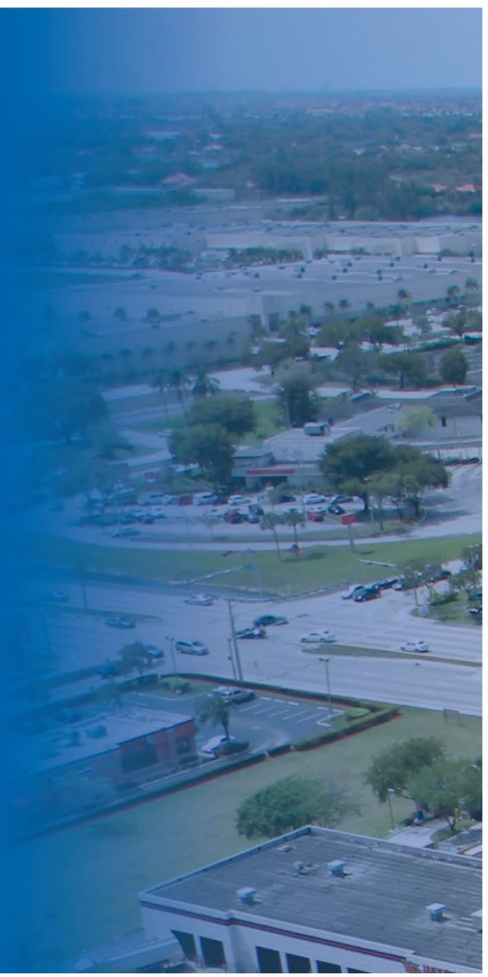
FDOT

SR 826/Palmetto Expressway PD&E Study

From SR 93/I-75 to the Golden Glades Interchange

SFM #: 437053-4-22-01
FAP #: 4751 146 P
ETDM #: 11241



SYSTEMS INTERCHANGE MODIFICATION REPORT (SIMR)

Re-evaluation (GGI Light Design Concept)

FINAL

September 2022

Systems Interchange Modification Report (SIMR) Re-evaluation

SR 826/Palmetto Expressway PD&E Study

From SR 93/I-75 to Golden Glades Interchange

FM #: 437053-4-22-01; FAP #: 4751 146 P; ETDM #: 11241

Florida Department of Transportation

Determination of Safety, Operational and Engineering Acceptability

Acceptance of this document indicates successful completion of the review and determination of safety, operational and engineering acceptability of the Interchange Access Request. Approval of the access request is contingent upon compliance with applicable Federal requirements, specifically the National Environmental Policy Act (NEPA) or Department's Project Development and Environment (PD&E) Procedures. Completion of the NEPA/PD&E process is considered approval of the project location design concept described in the environmental document.

Requestor

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Project Manager

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10/25/2022 | 2:36 PM EDT

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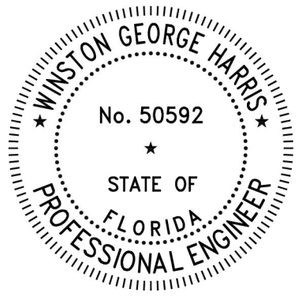
Date

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with RS&H, Inc., a Florida corporation authorized to operate as an engineering business, (EB No. EB0005620) by the State of Florida Department of Professional Regulation, Board of Engineers and that I have prepared or approved the evaluation, findings, opinions, conclusions or technical advice hereby reported for :

Financial Project ID:	418423-1-22-01
Federal Aid Project No.:	4751 146 P
Project:	Re-evaluation of SR 826 / Palmetto Expressway Project Development and Environment (PD&E) Study From SR 93/I-75 to the Golden Glades Interchange
County:	Miami-Dade
FDOT Project Manager:	Raul Quintela, P.E.

I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.



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Winston G Harris

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EXECUTIVE SUMMARY

INTRODUCTION

In May 2019, the FDOT received approval from FHWA for the SIMR Re-evaluation of proposed improvements within the Golden Glades Interchange (GGI). The improvements approved in the 2019 SIMR Re-evaluation constitute the current GGI Ultimate Design Concept. Following this approval, the FDOT determined that some of the proposed improvements per the GGI Ultimate Design Concept would be indeterminately delayed due to unresolved conflicts with existing Florida Gas Transmission pipelines. As a result, the FDOT is seeking to advance construction of an interim design concept, known as the GGI Light Design Concept, which will accommodate the Florida Gas Transmission facilities in their current location. The GGI Light Design Concept incorporates all the proposed improvements in in the GGI Ultimate Design Concept except for the following (see Figure 3-3 and Figure 3-4 under Section 3 of report):

- GGI Light excludes the proposed new flyover ramps providing direct connections between the proposed SR 826 Express Lanes and I-95 Express lanes (North). It also excludes widening required along SR 826 and I-95 to accommodate the future express lanes connection. This proposed new connection will be implemented with the planned SR 826 Express Lanes.
- GGI Light excludes the proposed widening along some ramps within the GGI system, per the Ultimate Design Concept. Notably it eliminates the proposed widening for the following ramps:
    - Loop ramp connecting movements from NB I-95 (GU) to WB SR 826. Proposed widening from one to two lanes (per GGI Ultimate) is not included in GGI Light.
    - Ramp connecting movements from EB SR 826/Palmetto Expressway to EB SR 826/NW 167th Street is not included in GGI Light.
- Proposed 3-lane off-ramp from EB SR 826/Palmetto Expressway (per GGI Ultimate) is modified to a one-lane off-ramp serving NB I-95 traffic only.
- GGI Light assumes that the planned SR 826 Express Lanes and improvements to the interchanges at NW 27th Avenue and NW 17th Avenue will not be implemented by the design year 2048.

The FDOT determined that a re-evaluation of the current approved 2019 SIMR Re-evaluation was necessary to support implementation of the interim GGI Light Design Concept. This report documents the findings of the SIMR Re-evaluation to support implementation of the GGI Light Design Concept.

METHODOLOGY

The SIMR re-evaluation was performed in accordance with the associated Methodology Letter of Understanding (MLOU) which was approved by FDOT and FHWA in March 2022. The MLOU is included herein under Appendix A. It describes the criteria, assumptions, processes, analyses, and documentation requirements for the SIMR Re-evaluation. The SIMR Re-evaluation assumes an opening year 2028 and design year 2048 for the proposed improvements. Traffic forecasts for the project are based on prior forecasts that were developed and approved for SR 826 and GGI improvements. Future traffic operations for the design alternatives are assessed using CORSIM microsimulation models. Safety conditions are evaluated based on a qualitative and quantitative assessment following the Highway Safety Manual Procedures.

DESIGN CONCEPTS

The SIMR Re-evaluation considered three future conditions (See Figures 3-2, 3-3 and 3-4):

- No Build Alternative: This includes the existing road network plus all funded and committed projects within the study corridor.
- The GGI Ultimate Design Concept: This is the current approved design concept for the GGI per the 2019 SIMR Re-evaluation.
- The GGI Light Design Concept: This is the interim design concept which is the subject of this SIMR Re-evaluation.

OPERATIONAL ANALYSES

Traffic operational analyses were performed for the No Build Alternative (2028 and 2048), GGI Light Design Concept (2028 and 2048) and the GGI Ultimate Design Concept (2048). The analyses were performed using CORSIM microsimulation models and resulting performance measures were used to assess and compare traffic operations within the study area for the three design alternatives. Throughput was used as the principal performance measure for determining

the relative performance of the alternative design concepts. This approach is consistent with FDOT's policy of maximizing throughput on facilities operating under congested conditions, similar to the GGI. The following were determined from the operational analyses.:

- The GGI Light Design Concept will provide better traffic operating conditions within the GGI Study Area when compared to the No Build Alternative in the opening year 2028 and design year 2048. The operational analyses indicate that the GGI Light Design Concept will generate higher throughput (GU lanes + express lanes) when compared to the No Build for all the major routes of interest for the study, this includes I-95, I-95/Turnpike Connector and SR 826. In addition, the operating speeds are generally higher or comparable in the GGI Light Design Concept when compared to the No Build Alternative. In cases where the GGI Light Design Concept generates noticeably lower speeds this results from the increase in throughput generated in the GGI Light Design Concept. Furthermore, the GGI Light Design Concept performs better than the No Build Concept across all networkwide performance measures including, total delay, total vehicle-miles travelled, average speed and unmet (latent) demand.
- The GGI Ultimate Design Concept will provide better overall traffic operating conditions than the GGI Light Design Concept. However, implementation of the GGI Light Design Concept will not result any critical operational failures which would otherwise be mitigated by the GGI Ultimate Design Concept, through the design year 2048. The operations analyses indicate that the GGI Ultimate Design Concept will mostly generate higher throughput (GU lanes + express lanes) when compared to the GGI Light Design Concept. In cases where the GGI Ultimate Design Concept generates less throughput than the GGI Light Design Concept this is due to the rerouting of some traffic in response to additional capacity provided by the proposed SR 826 Express Lanes which is only present in the GGI Ultimate Design Concept. Operating speeds are generally higher in the GGI Ultimate Design Concept except for cases where substantially higher throughput is generated in the GGI Ultimate Design Concept (i.e., EB SR 826) or segments with substantially higher demand volume. Furthermore, the GGI Ultimate Design Concept performs better than the GGI Light Concept across all networkwide performance measures including, total delay, total vehicle-miles travelled and average speed.
- The GGI Light Design Concept will not generate any systemic failures within the GGI through year 2048. However, improvements beyond the GGI Light Design Concept will be required at such time in the future when capacity improvements are implemented along I-95 and SR 826/Palmetto Expressway. Traffic demand along these freeway systems exceed the available capacity which meters traffic entering the GGI. Hence, as more capacity is added to I-95 and SR 826, traffic volumes entering the GGI will increase and systemic failure may occur, if future capacity improvements to the mainline systems and the GGI are not coordinated.

SAFETY ANALYSES

Historical crash data for the 5-year period 2015 through 2019 was reviewed for the segments of I-95 and SR 826/Palmetto Expressway located within the area of influence for the project. In addition, a quantitative assessment of predicted future crashes was performed per the Highway Safety Manual (HSM) procedures with computations made using the Interactive Highway Safety Design Module (IHSDM). A qualitative crash analysis was also performed to support the safety analysis. The following were determined from the safety analysis:

- Historical data confirmed that segments of the existing I-95 and SR 826 corridors experienced abnormally high crash rates during the 5-year period 2015 through 2019. If no improvements are implemented, the existing high crash rates will continue in the future.
- The segment of highest safety concern is along I-95 mainline from NW 151st Street to GGI. Excessive congestion and weaving activities are contributing causes for the high crash rates experienced within this segment of I-95. The proposed I-95/Turnpike Express Lane Connectors, per the GGI Light and GGI Ultimate Design Concepts, will improve safety within this segment of I-95 by reducing congestion and weaving activities.
- The segment of SR 826 from NW 27th Avenue to GGI is a high crash location. Excessive congestion is a contributing cause for crashes experienced in this location. The proposed new flyover for connecting EB SR 826 to NB I-95 (per GGI Light and GGI Ultimate) will reduce congestion and corresponding crash risk along SR 826. The proposed SR 826/I-95 Express Lanes connects (GGI Ultimate) will further reduce congestion and corresponding crash risk along SR 826.

- Due to the complexity of the GGI and various limitations of the HSM Predictive Method, it was determined that the procedure would not provide a reliable prediction of the expected crashes along I-95 and SR 826 for the alternative future scenarios. These limitations include the presence of managed lanes and 3-lane collector-distributor roads which are not covered by the Predictive Method. Hence, the Predictive Method was applied solely as an indicator to assess the relative safety performance of the GGI Interchange under the future Build and No Build scenarios. Results from the Predictive Method indicate that implementation of the GGI Light Design Concept and the GGI Ultimate Design concept would reduce crashes along I-95 and SR 826/Palmetto Expressway.

ASSESSMENT OF FHWA POLICY POINTS

The FHWA's Policy on Access to the Interstate System provides the requirements for the justification and documentation necessary to substantiate any proposed changes in access to the Interstate System. The current SR 826 SIMR Re-evaluation (approved May 2019) incorporates an assessment of the two considered requirements that are specified in the current FHWA's Policy on Access to the Interstate System. Updates to the policy point assessments are necessary for approving and authorizing the interim GGI Light Design Concept. In this regard, the SIMR Re-evaluation offers updated responses to Policy Point #1 and Policy Point #2 as follows:

Policy Point 1 (previously Item No. 3)

An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).

Addendum to Policy Point No. 1 Response (pertaining to documentation contained herein for the GGI Light Design Concept)

Detailed operations analyses were performed comparing the No Build Alternative, the current approved GGI Ultimate Design Concept (per 2019 SIMR Re-evaluation) and the proposed interim GGI Light Design Concept. The analyses confirmed that the GGI Light Design Concept will not have any adverse safety or operational impacts on I-95 and SR 826. The analyses demonstrated that the GGI Light Design Concept will provide better traffic operating conditions within the GGI Study Area when compared to the No Build Alternative. The analyses also demonstrated that the GGI Ultimate Design Concept will provide better overall traffic operating conditions than the GGI Light Design Concept. However, implementation of the GGI Light Design Concept (an interim improvement) will not result any critical operational failures which would otherwise be mitigated by the GGI Ultimate Design Concept, through the design year 2048. These findings are support by the results from the analyses presented below.

In evaluating the operational performance of the design alternatives, it must be recognized that the GGI operates in a congested environment where peak period traffic demand volumes exceed the capacity of the network. In such conditions, capacity improvements will often yield an increase in throughput accompanied by a decrease in operating speeds along some road segments. Hence, in comparing the GGI design alternatives, throughput is used as the principal performance measure for determining if one alternative performs better or worse than another. This approach is consistent with FDOT's policy of maximizing throughput on facilities operating under congested conditions, similar to the GGI. The following results from the analyses support these findings.

Comparison of 2028 Operating Conditions for No Build and GGI Light Design Concept: Results from the 2028 operations analysis indicate that the GGI Light Design Concept generates

higher throughput (GU lanes + express lanes) when compared to the No Build for all the major routes of interest for the study: NB I-95 (11.6%/14.2% increase in AM/PM); SB I-95 (28.9%/40.4% increase in AM/PM), NB I-95/Turnpike Connector (8.3%/7.3% increase AM/PM), SB I-95/Turnpike Connector (79.8%/112.9% in AM/PM), EB SR 826 (33.4%/30.4% increase in AM/PM) and WB SR 826 (2.4%/9.0% increase in AM/PM). In addition, average operating speeds in the GU lanes are higher or comparable under the GGI Light Concept when compared to the No Build Alternative. Average operating speeds for the peak direction of travel in GU lanes for GGI Light / No Build are:

- NB I-95 - 42 mph / 34 mph, PM peak
- SB I-95 – 47 mph / 53 mph, AM peak (GGI has higher throughput of approximately 1,300 vehs. /hr.)
- NB I-95/Turnpike Connector – 16 mph / 13 mph, PM peak
- SB I-95/Turnpike Connector – 44 mph / 12 mph, AM peak
- EB SR 826 – 45 mph / 10 mph, AM peak
- WB SR 826 – 45 mph / 57 mph, PM peak (GGI Light has higher throughput of approximately 500 vehs. /hr.)

In addition to the above, the GGI Light Design Concept performs better across all networkwide performance measures including, total delay (decrease by 40.0%/14.2% in AM/PM), total vehicle-miles travelled (increase by 13.8%/19.3% in AM/PM), average speed (increase by 34.8%/21.1% in AM/PM) and unmet (latent) demand (decrease by 75.7%/83.5% in AM/PM).

Comparison of 2048 Operating Conditions for No Build and GGI Light: Results from the 2048 operations analysis indicate that the GGI Light Design Concept will generate higher throughput (GU lanes + express lanes) when compared to the No Build for all the major routes of interest for the study: NB I-95 (11.1%/19.4% increase in AM/PM); SB I-95 (23.3%/41.8% increase in AM/PM), NB I-95/Turnpike Connector (8.5%/16.2% increase AM/PM), SB I-95/Turnpike Connector (84.7%/113.1% increase in AM/PM), EB SR 826 (26.3%/39.3% increase in AM/PM) and WB SR 826 (4.5% increase in PM). WB SR 826 shows a decrease in throughput of 3.3% in AM peak due to new signals installed at upstream intersection (NW 7th Avenue at NB Turnpike On-Ramp) under the GGI Light Design Concept. In addition to higher throughput, average operating speeds in the GU lanes are mostly higher or comparable under the GGI Light Design Concept when compared to the No Build Alternative. Average operating speeds for the peak direction of travel in GU lanes for GGI Light / No Build are:

- NB I-95 - 44 mph / 34 mph, PM peak
- SB I-95 – 28 mph / 51mph, AM peak. (Lower speed in GGI Light is due to the higher throughput in the GU lanes – an increase of approximately 850 vehs/hr compared to No Build)
- NB I-95/Turnpike Connector – 17 mph /14 mph, PM peak
- SB I-95/Turnpike Connector – 36 mph / 12 mph, AM peak
- EB SR 826 – 50 mph / 9 mph, AM peak
- WB SR 826 – 42 mph/55 mph, PM peak (Lower speed in GGI Light due to higher throughput – an increase of approximately 250 vehs/hr compared to No Build)

In addition to the above, the GGI Light Design Concept performs better across all networkwide performance measures including, total delay (decrease by 23.5%/14.6% in AM/PM), total vehicle-miles travelled (increase by 12.6%/19.1% in AM/PM), average speed (increase by 23.8%/25.0% in AM/PM) and unmet (latent) demand (decrease by 61.4%/51.7% in AM/PM).

Comparison of 2048 Operating Conditions for GGI Light and GGI Ultimate: Results from the 2048 operations analysis indicate that the GGI Ultimate Design Concept will generate higher throughput (GU lanes + express lanes) when compared to the GGI Light Design Concept for most of the major routes of interest for the study, including: NB I-95 (3.4%/5.1% increase in AM/PM); NB I-95/Turnpike Connector (3.6%/5.0% increase AM/PM), EB SR 826 (116.4%/83.8% increase in AM/PM) and WB SR 826 (1.8%/13.2% increase in AM/PM). The most significant increase in throughput occurs along EB SR 826 due to the presence of the express lanes which provides additional capacity in the GGI Ultimate Design Concept. The presence of the SR 826 express lanes in the GGI Ultimate Design Concept also generates some rerouting of traffic to SR 826 and a reduction in demand along SB I-95. Hence, the GGI Ultimate Design Concept reflects a lower throughput along SB I-95 (-7.2% / -6.5% in AM/PM) and along SB I-95/Turnpike Connector (-17.3% /-5.5% in AM/PM). Average operating speeds in the GU lanes are mostly higher or comparable under the GGI Ultimate Design Concept when compared to the GGI Light Design Concept.

Average operating speeds for the peak direction of travel in GU lanes for GGI Ultimate / GGI Light Design Concept:

- NB I-95 - 34 mph /44 mph, PM peak (Lower speed in GGI Ultimate is due to higher throughput – an increase of approximately 300 vehs./hr. when compared to GGI Light)
- SB I-95 – 48 mph / 28 mph, AM peak (Lower speed in GGI Light due to higher throughput – an increase of approximately 700 vehs./hr. compared to GGI Ultimate. Demand volumes also higher under GGI Light)
- NB I-95/Turnpike Connector – 46 mph / 17 mph, PM peak (Lower speed in GGI Light due to capacity restriction at the one lane off-ramp to WB SR 826 which is widened to 2 lanes in GGI Ultimate)
- SB I-95/Turnpike Connector – 45 mph / 36 mph, AM peak (Lower speed in GGI Light due to higher throughput – an increase of approximately 880 vehs./hr. compared to GGI Ultimate. Demand volume also higher under GGI Light)
- EB SR 826 – 21 mph / 50 mph, AM peak (Lower speed in GGI Ultimate due to higher throughput. Demand volume also higher under GGI Ultimate)
- WB SR 826 – 57 mph / 42 mph, PM peak. (Lower speed in GGI Light is due to the higher volume in the GU lanes – an increase of approximately 1000 vehs./hr compared to GGI Ultimate. Total throughput is still higher under GGI Ultimate since it includes express lanes on SR 826 which are not present in GGI Light.

The GGI Ultimate Design Concept performs better than GGI Light across all networkwide performance measures including, total delay (decrease by 19.3%/15.4% in AM/PM), total vehicle-miles travelled (increase by 6.3%/8.5% in AM/PM), average speed (increase by 15.4%/15.0% in AM/PM) and unmet (latent) demand (decrease by 38.1%/17.4% in AM/PM).

Safety: A safety analysis was performed which revealed that segments of the existing I-95 and SR 826 corridors experienced abnormally high cates during the 5-year period 2015 through 2019. If no improvements are implemented, the existing high crash rates will continue in the future. The segment of highest safety concern is along I-95 mainline from NW 151st Street to GGI. Excessive congestion and weaving activities are contributing causes for the high crash rates experienced within this segment of I-95. The proposed I-95/Turnpike Express Lane Connectors, per the GGI Light and GGI Ultimate Design Concepts, will improve safety within this segment of I-95 by reducing congestion and weaving activities. Similarly, the proposed new flyover for connecting EB SR 826 to NB I-95 (per GGI Light and GGI Ultimate) will reduce congestion and corresponding crash risk along SR 826. The proposed SR 826/I-95 Express Lanes connects (GGI Ultimate) will further reduce congestion and corresponding crash risk along SR 826.

Due to several limitations of the current Highway Safety Manual (HSM) crash prediction methodology, a limited crash prediction analysis was performed solely as an indicator to assess the relative safety performance of the GGI Interchange under the future Build and No Build scenarios. The results from the crash prediction analysis were consistent with the qualitative safety assessment indicating that the implementation of the GGI Light Design Concept and the GGI Ultimate Design Concept will improve safety conditions at the interchange

A Conceptual Master Signing Plan for the GGI Light Design Concept is included under Appendix E.

<u>Policy Item #2 (previously Item No. 4)</u>

The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access, such as managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). In rare instances where all basic movements are not provided by the proposed design, the report should include a full-interchange option with a comparison of the operational and safety analyses to the partial-interchange option. The report should also include the mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections, mitigation of driver expectation leading to wrong-way movements on ramps, etc. The report should describe whether future provision of a full interchange is precluded by the proposed design

Addendum to Policy Point No. 2 Response (pertaining to documentation contained herein for the GGI Light Design Concept)

The SIMR proposes no new interchanges along any of the freeway facilities within the project limits (I-95 and SR 826). All existing interchanges provide access to public roads only. The improvements proposed at the interchanges will maintain full access to the existing interstate facilities and cross streets and accommodate all movements. The proposed access modifications will be designed to meet or exceed current design standards, to the extent possible.

The design changes proposed per the GGI Light Design Concept have been developed with due consideration for all applicable FDOT and FHWA design criteria.

PROJECT FUNDING AND SCHEDULE

The proposed GGI Light improvements are funded in FDOT's Five Year Work Program as a conventional design-bid-build project. The proposed improvements are funded for design and construction with an anticipated letting date in July 2023 and open to traffic in 2028. Estimated construction cost for the GGI Light Improvements is approximately $472 Million. Letting is scheduled for 2031 for the portion of the improvements to implement an auxiliary lane on NB I-95 north of NW 2nd Avenue On-Ramp. All other proposed improvements are scheduled to be open by 2028.

CONCLUSION

Based on the findings from the SIMR Re-evaluation, the GGI Light Design Concept satisfies the FHWA's Policy on Access to the Interstate System and the prosed design change will not result in any adverse impacts to safety or operations along I-95 and SR 826. Therefore, the GGI Light Design Concept is offered as an interim improvement for the GGI Interchange. The GGI Ultimate Design Concept, per the current approved 2019 SIMR Re-evaluation, will remain along with all previously agreed commitments.

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APPENDICES

1 PROJECT OVERVIEW

1.1 Introduction

This report documents the re-evaluation of the Systems Interchange Modification Report (SIMR) for SR 826/Palmetto Expressway Project Development and Environment (PD&E) Study, from SR 93/I-75 to Golden Glades Interchange. This re-evaluation relates specifically to proposed design changes at the Golden Glades Interchange (GGI) referenced herein as the GGI Light Design Concept. The following provides chronological background information leading to this SIMR Re-evaluation.

2016 SR 826 SIMR: In October 2016, the Florida Department of Transportation (FDOT) completed a Systems Interchange Modification Report (SIMR) for the implementation of improvements along the segment of SR 826/Palmetto Expressway extending from I-75 to the Golden Glades Interchange (GGI) in Miami-Dade County, Florida. The SIMR was completed as a component of the associated SR 826/Palmetto Expressway Project Development and Environment (PD&E) Study (FM No. 418423-1-22-01). In addition, the SR 826 PD&E Study included improvements resulting from the adjacent GGI PD&E Study (FM No. 428358-1-22-01). The proposed project involves the construction of new express lanes along the Palmetto Expressway mainline, capacity improvements at the SR 826 interchanges and ramp improvements at the GGI. Improvements authorized for the Golden Glades Interchange under this project included the following:

- New flyover ramp providing direct connection between eastbound SR 826 and NB I-95 (general use lanes).
- New ramp connection for SB Turnpike to SB I-95 Express lanes.
- New flyover ramps providing direct connections between the proposed SR 826 Express Lanes and I-95 Express lanes (North).

2019 SR 826 SIMR Re-evaluation: Subsequent to the approval of the Palmetto Expressway SIMR in 2016, the FDOT identified additional network improvements within the GGI to further enhance safety and traffic operations. These additional improvements were analyzed and documented in a SIMR Re-evaluation which was approved by the FHWA in May 2019. This 2019 SIMR Re-evaluation is the prevailing base document for the proposed GGI improvements. The additional improvements authorized by the 2019 SIMR Re-evaluation include the following:

- Construction of a new ramp to connect the existing NB I-95 express lanes to the Turnpike Spur.
- Modifications to the ramp systems providing connections between the NB I-95 express lanes and other destinations served at the GGI (these include: I-95 general use (GU) lanes; NW 167th Street; US 441 and SR 826 GU lanes).
- Closing the existing NB I-95 Express Lanes Egress at NW 151st Street.
- Relocation of the proposed EL ingress/egress points on the Palmetto Expressway to service traffic using the GGI in addition to NW 17th Avenue and NW 12th Avenue. This proposed relocation of the ingress/egress points was implemented to better serve the transportation needs for the industrial and commercial areas located west of the GGI.

Staged Implementation of GGI Improvements: In June 2017, the FDOT embarked on a staged implementation of the proposed GGI improvements. The initial phase of the implementation incorporates all the major design modifications proposed for the ultimate condition except for the proposed new flyover connecting SR 826 Express Lanes and I-95 Express Lanes (North). This initial phase of the project is referenced as the GGI Interim Design Concept. The FDOT has segmented the GGI into nine projects, per the following FPID Nos. for advancing the design of the interim improvements: 428358-1, 428358-4, 428358-5, 428358-8, 437053-1, 437053-2, 437053-3, 437053-4, and 437053-5. The ultimate interchange configuration (GGI Ultimate Design Concept) is planned to be implemented at a future date, concurrent with the proposed new SR 826 Express Lanes. The GGI Ultimate Design Concept incorporates all the interchange modifications

associated with the initial 2016 SR 826 SIMR and the subsequent 2019 SR 826 SIMR Re-evaluation (referenced above).

GGI Light Design Concept: On August 21, 2013, FDOT and the Florida Gas Transmission Company (FGT) signed a Global Settlement Agreement establishing protocol for the operation, maintenance, repair, replacement, and expansion of both Pipeline Facilities and the State Highway System. This agreement is relevant to the Golden Glades Interchange Improvements project, as several segments have designs that directly conflict with existing FGT 18" and 24" gas lines. As currently designed, the GGI Interim Design Concept assumed that where conflicts were identified, the FDOT and FGT would negotiate an agreement for the relocation of the gas lines per provisions in the Global Settlement Agreement. The negotiations between the FDOT and FGT have stalled without reaching an agreement for the relocation of the conflicting pipeline facilities. Given the stalled negotiations, and with no expectation for a near-term resolution, the FDOT has proceeded to develop an alternative interim design concept (known as GGI Light Design Concept) with the goal of eliminating conflicts with the FGT pipeline facilities while still maintaining the desired facility improvements sought with the original GGI Interim Design Concept. The GGI Light Design Concept is envisioned as an interim improvement which will implement as much as possible of the original GGI Interim Design Concept, while accommodating FGT facilities in their current location. The GGI Light improvements will provide immediate benefits for enhancing safety and traffic operations at the interchange. The Ultimate GGI Design Concept remains the long-term vision for the interchange, however, implementation of the ultimate configuration will be pending future agreements between FDOT and FGT for the permanent relocation of conflicting pipeline facilities.

SIMR Re-evaluation for GGI Light Design Concept: The FDOT has determined that the analysis and documentation of the GGI Light Design Concept will require a re-evaluation of the previously approved 2019 SR 826 SIMR Re-evaluation. The SIMR Re-evaluation will serve as a component of the design change re-evaluation for the same area. The design change is necessary to enhance safety, improve traffic operations and address the transportation needs for the study area, while accommodating the FGT pipeline facilities. The GGI Light Design Concept will provide similar safety and operational benefits as the original GGI Interim Design Concept. In addition, it will not preclude the future implementation of the long-term ultimate configuration for the GGI interchange, per the current approved 2019 SIMR Re-evaluation. The Project Location map in Figure 1-1 highlights the focus area for the SR 826 SIMR Re-evaluation

Figure 1-1: Project Location Map

1.2 Purpose of SR 826 SIMR Re-evaluation (GGI Light)

This SR 826 SIMR Re-evaluation documents the operational analyses for the proposed design modifications, referenced herein as the GGI Light Design Concept. This incorporates design modifications that will accommodate FGT facilities in their current location while preserving the safety and operational benefits of the current approved 2019 SIMR Re-evaluation design Concept. These include improving the connectivity between EB SR 826 and NB I-95 (general use lanes) and enhancing the connectivity between I-95 Express Lanes (south) and Florida Turnpike. In addition, the improvements will facilitate the implementation of the planned South Florida Regional Managed Lanes Network - providing improved travel time reliability and long-term mobility options for South Florida commuters (see Figure 1-1). The regional express lanes network will also support implementation of the proposed Strategic Miami Area Rapid Transit (SMART) Plan.

The SIMR Re-evaluation compares traffic operations for the GGI Light design Concept, the current approved 2019 SIMR Re-evaluation Design Concept (also known as the Ultimate Design Concept) and the No Build Condition. The findings presented in the SIMR Re-evaluation demonstrate the safety and operational benefits of the GGI Light Design Concept compared against the current 2019 SIMR Design Concept and the No Build Condition. The findings provide the necessary justification for implementation of the GGI Light Design Concept.

2 METHODOLOGY

The methodology applied for the SR 826/Palmetto Expressway SIMR Re-evaluation is described in detail in the following document:

- *Methodology Letter of Understanding (MLOU), SR 826/Palmetto Expressway from SR 93/I-75 to Golden Glades Interchange (GGI) Systems Interchange Modification Report (SIMR) Re-evaluation – GGI Light, March 2022.*

This MLOU is included herein under Appendix A. The MLOU outlines the criteria, assumptions, processes, analyses and documentation requirements for the SIMR Re-evaluation. The MLOU was processed through the FDOT at the District, State and Federal level. The following summarizes some of the more prominent issues covered in the MLOU.

