

Citrus County Major Roadway Network Quality/Level of Service Analysis



DRAFT

Introduction

This memorandum documents the Quality/Level of Service (Q/LOS) analysis for the major roadway network in Citrus 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.

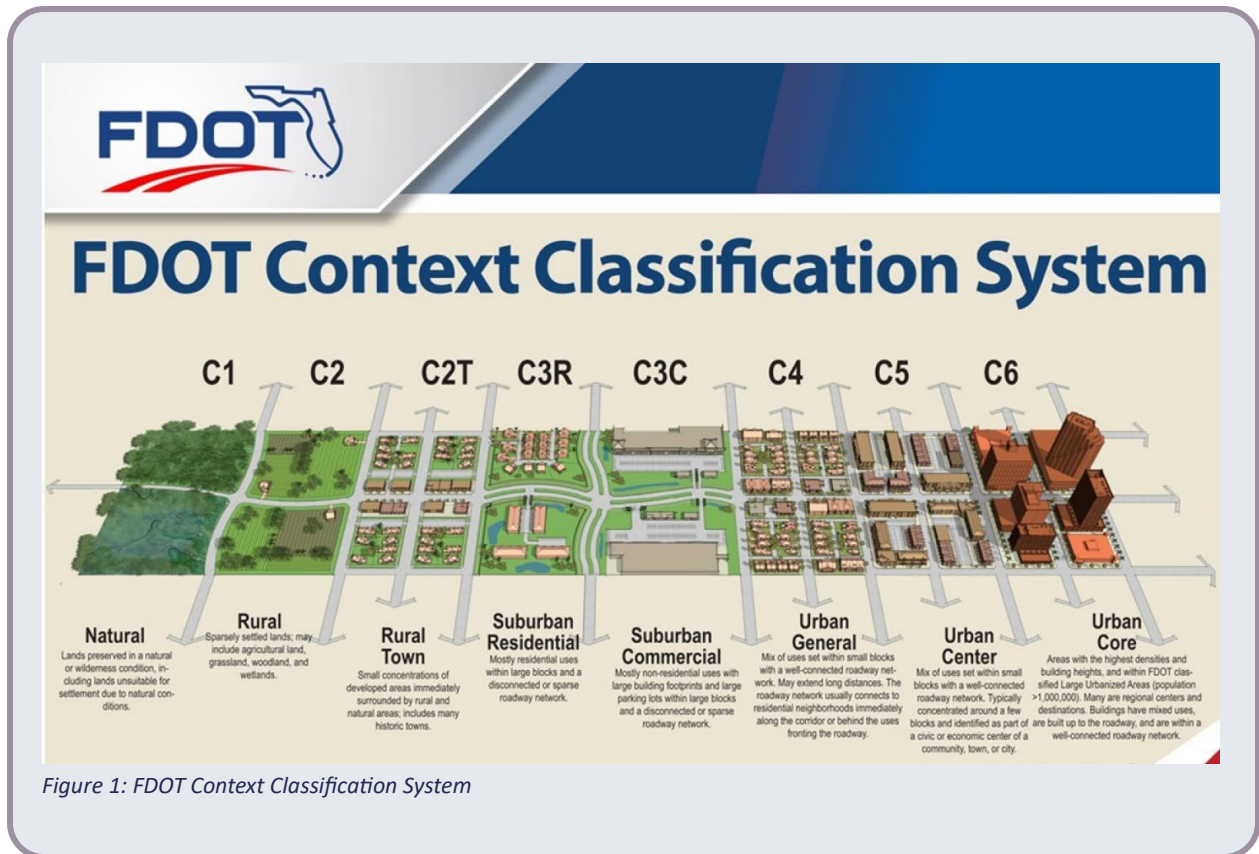
Context Classification Framework

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.



County Roadway Network Overview

The Citrus County major roadway network includes a mix of state highways, county-maintained corridors, and limited-access facilities that together provide regional mobility, local access, and intercounty connectivity. Based on the dashboard segment set used for this Quality/Level of Service analysis, the evaluated system represents approximately 277 roadway segments, 434.3 centerline miles, and 1,100.2 lane miles in 2025. These totals provide the basis for the summaries used throughout this memorandum.

The network spans a range of context classifications, with the largest share of mileage occurring in C2 and C3R settings. Specifically, C2 accounts for approximately 162.4 centerline miles and 343.7 lane miles, while C3R accounts for about 165.7 centerline miles and 357.3 lane miles. C3C accounts for about 76.0 centerline miles and 302.6 lane miles, with smaller portions of the system classified as C1, C2T, or C4.

