scenario 2	Workplan Year	Treatment Cost in Workplan	Widening Year	PCI at Plan Year	Treatment Cost	Additional Widening Cost	Rehab + Widening Cost
14	UZZELL RD	KINGS DR	VALUSEK RD	16.1	2,193	35,312	ACP	Local	27	-	-	-	2023	<40	\$529,681	\$325,667	\$855,348
0	GATES LP	MASTERS RD	MASTERS RD	17.6	2,714	47,806	ACP	Local	16	-	-	-	2023	<40	\$215,129	\$341,325	\$556,454
40	ALLELUIA TRL	IOWA LN	KIRCHNER RD	18.2	1,977	36,028	ACP	Local	33	-	-	-	2023	<40	\$540,422	\$230,491	\$770,913
199	CHARLOTTE	MCCOY RD	CINDY DR	18.2	1,358	24,768	ACP	Collector	8	-	-	-	2023	<40	\$111,456	\$158,001	\$269,458
87	ROGERS RD	RUSSELL ST	MAGNOLIA ST	18.4	364	6,703	ACP	Local	28	-	-	-	2023	<40	\$100,547	\$41,530	\$142,077
16	KINGS DR	KINGS DR	KINGS CIR	18.5	1,919	35,504	ACP	Local	27	-	-	-	2023	<40	\$532,556	\$215,815	\$748,371
200	CHARLOTTE	CINDY DR	MASTERS RD	18.6	1,049	19,513	ACP	Collector	13	-	-	-	2023	<40	\$87,810	\$116,273	\$204,083
130	SCOTT AVE	CEMETERY RD	SCOTT AVE	19.0	1,502	28,525	ACP	Local	19	-	-	-	2023	<40	\$128,362	\$157,789	\$286,151
128	DALMOLIN	SCOTT ST	SCOTT AVE	19.0	1,179	22,436	ACP	Local	29	-	-	-	2023	<40	\$336,542	\$123,151	\$459,693
50	COOK RD	COOK RD	937 FT N/O COOKRD	19.2	937	17,988	ACP	Local	41	-	-	-	2023	<40	\$269,827	\$95,564	\$365,391
37	IOWA LN	BISEL RD	MORRIS AVE	19.5	1,428	27,774	ACP	Local	24	-	-	-	2023	<40	\$124,882	\$140,235	\$265,117
2	MASTERS RD	Hanselman RD	W/O OF GATES LP	19.6	1,802	35,252	ACP	Local	27	-	-	-	2023	<40	\$528,781	\$173,921	\$702,702
35	IOWA LN	STEVENS RD	SHAW RD	19.7	1,343	26,429	ACP	Local	19	-	-	-	2023	<40	\$118,932	\$127,134	\$246,066
127	SCOTT AVE	MASTERS RD	DALMOLIN RD	19.7	2,607	51,491	ACP	Local	33	-	-	-	2023	<40	\$772,368	\$244,518	\$1,016,886
135	MISSISSIPPI	LOUISIANA ST	GEORGIA ST	19.6	551	10,798	ACP	Local	31	-	-	-	2024	<40	\$161,965	\$52,886	\$214,851
3	MASTERS RD	W/O OF GATES LP	E/O OF GATES LP	19.8	1,372	27,160	ACP	Local	37	-	-	-	2024	<40	\$407,395	\$127,568	\$534,963
171	PATTERSON RD	DEL BELLO RD	OLD CHOCOLATE BAYOU RD	20.2	4,299	86,738	ACP	Local	22	-	-	-	2024	<40	\$390,321	\$375,698	\$766,018
41	ALLELUIA TRL	KIRCHNER RD	1379 FT E/O KIRCHNER	20.2	1,075	21,759	ACP	Local	10	-	-	-	2024	<40	\$97,917	\$92,783	\$190,699
5	Hanselman RD	LIVE OAK CT	MASTERS RD	20.3	2,760	56,028	ACP	Local	36	-	-	-	2024	<40	\$840,426	\$236,052	\$1,076,478
36	IOWA LN	SHAW RD	BISEL RD	20.4	238	4,857	ACP	Local	26	-	-	-	2024	<40	\$72,859	\$20,000	\$92,859
