Hernando County Major Roadway Network Quality/Level of Service Analysis

DRAFT

METROPOLITAN PLANNING ORGANIZATION
HERNANDO / CITRUS

5/20/2026

Introduction

This memorandum documents the Quality/Level of Service (Q/LOS) analysis for the major roadway network in Hernando County within the Hernando/Citrus MPO planning area. The analysis reflects the Florida Department of Transportation (FDOT) 2023 Multimodal Quality/Level of Service Handbook and the updated generalized service volume framework applied to the 2025 and projected 2030 roadway network.

This memorandum is intended to support planning-level decision-making and is consistent with the FDOT Q/LOS Handbook, adopted Hernando Citrus MPO Congestion Management Process (CMP), and other MPO planning documents. The analysis is appropriate for generalized planning applications, future-year assessments, and systemwide screening. It is not intended to replace detailed operational analysis for corridor studies, traffic operations, design, or project development.

Methodology

The analysis follows the methodology presented in the FDOT 2023 Multimodal Quality/Level of Service Handbook. At a generalized planning level, the handbook identifies Florida's Generalized Service Volume Tables (GSVTs) as the primary tool for motorized vehicle LOS analysis. The handbook states that the GSVTs are intended for systemwide, areawide, and future-year planning analyses where precise operational results are not required.

Under the current methodology, the first step is to identify the appropriate roadway type and segment each facility into logical analysis lengths. The handbook distinguishes among freeways, uninterrupted flow highways, and arterials. For non-limited access highways and arterials, the analysis uses FDOT Context Classification as a core organizing characteristic. Context classifications range from C1 Natural and C2 Rural to C5 Urban Center and C6 Urban Core. Highway and arterial GSVTs are organized by context classification rather than area type because that approach better reflects varied operating environments across the state.

For each roadway segment, the analyst identifies the applicable context classification, number of through lanes, posted speed, and other relevant roadway, traffic, and control characteristics. Existing or forecast traffic demand is then compared against the applicable generalized service volume thresholds to determine LOS. The handbook further explains that all service volumes are first calculated for the peak hour in the peak direction, with two-way peak hour and daily volumes derived using the FDOT standard directional distribution factor and K factors.

For arterials, LOS is tied primarily to average travel speed relative to base free-flow speed rather than to simple capacity alone. The handbook emphasizes that arterial LOS is strongly influenced by signal spacing, progression, cycle length, and effective green ratio. For freeways, LOS is based on density. For uninterrupted flow highways, density is also a core measure. This distinction is important because roadway segments with similar traffic volumes can perform differently depending on their facility type, signal environment, and context classification.

The base year traffic data used for this analysis is 2024 Annual Average Daily Traffic (AADT). Future-year traffic volumes were developed using recent observed traffic count trends. In general, a five-year regression model was used to project future AADT based on available historic count data. Where a consistent multi-year count record was not available, a flat annual growth rate of 2 percent was applied as a reasonable planning assumption. This approach provided a consistent method for forecasting future traffic volumes across the study network while still allowing the analysis to reflect corridor-specific trends where sufficient data existed. The workbook Dashboard and LOS sheets indicate that annual forecast volumes were developed and applied at the segment level for the planning analysis.

Special attention was given to segments that showed a declining traffic trend in the forecast years. Traffic conditions during the COVID-19 period and the immediate post-COVID recovery period introduced irregular patterns that could distort a trend line if applied without review. To avoid overstating traffic decreases that may reflect temporary disruption rather than long-term change, an additional screening step was applied before allowing a segment to forecast downward. A decrease in future traffic was allowed only when both of the following conditions were met: the regression slope for the 2020 to 2024 period was negative, and at least three of the four year-to-year changes within that period were decreases. If both conditions were not met, the forecast was constrained so that each future year was greater than or equal to the previous year. In other words, the forecast was not permitted to decline unless the recent count history showed a clear and sustained downward pattern. This step was used to reduce the influence of abnormal short-term fluctuations and to produce forecasts that are more appropriate for long-range planning.

The handbook also describes several planning-level assumptions and limitations that are relevant to this memorandum. These include the use of generalized statewide average inputs, the assumption that queue spillback is not a controlling condition, and the expectation that the GSVTs should not be used for detailed design or operational analysis when volumes are near or above capacity. In the same way, the forecasting approach used in this memorandum should be understood as a planning-level estimate rather than a prediction of exact future traffic on each segment. The use of regression-based trend forecasting and a default 2 percent annual growth rate provides a practical and internally consistent basis for countywide screening, but it does not fully capture every corridor-specific influence, such as major land use changes, network modifications, project timing, or localized operational effects. As a result, the forecasts are intended to support reasonable long-range comparison across the network rather than to predict exact future traffic volumes on any individual segment.

Context Classification Framework

The 2023 handbook treats context classification as a primary input for highway and arterial LOS analysis. The context classes used by FDOT are listed below and illustrated in Figure 1 and are applied to each roadway segment using the adopted or approved county and FDOT context framework. This classification plays into developing the design criteria most appropriate to best meet the various mobility needs along the roadway.

Florida Department of Transportation Context Classification Criteria

The context classification system is broken down into the following 8 classifications with the following descriptions:

Context Classification	Description
C1 – Natural	Lands preserved in a natural or wilderness condition. Not intended for future development.
C2 – Rural	Sparsely settled lands. Could be developed in the future.
C2T – Rural Town	Town area immediately surrounded by rural and natural areas
C3R – Suburban Residential	Residential area uses within large blocks and sparse roadway system.
C3C – Suburban Commercial	Nonresidential use with large building footprints and large parking lots within large blocks or sparse roadway network
C4 – Urban General	Mix of the uses set within a small block with a well-connected roadway. Connects to residential neighborhoods.
C5 - Urban Center	Mix of uses set within small blocks that have a well-connected roadway network. Concentrated around a few blocks. Identified as a civic or economic center.
C6 – Urban Core	Area with the highest densities of building heights. And classified as a large, urbanized area. Buildings have a mixed use; they are built up to the roadway and are in a well-connected roadway network.