2.1 Area of Influence

The study area for the SR 826/Palmetto Expressway SIMR is depicted in Figure 2-1. The project study area is located within the Transportation Concurrency Exception Area (TCEA)/Urban Infill Area (UIA) established by Miami-Dade County and the Transportation Concurrency Management Area (TCMA) which was established by local municipalities (see Figure 2-1). The area of influence for the original 2016 SR 826 SIMR extends along SR 826 from I-75 to GGI. The area of influence relevant to this SIMR re-evaluation includes the following (see Figure 2-1):

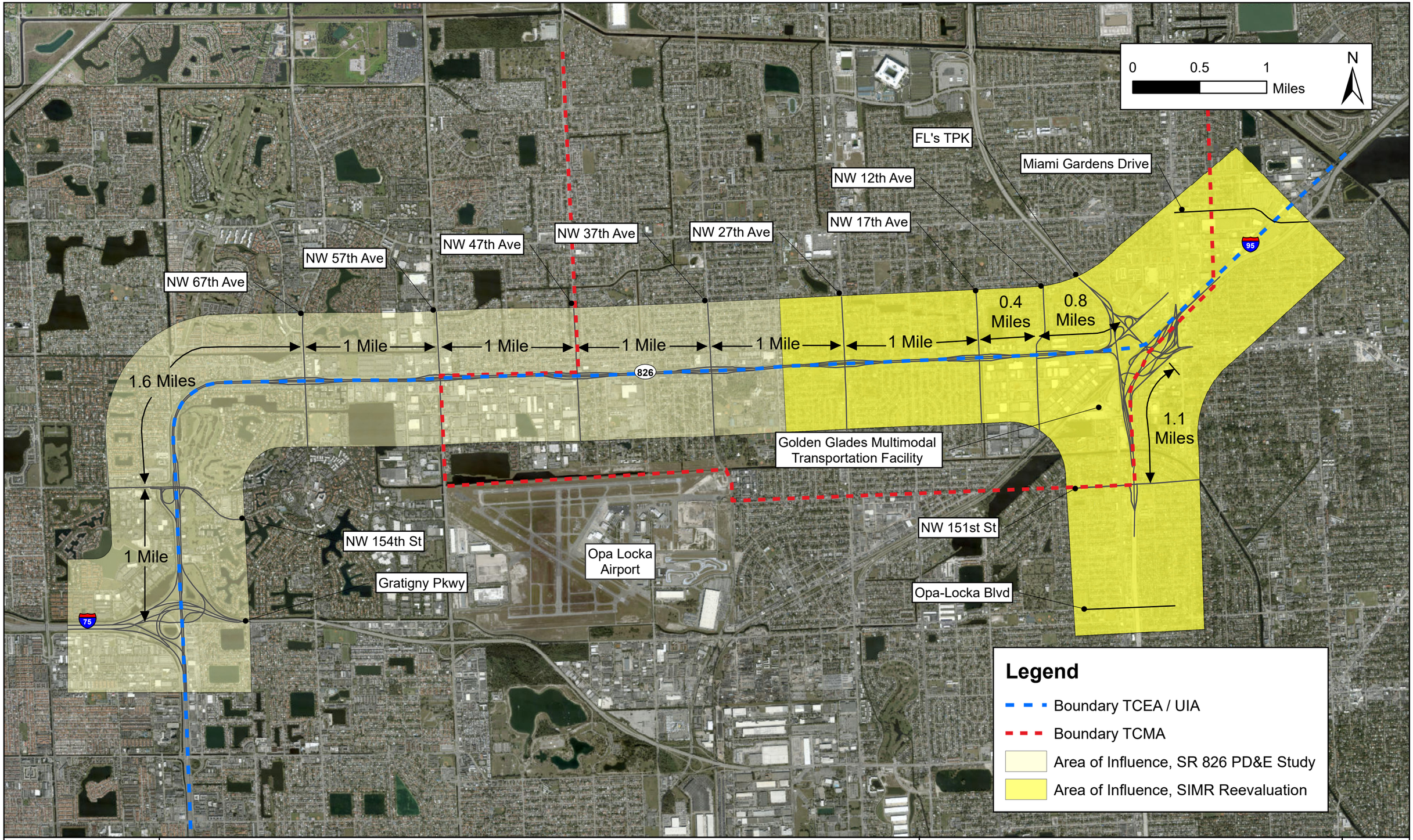
- SR 826/Palmetto Expressway from west of NW 27th Avenue (MP 21.530) to the GGI. This incorporates the existing interchanges at NW 27th Avenue (MP 22.034), NW 17th Avenue (MP 23.046) and NW 12th Avenue (MP 23.470).
- I-95 (Section 87270000) from Opa-Locka Boulevard (MP 10.9) to Miami Gardens Drive (MP 14.30). This includes the existing interchanges at Opa-Locka Boulevard, NW 151st Street, GGI and Miami Gardens Drive.
- All ramps and connecting roadways within the GGI area. This includes all connections serving The Golden Glades Intermodal Center, SR 826/Palmetto Expressway, I-95 (GP and Express Lanes), Florida's Turnpike, SR 7/US 441, SR 9 and SR 826/NW 167th Street.

2.2 Analysis Years

The analysis years for the SIMR Re-evaluation were established as follows:

- Existing year - 2011 (No analysis required for SIMR Re-evaluation)
- Opening year - 2028 (Analysis of No Build, and GGI Light Design Concept)
- Design year - 2048 (Analysis of No Build, GGI Ultimate and GGI Light Design Concept)

The existing year (2011) is consistent with the current approved 2019 SIMR Re-evaluation which had an anticipated opening year of 2025 and design year 2040. The opening year (2028) for the GGI Light improvements is consistent with the current production schedule for the project. Based on the new anticipated opening year (2028), a design year of 2048 was established for analysis of the GGI Light Design Concept. This is consistent with FDOT's practice of evaluating such infrastructure projects over a 20-year period, beginning at the opening year. However, it should be noted that the GGI Light Design Concept is an interim condition for the staged implementation of the of the GGI Ultimate Design Concept (per the 2019 SIMR Re-evaluation). Furthermore, the GGI Ultimate Design Concept was developed for a design year of 2040 and the FDOT recently completed a Master Plan for the I-95 corridor which envisions additional improvements at the GGI Interchange to meet transportations needs beyond 2040. Hence, it is not expected that the GGI Light Design Concept will meet the desired target level of service in year 2048. Given these considerations, the FDOT in consultation with the FHWA determined that the SIMR Re-evaluation should include an analysis of the current approved GGI Ultimate Design Concept (per 2019 SIMR Re-evaluation), the proposed new GGI Light Design Concept and the No Build Condition. In addition, the SIMR Re-evaluation provides an approximate year of failure for the GGI Light Design Concept.



FDOT	SR 826/Palmetto Expressway from I-75 to GGI SIMR Reevaluation - GGI Light ETDM NO: 11241 FM.: 418423-1-22-01	Area of Influence	FIGURE: 2-1

2.3 Travel Demand Forecasting

The SIMR Re-evaluation utilized the travel demand forecast from the previously approved 2016 SR 826/Palmetto Expressway SIMR, which includes the GGI. The 2019 SIMR Re-evaluation similarly utilized traffic forecasts from original 2016 SR 826 SIMR. Per FDOT's Interchange Access Request (IAR) User's Guide, traffic validation is required for the re-evaluation. The intent of the validation is to ensure that the traffic volumes available from the original approved SIMR still reflect the project area's travel conditions and pattern. The IAR User's Guide further suggest that the validation check can be performed by comparing traffic forecasts from the original SIMR with historical traffic growth and traffic forecast from the current travel demand model.

In keeping with the guidelines of the FDOT's IAR User's Guide, the validity of the traffic forecast from the 2016 SIMR was checked by comparing AADT estimates using data from the 2016 SIMR, historical traffic volumes, and volumes from the current regional travel demand model (SERPM 8). The volume comparison was performed for all the traffic entry and exit points serving the GGI. Figure 2-1 depicts the traffic count locations used for performing the comparison. The AADT estimates are summarized and compared in Table 2-1 and Table 2-2.

The comparison of the 2045 AADT estimates indicate that the 2016 SIMR forecasts are higher or within 5% of the SERPM 8 forecasts at all locations, except for the station at SR 9 South of GGI (see Table 2-1). In order to check the significance of the difference in the AADT forecasts, a lane call assessment was performed for each roadway based on the FDOT's Quality Level of Service Handbook, service volume thresholds. The objective of the lane call assessment was to determine if the difference in AADT forecast (2016 SIMR vs. SERPM 8) would generate a significant difference in lane calls with respect to the planned roadway improvements.

The lane call assessment comparison is included in Table 2-1. As noted in the table, except for SR 9 South of GGI, the lane call for all road segments is similar when using the SIMR forecast and the SERPM 8 forecast. In the case of SR 9 South of GGI the lane call generated from the SIMR forecast results in a typical section of 6 lanes whereas the lane call generated from SERPM 8 forecasts results in a typical section of 8 lanes. On further inspection of the SERPM 8 base year (2015) forecast and historical (2015) count it was determined that the SERPM 8 model overestimated the 2015 forecast along SR 9 south of GGI – 2015 AADT estimates are 64,900 per SERPM 8 vs. 25,900 per historical count. This overestimation of the base year SERPM 8 forecast may account for the differences reported in the 2045 AADT estimates (SERPM 8 vs. SIMR) for the station at SR 9 south of GGI. It should also be noted that the GGI project does not include any proposed improvements along the segment of SR 9 south of GGI.

In the case of SR 826/Palmetto Expressway (where improvements are proposed), the SIMR forecast results in a lane call of 10+ lanes whereas the SERPM 8 forecast results in 10 lanes (note that the LOS Handbook reports a maximum of 10 lanes for freeways in urbanized areas). The proposed improvements along SR 826/Palmetto Expressway (per SIMR) incorporate a typical section consisting of 10 lanes (6 general use lanes + 4 express lanes). These results indicate that use of SERPM 8 forecast would not change the planned improvements for a 10-lane typical section along SR 826/Palmetto Expressway. In addition, the lane call for other facilities with planned improvements (I-95) is consistent. Hence, it can be concluded that the variance in design traffic forecast (2016 SIMR vs. SERPM 8) is not significant in consideration of the proposed roadway improvements.

Comparison of the 2021 AADT estimates (Table 2-2) indicate that the SIMR forecasts are generally moderately higher than the historical AADT estimates, but for one location (SR 7/US 441 south of GGI). Differences in the 2021 AADT estimates may be due to normal fluctuations in annual counts as well as possible lingering impacts of the COVID 19 pandemic. Variability in the historical counts is also evident when comparing the FDOT 2015 counts and the FDOT 2021 counts – SR 826/NE 167 Street east of GGI is one notable location where the 2021 FDOT count is lower than the FDOT 2015 count. Overall, 2021 FDOT counts and the 2021 SIMR show a positive growth in the total daily traffic entering and exiting the GGI when compared to the 2015 historical FDOT counts. Importantly the 2021 FDOT counts show no discrepancies when compared to the 2045 SIMR forecasts (i.e., all 2045 traffic forecasts are higher than the corresponding 2021 traffic counts which is consistent with the anticipated future growth in travel demand throughout the study area). These results suggest that the 2016 SIMR forecast remain reasonable and variances in forecasts are not significant in consideration of the planned GGI improvements.

Figure 2-2: Traffic Count Locations

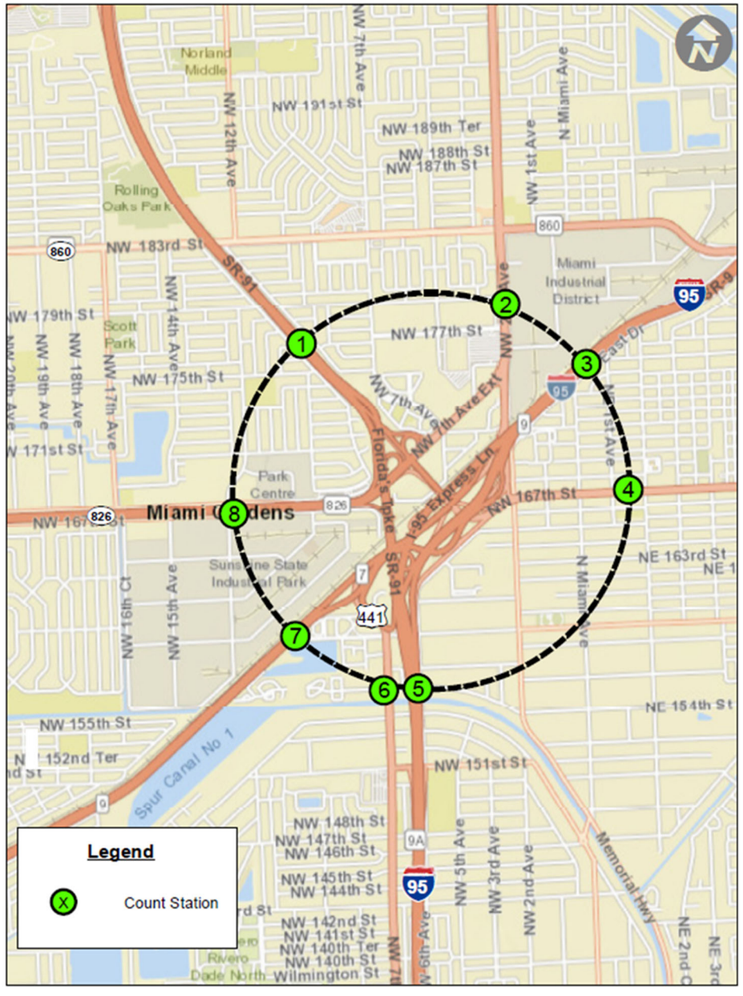


Table 2-1: Comparison of 2045 AADT Forecasts

STA	Location	2045 AADT SIMR	2045 AADT SERPM 8	2045 SIMR AADT vs. 2045 SERPM AADT	Lane Call per SIMR AADT	Lane Call per SERPM 8
1	FL. Turnpike North of GGI	161400	165000	-2.2%	8	8
2	SR 7/US 441 North of GGI	83500	78800	5.6%	8+	8
3	I-95 North of GGI	257300	214000	16.8%	10+	10+
4	SR 826/NE 167 ST, East of GGI	88600	91900	-3.7%	8+	8+
5	I-95 South of GGI	312000	323600	-3.7%	10+	10+
6	SR 7/US 441 South of GGI	33500	24600	26.6%	4	4
7	SR 9 South of GGI	44300	64800	-46.3%	6	8
8	SR 826/Palmetto Expy West of GGI	240100	181100	24.6%	10+	10
Total traffic entering and exiting GGI		1220700	1143800	6.3%		

Note:
1. 2045 SIMR AADTs estimated by extrapolating 2040 AADTs from approved 2016 SIMR
2. Lane call based on 2020 FDOT LOS Handbook, LOS E threshold, Urbanized Area
3. 8+ and 10+ indicate maximum number of lanes for facility type specified in LOS Handbook

Table 2-2: Comparison of Historical AADTs

STA	Location	2015 AADT FDOT Count	2021 AADT FDOT Count	2021 AADT SIMR	2021 SIMR AADT vs. 2021 FDOT Count
1	FL. Turnpike North of GGI	87,000	*104,800*	115,400	10%
2	SR 7/US 441 North of GGI	61,500	*60,000*	72,400	21%
3	I-95 North of GGI	225,000	208,700	213,500	2%
4	SR 826/NE 167 ST, East of GGI	65,500	55,700	79,900	43%
5	I-95 South of GGI	232,000	261,300	293,800	12%
6	SR 7/US 441 South of GGI	27,000	*29,400*	26,400	-10%
7	SR 9 South of GGI	25,900	30,800	38,400	25%
8	SR 826/Palmetto Expy West of GGI	156,000	153,000	194,500	27%
Total traffic entering and exiting GGI		879,900	903,700	1,034,300	14%

Notes:
1. 2021 SIMR AADTs estimated by interpolation from the approved 2016 SIMR AADTs
2. 2021 Counts collected by FDOT in May 2021
3. 2015 FDOT AADT estimates from Florida Traffic Online

Based on findings from the aforementioned validity checks, it is determined that a new travel demand model forecast was not required for this SIMR Re-evaluation. Traffic volumes from the prior approved 2016 SIMR and 2019 SIMR Re-evaluation were extrapolated to year 2048 and reassigned manually to the network links in accordance with proposed design modifications, where necessary. It should be noted that traffic forecast for the 2019 SIMR Re-evaluation were developed by reassigning the 2016 SIMR volumes to match the Ultimate Design Concept (per 2019 SIMR Re-evaluation). Hence, total traffic entering and exiting the study network is consistent when comparing the 2016 SIMR traffic forecast and the 2019 SIMR Re-evaluation traffic forecast. The following provides details of the extrapolation and reassignment process used for developing traffic forecast for the alternatives considered in the SIMR Re-evaluation:

- GGI Light Design Concept: Opening Year (2028) and design year (2048) volumes were developed based on traffic forecast per the 2016 SIMR No Build network. Opening Year (2028) traffic forecast were developed by interpolating between the 2018 and 2040 volumes in the 2016 SIMR No Build. Design Year (2048) volumes were developed by linear extrapolation of the 2018 and 2040 volumes in the 2016 SIMR No Build. Link volumes for 2028 and 2048 were reassigned, where necessary, to match the GGI Light Design Concept. This, in cases, involved assigning volumes proportionately based on upstream/downstream volumes on the network. It should be noted that the geometry for the 2016 SIMR No Build incorporated the proposed new connector for EB SR 826 to NB I-95, per the GGI Light Design Concept. The procedure followed for developing the GGI Light Design Concept maintains the basic travel patterns that were developed for the 2016 SIMR No Build condition.

- GGI Ultimate Design Concept: Design Year (2048) traffic forecast were developed based on volumes for the Ultimate Design Concept per the 2019 SIMR Re-evaluation. Year 2040 volumes were extrapolated to 2048 per average growth rates depicted in the GGI Light Design Concept (2040 to 2048). Note that the re-evaluation involves no changes to the Ultimate Design Concept per the 2019 SIMR Re-evaluation. Hence, no reassignment of traffic volumes is required for the ultimate design concept, following this procedure. It should also be noted that traffic volumes are generally higher under GGI Ultimate when compared to GGI Light – consistent with the approved traffic forecast for the 2016 SIMR No Build (basis for GGI Light) and the 2019 SIMR Re-evaluation (basis for GGI Ultimate).

- No Build Alternative: Opening year (2028) and design year (2048) volumes were developed by reassigning traffic volumes for the GGI Light Design Concept to match the No Build network. It should be noted that in redistributing traffic to match the No Build Condition, all traffic using the proposed new EB SR 826 to NB I-95 flyover (per GGI Light) will utilize the existing route via the GGI Park and Ride intersection to access NB I-95 (see existing route in Figure 3-1, under Section 3 of report). This redistribution, results in significantly more traffic using the existing route via the Park and Ride intersection under the No Build Condition when compared to the GGI Light Alternative. Also note that under GGI Light Design Concept there are no direct ramp connections to EB SR 826 from NW 12th Avenue, as per No Build (See Figures 3-2 and 3-3, under Section 3 of report). It is assumed that under GGI Light, traffic that would otherwise use the NW 12th Avenue on-ramp would utilize the NW 17th Avenue on-ramp, as the shortest route for accessing locations along EB 167th Street and NB SR 7 via EB SR 826. This is also accounted for the traffic redistribution for the No Build Alternative.

The travel demand volumes resulting from the above process are depicted in figures under Appendix B of the report.

2.4 Operational Analyses

Traffic operations analyses for the SR 826 SIMR Re-evaluation were performed utilizing CORSIM (version 6.3) models that were developed for the prior 2016 SR 826 SIMR and 2019 SIMR Re-evaluation. Note that the CORSIM models developed for the 2019 SIMR re-evaluation were built on the models developed for the 2016 SIMR. The CORSIM models developed for the 2016 SIMR were calibrated to replicate the traffic operating conditions during the AM and PM peak periods in the existing year (2011). The calibration was performed in accordance with criteria specified in the *FDOT's Traffic Analysis Handbook*. Information related to the calibration of the CORSIM models is documented in detail in the CORSIM Model Manual which is included under Appendix F of the approved 2016 SIMR. Given the prior calibration effort that was performed for the 2016 SR 826 SIMR, a recalibration effort was not required for this SIMR Re-evaluation.

CORSIM microsimulation models were developed for design year 2048 conditions for the GGI Light Design Concept, the GGI Ultimate Design Concept (per approved 2019 SIMR Re-evaluation) and the No Build Condition. Year 2028 CORSIM models were developed for GGI Light Design Concept and the No Build Condition. All CORSIM models maintained the following spatial and temporal limits per the prior 2016 SR 826 SIMR models:

- Spatial limits extend along SR 826 from west of NW 27th Avenue to the Golden Glades Interchange and along I-95 from south of Opa-Locka Boulevard Interchange to Miami Gardens Drive Interchange (see Figure 2-1).
- Temporal limits cover a total duration of 4 hours in the AM peak period and 4 hours in the PM peak period (which excludes the model initialization period). Multi-period analyses were performed using traffic volumes in 15-minute time increments.

Network performance measures were assessed from the CORSIM based on an average of 10 runs using different random number seeds. The following MOEs gathered from the CORSIM models were used to evaluate and compare the performance of the proposed design modifications.

- Freeway Segments (merge, diverge, basic or weave)
  - Density (veh/mi/ln)
  - Estimated LOS
  - Speed (mph)
  - Travel Time (seconds)
  - Simulated Volume and Demand Volume
- Network-wide
  - Total Delay (hours)
  - Total Vehicle-Miles Travelled (veh-miles)
  - Average Speed (mph)
  - Latent (unmet) demand

In addition to the above networkwide MOEs, consideration was also given for reporting vehicles arrived, average delay and total stops. However, these MOEs are not directly reported by CORSIM and are therefore not reported in the SIMR Re-evaluation. In addition, LOS estimates for freeway segments were computed based on density measured in vehicles/mile per lane. It is recognized that the Highway Capacity Manual's (HCM's) procedure for estimating Level of Service is based on passenger cars/mile per lane, however, given that CORSIM procedures for computing density differ from HCM, and given the low percentage of trucks (2% - 3%) traffic occurring during the peak period, it was determined that no adjustments for truck traffic was necessary for computing LOS estimates for freeway segments.

It should be noted that Highway Capacity Manual (HCM) analysis is referenced in the MLOU for performing freeway operational analyses. However, HCM procedures were not used, given that CORSIM microsimulation analysis was applied for performing operational analyses. This approach is consistent with the current FDOT Traffic Analysis Handbook.

2.5 Safety Analysis

A quantitative safety assessment was performed consistent with the FDOT's Interchange Access Request User's Guide, Safety Analysis Guidance. The safety analysis guidance incorporates the quantitative crash analysis procedures contained in the Highway Safety Manual (HSM) developed by the American Association of State Highway and Transportation Officials (AASHTO). The safety analysis compared the GGI Light Design Concept, the GGI Ultimate Design Concept and the No Build Condition. Study limits for the safety analysis were maintained consistent with the area of influence for the SIMR Re-evaluation as depicted in Figure 2-1. It is recognized that there are limitations to the HSM procedures, and it may not be directly applicable for all design conditions associated with this SIMR Re-evaluation. Hence, a qualitative safety assessment is also provided to supplement the HSM's quantitative safety analysis.

3 DESIGN CONCEPTS

The SIMR Re-evaluation considers three alternatives the project design year 2048: 1) No Build Condition; 2) GGI Ultimate Design Concept (per approved 2019 SIMR Re-evaluation; and 3) GGI Light Design Concept. The alternatives are described below.

No Build Alternative: The future No Build Alternative is illustrated in the line diagram contained in Figure 3-1. The No Build Alternative includes the existing road network plus all funded and committed projects within the study corridor per the FDOT 5-Year Work program. It also incorporates all Cost Feasible Plan projects contained in Miami-Dade County's 2045 Long Range Transportation Plan (LRTP) except for the SR 826 improvements that are the subject of this study.

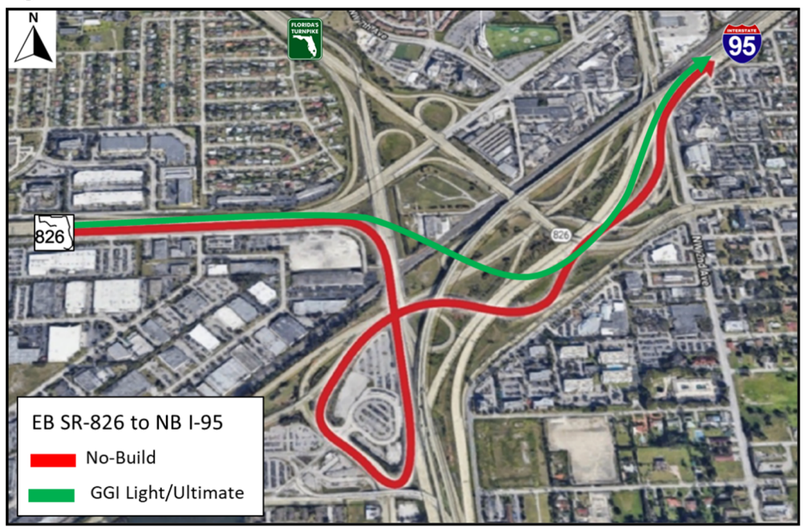
It should be noted that the 2040 LRTP and the then prevailing FDOT 5-Year Work Program provided the basis for No-Build network and resulting travel demand forecast for the 2019 SIMR Re-evaluation and the original 2016 SIMR. In comparing the 2040 LRTP, 2045 LRTP and associated 5-Year Work Programs, no projects were identified that would substantially change the assumed network nor the travel demand forecast for the GGI improvement project.

Travel demand forecast for the No Build Alterative opening year (2028) and design year (2048) were developed by redistributing volumes for the GGI Light Design Concept, per methodology described under Section 2.3 of the report. The resulting volumes are depicted in figures under Appendix B.

GGI Ultimate Design Concept: The GGI Ultimate Design Concept is the current approved design concept per the 2019 SIMR Re-evaluation – see Figure 3-2. This concept was developed to accommodate traffic conditions in year 2040. It includes the following major interchange modifications:

- New flyover ramp providing direct connection between eastbound SR 826 and NB I-95 (general use lanes). This improvement is included in the GGI Light Design Concept. The new flyover is a primary need for the GGI improvements as it provides a direct connection from EB SR 826 to NB I-95, eliminates the need to use the existing long circuitous route, reduces travel distance by approximately 1 mile, and removes traffic from some of the most congested segments of the GGI ramp system. Figure 3-1 (below) illustrates the existing route (No Build) in red and the proposed route (GGI Ultimate/GGI Light) in green for movements from EB SR 826 to NB I-95.

Figure 3-1: Alternative Routes for EB SR 826 to NB I-95



- New 3-lane off-ramp from EB SR 826/Palmetto Expressway (GU) to serve I-95 NB and SB movements.
- New ramp connection for movements from SB Florida's Turnpike to SB I-95 Express lanes. This improvement is included in the GGI Light Design Concept.
- New flyover ramps providing direct connections between the proposed SR 826 Express Lanes and I-95 Express lanes (North).
- Construction of a new ramp to connect the existing NB I-95 express lanes to the Turnpike Spur. The new ramp will also provide more direct connections for NB I-95 Express traffic to WB SR 826 and traffic continuing north on I-95 GU Lanes. This improvement is included in the GGI Light Design Concept.
- Widening and realignment of ramps within the GGI to accommodate anticipated future design year traffic.

- Relocation of express lanes ingress and egress points on I-95 in the vicinity of Miami Gardens Drive to accommodate the proposed new express lane connections.

The above improvements are noted in the line diagram contained in Figure 3-2. The line diagram also identifies proposed improvements for the Ultimate Design Concept that are not included the GGI Light Design Concept, discussed below.

Travel demand forecast for the GGI Ultimate Design Concept design year (2048) were developed per methodology described under Section 2.3 of the report. The resulting volumes are depicted in figures under Appendix B

GGI Light Design Concept: GGI Light is the interim design concept which is the subject of this re-evaluation – see Figure 3-3. The concept incorporates design changes necessary to accommodate the FGT pipelines. It includes all the interchange modifications listed above for the GGI Ultimate Design Concept except for the following:

- GGI Light excludes the proposed new flyover ramps providing direct connections between the proposed SR 826 Express Lanes and I-95 Express lanes (North). It also excludes widening required along SR 826 and I-95 to accommodate the future express lanes connection. This proposed new connection will be implemented with the planned SR 826 Express Lanes.
- GGI Light excludes the proposed widening along some ramps within the GGI system, per the Ultimate Design Concept. Notably it eliminates the proposed widening for the following ramps:
    - Loop ramp connecting movements from NB I-95 (GU) to WB SR 826. Proposed widening from one to two lanes (per GGI Ultimate) is not included in GGI Light.
    - Ramp connecting movements from EB SR 826/Palmetto Expressway to EB SR 826/NW 167th Street is not included in GGI Light.
- Proposed 3-lane off-ramp from EB SR 826/Palmetto Expressway (per GGI Ultimate) is modified to a one-lane off-ramp serving NB I-95 traffic only.

The GGI Light Design Concept also assumes that the planned SR 826 Express Lanes and improvements to the interchanges at NW 27th Avenue and NW 17th Avenue will not be implemented by the design year 2048. The design changes necessary for the GGI Light Design Concept are noted in the line diagram contained in Figure 3-3. Appendix C contains preliminary concept plans for GGI Light Design Concept. All improvements proposed for the GGI Light Design Concept are expected to be implemented by 2028 except for a proposed auxiliary lane along NB I-95, north of NW 2nd Avenue On-Ramp. This auxiliary lane project is currently programmed for letting in 2031 and is incorporated in the GGI Light Design Concept for 2048. The segment of NB I-95, north of NW 2nd Avenue will match the existing No Build in year 2028.

Travel demand forecast for the GGI Light Design Concept opening year (2028) and design year (2048) were developed per methodology described under Section 2.3 of the report. The resulting volumes are depicted in figures under Appendix B.

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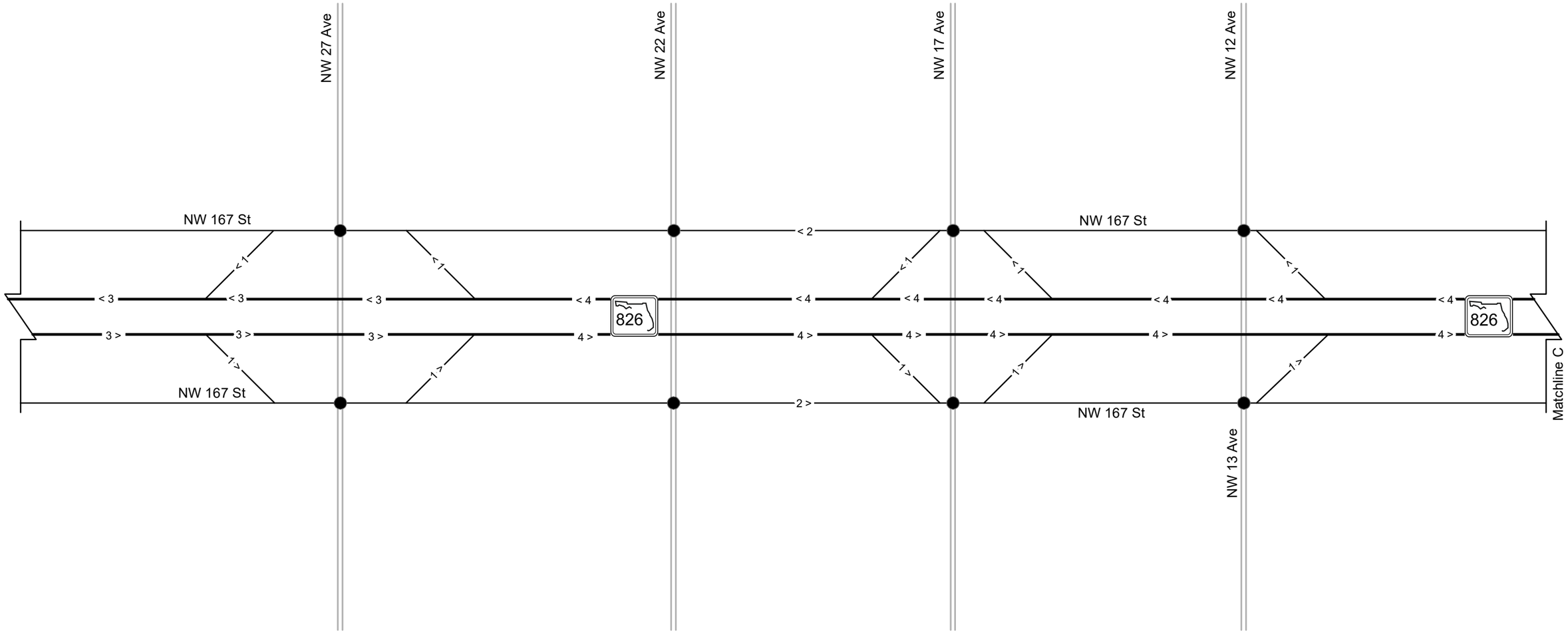
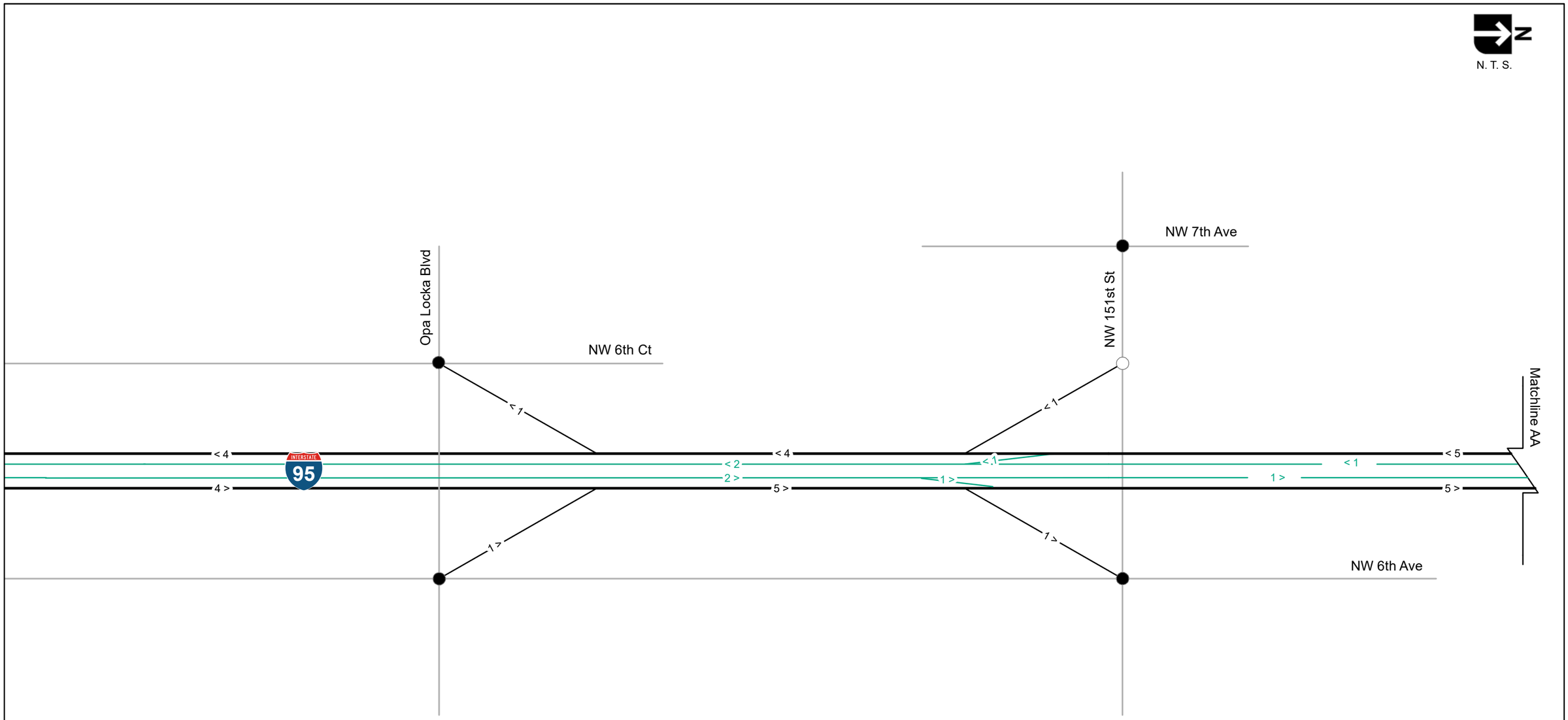