178	OLD CHOCOLATE BAYOU RD	MASTERS RD	FURNACE RD	20.6	1,643	33,813	ACP	Local	26	-	-	-	2024	<40	\$507,202	\$133,685	\$640,887
156	POLLARD DR	1047 FT SOUTH OF DEL BELLO SPUR	DEL BELLO SPUR	20.6	396	8,149	ACP	Local	4	-	-	-	2024	<40	\$36,672	\$32,044	\$68,716
143	AIRPARK RD	HAL MCCLAIN RD	CUL DE SAC	20.6	354	7,299	ACP	Local	23	-	-	-	2024	<40	\$32,844	\$28,698	\$61,542
176	OLD CHOCOLATE BAYOU RD	PATTERSON RD	1628 FT, NW/O PATTERSON RD	20.6	1,623	33,435	ACP	Local	22	-	-	-	2024	<40	\$150,460	\$131,243	\$281,703
49	COOK RD	742 FT S/O COOK RD	COOKRD	20.8	407	8,457	ACP	Local	5	-	-	-	2024	<40	\$38,058	\$31,715	\$69,773
136	MISSISSIPPI	GEORGIA ST	1937 FT N/O GEORGIA ST	21.0	1,950	40,868	ACP	Local	36	-	-	-	2024	<40	\$613,026	\$147,552	\$760,578
47	JORDAN RD	1400 SE/O COOK RD	SE END	21.0	1,012	21,250	ACP	Local	18	-	-	-	2024	<40	\$95,625	\$75,893	\$171,517
177	OLD CHOCOLATE BAYOU RD	FURNACE RD	PATTERSON RD	21.0	1,655	34,766	ACP	Local	10	-	-	-	2024	<40	\$156,449	\$123,760	\$280,208
6	Hanselman RD	ACORN DR	LIVE OAK CT	21.5	945	20,315	ACP	Local	20	-	-	-	2024	<40	\$91,417	\$63,945	\$155,361
19	MASTERS RD	UZZELL RD	BOOTH BLACE RD	21.5	1,942	41,831	ACP	Local	39	-	-	-	2024	<40	\$627,468	\$129,756	\$757,224
44	KIRCHNER RD	384 FT N/O ALLELUIA TRL	ALLELUIA TRL	21.8	382	8,330	ACP	Local	19	-	-	-	2024	<40	\$37,484	\$24,072	\$61,556
61	KING ST	683 FT N/O SPRAGUE ST	SPRAGUE ST	21.8	628	13,686	ACP	Local	32	-	-	-	2024	<40	\$205,291	\$39,551	\$244,842
201	BISEL RD	203 W/O MERIDIANA PKWY	SPRAGUE ST	21.9	1,295	28,403	ACP	Collector	7	-	-	-	2024	<40	\$127,813	\$78,811	\$206,624
157	POLLARD DR	DEL BELLO SPUR	DEL BELLO BLVD	22.0	1,596	35,051	ACP	Local	12	-	-	-	2024	<40	\$157,731	\$96,632	\$254,363
4	MASTERS RD	E/O OF GATES LP	UZZELL RD	20.4	2,061	42,031	ACP	Local	51	AC - Reclamation	2025	\$204,691	2025	39	Only widening cost included for this section.		\$173,208
22	MASTERS RD	JORDAN RD	TAYLOR ST	21.0	1,090	22,892	ACP	Local	52	AC - Reclamation	2025	\$111,485	2025	40	Only widening cost included for this section.		\$81,758
63	KING ST	RUSSELL ST	2366 FT E/O RUSSELL ST	22.0	2,300	50,542	ACP	Local	17	-	-	-	2025	<40	\$227,437	\$138,799	\$366,236
142	AIRPARK RD	WOLFE LN	HAL MCCLAIN RD	22.0	589	12,951	ACP	Local	18	-	-	-	2025	<40	\$58,281	\$35,322	\$93,603
121	CEMETERY RD	CREST RIDGE DR	SCOTT ST	22.0	1,212	26,662	ACP	Local	38	-	-	-	2025	<40	\$399,927	\$72,714	\$472,641