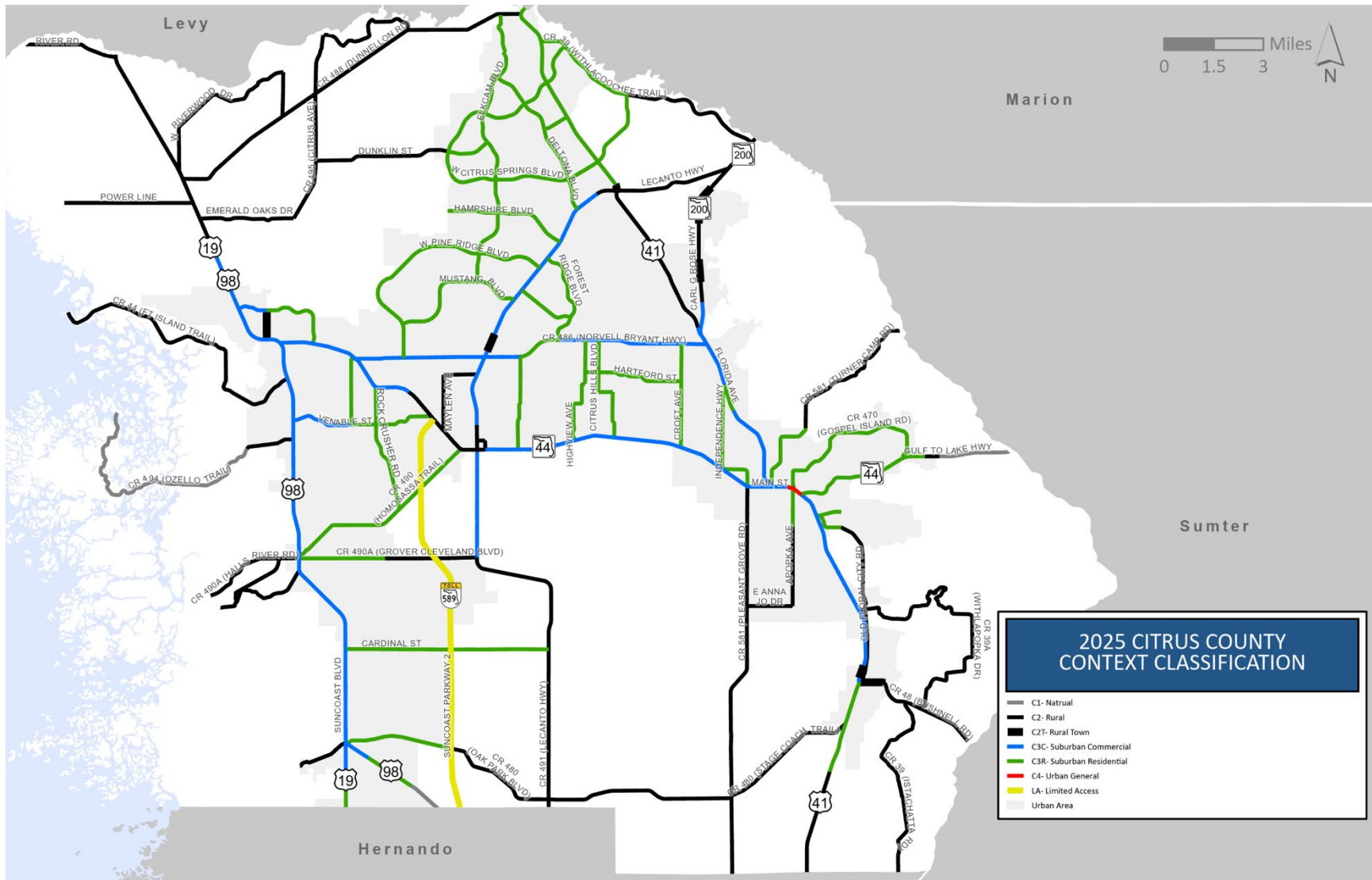


Figure 2: Citrus County Roadway Network by Context Classification

The evaluated network is weighted toward county-maintained facilities. County roadways account for approximately 329.9 centerline miles and 723.1 lane miles. State-maintained facilities account for approximately 103.9 centerline miles and 374.8 lane miles.

In lane configuration terms, the system is dominated by two-lane facilities, which account for approximately 327.8 centerline miles and 655.5 lane miles. Four-lane facilities account for approximately 97.3 centerline miles and 389.3 lane miles, while six-lane facilities account for approximately 9.2 centerline miles and 55.4 lane miles.

Several corridors stand out as the most extensive facilities in the analyzed roadway network. SR 44 (Gulf to Lake Hwy) is the largest corridor by centerline mileage, followed by CR 491 (Lecanto Hwy), US 19/US 98 (Suncoast Blvd), US 41 (Florida Ave), and CR 486 (Norvell Bryant Hwy)..

Taken together, the roadway inventory indicates that Citrus County major roadway network is predominantly county-maintained, heavily weighted toward two-lane facilities by centerline mileage, and distributed across a mix of rural and suburban contexts. These characteristics provide important context for interpreting the Q/LOS results, since constrained conditions on a relatively small number of major corridors can account for a substantial share of lane miles operating below the adopted standard.

Adopted Level of Service

Citrus County has an adopted level of service standard that serves as the benchmark for interpreting roadway performance in this analysis. Under Citrus County Policy 10B.3.8, the level of service standard for State Highway System roads is LOS D in urbanized areas and LOS C in non-urbanized areas, consistent with FDOT policy. For the County Highway System, the adopted standard is LOS D in all areas of the County. 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 Quality/Level of Service 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.