Figure 1: FDOT Context Classification System

County Roadway Network Overview

The Hernando County roadway network within the MPO planning area includes a mix of state highways, county-maintained roadways, and limited-access facilities that together provide regional mobility, intercounty connectivity, and local access to established and emerging activity areas. Based on the dashboard segment set used for this Quality/Level of Service analysis, the evaluated network includes approximately 335.0 centerline miles and 875.0 lane miles in 2025. These totals provide the basis for the summaries used throughout this memorandum.

Based on the established methodology, FDOT context classifications were identified throughout the network. The largest share of roadway mileage is located within C2 Rural context, with approximately 186.8 centerline miles and 408.1 lane miles. C3R Suburban Residential accounts for about 70.1 centerline miles and 195.5 lane miles, while C3C Suburban Commercial accounts for about 66.9 centerline miles and 248.9 lane miles. Smaller portions of the network are classified as C1 Natural or C2T Rural Town.

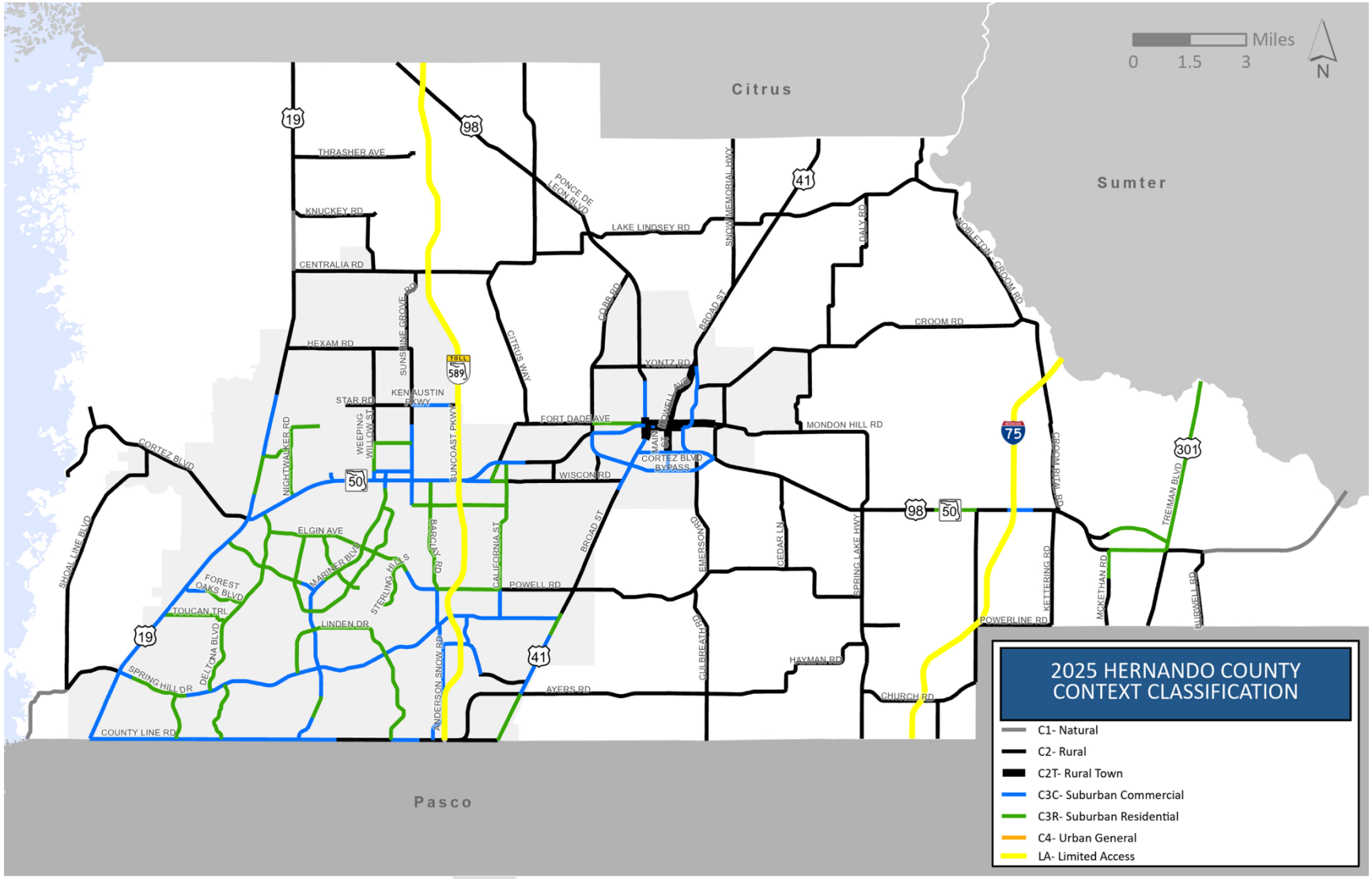

Figure 2: Hernando County Roadway Network by Context Classification

The evaluated network is weighted toward county-maintained facilities. County roadways account for approximately 254.2 centerline miles and 584.4 lane miles, while state roadways account for approximately 51.5 centerline miles and 171.5 lane miles. The remaining mileage consists of segments without a mapped ownership value in the dashboard lookup.

The network also reflects a range of roadway configurations and facility types. Undivided roadway segments account for about 237.6 centerline miles and 475.1 lane miles, while divided roadways account for about 93.2 centerline miles and 384.4 lane miles. One-way and other configurations make up the remaining small share of the analyzed mileage.

The network primarily consists of two-lane roadways, which account for about 244.5 centerline miles and 488.9 lane miles. Four-lane facilities account for about 78.5 centerline miles and 314.1 lane miles, and six-lane facilities account for about 12.0 centerline miles and 72.0 lane miles.

In lane-mile terms, the roadway inventory remains heavily weighted toward two-lane facilities, but four-lane and six-lane corridors represent a larger share of carrying capacity because each centerline mile contributes multiple lane miles. This distinction is important for planning because lane miles better reflect the carrying capacity represented by each corridor.

