ROADWAY ASPHALT PAVEMENT SURFACE EVALUATION REPORT

for

TOWN OF MALABAR FLORIDA 1962

Prepared By:

EDC ENGINEERS ⊕ SURVEYORS ⊕ ENVIRONMENTAL

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Table of Contents

Purpose

Engineering Design & Construction, Inc. (EDC) has been retained by the Town of Malabar to evaluate the existing surficial pavement condition of the towns publicly maintained asphalt roadways. This evaluation has been performed to aid the Town of Malabar in accomplishing the following goals:

- Catalog up-to-date evaluation of surficial asphalt pavement conditions of the Towns roads.
- Determine the types of prevalent pavement distresses and severity on the Towns roads.
- Determine priority of roadway improvements based on factors such as roadway type, presence and extent of pavement distress, level of service, and magnitude of resurfacing and/or reconstruction required.
- Communicate the findings of this evaluation to Town Council for decision making on the Towns need for addressing asphalt distresses and future roadway improvement projects.
- Provide an estimated expected life of the existing road asphalt based on observed distresses and condition of road only. No life cycle or life expectancy modeling.
- Provide potential resurfacing, restoration, and or reconstruction methods for distressed roadways.

The scope of contracted work did not include the following:

- Resurfacing, Restoration, and/or Reconstruction Plans for the town roadways.
- Cost estimating for any resurfacing, restoration, and/or reconstruction of specific town roadways.
- No subsurface base, subgrade, etc observations, explorations, or evaluations of the town roadways.
- Traffic counts or traffic impact analysis of the town roadways.
- Quantitative life cycle and/or life span modeling for the existing roads. This requires additional investigations and data not included in the contract.

As such, EDC has performed a series of field inspections between October 2022 and March 2023. Enclosed in this report is the summary of the field work, evaluation, findings, and suggest methods for repairing/restoring the observed asphalt distresses. EDC performed inspections consisting of visual surveys of the asphalt paved roads. The field inspector collected photos and observations of the existing roadway pavement to capture the current type and density of existing distresses as well as their severity level. Pavement distress density and severity are given scores to provide a ranking system of each roads distress level. Further, an adjusted score to the distress score is provided for the purposes of considering the type and traffic level of each roadway. This is provided for consideration of each roadways level of service to the overall town transportation network and not on distress level alone. Each roadway reports the length, width, roadway type, observed traffic intensity of use (no traffic counts), type of pavement distress, extent/severity of pavement distress, and relative density

of distresses. The report provides suggested resurfacing, restoration, and/or reconstruction methodology to address the observed distresses.

List of Surveyed Roadways

The following roadways were provided to EDC for purposes of this evaluation and report:

SURVEYED ROADWAYS SUMMARY			
ROAD NAME	TYPE	LENGTH (ft)	WIDTH (ft)
Atz Road	Collector	13221	23
Baywood Court	Local	200	21
Benjamin Road	Local	3375	18
Blanche Street	Local	1060	20
Booth Road	Local	630	18
Briar Creek Blvd & Brian Run Circle	Collector	2875	23
Brookshire Circle	Local	334	20
Century Oak Circle	Local	1260	20
Coquina Terrace	Local	1350	20
Coral Way	Local	1550	22
Corey Road	Collector	14460	22
Country Cove Circle	Local	3085	20
Eva Lane	Local	2640	20
Falls Trail	Local	1219	20
First Lane	Local	240	20
Florence Street	Local	1060	20
Gilmore Street	Local	1280	20
Glatter Road	Local	2890	18
Hall Road	Collector	13200	20
Hollow Brook Lane	Local	2045	20
Holloway Trail	Local	324	20
Homestead Lane	Local	1200	20
Huggins Drive	Local	808	22
Hunter Lane	Local	1320	20
Jordan Blvd	Collector	1010	70
La Court Lane	Local	2640	18
Lineberry Lane	Local	1200	20
Marie Street	Collector	5280	22
Oak Harbour Lane	Local	338	20
Oak Tree Place	Local	389	20

SURVEYED ROADWAYS SUMMARY			
ROAD NAME	ROAD NAME	ROAD NAME	ROAD NAME
Old Mission Road	Local	1950	18
Pemberton Trail & Bluff View Place	Local	1168	20
Reef Place	Local	510	20
Riverview Drive	Local	780	20
Rocky Point Road	Collector	7590	22
Smith Lane	Local	1320	20
Steeplechase Circle	Local	358	20
Township Road	Local	1056	20
W Railroad Avenue	Local	1830	20
Weber Road	Collector	10560	23

Asphalt Pavement Distress Definitions

The following categories of asphalt pavement distress were utilized for the roadway evaluation of this report.

Alligator Cracking:
A series of interconnected cracks caused by fatigue failure of the asphalt surface under repeated traffic loading. In thin pavements, cracking initiates at the bottom of the asphalt layer where the tensile stress is the highest then propagates to the surface as one or more longitudinal cracks. This is commonly referred to as "bottom-up" or "classical" fatigue cracking. In thick pavements, the cracks most likely initiate from the top in areas of high localized tensile stresses resulting from tire-pavement interaction and asphalt binder aging (top-down cracking). After repeated loading, the longitudinal cracks connect forming many-sided sharp-angled pieces that develop into a pattern resembling the back of an alligator or crocodile.

Potential Causes Include:
Decrease in pavement load supporting characteristics.
Loss of base, subbase, or subgrade support (e.g., poor drainage or temperature fluccuations resulting in a less stiff base).
Stripping on the bottom of the asphalt layer (the stripped portion contributes little to pavement strength so the effective asphalt thickness decreases)
Increase in loading (e.g., more or heavier loads than anticipated in design)
Inadequate structural design
Poor construction (e.g., inadequate compaction, improper materials)

Block Cracking:
Interconnected cracks that divide the pavement up into rectangular pieces. Blocks range in size and severity of crack. Larger blocks are generally classified as longitudinal and tranverse cracking (see below for further definition of this). Block cracking normally occurs over a large portion of pavement area but sometimes will occur only in non-traffic areas.

Potential Causes Include:
Asphalt shrinkage and daily temperature cycling. Typically caused by an inability of asphalt binder to expand and contract with temperature cycles because of asphalt binder aging or poor choice of asphalt binder in the mix design.

Distortions:
Plastic movement of the flexible pavement section typified by ripples, corrugations, or an abrupt wave (shoving) across the pavement surface. The distortion is perpendicular to the traffic direction. Usually occurs at points where traffic starts and stops (corrugation) or areas where asphalt abuts a rigid object (shoving).

Potential Causes Include:
Traffic action (starting and stopping) combined with an unstable (i.e. low stiffness) asphalt layer (caused by mix contamination, poor mix design, poor asphalt manufacturing, or lack of aeration of liquid asphalt emulsions), or excessive moisture in the subgrade.

Longitudinal and Transverse Cracking:
Cracks parallel or perpendicular to the pavement's centerline or laydown direction. Can be a type of fatigue cracking or top-down cracking.

Potential Causes Include:
Poor joint construction or location. Joints are generally the most difficult part of a pavement to compact since it is difficult to position a roller such that it fully compacts the joint without either (1) partially resting its weight on the adjacent pavement (thus bridging over the newly paved longitudinal joint), or (2) missing the newly compacted joint because the roller was not close enough to the edge. If possible, longitudinal joints should be constructed outside of the wheelpath so that they are only infrequently loaded.

A reflective crack from an underlying layer (not including joint reflection cracking). An underlying crack can move slightly, causing stress on an overlying layer and this stress can eventually result in a crack that located right on top of the underlying crack.

Asphalt fatigue. Often, the first signs of fatigue cracking are longitudinal in or near the wheelpath. This is the onset of future alligator cracking.

Top-down cracking. In pavements of substantial thickness for a given loading, cracking can initiate at the pavement surface (instead of at the bottom of the pavement layer). Cracks initiating at the pavement surface arise from tension induced by wheel loads combined with an aged, more brittle asphalt surface layer.

Patching, Utility Cuts, Repairs

An area of pavement which has been replace with new material to repair or replace the existing pavement. A patch is considered a defect no matter how well it is performing. A patched area usually does not perform well as an original pavement section and should be considered only where necessary. Generally, some roughness is associated with this distress.

Potential Causes Include:
Installation or replacement of culverts, underground utilities, road shoulder construction, or fixing of potholes.

Rutting and Depressions

A surface depression in the wheel paths or subsidence in the travel lane. Pavement uplift may occur along the sides of the rut. Often times ruts are more noticeable after or during rainfall events where water can be observed standing on the road.

Potential Causes Include:
A permanent deformation in any pavement layers or subgrade, usually causes by consolidated or lateral movement of the materials due to traffic loads.

Weathering and Raveling

Wearing of the asphalt surface. This distress is a progressive disintegration of an asphalt layer from the surface downward as a result of the dislodgement of aggregate particles.

Potential Causes Include:
Loss of bond between aggregate particles and the asphalt binder as a result of a dust coating on the aggregate particles that forces the asphalt binder to bond with the dust rather than the aggregate.

Aggregate segregation which occurs if fine particles are missing from the aggregate matrix, then the asphalt binder is only able to bind the remaining coarse particles at their relatively few contact points.

Inadequate compaction during construction. High density is required to develop sufficient cohesion within the asphalt.

Mechanical dislodging by certain types of traffic (studded tires or tracked vehicles).

Distress Scoring

For purposes of this report EDC has provided a modified pavement index methodology to score the distress density and severity of the roadways. The higher the density and/or severity of distress the higher the score.

Distress density is categorized as LOW (0-25%), MEDIUM (25-50%), or HIGH (greater than 50%). These levels score on a scale of 1-3 respectively for each type of distress.

Distress severity is categorized as LOW, MEDIUM, or HIGH. These levels score on a scale of 1-3 respectively for each type of distress.

The density and severity scores for each type of distress observed are multiplied. The observed distress type scores are then added to represent a total roadway distress score. An example is provided below:

PAVEMENT DISTRESS EVALUATION					
DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	MEDIUM	2	2
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	MEDIUM	2	LOW	1	2
LONGITUDINAL, TRANSVERSE CRACKS	MEDIUM	2	LOW	1	2
PATCHING, UTILITY CUT, REPAIRS	HIGH	3	LOW	1	3
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	LOW	1	MEDIUM	2	2
				TOTAL DISTRESS SCORE:	13.00

The severity of each type of distress is individually categorized as follows:

Alligator Cracking

Low – Parallel cracks with few or no transverse cracks.

Medium – Multiple, well defined transverse cracks.

High – Well-developed pattern, pieces that are broken out from interior or edge, missing segments of pavement.

Block Cracking

Low – Hairline cracks running parallel to each other. Little or not interconnecting cracks. Cracks not spalled. Non-filled crack with width less than 3/8" or filled crack of any width

Medium – Further development of smaller blocked cracks. Cracks interconnected. Cracks lightly spalled. Non-filled crack with width 3/8 to 3" or surrounded by light random cracking, filled crack of any width surrounded by light random cracking.

High – Repeated pattern of blocked cracks. Heavy spalling. Any crack filled or non-filled surrounded by medium or high severity of random cracking, non-filled cracks over 3", any crack where a few inches of pavement around the crack is severely broken.

Distortions

Low – Vibrations which are noticeable but no reduction in speed is necessary for comfort and safety.

Medium – Distortion produces vehicle vibrations which are significant and some reduction in speed is needed for comfort and safety.

High – Distortion produces vehicle vibrations which are so excessive that speed must be reduced considerable for safety and comfort.

Longitudinal and Transverse Cracking

Low –Non-filled crack with width less than 3/8" or filled crack of any width.

Medium –Non-filled crack with width 3/8 to 3" or surrounded by light random cracking, filled crack of any width surrounded by light random cracking.

High – Any crack filled or non-filled surrounded by medium or high severity of random cracking, non-filled cracks over 3", any crack where a few inches of pavement around the crack is severely broken.

Patching, Utility Cuts, Repairs

Low – Patch is in good condition and satisfactory. Ride quality is rated as low severity or better.

Medium – Patch is moderately deteriorated. Ride quality is rated as medium severity.

High – Patch is badly deteriorated. Ride quality is rated as high severity, or both; needs replacement soon.

Rutting and Depressions

Low – 1/4 - 1/2" average rut depth.

Medium –1/2 - 1" average rut depth.

High – 1" average rut depth (or greater).

Rutting and Depressions

Low – 1/4 - 1/2" average rut depth.

Medium –1/2 - 1" average rut depth.

High – 1" average rut depth (or greater).

Weathering and Raveling

Low – Asphalt beginning to show signs of aging. Loss of fine aggregate noticeable. Edges of course aggregate beginning to be exposed.

Medium – - Edges of coarse aggregate have been exposed up to ¼ their width due to loss of fine aggregate. Considerable loss of coarse aggregate. Clusters of missing coarse aggregate.

High – Edges of coarse aggregate have been exposed over ¼ their width due to loss of fine aggregate. Considerable loss of fine aggregate, potential loss of course aggregate. Surface very rough and pitted, could be completely removed in some places.

Road Type and Traffic Adjustment Scoring

While distress scoring provides a means of ranking the town roads based on their asphalt condition it does not provide a means for discerning other considerations for level of service to the town transportation network. As such, this report provides an "adjusted" score that takes into account the observed level of traffic during the field evaluations (no traffic counts) and the type of roadway (local, collector, or arterial). The Towns roads consist mostly of lower traffic, local roads. However, there are multiple collector roads with medium to high levels of observed traffic. Although the Towns roads connect to multiple arterial roads there are no arterial roads on the list of roads being evaluated.

The adjusted score takes into account the type of road and traffic as follows:

Road type is assigned a multiplier for local (0.50), collector (1), or arterial (1.5).

Observed traffic is assigned a multiplier for low (0.50), medium (1), or high (1.5). For purposes of this report low traffic is when little to no vehicles were observed during the inspections. In low traffic conditions the road could be inspected with little to no observance of vehicles. Medium traffic is when a consistent, regular frequency of vehicles were observed during the inspections. For medium traffic the road could be inspected with a regular, intermittent

observance by vehicles. High traffic is a substantial, high frequency of vehicles were observed during the inspections which made. Under high traffic conditions a steady, consistent stream of traffic was observed during the inspection. Please note, this is a relative scale and not based on calculated levels of service or detailed traffic counts.

The road type and traffic level multipliers are assigned to the distress score as follows to produce the adjusted score:

ROADWAY TYPE AND TRAFFIC ADJUSTMENT								
						TOTAL DISTRESS SCORE:		7.00
						ROADWAY TYPE MULTIPLIER		0.5
						TRAFFIC MULTIPLIER		0.5
	7		0.5		0.5			1.75
	DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=		ADJUSTED SCORE

Results and Recommendations Summary

General

The asphalt evaluation found that the majority of the Town of Malabar Roads are generally safe to travel and exhibit normal distress for their observed aged. The asphalt on these roads many not need restoration for another 10-20 years, depending on the progression of the observed distresses. Older aged and more frequently traveled roads were observed to be in need of asphalt restoration or full depth reclamation/reconstruction in the next 10 years. A select few roads are recommended for asphalt restoration or full depth reclamation/reconstruction in the next 5 years. Asphalt distresses of all categories were observed on the road network, and often times multiple types of distress on a single road. The towns roads consist mostly of lower traffic, local roads. However, there are multiple collector roads with medium to high levels of observed traffic.

Observed Distresses

Most local roads are aged and exhibit multiple forms of asphalt distress, though there are newer or restored roads such as Smith Lane, Eva Lane, Hunter Lane, and La Court Lane that are not anticipated to need restoration in the near future. Many of the local roads scored consistently for both distressed and adjusted scored. Based on distress scoring, the local roads that appear in most need of asphalt restoration are Coral Way, Booth Road, Huggins Drive, Coquina Terrace, Hollow Brook Lane, Township Road, Reef Place, and Brookshire Circle. All other local roads scored comparably. The adjusted scores for these roads generally resulted in higher scores as well. Being that they are local roads, with lower levels of observed traffic, it is anticipated that improvements to these roads would affect a small portion of the towns transportation network.

The collector roads scored higher on average than the local roads due to their length and traffic. Being longer roads there were more opportunities to have multiple distress types. For cost consideration it is recommended that the Town of Malabar review portions of these collector roads where conditions are the most distressed before considered full length improvements. The adjusted scoring shows that the collector roads for Briar Creek Blvd, Weber Road, and Rocky Point Road are the most significantly impacted by their levels of distress. Being that they are collector roads, with medium to high levels of observed traffic, it is anticipated that improvements to these roads would affect a small portion of the towns transportation network.

Please see the following pages for the distress and adjusted scoring summaries. Detailed roadway scoring and inspection photos are provided in Appendices A and B of this report.

ASPHALT SURFACE ROAD CONDITION - DISTRESS SCORES

RESULTS SUMMARY SORTED BY DISTRESS SCORE ONLY

ROAD NAME	TYPE	LENGTH (ft)	WIDTH (ft)	DISTRESS SCORE
Coral Way	Local	1550	22	23.00
Briar Creek Blvd & Brian Run Circle	Collector	2875	23	22.00
Booth Road	Local	630	18	21.00
Huggins Drive	Local	808	22	21.00
Coquina Terrace	Local	1350	20	15.00
Rocky Point Road	Collector	7590	22	15.00
Hollow Brook Lane	Local	2045	20	14.00
Township Road	Local	1056	20	14.00
Reef Place	Local	510	20	13.00
Weber Road	Collector	10560	23	13.00
Brookshire Circle	Local	334	20	11.00
Hall Road	Collector	13200	20	10.00
Marie Street	Collector	5280	22	10.00
Corey Road	Collector	14460	22	9.00
Oak Tree Place	Local	389	20	9.00
Old Mission Road	Local	1950	18	9.00
Country Cove Circle	Local	3085	20	8.00
Oak Harbour Lane	Local	338	20	8.00
Pemberton Trail & Bluff View Place	Local	1168	20	8.00
Benjamin Road	Local	3375	18	7.00
Blanche Street	Local	1060	20	7.00
Falls Trail	Local	1219	20	7.00

ASPHALT SURFACE ROAD CONDITION - DISTRESS SCORES

RESULTS SUMMARY SORTED BY DISTRESS SCORE ONLY

ROAD NAME	TYPE	LENGTH (ft)	WIDTH (ft)	DISTRESS SCORE
First Lane	Local	240	20	7.00
Florence Street	Local	1060	20	7.00
Homestead Lane	Local	1200	20	7.00
Steeplechase Circle	Local	358	20	7.00
Atz Road	Collector	13221	23	6.00
Century Oak Circle	Local	1260	20	6.00
Gilmore Street	Local	1280	20	6.00
Glatter Road	Local	2890	18	6.00
Holloway Trail	Local	324	20	6.00
Jordan Blvd	Collector	1010	70	6.00
Riverview Drive	Local	780	20	6.00
W Railroad Avenue	Local	1830	20	6.00
Lineberry Lane	Local	1200	20	5.00
Baywood Court	Local	200	21	2.00
La Court Lane	Local	2640	18	2.00
Eva Lane	Local	2640	20	1.00
Hunter Lane	Local	1320	20	1.00
Smith Lane	Local	1320	20	1.00

ASPHALT SURFACE ROAD CONDITION - DISTRESS SCORES

RESULTS SUMMARY SORTED BY ROAD TYPE AND TRAFFIC ADJUSTED SCORE

ROAD NAME	TYPE	LENGTH (ft)	WIDTH (ft)	ADJUSTED SCORE
Briar Creek Blvd & Brian Run Circle	Collector	2875	23	22.00
Weber Road	Collector	10560	23	19.50
Rocky Point Road	Collector	7590	22	15.00
Corey Road	Collector	14460	22	13.50
Hall Road	Collector	13200	20	10.00
Marie Street	Collector	5280	22	10.00
Atz Road	Collector	13221	23	6.00
Jordan Blvd	Collector	1010	70	6.00
Coral Way	Local	1550	22	5.75

ASPHALT SURFACE ROAD CONDITION - DISTRESS SCORES				
RESULTS SUMMARY SORTED BY ROAD TYPE AND TRAFFIC ADJUSTED SCORE				
ROAD NAME	TYPE	LENGTH (ft)	WIDTH (ft)	ADJUSTED SCORE
Booth Road	Local	630	18	5.25
Huggins Drive	Local	808	22	5.25
Coquina Terrace	Local	1350	20	3.75
Hollow Brook Lane	Local	2045	20	3.50
Township Road	Local	1056	20	3.50
Reef Place	Local	510	20	3.25
Riverview Drive	Local	780	20	3.00
Brookshire Circle	Local	334	20	2.75
Oak Tree Place	Local	389	20	2.25
Old Mission Road	Local	1950	18	2.25
Country Cove Circle	Local	3085	20	2.00
Oak Harbour Lane	Local	338	20	2.00
Pemberton Trail & Bluff View Place	Local	1168	20	2.00
Benjamin Road	Local	3375	18	1.75
Blanche Street	Local	1060	20	1.75
Falls Trail	Local	1219	20	1.75
First Lane	Local	240	20	1.75
Florence Street	Local	1060	20	1.75
Homestead Lane	Local	1200	20	1.75
Steeplechase Circle	Local	358	20	1.75
Century Oak Circle	Local	1260	20	1.50
Gilmore Street	Local	1280	20	1.50
Glatter Road	Local	2890	18	1.50
Holloway Trail	Local	324	20	1.50
W Railroad Avenue	Local	1830	20	1.50
Lineberry Lane	Local	1200	20	1.25
Baywood Court	Local	200	21	0.50
La Court Lane	Local	2640	18	0.50
Eva Lane	Local	2640	20	0.25
Hunter Lane	Local	1320	20	0.25
Smith Lane	Local	1320	20	0.25

Estimated Expected Life of Existing Asphalt

Research by the Florida Department of Transportation (FDOT) and other national highway associations has found that asphalt roadways can remain intact up to 25 years. There are many factors that can affect asphalt lifespan such as the climate, traffic, subsurface conditions, drainage, and routine maintenance. A majority of the Towns asphalt roads appear to be at least 5 years or older since construction, restoration, or rejuvenation. Roads including Eva Lane, Hunter Lane, La Court Lane, and Smith Lane appear to have been paved within he last 5 years based on lack of distress. Please see the enclosed Appendix A evaluation reports which includes the estimated expected life of the existing asphalt for each surveyed road. Please note the estimated life is a judgement of the engineer of record based on the observed distresses and condition of the road surface with consideration for general expectancies of such distresses on asphalt roadways in Florida. This report does not include quantitative modeling for asphalt life expectancy which requires road-specific investigations and data beyond the scope of the contract.

Recommended Restoration

Please see the enclosed Appendix A evaluation reports which includes the next recommended restoration of the existing asphalt for each surveyed road. These recommendations are based on the observed distresses, age, materials, and traffic for each roadway. This is limited to the surficial evaluations performed with this report only. **Please note,** prior to proceeding with any restoration works it is recommended that further investigations as discussed in the following sections of this report be performed to identify all pertinent factors contributing to roadway distress.

Additional Investigations and Monitoring

It is important to note there may exist other factors attributable to the observed surficial asphalt distresses that **were not** specifically evaluated as a part of this project scope. As such, the engineer of record cannot provide evaluation of such conditions in this report. Applications such as sealing, coating, and/or crack filling may be performed without much additional investigation when done as preventative maintenance, distresses are limited to minor and low frequency cracking, or it is confirmed that subsurface or structural failures are not a contributing factor to distress. In cases where distresses are more severe, more frequent, existing materials are unsuitable, or fatigue cracking is observed it is recommended that the Town of Malabar perform the following additional investigations before determining the appropriate method of pavement restoration, rejuvenation, rehabilitation, or reconstruction:

- Subsurface geotechnical investigation that includes asphalt cores, shallow hand auger borings, and lab testing. The investigation will provide an understanding of the thickness and materials that the pavement section is comprised of, as well as the ability to analyze the underlying substrate (soils).

- Analyze existing and project traffic loads. By understanding the traffic service of a road the appropriate method of asphalt restoration and/or preservation can be further refined. Some roadways may be suitable for sealing or coating based on the observed

distresses, however the life of such applications may be reduced by high traffic or travel speeds.

- Analyze existing drainage conditions. Poor drainage or frequent flooding can compromise asphalt, base, and subgrade pavement layers. Fluctuating water levels in the base and subgrade can remove material, weaken density, and create failures that run through the entire road section. Repeated application of surface sealing, coating, and resurfacing can sometimes prove to be futile when poor drainage conditions persist.