Legend

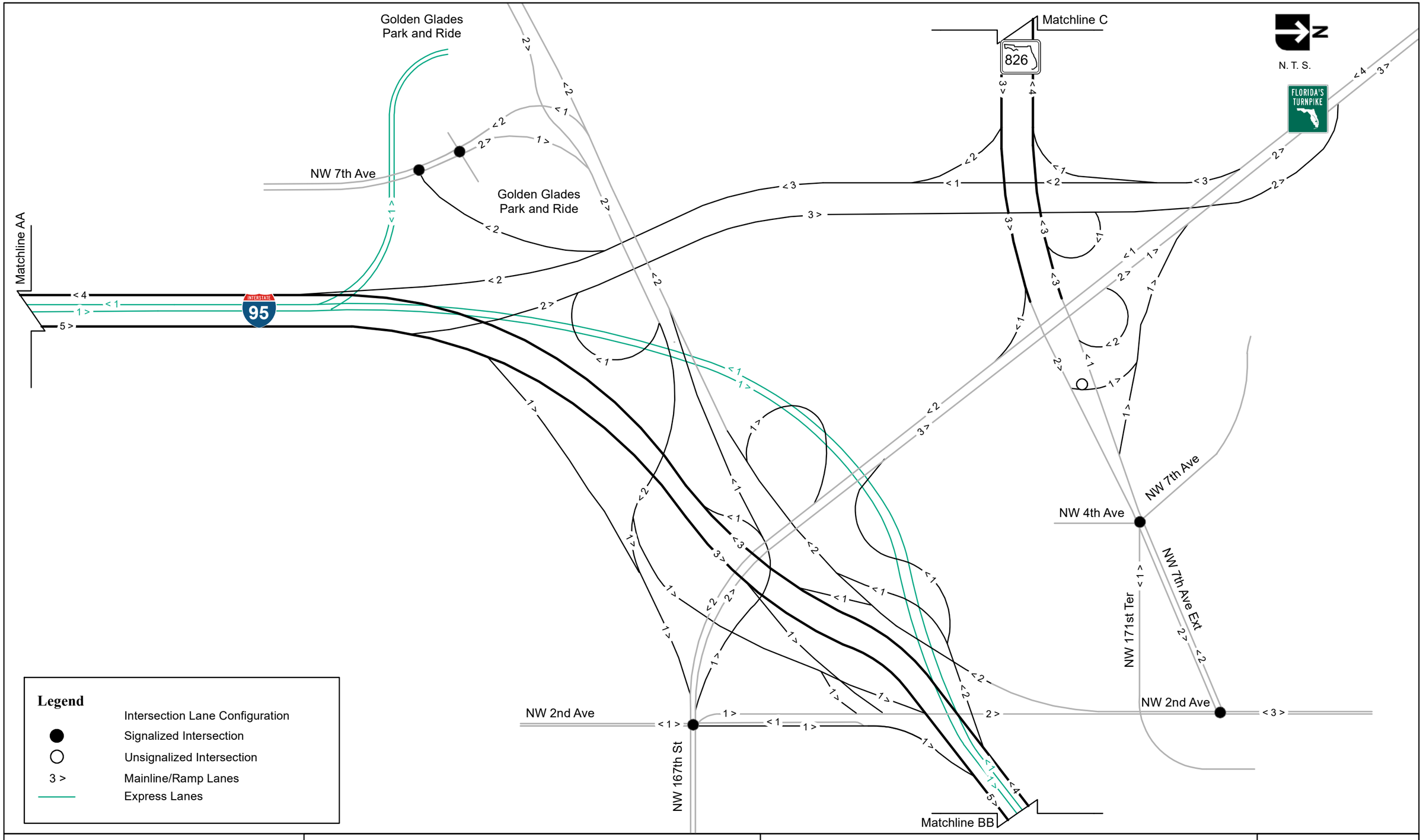
	Intersection Lane Configuration
●	Signalized Intersection
○	Unsignalized Intersection
3 >	Mainline/Ramp Lanes

FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange ETDM NO: 11241 FM.: 418423-1-22-01	No Build Alternative - Line Diagram	Figure 3-2 Sheet 1 of 4



FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange ETDM NO: 11241 FM.: 418423-1-22-01	No Build Alternative - Line Diagram	Figure 3-2 Sheet 2 of 4

SIMR Reevaluation



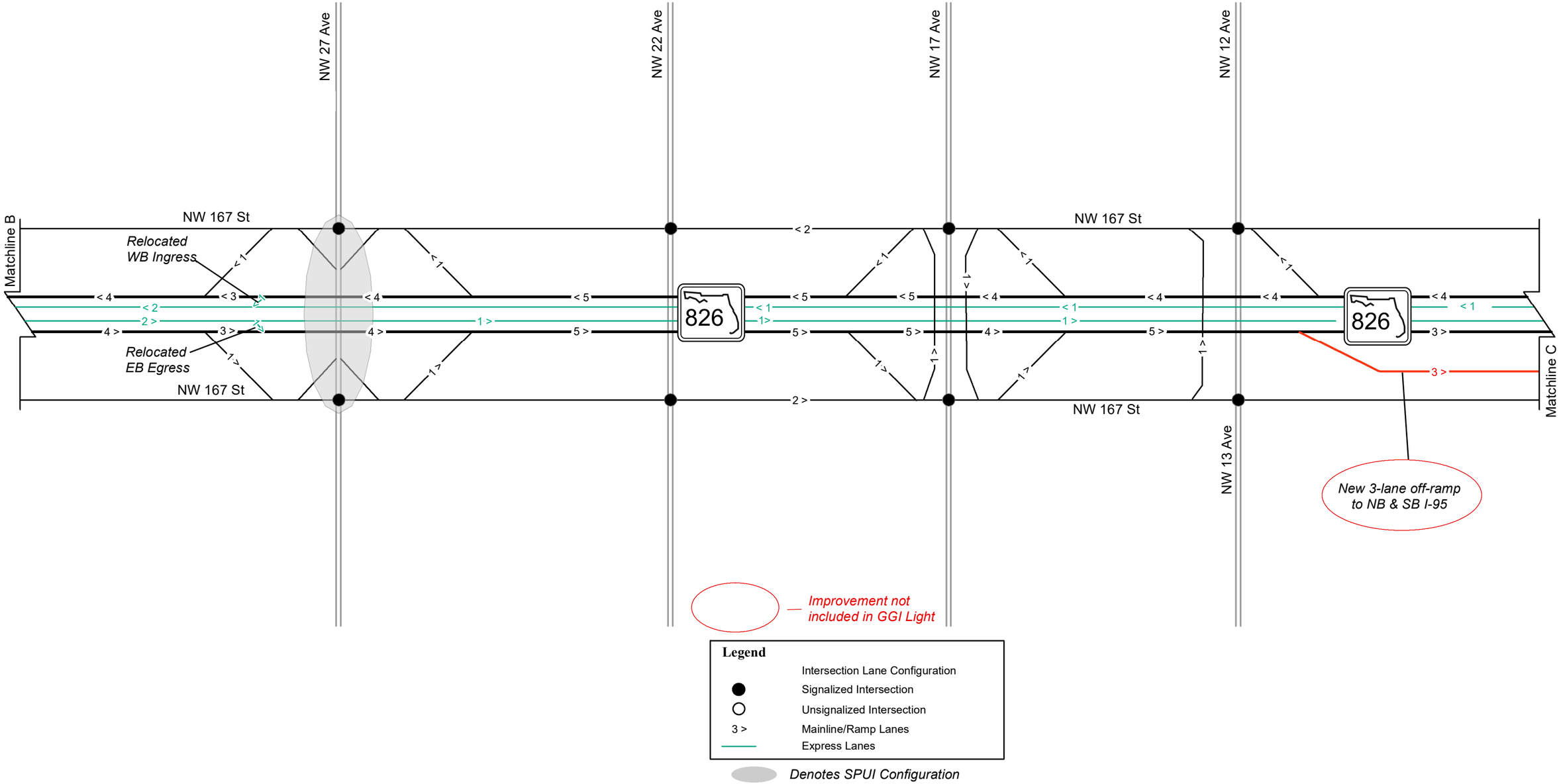
FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange ETDM NO: 11241 FM.: 418423-1-22-01	No Build Alternative - Line Diagram	Figure 3-2 Sheet 3 of 4

Legend

	Intersection Lane Configuration
●	Signalized Intersection
○	Unsignalized Intersection
3 >	Mainline/Ramp Lanes
———	Express Lanes

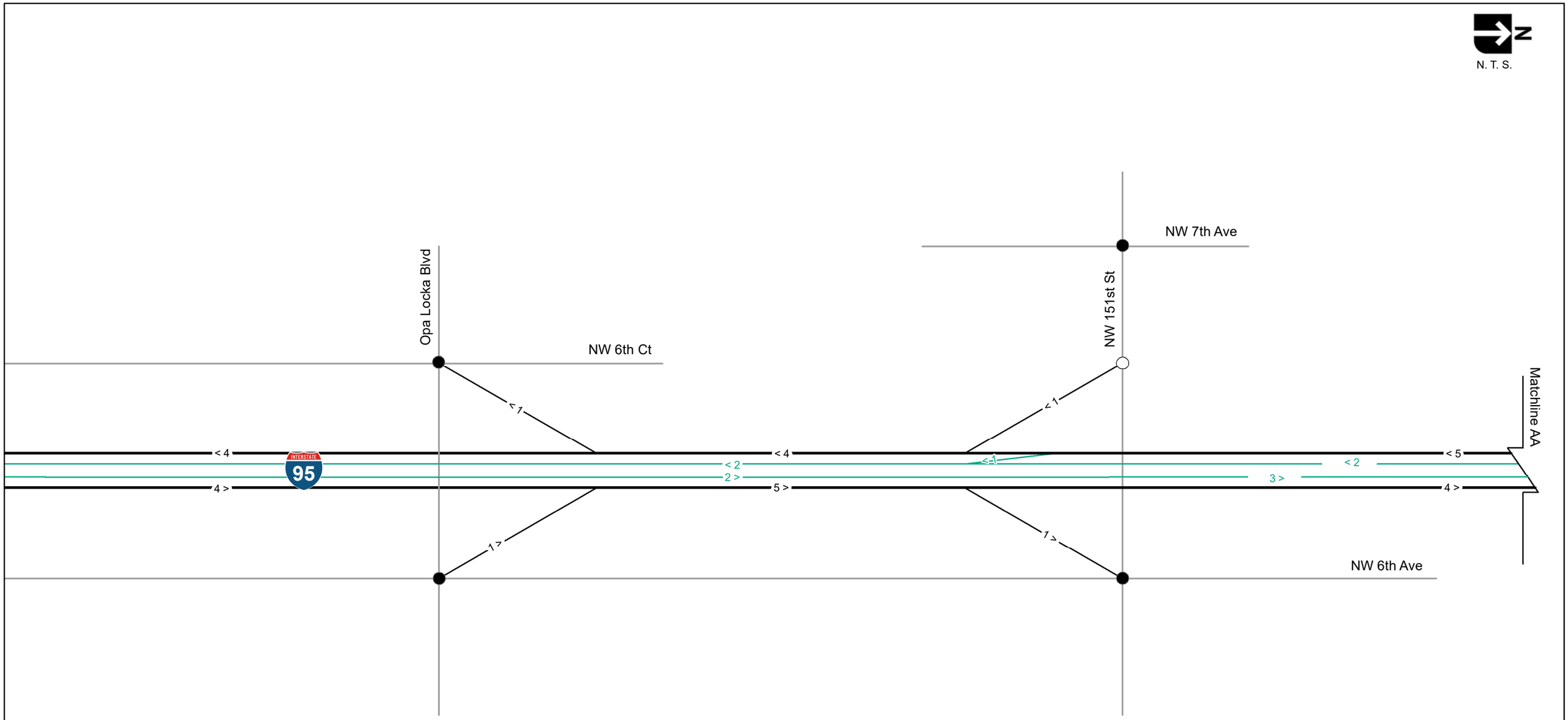
FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange ETDM NO: 11241 FM.: 418423-1-22-01	No Build Alternative - Line Diagram	Figure 3-2 Sheet 4 of 4

N. T. S.



FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange ETDM NO: 11241 FM.: 418423-1-22-01	GGI Ultimate Design Concept - Line Diagram	Figure 3-3 Sheet 1 of 4

N. T. S.

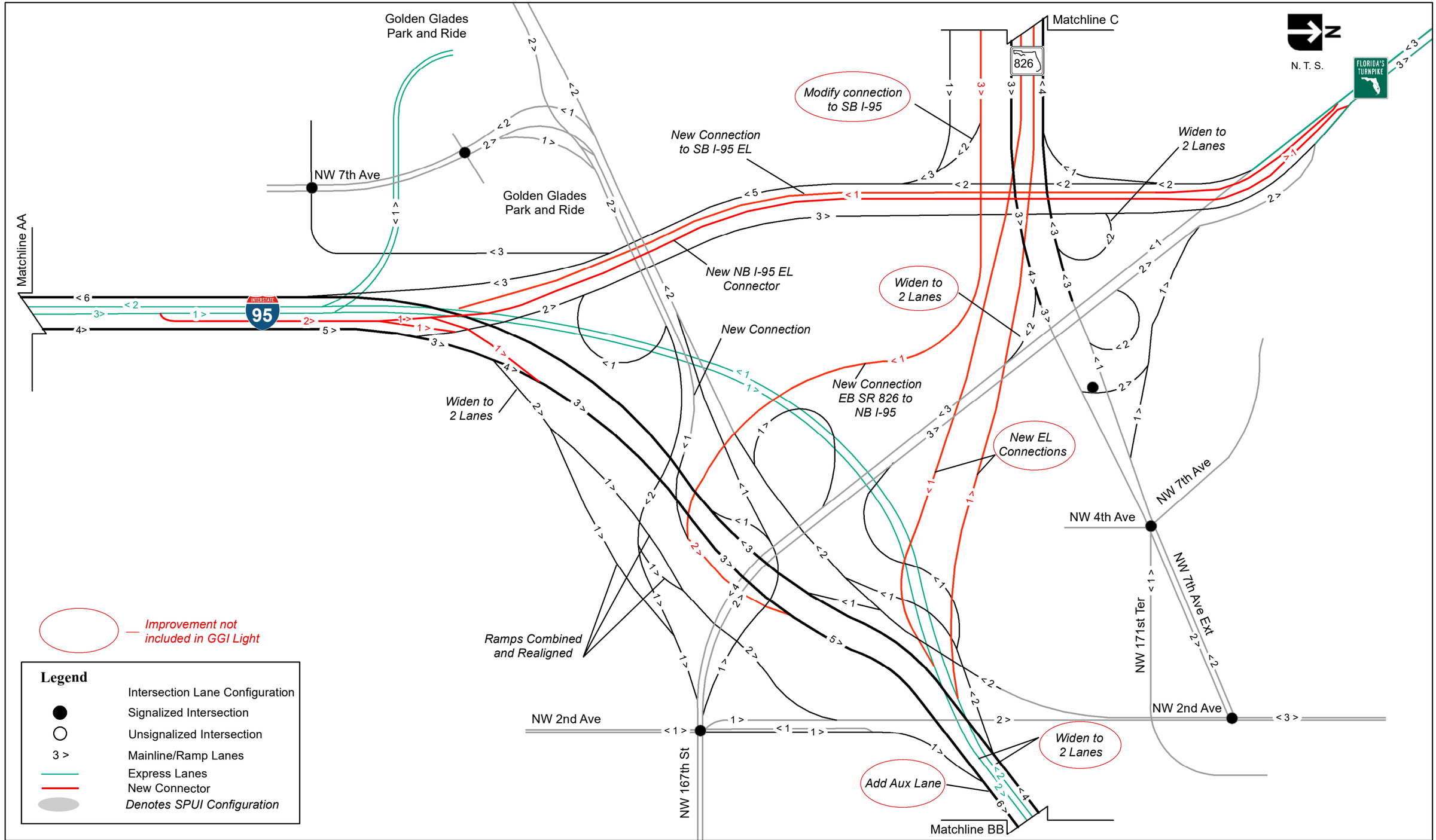


SR 826/Palmetto Expressway PD&E Study
From SR 93/I-75 to Golden Glades Interchange

ETDM NO: 11241
FM.: 418423-1-22-01

GGI Ultimate Design Concept - Line Diagram

Figure 3-3



FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange ETDM NO: 11241 FM.: 418423-1-22-01	GGI Ultimate Design Concept - Line Diagram	Figure 3-3 Sheet 3 of 4

SIMR Reevaluation

N. T. S.

SR 826/Palmetto Expressway PD&E Study
From SR 93/I-75 to Golden Glades Interchange

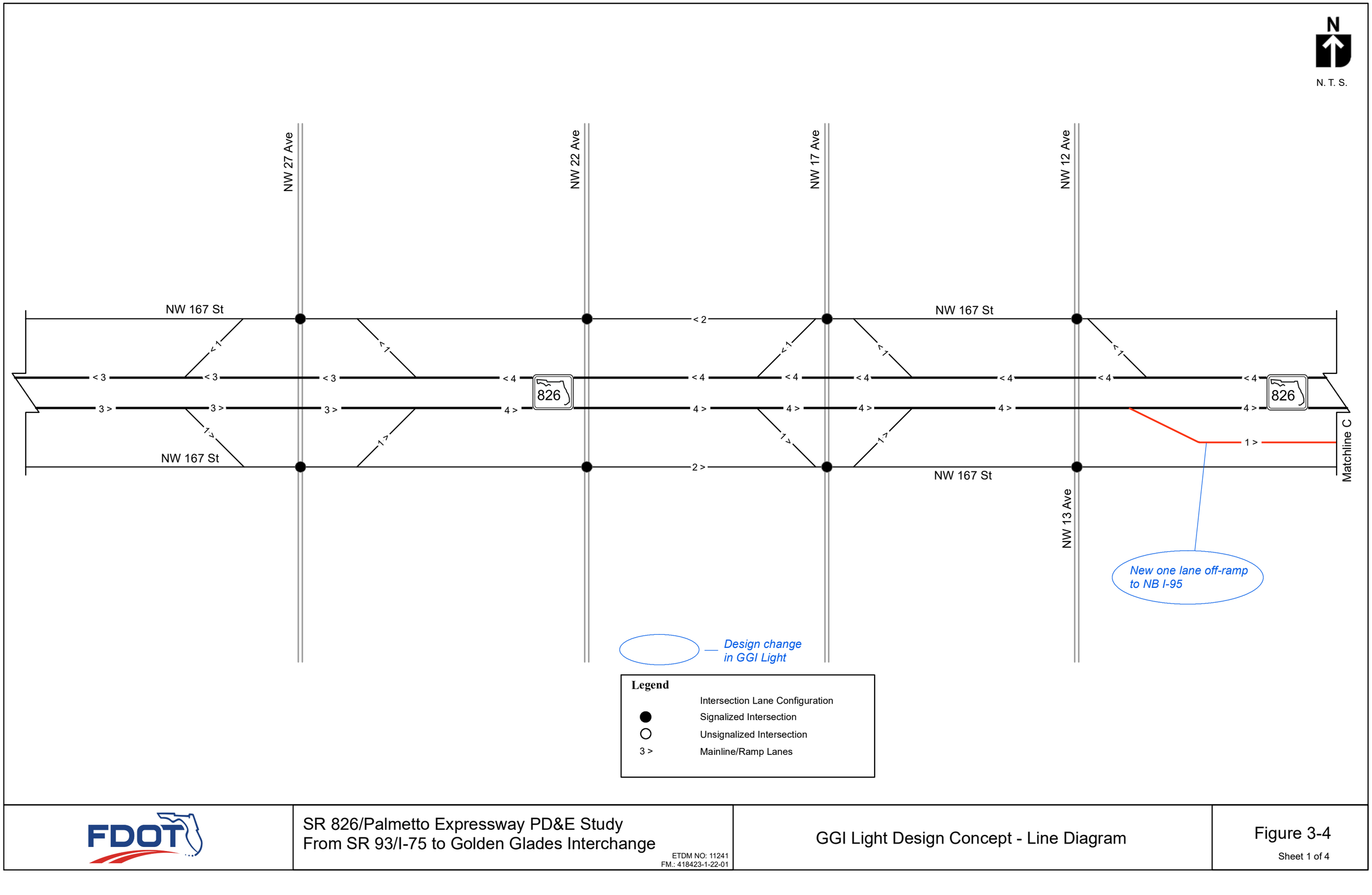
ETDM NO: 11241
FM.: 418423-1-22-01

GGI Ultimate Design Concept - Line Diagram

Figure 3-3

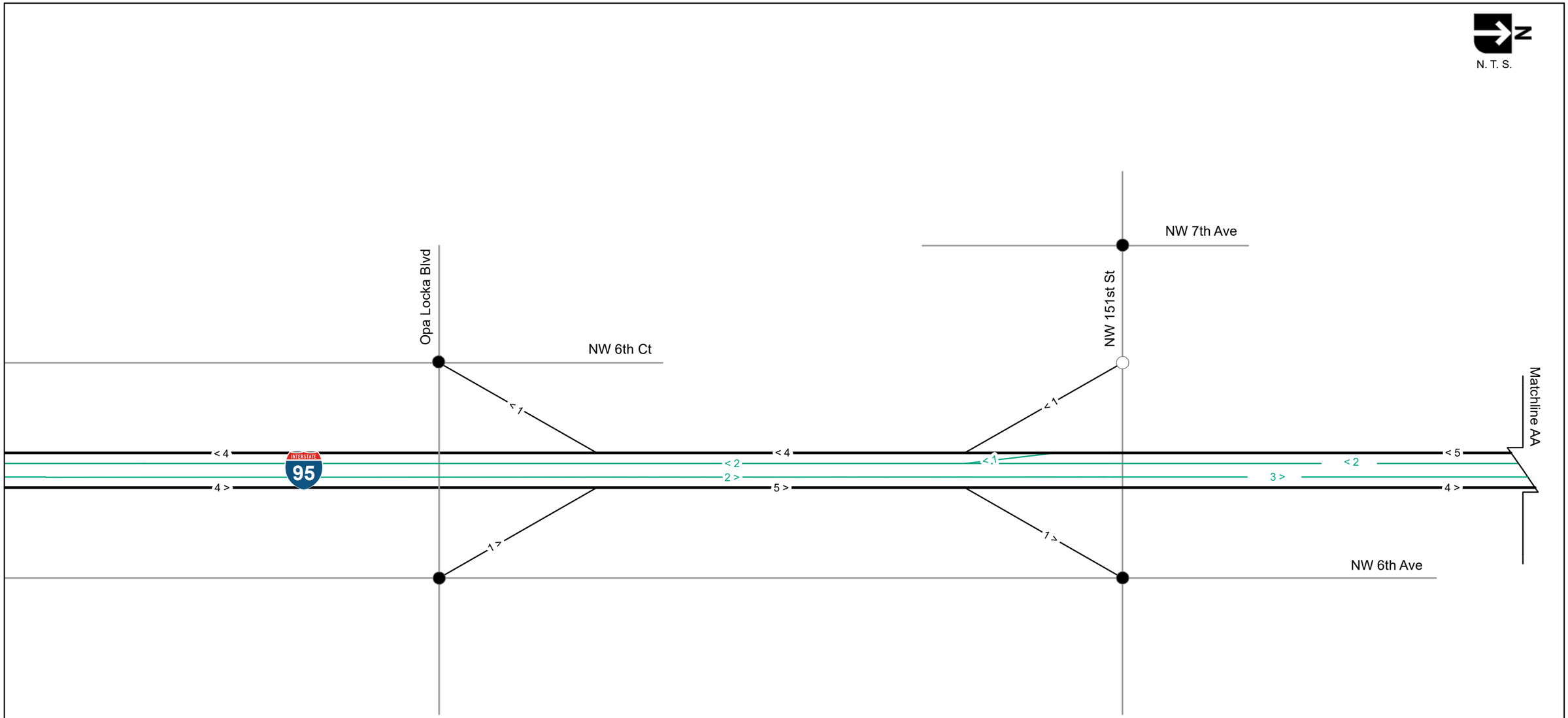
SIMR Reevaluation

N. T. S.



FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange ETDM NO: 11241 FM.: 418423-1-22-01	GGI Light Design Concept - Line Diagram	Figure 3-4 Sheet 1 of 4

N. T. S.



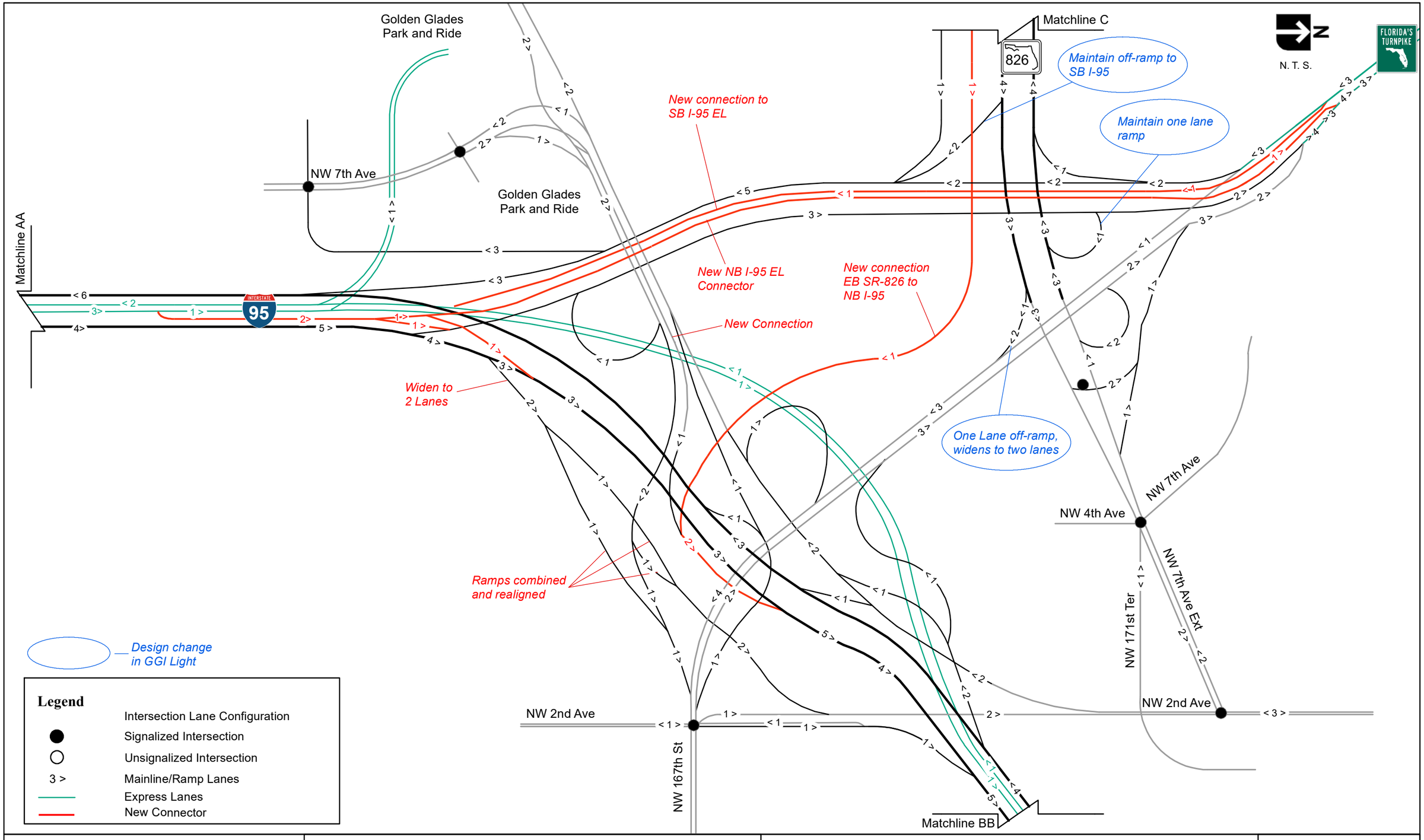
SR 826/Palmetto Expressway PD&E Study
From SR 93/I-75 to Golden Glades Interchange

ETDM NO: 11241
FM.: 418423-1-22-01

GGI Light Design Concept - Line Diagram

Figure 3-4

SIMR Reevaluation



FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange ETDM NO: 11241 FM.: 418423-1-22-01	GGI Light Design Concept - Line Diagram	Figure 3-4 Sheet 3 of 4

N. T. S.

Legend

	Intersection Lane Configuration
●	Signalized Intersection
○	Unsignalized Intersection
3 >	Mainline/Ramp Lanes
———	Express Lanes

FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange ETDM NO: 11241 FM.: 418423-1-22-01	GGI Light Design Concept - Line Diagram	Figure 3-4 Sheet 4 of 4

4 OPERATIONAL ANALYSES

4.1 CORSIM Microsimulation Analyses

CORSIM microsimulation models were developed to assess and compare the anticipated future traffic operating conditions for the three future alternative design concepts – No Build Alternative, Ultimate Design Concept (per current approved 2019 SIMR Re-evaluation), and proposed GGI Light Design Concept. The models were developed for design year 2048 conditions for four hours in the AM peak period (5:45 AM to 9:45 AM) and four hours in the PM peak period (3:00 PM to 7:00 PM). Opening Year (2028) models were also developed for the No Build Alternative and the GGI Light Design Concept covering the same AM and PM peak periods. The GGI Ultimate Design Concept will not be implemented by 2028, hence, it was not evaluated for opening year (2028). The development of the CORSIM microsimulation models and results from the analyses are discussed in the following sections.

4.2 CORSIM Model Development

CORSIM models were developed in accordance with the methodology described under Section 2.4 of the SIMR Re-evaluation. CORSIM models were fully developed, calibrated and approved for the prior 2016 SIMR and 2019 SIMR Re-evaluation. These models were used as the basis for developing the CORSIM models for the three considered future alternatives. The CORSIM models maintained all prior calibration parameters, spatial limits, and temporal limits per the prior approved 2019 SIMR Re-evaluation. Network geometries were modified to match the proposed design changes. Traffic volumes for Design Year (2048) and Opening Year (2028) were assigned per procedures described under Section 2.3 and the resulting network volumes depicted in Appendix B. Results from the CORSIM models were assessed from an average of 10 runs using different random number seeds.

4.3 CORSIM Microsimulation Results

Results of the CORSIM microsimulation analysis are summarized in the lane schematics and tables presented in the following sections. The lane schematics summarize link operating speeds, demand volumes, simulated (processed) volumes, densities and approximate level of service (based on HCM criteria). It should be noted that HCM and CORSIM do not apply the same methodologies for computing MOEs (density, delays) which are the basis for determining LOS conditions. Hence, the LOS estimates reported in the CORSIM lane schematics are not directly comparable to the HCM LOS standards. The lane schematics also include a comparison of demand volume vs. CORSM simulated volume along each link. Locations where the simulated volumes fall below 90% of the demand volumes are highlighted in red. These conditions likely result from congestion within the subject link or at downstream locations. In addition, upstream bottlenecks may meter the traffic flow arriving at downstream locations, hence, causing simulated volumes to fall below demand volumes. The presentation of results and discussions focus on segments of the network where significant design changes are proposed, namely:

- I-95 mainline (NB and SB)
- SR 826 mainline (EB and WB)
- I-95/Turnpike Connectors (NB and SB)

In addition to the above, travel times are also compared for movements from EB SR 826 to NB I-95. Networkwide performance measures are also used for evaluating the design alternatives.

In evaluating and comparing the operational performance of each design alternative it must be recognized that the GGI operates in a congested environment where peak period traffic demand volumes exceed the capacity of the network. In such conditions, capacity improvements will often yield an increase in throughput accompanied by a decrease in operating speeds. This is especially notable in the design year 2048 when congestion is most significant. Hence, in comparing the GGI design alternatives, throughput is used as the principal performance measure for determining if one alternative performs better or worse than another. This approach is consistent with FDOT's policy of maximizing throughput on facilities operating under congested conditions, similar to the GGI. The following sections present the results from the CORSIM analyses and an assessment of the operational performance of each design alternative.

4.3.1 Opening Year (2028) CORSIM Microsimulation Results

Results of the 2028 CORSIM microsimulation analysis for the No Build and GGI Light Design Concept are summarized in Figures 4-1 through 4-4 and Tables 4-1 through 4-8. The following provides a comparative assessment of traffic operations under the No Build Alternative and the GGI Light Design Concept.

- **Traffic Operations along NB I-95:** Results from the CORSIM analysis indicate that traffic operations along NB I-95 will be better under GGI Light Design Concept when compared to the GGI No Build Alternative. This determination is based on the higher throughput generated under the GGI Light Design Concept and higher operating speeds in the GU lanes in the PM peak period. In the AM peak (off-peak direction), average operating speeds in the GU lanes are similar in the GGI Light Design Concept (53 mph) and No Build Alternative (55 mph). In the PM peak, average operating speeds in the GU lanes are higher under GGI Light Design Concept (42 mph) when compared to No Build Alternative (34 mph). Average operating speeds in the express lanes are comparable under GGI Light Design Concept (52/52 mph in AM/PM) and No Build Alternative (51/50 mph in AM/PM peak). Total peak hour throughput (GU + express lanes) is higher under the GGI Light Design Concept in the AM peak hour (11.6%) and PM peak hour (14.2%). Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (11.4%) and PM peak period (11.7%). It should further be noted that in the PM peak both the GGI Light Design Concept and GGI No Build Alternative will experience congestion along the segment of NB I-95, south of the Turnpike Off-Ramp (see Figure 4-2 and 4-4). In GGI Light Design Concept, the express lanes egress point at NW 151st Street is removed within this congested segment. This design modification reduces weaving activities within the segment and mitigates potential impacts to traffic operations in the express lanes, as occurs under No Build Alternative. These design modifications provide congestion relief and improve safety within the segment.