Several facilities stand out as the most significant corridors in the study network. US 19 (SR 55) is the largest corridor by lane mileage, followed by Lake Lindsey Rd, Cortez Blvd (SR 50), Cortez Blvd (US 98/SR 50), Spring Hill Dr, Powell Rd, and Broad St (US 41/SR 45). These corridors provide the major framework for interpreting countywide Q/LOS results and identifying locations where constrained conditions are most concentrated.

Adopted Level of Service

Hernando County has an adopted level of service standard that serves as the benchmark for interpreting roadway performance in this analysis. Under the County's adopted standard, roadway levels of service for peak-hour traffic volume are generally D for County roadways within the Adjusted Urbanized Area and for other County roadways, and C for state roads, or as otherwise established by FDOT for state roads on the Strategic Intermodal System. This adopted standard provides the basis for distinguishing between facilities that are performing acceptably and those that fall below the applicable planning benchmark. In that way, the adopted level of service standard is a key point of reference for understanding the countywide Q/LOS results, identifying where constrained conditions occur, and evaluating the overall extent of roadway performance deficiencies across the major roadway network. The adopted level of service standard on the roadway network is shown on Figure 5.

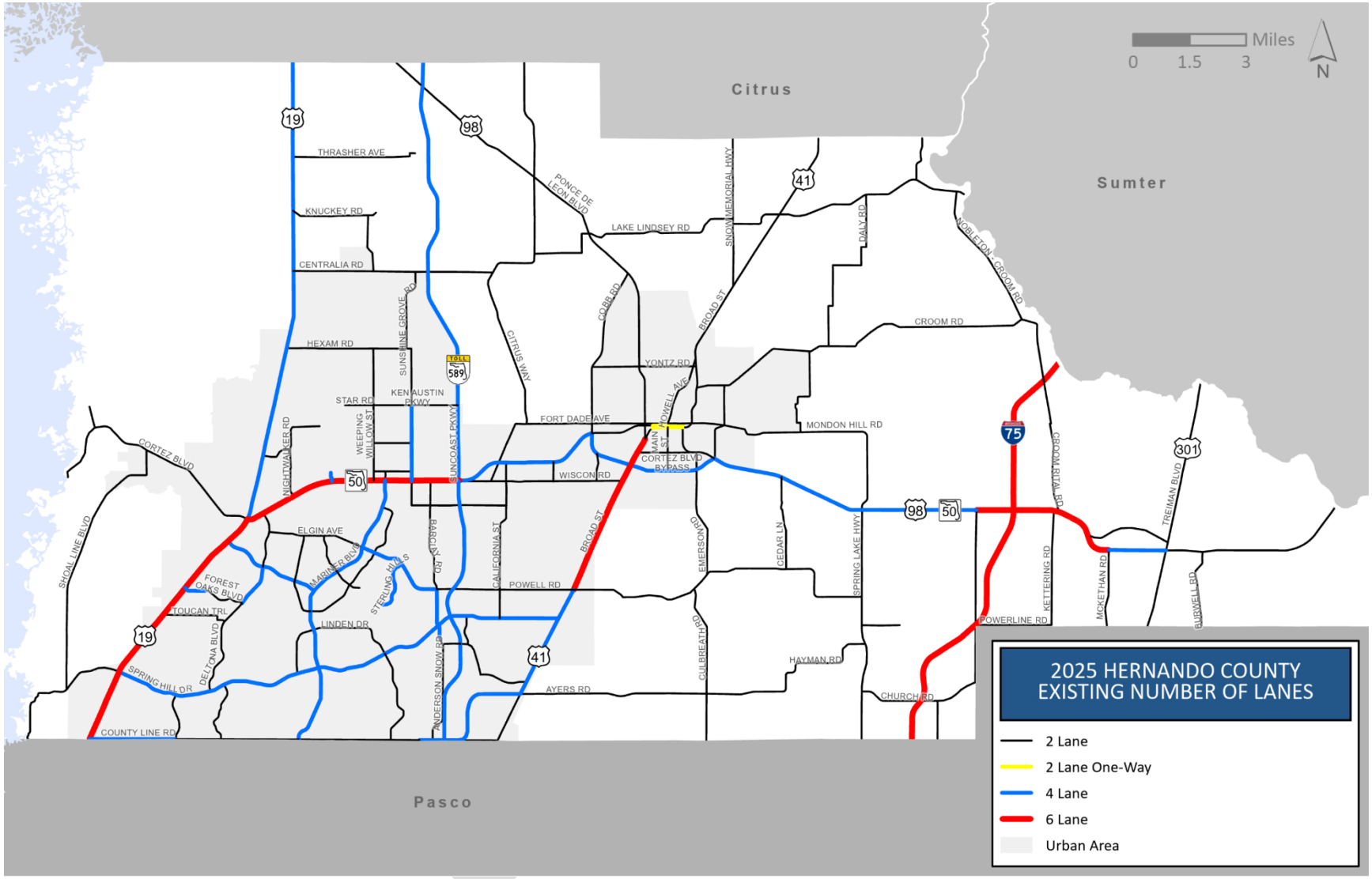

Figure 3: 2025 Hernando County Roadway Network by Number of Lanes

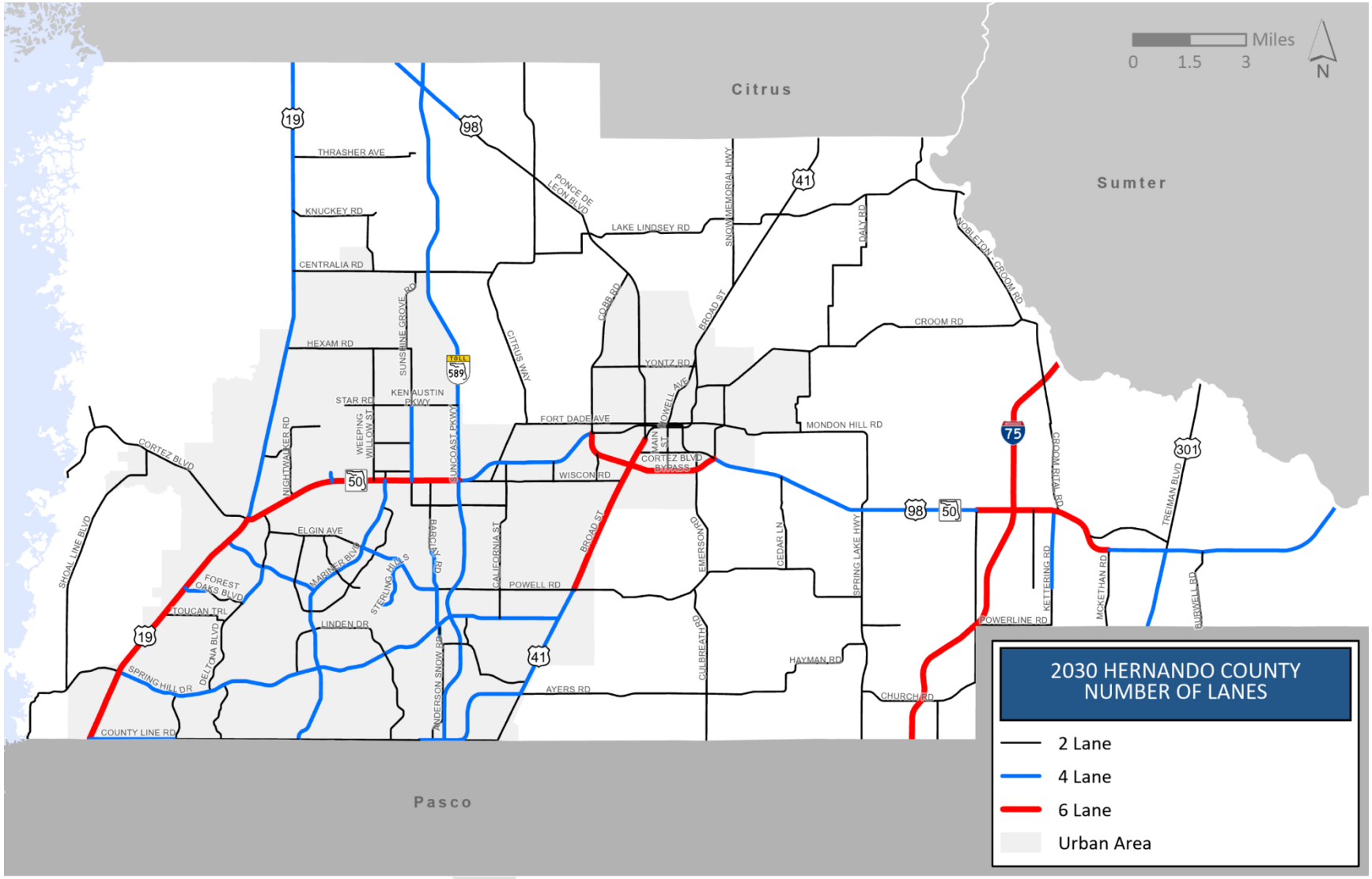

Figure 4: 2030 Hernando County Roadway Network by Number of Lanes