- Inspect roadway infrastructure for failures and/or life span. Roadway infrastructure for drainage and utilities can contribute to roadway distress when they fail or be begin to approach the end of their service life. Additionally, it is usually wise and cost effective to combine road projects with other infrastructure work so that an improved roadway does not need to be disturbed or restored.

Continued monitoring of the asphalt condition should be performed on an annual basis by the Town's public works staff or another contracted, qualified professional. This can be done by performing regular "windshield" surveys. For purposes of generalized reporting the Good-Fair-Poor methodology below can be used. This method should not be used as a means of determining specific roadway restoration efforts or costs, but rather as a means of highlighting what roads may warrant further attention and investigations. Annual performance of the windshield surveys will help the Town track relative changes to the roadway surface over time.

Good-Fair-Poor Windshield Survey Methodology

Condition	Definition
Very Good	Stable, no cracking, no patching, and no deformation. Excellent riding qualities. Nothing would improve the roadway at this time.
Good	Stable, minor cracking, generally hairline and hard to detect. Minor patching and possibly some minor deformation evident. May have dry or light colored appearance. Very good riding qualities. Rutting may be present but is less than ½".
Fair	Generally stable, minor areas of structural weakness evident. Cracking is easier to detect, patched but not excessively. Deformation more pronounced and easily noticed. Ride qualities are good to acceptable. Rutting may be present but is less than ¾".
Poor	Areas of instability, marked evidence of structural deficiency, large crack patterns (alligatoring), heavy and numerous patches, deformation very noticeable. Riding qualities range from acceptable to poor. When rutting is present, rut depth is greater than ¾".
Very Poor	Pavement in extremely deteriorated condition. Numerous areas of instability. Majority of section showing structural deficiency. Ride quality is unacceptable (probably should slow down).

Source: National Center for Asphalt Technology (NCAT), 2021

Repair and Restoration

The following are recommended means of asphalt pavement repair, restoration, reclamation, rejuvenation, and reconstruction for roadways.

Milling and Overlay (Resurfacing)

Milling is the process of removing at least part of the asphalt pavement section, in this case typically just enough thickness to place a smooth layer of asphaltic concrete atop the prepared surface. Milling asphalt typically requires the use of mechanical equipment such as a milling machine or cold planer. Milling and resurfacing is an ideal solution for asphalt with large areas of distress and failure. This method is most suitable for minor to moderator cracking limited to the asphalt surface, raveling/weathering, shoving, ride discomfort, or surface damages from accidents. Its cost advantage over other methods of repair is time and reuse of materials. For asphalt surfaces the product of milling is reclaimed asphalt pavement (RAP), which can be recycled in the asphalt hot mix asphalt (pavement) by combining with new aggregate and asphalt cement (binder) or a recycling agent.

However, in areas with minimal asphalt cover (1" or less), milling may not be feasible or practical; base reconstruction may be required in such instances. Further, it has been our experience that deficiencies in the base course (settlements and/or cracking) can "reflect" up through the newly placed layer of asphalt resulting in new blemishes. Milling and overlay (resurfacing) should not be used where consistent subsurface failures or unsuitable aggregate are observed.

If milling and resurfacing is the desirable option, it is recommended that full-depth inspection of the base course to identify any subsurface failures that may be present. In this scenario, consideration could be given to selecting areas indicative of significant roadway distress, removing the existing asphalt sections, adding additional base course materials, and then reconstructing the pavement section. Other areas showing less distress could be full-depth milled, the base inspected and recompacted, and the subject areas then resurfaced to match any reconstructed areas. If full-depth milling is not performed and only a portion of the asphalt is removed, then any remaining cracks in the milled, remaining asphalt surface could be routed and cracksealed before resurfacing.

Roads with suitable structural support and maintenance can be milled and resurfaced with 10-15 years of life before additional resurfacing/reconstruction is required.

Full Depth Reclamation (FDR)

Full Depth Reclamation is a process that "rebuilds" older, failing pavement section by recycling the existing pavement section. The existing, old asphalt and base course (and perhaps a portion of the subgrade soils) are pulverized by a specialized piece of equipment called a "reclaimer". Once the materials are pulverized, select additives such as lime, fly ash, asphaltic emulsion, portland cement and water are introduced into the mix. The resulting mix is then shaped, graded and compacted to produce a strong, durable base course which is then paved

with an asphaltic wearing surface. This method is more expensive than milling/resurfacing and sealing, and as such, those methods can be applied to prolong life of existing, suitable pavement. FDR can be 40-80% less expensive than road reconstruction, depending on the specific road conditions and materials. In curb and gutter sections, the economics of hauling excess materials off-site in order to maintain the centerline and curb line profile may be prohibitive.

FDR is a specialized process, and the end result is dependent on the qualifications of the FDR contractor. However, due to the relatively low number of qualified FDR contractors, the cost of FDR as well as scheduling can vary significantly. It should be noted that the FDR process is not an approved FDOT method, and only a Developmental FDOT Specification exists for this operation. Quality Control services for FDR process should be implemented.

FDR is most suitable for repair of ruts, rough areas, pot holes, and patching. It can eliminate alligator, transverse, longitudinal, and block cracking. In addition, FDR can restore the grade contours to allow for better surface drainage.

Prior to any FDR project the existing road section should undergo a subsurface investigation to verify the existing martials are of sufficient quantity and quality to be reclaimed, and what stabilization is required.

Roadway Reconstruction

Reconstruction is the removal of the entire asphalt, base course, and potentially subgrade then reconstructing the pavement section as a new roadway/pavement. This restarts the roads asphalt life span to the average of 25 years. Some recycling of materials can be used, however this is done by more manual sorting and stockpiling rather mechanically like Full Depth Reclamation (FDR). Reconstruction can be concentrated within areas where the most severe distress is occurring while other methods are utilized on remaining portions. Because reconstruction is the same or near to new road construction it tends to be the most expensive.

Reconstruction of an entire roadway may only be necessary under the following conditions:

- The roadway is being widened, regraded, or realigned substantially such that the existing pavement section cannot be incorporated into the improved road section.
- The proposed road section is substantially different (i.e. going from a flexible pavement to rigid pavement).
- The existing pavement section materials or thicknesses cannot be recycled to create a road this is structurally sufficient for its use.

This option would require a careful civil engineering review, with any changes to drainage conditions and elevations being considered. In some circumstances the reconstruction measures can be augmented by including tensile reinforcement layer(s) within the pavement section, such as Tensar (or equivalent) TriAx Geogrids (base course application) or GlassPave/GlassGrid products (asphalt application).

Rejuvenation

Asphalt rejuvenators are products designed to be applied to existing roadways in order to restore original properties to aged (oxidized) binders. Many rejuvenators are proprietary and thus specific applications must be carefully considered. However, many rejuvenators contain maltenes which is the residue remaining after petroleum refiners remove other useful derivatives such as gasoline and kerosene from crude oil. Maltene is added because its quantity is typically reduced in asphalt over time by oxidation. Rejuvenators can slow the loss of surface fines and reduce the formation of additional cracks. A trade off of this application is that they can also reduce pavement skid resistance for up to 1 year. Because of this, rejuvenators are generally appropriate for low-volume, low-speed roads. Rejuvenators are a practical means of preventive maintenance for such roads. Rejuvenation restores the original properties to aged asphalt binder and thus can postpone the need for sealing, coating or mill/resurfacing up to 5 years.

Sealing and Coating (a.k.a. Bituminous Surface Treatment)

Sealing and coating encompasses a variety of application of protecting layers to existing asphalt pavement. These are increasingly in use as a preventative maintenance procedure on flexible pavements of good structure. Such treatments should be applied to a distress-free to moderately distressed pavement surface. A 2-4 year service life is common, while five year service lives are achievable. These applications are not a recommended restoration for any heavily distresses road or those with structural and/or subsurface failures. Applications of seals and costing can increase the surface friction of the pavement, due to the additional covering of the aggregate. This combats the effects of raveling, which can make the pavement slippery and stopping difficult.

The following are common sealing and coating methodologies. They can be used independently or in some circumstances in combination with one another.

Crack Sealing - Crack sealing products are used to fill individual pavement cracks to prevent entry of water or other non-compressible substances such as sand, dirt, rocks or weeds. Crack sealant is typically used on early stage longitudinal cracks, transverse cracks, and block cracks. Fatigue cracks (alligator) are most often too extensive to warrant filling with crack sealer. Crack filler material is typically some form of rubberized asphalt, emulsified asphalt, or sand slurry. Crack sealing should be considered a temporary restoration (timing varies based on size and amount of cracking) in all cases and should be monitored.

Fog Sealing – A fog seal is a light application of a diluted slow-setting emulsified asphalt to the surface of an aged, oxidized pavement surface. Fog seals are low-cost and are used to restore flexibility to an existing asphalt pavement surface. They may be able to temporarily postpone the need for a surface treatment or overlays that are non-structural. Because applications are light (thin) this means fog sealing may prevent the need to perform more comprehensive surface treatments for 1-2 years.

Slurry Sealing – Slurry seals are homogenous mixture of emulsified asphalt, water, well-graded fine aggregate and mineral filler that has a smooth fluid-like appearance when applied.

Slurry seals are used to fill existing pavement surface defects. It can be used as either a preparatory treatment for other maintenance treatments or as a wearing course itself. Slurry seals come in gradations from fine to coarse. Its best used is on slight to moderate surface defects and as preventative maintenance. As opposed to a fog seal, a slurry seal contains aggregate. As such slurry seals can correct minor surface defects in a variably textured surface. Slurry seals can fill cracks and voids, sealing weather-tight, and providing color and texture delineation in a single application. Slurry sealing should be used to extend the pavement life until resurfacing becomes necessary. Roadways can be sealed on cyclical applications in 5-7 year rotations, or until such treatment is found unsuitable for the observed distresses.

Microsurfacing – This method is a more advanced form of slurry seal that uses the same basic ingredients (emulsified asphalt, water, fine aggregate and mineral filler) and combines them with advanced polymer additives. The slurry mix consists of crushed, well-graded aggregate, mineral filler, and latex-modified emulsified asphalt spread over entire pavement surface. Cost and performance depends on the number of courses applied. Restorations appropriate for microsurfacing treatment are commonly those which have slight to moderate distress, no rutting, and generally narrow crack widths. Microsurfacing treatment should be used to extend the pavement life until resurfacing becomes necessary. Roadways can be microsurfaced on cyclical applications in 5-7 year rotations, or until such treatment is found unsuitable for the observed distresses. Microsurfacing is typically more expensive than both slurry sealing and chip sealing due to the polymer-modified emulsion.

Chip Sealing – This common methodology involves the application of asphalt (usually emulsion, heated asphalt cement and cutbacks also used) followed by aggregate chips roller to achieve embedment. In other terms, a thin layer of asphalt is laid down before layers of crushed stone and aggregate are compacted on top of the asphalt. Due to its coloring being lighter than fresh asphalt the chip and seal is usually cooler and absorbs less heat. Chip sealing is a low durability form of restoration and/or distress prevention. It is most suitable on low volume or private roadways. The life span of a proper chip seal application can last 10-15 years. Cost and performance depends on the number of courses applied, as well as binder type and aggregate quality. The cost of chip seals is 15%-20% of the cost of pavement overlays.

Scrub Sealing – Scrub sealing is very close to chip sealing and similar to other sealing methods. It involves the application of an asphalt emulsion to an existing road surface. The specific difference lies in the "scrubbing" of the road surface to work the emulsion into surface cracks for better sealing. Scrubbing is performed by a series of brooms placed a different angles. Surface treatments are applied to restore texture and weatherproofing (including protection from oxidation), but do not contribute to improvement in ride or increased structural capacity. This method is suitable for low volume roadways. Because of the mechanical brooming of the emulsion this method is better at sealing fatigue cracking (alligator). In appropriate applications scrub seals can extend the life of pavement by 5-7 years.

Driveway Paving

It was observed during the field evaluations that man roads in the Town of Malabar are local roads in more rural settings. Further, an appreciable number of unpaved driveways were observed on these roads. Unpaved driveways experience repeated transverse loads at the edge of pavement which in turn can experience fatigue failure and edge cracking over time. It is typical that municipalities will include paving of driveway aprons in milling/resurfacing, reclamation, and reconstruction projects to help the longevity of improvements. This can sometimes become a challenging process when working with private property owners. Prior to performing any road improvements beyond preservation, sealing, or coating the Town of Malabar should evaluate the impact and number of existing unpaved driveways, should they be present. Engagement with property owners of unpaved driveways should be a priority by the Town in any roadway improvement project/initiative.

Roadway Section Adjustments

During the field evaluations it was noted that a number of the Towns roads, primarily south of Malabar Road, do not have curb or gutters and abut steep ditches. In certain cases it may be beneficial to adjust the asphalt road width and/or the overall right-of-way section to better avoid edge failures or perhaps improvement drainage. Eliminating steep transitions can help protect the asphalt edges by giving more earthen support to the shoulder. Ditches can be converted to piped storm sewer, though this is added expense above that of just improvements to the pavement. Improved drainage helps keep the underlying base and subgrade courses from becoming compromised. Road width changes and/or right-of-way section changes are most often only performed during road reconstruction projects, however drainage improvements outside the existing road can be performed independently.

The following are recommended means of asphalt pavement repair and restoration for the specific types of distresses.

Alligator Cracking

A fatigue cracked pavement should be investigated to determine the root cause of failure. Any investigation should involve digging a pit or coring the pavement to determine the pavement's structural makeup as well as determining whether or not subsurface moisture is a contributing factor. Once the characteristic alligator pattern is apparent, repair by crack sealing is generally ineffective. Fatigue crack repair generally falls into one of two categories.

Small, localized fatigue cracking indicative of a loss of subgrade support. Remove the cracked pavement area then dig out and replace the area of poor subgrade and improve the drainage of that area if necessary. Patch over the repaired subgrade.

Large fatigue cracked areas indicative of general structural failure. Place an asphalt overlay over the entire pavement surface. This overlay must be strong enough structurally to carry the anticipated loading because the underlying fatigue cracked pavement most likely contributes little or no strength.

If medium to high density of alligator cracking is present then total repair, restoration, or reconstruction of the road may be necessary.

Block Cracking

Strategies depend upon the severity and extent of the block cracking.

Low severity cracks (< ½" wide). Crack seal to prevent (1) entry of moisture into the subgrade through the cracks and (2) further raveling of the crack edges. Aspahlt can provide years of satisfactory service after developing small cracks if they are kept sealed.

High severity cracks (> ½" wide and cracks with raveled edges). Remove and replace the cracked pavement layer with an overlay.

If medium to high density of block cracking that cannot be sealed is present then total repair, restoration, or reconstruction of the road may be necessary.

Distortions

A heavily corrugated or shoved pavement should be investigated to determine the root cause of failure. Repair strategies generally fall into one of two categories:

Small, localized areas of corrugation or shoving. Remove the distorted pavement and patch.
Large corrugated or shoved areas indicative of general asphalt failure. Remove the damaged pavement and overlay.

Longitudinal and Transverse Cracking

Strategies depend upon the severity and extent of the cracking:

Low severity cracks (< ½" wide and infrequent cracks). Crack seal to prevent (1) entry of moisture into the subgrade through the cracks and (2) further raveling of the crack edges. Asphalt can provide years of satisfactory service after developing small cracks if they are kept sealed.

High severity cracks (> ½" wide and numerous cracks). Remove and replace the cracked pavement layer with an overlay.

If medium to high density of longitudinal or transverse a cracking that cannot be sealed is present then total repair, restoration, or reconstruction of the road may be necessary.

Patching, Utility Cuts, and Repairs

Depending on the severity of the patching there are multiple means of addressing this type of distress. Typically, upon a significant enough density of patching, utility cuts, or repairs the municipality maintaining the road will resurface or reconstruct the roadway using other means mentioned int his section.

Semi permanent patching:
Remove all water and debris from the pothole.
Square up the pothole sides so they are vertical and have in-tact pavement on all sides.
Place the patching material into the clean squared-up hole. The material should mound in the center and taper down to the edges so that it meets flush with the surrounding pavement edges.
Compact the patching material starting in the center and working out toward the edges. Compaction can be accomplished using a vibratory plate compactor or a single-drum vibratory roller. Check the compacted patching material for a slight crown. This is done so that subsequent traffic loading will compact it down to the surrounding pavement height.

Throw-and-Roll:
Place the patching material into the pothole without any preparation or water/debris removal.
Compact the patching material using the patching truck tires (usually 4 to 8 passes). Check the compacted patch for a slight crown. If a depression is present add more patching material and compact. Although it may seem that the semi-permanent technique would produce a higher quality patch than the throw-and-roll technique, the FHWA's Long Term Pavement Performance (LTPP) Study found that the "throw-and-roll technique proved just as effective as the semi-permanent procedure for those materials for which the two procedures were compared directly. Since the semi-permanent technique is more labor and material intensive, the throw-and-roll technique will generally prove more cost effective if quality materials are used.

Rutting and Depressions

A heavily rutted pavement should be investigated to determine the root cause of failure (e.g. insufficient compaction, subgrade rutting, poor mix design or studded tire wear). Slight ruts (<

1/3" deep) can generally be left untreated. Pavement with deeper ruts should be leveled and overlaid.

Weathering and Raveling

The pavement should be investigated to determine the root cause of failure. Repair strategies generally fall into one of two categories:

Small, localized areas of raveling. Remove the raveled pavement and patch.

Large raveled areas indicative of general asphalt failure. Remove the damaged pavement and overlay.

The following are lift expectancy of various types of pavement preservation, restoration, and rehabilitation.

Treatment	Recommended Year of Initial Treatment	Life Expectancy of Treatment (Years)
Preservation		
Crack Sealing	1 to 3	2 to 6
Fog Seals	0 to 3	1 to 2
Slurry Seals	2 to 6	3 to 5
Scrub Seals	2 to 6	1 to 3
Rejuvinators	1 to 7	3 to 4
Microsurfacing	3 to 7	4 to 7
Chip Seals	2 to 5	4 to 7
Thin HMA Overlay (0.5"-1.5")	5 to 8	7 to 10
Rehabilitation		
Structural Overlay (>2")	12 to 15	8 to 10
Reconstruction		
Full Depth Reclamation	>20	25
Reconstruction	>20	25

The following are the primary benefits of various types of pavement preservation, restoration, and rehabilitation.

Treatment	Roughness	Friction	Noise	Life Extension	Moisture Reduction
Crack Sealing				X	√
Fog Seals				X	√
Slurry Seals	√	√	√	√	√
Scrub Seals				√	√
Rejuvinators				√	√
Microsurfacing	√	√	√	√	√
Chip Seals	√	√	√	√	√
Thin HMA Overlay (0.5"-1.5")	√	√	√	√	√
Structural Overlay (>2")	√	√	√	√	√
Full Depth Reclamation	√	√	√	√	√
Reconstruction	√	√	√	√	√

√ = Major Effect
X = Minor Effect

Appendix A – Asphalt Roadway Field Evaluation (Alphabetical Order by Road Name)

ENGINEERING DESIGN & CONSTRUCTION, INC
CIVIL ENGINEERS & SURVEYORS SPECIALIZING IN LAND DEVELOPMENT

10250 SW Village Parkway, Suite 201
Port St. Lucie, FL 34987
(772) 462-2455

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Atz Rd
ROADWAY TYPE:	COLLECTOR
OBSERVED TRAFFIC:	MEDIUM
SURVEYED LENGTH (FT):	13,221
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	23
START INTERSECTION:	La Court Lane
END INTERSECTION:	Dead end at south

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING					
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	LOW	1	MEDIUM	2	2
			TOTAL DISTRESS SCORE:		**6.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**6.00**
ROADWAY TYPE MULTIPLIER	1
TRAFFIC MULTIPLIER	1

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		ADJUSTED SCORE
6	x	1	x	1	=	6.00

NOTES:

Generally the road is in good shape for its age. Weathering and unven asphalt, cracks, and patching in higher concentraction west of Weber Rd.
RECCOMENDED REPAIR(S): Preventative maintenance should be performed with applications of crack sealing and general aspahlt sealing or rejuvenators over the next 10-15 years to keep distresses at lower intensity. If the observance of structural/subsurface failures remain low in intensity or freqeuncy then milling and overlay in at the end of the asphalt life may be suitable to extend the life of the road without reconstruction. Mill and resurfacing may be required sooner west of Weber Road. Edge cracking should be fixed in the next 5 years
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

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ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Baywood Court
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	200
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	21
START INTERSECTION:	Country Cove Circle
END INTERSECTION:	Cul-de-sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING					
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**2.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**2.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

2		0.5		0.5		0.50
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

RECCOMENDED REPAIR(S): The asphalt is in fair condition overall, just aged. Structural failures were not observed in any appreciable concentration at the time of inspection. Due to the low traffic volumes on this road preventative maintenance for crack sealing, fog sealing, or slurry sealing are suitable to prolong the life of the existing asphalt.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

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ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Benjamin Road
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	3,375
CONDITION DESCRIPTION:	RECENTLY RESTORED PARTIALLY
AVG PAVEMENT WIDTH (FT):	18
START INTERSECTION:	Corey Road
END INTERSECTION:	Kramer Lane

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING					
DISTORTIONS	MEDIUM	2	LOW	1	2
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS	LOW	1	MEDIUM	2	2
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**7.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**7.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		ADJUSTED SCORE
7	x	0.5	x	0.5	=	1.75

NOTES:

A majority of the road appears to have been more recently paved than the rest. Edge cracking is the biggest failure the road.
RECCOMENDED REPAIR(S): Scrub sealing or chip sealing may be appropriate in areas of minor alligator cracking and longitundinal/traverse cracking. However, edge cracking and previously patched areas should be saw cut and full removed first to correct structural difficiences. Road shoulder compaction and reconstruction of existing drivewas are also advisable. A cost comparioson of repeated sealing and edge improvements vs reclamation or reconstruction should be performed prior to evaluate cost over the roads life.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Blanche Street
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,060
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Malabar Road
END INTERSECTION:	Johnston Ave

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	MEDIUM	2	LOW	1	2
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	MEDIUM	2	LOW	1	2
				TOTAL DISTRESS SCORE:	**7.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**7.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		ADJUSTED SCORE
7	x	0.5	x	0.5	=	1.75

NOTES:

RECCOMENDED REPAIR(S): Block cracking and weathering are prevalent distresses. Preventative measures may be more cost effective than reclamation or reconstruction should structural failures not become more apparent over time. As such, improvements to the aged binding may be improvement by application of an asphalt rejevenator, and followed by chip sealing or scrub sealing to fill longitundinal/transverse cracking and minor alligator cracking. Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section.

EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	March 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Booth Road
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	630
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	18
START INTERSECTION:	Babcock Street
END INTERSECTION:	Lett Lane

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	MEDIUM	2	MEDIUM	2	4
BLOCK CRACKING					
DISTORTIONS	LOW	1	MEDIUM	2	2
LONGITUDINAL,TRANSVERSE CRACKS					
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS	HIGH	3	MEDIUM	2	6
WEATHERING AND RAVELING	HIGH	3	HIGH	3	9
				TOTAL DISTRESS SCORE:	**21.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**21.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

21	x	0.5	x	0.5	=	5.25
DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**

NOTES:

This road is not a properly paved road. The road surface consists of large aggregate with weak binder that is not used commonly in modern road paving. This road can be expected to continue to weather, ravel, and rut signifcantly until the road is reconstructed in its entirety.