- **Traffic Operations along SB I-95.** Results from the CORSIM analysis indicate that traffic operations along SB I-95 will be better under GGI Light Design Concept when compared to the No Build Alternative. This determination is based on the higher throughput generated under the GGI Light Design Concept and higher operating speeds in the GU lanes in the PM peak period. In the AM peak (peak direction), average operating speeds in the GU lanes are moderately lower in the GGI Light Design Concept (47 mph) compared to No Build Alternative (53 mph) - the lower operating speeds in GGI Light occurs due to substantially higher throughput (1,329 vehicles more processed under GGI Light). In the PM peak, average operating speeds in the GU lanes are higher under GGI Light Design Concept (54 mph) when compared to No Build Alternative (38 mph). Average operating speeds in the express lanes are comparable under GGI Light Design Concept (51/52 mph in AM/PM) and No Build Alternative (51/52 mph in AM/PM peak). Total peak hour throughput (GU + express lanes) is higher under the GGI Light Design Concept in the AM peak hour (28.9%) and PM peak hour (40.4%). Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (24.0%) and PM peak period (39.5%).

- **Traffic Operations along NB I-95/Turnpike Connector:** Results from the CORSIM analysis indicate that traffic operations along the NB I-95/Turnpike Connector will be better under GGI Light Design Concept when compared the No Build Alternative. This determination is based on the higher throughput generated under the GGI Light Design Concept and with comparable speeds in the GU lanes in the AM and PM peak periods. In the AM peak (off-peak direction), average operating speeds in the GU lanes are comparable under GGI Light Design Concept (46 mph) and No Build Alternative (46 mph). In the PM peak (peak direction), average operating speeds in the GU lanes are moderately higher in the GGI Light Design Concept (16 mph) when compared to No Build Alternative (13 mph). The GGI Light Design Concept generates higher throughput (GU + express) in the AM peak (8.3%) and the PM peak (7.3%). Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (9.1%) and PM peak period (5.9%). In addition, under the GGI Light Design Concept, traffic using the new express lanes connections will operate freely at an average speed of approximately 47 mph in the AM and PM peaks.

- **Traffic Operations along SB I-95/Turnpike Connector:** Results from the CORSIM analysis indicate that traffic operations along the SB I-95/Turnpike Connector will be better under GGI Light Design Concept when compared the No Build Alternative. This determination is based on the higher throughput generated under the GGI Light Design Concept and higher operating speeds in the GU lanes in the AM and PM periods. In the AM peak hour (peak direction), average operating speeds in the GU lanes are higher under GGI Light Design Concept (44 mph) when compared to No Build Alternative (12 mph). Similarly, In the PM peak hour (off-peak direction), average operating speeds in the GU lanes are higher under the GGI Light Design Concept (25 mph) when compared to the No Build Alternative (11 mph). The GGI Light Design Concept also generates substantially higher throughput (GU + express) in the AM peak hour (79.8%) and the PM peak hour (112.9%). Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (58.9%) and PM peak period (115.8%). In addition, under the GGI Light Design Concept, traffic using the new express lanes connections will operate freely at an average speed of 46/47 mph in the AM/PM peaks.

- **Traffic Operations along EB SR 826:** Results from the CORSIM analysis indicate that traffic operations along EB SR 826 will be better under GGI Light Design Concept when compared to GGI No Build Alternative. This determination is based on the higher throughput generated under the GGI Light Design Concept and higher operating speeds in the GU lanes in the AM and PM periods. In the AM peak hour (peak direction), average operating speeds in the GU lanes are higher under GGI Light Design Concept (45 mph) when compared to No Build Alternative (10 mph). Similarly, In the PM peak hour (off-peak direction), average operating speeds in the GU lanes are higher under the GGI Light Design Concept (20 mph) when compared to the No Build Alternative (10 mph). The GGI Light Design Concept also generates substantially higher throughput in the AM peak hour (33.4%) and the PM peak hour (30.4%). Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (28.4%) and PM peak period (32.1%).

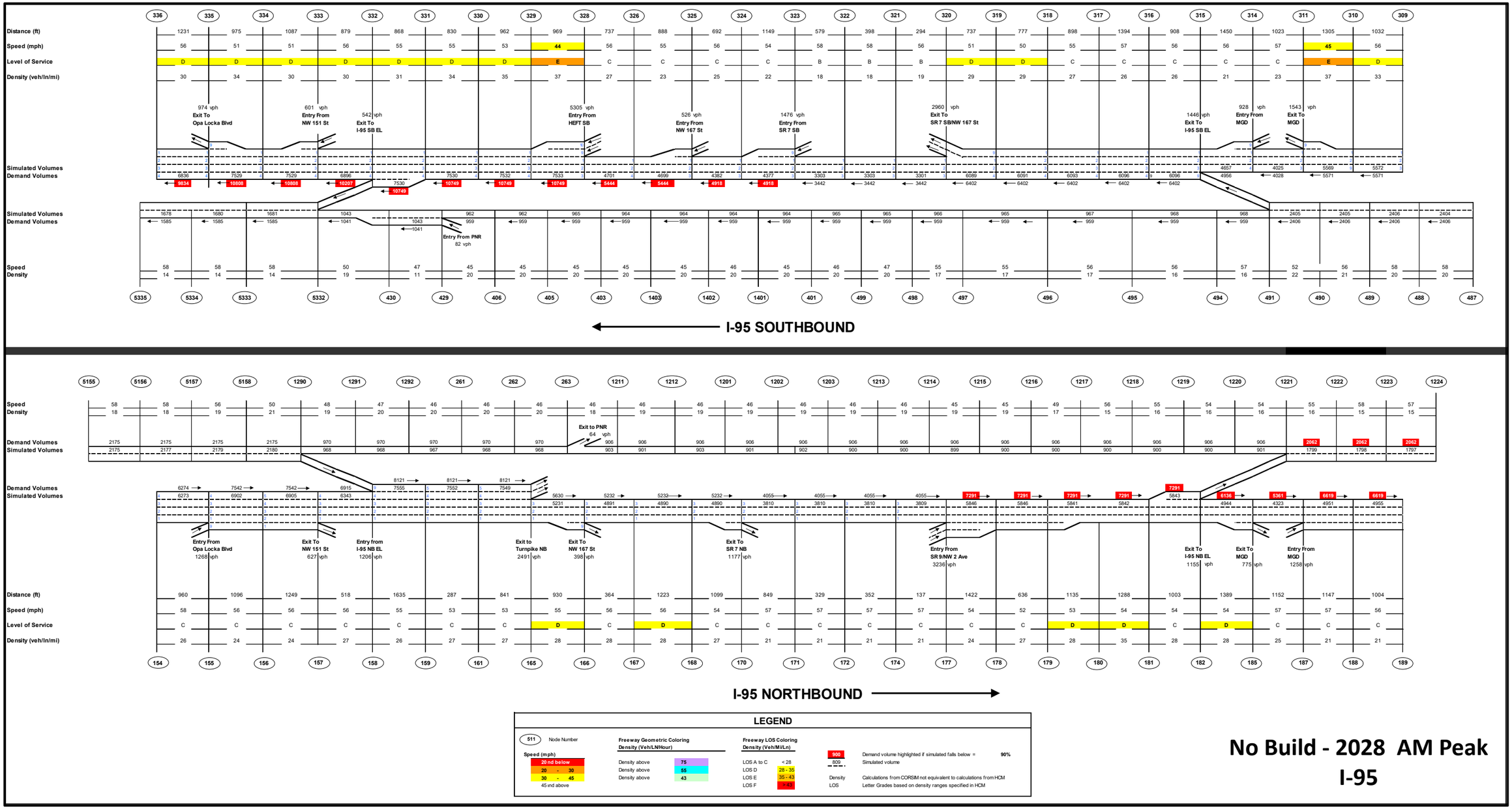
  It should be noted that although the GGI Light Design Concept performs better than the No Build Alternative, much of EB SR 826 will operate at LOS E or LOS F during the AM and PM peak periods. This occurs, since no capacity improvements are proposed for implementation along SR 826, in conjunction with the GGI Light Project. Future planned improvements along SR 826 will add additional capacity to the GU lanes and a new express lane facility. The GGI Ultimate Design Concept will be implemented in conjunction with these future planned capacity improvements along SR 826.

- **Traffic Operations along WB SR 826:** Results of the CORSIM analysis indicate that traffic operations along WB SR 826 will be better under GGI Light Design Concept when compared to GGI No Build Alternative. This determination is based on the higher throughput generated under the GGI Light Design Concept. In the AM peak hour (off-peak direction), average operating speeds in the GU lanes are comparable under GGI Light Design Concept (58 mph) and No Build Alternative (58 mph). In the PM peak hour (peak direction), average operating speeds in the GU lanes are lower under the GGI Light Design Concept (45 mph) when compared to the No Build Alternative (57 mph). The lower operating speed in GGI Light occurs due to higher throughput in the PM peak (GGI Light processes approximately 500 more vehicles than No Build). Total throughput in the in GGI Light is higher in the AM peak hour (2.4%) and PM peak hour (9.0%). Total throughput for the 4-hour simulation peak period is higher under GGI Light Design Concept in both AM peak period (2.1%) and PM peak period (9.0%).

- **EB SR 826 to NB I-95 GU lanes**: The GGI Light Design Concept incorporates a proposed new flyover for GU movements from EB SR 826 to NB I-95 GU Lanes. Results of the CORSIM analysis indicate that average operating speeds will be significantly higher for traffic movements going from EB SR 826 to NB I-95 GU lanes under GGI Light Design Concept (41/39 mph in AM/PM peaks) when compared to the GGI No Build Alternative (19/17 mph in AM/PM peaks).

Overall Network Performance

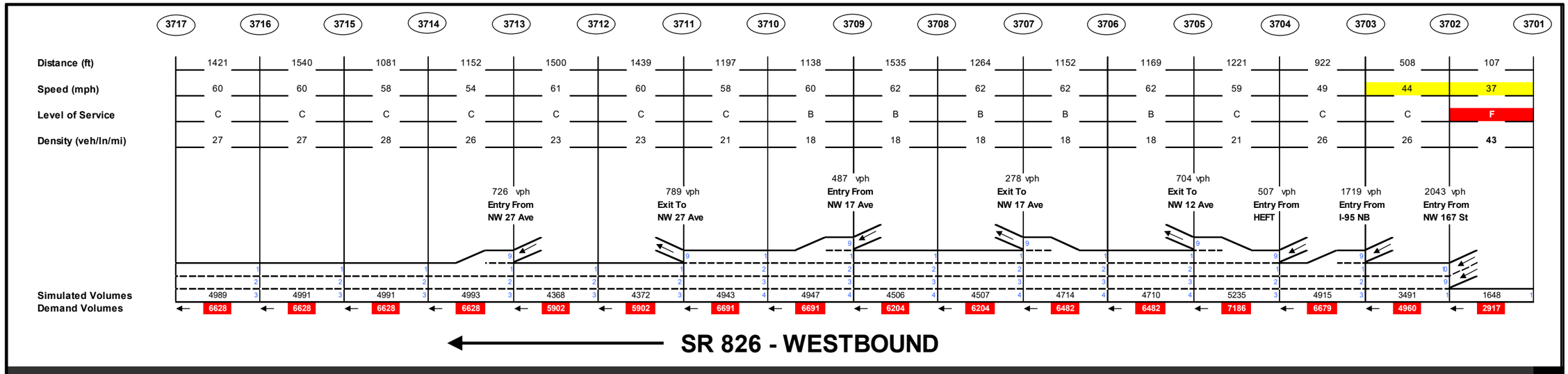
The discussions presented above confirm that the GGI Light Design Concept provides better overall traffic operating conditions throughout the GGI Interchange Study Area when compared to the No Build Alternative. The proposed interchange modifications improve traffic operations along NB/SB I-95, EB/WB SR 826, NB/SB I-95/Turnpike Connector and movements from EB SR 826 to NB I-95 GU lanes. In addition, as shown Table 4-8, all networkwide performance measures are better under the GGI Light Design Concept when compared to the No Build Alternative. The GGI Light Design Concept generates a reduction in networkwide delays of 40.0%/14.2% in AM/PM, total vehicle miles traveled increase by 13.8%/19.3% in AM/PM and average speed increase by 34.8%/21.1% in AM/PM. In addition, the accumulated unmet demand (latent demand) at the major network entry points (NB I-95, SB I-95, EB SR 826 and SB Turnpike) is substantially reduced under the GGI Light Design Concept – 75.7%/83.5% in the AM/PM peak periods.



No Build - 2028 AM Peak
I-95

FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange	2028 CORSIM Analysis – AM peak No Build
		Figure 4-1 Sheet 1 of 3

SIMR Re-evaluation (GGI Light)



LEGEND

511 Node Number

Speed (mph)

20 and below	
20	30
30	45
45 and above	

Freeway Geometric Coloring Density (Veh/LN/Hour)

Density above	75
Density above	55
Density above	43

Freeway LOS Coloring Density (Veh/Mi/Ln)

LOS A to C	< 28
LOS D	28 - 35
LOS E	35 - 43
LOS F	> 43

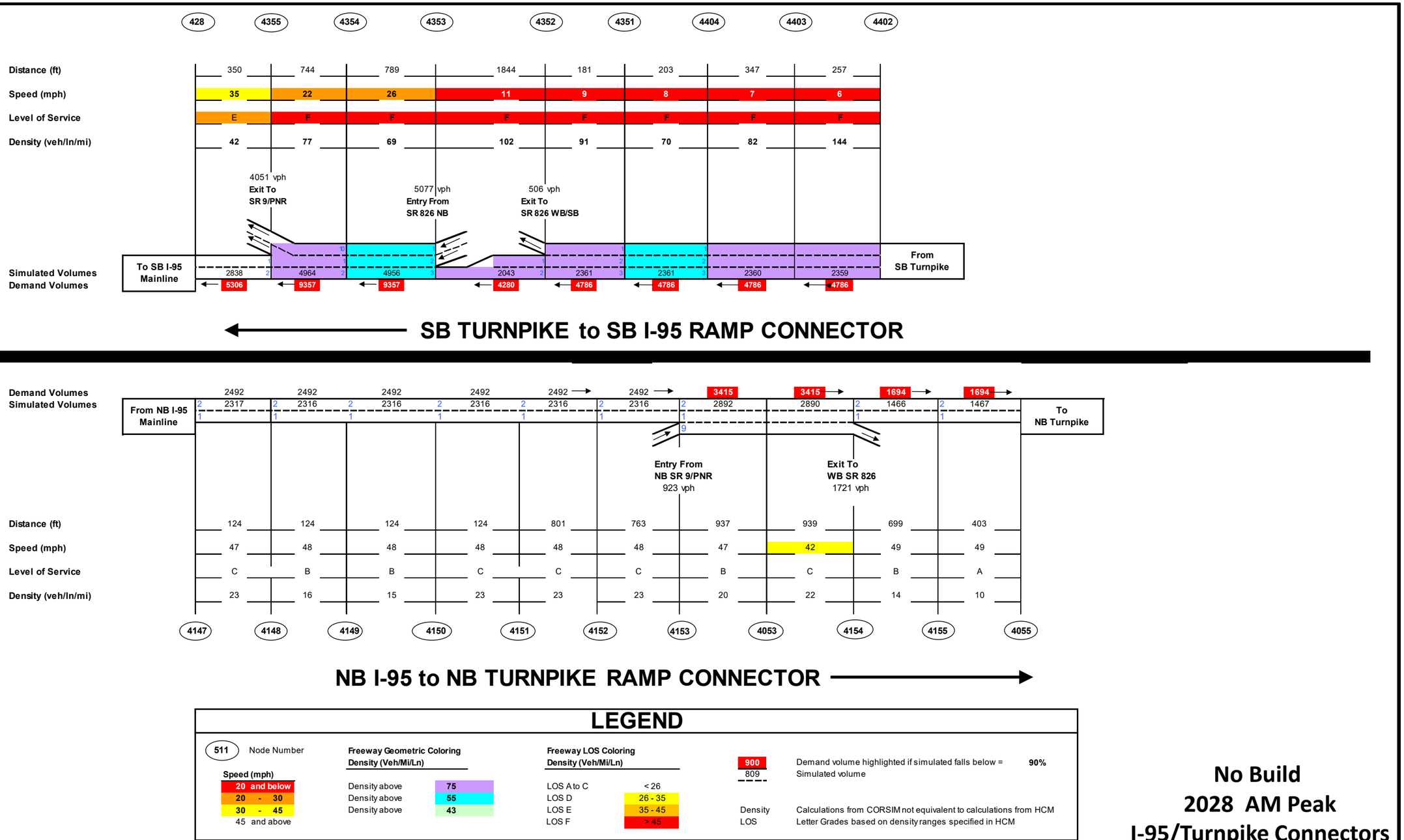
900 → Demand volume highlighted if simulated falls below = 90%

809 Simulated volume

Density Calculations from CORSIM not equivalent to calculations from HCM

LOS Letter Grades based on density ranges specified in HCM

No Build - 2028 AM Peak
SR 826



LEGEND

511 Node Number

Speed (mph)

20 and below	
20 - 30	
30 - 45	
45 and above	

Freeway Geometric Coloring
Density (Veh/Mi/Ln)

Density above	75
Density above	55
Density above	43

Freeway LOS Coloring
Density (Veh/Mi/Ln)

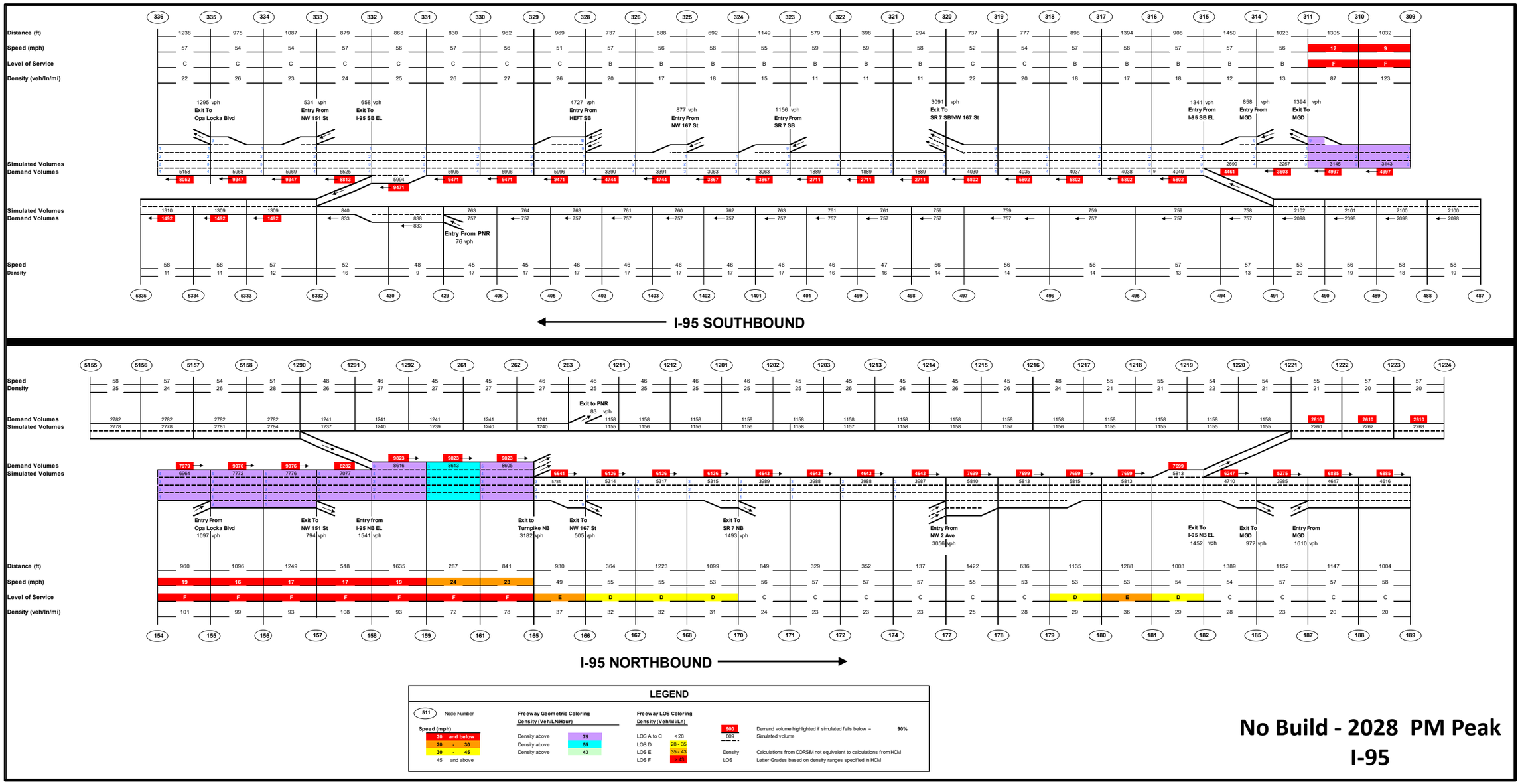
LOS A to C	< 26
LOS D	26 - 35
LOS E	35 - 45
LOS F	> 45

900 / 809 Demand volume highlighted if simulated falls below = **90%** Simulated volume

Density / LOS: Calculations from CORSIM not equivalent to calculations from HCM; Letter Grades based on density ranges specified in HCM

No Build
2028 AM Peak
I-95/Turnpike Connectors

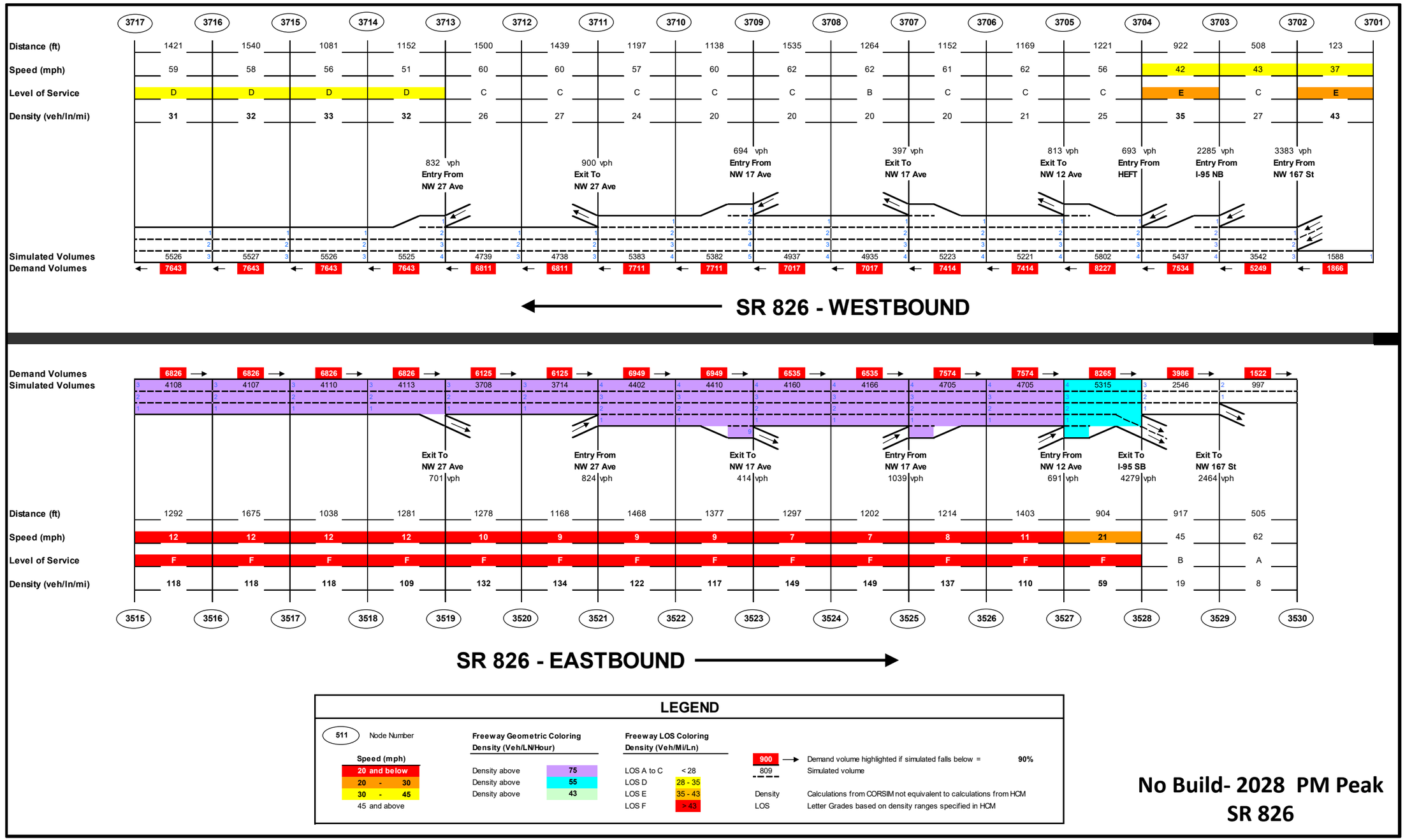
SIMR Re-evaluation (GGI Light)



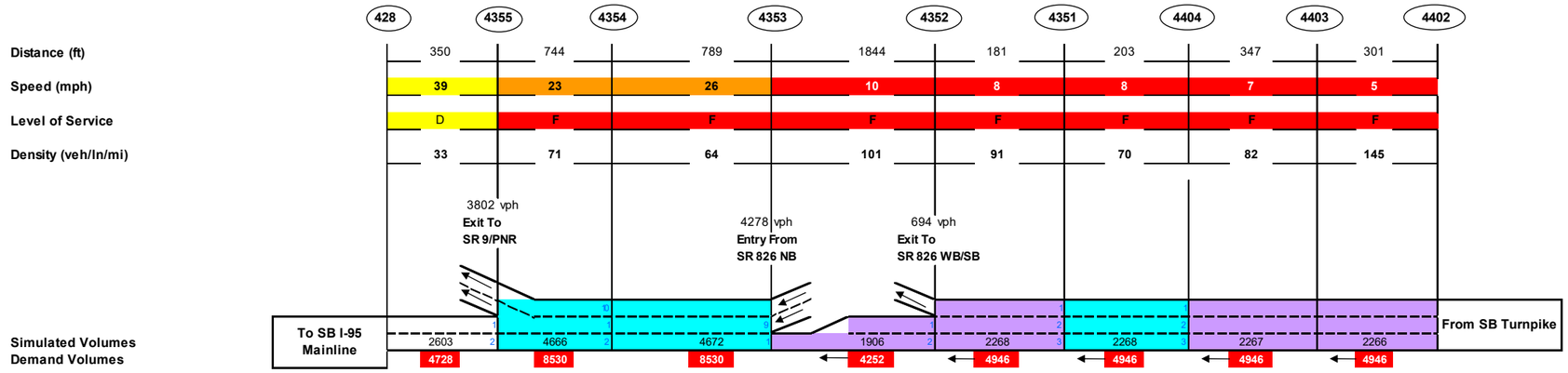
No Build - 2028 PM Peak
I-95

FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange	2028 CORSIM Analysis – PM peak No Build
		Figure 4-2 Sheet 1 of 3

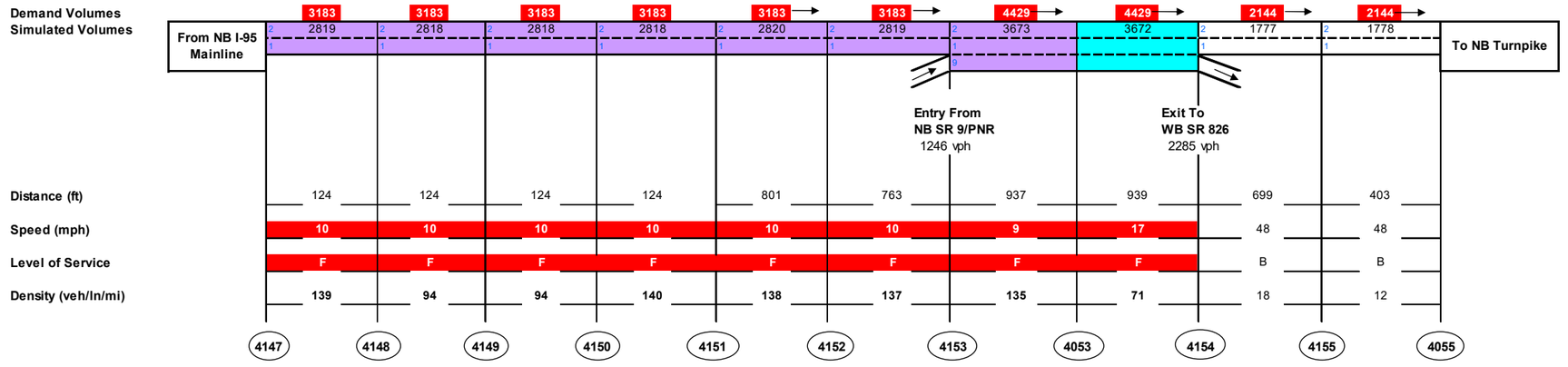
SIMR Re-evaluation (GGI Light)



No Build- 2028 PM Peak
SR 826



SB TURNPIKE to SB I-95 RAMP CONNECTOR



NB I-95 to NB TURNPIKE RAMP CONNECTOR

LEGEND

511 Node Number

Speed (mph)

20	and below	
20	-	30
30	-	45
45	and above	

Freeway Geometric Coloring
Density (Veh/Mi/Ln)

Density above	75
Density above	55
Density above	43

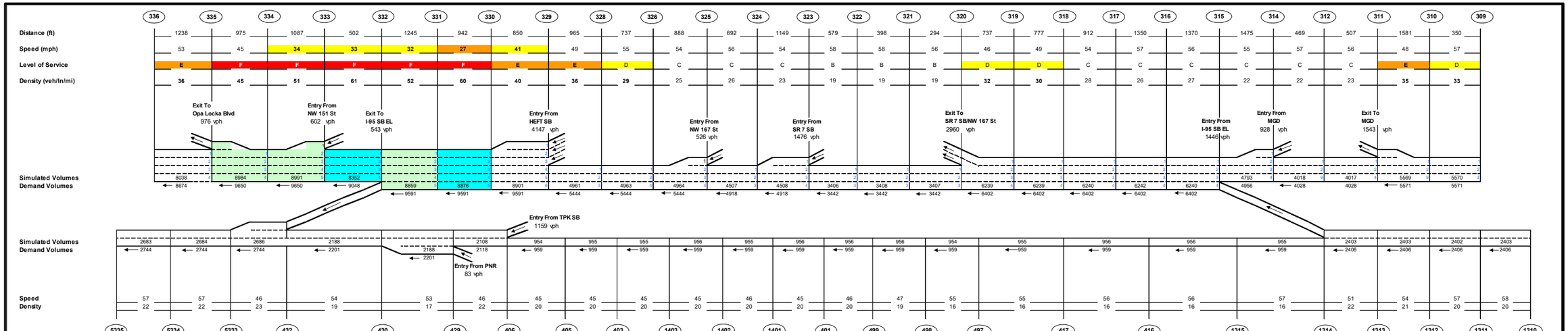
Freeway LOS Coloring
Density (Veh/Mi/Ln)

LOS A to C	< 26
LOS D	26 - 35
LOS E	35 - 45
LOS F	> 45

900 / 809 — Demand volume highlighted if simulated falls below = **90%** Simulated volume

Density / LOS — Calculations from CORSIM not equivalent to calculations from HCM. Letter Grades based on density ranges specified in HCM

No Build
2028 PM Peak
I-95/Turnpike Connectors



LEGEND

511 Node Number

Speed (mph)
- 20 and below
- 20 - 30
- 30 - 45
- 45 and above

Freeway Geometric Coloring Density (Veh/LN/Hour)
- Density above 75
- Density above 55
- Density above 43