173	FURNACE RD	LUM RD	OLD CHOCOLATE BAYOU RD	22.1	1,706	37,623	ACP	Local	27	-	-	-	2025	<40	\$564,345	\$100,995	\$665,340
32	MASON RD	1239 FT S/O STEVENS RD	STEVENS RD	22.4	1,232	27,556	ACP	Local	30	-	-	-	2025	<40	\$413,346	\$67,290	\$480,636
132	GEORGIA	ALABAMA ST	MISSISSIPPI ST	22.4	874	19,551	ACP	Local	22	-	-	-	2025	<40	\$87,982	\$47,432	\$135,413
170	TAMMY DR	LIRA RD	1090 FT N/O LIRA RD	22.4	1,088	24,367	ACP	Local	15	-	-	-	2025	<40	\$109,650	\$58,741	\$168,391
124	CEMETERY RD	CREST RIDGE DR	CEMETERY RD	22.4	388	8,689	ACP	Local	21	-	-	-	2025	<40	\$39,100	\$20,947	\$60,047
78	AMANDA LN	JANE ST	BISEL RD	22.4	1,155	25,868	ACP	Local	40	-	-	-	2025	<40	\$388,013	\$62,359	\$450,372
99	WILSON DR	LARGE AVE	LEWIS LN	22.4	1,434	32,128	ACP	Local	5	-	-	-	2025	<40	\$144,576	\$77,263	\$221,839
26	MASTERS RD	BISEL RD	ROGERS RD	22.6	1,079	24,360	ACP	Local	32	-	-	-	2025	<40	\$365,399	\$55,216	\$420,615
72	KEMP ST	MASTERS RD	RUSSELL ST	22.6	354	7,996	ACP	Local	20	-	-	-	2025	<40	\$35,981	\$18,044	\$54,025
15	UZZELL RD	1719 FT S/O KINGS DR	KINGS DR	22.6	418	9,436	ACP	Local	25	-	-	-	2025	<40	\$42,460	\$21,293	\$63,752
105	PETRY LN	725 FT S/O LEWIS LN	LEWIS LN	22.6	623	14,080	ACP	Local	30	-	-	-	2025	<40	\$211,197	\$31,773	\$242,970
24	MASTERS RD	KING ST	KEMP ST	22.6	366	8,263	ACP	Local	32	-	-	-	2025	<40	\$123,938	\$18,646	\$142,584
168	LIRA RD	DEL BELLO RD	TAMMY DR	22.6	525	11,872	ACP	Local	37	-	-	-	2025	<40	\$178,077	\$26,790	\$204,867
118	CEMETERY RD	ROGERS RD	LEWIS LN	22.6	2,146	48,536	ACP	Local	17	-	-	-	2025	<40	\$218,412	\$109,016	\$327,428
42	KIRCHNER RD	CLARK RD	BURNETT RD	22.6	874	19,765	ACP	Local	32	-	-	-	2025	<40	\$296,468	\$44,314	\$340,782
158	DEL BELLO SPUR	POLLARD DR	DEL BELLO SPUR	22.7	3,674	83,570	ACP	Local	27	-	-	-	2025	<40	\$1,253,552	\$179,269	\$1,432,821
29	REED LN	MASTERS RD	1477 FT E/O MASTERS RD	22.8	1,452	33,091	ACP	Local	10	-	-	-	2025	<40	\$148,908	\$69,763	\$218,671
126	CEMETERY RD	SCOTT ST	CEMETERY RD	23.4	1,308	30,600	ACP	Local	51	AC - Reclamation	2025	\$149,023	2025	39	Only widening cost included for this section.		\$51,000
140	1ST ST	LOUISIANA ST	485 FT E/O LOUISIANA ST	25.0	559	13,970	ACP	Local	52	AC - Reclamation	2025	\$68,034	2025	40	Only widening cost included for this section.		\$8,382
46	BURNETT RD	CUL DE SAC W/O KIRCHNER RD	1379 FT E/O KIRCHNER	25.1	1,240	31,154	ACP	Local	52	AC - Reclamation	2025	\$151,719	2025	39	Only widening cost included for this section.		\$16,175