RECCOMENDED REPAIR(S): Reconstruction is reccomended since this is not a properly paved flexible pavement road by modern standards. Coring and subsurface investigations are reccomended to determine if favorable base rock or subgrade materials exist that can be recycled.
EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

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ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Brian Creek Blvd and Briar Run Circle
ROADWAY TYPE:	COLLECTOR
OBSERVED TRAFFIC:	MEDIUM
SURVEYED LENGTH (FT):	2,875
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	23
START INTERSECTION:	Port Malabar Rd
END INTERSECTION:	Malabar Scrub entrance

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	HIGH	3	LOW	1	3
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS	MEDIUM	2	MEDIUM	2	4
LONGITUDINAL,TRANSVERSE CRACKS	HIGH	3	LOW	1	3
PATCHING, UTILITY CUT, REPAIRS	MEDIUM	2	MEDIUM	2	4
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	MEDIUM	2	MEDIUM	2	4
				TOTAL DISTRESS SCORE:	**22.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**22.00**
ROADWAY TYPE MULTIPLIER	1
TRAFFIC MULTIPLIER	1

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**
22	X	1	X	1	=	22.00

NOTES:

Significant distresses at entrance from Port Malabar Rd
Worst concentration of distresses is NE of bridge
Serves a mix of single family, multi-family, and recreation (scrub/santuary access)
The portion of road off Port Malabar Rd is owned and maintained by City of Palm Bay. This is the most severly distressed portion. Restoration efforts would need to be coordinated with City of Palm Bay.
RECCOMENDED REPAIR(S): The portion of road from the Briar Creek Bridge to Port Malabar Road has significant patching, alligator cracking, longitundinal/transverse cracking, weathering, and raveling. Surface treatments for rejevenation and sealing are not reccomended as this appears to be a more systemically distressed portion of road. Reconstruction of this portion of road may be necessary. Subsurface and structural investigations are reccomended to further confirm this. The portion of road west/south of the Briar Creek Bridge exhibits lower severity block cracking and longitudinal/transverse cracking. Milling and resufacing is more appropriate than sealing and rejvenation due to the age and traffic on the road.
EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Brookshire Circle
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	334
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Hollow Brook Lane
END INTERSECTION:	Cul-de-Sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	LOW	1	2
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	MEDIUM	2	MEDIUM	2	4
			TOTAL DISTRESS SCORE:		**11.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**11.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

11		0.5		0.5		2.75
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

Cul-de-sac beginning to weather significantly
RECCOMENDED REPAIR(S): This road has very prevalent weathering and raveling. As such rejevenation in combination with chip sealing or scrub sealing are reccommended to prolong the life of the road. Structural failures were not observed in major significance yet, but the select area of fatigure (alligator) cracking should be saw cut and restored prior to any surface treatments. If the observance of structural/subsurface failures remain low in intensity or freqeuncy then milling and overlay in at the end of the asphalt life may be suitable to extend the life of the road without reconstruction or reclamation.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

ENGINEERING DESIGN & CONSTRUCTION, INC.
CIVIL ENGINEERS & SURVEYORS SPECIALIZING IN LAND DEVELOPMENT
10250 SW Village Parkway, Suite 201
Port St. Lucie, FL 34987
772-462-2455

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Century Oak Circle
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,260
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	US-1
END INTERSECTION:	US-1 (looped road)

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING					
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS					
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	MEDIUM	2	MEDIUM	2	4
				TOTAL DISTRESS SCORE:	**6.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**6.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

6	x	0.5	x	0.5	=	1.50
DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**

NOTES:

Road is one way traffic loop through residential neighborhood
RECCOMENDED REPAIR(S): This road has very prevalent weathering and raveling. As such rejevenation in combination with chip sealing or scrub sealing are reccommended to prolong the life of the road. Structural failuers were not observed in major significance yet, but the select area of fatigure (alligator) cracking should be saw cut and restored prior to any surface treatments. If the observance of structural/subsurface failures remain low in intensity or freqeuncy then milling and overlay in at the end of the asphalt life may be suitable to extend the life of the road without reconstruction or reclamation.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Coquina Terrace
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,350
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Rocky Point Road
END INTERSECTION:	Cul-de-sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	MEDIUM	2	2
BLOCK CRACKING	MEDIUM	2	MEDIUM	2	4
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	MEDIUM	2	4
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS	MEDIUM	2	LOW	1	2
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**15.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**15.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

15		0.5		0.5		3.75
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

RECCOMENDED REPAIR(s): It has been explained by the Town manager that this neighborhood may have poor drainage at times during the year. The some of the distresses appeared to have moisure and bleeding that may be causing them. As such drainage improvements should be explored to keep the roads draining well. Due to the presence and severity of fatigue (alligator) cracking and other potential structural failures it is recommended a subsurface investigation occur. If the underlying materials are suitable and failsures are not in a high concentration then milling and overlay may be a suitable method to prolong the life of the asphalt. Reconstruciton and reclamation may be required if additional data reveals structural/subsurface concerns that cannot be observed from the asphalt surface.

EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Coral Way
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,550
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	22
START INTERSECTION:	Huggin Rd
END INTERSECTION:	Rocky Point Road

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	HIGH	3	MEDIUM	2	6
BLOCK CRACKING	HIGH	3	MEDIUM	2	6
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	HIGH	3	LOW	1	3
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS	MEDIUM	2	LOW	1	2
WEATHERING AND RAVELING	MEDIUM	2	MEDIUM	2	4
			TOTAL DISTRESS SCORE:		**23.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**23.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		ADJUSTED SCORE
23	x	0.5	x	0.5	=	5.75

NOTES:

RECCOMENDED REPAIR(s): It has been explained by the Town manager that this neighborhood may have poor drainage at times during the year. The some of the distresses appeared to have moisure and bleeding that may be causing them. As such drainage improvements should be explored to keep the roads draining well. Due to the presence and severity of fatigue (alligator) cracking and other potential structural failures it is recommended a subsurface investigation occur. If the underlying materials are suitable and failsures are not in a high concentration then milling and overlay may be a suitable method to prolong the life of the asphalt. Reconstruciton and reclamation may be required if additional data reveals structural/subsurface concerns that cannot be observed from the asphalt surface.

EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

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772-462-2455

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Corey Road
ROADWAY TYPE:	COLLECTOR
OBSERVED TRAFFIC:	HIGH
SURVEYED LENGTH (FT):	14,460
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	22
START INTERSECTION:	Country Cove Circle
END INTERSECTION:	Southern Town Limits

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	LOW	1	2
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS	MEDIUM	2	LOW	1	2
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**9.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**9.00**
ROADWAY TYPE MULTIPLIER	1
TRAFFIC MULTIPLIER	1.5

9		1		1.5		13.50
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

One of the longest and more heavily traveled roads in the Town of Malabar.
RECCOMENDED REPAIR(S): Preventative maintenance should be performed with applications of crack sealing and general aspahlt sealing or rejuvenators over the next 10-15 years to keep distresses at lower intensity. Existing patches and repairs to be monitored. Edge cracking, unpaved driveways are intermittent and should be monitored and repaired immediately when observed. If the observance of structural/subsurface failures remain low in intensity or freqeuncy then milling and overlay in at the end of the asphalt life may be suitable to extend the life of the road without full reconstruction or reclamation. Existing rutting is low severity, but present, and should be investigated further.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Country Cove Circle
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	3,085
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Corey Road
END INTERSECTION:	Corey Road (looped road)

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	MEDIUM	2	4
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**8.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**8.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

8		0.5		0.5		2.00
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

Two (2) bridge on road. Distresses becoming apparent around oak tree island.
RECCOMENDED REPAIR(S): Multiple distresses observed, but mostly in low severity. Block cracking, and longitundinal/transverse cracking are prevalent distresses. Preventative measures may be more cost effective than reclamation or reconstruction should structural failures not become more apparent over time. Chip sealing or scrub sealing is reccomended to fill longitundinal/transverse cracking and minor alligator cracking. Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section. Oak tree roots at island should be monitored for further distortions.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	~~Country Cove Circle~~ EVA Lane
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	~~3,085~~ 2640
CONDITION DESCRIPTION:	RECENTLY RESTORED ENTIRELY
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Malabar Road
END INTERSECTION:	Hall Road

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING					
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL, TRANSVERSE CRACKS					
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING					
				TOTAL DISTRESS SCORE:	**1.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**1.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

1		0.5		0.5		0.25
DISTRESS SCORE	X	ROAD MULTIPLIER	X	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

One of the newer and better conditioned roads in the Town of Malabar
No need for major restoration at this time.

RECCOMENDED REPAIR(S): No immediate repairs necessary. Preventative maintenance using rejvenators or fog seals are reccomended. Mill and and resurfacing may be needed in the future, unless more significant distresses become apparent over time.
EXPECTED LIFE OF CURRENT ASPHALT: 15-20 YEARS

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Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Falls Trail
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,219
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Briar Creek Blvd
END INTERSECTION:	Briar Creek Blvd (looped road)

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	LOW	1	2
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**7.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**7.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	ADJUSTED SCORE
7		0.5		0.5		1.75

NOTES:

RECCOMENDED REPAIR: Block cracking and longitudinal/tansverse cracking are prevalent distresses. Preventative measures may be more cost effective should structural failures not become more apparent over time. Low severity cracks (< ½" wide). Crack seal to prevent entry of moisture into the subgrade through the cracks and further raveling of the crack edges. High severity cracks (> ½" wide and cracks with raveled edges). Remove and replace the cracked pavement layer with an overlay.Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	First Lane
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	240
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Riverview Lane
END INTERSECTION:	Cul-De-Sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	LOW	1	2
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**7.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**7.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

7	x	0.5	x	0.5	=	1.75
DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**

NOTES:

RECCOMENDED REPAIR: Block cracking and longitudinal/tansverse cracking are prevalent distresses. Preventative measures may be more cost effective should structural failures not become more apparent over time. Low severity cracks (< ½" wide). Crack seal to prevent entry of moisture into the subgrade through the cracks and further raveling of the crack edges. High severity cracks (> ½" wide and cracks with raveled edges). Remove and replace the cracked pavement layer with an overlay.Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Florence Street
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,060
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Malabar Rd
END INTERSECTION:	Johnston Ave

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL, TRAVERSE CRACKING	MEDIUM	2	LOW	1	2
LONGITUDINAL,TRANSVERSE CRACKS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	MEDIUM	2	LOW	1	2
				TOTAL DISTRESS SCORE:	**7.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**7.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		ADJUSTED SCORE
7	x	0.5	x	0.5	=	1.75

NOTES:

RECCOMENDED REPAIR: Block cracking and weathering are prevalent distresses. Preventative measures may be more cost effective than reclamation or reconstruction should structural failures not become more apparent over time. As such, improvements to the aged binding may be improvement by application of an asphalt rejevenator, and followed by chip sealing or scrub sealing to fill longitundinal/transverse cracking and minor alligator cracking. Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section.

EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEAR

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Roadway Pavement Evaluation

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ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Gilmore Street
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,280
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Malabar Rd
END INTERSECTION:	Weir Street

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS	MEDIUM	2	LOW	1	2
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	MEDIUM	2	2
				TOTAL DISTRESS SCORE:	**6.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**6.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

6		0.5		0.5		1.50
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

Post office is access from this road
Road is paved to post office driveway, the rest is unpaved.
RECCOMENDED REPAIR: Weather is most severe distress. Sealing may prolong life of existing asphalt, but may required multiple courses which could impacts cost. Milling and overlay in the next 10 years may have the most impact on the life of the road as-is, without reconstructing. If the remained of the road its to be paved it is reccomended to incorporated improvements to the existing road as well. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

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CIVIL ENGINEERS & SURVEYORS SPECIALIZING IN LAND DEVELOPMENT
10250 SW Village Parkway, Suite 201
Port St. Lucie, FL 34987
772-462-2455

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Glatter Road
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	2,890
CONDITION DESCRIPTION:	RECENTLY RESTORED PARTIALLY
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Malabar Rd
END INTERSECTION:	Marie Street

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**6.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**6.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

6		0.5		0.5		1.50
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

Majority of this road appears to have been paved recently.
RECCOMENDED REPAIR: Prevalent distresses are low in frequency and severity. Preventative measures may be more cost effective than reclamation or reconstruction should structural failures not become more apparent over time. Conventional sealing will prolong life. Fatigue and edge cracking should be removed and reconstrcted in full. Should surficial distresses worsen in next 10 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

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Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Hall Road
ROADWAY TYPE:	COLLECTOR
OBSERVED TRAFFIC:	MEDIUM
SURVEYED LENGTH (FT):	13,200
CONDITION DESCRIPTION:	RECENTLY RESTORED PARTIALLY
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Marie Street
END INTERSECTION:	Richards Lane

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS	MEDIUM	2	LOW	1	2
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	LOW	1	HIGH	3	3
				TOTAL DISTRESS SCORE:	**10.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**10.00**
ROADWAY TYPE MULTIPLIER	1
TRAFFIC MULTIPLIER	1

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**
10	X	1	X	1	=	10.00

NOTES:

One of the more traveled roads in the Town of Malabar.
RECCOMENDED REPAIR(S): Preventative maintenance should be performed with applications of crack sealing and general aspahlt sealing or rejuvenators over the next 10-15 years to keep distresses at lower intensity. Weathering should be addressed sooner west of Weber Road. Existing patches and repairs to be monitored. If the observance of structural/subsurface failures remain low in intensity or freqeuncy then milling and overlay in at the end of the asphalt life may be suitable to extend the life of the road without full reconstruction or reclamation. Existing rutting is low severity, but present, and should be investigated further.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Hollow Brook Lane
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	2,045
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Briar Creek Blvd
END INTERSECTION:	Brian Creek Blvd (looped road onto itself)

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	MEDIUM	2	MEDIUM	2	4
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS	LOW	1	MEDIUM	2	2
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS	LOW	1	MEDIUM	2	2
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	MEDIUM	2	LOW	1	2
				TOTAL DISTRESS SCORE:	**14.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**14.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

14	x	0.5	x	0.5	=	3.50
DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**

NOTES:

Cracking and weathering around curbing. Lots of irrigation staining on road and curbing
"Bird baths" of standing water observed in gutters.
RECCOMENDED REPAIR(S): Medium severity alligator cracking and distortions are observed. May be due to poor profile grade line drainage or subsurface conditions. It is highlly suggested that a subsurface investigation of the road be performed due to the presence and frequency of distresses that may be associated with structural failsures. If cracking is linked to subsurface/structural failsures then mill and overlay may not be suitabled. Reclamation of this road may be possible and should be evaluated before reconstruction is determined the more feasible option.
EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

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Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Holloway Trail
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	324
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Briar Creek Blvd
END INTERSECTION:	Cul-De-Sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING					
			TOTAL DISTRESS SCORE:		**6.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**6.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		ADJUSTED SCORE
6	x	0.5	x	0.5	=	1.50

NOTES:

RECCOMENDED REPAIR: Block cracking, longitundinal/transverse cracking, and weathering are prevalent distresses. Preventative measures may be more cost effective than reclamation or reconstruction should structural failures not become more apparent over time. Chip sealing or scrub sealing is reccomended to fill longitundinal/transverse cracking and minor alligator cracking. Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section.

EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Homestead Lane
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,200
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Atz Road
END INTERSECTION:	Cul-De-Sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	MEDIUM	2	LOW	1	2
				TOTAL DISTRESS SCORE:	**7.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**7.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		ADJUSTED SCORE
7	x	0.5	x	0.5	=	1.75

NOTES:

RECCOMENDED REPAIR: Block cracking, longitundinal/transverse cracking, and weathering are prevalent distresses. Preventative measures may be more cost effective than reclamation or reconstruction should structural failures not become more apparent over time. As such, improvements to the aged binding may be improvement by application of an asphalt rejevenator, and followed by chip sealing or slurry sealing to fill longitundinal/transverse cracking and minor alligator cracking. Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Project Number: 22-383
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Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Huggins Drive
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	808
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	22
START INTERSECTION:	US-1
END INTERSECTION:	Cul-De-Sac

PAVEMENT DISTRESS EVALUATION					
DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	HIGH	3	MEDIUM	2	6
BLOCK CRACKING	MEDIUM	2	MEDIUM	2	4
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	HIGH	3	LOW	1	3
PATCHING, UTILITY CUT, REPAIRS	LOW	1	MEDIUM	2	2
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	MEDIUM	2	MEDIUM	2	4
			TOTAL DISTRESS SCORE:		**21.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT	
TOTAL DISTRESS SCORE:	**21.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

21		0.5		0.5		5.25
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

RECCOMENDED REPAIR(s): It has been explained by the Town manager that this neighborhood may have poor drainage at times during the year. The some of the distresses appeared to have moisure and bleeding that may be causing them. As such drainage improvements should be explored to keep the roads draining well. Due to the presence and severity of fatigue (alligator) cracking and other potential structural failures it is recommended a subsurface investigation occur. If the underlying materials are suitable and failsures are not in a high concentration then milling and overlay may be a suitable method to prolong the life of the asphalt. Reconstruciton and reclamation may be required if additional data reveals structural/subsurface concerns that cannot be observed from the asphalt surface.

EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Hunter Lane
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,320
CONDITION DESCRIPTION:	RECENTLY RESTORED ENTIRELY
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Atz Road
END INTERSECTION:	Dead end north and south of Atz Rd

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING					
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS					
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
			TOTAL DISTRESS SCORE:		**1.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**1.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

1		0.5		0.5		0.25
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

One of the newer and better conditioned roads in the Town of Malabar
No need for restoration at this time.
South of Atz Rd is unpaved

RECCOMENDED REPAIR: No immediate repairs necessary to paved portion of road. Preventative maintenance using rejvenators or fog seals are reccomended. Mill and and resurfacing may be needed in the future, unless more significant distresses become apparent over time.
EXPECTED LIFE OF CURRENT ASPHALT: 15-20 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Jordan Blvd
ROADWAY TYPE:	COLLECTOR
OBSERVED TRAFFIC:	MEDIUM
SURVEYED LENGTH (FT):	1,010
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	70
START INTERSECTION:	US-1
END INTERSECTION:	Jordan Scrub Sanctuary

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS	MEDIUM	2	LOW	1	2
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**6.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**6.00**
ROADWAY TYPE MULTIPLIER	1
TRAFFIC MULTIPLIER	1

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**
6	x	1	x	1	=	6.00

NOTES:

Road has a railroad crossing
Railroad crossing and US-1 intersection appeared to be recently paved/restored

RECCOMENDED REPAIR: Crack sealing and other conventional sealing method are sufficient for the majorite of distresses. However, the more severe patching, weathering, and raveling may need mill and overlay in the next 10-15 years.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	March 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	La Court Lane
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	2,640
CONDITION DESCRIPTION:	RECENTLY RESTORED ENTIRELY
AVG PAVEMENT WIDTH (FT):	18
START INTERSECTION:	Atz Road
END INTERSECTION:	Marie Street

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS					
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING					
			TOTAL DISTRESS SCORE:		**2.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**2.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

2		0.5		0.5		0.50
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

One of the newer and better conditioned roads in the Town of Malabar
No need for major restoration at this time.

RECCOMENDED REPAIR: No immediate repairs necessary. Preventative maintenance using rejvenators or fog seals are reccomended. Mill and and resurfacing may be needed in the future, unless more significant distresses become apparent over time.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Lineberry Lane
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,200
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Atz Road
END INTERSECTION:	Cul-De-Sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**5.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**5.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

5		0.5		0.5		1.25
DISTRESS SCORE	X	ROAD MULTIPLIER	X	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

RECCOMENDED REPAIR: Most of the road is reccomended for preventative maintenance and restoration using sealing techniques. All sealing (fog, slurry, scrub, chip) would be appropriate. This road is also suitable for microsurfacing due to the low traffic levels and low severity of distress. If the distressed become more severe in the next 5-10 years then micorsurfacing may not be appropriate. Thicker sealing methodologies and or resurfacing may be required. Edge cracking is prevalent and thus should be removed and restored entirely before any surface treatments.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Marie Street
ROADWAY TYPE:	COLLECTOR
OBSERVED TRAFFIC:	MEDIUM
SURVEYED LENGTH (FT):	5,280
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	22
START INTERSECTION:	Johnston Ave
END INTERSECTION:	Hall Road

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	MEDIUM	2	LOW	1	2
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS	MEDIUM	2	LOW	1	2
RUTTING AND DEPRESSIONS	MEDIUM	2	LOW	1	2
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**10.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**10.00**
ROADWAY TYPE MULTIPLIER	1
TRAFFIC MULTIPLIER	1

10		1		1		10.00
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

Porton south of Hall Road is not paved. Minor portion near Johnston Ave is not paved.
RECCOMENDED REPAIR(S): Preventative maintenance should be performed with applications of crack sealing and general aspahlt sealing or rejuvenators over the next 10-15 years to keep distresses at lower intensity. Existing patches and repairs to be monitored. Edge cracking north of Malabar Road may need saw cut and repair in the next 5 years. If the observance of structural/subsurface failures remain low in intensity or freqeuncy then milling and overlay in at the end of the asphalt life may be suitable to extend the life of the road without full reconstruction or reclamation. Existing rutting is low severity, but present, and should be investigated further.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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10250 SW Village Parkway, Suite 201
Port St. Lucie, FL 34987
772-462-2455

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Oak Harbor Lane
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	338
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Country Cove Circle
END INTERSECTION:	Dead emds at residential driveway / Country Cove amenity area

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	MEDIUM	2	4
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
			TOTAL DISTRESS SCORE:		**8.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**8.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

8	x	0.5	x	0.5	=	2.00
DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**

NOTES:

RECCOMENDED REPAIR(S): Multiple distresses observed, but mostly in low severity. Block cracking, and longitundinal/transverse cracking are prevalent distresses. Preventative measures may be more cost effective than reclamation or reconstruction should structural failures not become more apparent over time. Chip sealing or scrub sealing is reccomended to fill longitundinal/transverse cracking and minor alligator cracking. Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section. Oak tree roots at island should be monitored for further distortions.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

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Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Oak Tree Place
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	389
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Falls Trail
END INTERSECTION:	Cul-De-Sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	MEDIUM	2	2
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS	LOW	1	HIGH	3	3
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING					
				TOTAL DISTRESS SCORE:	**9.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**9.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

9		0.5		0.5		2.25
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

RECCOMENDED REPAIR(S): Medium severity alligator cracking is observed. May be due to poor profile grade line drainage. It is reccomended that this road be milled and resurfaced if the areas of alligator cracking can be remedied as spot fixes.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	March 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Old Mission Road
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,950
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	18
START INTERSECTION:	Weber Road
END INTERSECTION:	Beran Lane

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	MEDIUM	2	2
BLOCK CRACKING					
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS					
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	HIGH	3	MEDIUM	2	6
				TOTAL DISTRESS SCORE:	**9.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**9.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

9		0.5		0.5		2.25
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

Appears that microsurfacing of asphalt was performed in the recent past and is weathering significantly and the pavement is uneven.