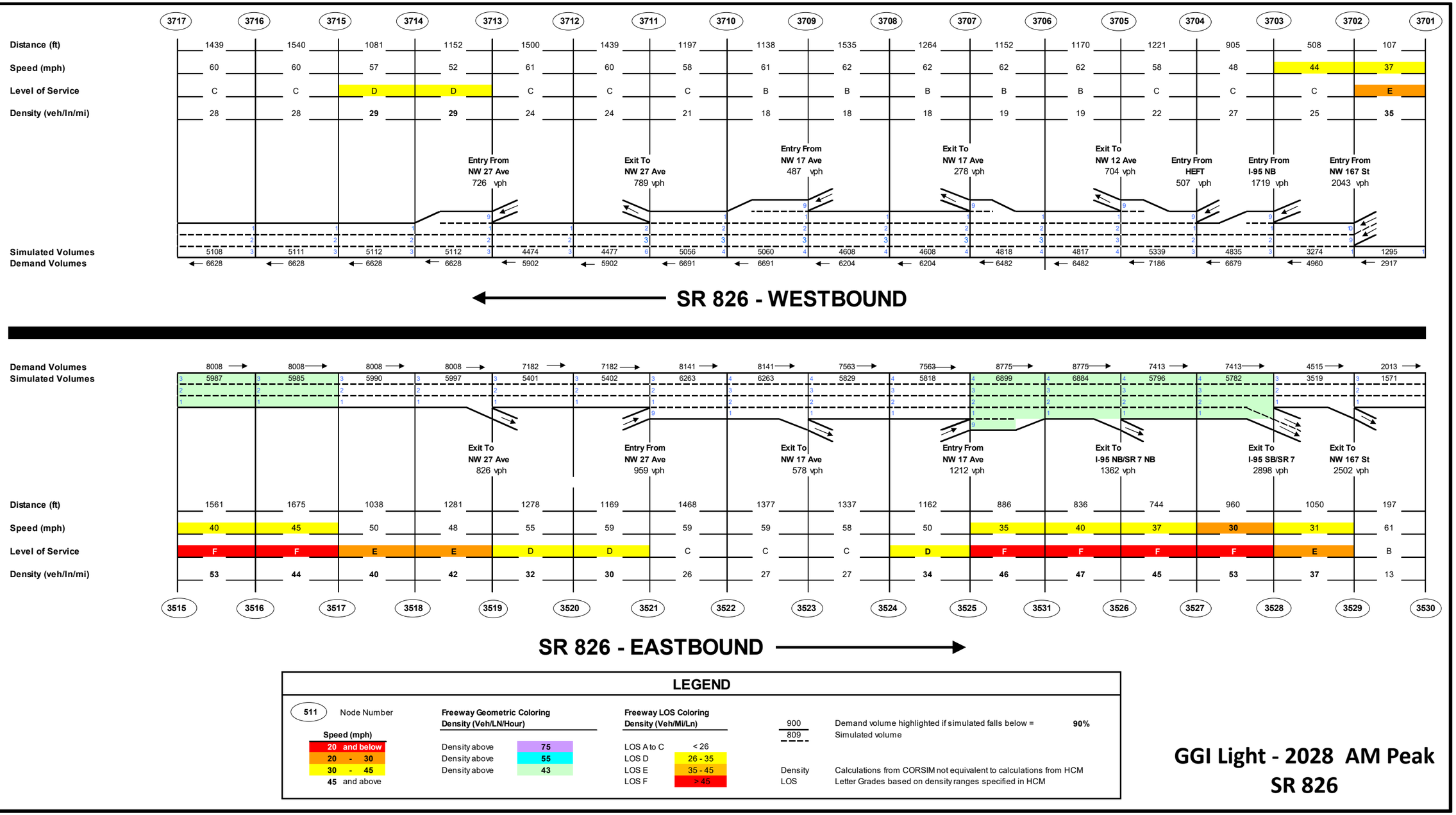
Freeway LOS Coloring Density (Veh/Mi/Ln)
- LOS A to C < 26
- LOS D 26 - 35
- LOS E 35 - 45
- LOS F > 45

900 / 809 Demand volume highlighted if simulated falls below = 90% Simulated volume

Density Calculations from CORSIM not equivalent to calculations from HCM

LOS Letter Grades based on density ranges specified in HCM

GGI Light - 2028 AM Peak
I-95



LEGEND

511 Node Number

Speed (mph)

20 and below	
20 - 30	
30 - 45	
45 and above	

Freeway Geometric Coloring
Density (Veh/LN/Hour)

Density above	75
Density above	55
Density above	43

Freeway LOS Coloring
Density (Veh/Mi/Ln)

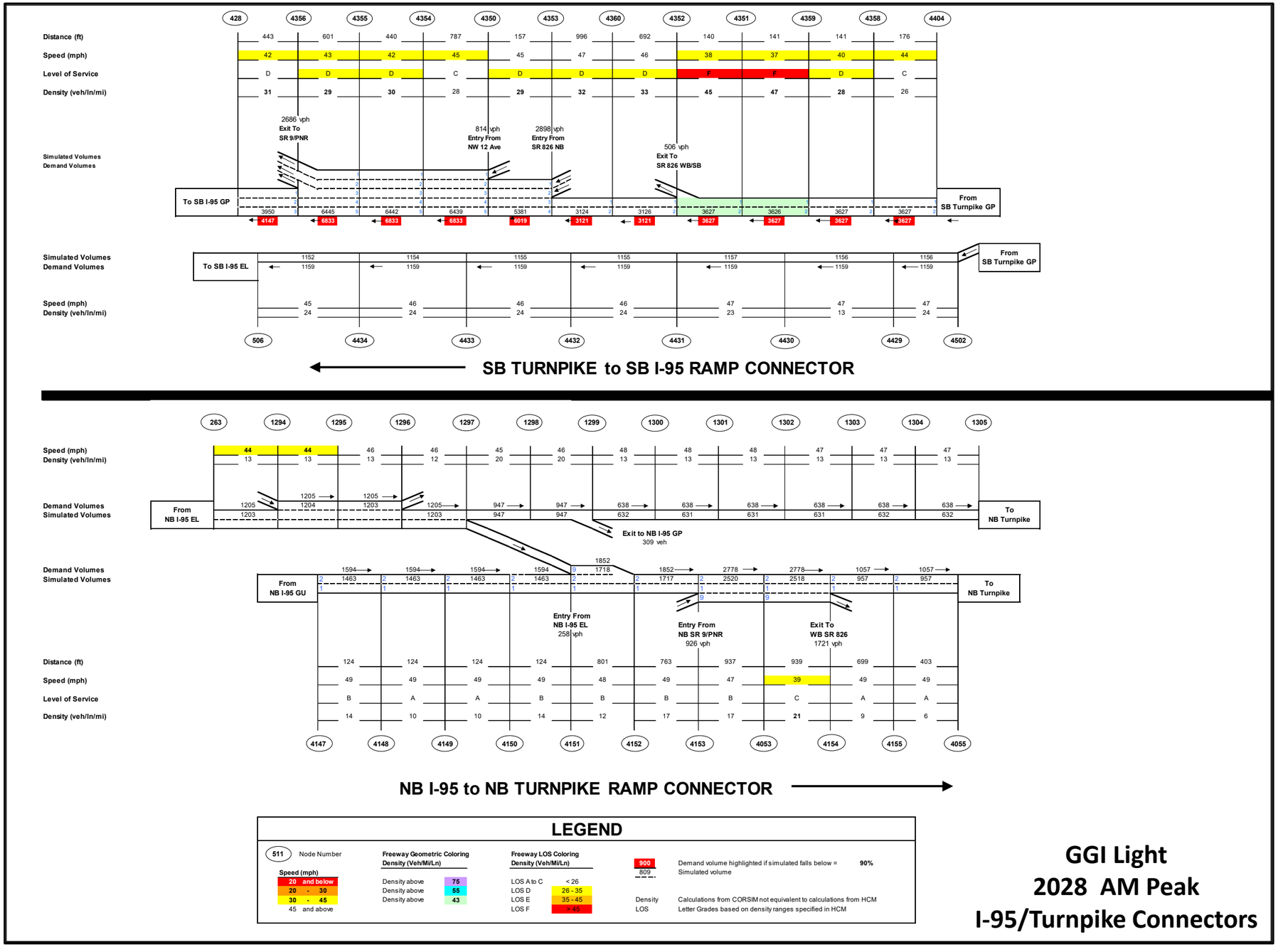
LOS A to C	< 26
LOS D	26 - 35
LOS E	35 - 45
LOS F	> 45

900 / 809 Demand volume highlighted if simulated falls below = **90%**; Simulated volume

Density — Calculations from CORSIM not equivalent to calculations from HCM

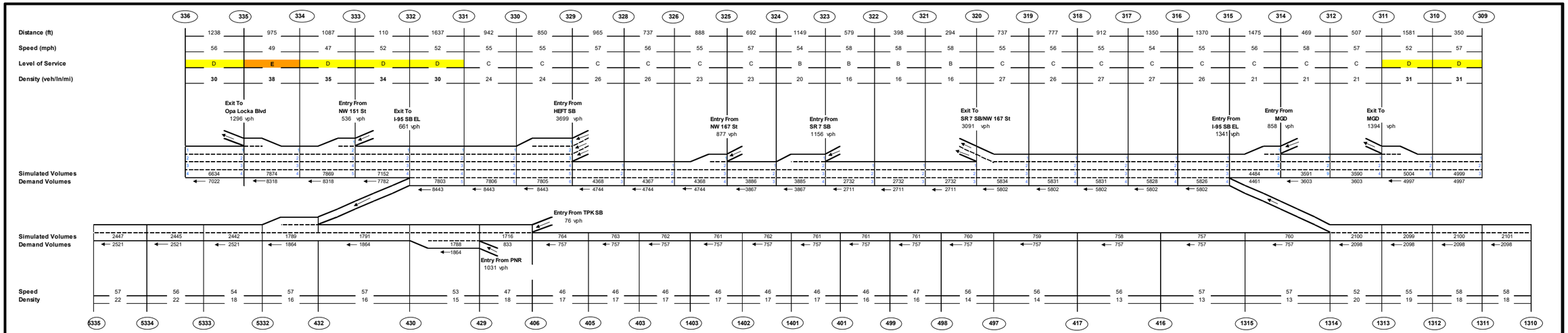
LOS — Letter Grades based on density ranges specified in HCM

GGI Light - 2028 AM Peak
SR 826

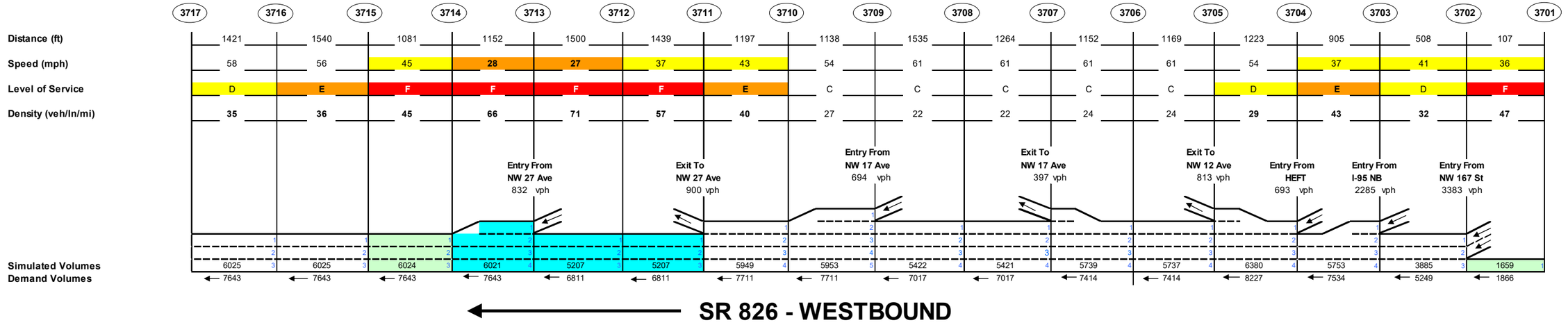


GGI Light
2028 AM Peak
I-95/Turnpike Connectors

SIMR Re-evaluation (GGI Light)



GGI Light - 2028 PM Peak
I-95



LEGEND

511 Node Number

Speed (mph)
20 and below
20 - 30
30 - 45
45 and above

Freeway Geometric Coloring Density (Veh/LN/Hour)

Density above	75
Density above	55
Density above	43

Freeway LOS Coloring Density (Veh/Mi/Ln)

LOS A to C	< 26
LOS D	26 - 35
LOS E	35 - 45
LOS F	> 45

900 / 809 Demand volume highlighted if simulated falls below = **90%**; Simulated volume

Density / LOS: Calculations from CORSIM not equivalent to calculations from HCM; Letter Grades based on density ranges specified in HCM

GGI Light - 2028 PM Peak
SR 826

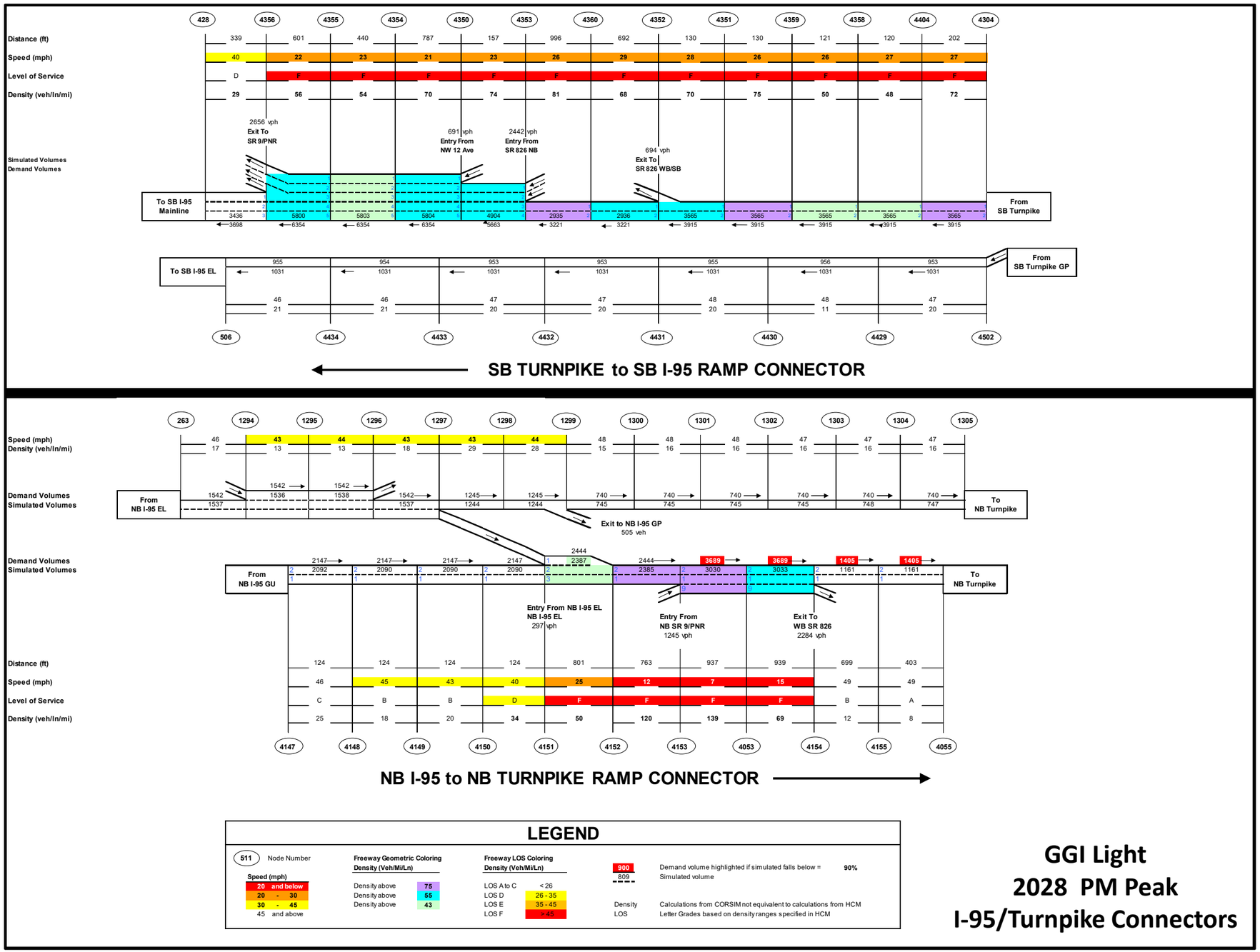

Distance (ft)
Speed (mph)
Level of Service
Density (veh/ln/mi)
Simulated Volumes
Demand Volumes
2656 vph
Exit To
SR 9/PNR
691 vph
Entry From
NW 12 Ave
2442 vph
Entry From
SR 826 NB
694 vph
Exit To
SR 826 WB/SB
To SB I-95
Mainline
From
SB Turnpike
To SB I-95 EL
From
SB Turnpike GP
SB TURNPIKE to SB I-95 RAMP CONNECTOR
Demand Volumes
Simulated Volumes
From
NB I-95 EL
Exit to NB I-95 GP
505 veh
To
NB Turnpike
From
NB I-95 GU
Entry From NB I-95 EL
NB I-95 EL
297 vph
Entry From
NB SR 9/PNR
1245 vph
Exit To
WB SR 826
2284 vph
NB I-95 to NB TURNPIKE RAMP CONNECTOR
LEGEND
Node Number
Speed (mph)
20 and below
20 - 30
30 - 45
45 and above
Freeway Geometric Coloring
Density (Veh/Mi/Ln)
Density above 75
Density above 55
Density above 43
Freeway LOS Coloring
Density (Veh/Mi/Ln)
LOS A to C < 26
LOS D 26 - 35
LOS E 35 - 45
LOS F > 45
Demand volume highlighted if simulated falls below = 90%
Simulated volume
Density Calculations from CORSIM not equivalent to calculations from HCM
LOS Letter Grades based on density ranges specified in HCM
GGI Light
2028 PM Peak
I-95/Turnpike Connectors

Table 4-1: 2028 CORSIM Analysis – NB I-95

NB I-95 AM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
NB I-95	GU lanes	From OpaLocka Blvd. to MGD (22,045 feet)	Travel Time (min:sec)	4:33	4:46	Speeds comparable in No Build and GGI Light
			Avg. Speed (mph)	55	53	
	Express Lanes	From OpaLocka Blvd. to MGD (21,574 feet)	Travel Time (min:sec)	4:51	4:42	Speeds comparable in No Build and GGI Light
			Avg. Speed (mph)	51	52	
	GU Lanes	NB I-95, N of NW 2nd Ave On-Ramp	Throughput (vehs/hr.)	5846	6619	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	900	909	
	GU + EL		Throughput (vehs/hr.)	6746	7528 +11.6%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	23610	26304 +11.4%	

Table 4-2: 2028 CORSIM Analysis – SB I-95

SB I-95 AM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
SB I-95	GU lanes	From MGD to OpaLocka Blvd. (22,062 feet)	Travel Time (min:sec)	4:42	5:22	Speeds lower in GGI Light due to higher throughput
			Avg. Speed (mph)	53	47	
	Express Lanes	From MGD to OpaLocka Blvd. (21,814 feet)	Travel Time (min:sec)	4:49	4:51	Speeds comparable in No Build and GGI Light
			Avg. Speed (mph)	51	51	
	GU Lanes	SB I-95 N of 151 Street	Throughput (vehs/hr.)	7530	8859	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	1043	2188	
	GU + EL		Throughput (vehs/hr.)	8573	11047 +28.9%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	31235	38741 +24.0%	

NB I-95 PM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
NB I-95	GU lanes	From OpaLocka Blvd. to MGD (22,045 feet)	Travel Time (min:sec)	7:17	5:57	GGI Light Performs Better than No Build.
			Avg. Speed (mph)	34	42	
	Express Lanes	From OpaLocka Blvd. to MGD (21,574 feet)	Travel Time (min:sec)	5:09	4:46	EL speeds comparable in No Build and GGI Light
			Avg. Speed (mph)	50	52	
	GU Lanes	NB I-95, N of NW 2nd Ave On-Ramp	Throughput (vehs/hr.)	5813	6782	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	1156	1178	
	GU + EL		Throughput (vehs/hr.)	6969	7960 +14.2%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	28081	31378 +11.7%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build

SB I-95 PM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
SB I-95	GU lanes	From MGD to OpaLocka Blvd. (22,062 feet)	Travel Time (min:sec)	6:38	4:38	GGI Light Performs Better than No Build.
			Avg. Speed (mph)	38	54	
	Express Lanes	From MGD to OpaLocka Blvd. (21,814 feet)	Travel Time (min:sec)	4:46	4:31	EL speeds comparable in No Build and GGI Light
			Avg. Speed (mph)	52	52	
	GU Lanes	SB I-95 N of 151 Street	Throughput (vehs/hr.)	5994	7803	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	838	1788	
	GU + EL		Throughput (vehs/hr.)	6832	9591 +40.4%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	27448	38301 +39.5%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build

Table 4-3: 2028 CORSIM Analysis – NB I-95/Turnpike Connector

NB I-95/Turnpike Connector - AM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
NB I-95/Turnpike Connector	GU lanes	From I-95 to N of SR 826 Off-Ramp (5,038 feet)	Travel Time (min:sec)	1:14	1:14	Speeds comparable in GGI Light and No Build.
			Avg. Speed (mph)	46	46	
	Express Lanes	From I-95 to N of SR 826 Off-Ramp	Travel Time (min:sec)	-	1:20	No EL connectivity provided in No Build.
			Avg. Speed (mph)	-	47	
	GU Lanes	N of SR 826 Off-Ramp	Throughput (vehs/hr.)	1467	957	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	-	632	
	GU + EL		Throughput (vehs/hr.)	1467	1589 +8.3%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	5036	5493 +9.1%	

NB I-95/Turnpike Connector - PM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
NB I-95/Turnpike Connector	GU lanes	From I-95 to N of SR 826 Off-Ramp (5,038 feet)	Travel Time (min:sec)	4:19	3:41	GGI Light Performs Better than No Build.
			Avg. Speed (mph)	13	16	
	Express Lanes	From I-95 to N of SR 826 Off-Ramp	Travel Time (min:sec)	-	1:20	No EL connectivity provided in No Build.
			Avg. Speed (mph)	-	47	
	GU Lanes	N of SR 826 Off-Ramp	Throughput (vehs/hr.)	1778	1161	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	-	747	
	GU + EL		Throughput (vehs/hr.)	1778	1908 +7.3%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	7084	7504 +5.9%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build

Table 4-4: 2028 CORSIM Analysis – SB I-95/Turnpike Connector

SB I-95/Turnpike Connector - AM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
SB I-95/Turnpike Connector	GU lanes	From N of SR 826 Off-Ramp to S of NW 7 Ave. Off-Ramp (4,715 feet)	Travel Time (min:sec)	4:22	1:14	GGI Light Performs Better than No Build.
			Avg. Speed (mph)	12	44	
	Express Lanes	From N of SR 826 Off-Ramp to S of NW 7 Ave. Off-Ramp	Travel Time (min:sec)	-	1:36	GGI Light Performs Better than No Build.
			Avg. Speed (mph)	-	46	
	GU Lanes	S of NW 7 Ave. Off-Ramp	Throughput (vehs/hr.)	2838	3950	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	-	1152	
	GU + EL		Throughput (vehs/hr.)	2838	5102 +79.8%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	11224	17833 +58.9%	

SB I-95/Turnpike Connector - PM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
SB I-95/Turnpike Connector	GU lanes	From N of SR 826 Off-Ramp to S of NW 7 Ave. Off-Ramp (4,715 feet)	Travel Time (min:sec)	4:42	2:09	GGI Light Performs Better than No Build.
			Avg. Speed (mph)	11	25	
	Express Lanes	From N of SR 826 Off-Ramp to S of NW 7 Ave. Off-Ramp	Travel Time (min:sec)	-	1:35	GGI Light Performs Better than No Build.
			Avg. Speed (mph)	-	47	
	GU Lanes	S of NW 7 Ave. Off-Ramp	Throughput (vehs/hr.)	2062	3436	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	-	955	
	GU + EL		Throughput (vehs/hr.)	2062	4391 +112.9%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	8231	17762 +115.8%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build

Table 4-5: 2028 CORSIM Analysis – EB SR 826

EB SR 826/Palmetto Expressway - AM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
EB SR 826/Palmetto Expy.	GU lanes	From W of NW 37 Ave. Off-Ramp to E of NW 167 St. Off-Ramp (18,019 feet)	Travel Time (min:sec)	21:09	4:31	GGI Light Performs Better than No Build.
			Avg. Speed (mph)	10	45	
	Express Lanes	From W of NW 37 Ave. Off-Ramp to E of NW 167 St. Off-Ramp	Travel Time (min:sec)	-	-	No express lanes provided on SR 826 in No Build and GGI Light
			Avg. Speed (mph)	-	-	
	GU Lanes	E of NW 167 St. Off-Ramp	Throughput (vehs/hr.)	1178	1571	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	-	-	
	GU + EL		Throughput (vehs/hr.)	1178	1571 +33.4%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	4607	5914 +28.4%	

EB SR 826/Palmetto Expressway - PM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
EB SR 826/Palmetto Expy.	GU lanes	From W of NW 37 Ave. Off-Ramp to E of NW 167 St. Off-Ramp (18,019 feet)	Travel Time (min:sec)	19:41	10:16	GGI Light Performs Better than No Build.
			Avg. Speed (mph)	10	20	
	Express Lanes	From W of NW 37 Ave. Off-Ramp to E of NW 167 St. Off-Ramp	Travel Time (min:sec)	-	-	No express lanes provided on SR 826 in No Build and GGI Light
			Avg. Speed (mph)	-	-	
	GU Lanes	E of NW 167 St. Off-Ramp	Throughput (vehs/hr.)	997	1300	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	-	-	
	GU + EL		Throughput (vehs/hr.)	997	1300 +30.4%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	3925	5185 +32.1%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build

Table 4-6: 2028 CORSIM Analysis – WB SR 826

WB SR 826/Palmetto Expressway - AM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
WB SR 826/Palmetto Expy.	GU lanes	From E of NW 167 St. On-Ramp to W of NW 137 St. On-Ramp (18,346 feet)	Travel Time (min:sec)	3:34	3:36	Speeds comparable in GGI Light and No Build
			Avg. Speed (mph)	58	58	
	Express Lanes	From E of NW 167 St. On-Ramp to W of NW 137 St. On-Ramp	Travel Time (min:sec)	-	-	No express lanes provided on SR 826 in No Build and GGI Light
			Avg. Speed (mph)	-	-	
	GU Lanes	W of NW 27 Ave. On-Ramp	Throughput (vehs/hr.)	4989	5108	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	-	-	
	GU + EL		Throughput (vehs/hr.)	4989	5108 +2.4%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	17855	18234 +2.1%	

WB SR 826/Palmetto Expressway - PM PEAK HOUR - 2028						
Location			Performance Measure	No Build	GGI Light	Comments
WB SR 826/Palmetto Expy.	GU lanes	From E of NW 167 St. On-Ramp to W of NW 137 St. On-Ramp (18,346 feet)	Travel Time (min:sec)	3:40	4:38	Speeds lower in GGI Light due to higher throughput.
			Avg. Speed (mph)	57	45	
	Express Lanes	From E of NW 167 St. On-Ramp to W of NW 137 St. On-Ramp	Travel Time (min:sec)	-	-	No express lanes provided on SR 826 in No Build and GGI Light
			Avg. Speed (mph)	-	-	
	GU Lanes	W of NW 27 Ave. On-Ramp	Throughput (vehs/hr.)	5526	6025	GGI Light Performs Better than No Build.
	EL Lanes		Throughput (vehs/hr.)	-	-	
	GU + EL		Throughput (vehs/hr.)	5526	6025 +9.0%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	22099	24081 +9.0%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build

Table 4-7: 2028 CORSIM Analysis – EB SR 826 to NB I-95

EB SR 826 to NB I-95 AM PEAK HOUR - 2028					
Location		Performance Measure	No Build	GGI Light	Comments
GU lanes	From EB SR 826 to NB I-95 (12,800 feet - No Build) (4,600 feet - GGI Light)	Travel Time (min:sec)	5:21	1:16	GGI Light Performs Better than No Build.
		Avg. Speed (mph)	19	41	

EB SR 826 to NB I-95 PM PEAK HOUR - 2028					
Location		Performance Measure	No Build	GGI Light	Comments
GU lanes	From EB SR 826 to NB I-95 (12,800 feet - No Build) (4,600 feet - GGI Light)	Travel Time (min:sec)	6:02	1:18	GGI Light Performs Better than No Build.
		Avg. Speed (mph)	17	39	

Table 4-8: 2028 CORSIM Analysis – Networkwide Performance

Networkwide Performance - 2028 AM peak				
Performance Measure	No Build	GGI Light	% Change	Comments
Total Delay (hours)	12,083	7,244	-40.0%	GGI Light Performs Better than No Build.
Total Vehicle-Miles Travelled	467,810	532,365	13.8%	GGI Light Performs Better than No Build.
Average Speed (mph)	23	31	34.8%	GGI Light Performs Better than No Build.
Unmet Demand (vehs)	17,873	4,342	-75.7%	GGI Light Performs Better than No Build.

Networkwide Performance - 2028 PM peak				
Performance Measure	No Build	GGI Light	% Change	Comments
Total Delay (hours)	17,905	15,360	-14.2%	GGI Light Performs Better than No Build.
Total Vehicle-Miles Traveled	506,085	603,746	19.3%	GGI Light Performs Better than No Build.
Average Speed (mph)	19	23	21.1%	GGI Light Performs Better than No Build.
Unmet Demand (vehs)	30937	5092	-83.5%	GGI Light Performs Better than No Build.

Notes: Unmet Demand = Accumulated total Demand Volume minus Simulated Volume at network entry points along NB I-95, SB I-95, EB SR 826, and SB Turnpike.

4.3.2 Design Year (2048) CORSIM Microsimulation Results

Results of the CORSIM microsimulation analysis for design year (2048) are depicted in Figures 4-5 through 4-10 and Tables 4-9 through 4-16.

2048 No Build - Traffic Operations:

The CORSIM results for the No Build Alternative indicate that by 2048 several road segments within the GGI Interchange study area will experience significant congestion with substandard traffic operating conditions (LOS E or F) in the AM and/or PM peak periods. As depicted in the lane schematics in Figures 4-5 and 4-6, the following road segments will experience substandard operating conditions.

- **Northbound I-95 from NW 151st Street to Turnpike Off-Ramp (PM Peak):** The results indicate that traffic operations along this segment of I-95 will be at LOS F in the PM peak. In the heavily travelled PM peak period, average operating speeds are approximately 15 to 30 mph and congestion extends to the south beyond Opa-Locka Boulevard. Furthermore, queues in the PM peak period spillback into the NB express lanes – reducing operating speeds in the express lanes to approximately 24 mph. The excessive congestion within this segment and its impacts to express lane operations and safety are primary reasons for introducing the proposed I-95/Turnpike Express Lanes Connector per GGI Light and GGI Ultimate Design Concept.
- **Southbound I-95 from Miami Gardens Drive to SR 7 Off-Ramp (PM Peak):** The results indicate that traffic operations along this segment of I-95 will be at LOS F in the PM peak. Traffic congestion is severe during the PM peak period with average operating speeds ranging from approximately 13 mph to 41 mph and congestion extends to the north beyond Miami Gardens Drive. Visual observations of the simulation models indicate that this queuing results largely from queue spillback from the GGI ramp system onto the mainline. Visual observations also confirm that congestion within this segment of I-95 extends throughout most of the 4-hour simulation period.
- **SB I-95 from HEFT On-Ramp to Opa-Locka Boulevard (AM Peak):** The results indicate that traffic operations throughout much of this segment will be at LOS E in the AM peak period. Average operating speeds during the AM peak range from approximately 40 mph to 55 mph. It should be noted that during the PM peak there is no significant congestion within this segment, however, average throughput in the GU lanes is only about 51% of the demand volumes, due to congestion and metering of traffic at upstream locations.
- **NB I-95/Turnpike Connector (PM peak)**: The results indicate that this ramp connector will operate at LOS F with severe congestion during the PM peak period. Average operating speeds during the PM peak are approximately 9 mph to 14 mph. Congestion within this segment is due to excessive traffic demand throughout the segment as well as excessive demand on the single lane WB SR 826 Off-ramp.
- **SB I-95/Turnpike Connector (AM and PM Peaks)**: The results indicate that this ramp connector will operate at LOS F during the AM and PM peak periods. Average operating speeds during the AM peak are approximately 6 mph to 20 mph and average speeds in the PM peak are approximately 5 mph to 14 mph. Congestion within this segment is due to excessive traffic demand and throughput is about 33% of the demand volume for the segment. Note that a segment within this connector is only one lane (south of off-ramp to WB SR 826), and this substantially restricts traffic flow from the Turnpike to SB I-95.
- **EB SR 826 from NW 27th Avenue to NW 167th Street Off-Ramp (AM and PM Peaks**): The results indicate that this segment of SR 826 will operate at LOS F during the AM and PM peak periods. Average operating speeds during the AM peak are approximately 6 mph to 12 mph and average speeds in the PM peak are approximately 6 mph to 16 mph. Congestion within this segment is due to excessive traffic demand and throughput is below 50% of the demand volume throughout the segment.