10	ACORN DR	HANSELMAN RD	EAST END	25.2	2,610	65,864	ACP	Local	50	AC - Reclamation	2025	\$320,759	2025	38	Only widening cost included for this section.		\$30,053
89	ROGERS RD	ELM ST	CEMETERY RD	17.8	1,795	31,888	ACP	Local	48	AC - Reclamation	2026	\$160,076	2026	31	Only widening cost included for this section.		\$221,893
88	ROGERS RD	MAGNOLIA ST	ELM ST	18.2	358	6,508	ACP	Local	45	AC - Reclamation	2026	\$32,672	2026	28	Only widening cost included for this section.		\$41,839
210	LEWIS LN	SCHOOL RD	CEMETERY RD	19.5	2,164	42,252	ACP	Arterial	45	AC - Reclamation	2026	\$212,105	2026	27	Only widening cost included for this section.		\$210,162
12	Twin Oaks DR	HANSELMAN RD	EAST END	21.0	2,435	51,153	ACP	Local	48	AC - Reclamation	2026	\$256,789	2026	31	Only widening cost included for this section.		\$182,353
13	UZZELL RD	VALUSEK RD	MASTERS RD	22.5	1,685	37,877	ACP	Local	44	AC - Reclamation	2026	\$190,142	2026	27	Only widening cost included for this section.		\$88,998
159	DEL BELLO BLVD	POLLARD DR	DEL BELLO BLVD	22.7	581	13,156	ACP	Local	38	-	-	-	2026	<40	\$197,336	\$29,059	\$226,395
102	PALMETTO ST	PALMETTO RD	LARGE AVE	22.7	655	14,872	ACP	Local	29	-	-	-	2026	<40	\$223,077	\$32,529	\$255,606
209	LEWIS LN	SCHOOL ST	SCHOOL RD	22.8	1,453	33,138	ACP	Arterial	39	-	-	-	2026	<40	\$497,075	\$69,615	\$566,690
169	LIRA RD	TAMMY DR	1015 FT NE/O TAMMY DR	23.0	1,016	23,354	ACP	Local	10	-	-	-	2026	<40	\$105,092	\$46,091	\$151,182
148	CREEK DR	374 FT NW/O PINE ST	PINE ST	23.0	296	6,806	ACP	Local	18	-	-	-	2026	<40	\$30,626	\$13,316	\$43,941
153	HAL MCCLAIN RD	FREY RD	KELLY ST	23.0	684	15,732	ACP	Local	36	-	-	-	2026	<40	\$235,980	\$30,780	\$266,760
188	JORDAN RD	SHERRI CIR WEST	SHERRI CIR EAST	23.0	778	17,905	ACP	Collector	54	AC - Reclamation	2026	\$89,885	2026	30	Only widening cost included for this section.		\$34,937
11	Oakcrest DR	HANSELMAN RD	EAST END	23.1	2,399	55,286	ACP	Local	21	-	-	-	2026	<40	\$248,787	\$106,127	\$354,913

Road Widening Project Listing

Fugro Unique ID	Road Name	BEG_DESC	END_DESC	Total Pavement Width	Pavement Length (ft)	Pavement Area (ft ²)	Pavement Type	Functional Class	2022 PCI	in workplan for Scenario 2	Workplan Year	Treatment Cost in Workplan	Widening Year	PCI at Plan Year	Treatment Cost	Additional Widening Cost	Rehab + Widening Cost