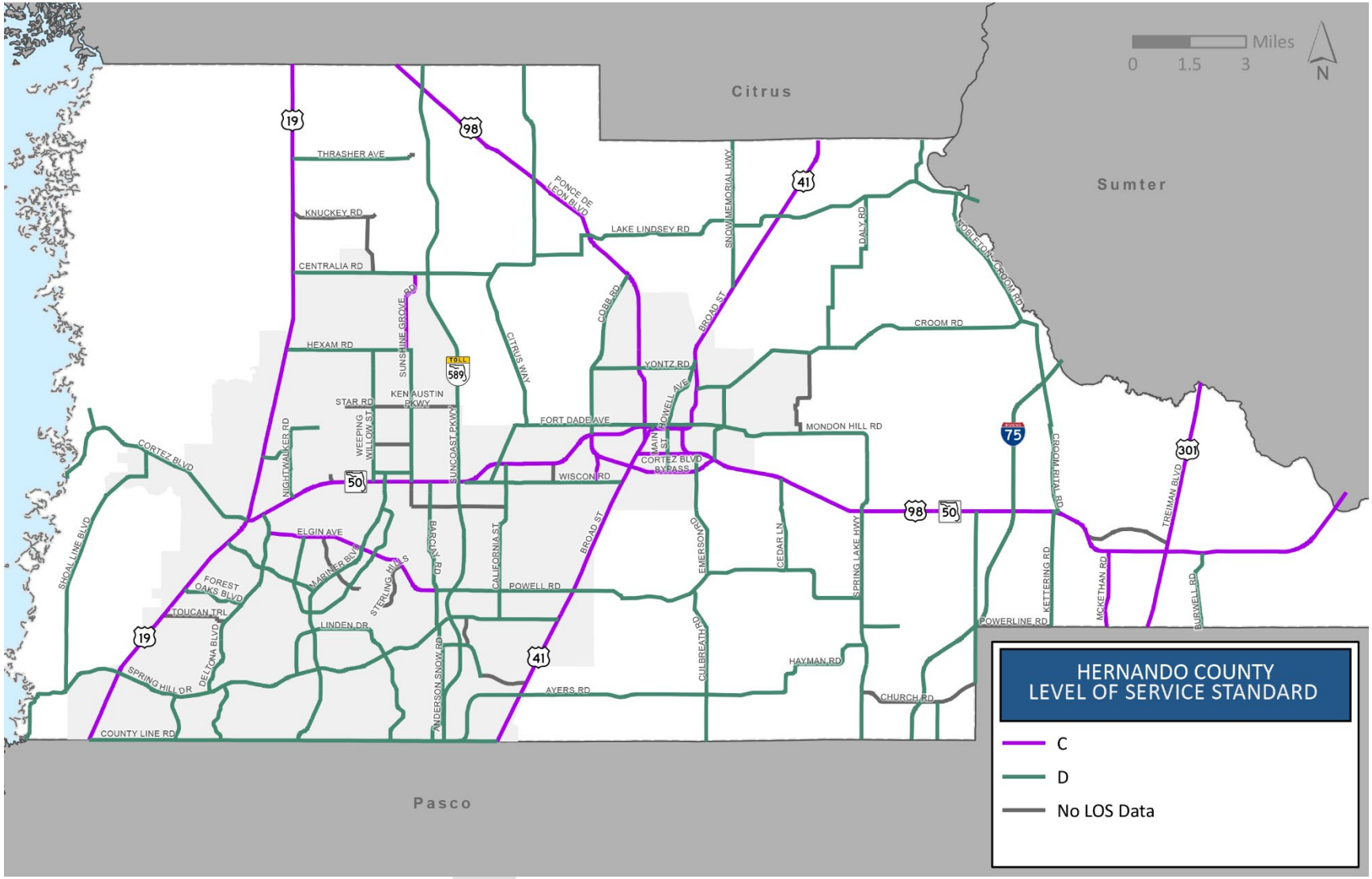

Figure 5: Hernando County Adopted Level of Service Standard

2025 Quality/Level of Service Analysis

In 2025, the roadway network totals approximately 335.0 centerline miles and 875.0 lane miles. Of that total, approximately 14.8 centerline miles and 35.4 lane miles are calculated at LOS E or F, equivalent to about 4.4% of total centerline miles and 4.0% of total lane miles. This indicates that constrained conditions are present but remain limited to a relatively small share of the system as a whole.

The 2025 base year traffic volumes across the network are shown on Figure 6.

Most of the network operates at LOS B, C, or D in 2025. Together, those categories account for approximately 320.2 centerline miles and 839.6 lane miles, which is about 95.6% of centerline miles and 96.0% of lane miles in the analyzed network. Among those categories, LOS C represents the largest share of the system, accounting for about 157.8 centerline miles and 436.4 lane miles, or about 47.1% of total centerline miles and 49.9% of total lane miles. LOS B accounts for about 106.4 centerline miles and 273.3 lane miles, or about 31.8% of centerline miles and 31.2% of lane miles, while LOS D accounts for about 56.0 centerline miles and 129.9 lane miles, or about 16.7% of centerline miles and 14.8% of lane miles.

The more constrained portion of the system is comparatively small in mileage terms. LOS E accounts for about 4.9 centerline miles and 9.8 lane miles, which is about 1.5% of total centerline miles and 1.1% of total lane miles. LOS F accounts for about 9.9 centerline miles and 25.6 lane miles, or about 3.0% of total centerline miles and 2.9% of total lane miles. These percentages help show that most of the system remains in the middle LOS categories, while the most constrained conditions are concentrated on a relatively limited portion of the network.