RECCOMENDED REPAIR: Although the unweather portions of the road are in satiafactory condition, the uneven pavement makes this road somewhat unsuitable for sealing or rejvenating. It is reccomended that the road be milled and resurfaced in order to prolong is service life. Fatigue (alligator) crackign appears to be iolated and can be spot fixed prior to milling and overlay.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Pemberton Trail & Bluff View Placw
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,168
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Briar Creek Blvd
END INTERSECTION:	Dead End

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	LOW	1	2
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	MEDIUM	2	LOW	1	2
				TOTAL DISTRESS SCORE:	**8.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**8.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**
8	x	0.5	x	0.5	=	2.00

NOTES:

RECCOMENDED REPAIR: Block cracking, longitudinal/tansverse cracking, and weathering are prevalent distresses. Preventative measures may be more cost effective should structural failures not become more apparent over time. Low severity cracks (< ½" wide). Crack seal to prevent entry of moisture into the subgrade through the cracks and further raveling of the crack edges. High severity cracks (> ½" wide and cracks with raveled edges). Remove and replace the cracked pavement layer with an overlay.Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Reef Place
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	510
CONDITION DESCRIPTION:	RECENTLY RESTORED PARTIALLY
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Coral Way
END INTERSECTION:	Cul-De-Sac

PAVEMENT DISTRESS EVALUATION					
DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	MEDIUM	2	2
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	LOW	1	2
PATCHING, UTILITY CUT, REPAIRS	MEDIUM	2	MEDIUM	2	4
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	LOW	1	LOW	1	1
			TOTAL DISTRESS SCORE:		**13.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT							
					TOTAL DISTRESS SCORE:		**13.00**
					ROADWAY TYPE MULTIPLIER		0.5
					TRAFFIC MULTIPLIER		0.5
13		0.5		0.5			3.25
DISTRESS SCORE	x	ROAD MULTIPLIER	x	TRAFFIC MULTIPLIER	=		**ADJUSTED SCORE**

NOTES:

Cul-de-Sac was recently paved/restored it appears.
RECCOMENDED REPAIR(s): It has been explained by the Town manager that this neighborhood may have poor drainage at times during the year. The some of the distresses appeared to have moisure and bleeding that may be causing them. As such drainage improvements should be explored to keep the roads draining well. Due to the presence and severity of fatigue (alligator) cracking and other potential structural failures it is recommended a subsurface investigation occur. If the underlying materials are suitable and failsures are not in a high concentration then milling and overlay may be a suitable method to prolong the life of the asphalt. Reconstruciton and reclamation may be required if additional data reveals structural/subsurface concerns that cannot be observed from the asphalt surface.
EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Riverview Drive
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	MEDIUM
SURVEYED LENGTH (FT):	780
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	US-1
END INTERSECTION:	Cul-De-Sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**6.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**6.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	1

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**
6	x	0.5	x	1	=	3.00

NOTES:

This road serves as access to Yellowdog Café parking lot so sees higher traffic. RECCOMENDED REPAIR: Block cracking is most prevalent. Low severity cracks (< ½" wide). Crack seal to prevent (1) entry of moisture into the subgrade through the cracks and (2) further raveling of the crack edges. Aspahlt can provide years of satisfactory service after developing small cracks if they are kept sealed. High severity cracks (> ½" wide and cracks with raveled edges). Remove and replace the cracked pavement layer with an overlay. Fatigure (alligator) failsures should be removed and restored in full until such time the road is reclaimed or reconstructed in the future.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Rocky Point Road
ROADWAY TYPE:	COLLECTOR
OBSERVED TRAFFIC:	MEDIUM
SURVEYED LENGTH (FT):	7,590
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	22
START INTERSECTION:	US-1
END INTERSECTION:	US-1 (looped road)

PAVEMENT DISTRESS EVALUATION					
DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	LOW	1	1
BLOCK CRACKING	HIGH	3	MEDIUM	2	6
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	MEDIUM	2	4
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	LOW	1	LOW	1	1
				TOTAL DISTRESS SCORE:	**15.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT						
					TOTAL DISTRESS SCORE:	**15.00**
					ROADWAY TYPE MULTIPLIER	1
					TRAFFIC MULTIPLIER	1
15	x	1	x	1	=	15.00
DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**

NOTES:

Road condition is showing signs of increasing degredation
Significant damage and erosion (undermining) in select areas due to Hurricane season of 2022.
RECCOMENDED REPAIR(S): The observed roadway failures due to hurricane erosion should be fixed as soon as possible. The road has a higher concentration of block cracking and longitudinal/transverse cracking than most roads in Town. Structural failures are not immediately apparent from the surface, however subsurface investigation before any road improvements is reccomended. Low severity cracks (< ½" wide). Crack seal to prevent entry of moisture into the subgrade through the cracks and further raveling of the crack edges. High severity cracks (> ½" wide and cracks with raveled edges). Remove and replace the cracked pavement layer with an overlay.Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Milling and overlay is also suitable, however may not be needed if sealing and crack fixes is deemed less costly.
EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

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Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Smith lane
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,320
CONDITION DESCRIPTION:	NEW RECONSTRUCTION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Atz Road
END INTERSECTION:	Dead end north and south of Atz Rd

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING					
DISTORTIONS					
LONGITUDINAL,TRANSVERSE CRACKS					
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
			TOTAL DISTRESS SCORE:		**1.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**1.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		ADJUSTED SCORE
1	X	0.5	X	0.5	=	0.25

NOTES:

One of the newer and better conditioned roads in the Town of Malabar
No need for restoration at this time.
North of Atz Rd is unpaved.

RECCOMENDED REPAIR: No immediate repairs necessary to paved portion of road. Preventative maintenance using rejvenators or fog seals are reccomended. Mill and and resurfacing may be needed in the future, unless more significant distresses become apparent over time.
EXPECTED LIFE OF CURRENT ASPHALT: 15-20 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Steeplechase Circle
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	358
CONDITION DESCRIPTION:	AGED IN SATISFACTORY CONDITION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Briar Creek Blvd
END INTERSECTION:	Cul-De-Sac

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING	HIGH	3	LOW	1	3
DISTORTIONS	LOW	1	MEDIUM	2	2
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS					
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	LOW	1	1
			TOTAL DISTRESS SCORE:		**7.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**7.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

7	x	0.5	x	0.5	=	1.75
DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**

NOTES:

RECCOMENDED REPAIR: Block cracking, longitundinal/transverse cracking, and weathering are prevalent distresses. Preventative measures may be more cost effective than reclamation or reconstruction should structural failures not become more apparent over time. Chip sealing or scrub sealing is reccomended to fill longitundinal/transverse cracking and minor alligator cracking. Should surficial distresses worsen in next 5 years then mill and resuface may be reccomended. Road coring and subsurface investigations should be performed to evaluate the structural materials and thickness of the pavement section. Oak tree roots causing distorion need to be monitored.
EXPECTED LIFE OF CURRENT ASPHALT: 5-10 YEARS

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Township Road
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,056
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	US-1
END INTERSECTION:	Dead End

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	MEDIUM	2	MEDIUM	2	4
BLOCK CRACKING	MEDIUM	2	LOW	1	2
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	HIGH	3	LOW	1	3
PATCHING, UTILITY CUT, REPAIRS	LOW	1	LOW	1	1
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	LOW	1	MEDIUM	2	2
			TOTAL DISTRESS SCORE:		**14.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**14.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**
14	X	0.5	X	0.5	=	3.50

NOTES:

This appears to be an older road in the Town of Malabar. Dilapidated speed bumps present on road.
RECCOMENDED REPAIR(S): The road should be investigated for subsurface and structural failures. The prevalent distresses appear mostly due to the roadways age. The asphalt may be at its maximum life span, even though it is not in total disrepair yet. As such surface treatments may only provied short term (0-5 year) prolongment. Milling and overlay may prove suitable if the underlaying materials and subsurface conditions are not actively contributing to structural failure. Speed bumps need to be removed before restoration.
EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

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Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	W Railroad Avenue
ROADWAY TYPE:	LOCAL
OBSERVED TRAFFIC:	LOW
SURVEYED LENGTH (FT):	1,830
CONDITION DESCRIPTION:	RECENTLY RESTORED PARTIALLY
AVG PAVEMENT WIDTH (FT):	20
START INTERSECTION:	Malabar Road
END INTERSECTION:	Dead end north of Malabar Rd,Center St to the South of Malabar

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING					
BLOCK CRACKING					
DISTORTIONS	LOW	1	LOW	1	1
LONGITUDINAL,TRANSVERSE CRACKS	LOW	1	LOW	1	1
PATCHING, UTILITY CUT, REPAIRS	MEDIUM	2	LOW	1	2
RUTTING AND DEPRESSIONS					
WEATHERING AND RAVELING	LOW	1	MEDIUM	2	2
				TOTAL DISTRESS SCORE:	**6.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**6.00**
ROADWAY TYPE MULTIPLIER	0.5
TRAFFIC MULTIPLIER	0.5

DISTRESS SCORE		ROAD MULTIPLIER		TRAFFIC MULTIPLIER		**ADJUSTED SCORE**
6	X	0.5	X	0.5	=	1.50

NOTES:

Town of Malabar Town Hall is accessed from portion south of Malabar Rd
Recently paved/restored south of Malabar Rd and short spur north of Malabar Rd
Most of the portion north of Malabar Rd is rigid, concrete aggregate pavement. Not asphalt.
Rigid pavement showing signs of weathering and cracking (not scored in asphalt assessment).
RECCOMENDED REPAIR(S): If rigid pavement is to be converted to flexible pavement in the future reconstructed would be required. The newer asphalt sections can be maintained with rejevenation and sealing techniques. The north terminus may required milling and resurfacing in the next 10-15 years if left untreated.
EXPECTED LIFE OF CURRENT ASPHALT: 10-15 YEARS

ENGINEERING DESIGN & CONSTRUCTION, INC.
CIVIL ENGINEERS & SURVEYORS SPECIALIZING IN LAND DEVELOPMENT
10250 SW Village Parkway, Suite 201
Port St. Lucie, FL 34987
772-462-2455

Project Number: 22-383
Project Name: Town of Malabar
Roadway Pavement Evaluation

Report Date: February 2023

ASPHALT SURFACE ROAD
CONDITION SURVEY DATA SHEET

GENERAL		
ROAD SURVEY PERIOD:	OCT 2022 - FEB 2023	
ROAD SURVEY ENGINEER:	DAVID C. BAGGETT, P.E.	SIGN:

ROADWAY INFO	
ROADWAY NAME:	Weber Road
ROADWAY TYPE:	COLLECTOR
OBSERVED TRAFFIC:	HIGH
SURVEYED LENGTH (FT):	10,560
CONDITION DESCRIPTION:	AGED IN NEED OF RESTORATION
AVG PAVEMENT WIDTH (FT):	23
START INTERSECTION:	Malabar Road
END INTERSECTION:	South to Town of Malabar limits

PAVEMENT DISTRESS EVALUATION

DISTRESS TYPE[1]:	DENSITY	SCORE	SEVERITY	SCORE	PRODUCT
ALLIGATOR CRACKING	LOW	1	MEDIUM	2	2
BLOCK CRACKING	LOW	1	LOW	1	1
DISTORTIONS	MEDIUM	2	LOW	1	2
LONGITUDINAL,TRANSVERSE CRACKS	MEDIUM	2	LOW	1	2
PATCHING, UTILITY CUT, REPAIRS	HIGH	3	LOW	1	3
RUTTING AND DEPRESSIONS	LOW	1	LOW	1	1
WEATHERING AND RAVELING	LOW	1	MEDIUM	2	2
			TOTAL DISTRESS SCORE:		**13.00**

ROADWAY TYPE AND TRAFFIC ADJUSTMENT

TOTAL DISTRESS SCORE:	**13.00**
ROADWAY TYPE MULTIPLIER	1
TRAFFIC MULTIPLIER	1.5

13		1		1.5		19.50
DISTRESS SCORE	X	ROAD MULTIPLIER	X	TRAFFIC MULTIPLIER	=	**ADJUSTED SCORE**

NOTES:

RECCOMENDED REPAIR(S): Weber Road appears to have been microsurfaced in the recent years. The evidence of that surfacing is wearing off due to the higher traffic on this road. As such it is not commended to continue microsrufacing as a surface treatment. Alligator cracking, patching, repairs, weathering, raveling, an distortions are also regularly present. It is reccomended that the Town first perform subsurface and structural evaluations of the existing roadway to determine the extent of subsurface failures. Mill and overlay may not be suitable if materials and subsurface failures are present throughout the road. Full depath reclamation or reconstruction may be required.
EXPECTED LIFE OF CURRENT ASPHALT: 0-5 YEARS

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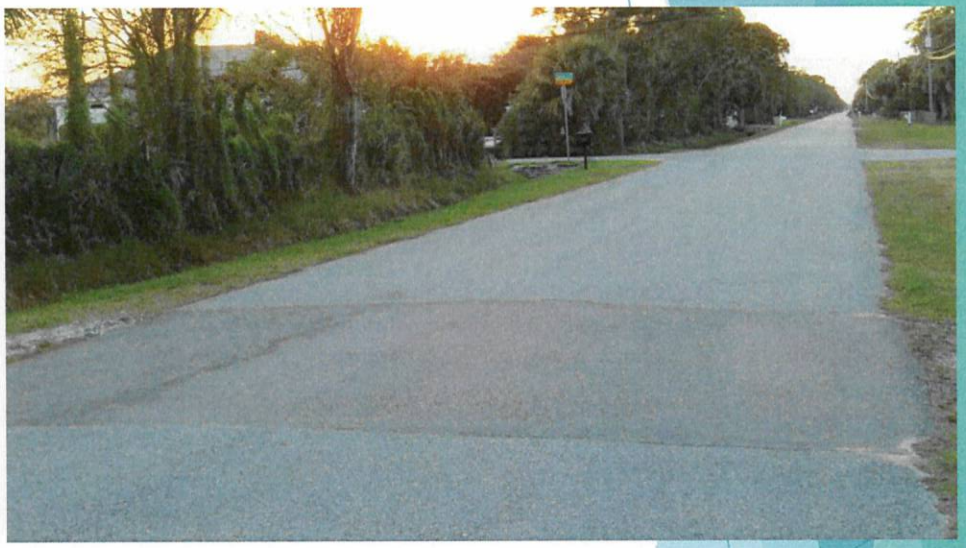
10250 SW Village Parkway, Suite 201
Port St. Lucie, FL 34987
772-462-2455

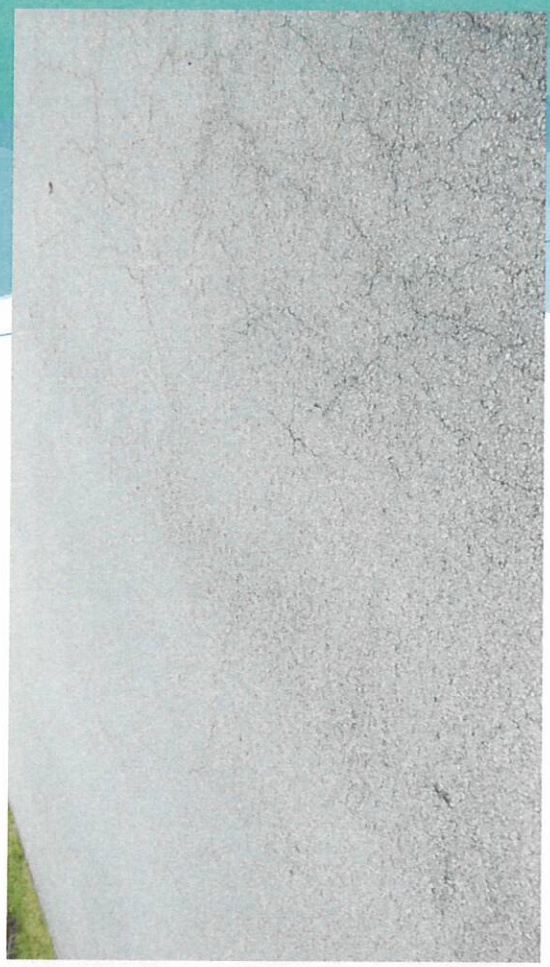
Appendix B – Asphalt Roadway Inspection Photos (Alphabetical Order by Road Name)