141	WOLFE LN	LOUISIANA ST	484 FT SE/O LOUISIANA ST	23.2	378	8,760	ACP	Local	23	-	-	-	2026	<40	\$39,421	\$15,859	\$55,281
70	RUSSELL ST	KING ST	KEMP ST	23.2	362	8,394	ACP	Local	25	-	-	-	2026	<40	\$125,906	\$15,196	\$141,102
23	MASTERS RD	TAYLOR ST	KING ST	23.2	368	8,533	ACP	Local	45	AC - Reclamation	2026	\$42,836	2026	27	Only widening cost included for this section.	\$15,448	\$15,448
183	JORDAN RD	CLARK RD	MERIDIANA PKWY (start of PCC)	23.4	2,468	57,705	ACP	Collector	23	-	-	-	2026	<40	\$259,671	\$97,178	\$356,849
119	CEMETERY RD	LEWIS LN	GEORGIA ST	23.4	670	15,678	ACP	Local	32	-	-	-	2026	<40	\$235,171	\$26,168	\$261,339
202	BISSELL RD	SPRAGUE ST	MASTERS RD	23.4	1,461	34,198	ACP	Collector	6	-	-	-	2026	<40	\$153,892	\$56,621	\$210,513
98	WILSON DR	ROGERS RD	LARGE AVE	23.4	710	16,623	ACP	Local	7	-	-	-	2026	<40	\$74,803	\$27,519	\$102,321
180	BELCHER RD	HAL McCLAIN RD	MASTERS RD	23.4	6,671	156,241	ACP	Local	31	-	-	-	2026	<40	\$2,343,617	\$257,878	\$2,601,495
211	DOGWOOD AVE	POLLARD DR	MASTERS RD	23.5	4,756	111,622	ACP	Collector	20	-	-	-	2026	<40	\$502,301	\$180,621	\$682,922
152	HAL McCLAIN RD	AIRPARK RD	FREY RD	23.5	372	8,751	ACP	Local	47	AC - Reclamation	2026	\$43,932	2026	29	Only widening cost included for this section.	\$13,692	\$13,692
67	TAYLOR ST	RUSSELL ST	MAGNOLIA ST	25.6	344	8,801	ACP	Local	46	AC - Reclamation	2026	\$44,183	2026	29	Only widening cost included for this section.	\$2,063	\$2,063
138	LOUISIANA ST	1ST ST	2ND ST	25.8	717	18,499	ACP	Local	49	AC - Reclamation	2026	\$92,863	2026	32	Only widening cost included for this section.	\$2,151	\$2,151
7	Hanselman RD	OAKCREST DR	ACORN DR	19.4	514	9,959	ACP	Local	44	AC - Reconstruction	2027	\$171,688	2027	22	Only widening cost included for this section.	\$50,884	\$50,884
30	LOVERS LN	CLARK RD	1667 FT N/O CLARK RD	23.3	1,683	39,230	ACP	Local	42	AC - Reconstruction	2027	\$676,325	2027	20	Only widening cost included for this section.	\$67,958	\$67,958
144	PINE ST	MORRIS AVE	HORSE SHOE DR	23.4	2,504	58,681	ACP	Local	44	AC - Reconstruction	2027	\$1,011,662	2027	22	Only widening cost included for this section.	\$96,226	\$96,226
120	CEMETERY RD	GEORGIA ST	CREST RIDGE DR	23.6	1,155	27,210	ACP	Local	36	-	-	-	2027	<40	\$408,146	\$42,382	\$450,528
68	MAGNOLIA ST	JORDAN RD	TAYLOR ST	23.6	1,050	24,761	ACP	Local	12	-	-	-	2027	<40	\$111,424	\$37,931	\$149,355
71	RUSSELL ST	KEMP ST	BISSELL RD	23.6	362	8,531	ACP	Local	5	-	-	-	2027	<40	\$38,391	\$13,014	\$51,405