2048 GGI Light - Traffic Operations:

The CORSIM results indicate that traffic operations within the GGI Study Area will be better under the GGI Light Design Concept when compared to the No Build Alternative for the 2048 conditions. This determination is based on the higher throughput produced throughout the network under the GGI Light Design Concept when compared to the No Build Alternative. Tables 4-9 through 4-16 provide a comparative assessment of traffic operations under the No Build Alternative and the GGI Light Design Concept. The comparison depicts the following for the key performance measures:

- **NB I-95:** Total peak hour throughput (GU + express lanes) is higher under the GGI Light Design Concept in the AM peak hour (11.1%) and PM peak hour (19.4%), when compared to No Build. Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (11.8%) and PM peak period (18.4%). In the AM peak hour, average operating speeds are comparable in GGI Light (54 mph) and No Build (54 mph), whereas, in the PM peak (peak direction) operating speeds are higher in GGI Light (44 mph) compared to No Build (34 mph). In the PM peak, operating speeds in the express lanes are also higher under GGI Light (51 mph) compared to No Build (42 mph). This occurs due to spillback of queues in the express lanes under No Build conditions. These results confirm that 2048 traffic operations along NB I-95 are better under GGI Light when compared to No Build.
- **SB I-95:** Total peak hour throughput (GU + express lanes) is higher under the GGI Light Design Concept in the AM peak hour (23.3%) and PM peak hour (41.8%) when compared to No Build. Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (24.3%) and PM peak period (41.6%). In the AM peak hour, average operating speeds in the GU lanes are lower in GGI Light (28 mph) compared to No Build (51 mph), whereas, in the PM peak operating speeds are higher in GGI Light (45 mph) compared to No Build (35 mph). The lower speeds generated by GGI Light in the AM peak hour result from the substantially higher volume of traffic processed under GGI Light (approximately 863 additional vehicles processed in GU lanes in AM peak hour under GGI Light). Operating speeds in the express lanes are comparable in GGI Light (51/52 mph in AM/PM) and No Build (51/52 mph in AM/PM). These results confirm that 2048 traffic operations along SB I-95 are better under GGI Light when compared to No Build.
- **NB I-95/Turnpike Connector:** Total peak hour throughput (GU + express lanes) is higher under the GGI Light Design Concept in the AM peak hour (8.5%) and PM peak hour (16.2%) when compared to No Build. Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (8.7%) and PM peak period (15.4%). In the AM peak hour, average operating speeds in the GU lanes are comparable in GGI Light (45 mph) and No Build (46 mph). In the PM peak operating speeds in the GU lanes are moderately higher in GGI Light (17 mph) compared to No Build (14 mph). The express lanes in GGI Light operate freely at approximately 46 mph in both AM and PM peak period, whereas this facility is not available under the No Build Alternative. These results confirm that 2048 traffic operations along the NB I-95/Turnpike Connector are better under GGI Light when compared to No Build.
- **SB I-95/Turnpike Connector:** Total peak hour throughput (GU + EL) is higher under the GGI Light Design Concept in the AM peak hour (84.7%) and PM peak hour (113.1%), when compared to No Build. Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (75.4%) and PM peak period (112.5%). In the AM peak hour, average operating speeds in the GU lanes are higher in GGI Light (36 mph) compared to No Build (12 mph). Similarly, in the PM peak operating speeds are higher in GGI Light (14 mph) compared to No Build (9 mph). The express lanes in GGI Light operate freely at approximately 46/47 mph in AM/PM peak periods, whereas this facility is not available under the No Build Alternative. These results confirm that 2048 traffic operations along the SB I-95/Turnpike Connector are better under GGI Light when compared to No Build.
- **EB SR 826/Palmetto Expressway:** Total peak hour throughput (GU + EL) is higher under the GGI Light Design Concept in the AM peak hour (26.3%) and PM peak hour (39.3%), when compared to No Build. Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Light Design Concept in both AM peak period (23.1%) and PM peak period (38.1%). In the AM peak hour, average operating speeds are higher in GGI Light (50 mph) compared to No Build (9 mph). Similarly, in the PM peak operating speeds are higher in GGI Light (14 mph) compared to No Build (7 mph). These results confirm that 2048 traffic operations along the EB SR 826/Palmetto Expressway are better under GGI Light when compared to No Build.
- **WB SR 826/Palmetto Expressway:** Total peak hour throughput (GU + express lanes) is marginally lower under the GGI Light Design Concept in the AM peak hour (-3.3%) and higher in the PM peak hour (4.5%) when compared to No Build. Similarly, total throughput (GU +EL) for the 4-hour simulation peak period is marginally lower under GGI Light Design Concept in AM peak period (-3.4%) and higher in the PM peak period (3.9%). The lower throughput under GGI Light in the AM peak period results from the new signal installed at the adjacent upstream intersection (NW 7th Avenue Extension and Turnpike) which meters

traffic flowing to WB SR 826. This upstream intersection is unsignalized under the No Build, hence, the metering of traffic is not present under No Build. Signalizing of this intersection is essential for safety and operations due to the heavy conflicting eastbound left turn movements (approximately 514/619 in AM/PM) forecasted to use the intersection by 2048. It is also important to note that travel demand is highest along WB SR 826 during the PM peak period and the throughput generated by GGI Light in the PM peak (6,043 vehs./hr.) is higher than the throughput generated by the No Build in AM (5,396 vehs/hr.) and No Build in PM (5,784 vehs./hr.) peaks. This suggests that the GGI Light performs better for maximizing throughput. In the AM peak hour, average operating speeds are comparable in GGI Light (58 mph) and No Build (57 mph), whereas, in the PM peak operating speeds are lower in GGI Light (42 mph) compared to No Build (55 mph). The lower speeds generated by GGI Light in the PM peak hour occurs dure to higher volume of traffic processed under GGI Light (approximately 259 additional vehicles processed in PM peak hour under GGI Light). These results indicate that 2048 traffic operations along WB SR 826/Palmetto Expressway are better under GGI Light when compared to No Build.

- **EB SR 826 to NB I-95 GU lanes**: The GGI Light Design Concept incorporates a proposed new flyover for GU movements from EB SR 826 to NB I-95 GU Lanes. Results of the CORSIM analysis indicate that travel times will be substantially reduced for traffic movements going from EB SR 826 to NB I-95 GU lanes under GGI Light Design Concept (1:15/1:13 min:ss in AM/PM peaks) when compared to the No Build Alternative (5:59/8:59 min:ss in AM/PM peaks). Correspondingly, average operating speeds will be significantly higher for traffic making this movement under GGI Light Design Concept (41/42 mph in AM/PM peaks) when compared to the No Build Alternative (18/12 mph in AM/PM peaks). These results confirm that road users travelling from EB SR 826 to NB I-95 will experience significant travel time savings resulting from the implementation of the GGI Light Design Concept.
- **Overall Network Performance**. As shown Table 4-16, all networkwide performance measures are better under the GGI Light Design Concept when compared to the No Build Alternative. The GGI Light Design Concept generates a reduction in networkwide delays of 23.5%/14.6% in AM/PM, total vehicle miles traveled increase by 12.6%/19.1% in AM/PM and average speed increase by 23.8%/25.0% in AM/PM. In addition, the accumulated unmet demand (latent demand) along the major network entry points (NB I-95, SB I-95, EB SR 826 and SB Turnpike) is substantially reduced under the GGI Light Design Concept – 61.4%/51.7% in the AM/PM peak periods.

The preceding discussions confirm that the GGI Light Design Concept will perform better than the No Build under 2048 Conditions. Notwithstanding, as shown in the lane schematics in Figures 4-7 and 4-8, the following road segments, within the GGI Study Area, will experience substandard traffic operating conditions by 2048 under the GGI Light Design Concept:

- **Northbound I-95 from NW 151st Street to Turnpike Off-Ramp (PM Peak):** The results indicate that traffic operations along this segment of I-95 will be at LOS F in the PM peak with average operating speeds of approximately 23 to 38 mph and congestion extends to the south beyond Opa-Locka Boulevard. This segment also experience congestion in the No Build Alternative with queues from the GU lanes backing-up into the express lanes. In the GGI Light Design Concept, the express lanes egress point at NW 151st Street is removed. This design modification in the GGI Light Design Concept reduces weaving activities within the segment and mitigates queue spillback into the express lanes. These design modifications provide congestion relief and improve safety within the segment.
- **Southbound I-95 from Miami Gardens Drive to SR 7 Off-Ramp (AM and PM Peak):** The results indicate that traffic operations along much of this segment of I-95 will be at LOS E/F in the AM peak and PM peak. Traffic operating speed range from approximately 29 mph to 54 mph in the AM peak and 37 to 47 mph in the PM peak. It should be noted that this segment of I-95 also experiences significant congestion in the No Build Alternative.
- **SB I-95 from HEFT On-Ramp to Opa-Locka Boulevard (AM):** The results indicate that traffic operations throughout most of this segment will be at LOS F in the AM peak period . Average operating speeds range from approximately 14 mph to 44 mph in the AM peak. It should be noted that under No Build Alternative this segment experiences substantial congestion in the AM peak period and, throughput is substantially reduced in the PM peak due to metering of traffic at upstream congested locations. The design modifications proposed under the GGI Light Design Concept substantially increase throughput within this segment when compared to the No Build Alternative.

- **NB I-95/Turnpike Connector (PM peak)**: The results indicate that the GU lanes within segments of this ramp connector will operate at LOS F during the PM peak period. Average operating speeds during the PM peak are approximately 7 mph to 44 mph. Visual observation of the CORSIM microsimulation indicate that congestion is present on the ramp beyond the peak hour and continues through to the end of the 4-hour simulation period. However, queues on the ramp do not spillback onto I-95 nor onto the express lanes. Congestion within this segment is primarily due to excessive traffic demand on the single lane WB SR 826 Off-ramp. This single-lane loop ramp cannot be widened at this time due to conflict with the FGT pipelines. In the GGI Ultimate Design Concept this loop ramp is widened to 2 lanes and traffic operations are vastly improved. Traffic using the new express lanes connections operate under free flow conditions with average operating speeds of approximately 46 mph.
- **SB I-95/Turnpike Connector (PM Peak)**: The results indicate that this ramp connector will operate at LOS F during the PM peak period. Average operating speeds during the PM peak are approximately 8 mph to 20 mph. Note that under the No Build Alternative this segment is severely congested during the AM and PM peak periods. The proposed design modifications provide an additional dedicated lane connecting the Turnpike and I-95 express lanes. This design modification adds capacity and provides congestion relief for traffic in the GU lanes. Traffic using the new express lane connections operate under free flow conditions with average operating speeds of approximately 47 mph.
- **EB SR 826 from NW 27th Avenue to NW 167th Street Off Ramp (PM Peak**): The results indicate that this segment of SR 826 will operate at LOS F during PM peak period. Average operating speeds during the PM peak are approximately 10 mph to 17 mph. This segment of SR 826 also experiences congestion under No Build Alternative in AM and PM peaks. The GGI Light improvements provide some congestion relief as it is less impacted by spillback of queues from the downstream ramps connecting to SB I-95.

2048 GGI Ultimate – Traffic Operations

The discussions presented in the preceding sections amply demonstrate that the GGI Light Design Concept will provide substantially better traffic operating conditions when compared to the No Build Alternative. The GGI Ultimate Design Concept incorporates all the proposed improvements of the GGI Light Design Concept plus additional capacity improvements as described under Section 3 of this report. The GGI Ultimate Design Concept is also the current approved concept for implementation, per the prior 2019 SIMR Re-evaluation. Hence, it is understood that the GGI Ultimate Concept will perform better than the No Build Alternative. Therefore, the ensuing discussions focus on comparing the traffic operations under the GGI Ultimate Design Concept and the GGI Light Design Concept.

- **Traffic Operations along NB I-95:** Results from the microsimulation analysis indicate that traffic operations along NB I-95 will be better under GGI Ultimate Design Concept when compared to GGI Light Design Concept. This determination is based on the higher throughput generated under GGI Ultimate Design Concept. As shown in Table 4-9, total peak hour throughput (GU + express lanes) is higher under the GGI Light Ultimate Design Concept in the AM peak hour (3.4%) and PM peak hour (5.1%) when compared to GGI Light. Total throughput (GU +EL) for the 4-hour simulation peak period is also higher under GGI Ultimate Design Concept in both AM peak period (2.4%) and PM peak period (4.7%).

In the AM peak period, average operating speeds in the GU lanes are comparable in GGI Ultimate (55 mph) and GGI Light (54 mph), whereas, in the PM peak period, average operating speeds in GGI Ultimate (34 mph) is lower than GGI Light (44 mph). The lower operating speeds in GGI Ultimate, during the PM peak, occurs due to the higher throughput in GGI Ultimate. GGI Light and GGI Ultimate generate similar operating speeds in the express lanes in AM (52 mph) and PM (51 to 52 mph) peak periods.

Inspection of the lane schematics in Figure 4-7 through and 4-10 Indicate that GGI Light and GGI Ultimate will experience congestion along a similar segment of NB I-95, south of the Turnpike Off-Ramp (PM peak). The GGI Ultimate Design Concept also shows congestion in PM peak within the segment of NB I-95 south of Miami Gardens Drive. This congestion is not reflected in the GGI Light Design Concept. The congestion shown in the GGI Ultimate Design Concept results from the higher volumes being processed south of Miami Gardens Drive when compared to the GGI Light Design Concept.

- **Traffic Operations along SB I-95**. Results from the CORSIM analysis indicate that traffic operations along SB I-95 differ under GGI Ultimate Design Concept when compared to GGI Light Design Concept. Traffic demand along SB I-95 (south of GGI) is higher under the GGI Light Design Concept when compared to the GGI Ultimate Design Concept. GGI Light Design Concept experiences higher demand than GGI Ultimate Design Concept due to the SR 826 Express Lanes which are installed only in the GGI Ultimate Design Concept and diverts traffic to use alternative routes along SR 826. Correspondingly, the operations analysis reflects a higher throughput along SB I-95 under the GGI Light Design Concept (11,031/9,614 in AM/PM) when compared to the GGI Ultimate Design Concept (10,234/8,985 in AM/PM). Given the differences in throughput, average operating speeds in the GU lanes are lower under the GGI Light Design Concept, during the more heavily travelled AM peak period (28/48 mph in GGI Light/GGI Ultimate). Average operating speeds in the express lanes are similar in the AM peak (51/52 mph for GGI Light/GGI Ultimate) and PM peak (52 mph/52 mph for GGI Light/GGI Ultimate).

  Inspection of the lane schematics indicate that the GGI Ultimate Design Concept experiences considerable congestion along the SB segment of I-95 from the SR 7 Off-Ramp to Miami Gardens Drive. This congestion occurs in the AM and PM peak periods due to excessive demand along the I-95 mainline segment and the exit ramp to SR 7/NB Turnpike/ WB SR 826. Visual observations indicate that congestion on the exit ramp spillback to impact I-95 under GGI Ultimate and impacts are more pronounced in the PM peak period. This condition does not occur under GGI Light (nor in No Build) as demand volumes on the mainline segment and exit ramp are lower when compared to GGI Ultimate. As a result, average operating speeds in the PM peak along SB I-95 are lower under GGI Ultimate (25 mph) when compared to GGI Light (45 mph). Note that the GGI Ultimate still processes substantially more vehicles (1,288/2,205 in AM/PM) along SB I-95 when compared to No Build.

- **Traffic Operations along NB I-95 /Turnpike Connector:** Results from the CORSIM analysis indicate that traffic operations along the NB I-95/Turnpike Connector will be better under GGI Ultimate Design Concept when compared to GGI Light Design Concept. This determination is made based on the higher throughput generated in the GGI Ultimate Design Concept. As shown in Table 4-11, total peak hour throughput (GU + express lanes) is higher under the GGI Ultimate Design Concept in the AM peak hour (3.6%) and PM peak hour (5.0%) when compared to GGL Light. Total throughput (GU+EL) for the 4-hour simulation peak period is also higher under GGI Ultimate Design Concept in both AM peak period (2.8%) and PM peak period (5.0%).

  The proposed new express lanes connector will operate similarly in both concepts with average operating speeds of approximately 46 to 47 mph in the AM and PM peaks (see Table 4-11). However, average operating speeds in the GU lanes will be higher in the GGI Ultimate Design Concept (46/46 mph in AM/PM) when compared to GGI Light Design Concept (46/17 mph in AM/PM). The improved performance under the GGI Ultimate Design Concept, particularly in PM peak, results from the proposed widening of the WB SR 826 Off-Ramp from 1 to 2 lanes. In the GGI Light Design Concept this loop ramp is retained as a one-lane ramp due to conflicts with the FGT pipelines. This one-lane loop ramp operates over capacity, and this generates increased congestion along the NB I-95/Turnpike Connector, under the GGI Light Design Concept.

- **Traffic Operations along SB I-95/Turnpike Connector:** Results from the CORSIM analysis indicate that traffic operations along SB I-95/Turnpike Connector differ under GGI Ultimate Design Concept when compared to GGI Light Design Concept. Total throughput (GU + express lanes) is lower under GGI Ultimate (-17.3%/-5.-4% in AM/PM) when compared to GGI Light. The lower throughput under GGI Ultimate occurs due to lower demand when compared to GGI Light.

  In the AM peak period, average operating speeds in the GU lanes are higher in GGI Ultimate (45 mph) compared to GGI Light (36 mph). Similarly, in the PM peak period, average operating speeds in GGI Ultimate (42 mph) are higher than GGI Light (14 mph). The lower operating speeds in GGI Light, occurs due to the higher throughput in the GU lanes under GGI Light (4,140/3,340 in AM/PM) when compared to GGI Ultimate (3,260/2,944 in AM/PM).

GGI Light and GGI Ultimate generate similar operating speeds in the express lanes in AM (46 mph) and PM (47 mph) peak periods.

- **Traffic Operations along EB SR 826:** Results from the CORSIM analysis indicate that traffic operations along EB SR 826 will differ under GGI Ultimate Design Concept when compared to GGI Light Design Concept. Traffic demand along EB SR 826 is higher under the GGI Ultimate Design Concept when compared to the GGI Light Design Concept. The higher demand under the GGI Ultimate Design Concept results from the presence of the SR 826 Express Lanes which diverts more traffic to use routes along SR 826, due to its increased capacity. Correspondingly, the traffic operations analysis reflects a higher throughput along EB SR 826 under the GGI Ultimate Design Concept (3,192/2,048 in AM/PM) when compared to the GGI Light Design Concept (1,475/1,114 in AM/PM). In the AM peak operating speeds in the GU lanes are higher in GGI Light (50 mph) compared to GGI Ultimate (21 mph), whereas, in the PM peak, operating speeds are higher under GGI Ultimate (22 mph) compared to GGI Light (14 mph). Lower operating speeds are generated in GGI Ultimate during the AM peak since throughput is substantially higher in GGI Ultimate (3,192 vehs,/hr.) when compared to GGI Light (1,475 vehs,/hr.). GGI Ultimate also includes express lanes which operate under free flow conditions at approximately 60 mph.

- **Traffic Operations along WB SR 826:** Results of the CORSIM analysis indicate that traffic operations along WB SR 826 will be better under GGI Ultimate Design Concept when compared to GGI Light Design Concept. Total throughput (GU + EL) higher under GGI Ultimate (5,310/6,843 in AM/PM peaks) when compared to GGI Light Design Concept (5,216/6043 in AM/PM peaks). In addition, average operating speeds in the GU lanes are better in the GGI Ultimate Design Concept (61/57 mph in AM/PM peaks) when compared to GGI Light Design Concept (58/42 mph in AM/PM peaks). The GGI Ultimate also includes express lanes which operate under free flow conditions at approximately 60 mph.

- **EB SR 826 to NB I-95 GU lanes**: Both GGI Ultimate Design Concept and GGI Light Design Concept incorporate a proposed new flyover for GU movements from EB SR 826 to NB I-95 GU Lanes. Results of the CORSIM analysis indicate that average operating speeds will be similar for traffic movements going from EB SR 826 to NB I-95 GU lanes under GGI Light Design Concept (41/42 mph in AM/PM peaks) and GGI Ultimate Design Concept (44/39 mph in AM/PM peaks). In the Ultimate Design Concept direct connectivity is also provided via express lanes for EB SR 826 (EL) to NB I-95 (EL). Express lane users operate under free flow conditions at approximately 50 – 60 mph.

- **Overall Network Performance**. As shown Table 4-16, all networkwide performance measures are better under the GGI Ultimate Design Concept when compared to the GGI Light design Concept. The GGI Light Design Concept generates a reduction in networkwide delays of 19.34%/ 15.4% in AM/PM, total vehicle miles traveled increase by 6.3%/8.5% in AM/PM and average speed increase by 15.4.5%/15.0% in AM/PM. In addition, the accumulated unmet demand (latent demand) along the major network entry points (NB I-95, SB I-95, EB SR 826 and SB Turnpike) is reduced under the GGI Ultimate Design Concept in the AM peak by 38.1% and in PM peak by 17.4%.

  Inspection of the traffic simulation results indicate that neither the GGI Ultimate Design Concept nor the GGI Light Design Concept will fully satisfy traffic demand along all segments of I-95 and SR 826. Both concepts depict congestion along segments of I-95 and SR 826 corridors in the design year 2048. Results indicate that implementation of the GGI Light Design Concept will not result any critical operational failures which would otherwise be mitigated by the GGI Ultimate Design Concept, through the design year 2048

4.3.3 Year of Failure Assessment – GGI Light Design Concept

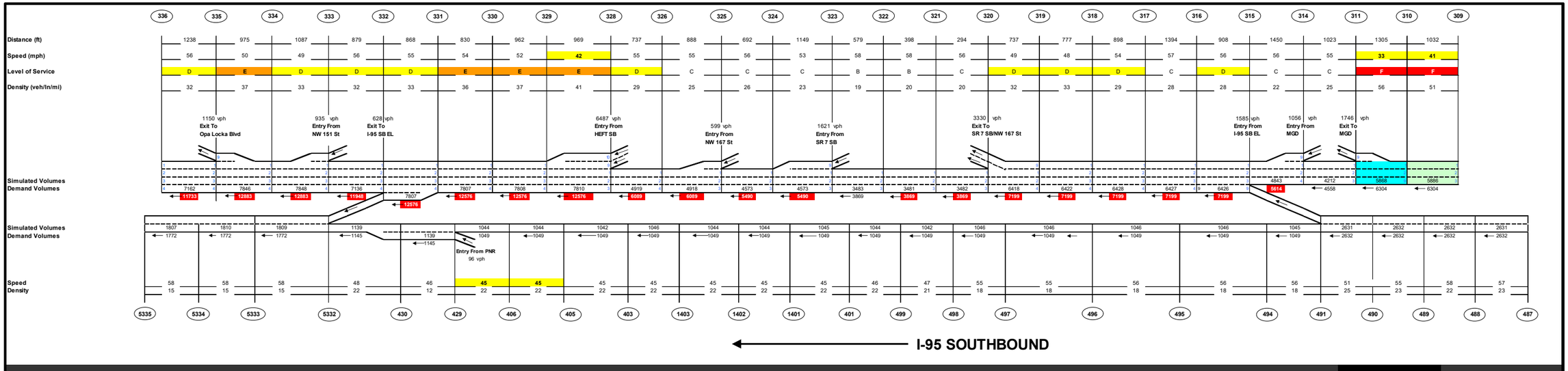
The results from the CORSIM microsimulation analysis (discussed in the preceding sections) indicate that the GGI Light Design Concept will not result in any systemic failure of the GGI interchange through year 2048. The major design modifications proposed for the GGI will add capacity to the interchange and operate at an acceptable level through year 2048. These major design modifications include:

- New EB SR 826 to NB I-95 GU Direct Connector
- New NB I-95 to NB Turnpike Express Lane Connector
- New SB Turnpike to SB I-95 Express Lane Connector

Notwithstanding, the CORSIM analyses indicate that the traffic volumes processed along several segments of the GGI interchange will be below the travel demand volumes. This occurs, in large part, due to inadequate capacity on the major road systems leading into the interchange, i.e. I-95 and SR 826. The demand volume entering the interchange from NB I-95 and EB SR 826 will exceed the available capacity by 2028 (based on traffic forecast and estimated capacities of the freeway segments). In the future, the FDOT plans to add capacity to SR 826 (per approved 2016 SR 826 PD&E Study). FDOT also envisions future improvements to I-95 which will add capacity to the mainline, per the 2019 I-95 Corridor Planning Study (Master Plan). The Master Plan also envisions future improvements at the intersection of NE 2nd Avenue and NW 167th Street to enhance the capacity of the intersection. The future intersection improvements will also modify ramp connections within the GGI to minimize queuing at the intersection and within the GGI. As the FDOT advances these planned improvements and adds capacity to the mainline systems, traffic volumes on the GGI ramp systems will increase - since the metering effect due to limited capacity at upstream locations will no longer be present. Ramp segments within the GGI system with limited capacity would therefore need to be improved to accommodate the increase in traffic volumes. If ramp capacities are not adequate, systemic failures could occur throughout the interchange, due the interconnectivity of the GGI ramps system. Implementation of the GGI Light Design Concept required restricting the amount of widening along two ramp segments of importance to the interchange operation. These are:

- Loop Ramp from NB I-95/Turnpike Connector to WB SR 836. This is a single lane ramp under the GGI Light Design Concept which is proposed to be widened to 2 lanes under the GGI Ultimate Design Concept. Future traffic forecast for this ramp segment is approximately 2,284/2,712 vehicles/hour in years 2028/2048, whereas, the ramp capacity is approximately 1,780 vehicles/hour, per HCM.
- Ramp from EB SR 826 to EB NW 167th Street Connector. This is a single lane ramp which widens to two lanes as it joins the connector to EB NW167 Street. This ramp is proposed to be widened to two lanes under GGI Ultimate Design Concept. Future traffic forecast for this ramp segment is approximately 2,502/2660 vehicles/hour in 2028/2048 whereas, the ramp capacity is approximately 1,970 vehicles/hour, per HCM.

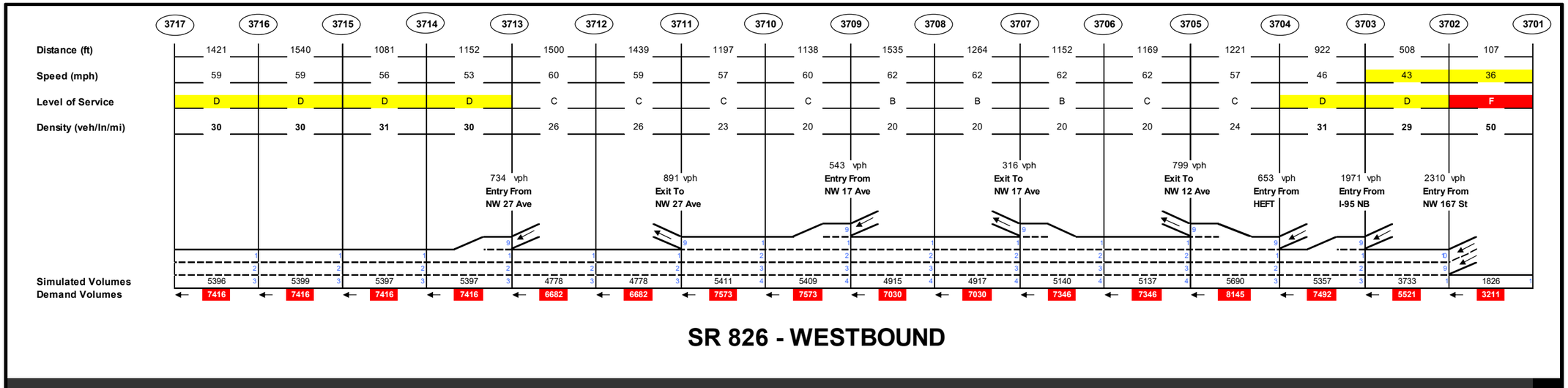
The travel demand forecasts for GGI Light indicate that the 2028 and 2048 demand volumes on the above ramps will exceed the capacity of the single lane ramp segments as proposed in the GGI Light Design Concept. Hence, systemic failure could occur at the GGI interchange as future capacity improvements are implemented along I-95 and SR 826. It is therefore anticipated that additional capacity improvements will be needed at the GGI Interchange concurrently with the timing for future capacity improvements along I-95 and SR 826 mainline.



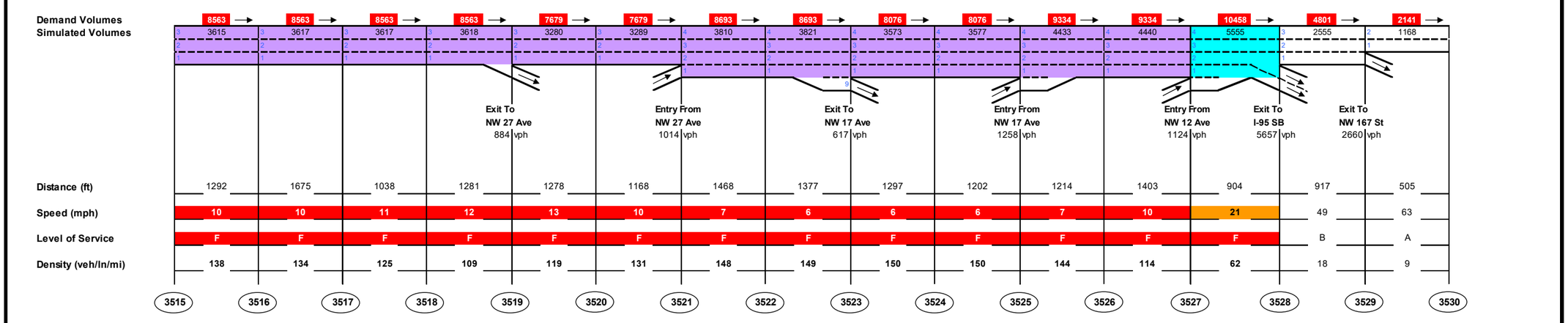
LEGEND

511 Node Number	Freeway Geometric Coloring Density (Veh/Ln/Hour)	Freeway LOS Coloring Density (Veh/Mi/Ln)	900 Demand volume highlighted if simulated falls below = 90%
Speed (mph)	Density above 75	LOS A to C < 28	809 Simulated volume
20 nd below	Density above 55	LOS D 28 - 35	Density Calculations from CORSIM not equivalent to calculations from HCM
20 - 30	Density above 43	LOS E 35 - 43	LOS Letter Grades based on density ranges specified in HCM
30 - 45		LOS F > 43	
45 nd above			

No Build - 2048 AM Peak
I-95



SR 826 - WESTBOUND



SR 826 - EASTBOUND

LEGEND

511 Node Number

Speed (mph)

20 and below	
20 - 30	
30 - 45	
45 and above	

Freeway Geometric Coloring Density (Veh/LN/Hour)

Density above	75
Density above	55
Density above	43

Freeway LOS Coloring Density (Veh/Mi/Ln)

LOS A to C	< 28
LOS D	28 - 35
LOS E	35 - 43
LOS F	> 43

900 → Demand volume highlighted if simulated falls below = 90%

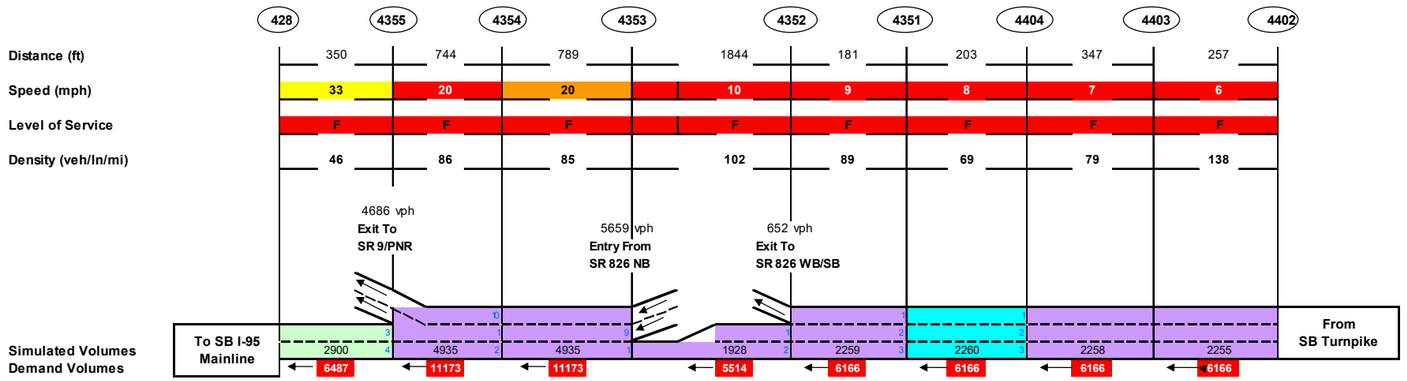
809 Simulated volume

Density Calculations from CORSIM not equivalent to calculations from HCM

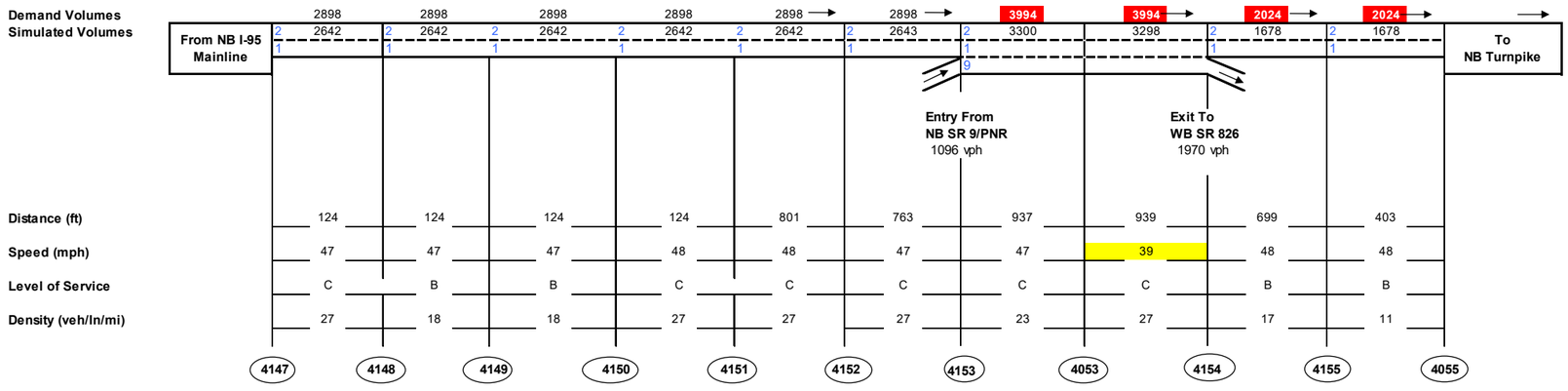
LOS Letter Grades based on density ranges specified in HCM

No Build - 2048 AM Peak

SR 826



SB TURNPIKE to SB I-95 RAMP CONNECTOR



NB I-95 to NB TURNPIKE RAMP CONNECTOR

LEGEND

511 Node Number

Speed (mph)

20	and below	
20	-	30
30	-	45
45	and above	

Freeway Geometric Coloring
Density (Veh/Mi/Ln)

Density above	75
Density above	55
Density above	43

Freeway LOS Coloring
Density (Veh/Mi/Ln)

