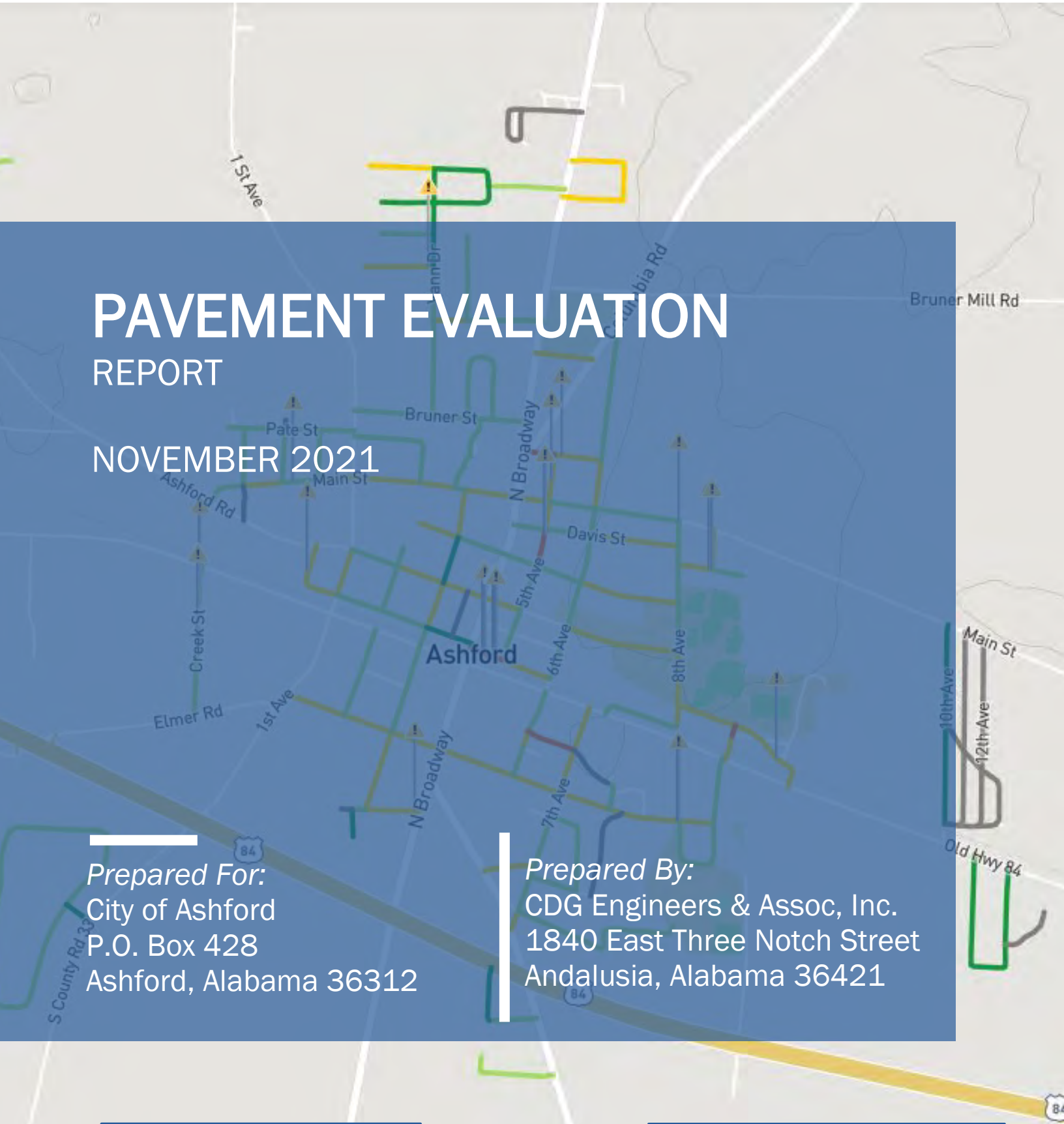
PAVEMENT EVALUATION
REPORT

NOVEMBER 2021



Prepared For:
City of Ashford
P.O. Box 428
Ashford, Alabama 36312

Prepared By:
CDG Engineers & Assoc, Inc.
1840 East Three Notch Street
Andalusia, Alabama 36421

CDG

RoadBotics

PAVEMENT EVALUATION REPORT

Prepared for:

Ashford, Alabama

Prepared by:

1840 East Three Notch Street
Andalusia, Alabama 36421
(334) 222-9431

November 2021

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1.0 EXECUTIVE SUMMARY

At the request of the City of Ashford (City), CDG Engineers & Associates (CDG) has evaluated approximately 209 street segments that represent the approximate 18 centerline miles of streets within the corporate boundary of the City of Ashford. The evaluation area consisted of all roadways within the City limits that are currently under City maintenance, and all state-maintained roadways were excluded. CDG partnered with RoadBotics, Inc. to provide a video captured evaluation of the roadway condition using their Artificial Intelligence software. The data collected was evaluated for each roadway segment and a Pavement Condition Rating (PCR), from 0 ("failed") to 100 ("good"), was calculated based on the distresses observed. It should be noted that the evaluation did not include any subsurface information or pavement age considerations.

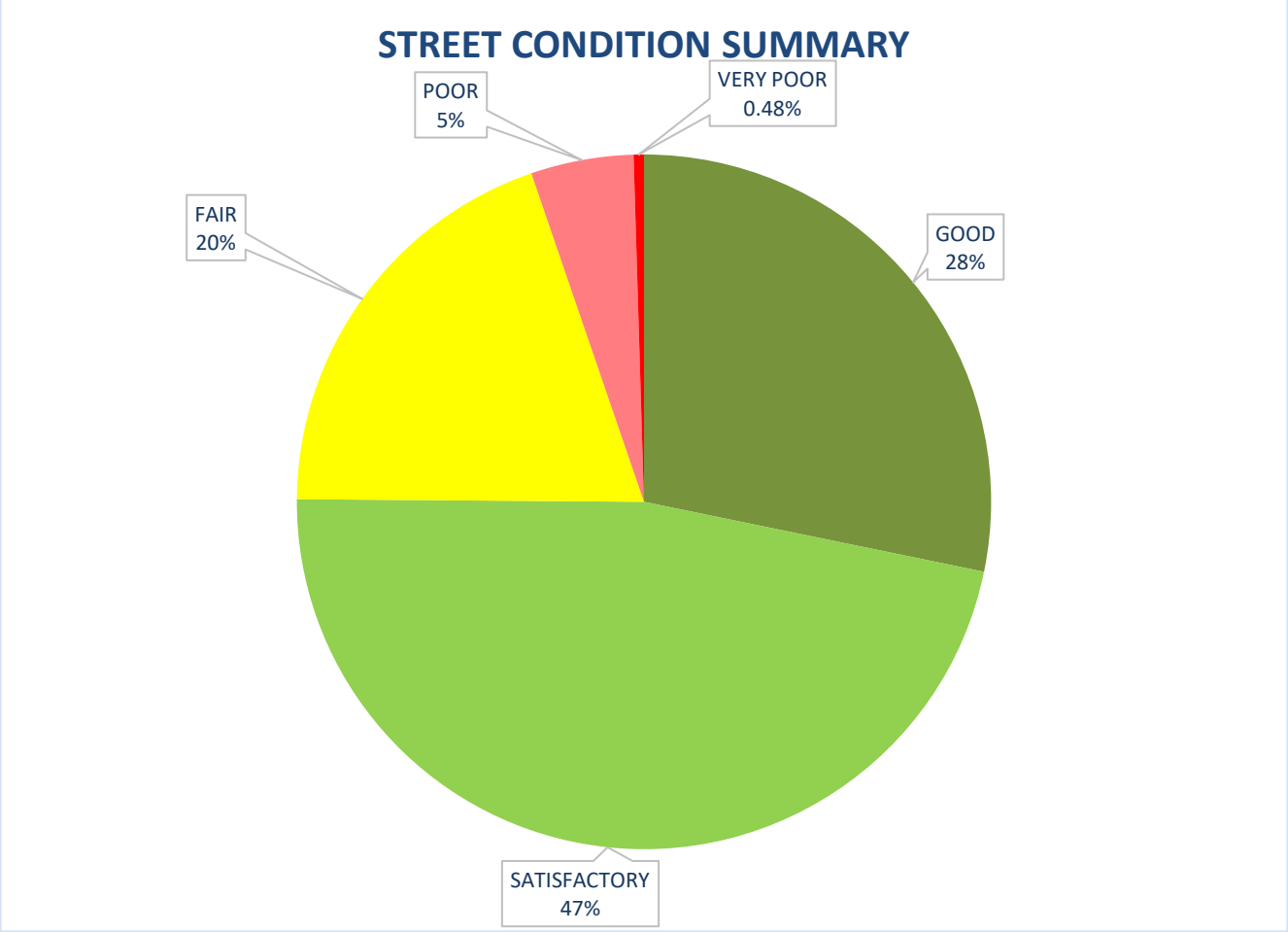


Figure 1: Street Condition Summary

As shown in Figure 1 above, the majority of roads within the City of Ashford (75%) had PCR values of 70 or higher and were categorized as "satisfactory" (47%) or "good" condition (28%). Less than 1 percent of the City's roadways had PCRs under 40, categorized as "very poor". No roadways categorized as "serious" or "failed". The remaining roadways were considered to be in "fair" (20%) or "poor" (5%) condition. ***The average PCR for all roads within the limits of the City of Ashford is 76.6*****, which is rated as "Satisfactory" according to the established PCR scale.**

This report should be used as a tool for network-level planning to help establish a prioritization of the City-owned street network and aid the City in assigning earmarked funds appropriately. It is our understanding that City planners will utilize this data to aid in their field investigations and engineering analysis to determine estimated cost for roadway improvements.

Finally, because the PCR values are a snapshot in time of roadway condition, it is recommended that the PCR evaluations be routinely re-evaluated (ideally every 5 years or less) to provide City planners with up-to-date data.

2.0 PURPOSE AND SCOPE OF WORK

In July 2021, CDG Engineers and Associates (CDG) was retained by the City of Ashford (City) to provide an evaluation of all paved streets within its corporate boundaries. The results of the evaluation are to be used to prioritize street department maintenance activities as well as contracted corrective and rehabilitative measures for the City's roadway network. The purpose of this report is to provide objective data for the City's infrastructure decision making processes.

Specific items in the scope of work for this project include the following:

Task 1: Roadway Network Identification

- Determine the extent of the City's roadway network and preparation for a network database in Geographic Information System (GIS).

Task 2: Field Evaluation

- Field collection of data for roadways defined in Task 1 by CDG personnel.
- CDG will upload data for analysis. The analysis will result in a Pavement Condition Index (PCI) rating for each roadway segment.