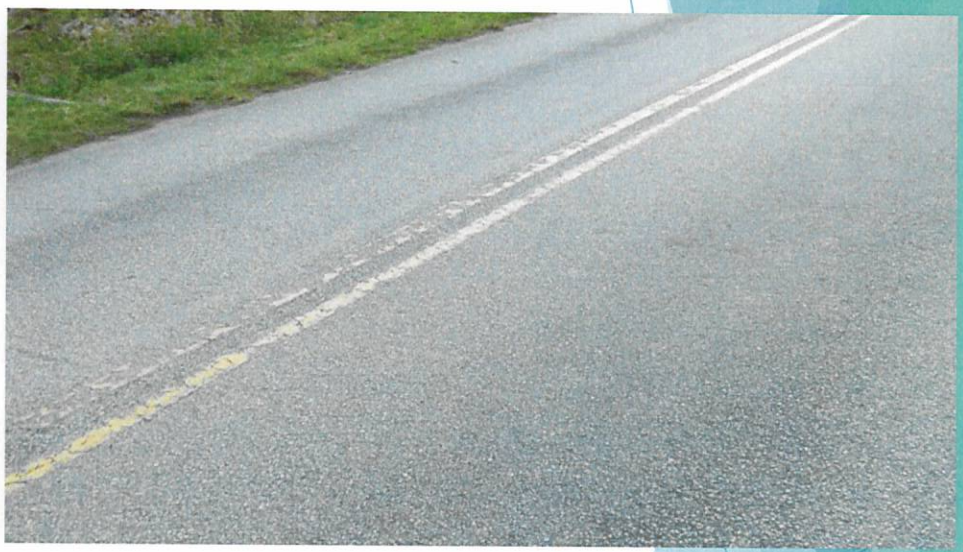
Atz Road

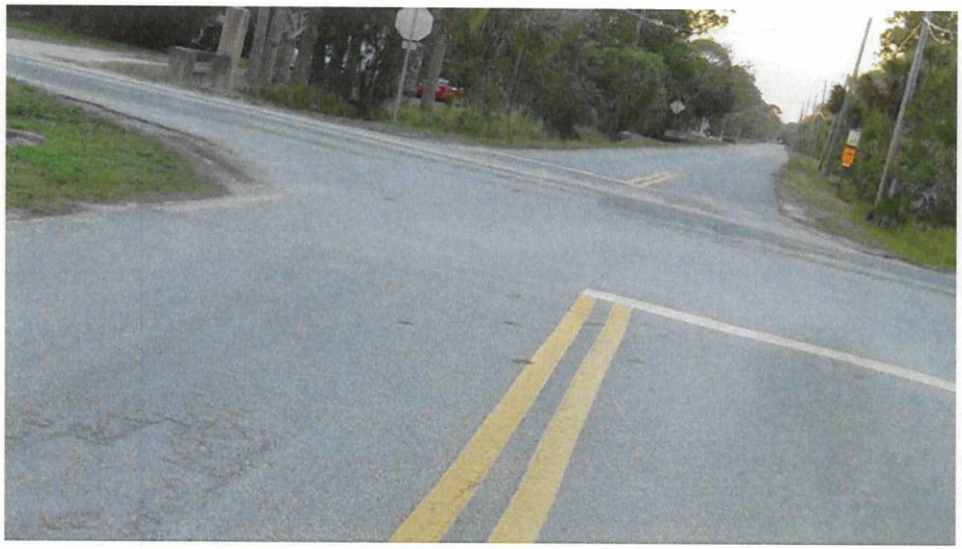
Asphalt Pavement Inspection Photos

ATZ Rd









Baywood Court

Asphalt Pavement Inspection Photos


BAYWOOD CT

Benjamin Road

Asphalt Pavement Inspection Photos


Benjamin Rd
NO OUTLET


FOR SALE

2120 Harbor

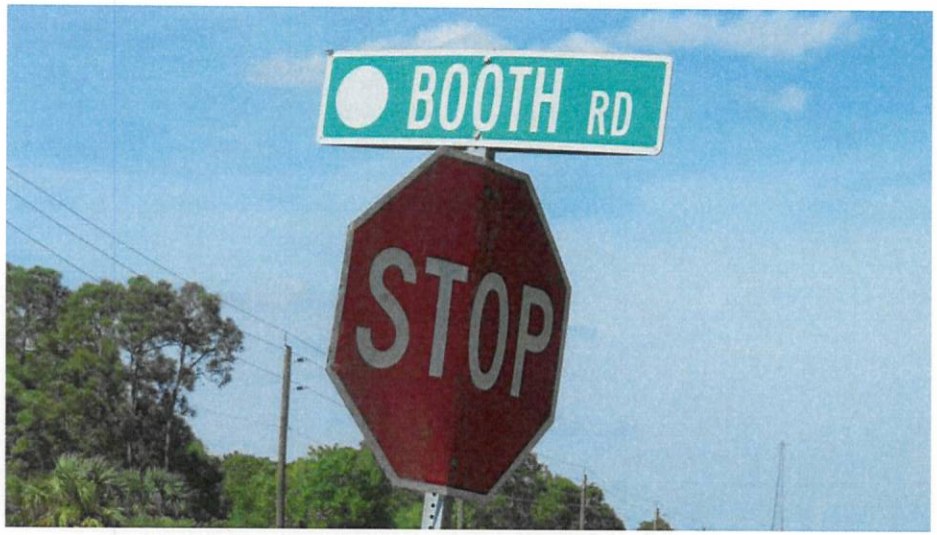
Blanche Street

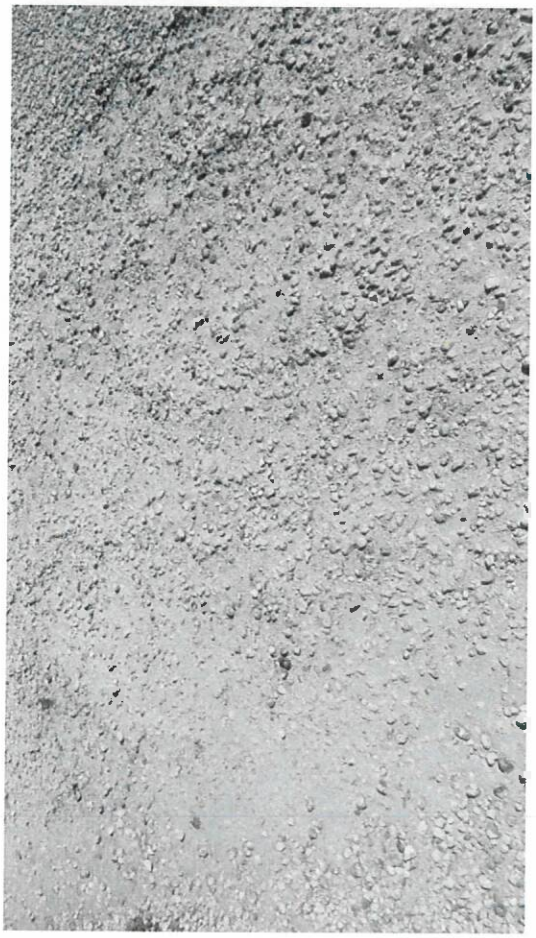
Asphalt Pavement Inspection Photos

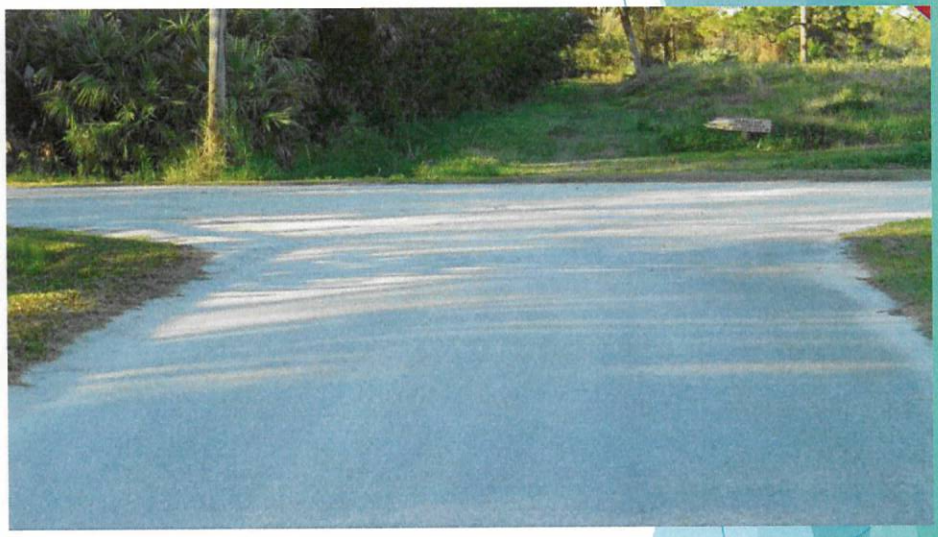
Blanche St

Booth Road

Asphalt Pavement Inspection Photos

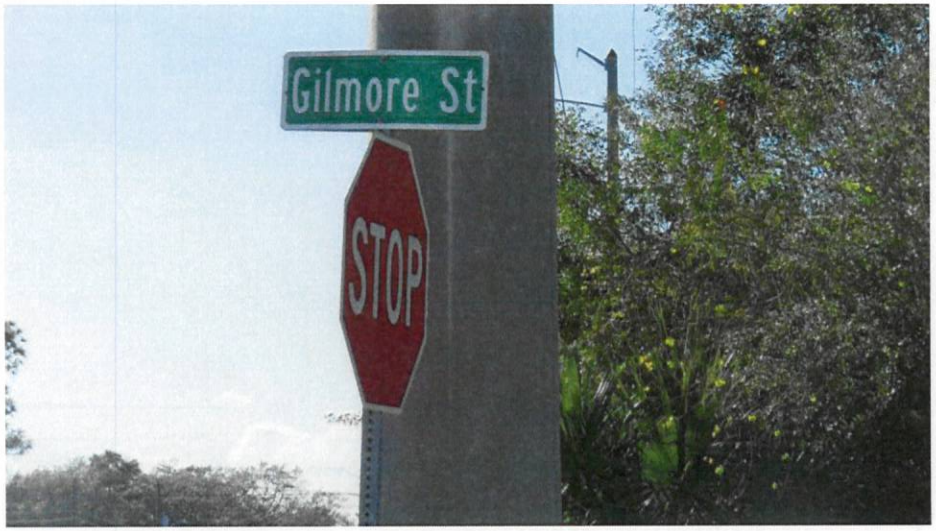

BOOTH RD
STOP

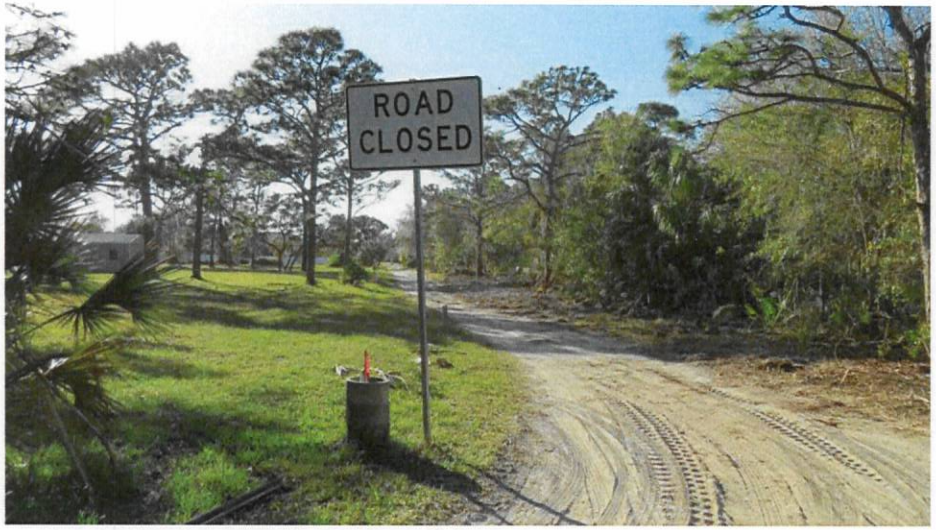




Gilmore Street

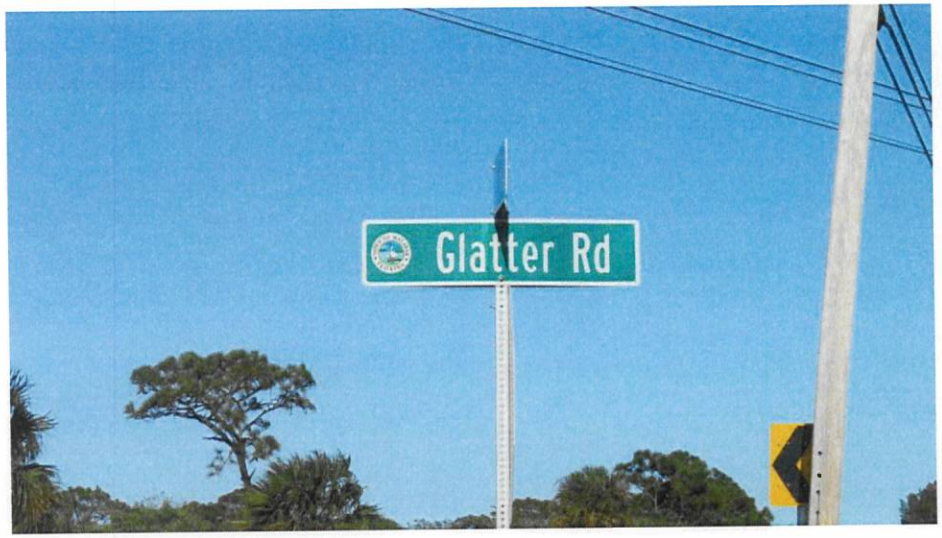
Asphalt Pavement Inspection Photos

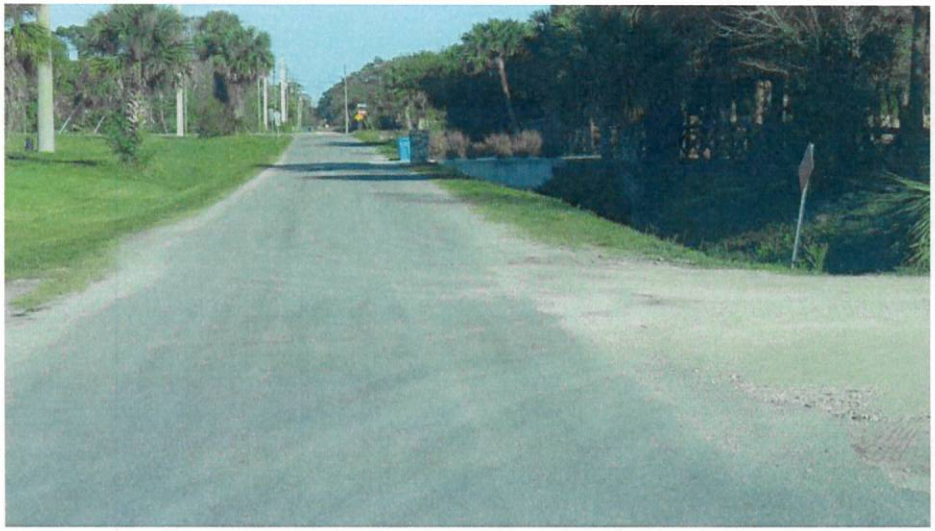

Gilmore St
STOP


ROAD
CLOSED

Glattter Road

Asphalt Pavement Inspection Photos

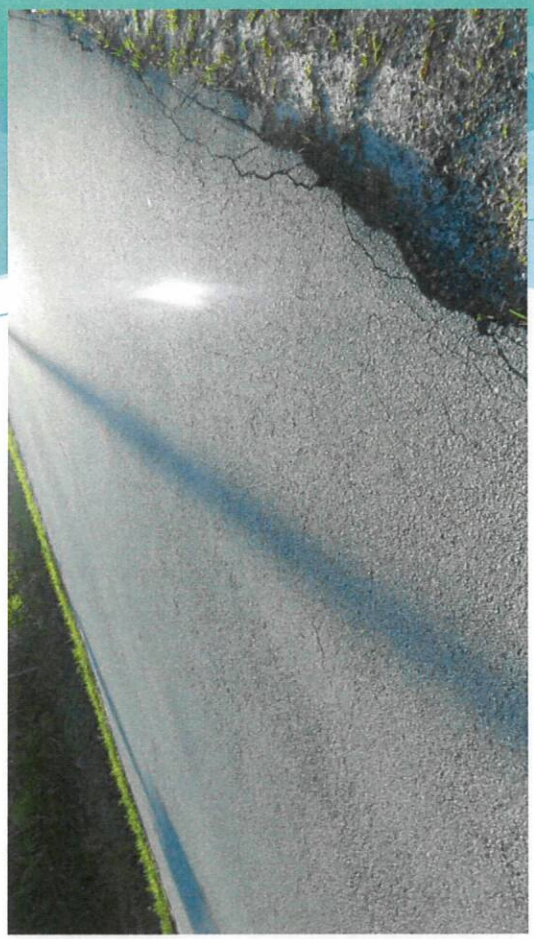

Glatter Rd

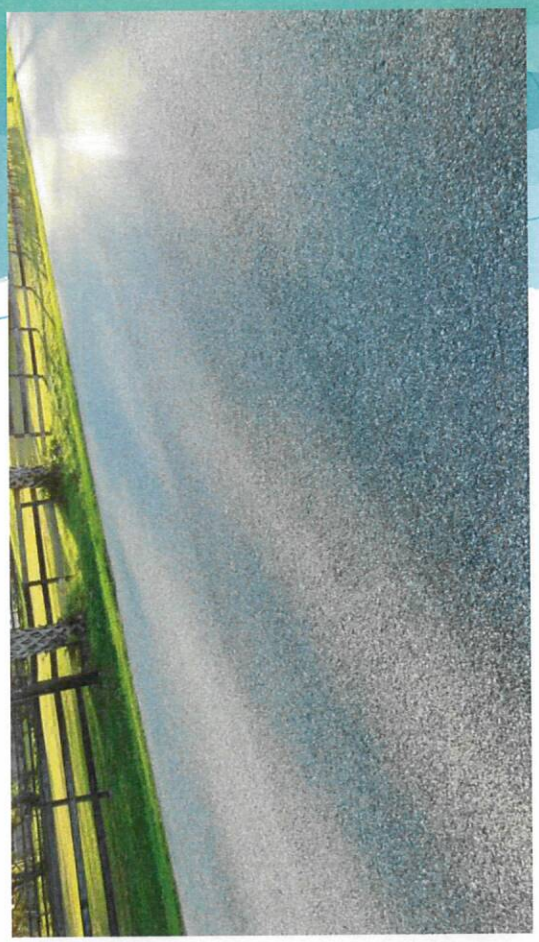


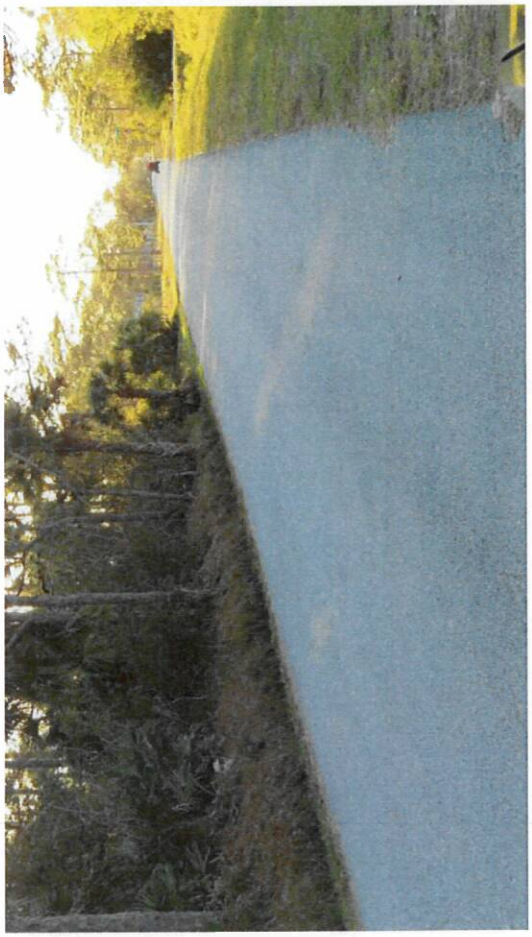

NO
OUTLET

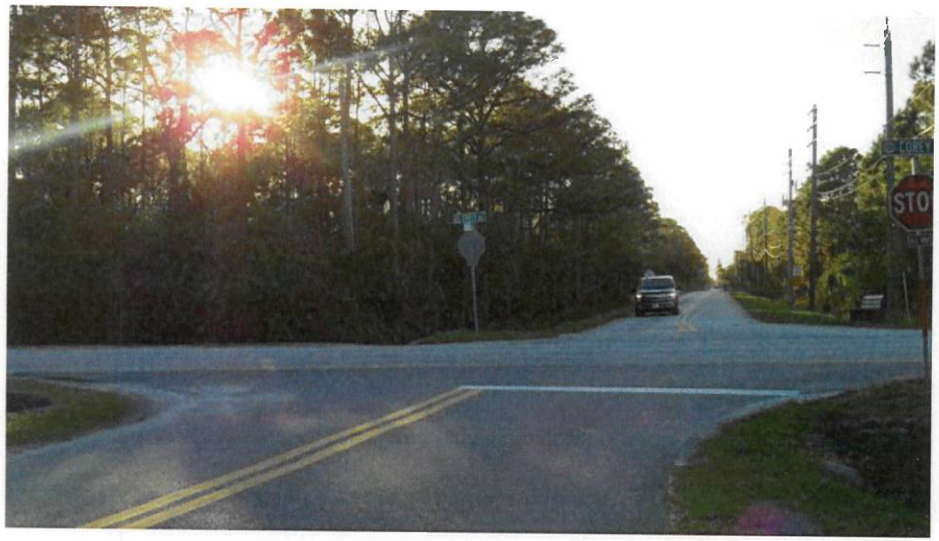
Hall Road

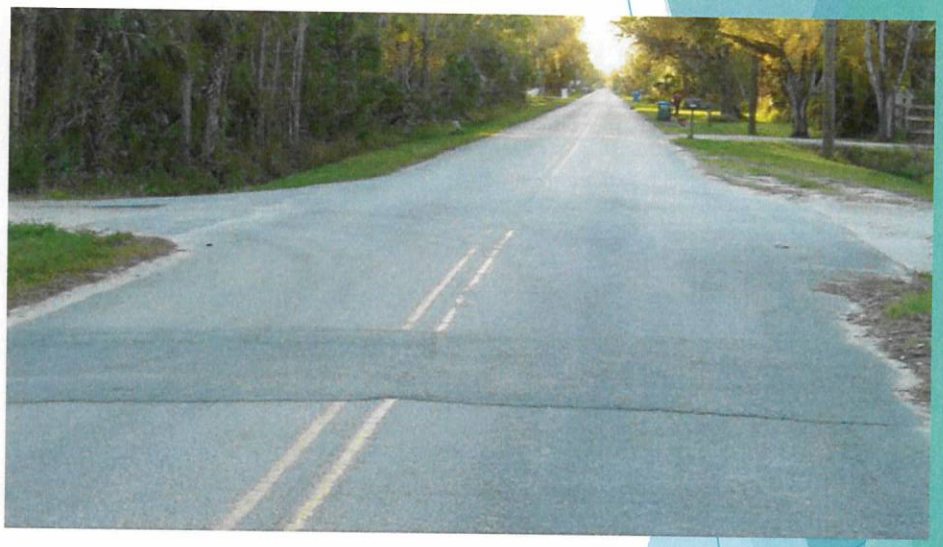
Asphalt Pavement Inspection Photos

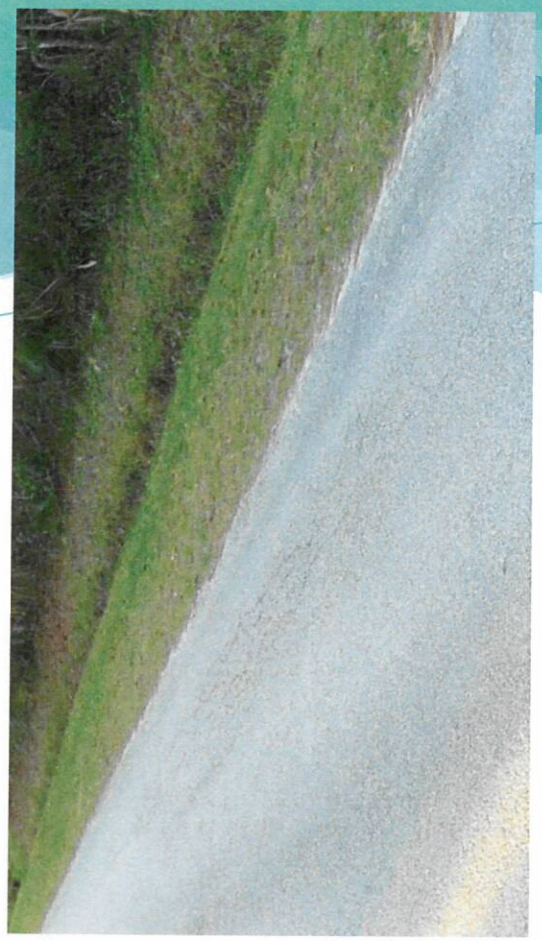






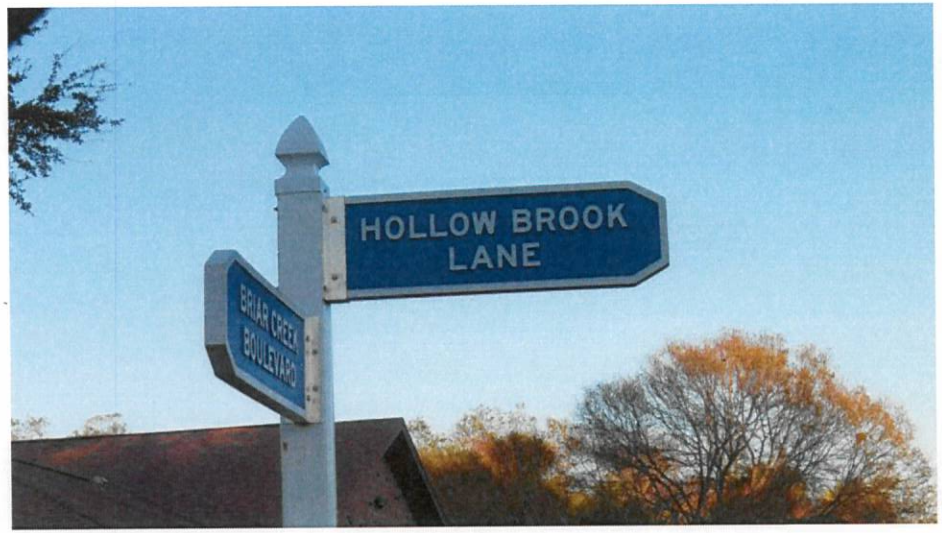

STO

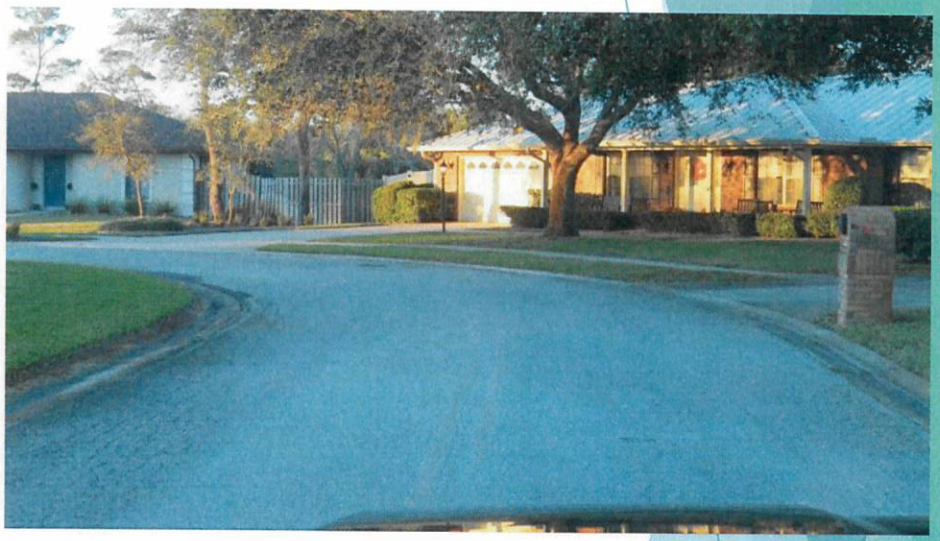


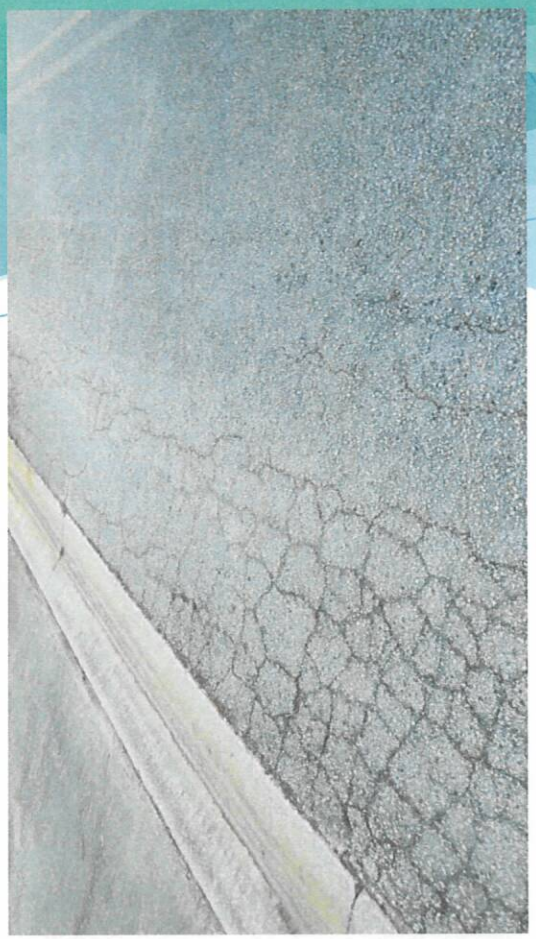


Hollow Brook Lane

Asphalt Pavement Inspection Photos


HOLLOW BROOK
LANE
BRIAR CREEK
BOULEVARD

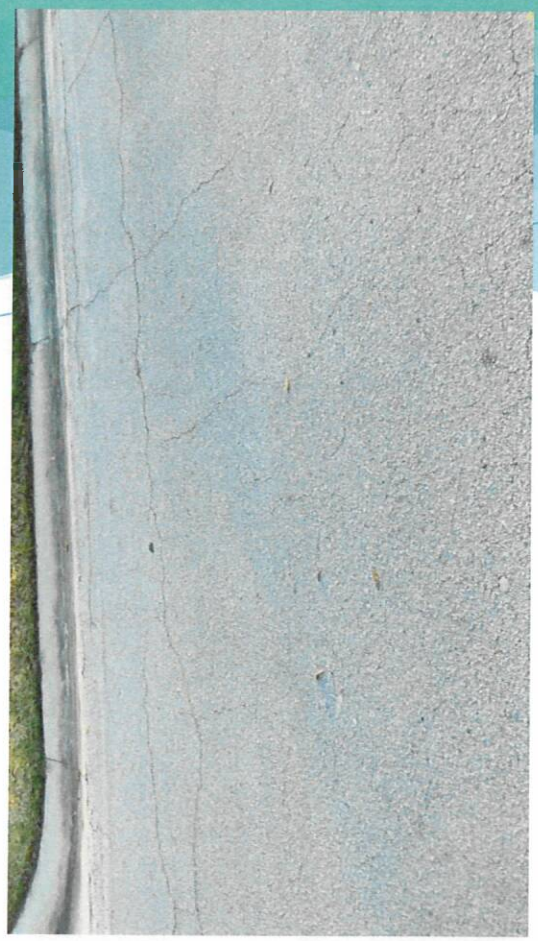