From a corridor perspective, the most constrained facilities in 2025 are those with the greatest E/F lane-mile totals. County Line Rd accounts for the largest extent of constrained conditions, with about 5.4 E/F centerline miles and 10.7 E/F lane miles. It is followed by US 19 with about 1.2 E/F miles and 7.5 E/F lane miles, Anderson Snow Rd with about 2.8 E/F miles and 5.7 E/F lane miles, Powell Rd with about 2.0 E/F miles and 3.9 E/F lane miles, and Sunshine Grove Rd with about 1.5 E/F miles and 3.0 E/F lane miles. These corridors therefore represent the greatest physical extent of constrained conditions in the 2025 analysis year. The 2025 Q/LOS results across the network are illustrated on Figure 7.

Table 1: 2025 Countywide Quality/Level of Service Summary

Metric	Value
Total centerline miles	335.0
Total lane miles	875.0
LOS E/F centerline miles	14.8
LOS E/F lane miles	35.4
LOS E/F share of centerline miles	4.4%
LOS E/F share of lane miles	4.0%

Table 2: 2025 LOS Distribution by Centerline Miles, Lane Miles, and System Share

LOS	Centerline Miles	% of Centerline Miles	Lane Miles	% of Lane Miles
B	106.4	31.8%	273.3	31.2%
C	157.8	47.1%	436.4	49.9%
D	56.0	16.7%	129.9	14.8%
E	4.9	1.5%	9.8	1.1%
F	9.9	3.0%	25.6	2.9%

Table 3: Corridors with High Rates Below LOS Standard in 2025

Corridor	E/F Centerline Miles	E/F Lane Miles
County Line Rd	5.4	10.7
US 19	1.2	7.5
Anderson Snow Rd	2.8	5.7
Powell Rd	2.0	3.9
Sunshine Grove Rd	1.5	3.0