Task 3: Mapping

- CDG will prepare an overall map to illustrate the results of the pavement evaluation. Three (3) 22"x34" printed copies will be provided to the City. An electronic copy will also be provided in .PDF format.

Task 4: Report

- CDG will prepare an engineering report to convey the following elements:
    - Types of Pavement Distresses.
    - Evaluation Methodology.
    - Analysis of individual roadway segment pavement condition rating.

3.0 TYPES OF PAVEMENT DISTRESSES

The condition of a city's roadway network is constantly changing as pavement distresses develop over time. The nature and cause of pavement distresses are varied thus requiring different methods for maintenance and rehabilitation. Therefore, it is critical to accurately identify each type of pavement distress so the proper maintenance treatment can be selected.

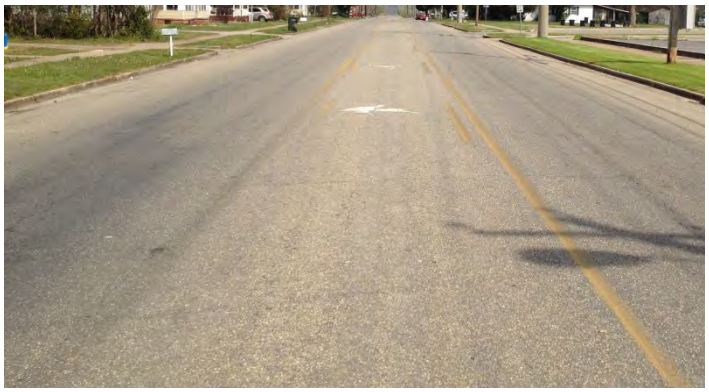
The following list of pavement distresses or defects were considered as part of the evaluation process:

RAVELING

Raveling is the progressive disintegration of the asphalt from the surface downward as a result of the dislodgement of aggregate particles. It is often caused by the loss of bond between aggregate particles and the asphalt binder, and results in a loss of skid resistance and hydroplaning.

BLEEDING

Bleeding is defined as a film of asphalt binder on the pavement surface that causes a loss of skid resistance. Shiny, glass-like surfaces in the area of the wheel path are often typical indications of bleeding.



PATCHING

Patching is the placement of a new material in an effort to rehabilitate an existing pavement that has deteriorated or suffered from utility cuts.

RUTTING

Rutting is a longitudinal surface depression in the wheel path. Rutting is caused by heavy loads, subgrade settlement, poor construction methods, or asphalt mixtures of inadequate strength.

POTHOLES

Potholes are simply depressions in the pavement surface that penetrate all the way through the asphalt layer down to the base course. They allow moisture infiltration which can accelerate deterioration, and are generally the end result of alligator cracking.

CRACKING

Fatigue (Alligator) Cracking is a series of interconnected cracks caused by fatigue failure of the asphalt surface under repeated traffic loading. It is an indicator of structural failure and the cracks allow moisture infiltration which can accelerate deterioration. Common causes of alligator cracking include loss of base/subbase material, excessive loading, inadequate structural design, and poor drainage.

Block and Transverse Cracking is a series of interconnected cracks that divide the pavement into a series of rectangular sections. It allows moisture infiltration which can accelerate deterioration. Common causes of block cracking include shrinkage of asphalt as a result of fluctuations in daily temperatures, poor asphalt binder that is unable to expand and contract with changes in temperature, or reflection cracking from an underlying layer.

Longitudinal Cracking is cracking parallel to the centerline of the roadway with possible causes including poor construction methods, freeze/thaw cycles, daily temperature cycling, or reflection cracking. Longitudinal cracking allows moisture infiltration which can accelerate deterioration. Longitudinal cracking occurs in concrete and asphalt pavements.

CRACKING (CONTINUED)

Edge Cracking is often crescent-shaped cracks or fairly continuous cracks which intersect the pavement edge. Causes of edge cracking are lack of shoulder support, insufficient quality or thickness of asphalt, or poor drainage. Edge cracking occurs in asphalt and concrete pavements.

PUMPING

Pumping is movement of material underneath the slab or ejection of material from underneath the slab. Caused by water accumulation under the slab due to poor drainage, panel cracks or poor joint seals. Pumping occurs in concrete pavements.

CORNER BREAKS

Corner breaks are cracks which intersect the slab joints near the corner – generally within 6' feet of the corner- in concrete pavement. Causes of corner breaks are lack of slab support and load repetition.

FAULTING

Faulting is a difference in elevation across a crack or joint in concrete pavement. The cause of faulting is generally pumping.

SURFACE DETERIORATION

Surface Deterioration is often the wearing away of the surface mortar and exposure of the coarse aggregate in concrete pavement. The primary cause of surface deterioration is freeze/thaw cycles.

4.0 EVALUATION METHODOLOGY

The pavement evaluation methodology adopted for this project is based on a visual inspection of the roadways within the corporate boundary of Ashford. The methodology utilizes a Pavement Condition Rating (PCR) and is generally based on the Pavement Condition Index (PCI) used within ASTM D6433, "Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys" in conjunction with Distress Extent Definitions developed and used by the Ohio Department of Transportation.

Please note that a visual inspection of observable distress ***does not*** provide a quantitative measure of the extent of rehabilitative measures, such as an asphalt buildup suitable for anticipated traffic loading, but ***does*** help to sharpen the focus of a street rehabilitation program by identifying areas with the highest occurrence of observable distress.

CDG traveled to each roadway and collected the video data of the pavement distress present at the time of evaluation. Observable pavement distress is an indication the roadway is experiencing some detriment and will need maintenance or rehabilitation measures based on the type of distress encountered. The data was then uploaded to RoadBotics for their Artificial Intelligence technology to analyze and produce the resulting Pavement Condition Rating (PCR). The PCR is a mathematical expression which includes the composite effects of different distresses, the severity of each type, and the frequency of each occurrence.

The mathematical expression for the PCR is as follows:

$$PCR = 100 - \sum_{1}^{n} Deduct$$

Where: $n = number\ of\ visable\ distresses$

$$Deduct = (Distress\ Weight)(Severity\ Weight)(Extent\ Weight)$$

(Ohio Department of Transportation. *Pavement Condition Rating System.* April 2006. www.dot.state.oh.us. July 2015)

The "Distress Weight" described above is a pre-selected value conveying a relative ranking of the significance of the distress type. For instance, rutting is a more significant distress than patching, so the "Distress Weight" for rutting is higher than the "Distress Weight" for patching.

The "Severity Weight" is categorized in three different ranges: Low, Medium, and High. Low, medium, or high severity was assigned to each distress type using objective measurements taken in the field and applying them to the definitions found in ASTM D6433. These definitions are also very similar to those represented in the *Pavement Condition Rating System* publication produced by the Ohio Department of Transportation.

Similarly, the "Extent Weight" was applied based on definitions found in ASTM D6433, and are categorized as: occasional, frequent or extensive.

Because the PCR values are a snapshot in time of roadway condition, it is recommended that the PCR evaluations be routinely re-evaluated (ideally every 5 years or less) to provide City planners with up-to-date data.

The PCR scale in Figure 2, right, is used to describe the condition of the roadway based on the field evaluation results. The PCR scale below has a range of 0 to 100. A rating of 100 represents a roadway with little to no observable distress. A rating of 0 represents a failed roadway. Failed roadways have all types of distresses present occurring extensively throughout and at the highest levels of severity. Generally, roadways that are at risk of a rapid decrease in condition, if untreated, have PCR ratings around 55 or less.

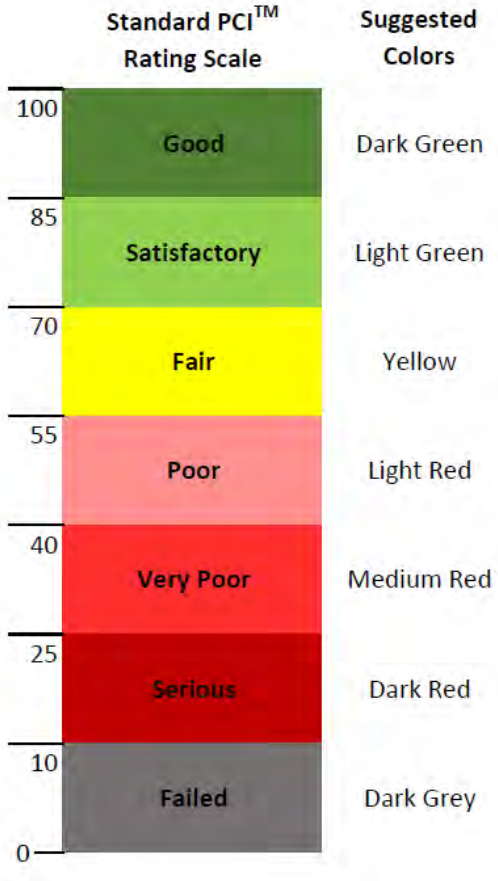


Figure 2: Pavement Condition Index Scale

ASTM D6433

The PCR methodology and scale provide many advantages, including:

- PCR values allow for better communication between the Street Department and City planners or other interested parties.
- PCR values allow the City to rank their roads for maintenance and rehabilitation activities.
- PCR values allow the City to establish a standard threshold for certain levels of maintenance or rehabilitation, further enhancing planning efforts.
- As PCR values are updated, the City can compare new values with others collected in the past to determine a rate of deterioration and perhaps modify products, mixtures, or construction methods used.

5.0 RESULTS & RECOMMENDATIONS

The City of Ashford maintains approximately 18 linear miles of roads. ***The average PCR for all roads maintained by the City of Ashford is 76.6*, which is rated as "Satisfactory" according to the established PCR scale.** During the evaluation, a wide range of conditions were encountered with the minimum and maximum PCR for all roads found to be 33.3 and 100, respectively.

As shown in Figure 3, below, the majority of roadways maintained by Ashford (75%) are rated "good" or "satisfactory". These streets are best served through routine and preventative maintenance. The next largest category of roads is "fair" with 41 streets/segments (20%). These roadways are candidates for thin to moderate overlays with some localized patching. Figure 3 also shows that 10 streets (5%) are ranked as "poor". These roadways are candidates for progressively thicker overlays with some patching. Only 1 (approximately 0.48%) fall into the "very poor" category. This roadway is heavily distressed and is showing signs of base failures. Therefore, a thick overlay with base stabilization is recommended for this street. No roadways were categorized as "serious" or "failed".