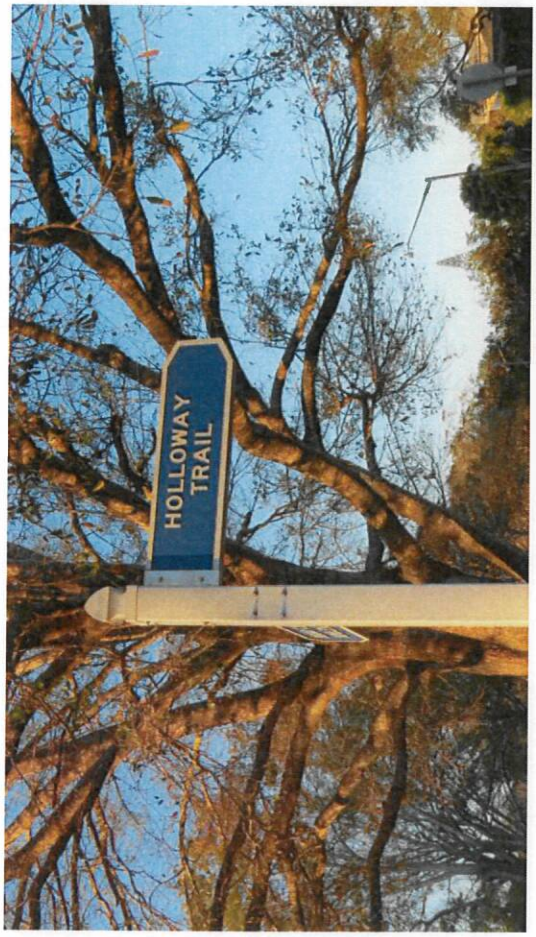


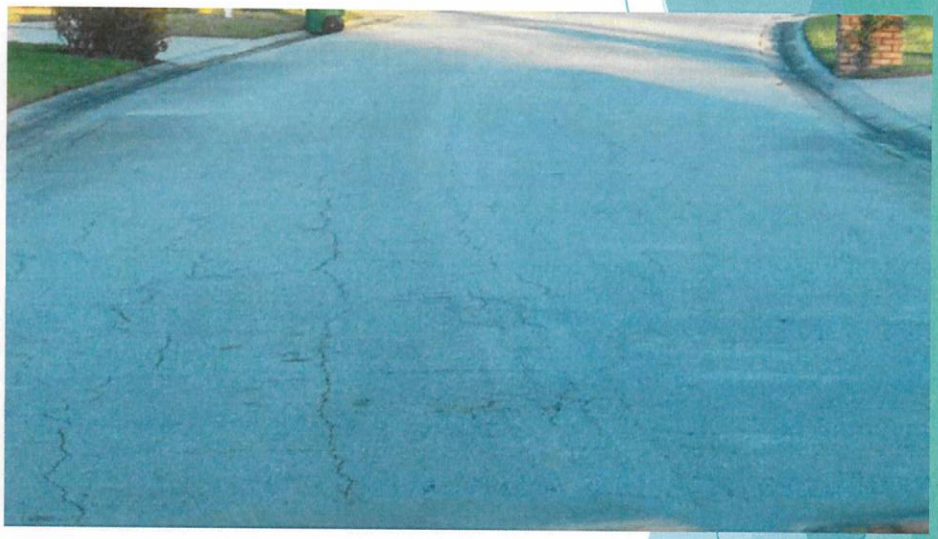

STOP

Holloway Trail

Asphalt Pavement Inspection Photos



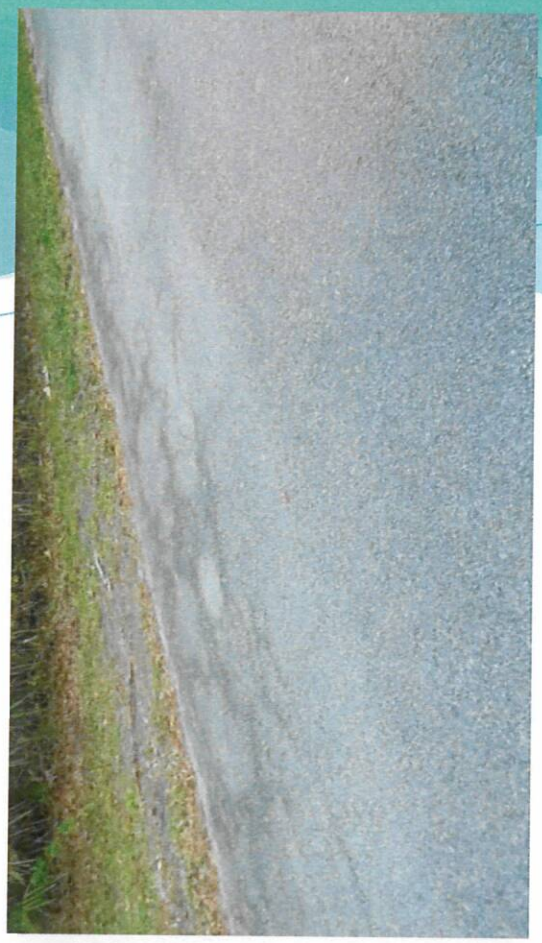

HOLLOWAY
TRAIL



Homestead Lane

Asphalt Pavement Inspection Photos

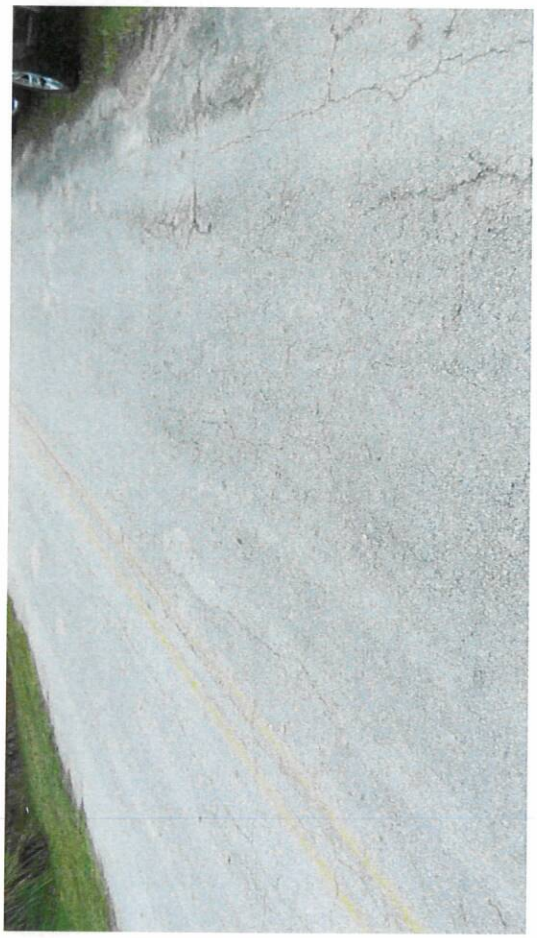

Homestead Ln



Huggins Drive

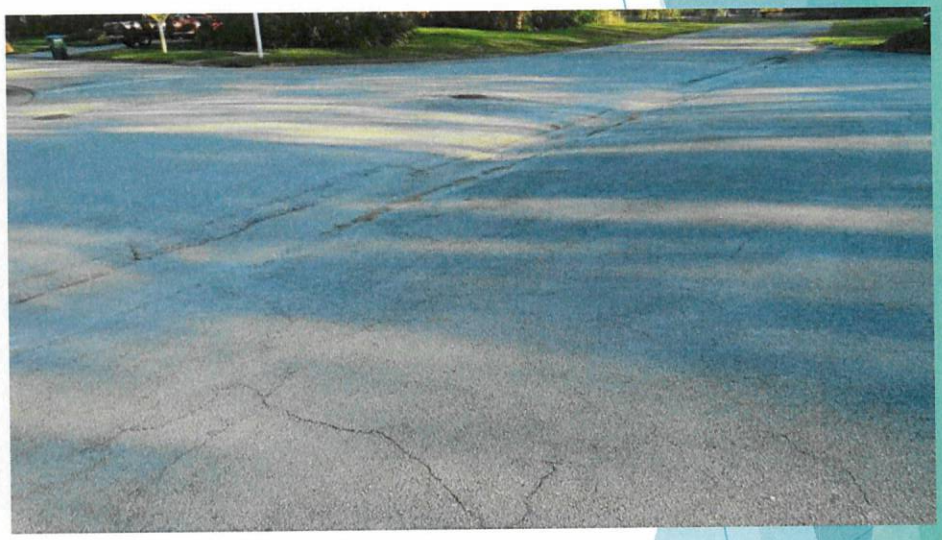
Asphalt Pavement Inspection Photos


HUGGINS DR
STOP
HIGHWAY



Briar Creek Blvd & Brian Run Circle

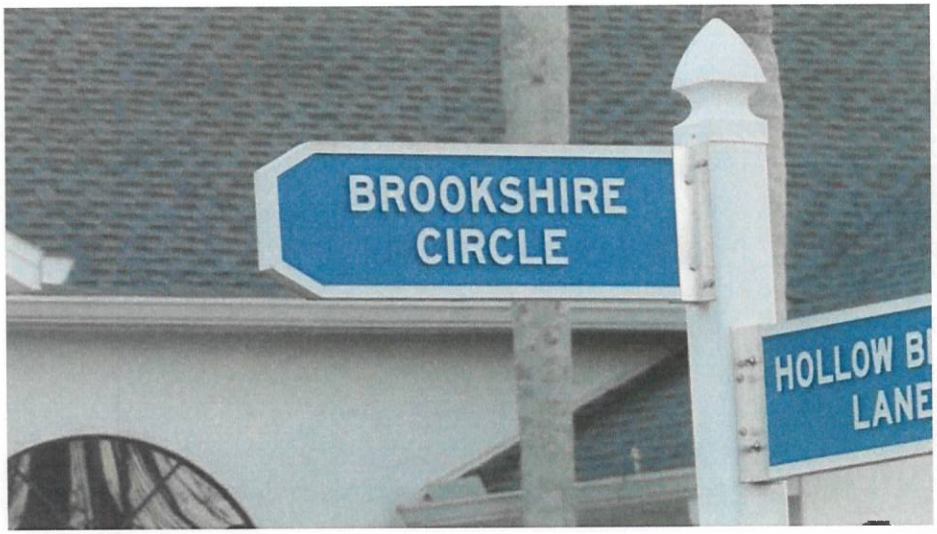
Asphalt Pavement Inspection Photos




Briar Creek BL
Port Malabar BL

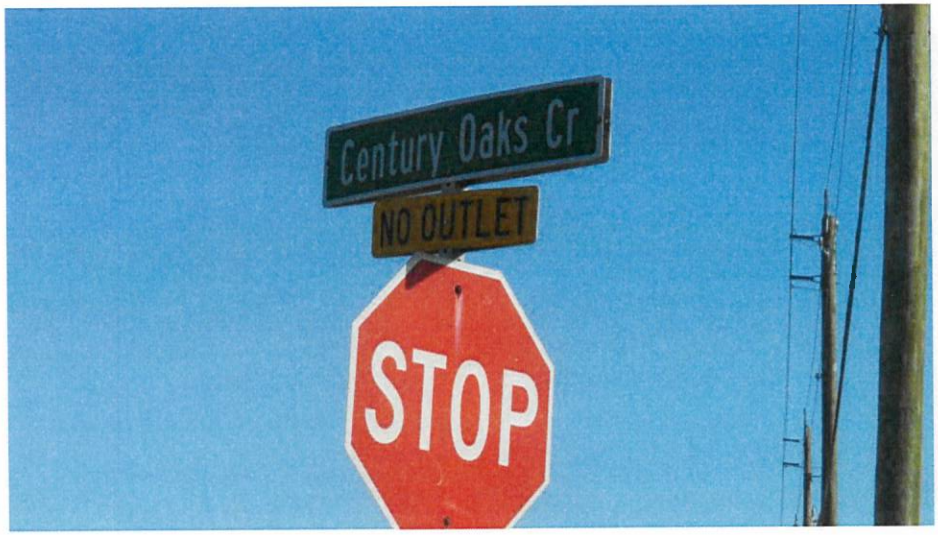
Brookshire Circle

Asphalt Pavement Inspection Photos


BROOKSHIRE
CIRCLE
HOLLOW B
LANE

Century Oak Circle

Asphalt Pavement Inspection Photos


Century Oaks Cr
NO OUTLET
STOP

Coquina Terrace

Asphalt Pavement Inspection Photos


Coquina Ter
NO OUTLET
STOP

Coral Way

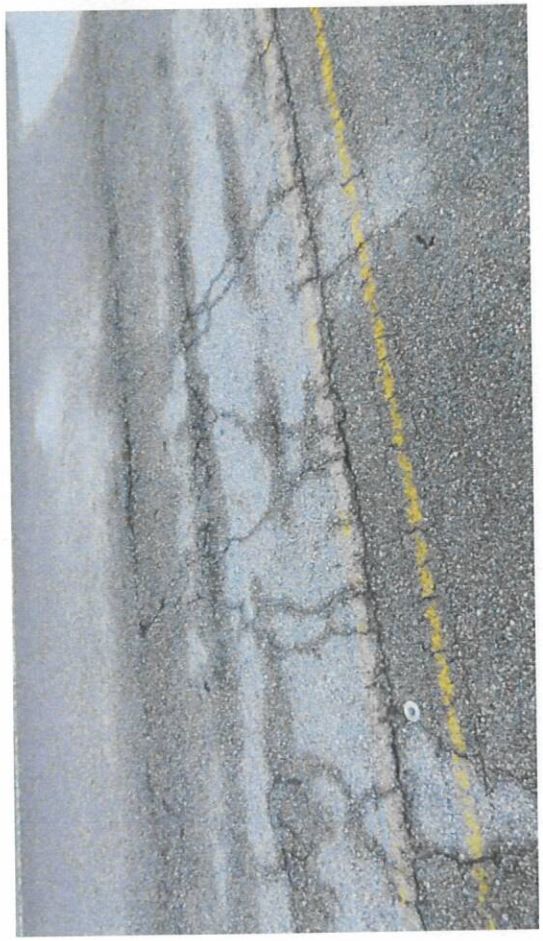
Asphalt Pavement Inspection Photos

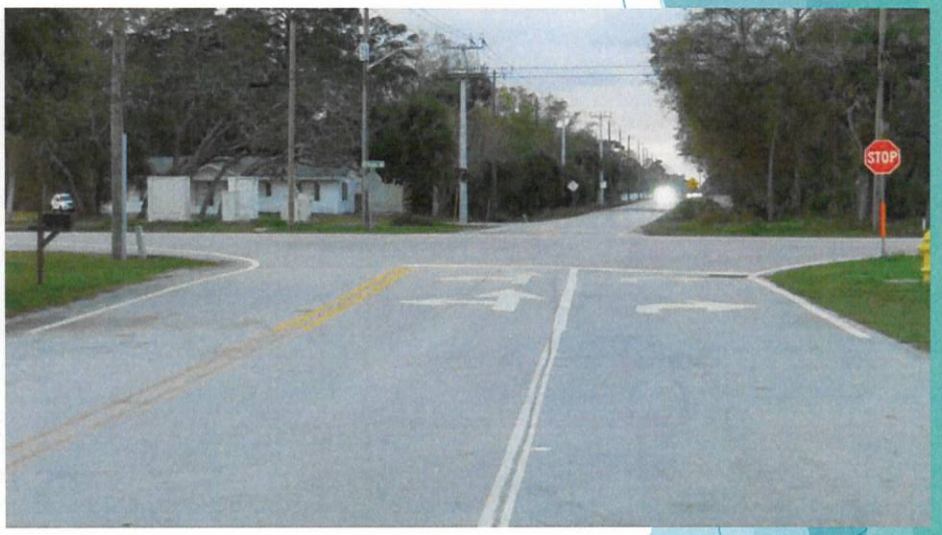

STOP
CORAL WAY

Corey Road

Asphalt Pavement Inspection Photos


COREY
COUNTRY COVE CIR
NO OUTLET




STOP

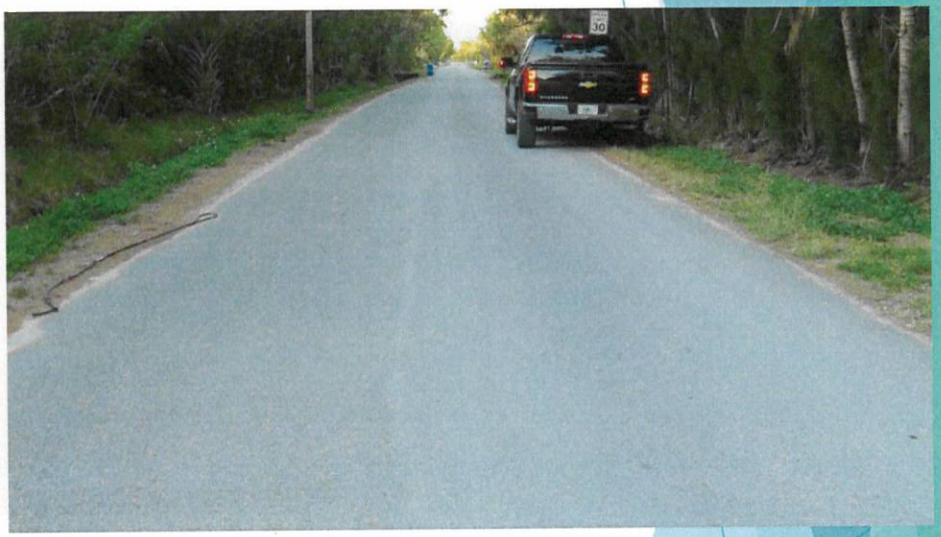
Country Cove Circle

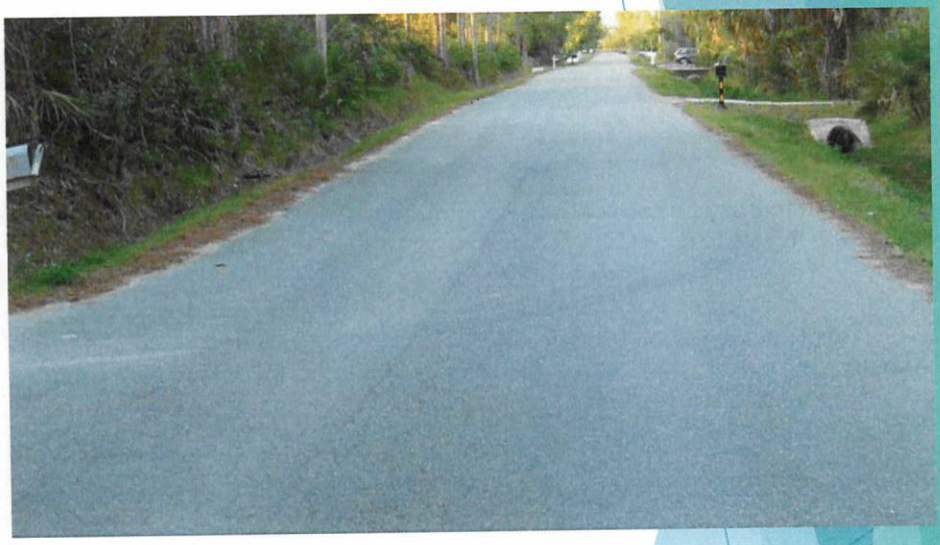
Asphalt Pavement Inspection Photos

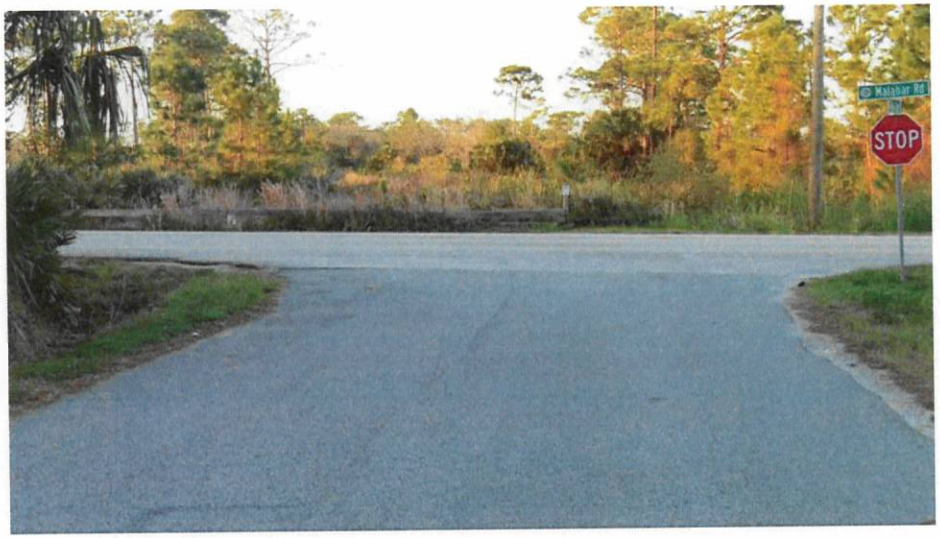
Eva Lane

Asphalt Pavement Inspection Photos


Rd
Eva Ln

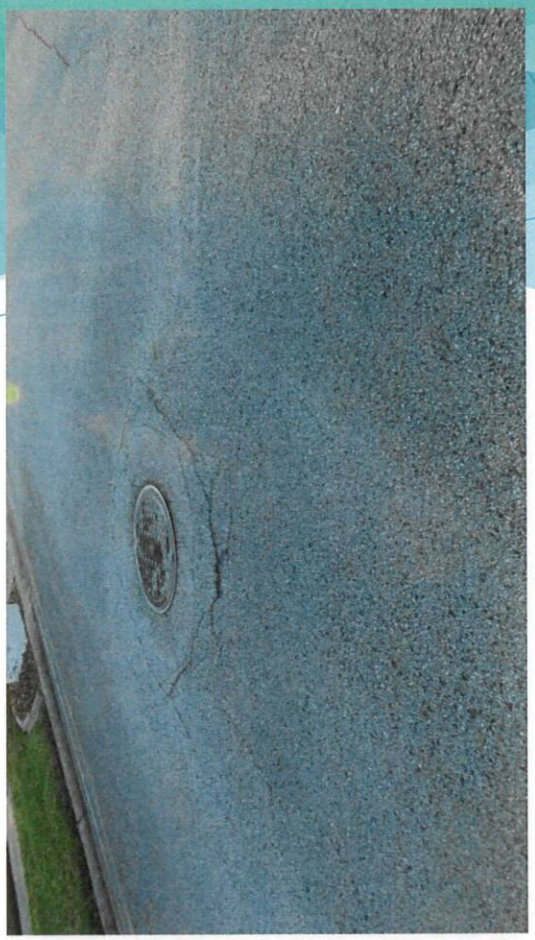




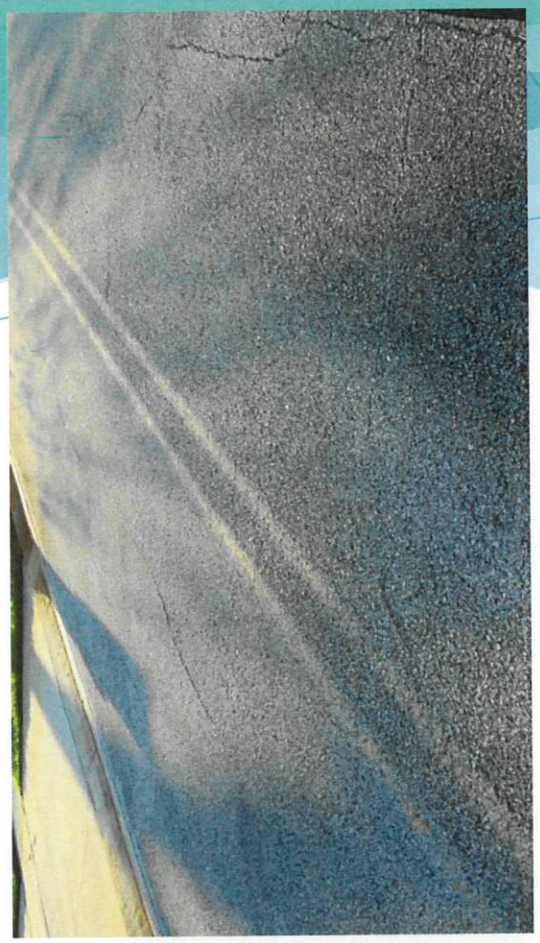

Malabar Rd
STOP