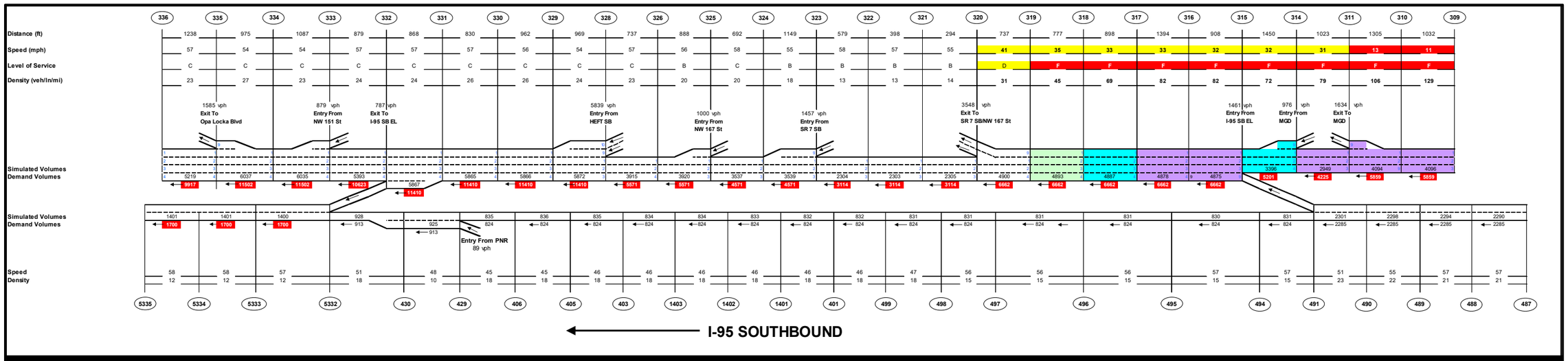
LOS A to C	< 26
LOS D	26 - 35
LOS E	35 - 45
LOS F	> 45

900 / 809 Demand volume highlighted if simulated falls below = 90% Simulated volume

Density / LOS Calculations from CORSIM not equivalent to calculations from HCM Letter Grades based on density ranges specified in HCM

No Build
2048 AM Peak
I-95/Turnpike Connectors

SIMR Re-evaluation (GGI Light)

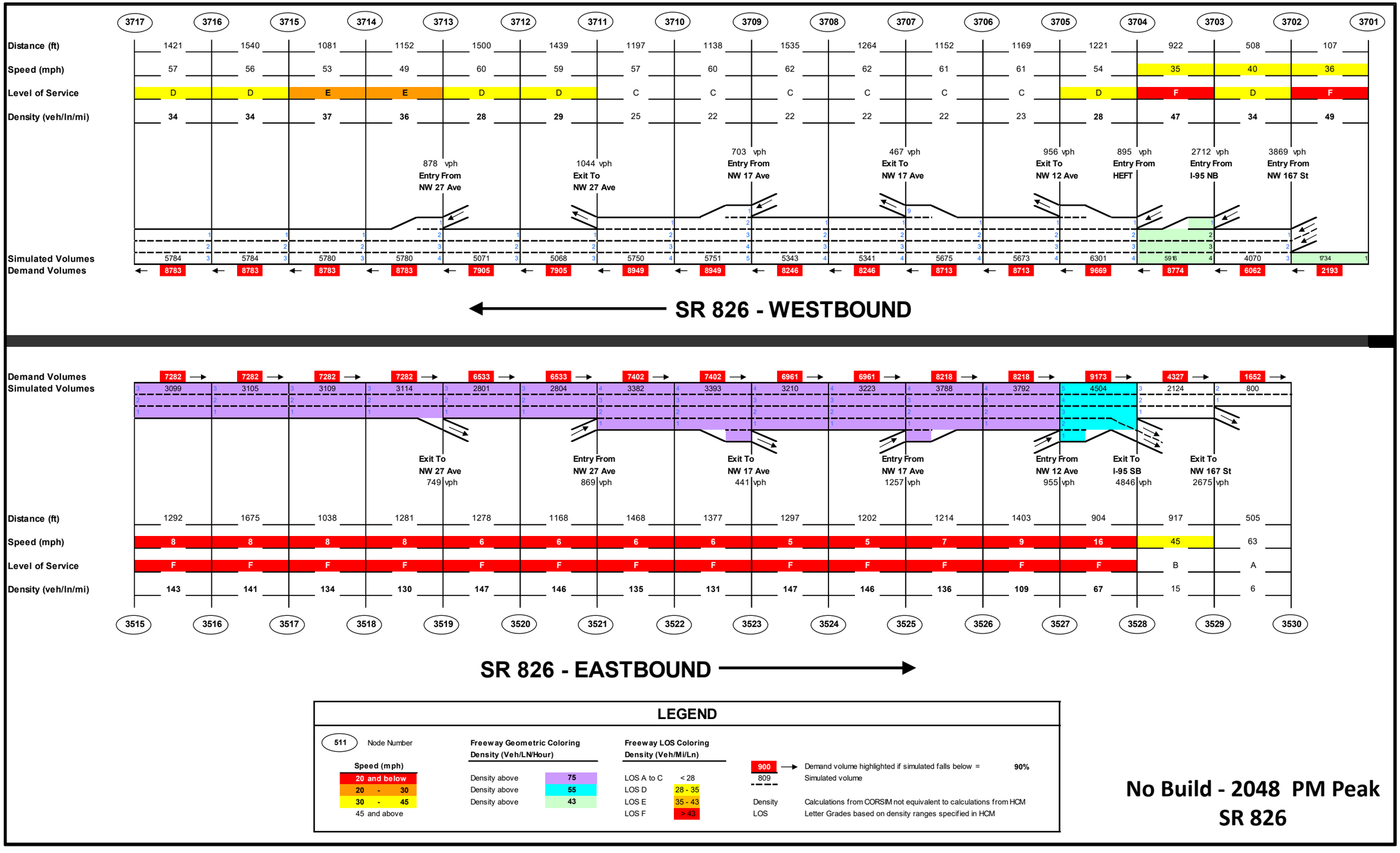


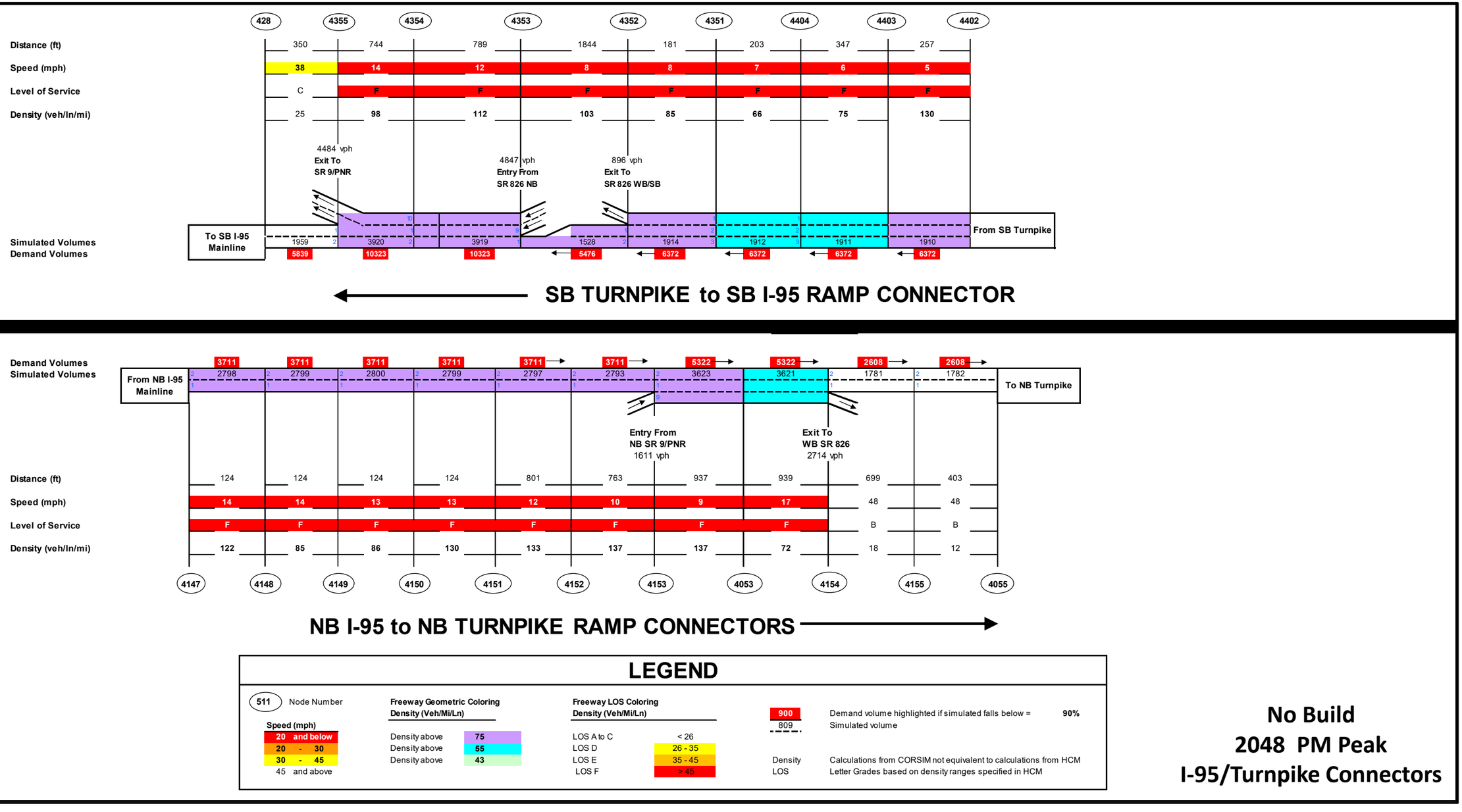
LEGEND

- 511 — Node Number
- Speed (mph): 20 and below; 20 - 30; 30 - 45; 45 and above
- Freeway Geometric Coloring, Density (Veh/LN/Hour): Density above 75; Density above 55; Density above 43
- Freeway LOS Coloring, Density (Veh/Mi/Ln): LOS A to C < 28; LOS D 28 - 35; LOS E 35 - 43; LOS F > 43
- 900 — Demand volume highlighted if simulated falls below = 90%
- 809 — Simulated volume
- Density — Calculations from CORSIM not equivalent to calculations from HCM
- LOS — Letter Grades based on density ranges specified in HCM

No Build - 2048 PM Peak
I-95

FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange	2048 CORSIM Analysis – PM peak No Build
		Figure 4-6 Sheet 1 of 3





LEGEND

511 Node Number

Speed (mph)

20 and below	
20 - 30	
30 - 45	
45 and above	

Freeway Geometric Coloring
Density (Veh/Mi/Ln)

Density above	75
Density above	55
Density above	43

Freeway LOS Coloring
Density (Veh/Mi/Ln)

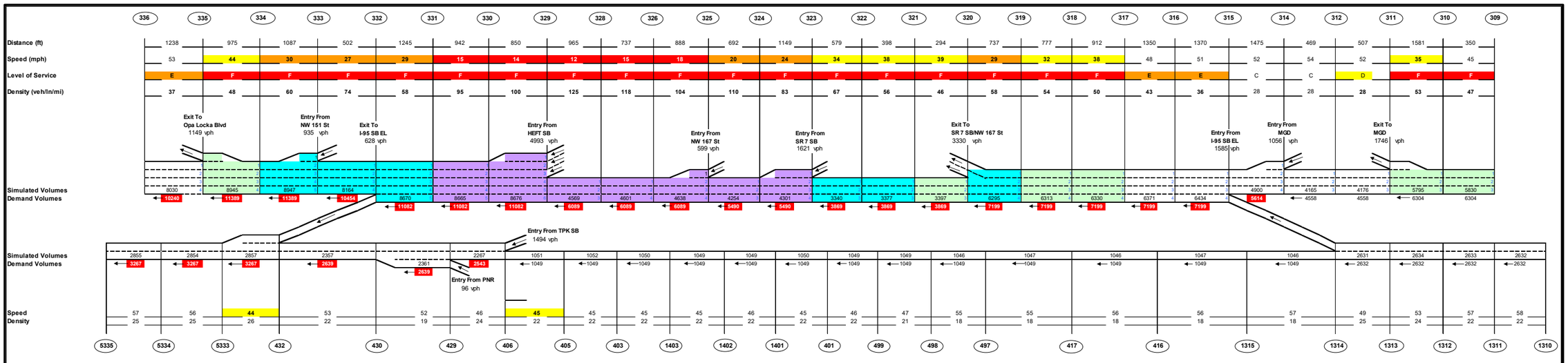
LOS A to C	< 26
LOS D	26 - 35
LOS E	35 - 45
LOS F	> 45

900 / 809 — Demand volume highlighted if simulated falls below = **90%**; Simulated volume

Density — Calculations from CORSIM not equivalent to calculations from HCM

LOS — Letter Grades based on density ranges specified in HCM

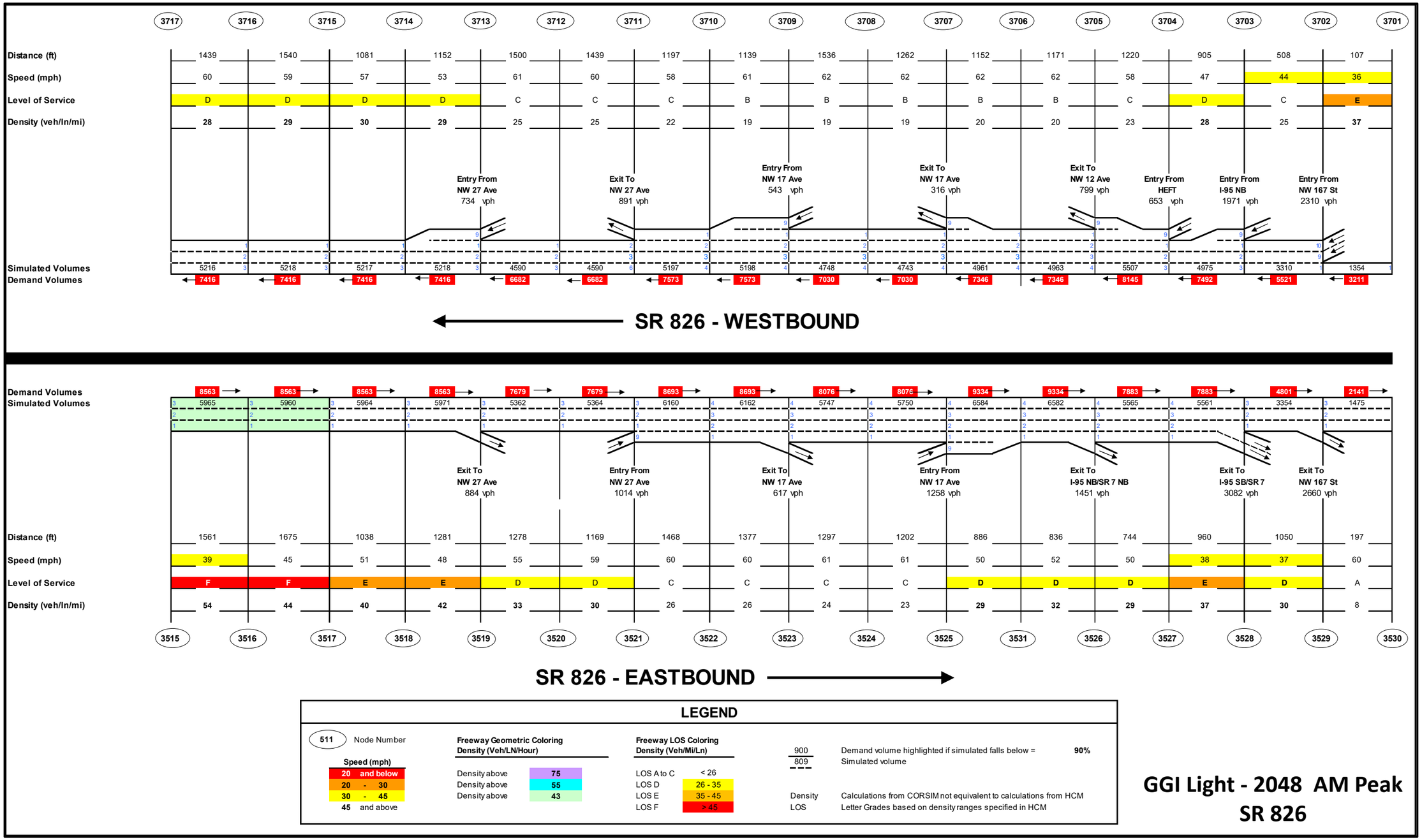
No Build
2048 PM Peak
I-95/Turnpike Connectors

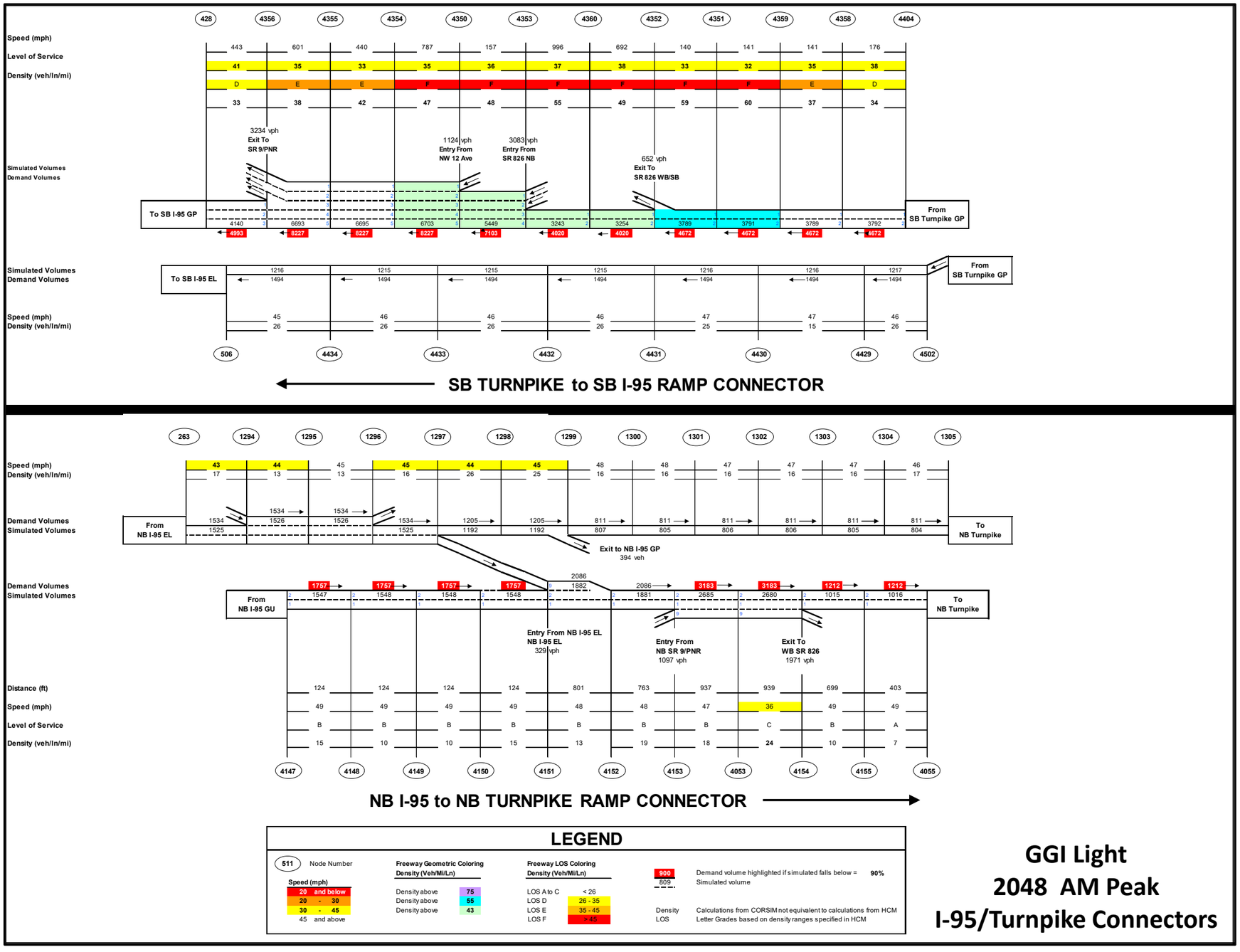


LEGEND

511 Node Number	**Freeway Geometric Coloring Density (Veh/LN/Hour)**		**Freeway LOS Coloring Density (Veh/Mil/Ln)**		900 Demand volume highlighted if simulated falls below = **90%**
Speed (mph)	Density above	**75**	LOS A to C	< 26	809 Simulated volume
20 and below	Density above	**55**	LOS D	26 - 35	
20 - 30	Density above	**43**	LOS E	35 - 45	Density Calculations from CORSIM not equivalent to calculations from HCM
30 - 45			LOS F	> 45	LOS Letter Grades based on density ranges specified in HCM
45 and above					

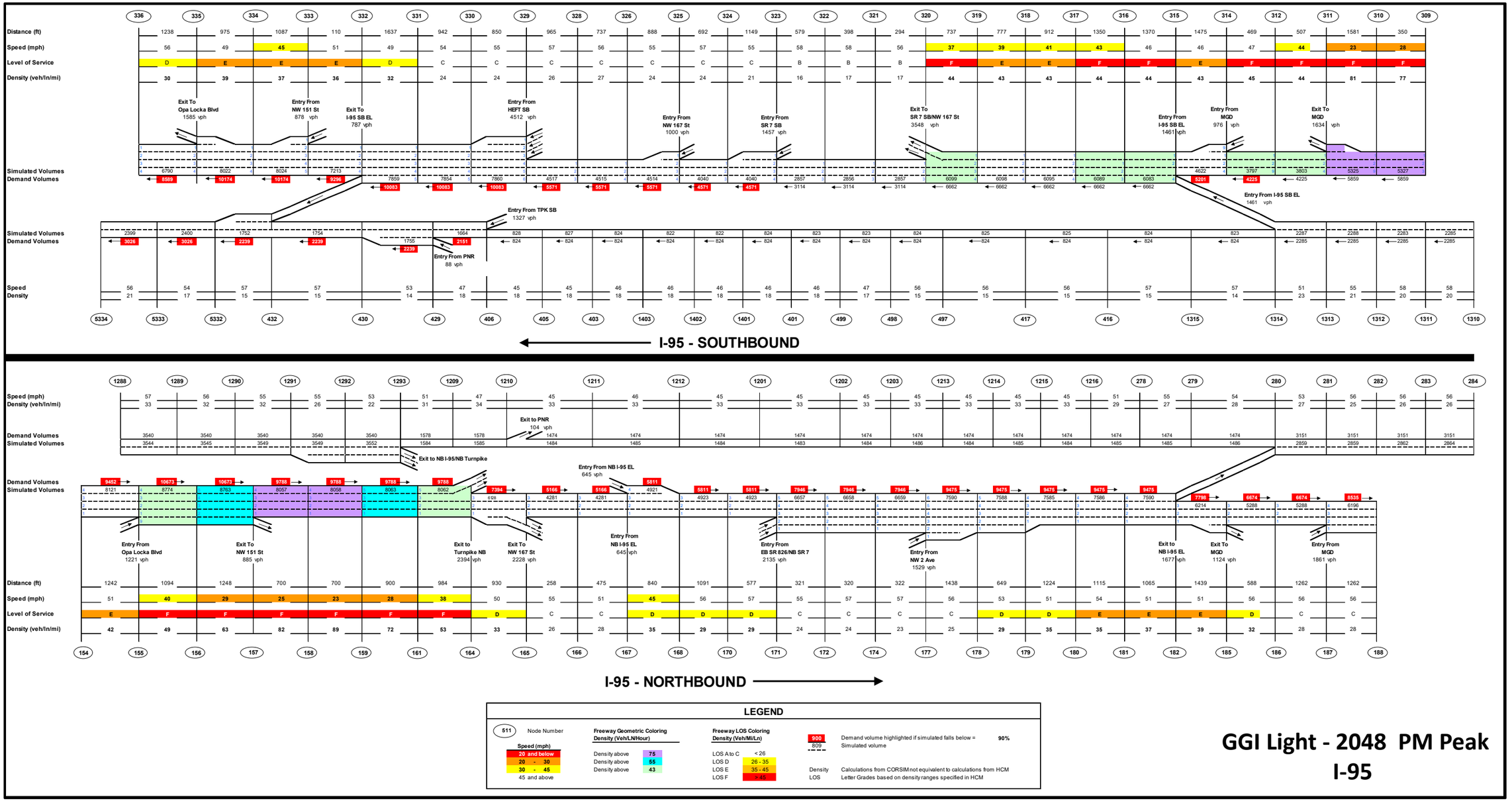
GGI Light - 2048 AM Peak
I-95





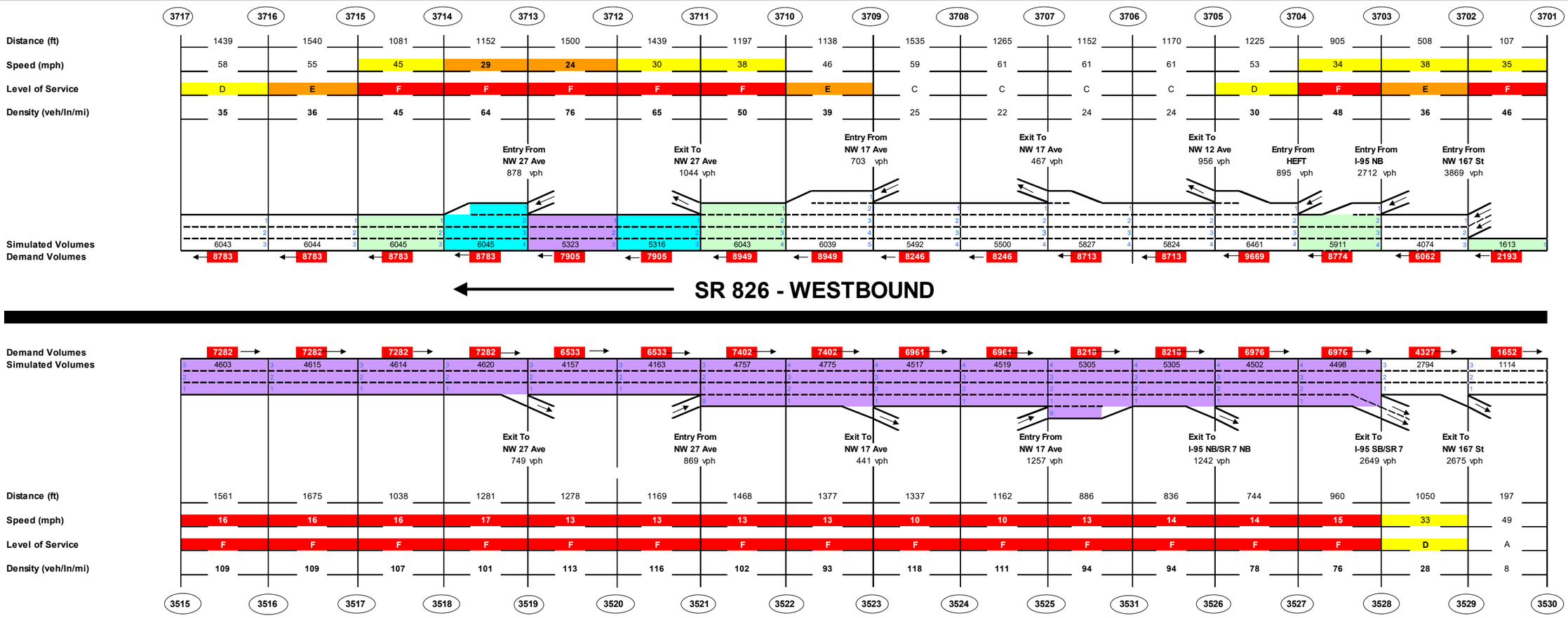
GGI Light
2048 AM Peak
I-95/Turnpike Connectors

SIMR Re-evaluation (GGI Light)



GGI Light - 2048 PM Peak
I-95

SIMR Re-evaluation (GGI Light)



LEGEND

511 Node Number

Speed (mph)

20	and below
20 -	30
30 -	45
45	and above

Freeway Geometric Coloring
Density (Veh/LN/Hour)

Density above	75
Density above	55
Density above	43

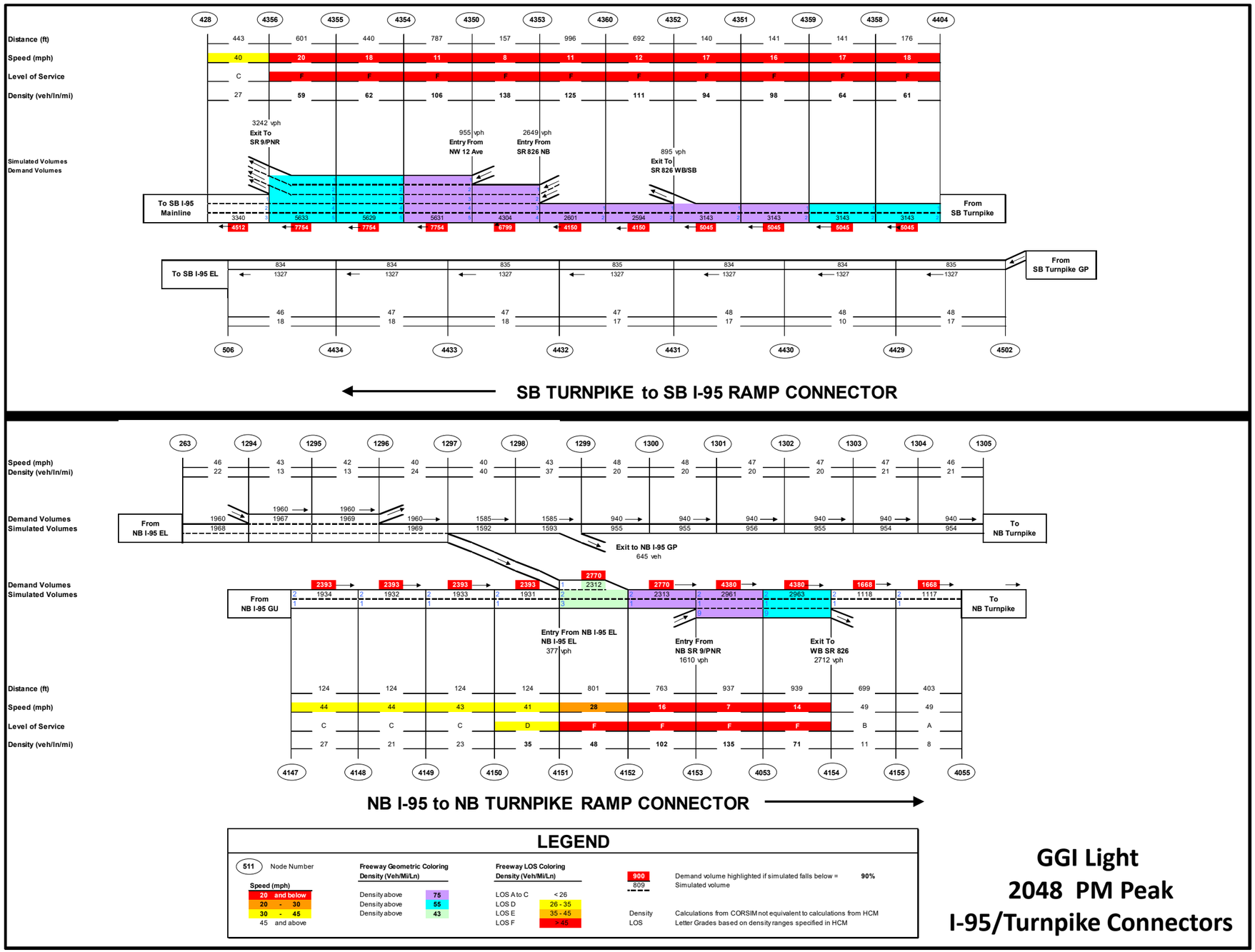
Freeway LOS Coloring
Density (Veh/Mi/Ln)