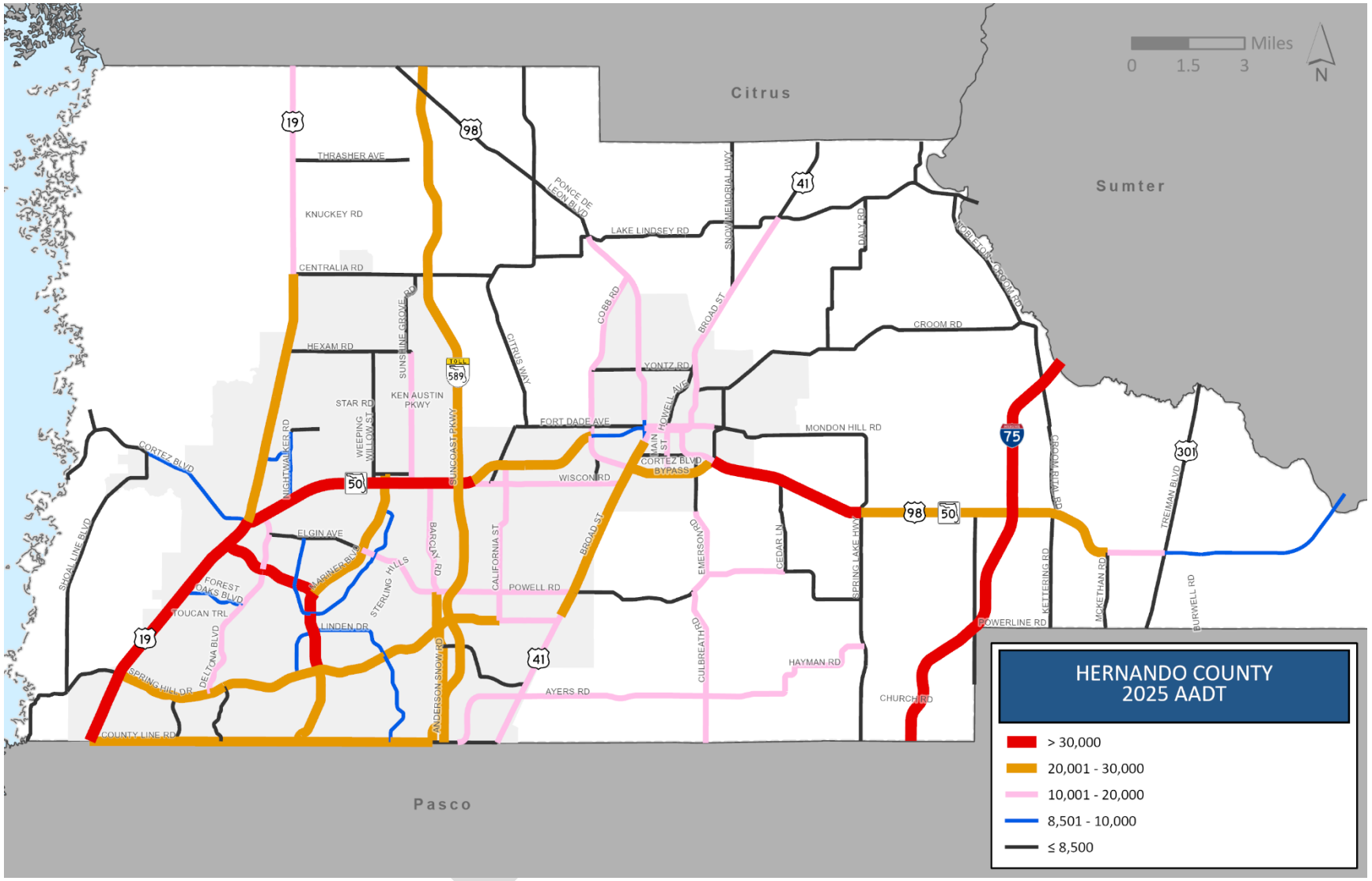

Figure 6: 2025 Average Annual Daily Traffic (AADT)

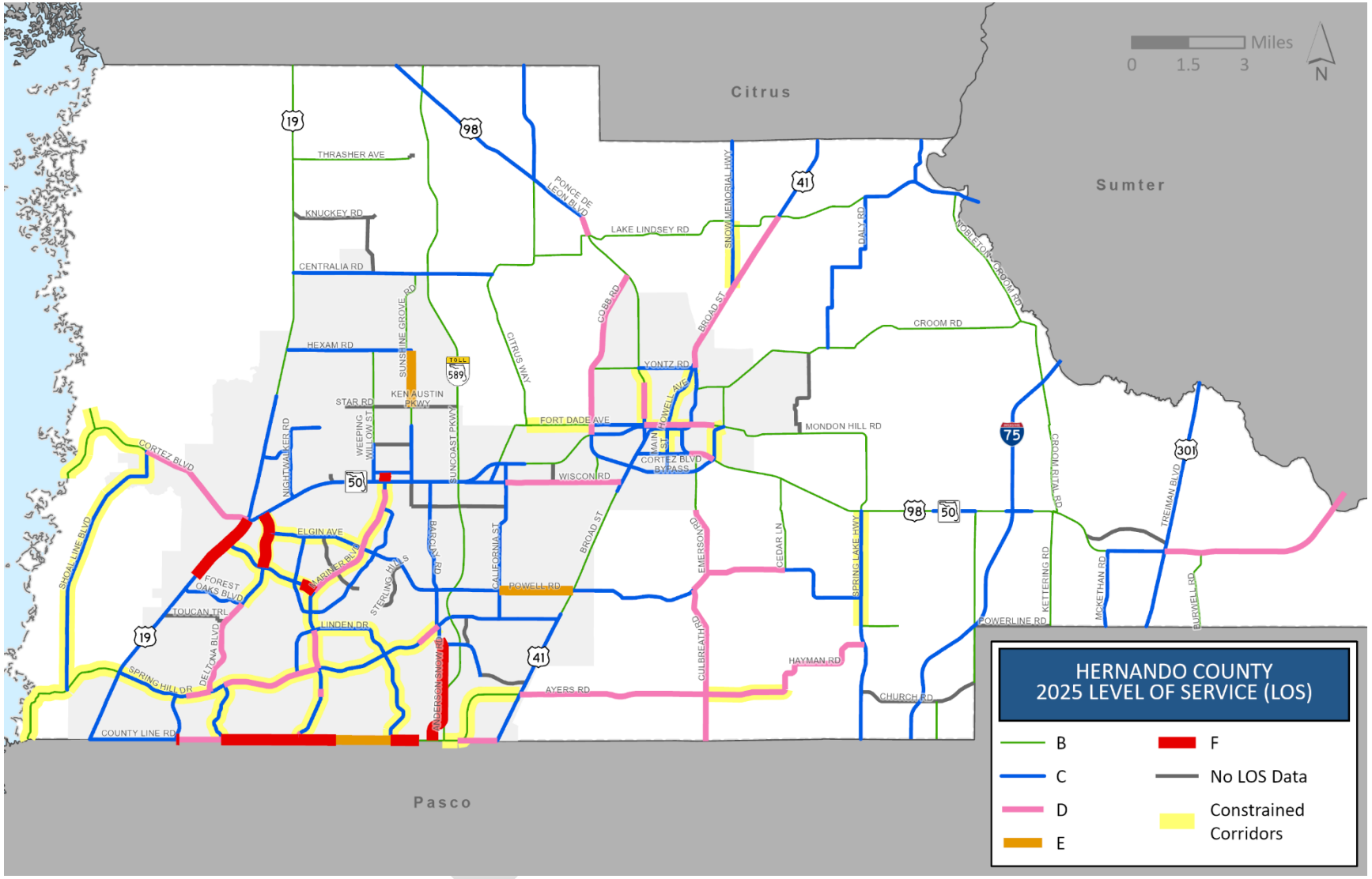

Figure 7: 2025 Hernando County Roadway Quality/Level of Service

2030 Quality/Level of Service Analysis

In 2030, the roadway network totals approximately 335.0 centerline miles and 904.2 lane miles. Of that total, approximately 52.1 centerline miles and 135.5 lane miles are calculated at LOS E or F, equivalent to about 15.6% of total centerline miles and 15.0% of total lane miles. This represents a meaningful increase in the physical extent of constrained conditions compared with 2025.