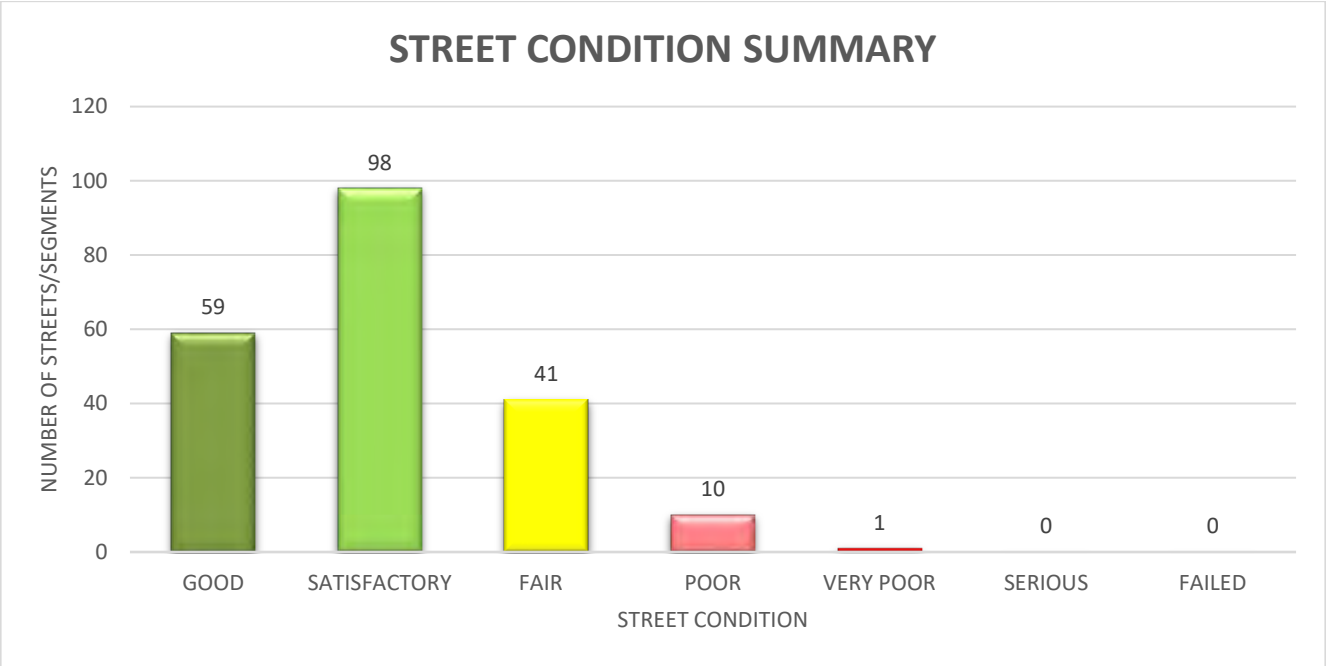


Figure 3: Street Condition Summary (City Maintained)

The City was provided a login to the RoadBotics dashboard, allowing City planners to utilize mapping with the data overlaid, which is an efficient way to view and plan rehabilitative activities. The dashboard can filter down to specific deficiencies observed, as well as view the video segment images that were captured.

The chart below summarizes the recommended treatment measures and corresponding PCR ratings. The cost per square foot is also included for reference. A more detailed explanation for each type of treatment, including routine and preventative maintenance, can be found in Appendix B of this report.

DESCRIPTION	PCR RANGE	TREAMENT	APPROX. COST / SQ FT
GOOD	85.0-100	ROUTINE & PREVENTATIVE MAINTENANCE; SOME CRACK & JOINT SEALING; LOCALIZED REPAIRS	N/A
SATISFACTORY	70.0-84.9	ROUTINE & PREVENTATIVE MAINTENANCE; SOME CRACK & JOINT SEALING; LOCALIZED REPAIRS	N/A
FAIR	55.0-69.9	THIN TO MODERATE OVERLAYS; SOME LOCALIZED PATCHING REPAIRS	$2.00
POOR	40-54.9	PROGRESSIVELY THICKER OVERLAYS WITH PATCHING AS NEEDED	$3.25
VERY POOR	25-39.9	THICK OVERLAYS WITH MORE EXTENSIVE PATCHING; SURFACE REMOVAL AND REPLACEMENT WITH BASE STABILIZATION	$5.25
SERIOUS & FAILED	0.0-24.9	FULL RECONSTRUCTION	$6.50 (LOCAL) $8.50 (COLLECTOR)

Figure 4: Pavement Treatment Summary

6.0 SUMMARY AND CONCLUSIONS

The public roadway network is often a city's most visible asset. The leaders of the City of Ashford have taken a proactive role in evaluating and addressing the distresses and aging of this asset.

This pavement evaluation is intended to aid the City of Ashford in selecting streets in need of rehabilitation and prioritize roadway maintenance efforts. Combined with the City's proactive approach, this report should enable City leaders to direct the use of City funds more accurately for the resurfacing and rehabilitation of roadways.

Appendix A – Sample Condition Rating Form

Pavement Evaluation
City of Ashford
Ashford, Alabama

CDG FORM: PCR-01 (Rev. 2/23/15)

FLEXIBLE PAVEMENT CONDITION RATING FORM

STREET OR ROUTE: _____ DATE: _____

BEGIN: _____ RATED BY: _____

END: _____

Street I.D. # _____

DISTRESS	DISTRESS WEIGHT	SEVERITY WT.*			EXTENT WT.**			DEDUCT POINTS***
		L	M	H	O	F	E	
RAVELING	10	0.3	0.6	1	0.5	0.8	1	
BLEEDING	5	0.8	0.8	1	0.6	0.9	1	
PATCHING	5	0.3	0.6	1	0.6	0.8	1	
RUTTING	15	0.3	0.7	1	0.6	0.8	1	
POTHOLES	15	0.4	0.8	1	0.5	0.8	1	
FATIGUE (ALLIGATOR) CRACKING	15	0.4	0.7	1	0.5	0.7	1	
BLOCK AND TRANSVERSE CRACKING	10	0.4	0.7	1	0.5	0.7	1	
LONGITUDINAL CRACKING	5	0.4	0.7	1	0.5	0.7	1	
EDGE CRACKING	10	0.4	0.7	1	0.5	0.7	1	
RIDE QUALITY	Max. 10	Give deduction for ride quality						

TOTAL DEDUCT = _____

100 - TOTAL DEDUCT = PCR = _____

* L = LOW
M = MEDIUM
H = HIGH

** O = OCCASIONAL
F = FREQUENT
E = EXTENSIVE

*** DEDUCT POINTS = DISTRESS WEIGHT X SEVERITY WT. X EXTENT WT.

OTHER INFORMATION:

ROADWAY WIDTH	PAVEMENT TYPE		CURB AND GUTTER CONDITION			LANE/SHOULDER DROP-OFF
			CURB AND GUTTER PRESENT?		DESCRIPTION	
(FT.)	ASPHALT	A.K.G.	Y	N		(IN.)

Appendix B – PCR Summary

Pavement Evaluation
City of Ashford
Ashford, Alabama

Street ID #	STREET NAME	LENGTH (FT)	POTHOLES	% FATIGUE CRACKING	% DISTORTION	% DETERIORATION	PATCH/SEAL	% TRANS/LONG	PCR	RECOMMENDED TREATMENT
23	Midland Street	331	6	0	7	87	63	100	33.3	OVERLAY & BASE STABILIZATION
76	Houston Street	492	0	0	0	22	4	94	43.0	2.5" OVERLAY
79	Bruner Street	246	0	0	0	50	77	100	45.0	2.5" OVERLAY
175	Barfield Street	108	0	0	0	50	10	90	50.0	2.5" OVERLAY
75	Pinehurst Drive	676	1	0	0	62	23	94	50.7	2.5" OVERLAY
46	8th Avenue	525	0	29	0	25	38	100	51.1	2.5" OVERLAY
5	5th Avenue	374	2	0	0	89	41	97	51.5	2.5" OVERLAY
48	Bruner Street	463	1	0	0	64	58	100	52.2	2.5" OVERLAY
109	Ole Taylor Place	151	0	0	0	0	40	60	54.0	2.5" OVERLAY
74	Harrison	531	1	0	0	44	48	96	54.0	2.5" OVERLAY
174	5th Avenue	472	2	0	0	17	25	98	55.0	2.5" OVERLAY
167	Davis Street	344	2	0	0	38	38	100	55.7	1.5" OVERLAY
206	11th Avenue	1181	0	0	0	0	0	0	55.7	1.5" OVERLAY
155	8th Avenue	246	1	0	4	28	24	76	57.8	1.5" OVERLAY
119	Oak Street	367	2	0	0	5	19	100	58.3	1.5" OVERLAY
108	Ole Taylor Place	646	0	0	0	0	8	100	59.0	1.5" OVERLAY
83	Midland Street	715	1	0	0	11	7	93	59.1	1.5" OVERLAY
22	Church Street	331	0	0	0	0	21	100	60.0	1.5" OVERLAY
39	Oak Street	213	0	0	0	0	14	100	60.0	1.5" OVERLAY
66	Oak Street	125	0	0	0	0	0	100	60.0	1.5" OVERLAY
95	Church Street	220	0	0	0	0	36	100	60.0	1.5" OVERLAY
104	Crawford Street	564	0	0	0	13	2	64	60.0	1.5" OVERLAY
117	6th Avenue	167	0	0	0	0	0	100	60.0	1.5" OVERLAY
157	Ole Taylor Place	174	0	0	0	6	17	100	60.0	1.5" OVERLAY
159	Church Street	10	0	0	0	0	0	100	60.0	1.5" OVERLAY
165	Church Street	253	0	0	0	0	100	100	60.0	1.5" OVERLAY
185	11th Avenue	131	0	0	0	0	0	0	60.0	1.5" OVERLAY
205	Weeks Street	59	0	0	0	0	0	0	60.0	1.5" OVERLAY
115	Creek Street	1486	3	1	0	7	10	95	60.1	1.5" OVERLAY
195	11th Avenue	751	0	0	0	0	0	0	60.1	1.5" OVERLAY
148	Church Street	479	0	0	0	2	10	98	61.0	1.5" OVERLAY
140	Oakwood Lane	89	0	0	0	10	20	100	62.0	1.5" OVERLAY
28	Adams Street	994	0	0	0	0	1	100	63.0	1.5" OVERLAY
126	Barfield Street	249	0	8	0	29	29	92	63.7	1.5" OVERLAY
11	Oak Street	331	0	0	0	0	14	100	64.0	1.5" OVERLAY
70	7th Avenue	197	0	0	0	33	0	100	64.0	1.5" OVERLAY
101	Main Street	384	0	0	0	8	18	92	64.0	1.5" OVERLAY
180	8th Avenue	98	1	0	0	20	0	90	64.1	1.5" OVERLAY