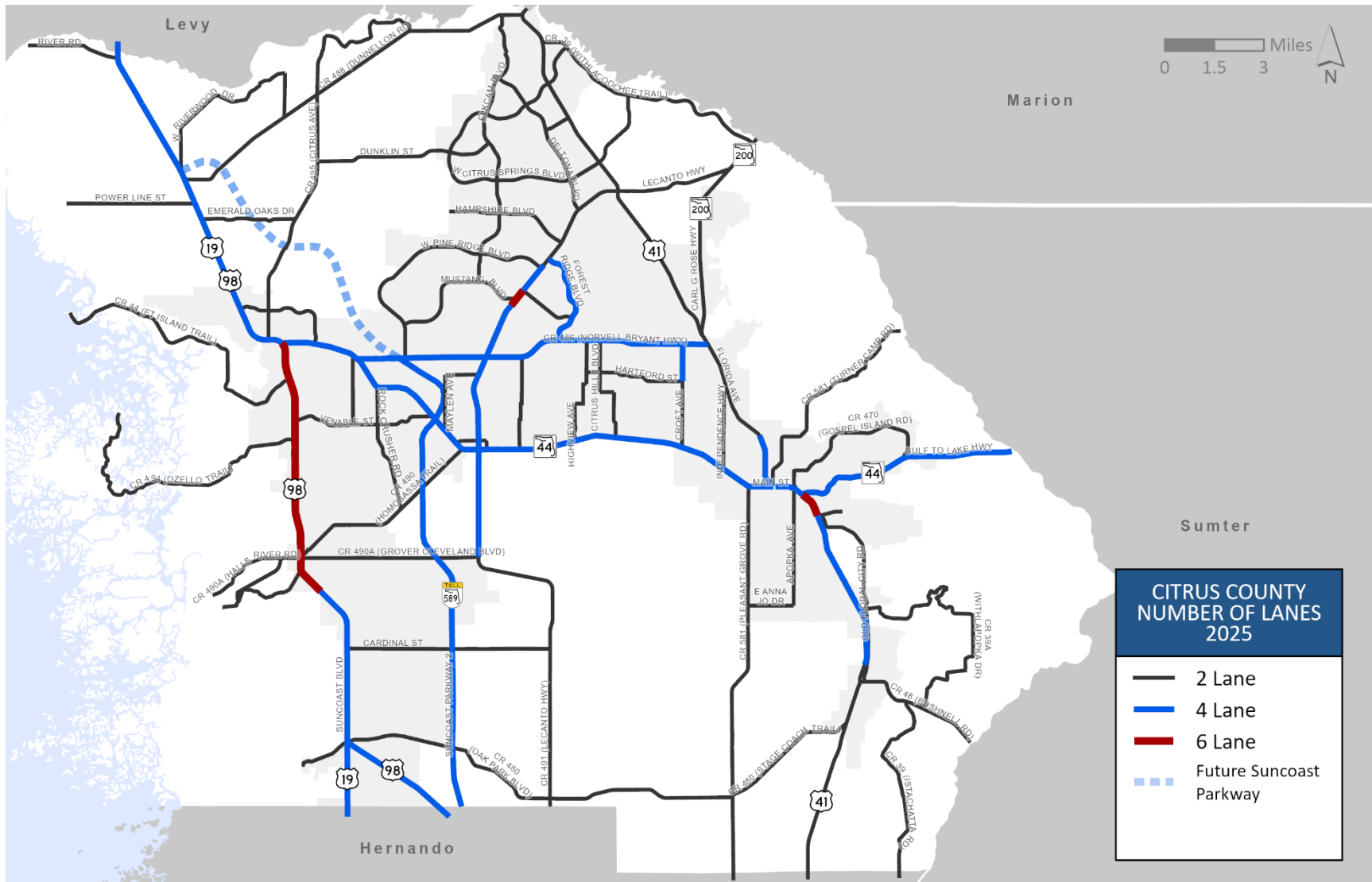


Figure 3: 2025 Citrus County Roadway Network by Number of Lanes

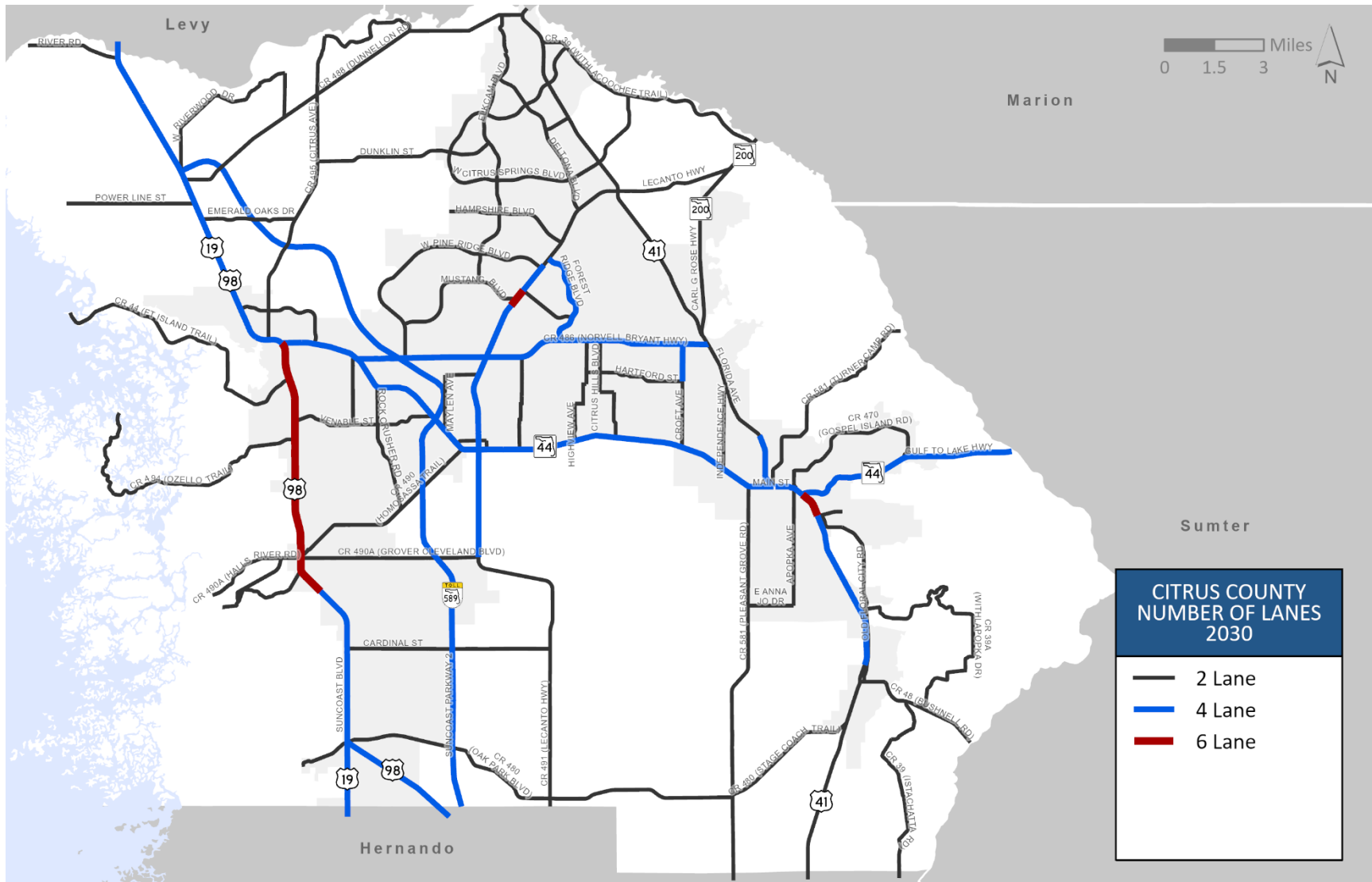


Figure 4: 2030 Citrus County Roadway Network by Number of Lanes

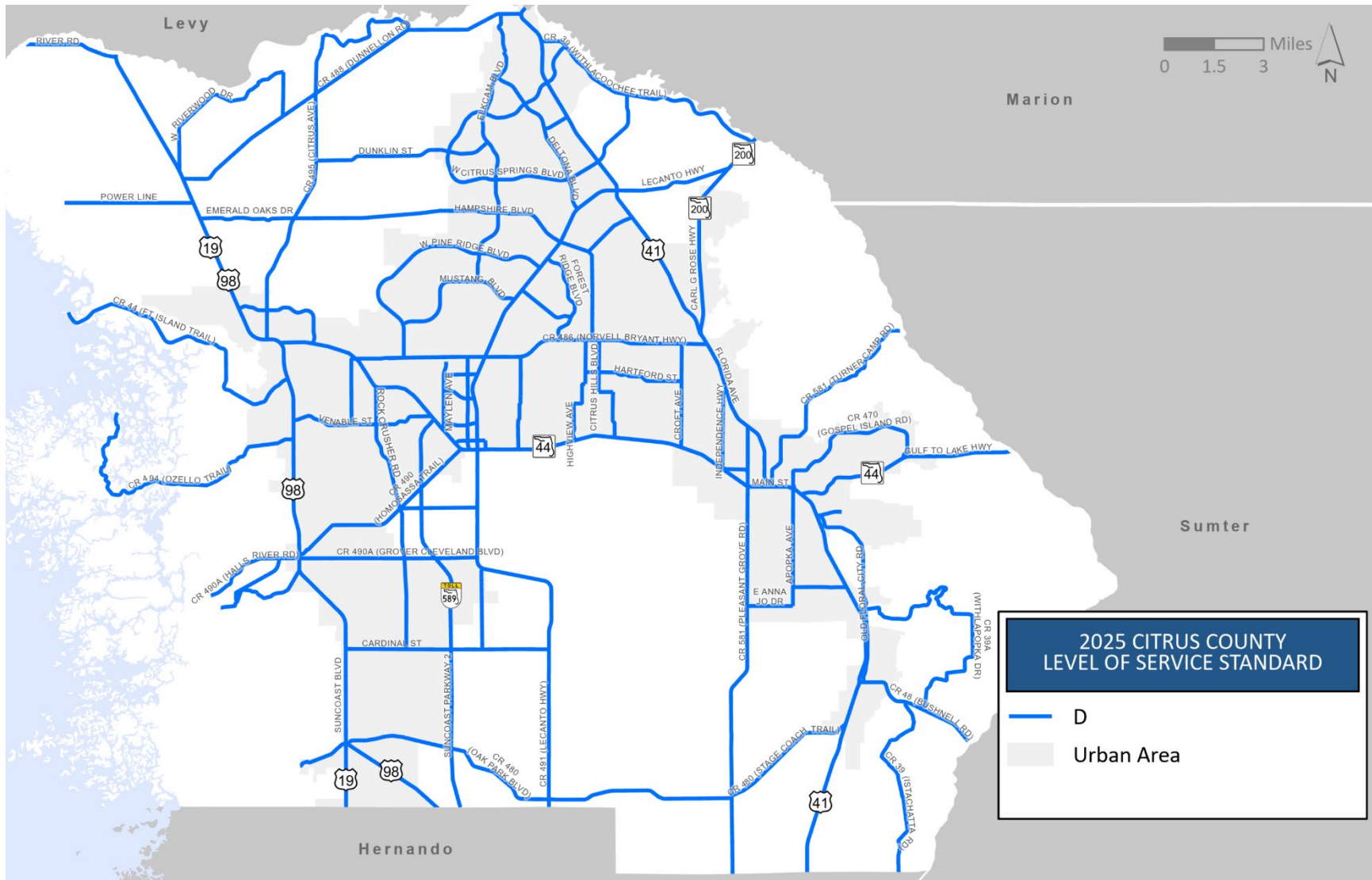


Figure 5: Citrus County Adopted Level of Service Standard

Quality/Level of Service Analysis

This section summarizes roadway Quality/Level of Service conditions for the analyzed major roadway network in 2025 and 2030. For clarity and consistency, the discussion is presented primarily in terms of centerline miles and lane miles, since those measures better reflect the physical extent of constrained roadway conditions than a simple count of roadway segments. The analyzed system includes approximately 388.3 centerline miles, 1,013.7 lane miles in 2025, and 1,015.7 lane miles in 2030.