The 2030 forecasted traffic volumes across the network are shown on Figure 8.

Most of the network continues to operate at LOS B, C, or D in 2030. Together, those categories account for approximately 282.9 centerline miles and 768.7 lane miles, or about 84.4% of centerline miles and 85.0% of lane miles in the analyzed network. As in 2025, LOS C accounts for the greatest share of the system, with about 133.7 centerline miles and 370.4 lane miles, equivalent to about 39.9% of centerline miles and 41.0% of lane miles. LOS B accounts for about 104.0 centerline miles and 273.4 lane miles, or about 31.0% of centerline miles and 30.2% of lane miles, while LOS D accounts for about 45.2 centerline miles and 124.9 lane miles, or about 13.5% of centerline miles and 13.8% of lane miles.

The constrained portion of the system expands in 2030, particularly in LOS E and LOS F. LOS E increases to about 30.5 centerline miles and 64.2 lane miles, which is about 9.1% of total centerline miles and 7.1% of total lane miles. LOS F accounts for about 21.6 centerline miles and 71.3 lane miles, equivalent to about 6.4% of total centerline miles and 7.9% of total lane miles. This makes the increase in constrained conditions clearer than mileage totals alone, because it shows growth across both lower-performing LOS categories.

The corridor rankings indicate that US 19 is the most constrained facility in 2030, with about 4.4 E/F centerline miles and 26.7 E/F lane miles. It is followed by Ayers Rd with about 7.1 E/F miles and 14.2 E/F lane miles, County Line Rd with about 6.5 E/F miles and 12.9 E/F lane miles, Northcliffe Blvd with about 2.7 E/F miles and 10.9 E/F lane miles, and Ponce de Leon Blvd (US 98) with about 3.1 E/F miles and 9.3 E/F lane miles. These corridors therefore represent the greatest physical extent of constrained conditions in the 2030 analysis year. The 2030 Q/LOS results across the network are illustrated on Figure 9.

Table 4: 2030 Countywide Quality/Level of Service Summary

Metric	Value
Total centerline miles	335.0
Total lane miles	904.2
LOS E/F centerline miles	52.1
LOS E/F lane miles	135.5
LOS E/F share of centerline miles	15.6%
LOS E/F share of lane miles	15.0%

Table 5: 2030 LOS Distribution by Centerline Miles, Lane Miles, and System Share

LOS	Centerline Miles	% of Centerline Miles	Lane Miles	% of Lane Miles
B	104.0	31.0%	273.4	30.2%
C	133.7	39.9%	370.4	41.0%
D	45.2	13.5%	124.9	13.8%
E	30.5	9.1%	64.2	7.1%
F	21.6	6.4%	71.3	7.9%

Table 6: Corridors with Significant Rates of Distance Operating Below LOS Standard in 2030

Corridor	E/F Centerline Miles	E/F Lane Miles
US 19	4.4	26.7
Ayers Rd	7.1	14.2
County Line Rd	6.5	12.9
Northcliffe Blvd	2.7	10.9
Ponce de Leon Blvd (US 98)	3.1	9.3