Street ID #	STREET NAME	LENGTH (FT)	POTHOLES	% FATIGUE CRACKING	% DISTORTION	% DETERIORATION	PATCH/SEAL	% TRANS/LONG	PCR	RECOMMENDED TREATMENT
10	Oakwood Lane	43	0	0	0	0	50	100	65.0	1.5" OVERLAY
58	Waterford Way	3136	0	0	0	73	5	27	65.2	1.5" OVERLAY
63	Grimshey Drive	1804	0	0	0	6	6	53	65.5	1.5" OVERLAY
7	3rd Avenue	810	0	0	0	13	23	100	65.7	1.5" OVERLAY
41	6th Avenue	482	0	0	0	4	0	96	67.0	1.5" OVERLAY
96	Alice Street	499	0	0	0	12	8	86	67.0	1.5" OVERLAY
100	5th Avenue	272	0	0	0	0	19	100	67.0	1.5" OVERLAY
35	Oak Street	528	0	0	0	4	19	100	67.9	1.5" OVERLAY
25	8th Avenue	276	0	0	0	25	0	92	69.0	1.5" OVERLAY
57	1st Avenue	476	0	0	0	2	2	80	69.0	1.5" OVERLAY
78	Main Street	348	0	0	0	4	0	96	69.0	1.5" OVERLAY
53	Midland Street	476	0	0	2	8	8	100	69.0	1.5" OVERLAY
2	Academy Drive	1486	0	0	0	8	1	100	69.1	1.5" OVERLAY
82	Academy Drive	640	0	0	0	20	14	95	69.6	1.5" OVERLAY
37	Stonegate Drive	328	0	0	0	28	34	88	70.0	1.5" OVERLAY
91	8th Avenue	246	0	0	0	4	38	96	70.0	1.5" OVERLAY
133	Main Street	354	0	0	0	0	3	100	70.0	1.5" OVERLAY
146	Main Street	322	0	0	0	3	9	100	70.0	1.5" OVERLAY
197	South Broadway Street	322	0	0	0	0	0	0	70.0	1.5" OVERLAY
33	Midland Street	509	0	0	0	20	16	100	70.0	N/A
26	Mercer Street	755	0	0	3	11	20	47	70.3	N/A
45	Adams Street	397	0	0	0	26	5	100	70.4	N/A
88	Stonegate Drive	732	0	0	0	7	19	100	70.4	N/A
113	Jules Lane	1378	0	0	0	7	23	96	70.7	N/A
68	5th Avenue	466	0	0	0	4	4	98	71.1	N/A
47	Magnolia Drive	1073	0	0	0	43	3	41	71.5	N/A
152	Church Street	1129	0	2	0	0	7	100	71.8	N/A
50	7th Avenue	446	0	0	0	20	48	98	72.0	N/A
163	Oak Street	482	0	0	0	4	26	100	72.2	N/A
176	Waterford Way	794	0	0	0	50	0	50	73.0	N/A
161	Midland Street	774	0	0	0	58	8	36	73.1	N/A
138	Main Street	656	0	0	0	4	21	100	73.4	N/A
81	8th Avenue	210	0	0	0	14	19	71	73.4	N/A
144	9th Avenue	400	0	0	0	22	7	98	73.6	N/A
107	Oak Street	486	0	0	0	2	12	100	73.6	N/A
31	Oak Street	787	0	0	0	5	8	99	73.6	N/A
139	3rd Avenue	469	0	0	0	2	34	100	73.7	N/A
199	11th Avenue	190	0	0	0	0	0	0	73.7	N/A

Street ID #	STREET NAME	LENGTH (FT)	POTHOLES	% FATIGUE CRACKING	% DISTORTION	% DETERIORATION	PATCH/SEAL	% TRANS/LONG	PCR	RECOMMENDED TREATMENT
42	8th Avenue	600	0	0	0	16	18	85	74.0	N/A
19	Oak Street	614	0	0	0	10	16	100	74.0	N/A
49	Waterford Way	994	0	0	0	39	5	54	74.0	N/A
121	Oakwood Lane	830	0	0	0	32	2	68	74.0	N/A
123	Oak Street	499	0	0	0	2	8	100	74.0	N/A
196	North Broadway Street	249	0	0	0	0	0	0	74.0	N/A
128	Main Street	358	1	0	0	3	16	100	74.3	N/A
150	3rd Avenue	472	0	0	0	8	29	100	74.3	N/A
162	2nd Avenue	489	0	0	0	8	6	98	74.4	N/A
134	Henry Bolden Drive	915	0	0	0	19	6	83	74.5	N/A
169	2nd Avenue	469	0	0	0	6	15	96	74.6	N/A
0	7th Avenue	443	0	0	0	20	7	96	74.6	N/A
127	Davis Street	873	0	0	0	1	1	99	74.7	N/A
164	8th Avenue	266	0	0	0	14	34	100	74.8	N/A
204	Marie Street	85	0	0	0	0	0	0	74.8	N/A
17	Main Street	449	0	0	0	4	2	100	74.8	N/A
178	Main Street	512	0	0	0	4	15	94	75.0	N/A
89	Ole Taylor Place	942	0	0	0	26	0	75	75.0	N/A
173	Northwood Drive	833	0	0	0	26	0	68	75.5	N/A
208	12th Avenue	56	0	0	0	0	0	0	75.5	N/A
130	Barfield Street	646	0	0	0	42	2	58	76.0	N/A
154	3rd Avenue	427	0	0	0	11	7	93	76.5	N/A
125	Barfield Street	669	0	0	0	9	15	96	76.5	N/A
85	2nd Avenue	410	0	0	0	7	5	98	76.8	N/A
124	Pine Needles Drive	518	0	0	0	12	12	92	76.8	N/A
142	Main Street	397	0	0	0	61	5	39	77.2	N/A
38	Adams Street	499	0	0	0	14	8	90	77.2	N/A
202	9th Avenue	938	0	0	0	21	0	37	77.4	N/A
203	North Broadway Street	233	0	0	0	0	0	0	77.4	N/A
111	Vann Drive	942	0	0	0	9	0	86	77.7	N/A
158	8th Avenue	486	0	0	0	2	10	98	77.9	N/A
110	Pate Street	341	0	0	0	37	9	63	78.4	N/A
9	8th Avenue	377	0	0	0	5	0	100	78.5	N/A
14	George Cook Street	466	0	0	0	7	5	93	78.6	N/A
141	6th Avenue	522	0	0	0	15	11	85	78.6	N/A
166	Marie Street	535	0	0	0	11	6	87	78.6	N/A
40	6th Avenue	463	0	0	0	8	4	96	78.7	N/A
3	Bruner Street	768	0	0	0	8	3	92	78.9	N/A

Street ID #	STREET NAME	LENGTH (FT)	POTHOLES	% FATIGUE CRACKING	% DISTORTION	% DETERIORATION	PATCH/SEAL	% TRANS/LONG	PCR	RECOMMENDED TREATMENT
69	Barfield Street	417	0	0	0	7	5	95	78.9	N/A
6	Hugh Street	489	0	0	0	6	11	96	79.0	N/A
29	Park Street	571	0	0	0	5	2	96	79.0	N/A
170	Smith Street	886	0	0	0	73	0	9	79.0	N/A
65	Breakfast Pond Drive	922	0	0	0	31	0	12	79.3	N/A
71	Harrison	128	0	0	0	38	38	100	79.4	N/A
160	Pittman Street	472	0	0	0	71	0	29	79.5	N/A
56	Bruner Street	335	0	9	0	12	3	94	79.8	N/A
137	Pinecrest Drive	682	0	0	0	17	1	14	79.8	N/A
4	None	364	0	0	0	31	0	69	80.0	N/A
55	Davis Street	315	0	0	0	19	6	94	80.2	N/A
136	6th Avenue	240	0	0	0	4	13	96	80.2	N/A
84	6th Avenue	482	0	0	0	6	0	98	80.3	N/A
16	Pate Street	397	0	0	0	7	10	88	80.8	N/A
168	6th Avenue	299	0	0	0	30	17	73	80.8	N/A
207	12th Avenue	509	0	0	0	0	0	0	80.8	N/A
12	6th Avenue	358	0	0	0	9	3	91	81.0	N/A
60	Bruner Street	354	0	0	0	3	11	100	81.0	N/A
179	3rd Avenue	472	0	0	0	8	8	31	81.6	N/A
86	Pate Street	344	0	0	0	49	0	54	82.0	N/A
191	North Broadway Street	62	0	0	0	0	0	0	82.0	N/A
32	Adams Street	322	0	0	0	21	0	79	82.3	N/A
149	Davis Street	295	0	0	0	28	0	72	82.4	N/A
43	Vann Drive	525	0	0	0	4	0	57	82.5	N/A
52	7th Avenue	364	0	0	0	6	0	75	82.5	N/A
116	6th Avenue	256	0	0	0	8	0	92	82.5	N/A
156	Davis Street	453	0	0	0	20	0	80	82.5	N/A
200	Weeks Street	318	0	0	0	0	0	0	82.5	N/A
201	Houston Street	469	0	0	0	0	0	0	82.5	N/A
77	3rd Avenue	197	0	0	0	26	11	32	83.0	N/A
135	Main Street	840	0	0	0	0	5	100	83.3	N/A
1	10th Avenue	988	0	0	0	13	0	5	84.0	N/A
122	10th Avenue	981	0	0	0	10	0	1	84.0	N/A
27	Vann Drive	335	0	0	0	3	0	6	84.5	N/A
61	2nd Avenue	194	0	0	0	15	0	85	84.5	N/A
183	None	551	0	0	0	0	0	0	84.5	N/A
21	Vann Drive	312	0	0	0	3	3	12	85.0	N/A
147	6th Avenue	430	0	0	0	0	2	100	85.9	N/A