Across the full network, the share of roadway operating at LOS E or F increases from about 8.3 centerline miles and 22.4 lane miles in 2025 to about 27.7 centerline miles and 86.5 lane miles in 2030. In percentage terms, that corresponds to an increase from about 1.9% to 6.4% of centerline miles and from about 2.0% to 7.9% of lane miles operating at LOS E or F. Conversely, roadway operating at LOS B through D accounts for about 98.0% of centerline miles and 97.9% of lane miles in 2025, declining to about 93.7% of centerline miles and 92.1% of lane miles in 2030.

2025 Quality/Level of Service Analysis

In 2025, the roadway network totals approximately 434.3 centerline miles and 1,100.2 lane miles. Of that total, approximately 8.3 centerline miles and 22.4 lane miles are calculated at LOS E or F, equivalent to about 1.9% of total centerline miles and 2.0% of total lane miles. This indicates that constrained conditions are limited to a small share of the overall system in the 2025 analysis year.

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 426.0 centerline miles and 1,077.8 lane miles, which is about 98.0% of centerline miles and 97.9% of lane miles in the analyzed network. Among those categories, LOS C represents the largest share of the system, accounting for about 263.8 centerline miles and 676.0 lane miles, or about 60.7% of total centerline miles and 61.4% of total lane miles. LOS B accounts for about 116.1 centerline miles and 283.7 lane miles, or about 26.7% of centerline miles and 25.8% of lane miles, while LOS D accounts for about 46.1 centerline miles and 118.1 lane miles, or about 10.6% of centerline miles and 10.7% of lane miles.

The more constrained portion of the system is concentrated on a limited number of major corridors. LOS E accounts for about 0.8 centerline miles and 2.0 lane miles, which is about 0.2% of total centerline miles and 0.2% of total lane miles. LOS F accounts for about 7.4 centerline miles and 20.4 lane miles, or about 1.7% of total centerline miles and 1.9% of total lane miles. These percentages show that the vast majority of the roadway system remains in the middle LOS categories, while the most constrained conditions are limited in extent in the 2025 analysis year.

From a corridor perspective, the most constrained facilities in 2025 are those with the greatest E/F lane-mile totals. CR 491 (Lecanto Hwy) accounts for the largest extent of constrained conditions, with about 5.7 E/F centerline miles and 16.0 E/F lane miles. It is followed by US 41 (Florida Ave) with about 1.9 E/F miles and 3.9 E/F lane miles and US 41/SR 44 (Main St) with about 0.6 E/F miles and 2.6 E/F lane miles.

These are the only three corridors with LOS E or F conditions in the 2025 scratch file. 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	434.3
Total lane miles	1,100.2
LOS E/F centerline miles	8.3
LOS E/F lane miles	22.4
LOS E/F share of centerline miles	1.9%
LOS E/F share of lane miles	2.0%

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	116.1	26.7%	283.7	25.8%
C	263.8	60.7%	676.0	61.4%
D	46.1	10.6%	118.1	10.7%
E	0.8	0.2%	2.0	0.2%
F	7.4	1.7%	20.4	1.9%

Table 3: Corridors with Greatest Mileage Operating Below LOS D Standard in 2025

Corridor	E/F Centerline Miles	E/F Lane Miles
CR 491 (Lecanto Hwy)	5.7	16.0
US 41 (Florida Ave)	1.9	3.9
US 41/SR 44 (Main St)	0.6	2.6