77	AMANDA LN	798 FT S/O JANE ST	JANE ST	23.6	804	18,965	ACP	Local	10	-	-	-	2027	<40	\$85,342	\$28,930	\$114,272
131	GEORGIA	CEMETERY RD	ALABAMA ST	23.6	718	16,945	ACP	Local	40	-	-	-	2027	<40	\$254,172	\$25,848	\$280,020
43	KIRCHNER RD	BURNETT RD	ALLELUIA TRL	23.6	1,489	35,174	ACP	Local	15	-	-	-	2027	<40	\$158,282	\$52,985	\$211,267
111	RUSSELL ST	ROGERS RD	LARGE AVE	23.8	656	15,608	ACP	Local	21	-	-	-	2027	<40	\$70,236	\$21,641	\$91,878
80	Pearland Sites RD	ALVIN MANVEL RD	HIGHWAY 6	23.8	1,373	32,677	ACP	Local	38	-	-	-	2027	<40	\$490,161	\$45,309	\$535,470
79	BRIARCREST ST	2955 FT S/O BISSELL RD	BISSELL RD	23.9	2,972	70,955	ACP	Local	15	-	-	-	2027	<40	\$319,295	\$94,606	\$413,902
17	KINGS CIR	S/O KINGS CIR	N/O KINGS CIR	23.9	523	12,517	ACP	Local	28	-	-	-	2027	<40	\$187,755	\$16,215	\$203,970
62	KING ST	SPRAGUE ST	MASTERS RD	24.0	1,808	43,375	ACP	Local	18	-	-	-	2027	<40	\$195,187	\$54,420	\$249,607
182	CLARK RD	KIRCHNER RD	JORDAN RD	24.1	2,312	55,737	ACP	Collector	41	AC - Reconstruction	2027	\$960,913	2027	19	Only widening cost included for this section.	\$65,717	\$65,717
9	LIVE OAK CT	HANSELMAN RD	EAST END	24.1	1,661	40,113	ACP	Local	18	-	-	-	2027	<40	\$180,507	\$46,178	\$226,685
58	KREUZER	1333 FT W/O MERIDIANA PKWY	MERIDIANA PKWY	24.2	1,257	30,441	ACP	Local	38	-	-	-	2027	<40	\$456,620	\$33,688	\$490,308
60	TANKERSLEY RD	MCCOY DR	MASTERS RD	24.4	2,396	58,418	ACP	Local	29	-	-	-	2027	<40	\$876,263	\$58,177	\$934,440
96	WILSON DR	852 FT S/O ROGERS RD	ROGERS RD	24.4	371	9,043	ACP	Local	9	-	-	-	2027	<40	\$40,692	\$8,894	\$49,586
106	CINDY	LEWIS LN	CHARLOTTE DR	24.4	1,843	44,965	ACP	Local	40	-	-	-	2027	<40	\$674,477	\$44,137	\$718,614
76	JANE ST	1106 FT W/O AMANDA LN	AMANDA LN	24.6	1,098	27,011	ACP	Local	9	-	-	-	2027	<40	\$121,549	\$23,058	\$144,607
69	RUSSELL ST	TAYLOR ST	KING ST	24.6	355	8,728	ACP	Local	27	-	-	-	2027	<40	\$130,921	\$7,451	\$138,372
172	FURNACE RD	OAK HILL	LUM RD	25.1	1,114	27,978	ACP	Local	30	-	-	-	2027	<40	\$419,663	\$14,836	\$434,499
101	PALMETTO RD	S/W OF ROGERS RD	ROGERS RD	25.8	222	5,722	ACP	Local	12	-	-	-	2027	<40	\$25,751	\$665	\$26,416
65	SPRAGUE ST	KING ST	BISSELL RD	25.8	777	20,034	ACP	Local	24	-	-	-	2027	<40	\$90,152	\$2,329	\$92,481
28	BOOTH PLACE RD	1136 FT W/O MASTERS RD	MASTERS RD	25.9	1,050	27,191	ACP	Local	21	-	-	-	2027	<40	\$122,361	\$1,746	\$124,107

Total Widening Cost **\$34,206,601**