Street ID #	STREET NAME	LENGTH (FT)	POTHOLES	% FATIGUE CRACKING	% DISTORTION	% DETERIORATION	PATCH/SEAL	% TRANS/LONG	PCR	RECOMMENDED TREATMENT
34	3rd Avenue	466	0	0	0	0	2	100	86.0	N/A
98	7th Avenue	512	0	0	0	0	8	87	86.3	N/A
59	Houston Street	138	0	0	0	36	0	43	86.5	N/A
62	Waterford Way	92	0	0	0	75	0	25	86.5	N/A
87	7th Avenue	105	0	0	0	18	0	36	86.5	N/A
90	Oakwood Lane	148	0	0	0	67	0	33	86.5	N/A
92	Macarthur Street	761	0	0	0	5	0	8	86.5	N/A
103	Oakwood Lane	92	0	0	0	11	0	89	86.5	N/A
106	Breakfast Pond Drive	233	0	0	0	17	0	35	86.5	N/A
143	Pate Street	36	0	0	0	20	0	40	86.5	N/A
151	Pate Street	121	0	0	0	50	0	50	86.5	N/A
153	Waterford Way	92	0	0	0	33	0	33	86.5	N/A
172	Waterford Way	194	0	0	0	21	0	21	86.5	N/A
177	Vann Drive	322	0	0	0	13	0	6	86.5	N/A
193	South Broadway Street	59	0	0	0	0	0	0	86.5	N/A
93	Church Street	469	0	0	0	0	0	98	87.0	N/A
194	Weeks Street	571	0	0	0	0	0	0	87.0	N/A
114	5th Avenue	279	0	0	0	0	89	100	87.3	N/A
24	6th Avenue	295	0	0	0	0	3	100	87.4	N/A
97	6th Avenue	295	0	0	0	0	4	100	87.5	N/A
94	None	289	0	0	0	97	0	0	87.5	N/A
171	Midland Street	469	0	0	0	0	0	100	87.8	N/A
132	Adams Street	466	0	0	0	0	0	100	88.0	N/A
36	6th Avenue	217	0	0	0	0	23	100	88.0	N/A
30	5th Avenue	240	0	0	0	0	38	83	88.5	N/A
64	Bruner Street	125	0	0	0	0	8	100	89.5	N/A
181	None	108	0	0	0	100	0	0	90.0	N/A
120	Main Street	98	0	0	0	0	10	100	90.5	N/A
44	None	682	0	0	0	6	1	0	91.0	N/A
102	Pinecrest Drive	512	0	0	0	6	6	0	91.0	N/A
129	Midland Street	259	0	0	0	0	8	27	91.1	N/A
8	Academy Drive	600	0	0	0	0	3	11	91.4	N/A
131	Bruner Street	115	0	0	0	0	0	100	91.6	N/A
18	Breakfast Pond Drive	282	0	0	0	0	0	53	92.0	N/A
54	8th Avenue	180	0	0	0	0	0	100	92.0	N/A
72	Houston Street	154	0	0	0	0	0	100	92.0	N/A
188	Weeks Street	253	0	0	0	0	0	0	92.0	N/A
189	North Broadway Street	69	0	0	0	0	0	0	92.0	N/A

Street ID #	STREET NAME	LENGTH (FT)	POTHOLES	% FATIGUE CRACKING	% DISTORTION	% DETERIORATION	PATCH/SEAL	% TRANS/LONG	PCR	RECOMMENDED TREATMENT
13	Macarthur Street	217	0	0	0	9	0	0	92.5	N/A
105	Oakwood Lane	95	0	0	0	100	0	0	92.5	N/A
145	Henry Ashley Drive	525	0	0	0	16	0	0	92.5	N/A
182	None	351	0	0	0	3	0	0	92.5	N/A
190	South Broadway Street	289	0	0	0	11	0	0	92.5	N/A
198	12th Avenue	1293	0	0	0	2	0	0	92.5	N/A
15	Shelly Circle	1440	0	0	0	0	0	1	94.0	N/A
20	None	269	0	0	0	0	0	14	94.0	N/A
67	None	430	0	0	0	0	0	2	94.0	N/A
99	Waterford Way	43	0	0	0	0	0	100	94.0	N/A
187	North Broadway Street	108	0	0	0	0	0	0	94.0	N/A
192	Harrison	105	0	0	0	0	0	38	94.0	N/A
51	None	804	0	0	0	0	0	0	100.0	N/A
73	None	764	0	0	0	0	0	0	100.0	N/A
80	Mercer Street	56	0	0	0	0	0	0	100.0	N/A
112	None	453	0	0	0	0	0	0	100.0	N/A
118	Midland Street	213	0	0	0	0	0	0	100.0	N/A
184	Ice House Lane	469	0	0	0	0	0	0	100.0	N/A
186	11th Avenue	184	0	0	0	0	0	0	100.0	N/A

Appendix C – Pavement Treatment Descriptions

Pavement Evaluation
City of Ashford
Ashford, Alabama

APPENDIX C: PAVEMENT TREATMENT DESCRIPTIONS

The following list describes each of the pavement treatments prescribed in this report:

ROUTINE & PREVENTATIVE MAINTENANCE

Routine and preventative maintenance slows deterioration and maintains the functionality of a roadway without significantly increasing the pavement's structural capacity. Routine and preventative maintenance actions include:

- Crack Filling – cleaning and filling wide cracks on worn pavements that have wide cracks in a random pattern
- Crack Sealing – routing, cleaning and filling a crack to seal it off and prevent water and debris from entering
- Fog Seal – a light application of diluted emulsion to rejuvenate dry/brittle asphalt surfaces, seal small cracks and slow the rate of weathering & oxidation
- Slurry Seal – a mixture of fine aggregate, asphalt emulsion, water and mineral filler applied to stable pavements to improve surface friction, retard raveling and seal minor cracks
- Pothole patching – filling surface voids to repair distress and improve ride quality

OVERLAY

Pavement overlay provides additional asphalt on the existing roadway. For an overlay treatment, an existing layer of asphalt is removed through milling. The milling depth should be adequate to remove the oxidized and deteriorated layer of pavement. Once milling has been performed, a layer of wearing surface asphalt and possibly asphalt binder are placed. The depth of milling and the thickness of the corresponding asphalt can vary from 1" to 5".

Overlay extends the life of the existing roadway structure by adding additional material to the surface, sealing small cracks, re-establishing proper cross slope of the road to promote surface drainage and creating an improved driving surface. Overlay is often used in conjunction with patching or base stabilization which provides additional treatment options.

PATCHING

Patching is the removal and replacement of a small section of pavement. For asphalt pavement, it involves saw-cutting and removing the existing asphalt layer, adding new asphalt material and then rolling and compacting it to be flush with the surrounding pavement. For concrete pavement, full-depth saw-cuts are used to remove the existing pavement. Then, new concrete is poured and the perimeter joints are sealed.

When installed correctly, pavement patches are a useful tool to extend the overall life of a roadway without the higher cost of full reconstruction. Since small areas of distressed pavement can be removed and replaced, patches are good solutions when a concrete roadway has occasional corner breaks and for asphalt pavements with localized areas of fatigue cracking. They are also used for utility line repairs in concrete and asphalt roadways as well as for correcting existing pavement before overlay material is added.

BASE STABILIZATION

The base course functions primarily as the structural support of all streets. A primary cause for roadway deterioration is the deterioration of an underlying base course material. As the base course deteriorates over time, the pavement's functionality such as load support, serviceability, and drainage also decrease. Often, roadways in poor condition have distresses arising from base failure.

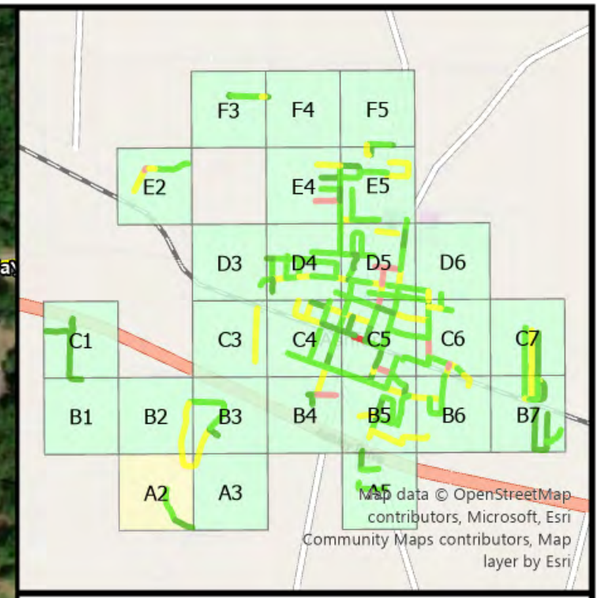
To improve these roadways without the higher cost of reconstruction, base stabilization can be used. First, the existing asphalt is pulverized and blended into the aggregate base. It should be noted that other stabilizing material (besides the existing pavement) can be used to strengthen the base layer. Once the stabilizing material has been uniformly mixed in, the roadbed is compacted and the asphalt layers are added.

RECONSTRUCTION

Reconstruction includes the removal of the existing roadway and reconstructing the road from the sub-grade through the pavement surface. Before the new asphalt is installed, the sub-grade is corrected by removing unsuitable material(s) then backfilling with granular materials and aggregate base. The new asphalt base, binder and wearing surface are then installed.

Appendix D – Map and Map Book

Pavement Evaluation
City of Ashford
Ashford, Alabama



0 100 200 400 Feet

PCI Evalutions

- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

Pavement Evaluation
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Sheet No.: 1

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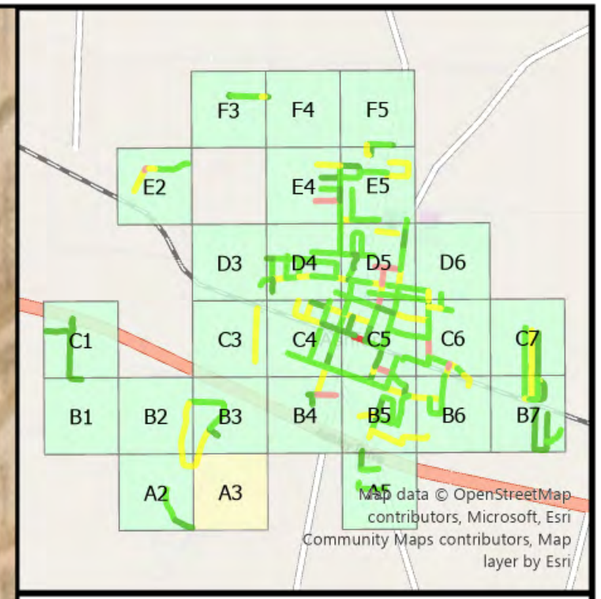

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PCI Evalutions
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- SATISFACTORY
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- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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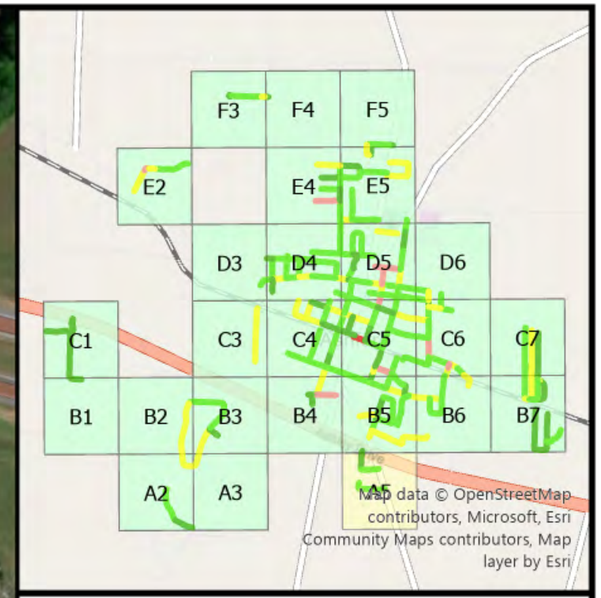