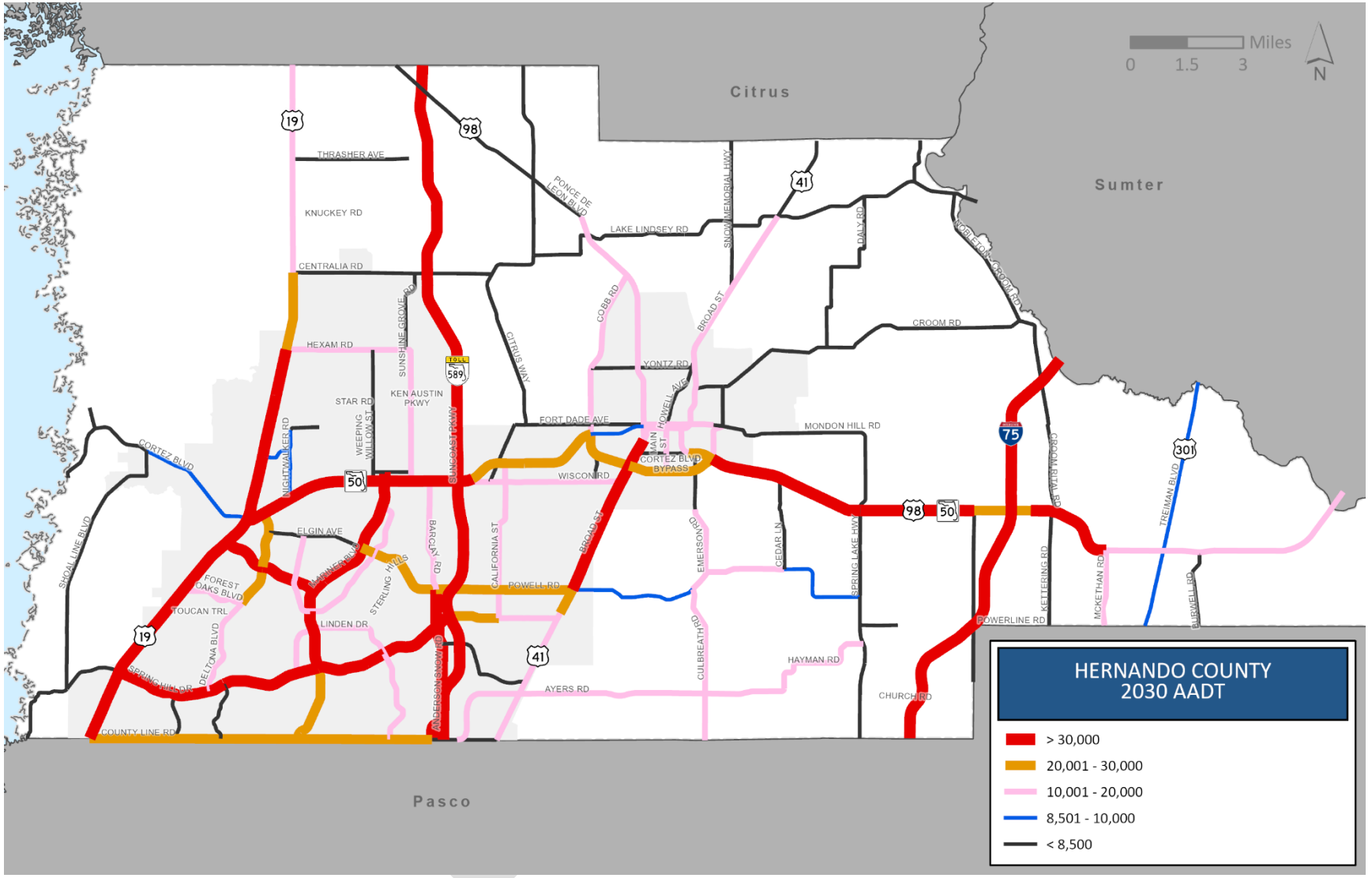

Figure 8: 2030 Forecasted Average Annual Daily Traffic (AADT)

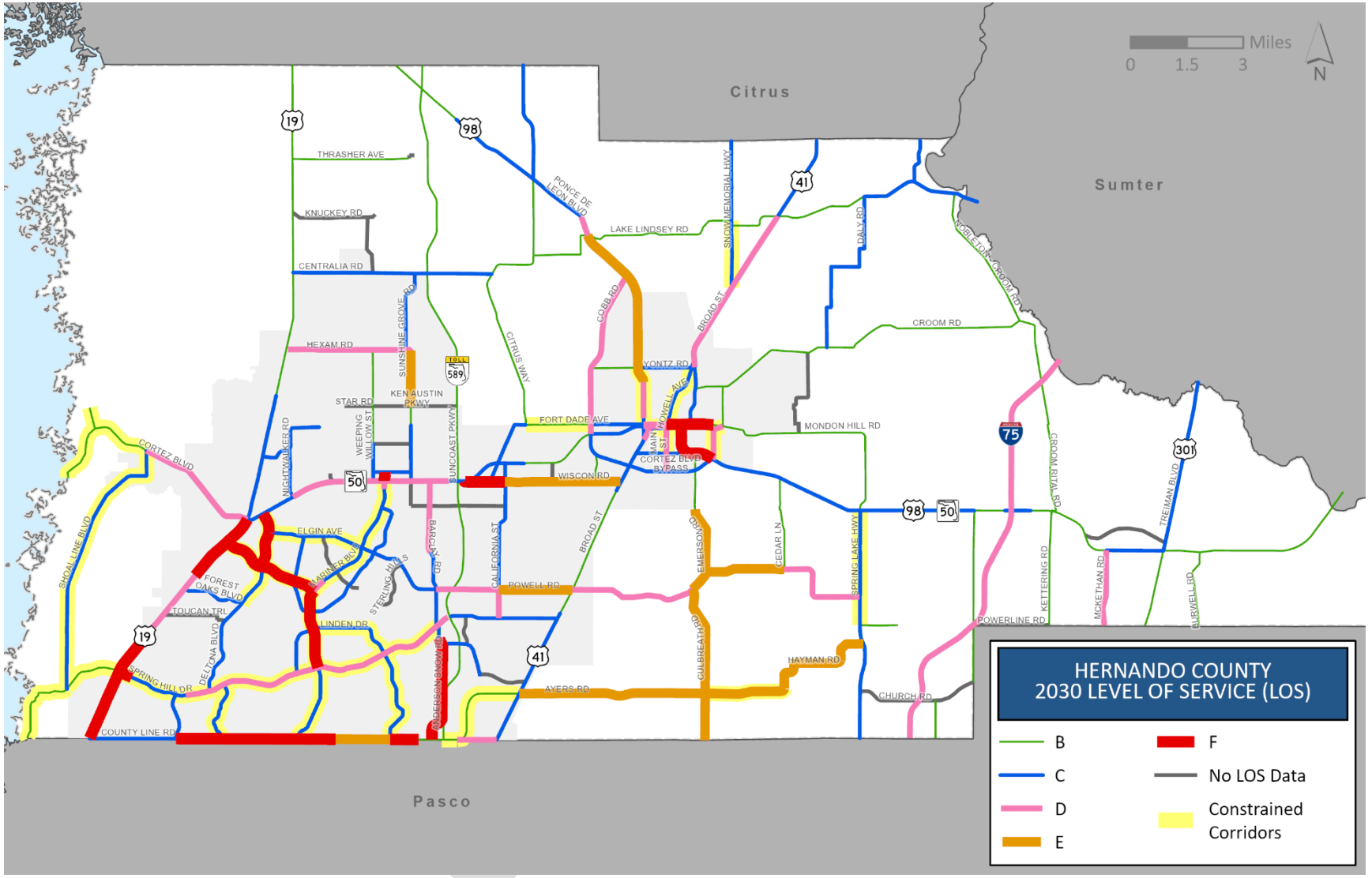

Figure 9: 2030 Forecasted Hernando County Roadway Quality/Level of Service

Key Takeaways

The Hernando County roadway Q/LOS analysis indicates that the majority of the major roadway network continues to operate at or better than the adopted level of service standard in both years. Those corridors that have segments operating at LOS E or F conditions are concentrated on a few facilities. Overall, about 95.6% of centerline miles and 96.0% of lane miles remain in the LOS B through D range in 2025, declining to about 84.4% of centerline miles and 85.0% of lane miles in 2030 as the share operating at LOS E/F increases. Ultimately, systemwide performance is anticipated to remain generally stable in many areas, with a few specific corridors accounting for a disproportionate share of constrained miles.