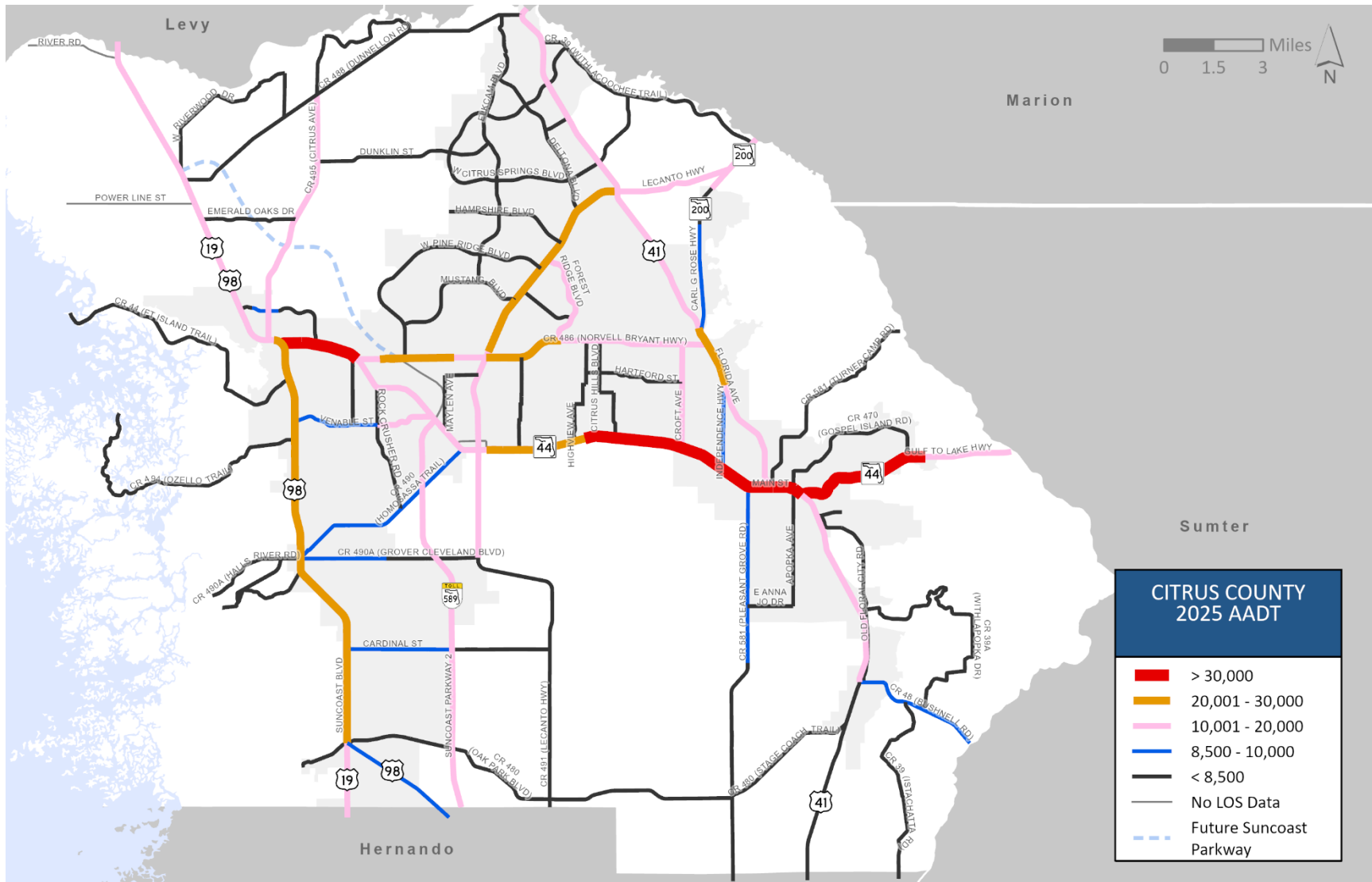


Figure 6: 2025 Average Annual Daily Traffic (AADT)

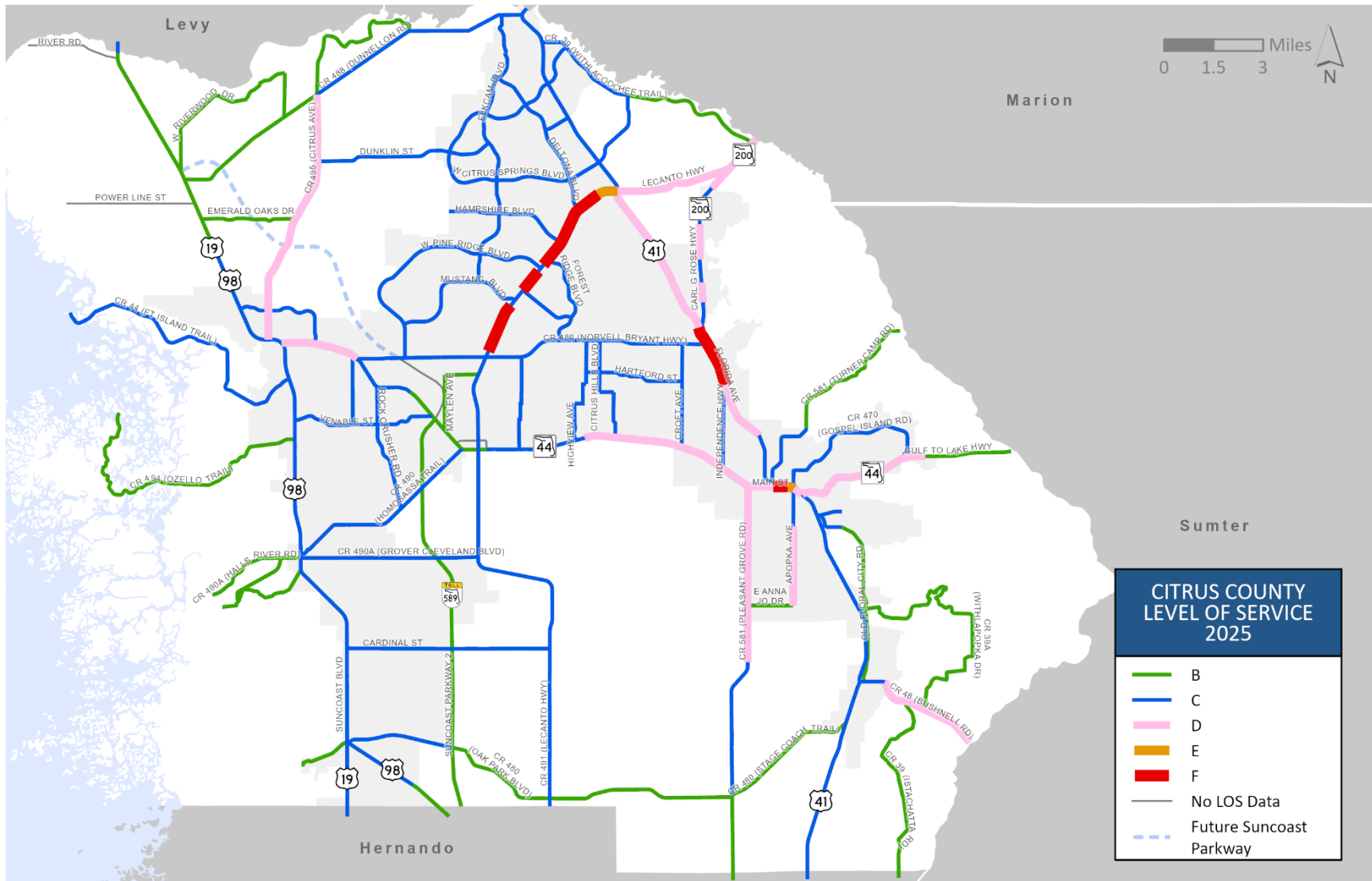


Figure 7: 2025 Citrus County Roadway Quality/Level of Service

2030 Quality/Level of Service Analysis

In 2030, the roadway network remains at approximately 434.3 centerline miles and 1,100.2 lane miles. Of that total, approximately 27.7 centerline miles and 86.5 lane miles are calculated at LOS E or F, equivalent to about 6.4% of total centerline miles and 7.9% of total lane miles. This represents an increase in the physical extent of constrained conditions compared with 2025, but the large majority of the system still operates above LOS E or F in 2030.