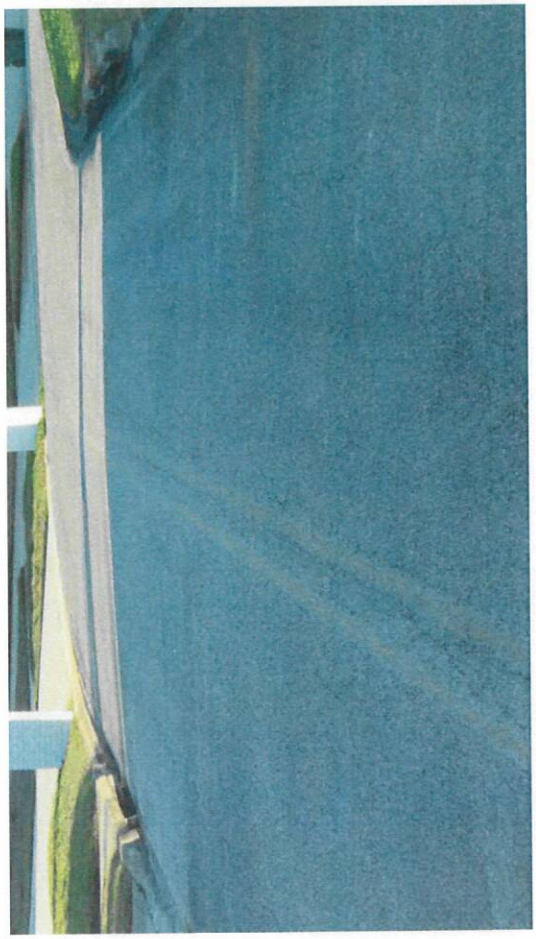
Falls Trail

Asphalt Pavement Inspection Photos




FALLS
TRAIL





First Lane

Asphalt Pavement Inspection Photos


FIRST
LANE

Florence Street

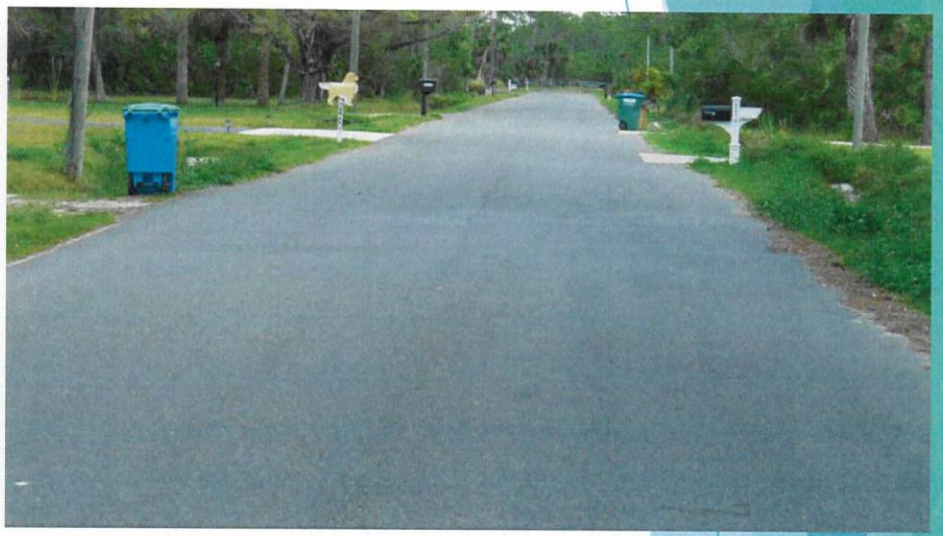
Asphalt Pavement Inspection Photos

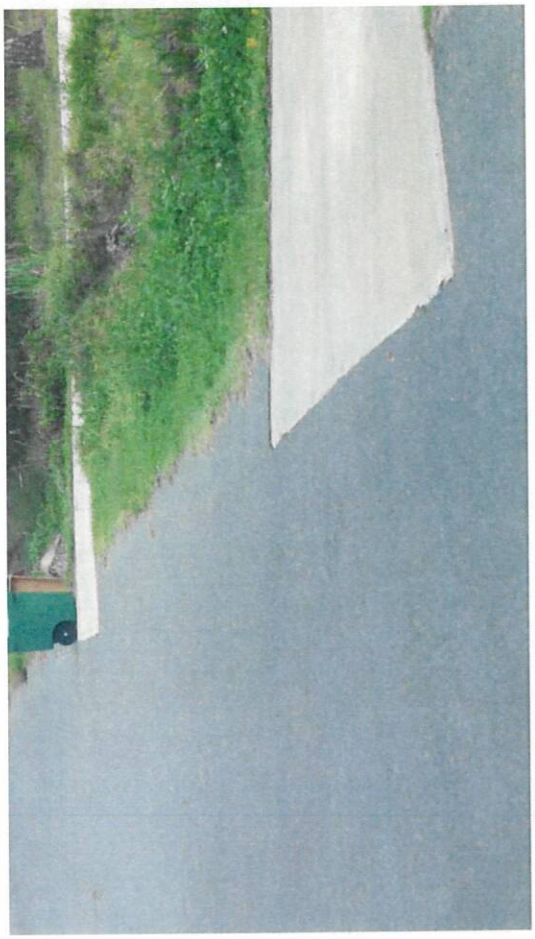
E Florence St
STOP

Hunter Lane

Asphalt Pavement Inspection Photos


Hunter Ln
NO OUTLET

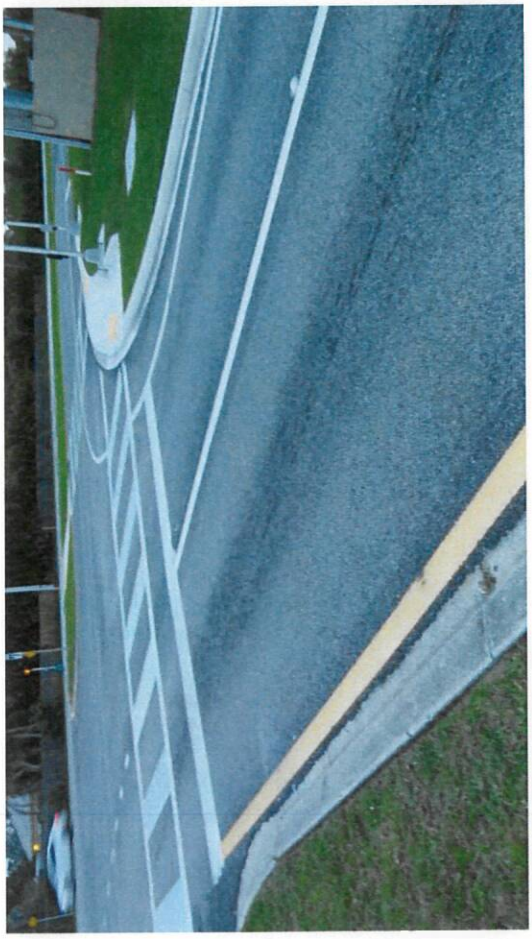




Jordan Blvd

Asphalt Pavement Inspection Photos

Jordan Blvd



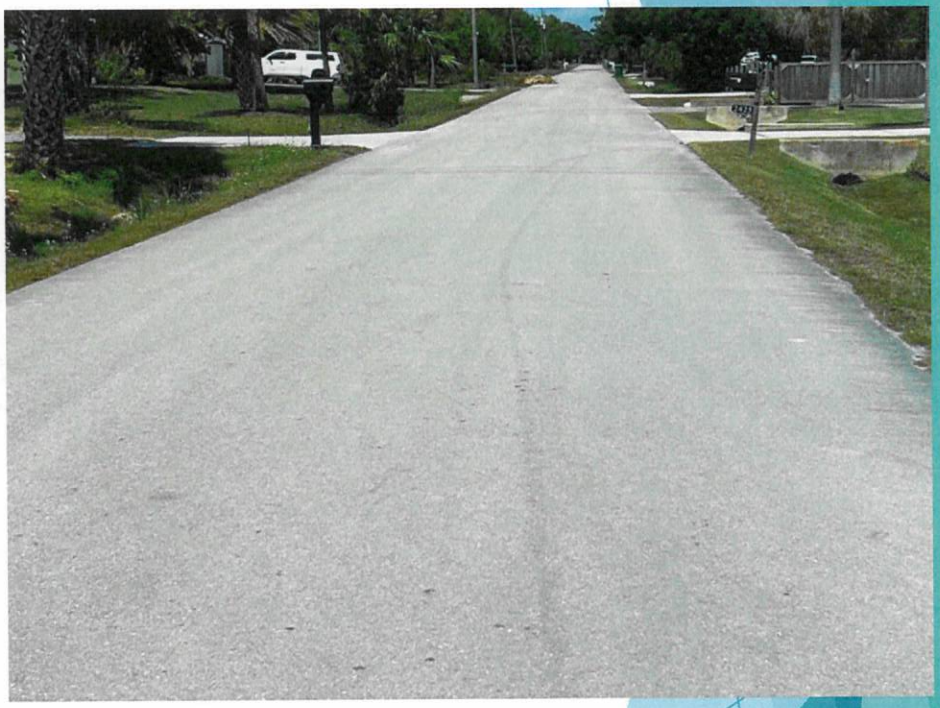

Jordan Scrub
Sanctuary

La Court Lane

Asphalt Pavement Inspection Photos


La Court Ln
AIZ Rd

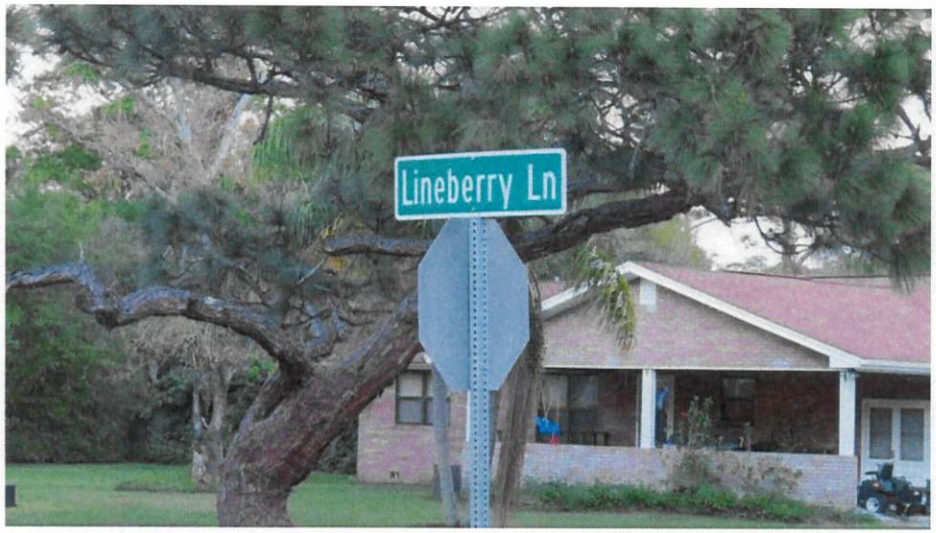

SPEED
LIMIT
30

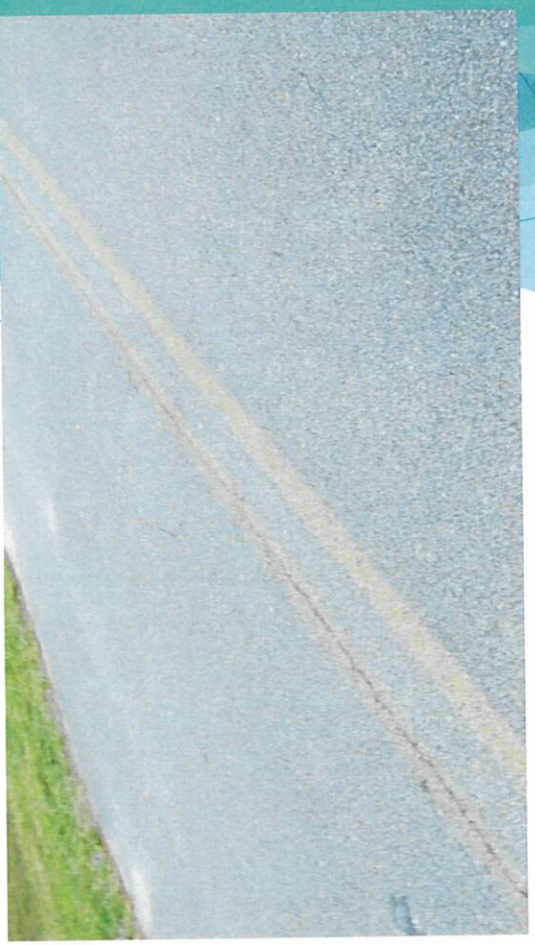



STOP

Lineberry Lane

Asphalt Pavement Inspection Photos

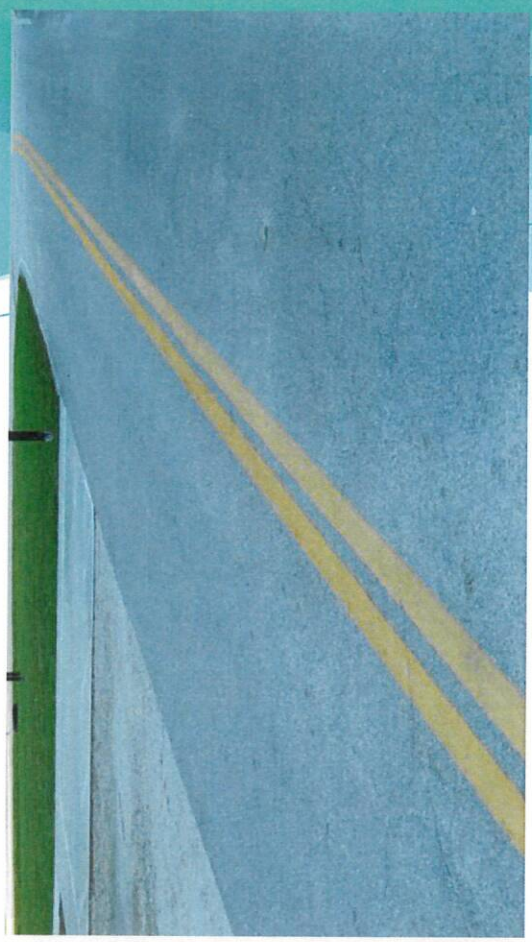

Lineberry Ln

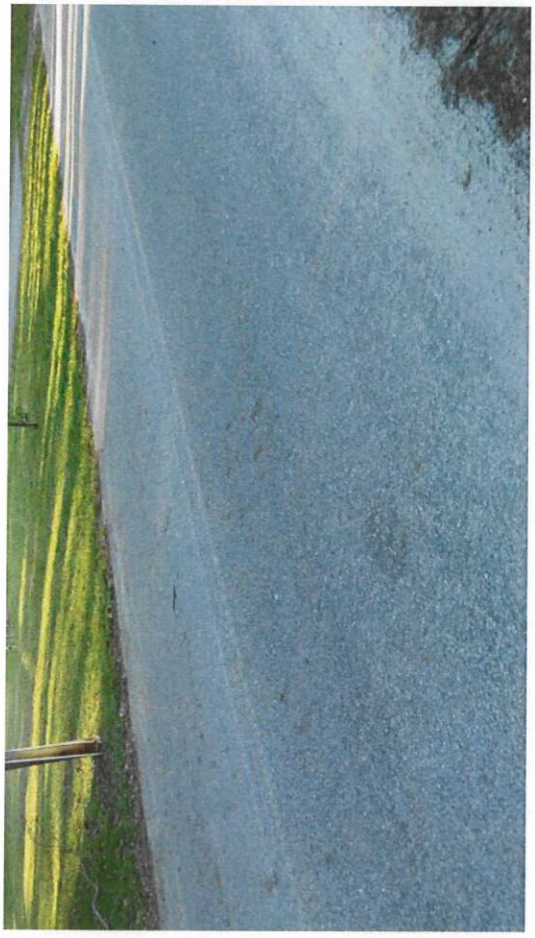


Marie Street

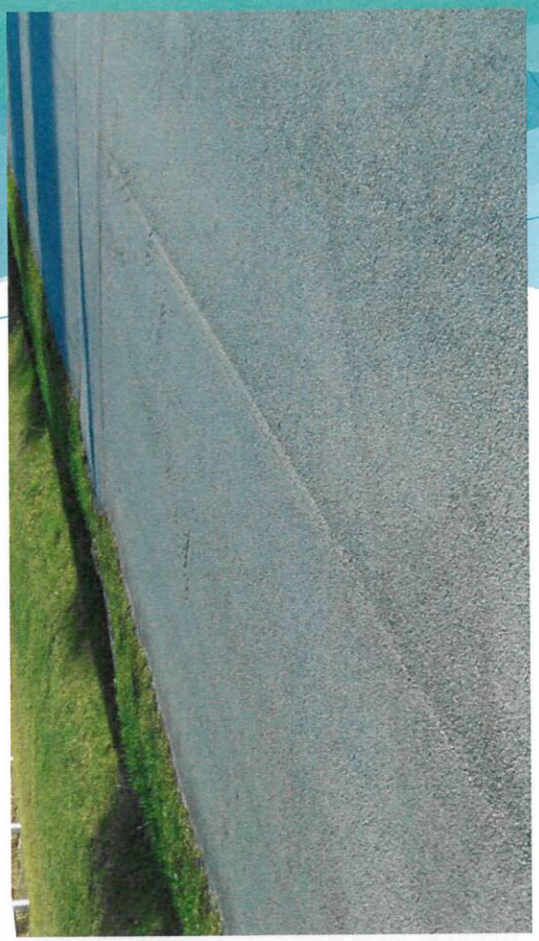
Asphalt Pavement Inspection Photos

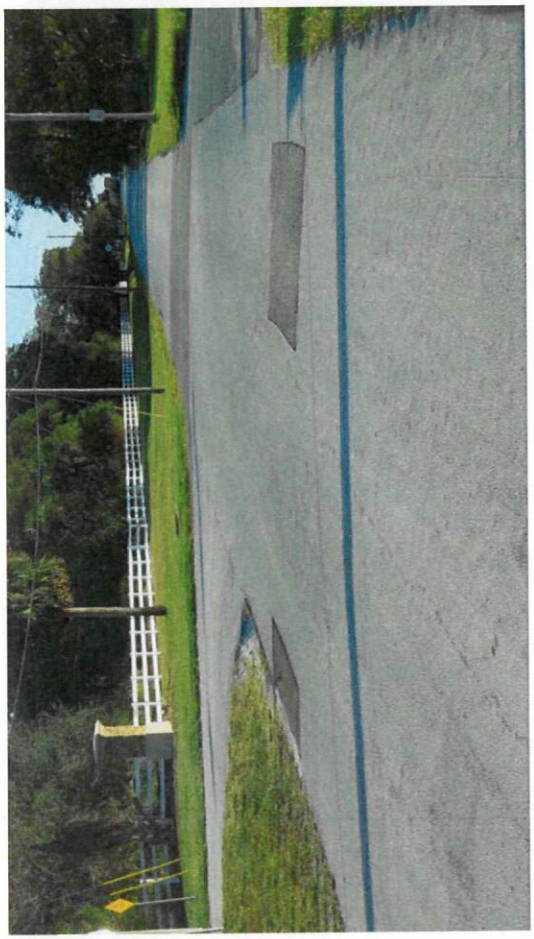

Malabar Rd
Marie St
STOP





SLOW





Oak Harbour Lane

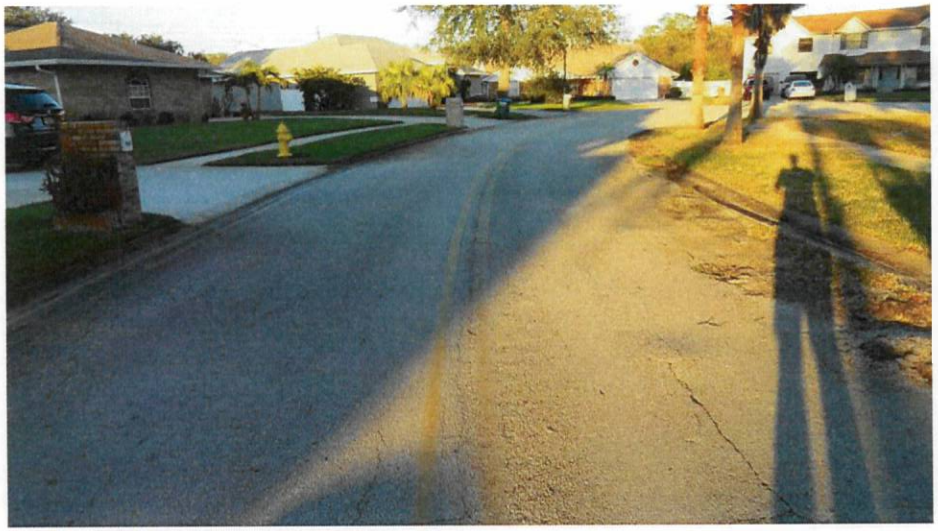
Asphalt Pavement Inspection Photos

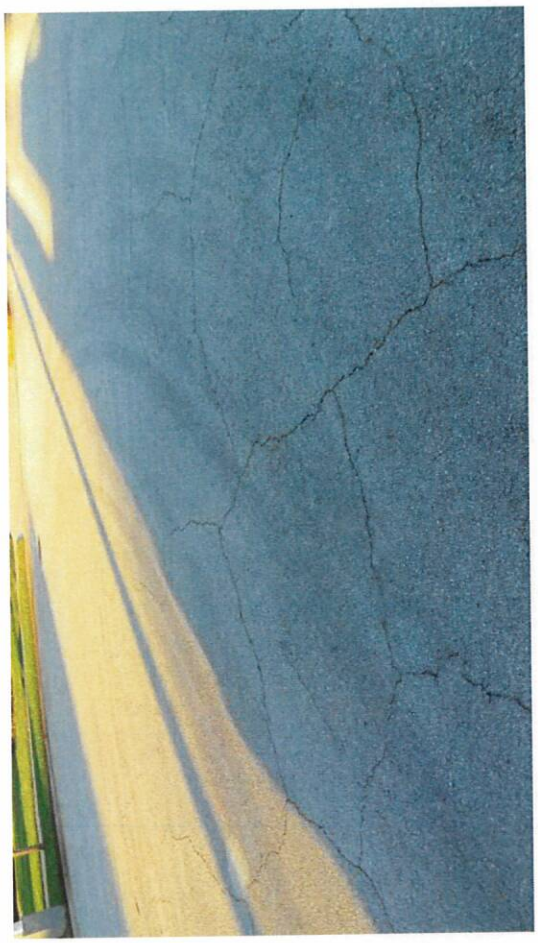
OAK HARBOUR LN

Oak Tree Place

Asphalt Pavement Inspection Photos


OAK TREE
PLACE

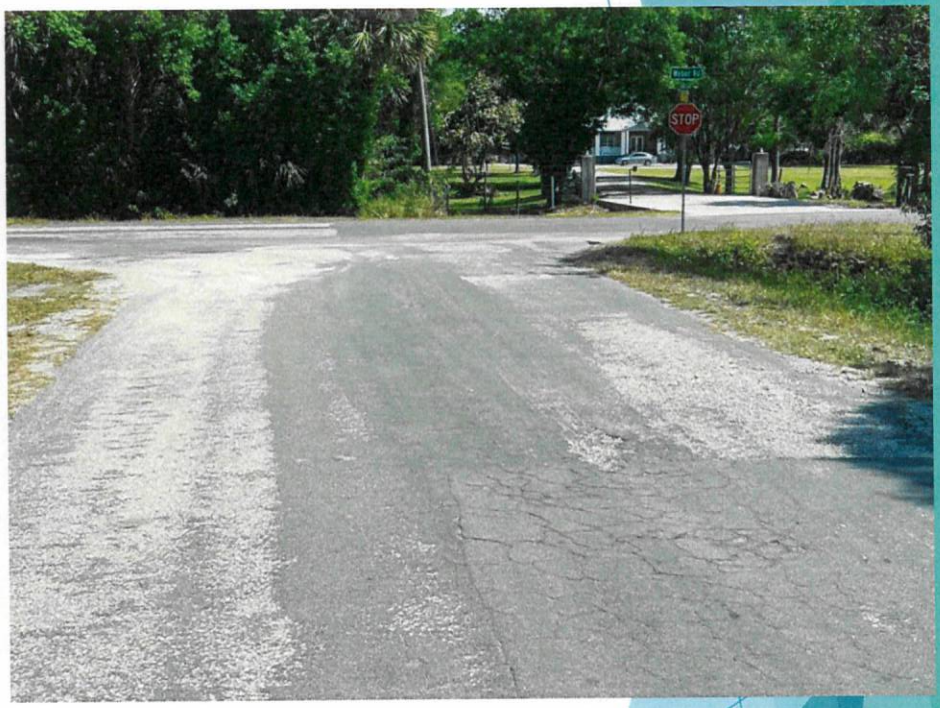


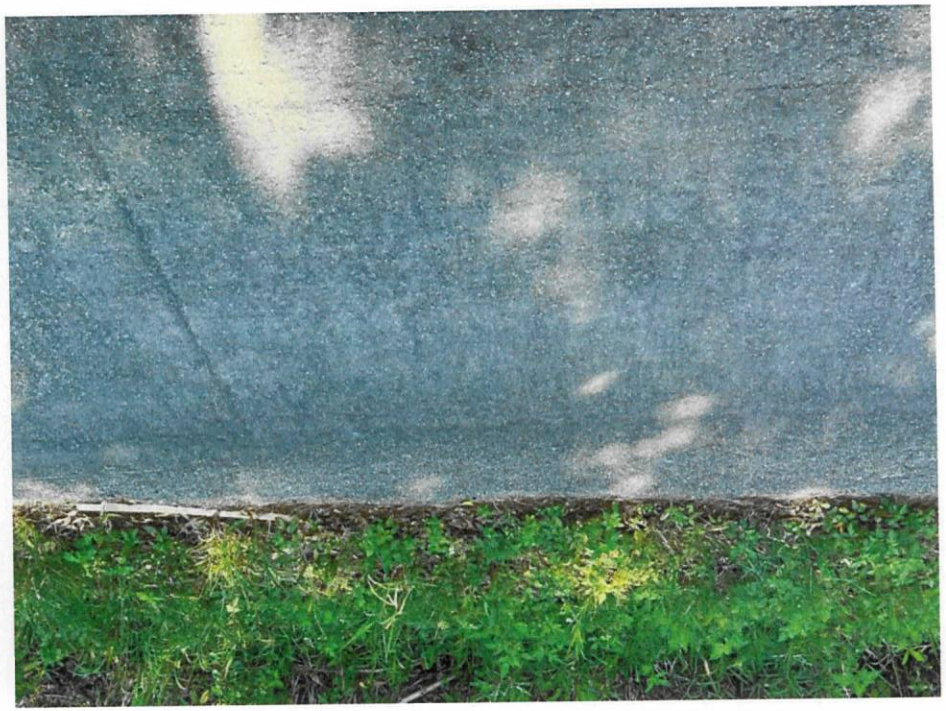


Old Mission Road

Asphalt Pavement Inspection Photos

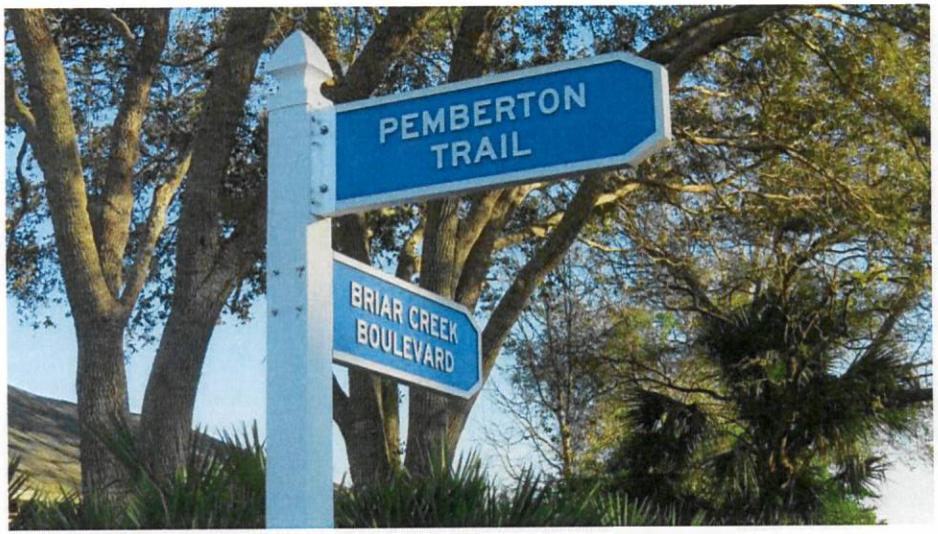