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PCI Evalutions

- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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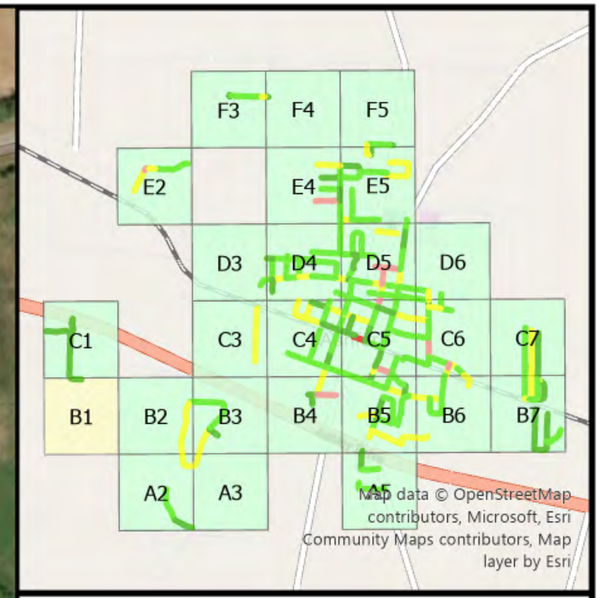

0 100 200 400 Feet

PCI Evalutions

- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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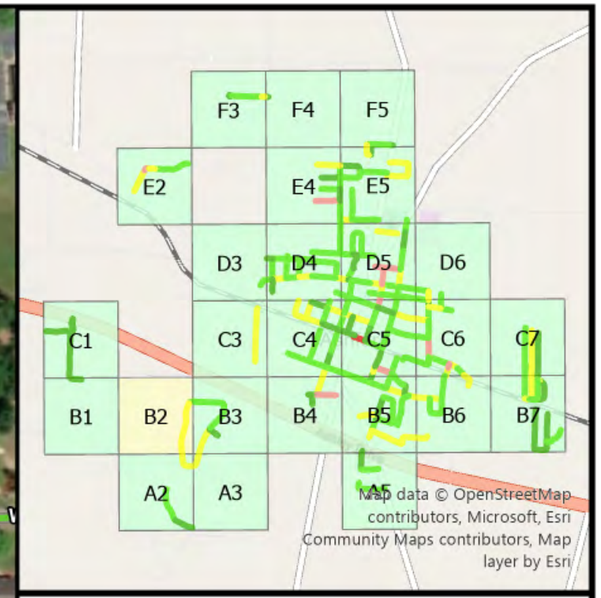

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PCI Evalutions

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- SATISFACTORY
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- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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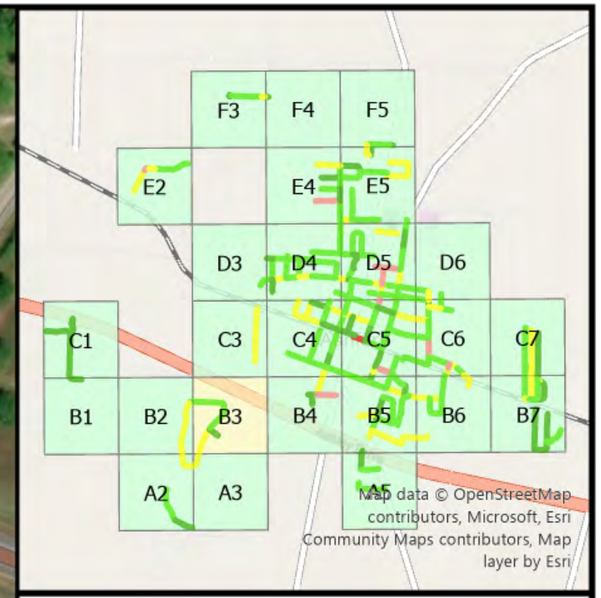

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PCI Evalutions

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- SATISFACTORY
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- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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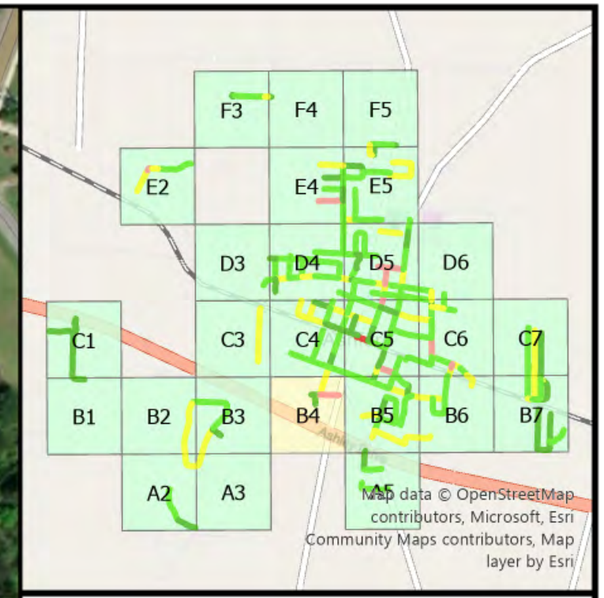

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PCI Evalutions

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- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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Sheet No.: 7

N

0 100 200 400 Feet

PCI Evalutions

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- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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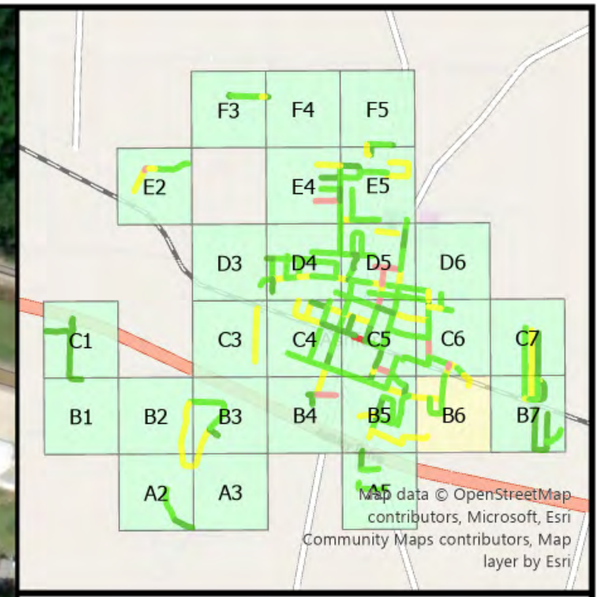

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PCI Evalutions

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- SATISFACTORY
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- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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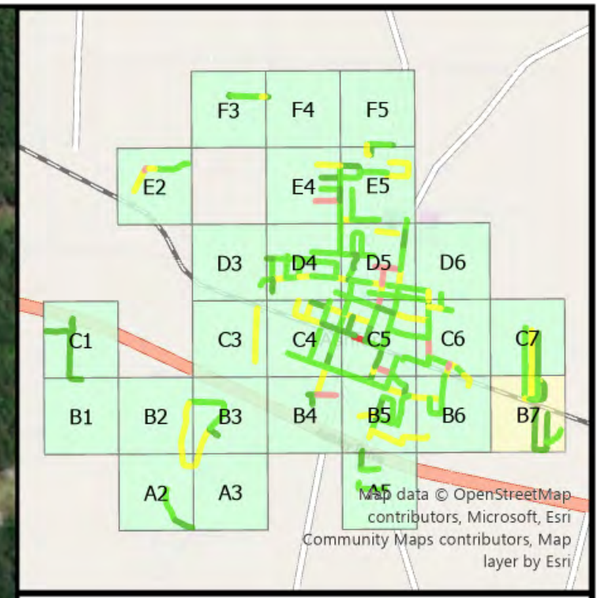

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PCI Evalutions

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- SATISFACTORY
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- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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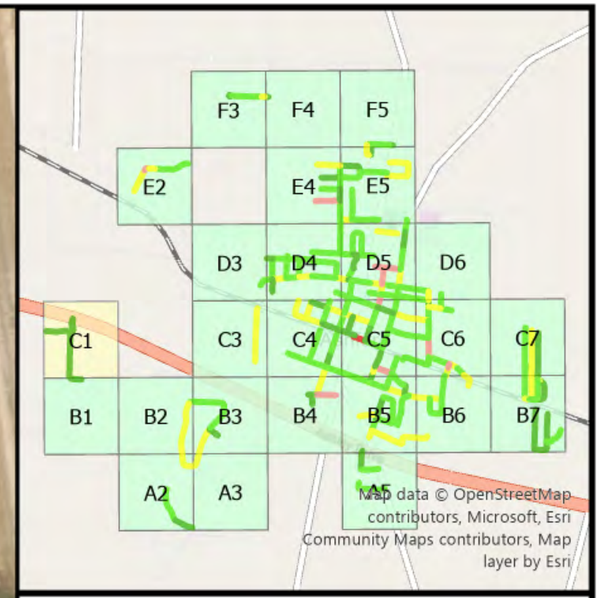

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PCI Evalutions

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- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

Pavement Evaluation
Sheet Name: C1
Sheet No.: 11

N

0 100 200 400
Feet

PCI Evalutions

- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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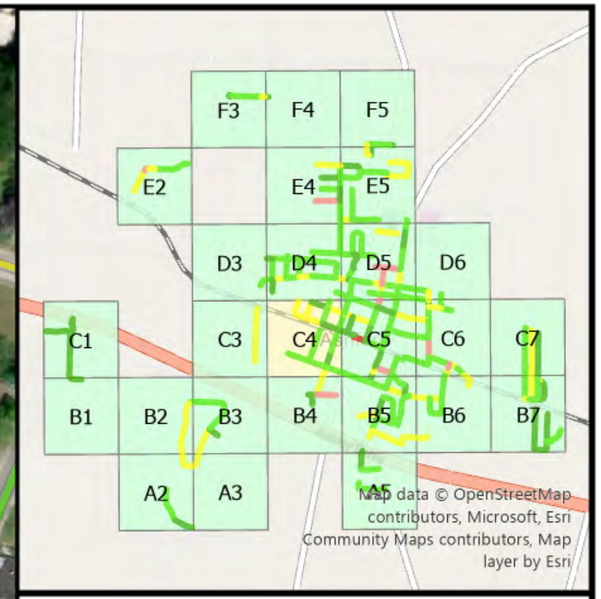