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 406.7 centerline miles and 1,013.7 lane miles, or about 93.7% of centerline miles and 92.1% of lane miles in the analyzed network. As in 2025, LOS C accounts for the greatest share of the system, with about 268.7 centerline miles and 685.2 lane miles, equivalent to about 61.9% of centerline miles and 62.3% of lane miles. LOS B accounts for about 108.9 centerline miles and 269.3 lane miles, or about 25.1% of centerline miles and 24.5% of lane miles, while LOS D accounts for about 29.1 centerline miles and 59.2 lane miles, or about 6.7% of centerline miles and 5.4% of lane miles.

The constrained portion of the system expands in 2030, particularly in LOS E and LOS F. LOS E accounts for about 5.6 centerline miles and 11.2 lane miles, which is about 1.3% of total centerline miles and 1.0% of total lane miles. LOS F accounts for about 22.1 centerline miles and 75.3 lane miles, equivalent to about 5.1% of total centerline miles and 6.8% of total lane miles. This shows that the increase in constrained conditions is still limited to a relatively modest share of the overall roadway network by 2030.

The corridor rankings indicate that SR 44 (Gulf to Lake Hwy) has the greatest E/F lane-mile total in 2030, with about 10.9 E/F centerline miles and 43.7 E/F lane miles. It is followed by CR 491 (Lecanto Hwy) with about 5.7 E/F miles and 16.0 E/F lane miles, CR 495 (Citrus Ave) with about 3.9 E/F miles and 7.7 E/F lane miles, SR 44 (Main St) with about 1.7 E/F miles and 6.8 E/F lane miles, and US 41 (Florida Ave) with about 2.8 E/F miles and 5.7 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	434.3
Total lane miles	1,100.2
LOS E/F centerline miles	27.7
LOS E/F lane miles	86.5
LOS E/F share of centerline miles	6.4%
LOS E/F share of lane miles	7.9%

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	108.9	25.1%	269.3	24.5%
C	268.7	61.9%	685.2	62.3%
D	29.1	6.7%	59.2	5.4%
E	5.6	1.3%	11.2	1.0%
F	22.1	5.1%	75.3	6.8%

Table 6: Corridors with Greatest Mileage Operating Below the Adopted LOS D Standard in 2030

Corridor	E/F Centerline Miles	E/F Lane Miles
SR 44 (Gulf to Lake Hwy)	10.9	43.7
CR 491 (Lecanto Hwy)	5.7	16.0
CR 495 (Citrus Ave)	3.9	7.7
SR 44 (Main St)	1.7	6.8
US 41 (Florida Ave)	2.8	5.7