Old Mission Rd
NO OUTLET

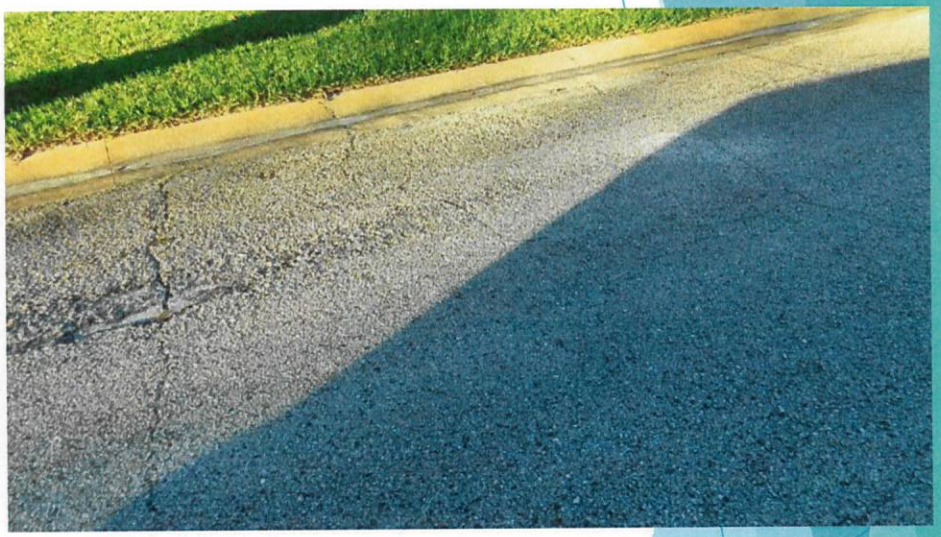

STOP

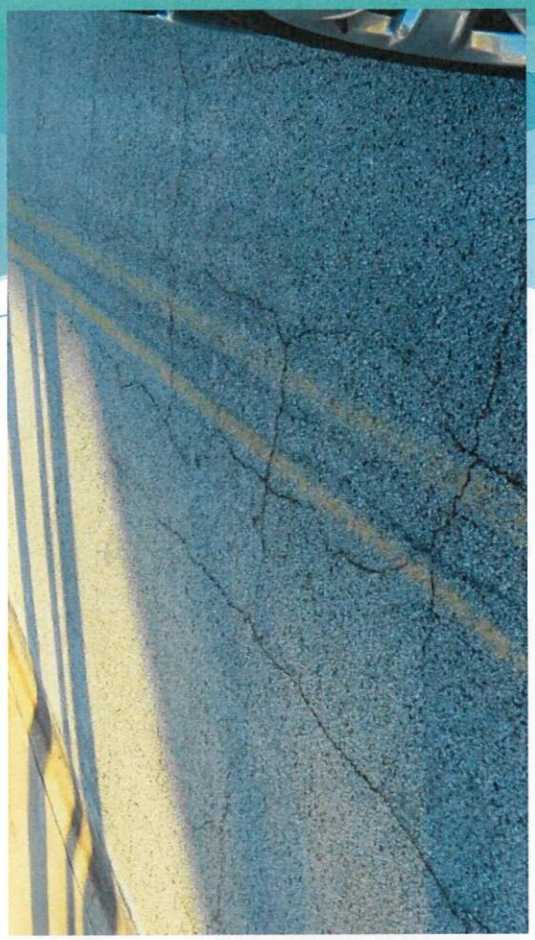


Pemberton Trail & Bluff View Place

Asphalt Pavement Inspection Photos

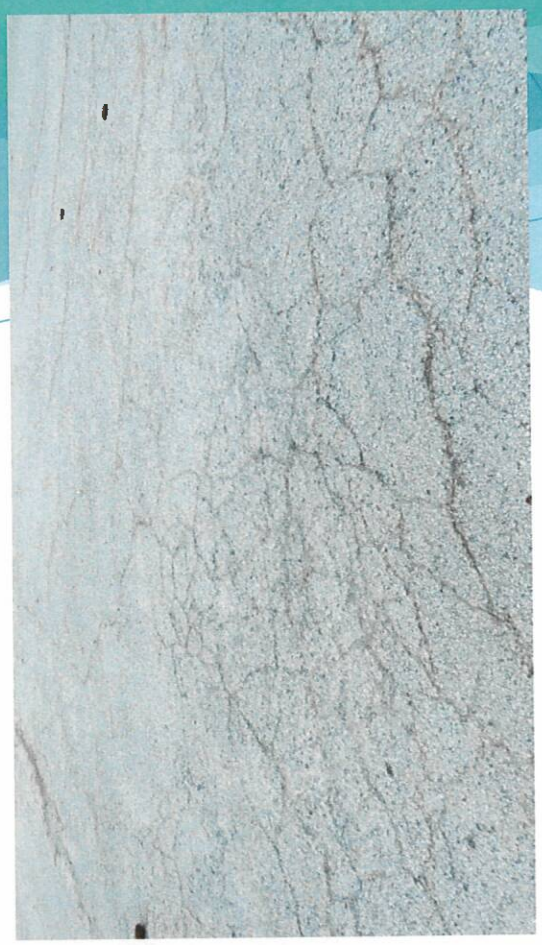

PEMBERTON
TRAIL
BRIAR CREEK
BOULEVARD





Reef Place

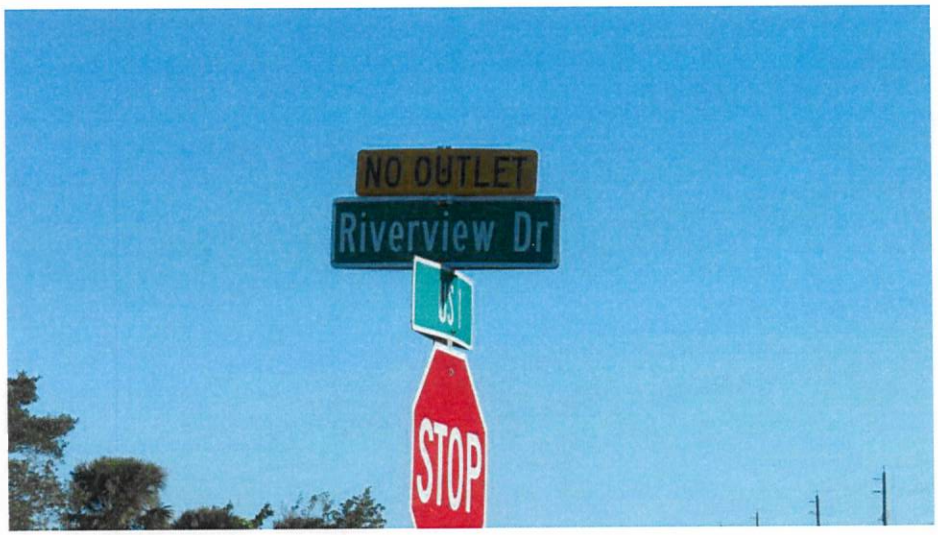
Asphalt Pavement Inspection Photos




REEF PL

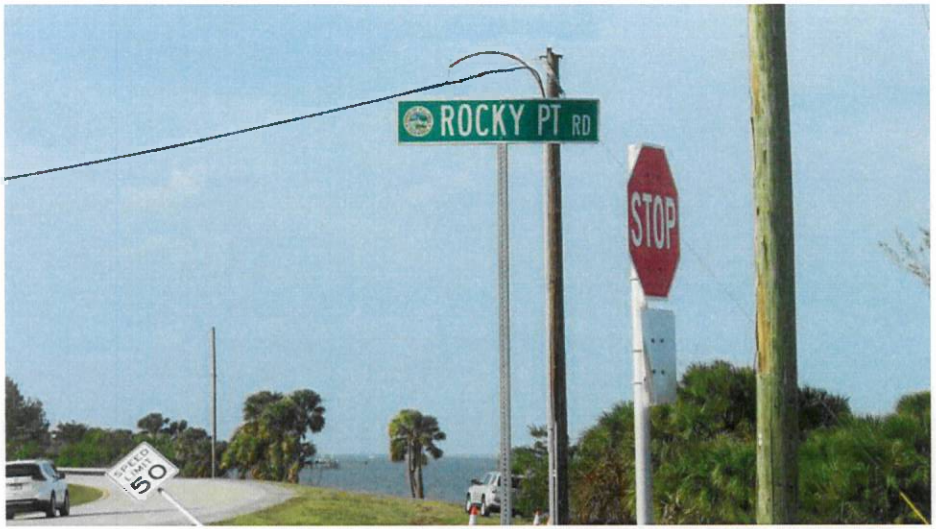
Riverview Drive

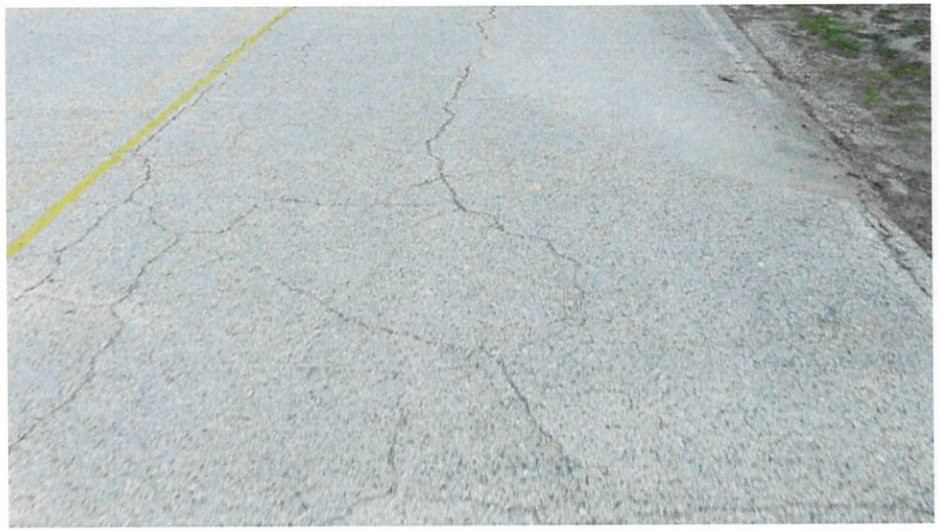
Asphalt Pavement Inspection Photos

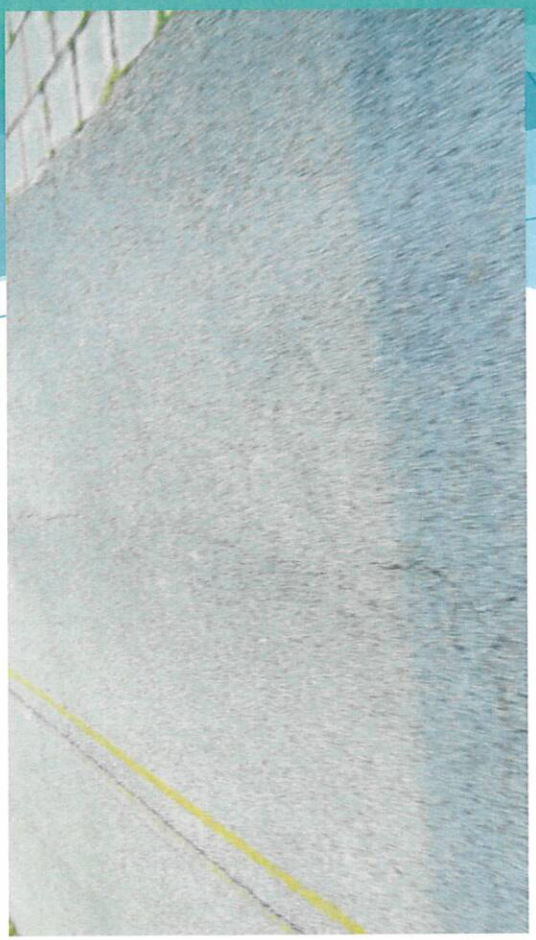

NO OUTLET
Riverview Dr
ST
STOP

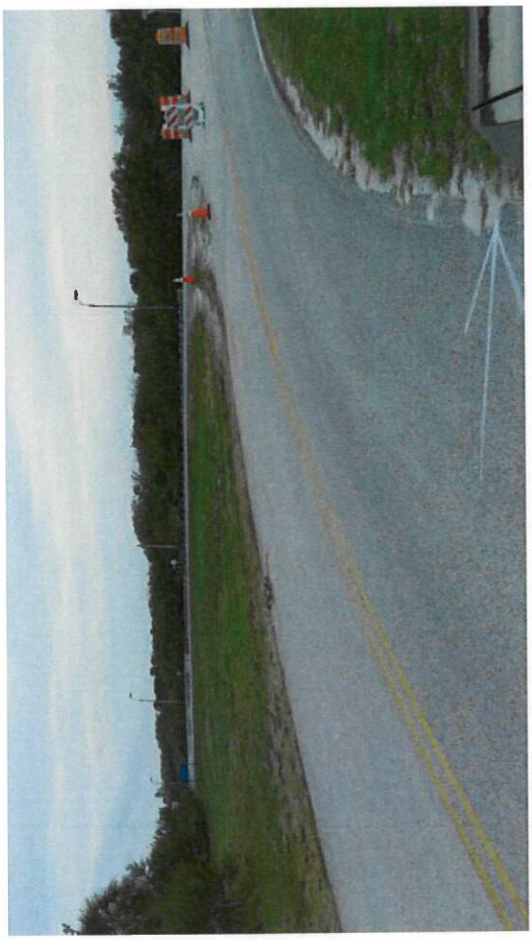
Rocky Point Road

Asphalt Pavement Inspection Photos


ROCKY PT RD
STOP
SPEED LIMIT
50







Smith Lane

Asphalt Pavement Inspection Photos

Smith Ln
NO OUTLET
Stop

Steeplechase Circle

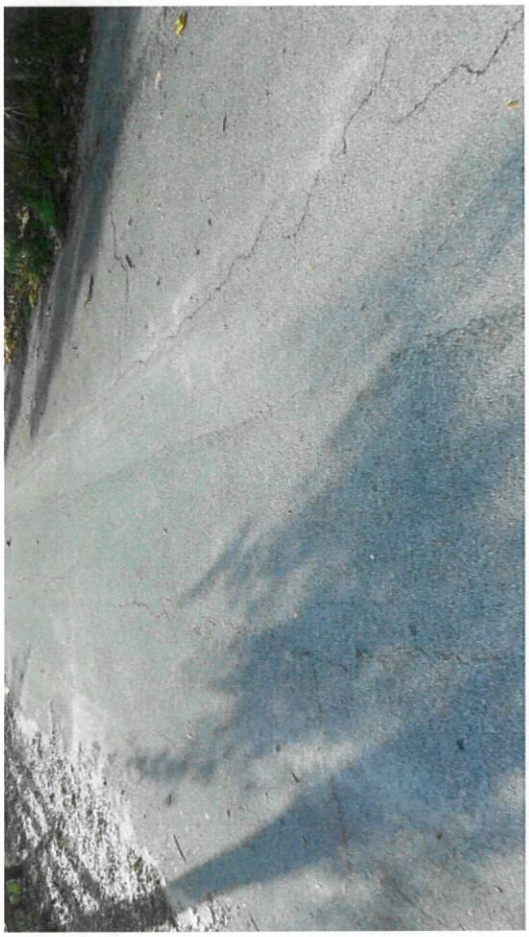
Asphalt Pavement Inspection Photos


STEEPLECHASE
CIRCLE

Township Road

Asphalt Pavement Inspection Photos


Township Rd
STOP

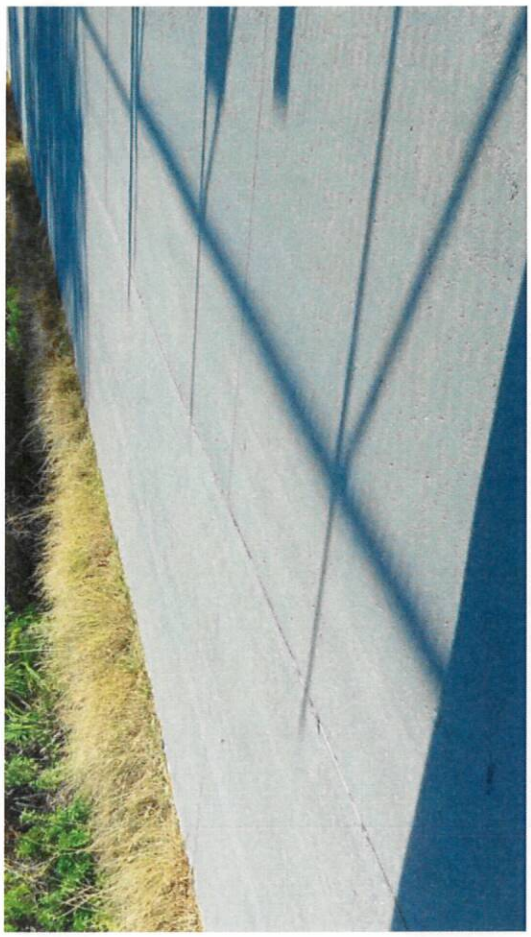


W Railroad Avenue

Asphalt Pavement Inspection Photos


W Railroad Ave
STOP
RAIL ROAD CROSSING
DO NOT STOP ON TRACKS
BREVARD COUNT
SHERIFF'S OFFIC
MALABAR
SUB-STATIO
SHERIFF
WAYNE IV
TOWN OF MAL


STOP

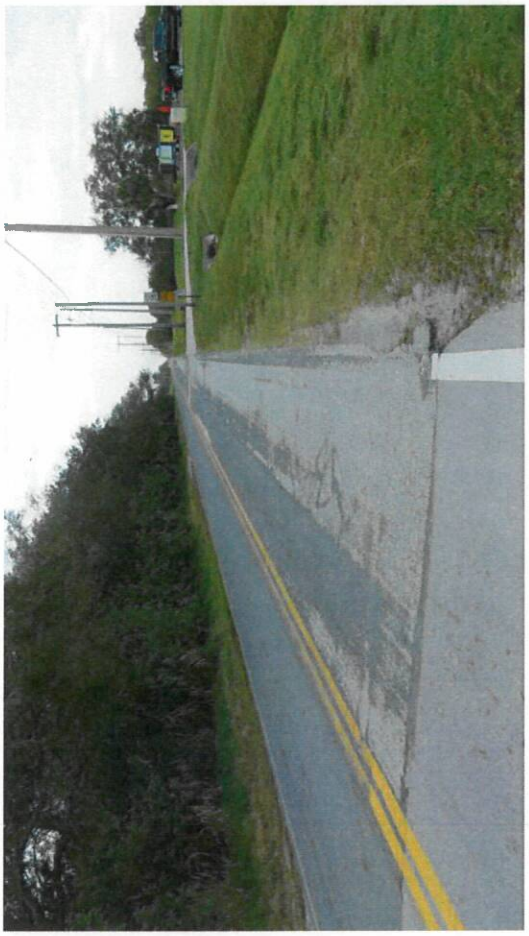


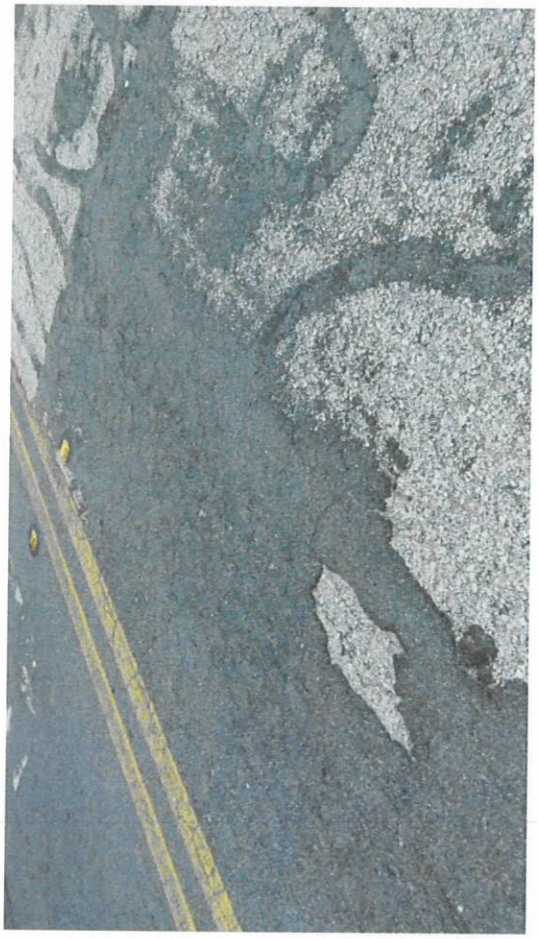
Weber Road

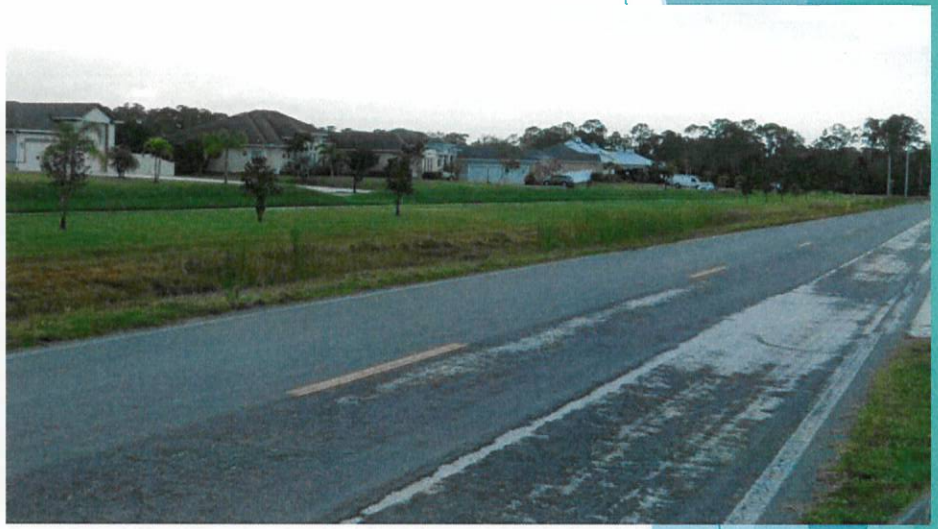
Asphalt Pavement Inspection Photos


STOP
Malabar Rd
Weber Rd


STOP







STOP


SPEED LIMIT
35
Grant-Valkaria