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PCI Evalutions

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- SATISFACTORY
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CITY OF ASHFORD ALABAMA 1891

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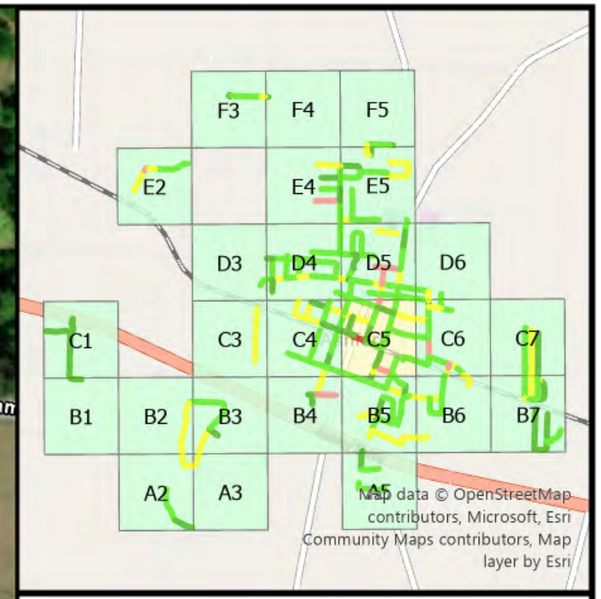

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PCI Evalutions

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- SATISFACTORY
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CITY OF ASHFORD ALABAMA 1891

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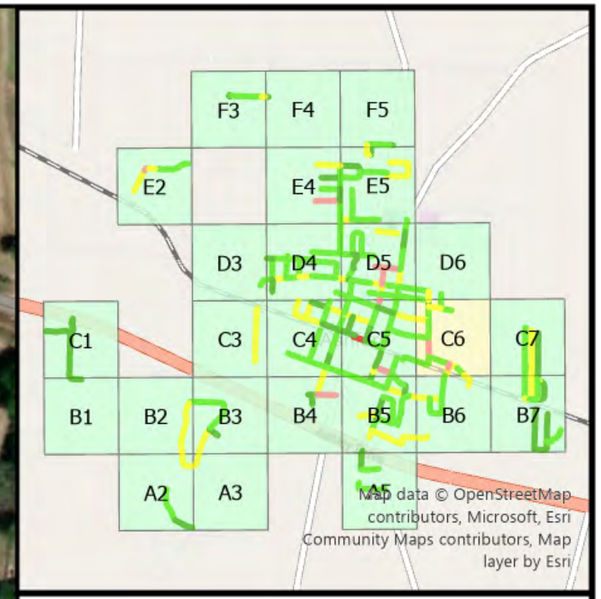

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PCI Evalutions

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CDG

CITY OF ASHFORD ALABAMA 1891

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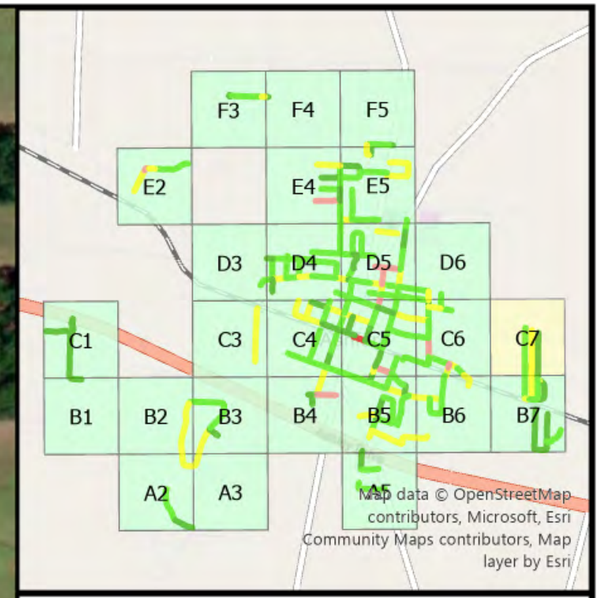

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PCI Evalutions

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- VERY POOR

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CITY OF ASHFORD ALABAMA 1891

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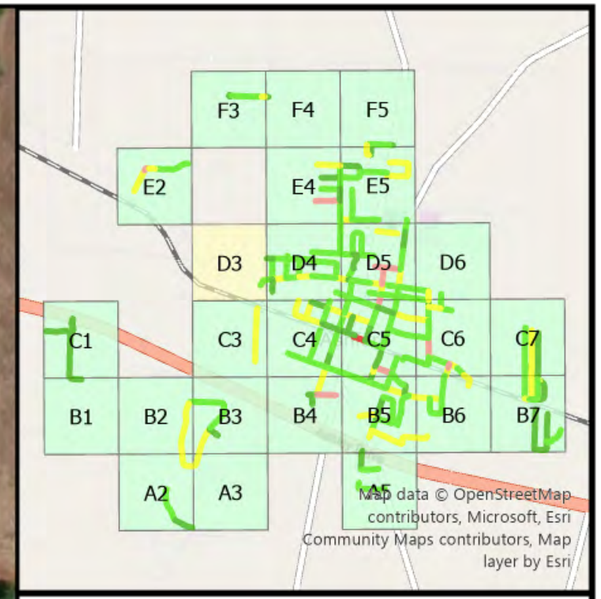

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PCI Evalutions

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- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

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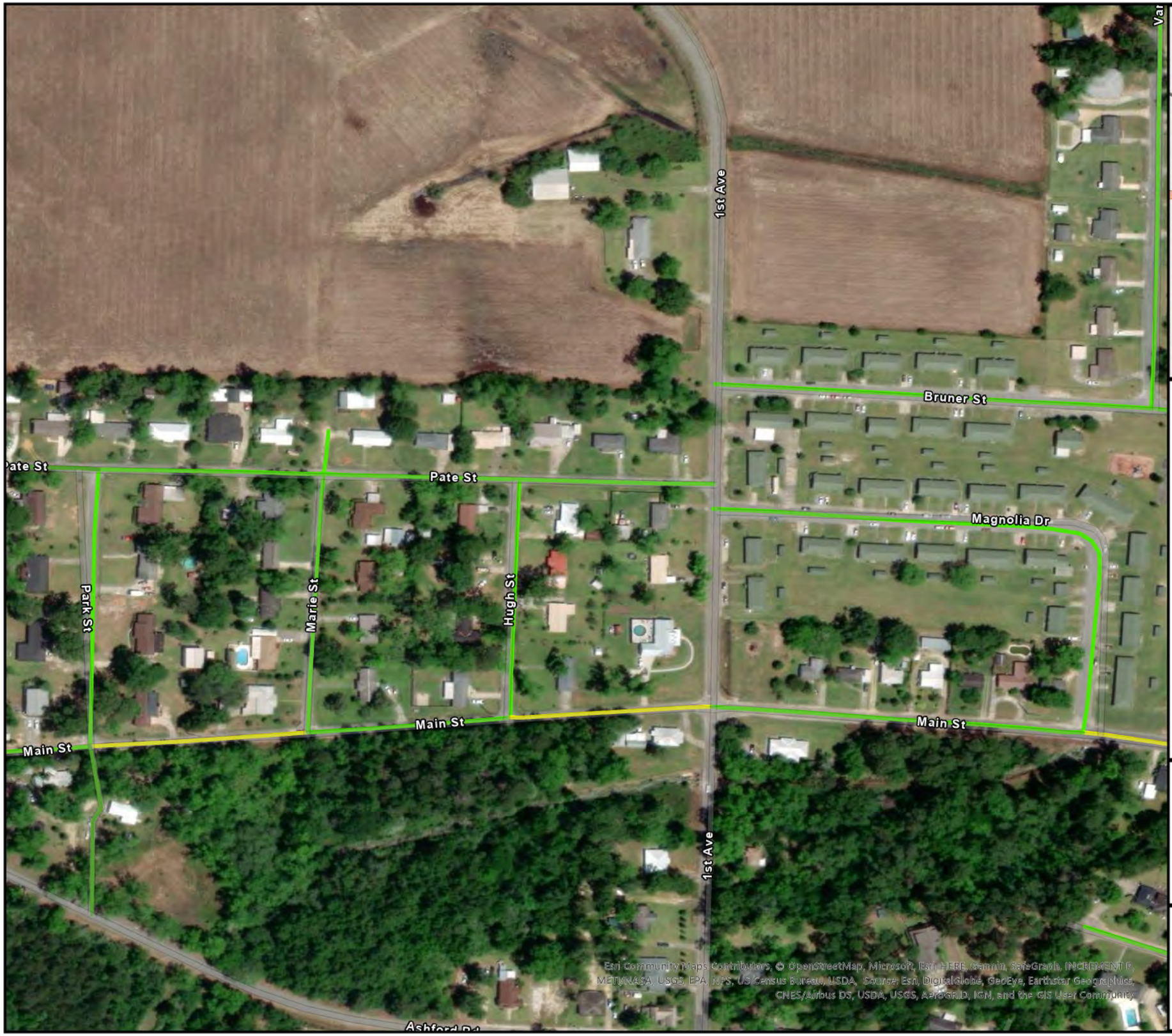

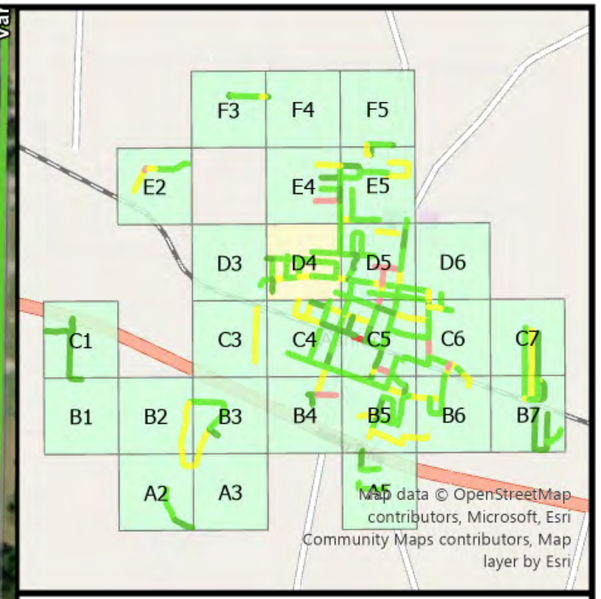

0 100 200 400
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PCI Evalutions

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- SATISFACTORY
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- POOR
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CDG