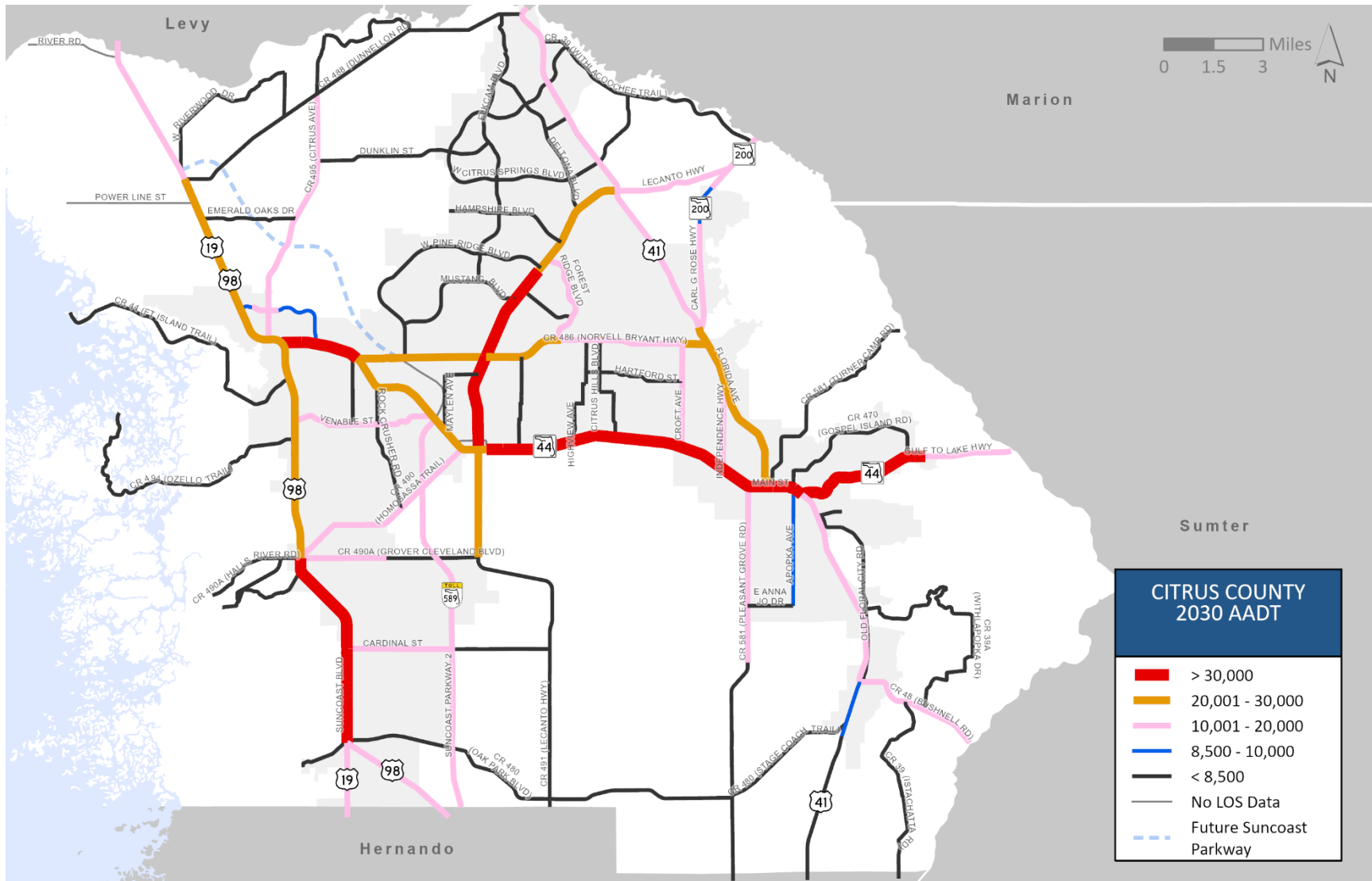


Figure 8: 2030 Forecasted Average Annual Daily Traffic (AADT)

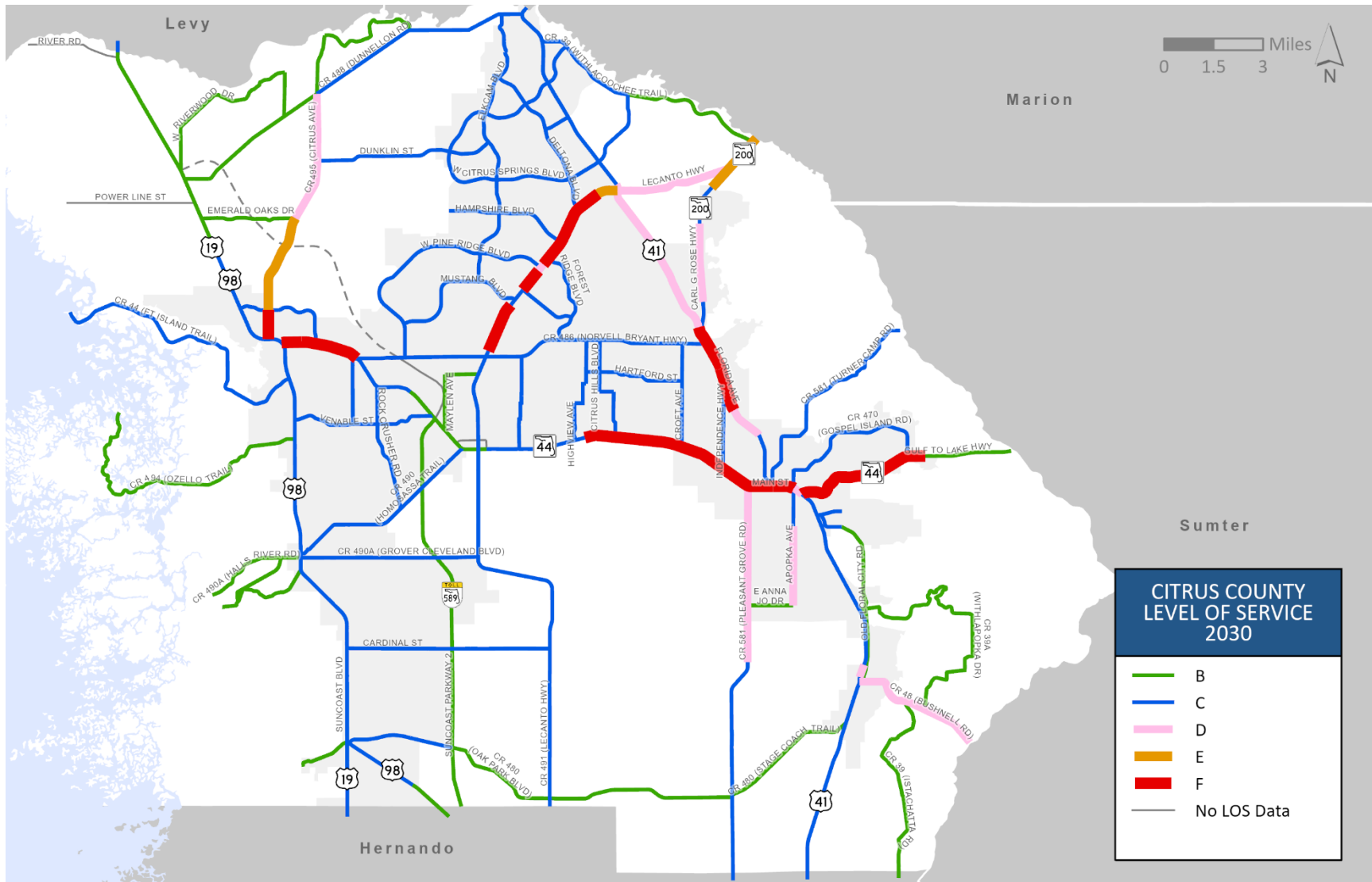


Figure 9: 2030 Forecasted Citrus County Roadway Quality/Level of Service

Key Takeaways

The Citrus 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 98.0% of centerline miles and 97.9% of lane miles remain in the LOS B through D range in 2025, declining to about 93.7% of centerline miles and 92.1% of lane miles in 2030 as constrained conditions expand. In practical terms, overall roadway performance remains predominantly within the middle LOS categories, with constrained conditions limited to about 2% of the system in 2025 and about 6% to 8% in 2030, while a handful of major corridors account for most of the roadway mileage operating below the adopted standard.