CITY OF ASHFORD ALABAMA 1891

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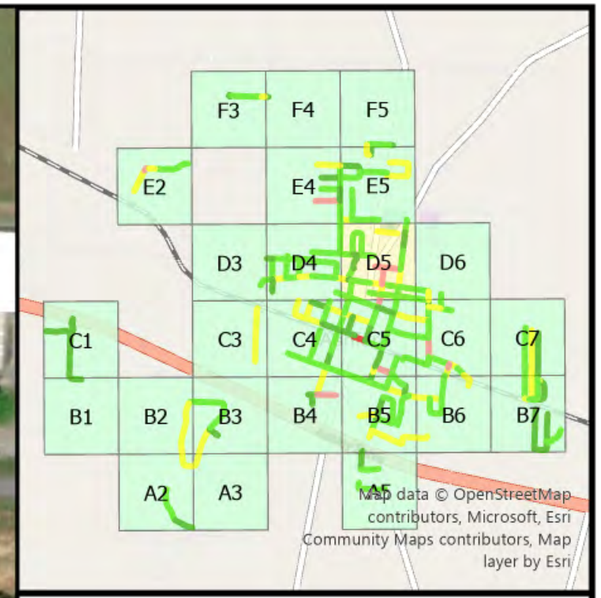

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PCI Evalutions

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- SATISFACTORY
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- POOR
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CDG

CITY OF ASHFORD ALABAMA 1891

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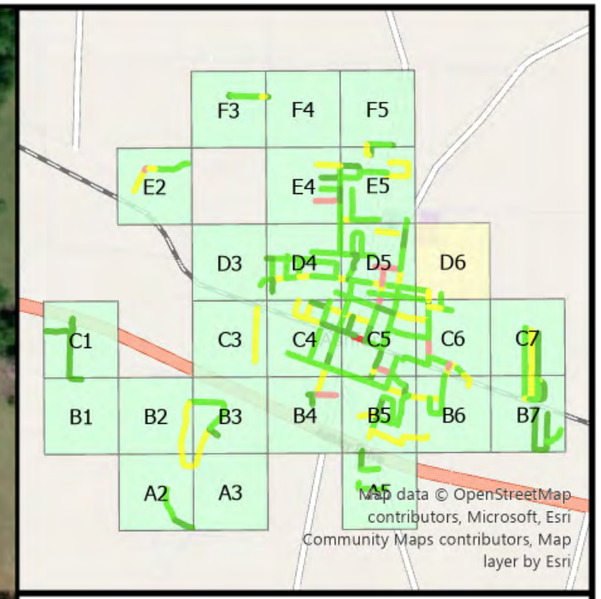

0 100 200 400
Feet

PCI Evalutions
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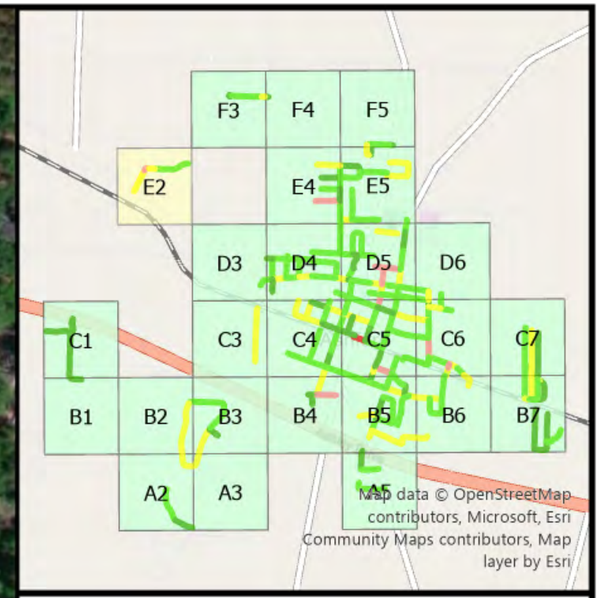
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

Pavement Evaluation
Sheet Name: D6
Sheet No.: 20

N



0 100 200 400 Feet

PCI Evalutions

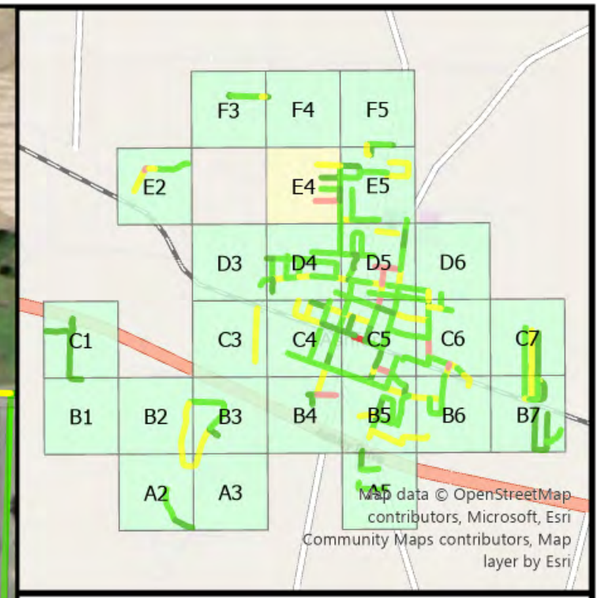
- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

Pavement Evaluation
Sheet Name: E2
Sheet No.: 21

N



0 100 200 400 Feet

PCI Evalutions

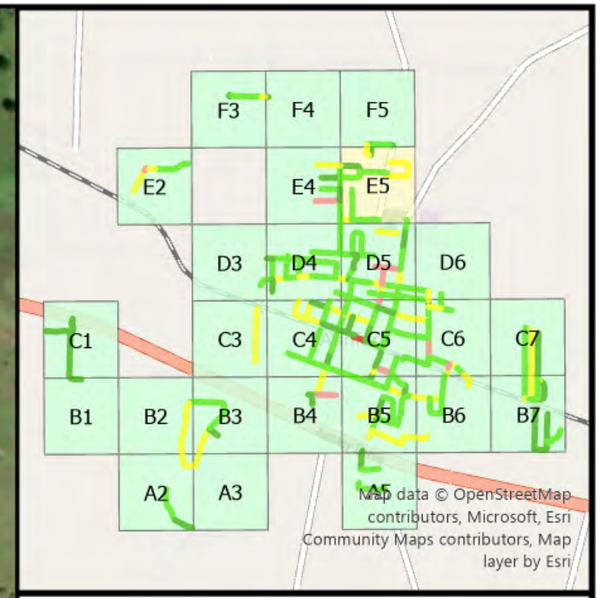
- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

Pavement Evaluation
Sheet Name: E4
Sheet No.: 22

N



0 100 200 400
Feet

PCI Evalutions

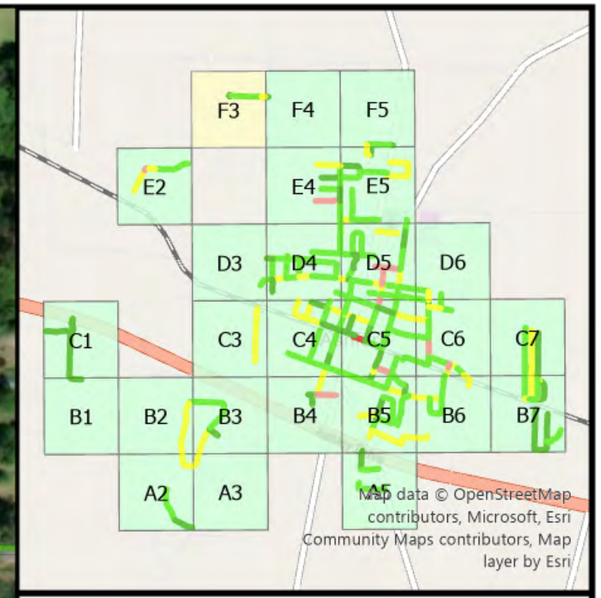
- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

Pavement Evaluation
Sheet Name: E5
Sheet No.: 23

N



0 100 200 400
Feet

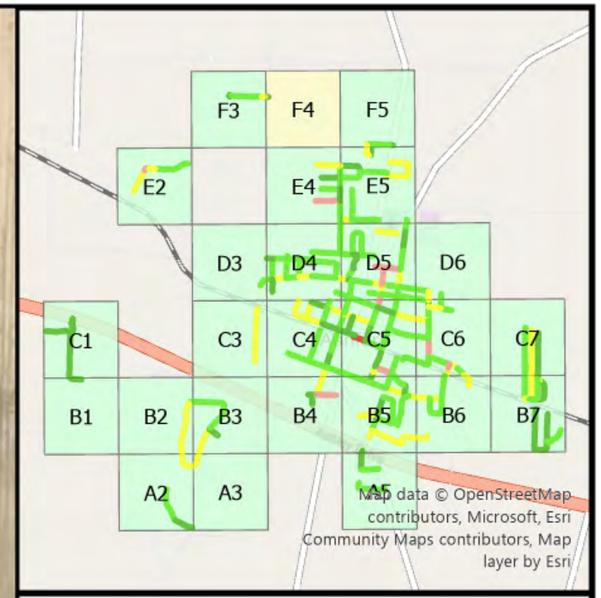
PCI Evalutions
- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

Pavement Evaluation
Sheet Name: F3
Sheet No.: 24

N



0 100 200 400 Feet

PCI Evalutions

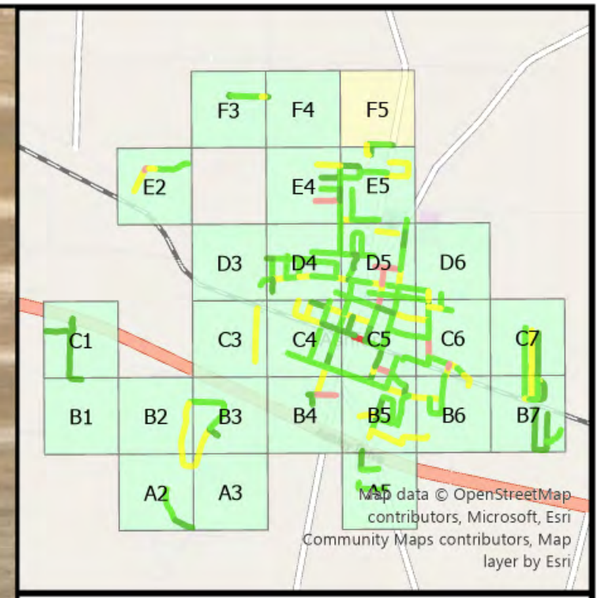
- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

Pavement Evaluation
Sheet Name: F4
Sheet No.: 25

N



0 100 200 400 Feet

PCI Evalutions

- GOOD
- SATISFACTORY
- FAIR
- POOR
- VERY POOR

CDG

CITY OF ASHFORD ALABAMA 1891

Pavement Evaluation
Sheet Name: F5
Sheet No.: 26

N