LOS A to C	< 26
LOS D	26 - 35
LOS E	35 - 45
LOS F	> 45

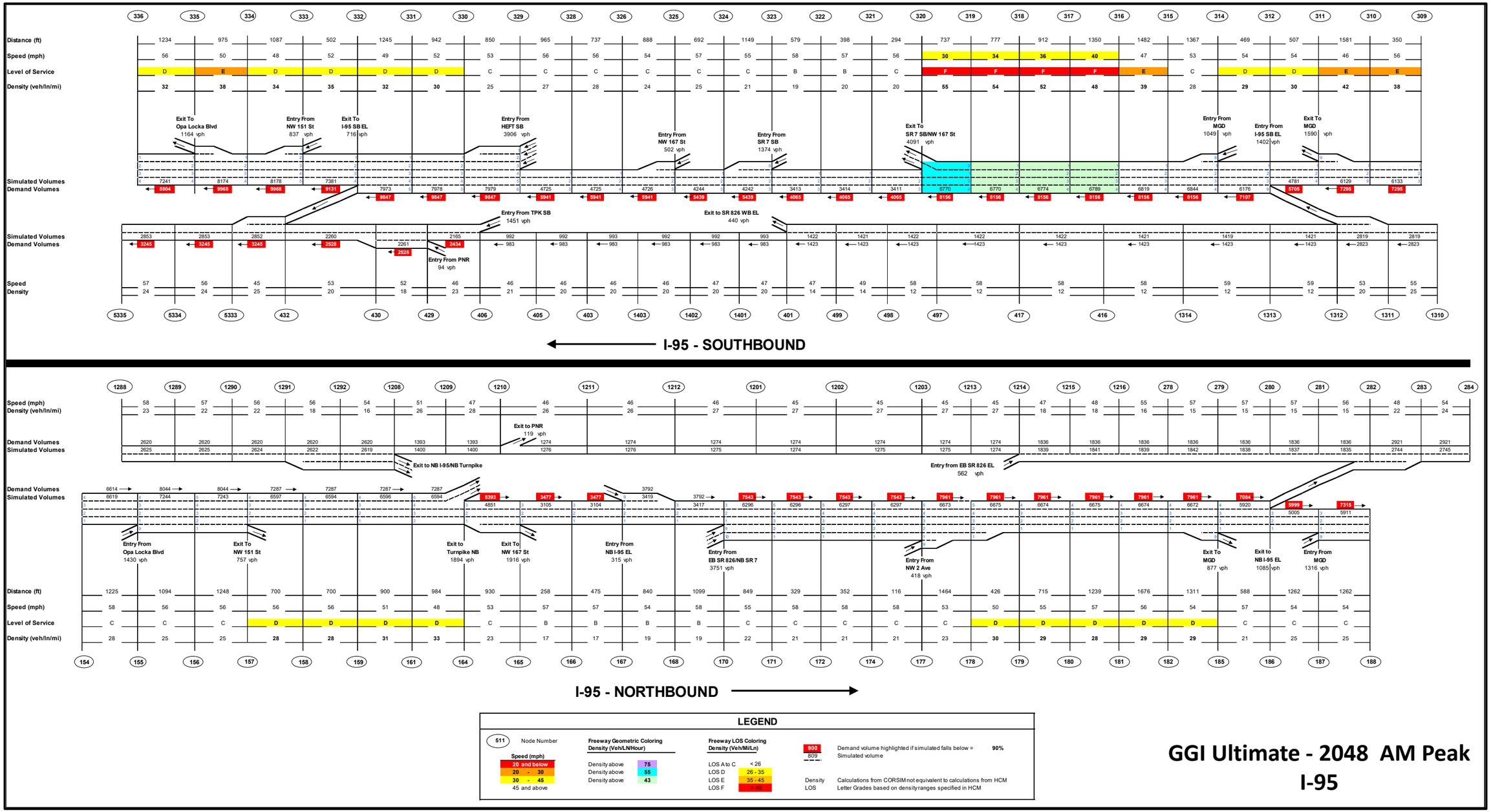
900 Demand volume highlighted if simulated falls below = **90%**
809 Simulated volume

Density Calculations from CORSIM not equivalent to calculations from HCM
LOS Letter Grades based on density ranges specified in HCM

GGI Light - 2048 PM Peak
SR 826


428 4356 4355 4354 4350 4353 4360 4352 4351 4359 4358 4404
Distance (ft) 443 601 440 787 157 996 692 140 141 141 176
Speed (mph) 40 20 18 11 8 11 12 17 16 17 18
Level of Service C F F F F F F F F F F
Density (veh/ln/mi) 27 59 62 106 138 125 111 94 98 64 61
Simulated Volumes
Demand Volumes
3242 vph
Exit To
SR 9/PNR
955 vph
Entry From
NW 12 Ave
2649 vph
Entry From
SR 826 NB
895 vph
Exit To
SR 826 WB/SB
To SB I-95
Mainline
From
SB Turnpike
3340 5633 5629 5631 4304 2601 2594 3143 3143 3143 3143
4512 7754 7754 7754 6799 4150 4150 5045 5045 5045 5045
To SB I-95 EL
From
SB Turnpike GP
834 834 835 835 834 834 835
1327 1327 1327 1327 1327 1327 1327
46 47 47 47 48 48 48
18 18 18 17 17 10 17
506 4434 4433 4432 4431 4430 4429 4502
SB TURNPIKE to SB I-95 RAMP CONNECTOR
263 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305
Speed (mph) 46 43 42 40 40 43 48 48 47 47 47 46
Density (veh/ln/mi) 22 13 13 24 40 37 20 20 20 20 21 21
Demand Volumes
Simulated Volumes
From
NB I-95 EL
1960 1960
1960 1967 1969 1960 1585 1585 940 940 940 940 940 940
1968 1969 1592 1593 955 955 956 955 954 954
To
NB Turnpike
Exit to NB I-95 GP
645 veh
2770
2393 2393 2393 2393 2312 2770 4380 4380 1668 1668
From
NB I-95 GU
1934 1932 1933 1931 2313 2961 2963 1118 1117
To
NB Turnpike
Entry From NB I-95 EL
NB I-95 EL
377 vph
Entry From
NB SR 9/PNR
1610 vph
Exit To
WB SR 826
2712 vph
Distance (ft) 124 124 124 124 801 763 937 939 699 403
Speed (mph) 44 44 43 41 28 16 7 14 49 49
Level of Service C C C D F F F F B A
Density (veh/ln/mi) 27 21 23 35 48 102 135 71 11 8
4147 4148 4149 4150 4151 4152 4153 4053 4154 4155 4055
NB I-95 to NB TURNPIKE RAMP CONNECTOR
LEGEND
511 Node Number
Speed (mph)
20 and below
20 - 30
30 - 45
45 and above
Freeway Geometric Coloring
Density (Veh/Mi/Ln)
Density above 75
Density above 55
Density above 43
Freeway LOS Coloring
Density (Veh/Mi/Ln)
LOS A to C < 26
LOS D 26 - 35
LOS E 35 - 45
LOS F > 45
900
809
Demand volume highlighted if simulated falls below = 90%
Simulated volume
Density Calculations from CORSIM not equivalent to calculations from HCM
LOS Letter Grades based on density ranges specified in HCM
GGI Light
2048 PM Peak
I-95/Turnpike Connectors

SIMR Re-evaluation (GGI Light)

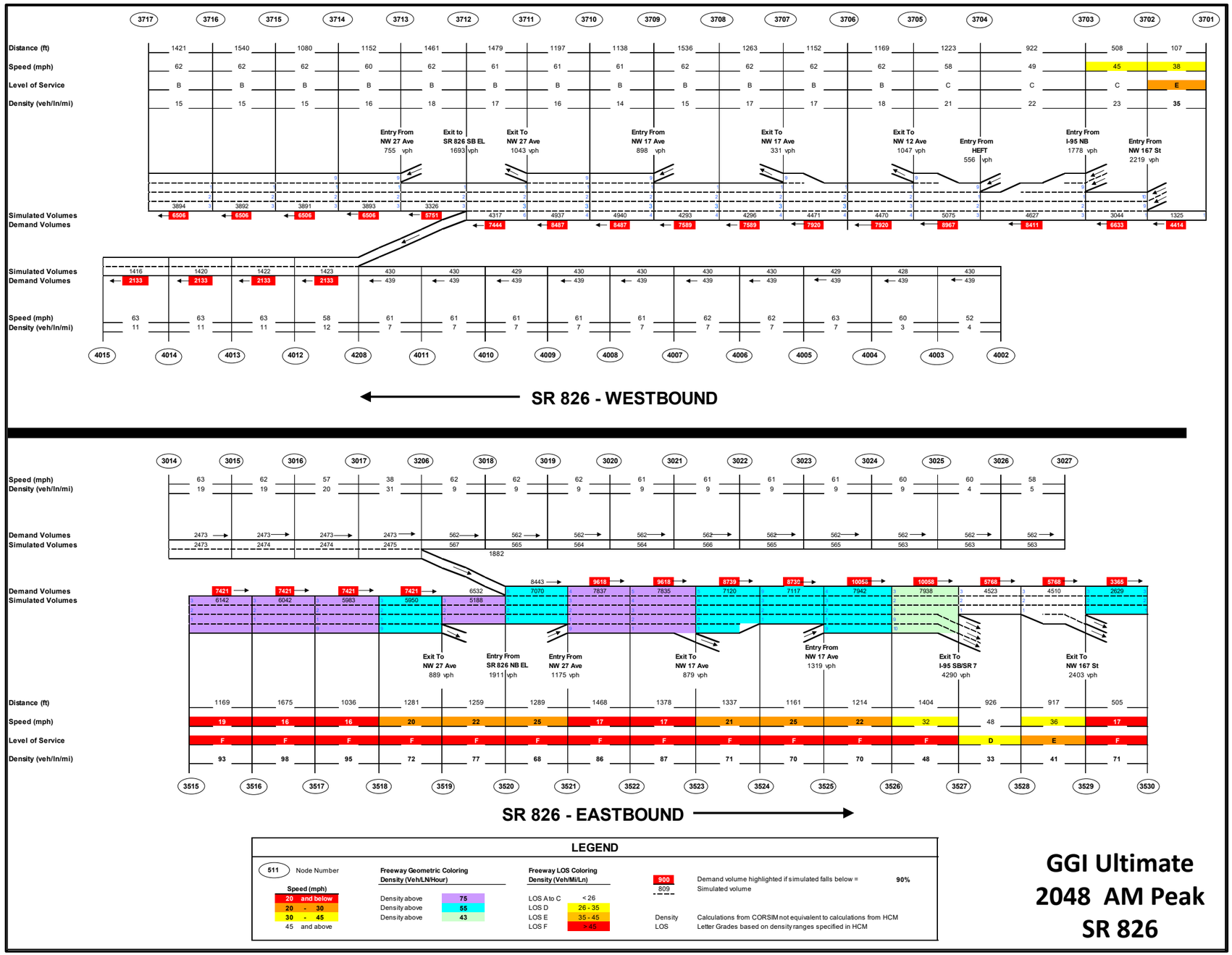


LEGEND

(511) Node Number	Freeway Geometric Coloring Density (Veh/LN/Hour)		Freeway LOS Coloring Density (Veh/Mi/Ln)		900 / 809 Demand volume highlighted if simulated falls below = 90% Simulated volume
Speed (mph): 20 and below; 20 - 30; 30 - 45; 45 and above	Density above 75		LOS A to C	< 26	
	Density above 55		LOS D	26 - 35	
	Density above 43		LOS E	35 - 45	Density / LOS: Calculations from CORSIM not equivalent to calculations from HCM; Letter Grades based on density ranges specified in HCM
			LOS F	> 45	

GGI Ultimate - 2048 AM Peak
I-95

SIMR Re-evaluation (GGI Light)



LEGEND

511 Node Number

Speed (mph)

20 and below	
20 - 30	
30 - 45	
45 and above	

Freeway Geometric Coloring
Density (Veh/LN/Hour)

Density above	75
Density above	55
Density above	43

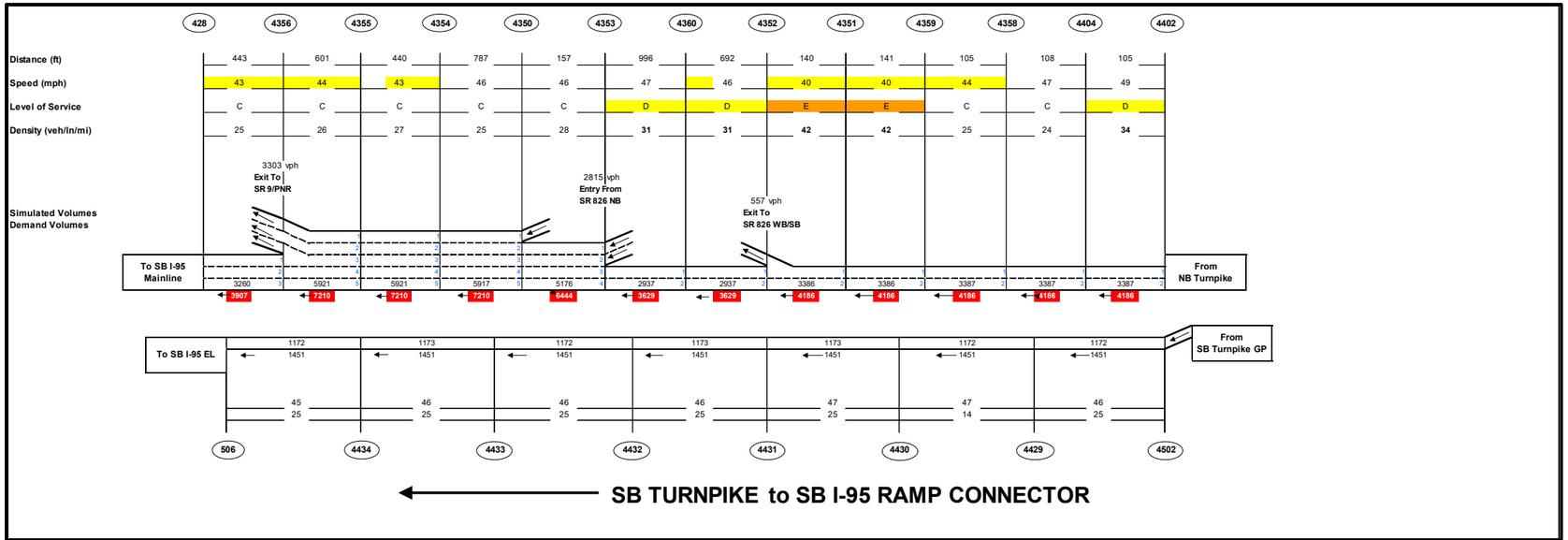
Freeway LOS Coloring
Density (Veh/Mi/Ln)

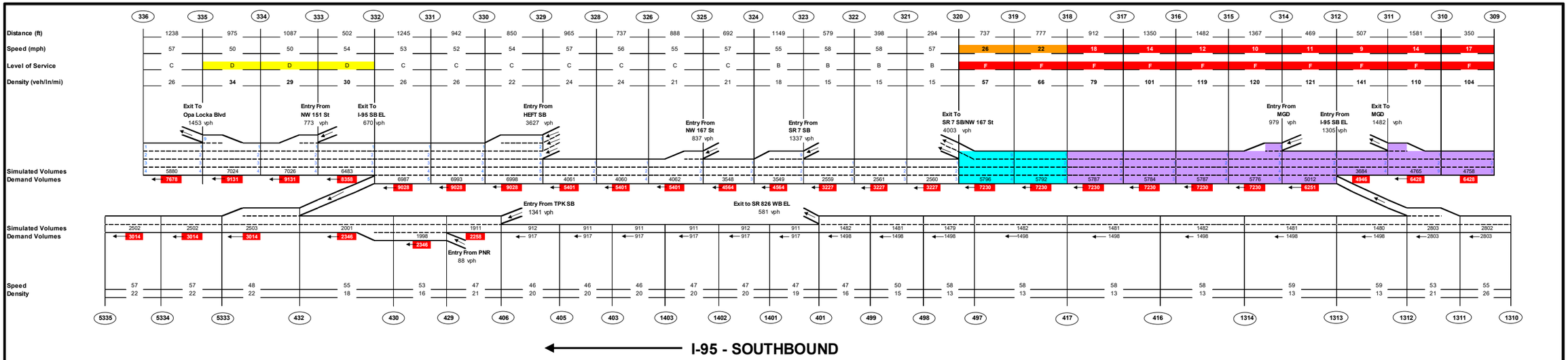
LOS A to C	< 26
LOS D	26 - 35
LOS E	35 - 45
LOS F	> 45

900 / 809 Demand volume highlighted if simulated falls below = **90%** Simulated volume

Density Calculations from CORSIM not equivalent to calculations from HCM
LOS Letter Grades based on density ranges specified in HCM

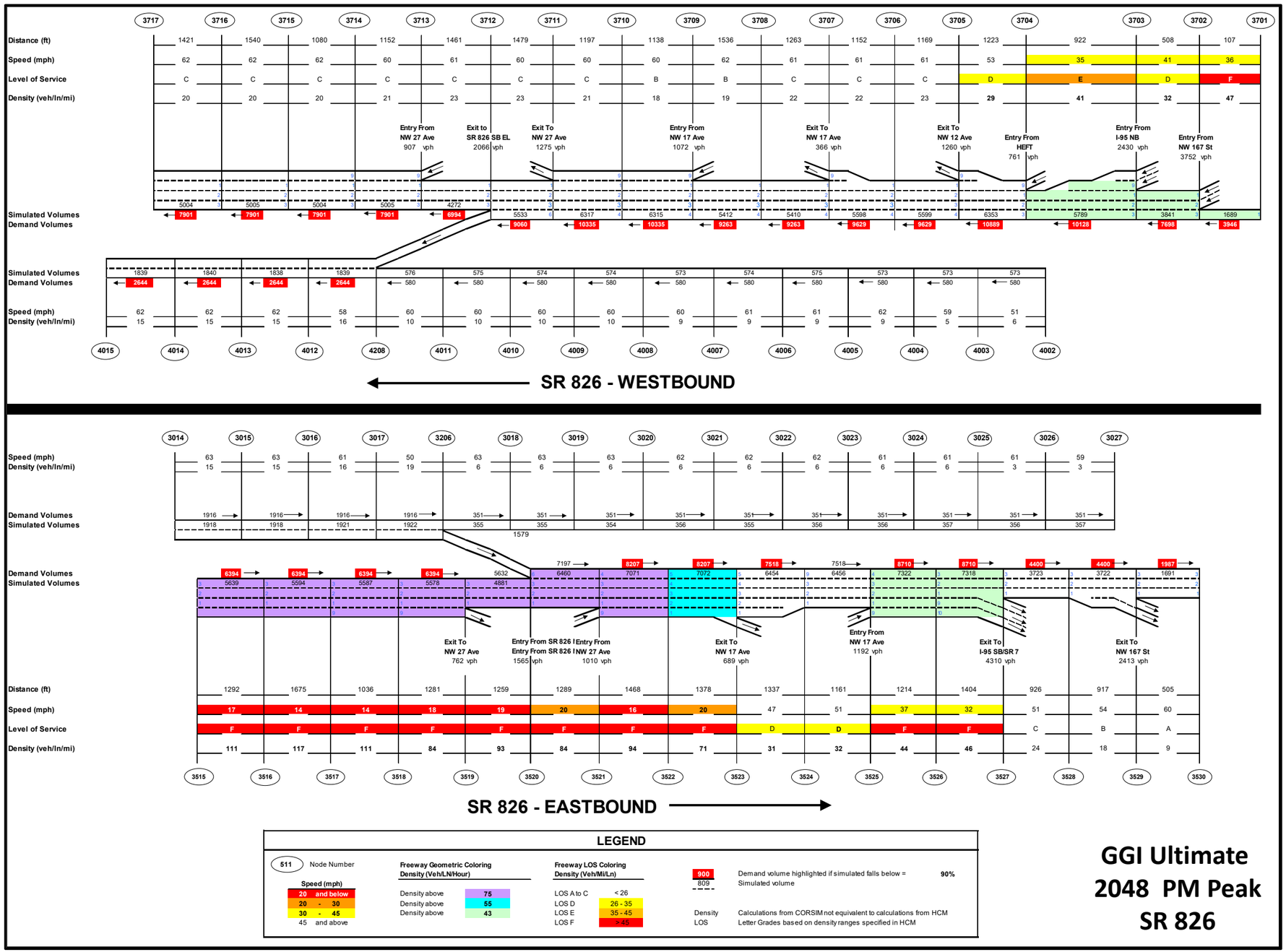
GGI Ultimate
2048 AM Peak
SR 826


428
4356
4355
4354
4350
4353
4360
4352
4351
4359
4358
4404
4402
Distance (ft)
443 601 440 787 157 996 692 140 141 105 108 105
Speed (mph)
43 44 43 46 46 47 46 40 40 44 47 49
Level of Service
C C C C C D D E E C C D
Density (veh/ln/mi)
25 26 27 25 28 31 31 42 42 25 24 34
Simulated Volumes
Demand Volumes
3303 vph
Exit To
SR 9/PNR
2815 vph
Entry From
SR 826 NB
557 vph
Exit To
SR 826 WB/SB
To SB I-95
Mainline
From
NB Turnpike
3260 5921 5921 5917 5176 2937 2937 3386 3386 3387 3387 3387
3907 7210 7210 7210 6444 3629 3629 4186 4186 4186 4186 4186
To SB I-95 EL
From
SB Turnpike GP
1172 1173 1172 1173 1173 1172 1172
1451 1451 1451 1451 1451 1451 1451
45 46 46 46 47 47 46
25 25 25 25 25 14 25
506
4434
4433
4432
4431
4430
4429
4502
SB TURNPIKE to SB I-95 RAMP CONNECTOR
1293
1294
1295
1296
1297
1298
1299
1300
1301
1302
1303
1304
1305
Speed (mph)
Density (veh/ln/mi)
46 44 46 46 46 46 48 48 48 47 47 47
13 13 13 13 20 20 13 13 13 13 13 13
Demand Volumes
Simulated Volumes
From
NB I-95 EL
1228 1228 1228 1228 965 965 651 651 651 651 651 651
1219 1218 1219 1219 960 961 647 648 648 648 647 648
To
NB Turnpike
Exit to NB I-95 GP
314 veh
2158
Demand Volumes
Simulated Volumes
From
NB I-95 GU
1895 1895 1895 1895 2158 3164 3164 1386 1386
1741 1742 1742 1742 2001 1999 2823 2820 1237 1237
To
NB Turnpike
Entry From
NB SR 9/PNR
263 vph
Entry From
NB SR 9/PNR
1006 vph
Exit To
WB SR 826
1778 vph
Distance (ft)
124 124 124 124 801 763 937 939 699 403
Speed (mph)
44 45 48 49 48 48 47 41 48 49
Level of Service
B B B B B B B C B A
Density (veh/ln/mi)
19 12 12 17 14 20 19 22 12 8
4147
4148
4149
4150
4151
4152
4153
4053
4154
4155
4055
NB I-95 to NB TURNPIKE RAMP CONNECTOR
LEGEND
511 Node Number
Speed (mph)
20 and below
20 - 30
30 - 45
45 and above
Freeway Geometric Coloring
Density (Veh/Mi/Ln)
Density above 75
Density above 55
Density above 43
Freeway LOS Coloring
Density (Veh/Mi/Ln)
LOS A to C < 26
LOS D 26 - 35
LOS E 35 - 45
LOS F > 45
900 Demand volume highlighted if simulated falls below = 90%
809 Simulated volume
Density Calculations from CORSIM not equivalent to calculations from HCM
LOS Letter Grades based on density ranges specified in HCM
GGI Ultimate
2048 AM Peak
I-95/Turnpike Connectors



GGI Ultimate - 2048 PM Peak
I-95

SIMR Re-evaluation (GGI Light)



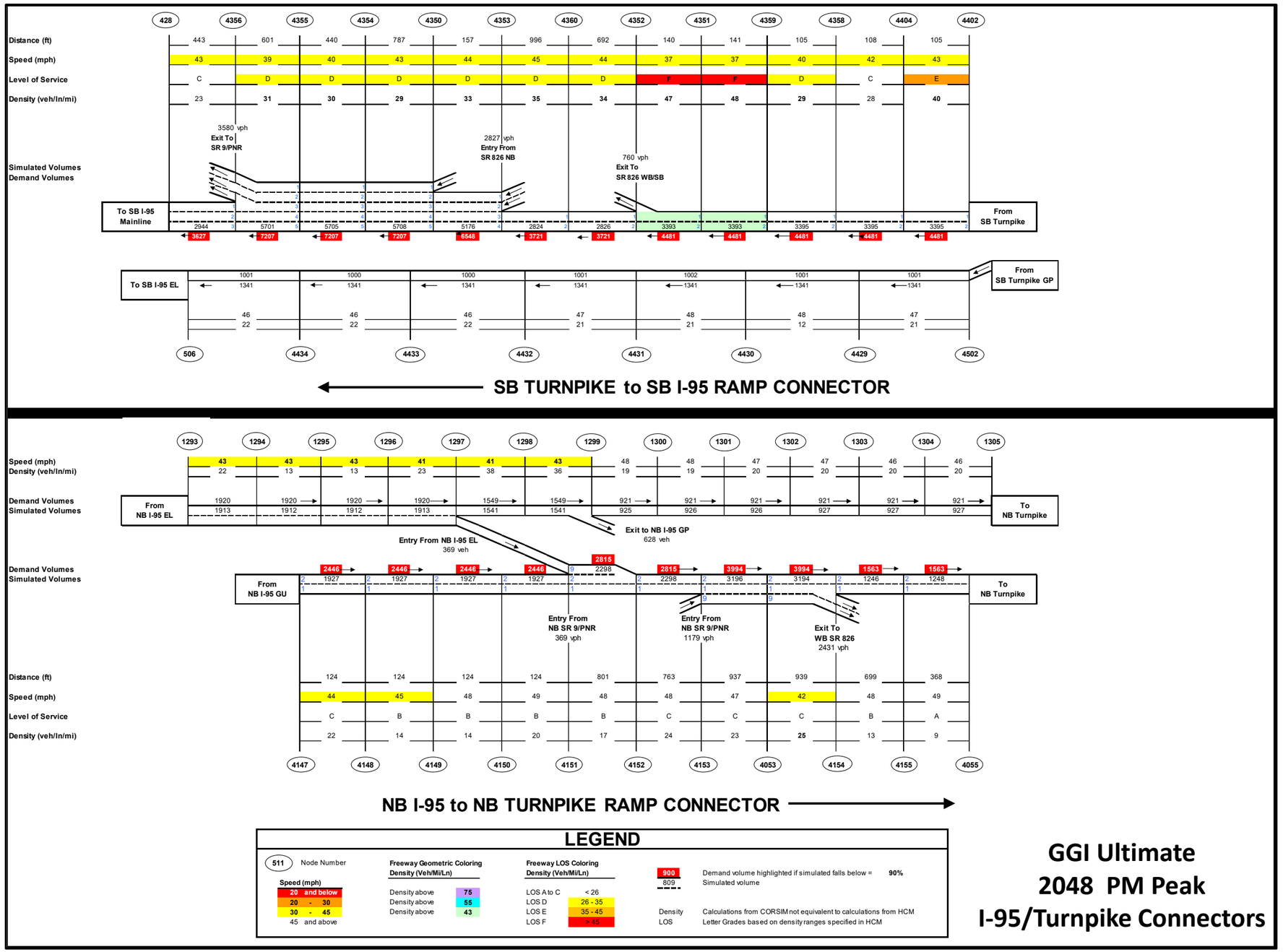

Distance (ft)
Speed (mph)
Level of Service
Density (veh/ln/mi)
Simulated Volumes
Demand Volumes
3580 vph
Exit To
SR 9/PNR
2827 vph
Entry From
SR 826 NB
760 vph
Exit To
SR 826 WB/SB
To SB I-95
Mainline
From
SB Turnpike
To SB I-95 EL
From
SB Turnpike GP
SB TURNPIKE to SB I-95 RAMP CONNECTOR
Demand Volumes
Simulated Volumes
From
NB I-95 EL
To
NB Turnpike
Entry From NB I-95 EL
369 veh
Exit to NB I-95 GP
628 veh
From
NB I-95 GU
Entry From
NB SR 9/PNR
369 vph
Entry From
NB SR 9/PNR
1179 vph
Exit To
WB SR 826
2431 vph
NB I-95 to NB TURNPIKE RAMP CONNECTOR
LEGEND
Node Number
Speed (mph)
20 and below
20 - 30
30 - 45
45 and above
Freeway Geometric Coloring
Density (Veh/Mi/Ln)
Density above 75
Density above 55
Density above 43
Freeway LOS Coloring
Density (Veh/Mi/Ln)
LOS A to C < 26
LOS D 26 - 35
LOS E 35 - 45
LOS F > 45
Demand volume highlighted if simulated falls below = 90%
Simulated volume
Density Calculations from CORSIM not equivalent to calculations from HCM
LOS Letter Grades based on density ranges specified in HCM
GGI Ultimate
2048 PM Peak
I-95/Turnpike Connectors

Table 4-9: 2048 CORSIM Analysis – NB I-95

NB I-95 AM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
NB I-95	GU lanes	From OpaLocka Blvd. to MGD (22,045 feet)	Travel Time (min:sec)	4:37	4:36	4:35	Speeds in GU comparable in No Build, GGI Light and GGI Ultimate
			Avg. Speed (mph)	54	54	55	
	Express Lanes	From OpaLocka Blvd. to MGD (21,574 feet)	Travel Time (min:sec)	4:54	4:46	4:43	Speeds in EL comparable in No Build, GGI Light and GGI Ultimate
			Avg. Speed (mph)	50	52	52	
	GU Lanes	NB I-95, N of NW 2nd Ave On-Ramp	Throughput (vehs/hr.)	6251	7076	6675	GGI Light performs better than No Build. GGI Ultimate performs bettern than GGI Light
	EL Lanes		Throughput (vehs/hr.)	1160	1157	1839	
	GU + EL		Throughput (vehs/hr.)	7411	8233 +11.1%	8514 +3.4%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	25898	28964 +11.8%	29645 +2.4%	

NB I-95 PM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
NB I-95	GU lanes	From OpaLocka Blvd. to MGD (22,045 feet)	Travel Time (min:sec)	7:20	5:39	7:20	GGI Light performa better than No Build . Speed lower in GGI Ultimate due to higher throughput
			Avg. Speed (mph)	34	44	34	
	Express Lanes	From OpaLocka Blvd. to MGD (21,574 feet)	Travel Time (min:sec)	5:51	4:51	4:43	GGI Light performs better than No Build. Speeds comparable in GGI Light and GGI Ultimate
			Avg. Speed (mph)	42	51	52	
	GU Lanes	NB I-95, N of NW 2nd Ave On-Ramp	Throughput (vehs/hr.)	6124	7588	7891	GGI Light performs better than No Build. GGI Ultimate performs bettern than GGI Light
	EL Lanes		Throughput (vehs/hr.)	1474	1485	1645	
	GU + EL		Throughput (vehs/hr.)	7598	9073 +19.4%	9536 +5.1%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	30484	36106 +18.4%	37792 +4.7%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build and GGI Ultimate to GGI Light

Table 4-10: 2048 CORSIM Analysis – SB I-95

SB I-95 AM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
SB I-95	GU lanes	From MGD to OpaLocka Blvd. (22,062 feet)	Travel Time (min:sec)	4:58	9:01	5:12	Speeds lower in GGI Light than No Build due to higer throughput
			Avg. Speed (mph)	51	28	48	Speeds lower in GGI Light than GGI Ultimate due to higher throughput
	Express Lanes	From MGD to OpaLocka Blvd. (21,814 feet)	Travel Time (min:sec)	4:51	4:54	4:46	Speeds in EL comparable in No Build, GGI Light and GGI Ultimate
			Avg. Speed (mph)	51	51	52	
	GU Lanes	SB I-95 N of 151 Street	Throughput (vehs/hr.)	7807	8670	7973	GGI Light Performs Better than No Build. Throughput in GGI Light higher than GGI Ultimate due to higher demand.
	EL Lanes		Throughput (vehs/hr.)	1139	2361	2261	
	GU + EL		Throughput (vehs/hr.)	8946	11031 +23.3%	10234 -7.2%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	33202	41285 +24.3%	37444 -9.3%	

SB I-95 PM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
SB I-95	GU lanes	From MGD to OpaLocka Blvd. (22,062 feet)	Travel Time (min:sec)	7:11	5:37	10:36	GGI Light Performs Better than No Build. Speed in GGI Ultimate impacted by higher demand and congestion along I-95 segment north of GGI.
			Avg. Speed (mph)	35	45	25	
	Express Lanes	From MGD to OpaLocka Blvd. (21,814 feet)	Travel Time (min:sec)	4:48	4:32	4:43	Speeds in EL comparable in No Build, GGI Light and GGI Ultimate
			Avg. Speed (mph)	52	52	52	
	GU Lanes	SB I-95 N of 151 Street	Throughput (vehs/hr.)	5867	7859	6987	GGI Light Performs Better than No Build. Throughput in GGI Light higher than GGI Ultimate due to higher demand and upstream congestion in GGI Ultimate.
	EL Lanes		Throughput (vehs/hr.)	913	1755	1998	
	GU + EL		Throughput (vehs/hr.)	6780	9614 +41.8%	8985 -6.5%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	27574	39034 +41.6%	36318 -7.0%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build and GGI Ultimate to GGI Light

Table 4-11: 2048 CORSIM Analysis – NB I-95/Turnpike Connector

NB I-95/Turnpike Connector - AM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
NB I-95/Turnpike Connector	GU lanes	From I-95 to N of SR 826 Off-Ramp (5,038 feet)	Travel Time (min:sec)	1:15	1:16	1:14	Speeds comparable in No Build, GGI Light and GGI Ultimate
			Avg. Speed (mph)	46	45	46	
	Express Lanes	From I-95 to N of SR 826 Off-Ramp	Travel Time (min:sec)	-	1:21	1:19	No EL connectivity provided in No Build. Speeds comparable in GGI Light and GGI Ultimate
			Avg. Speed (mph)	-	46	47	
	GU Lanes	N of SR 826 Off-Ramp	Throughput (vehs/hr.)	1678	1016	1237	GGI Light performs better than No Build. GGI Ultimate performs better than GGI Light and No Build
	EL Lanes		Throughput (vehs/hr.)	-	804	648	
	GU + EL		Throughput (vehs/hr.)	1678	1820 +8.5%	1885 +3.6%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	5787	6288 +8.7%	6465 +2.8%	

NB I-95/Turnpike Connector - PM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
NB I-95/Turnpike Connector	GU lanes	From I-95 to N of SR 826 Off-Ramp (5,038 feet)	Travel Time (min:sec)	4:09	3:28	1:14	GGI Light comparable to No Build. GGI Ultimate performs better than GGI Light
			Avg. Speed (mph)	14	17	46	
	Express Lanes	From I-95 to N of SR 826 Off-Ramp	Travel Time (min:sec)	-	1:21	1:22	No EL connectivity provided in No Build. Speeds comparable in GGI Light and GGI Ultimate
			Avg. Speed (mph)	-	46	46	
	GU Lanes	N of SR 826 Off-Ramp	Throughput (vehs/hr.)	1782	1117	1248	GGI Light performs better than No Build. GGI Ultimate performs better than GGI Light
	EL Lanes		Throughput (vehs/hr.)	-	954	927	
	GU + EL		Throughput (vehs/hr.)	1782	2071 +16.2%	2175 +5.0%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	7079	8172 +15.4%	8577 +5.0%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build and GGI Ultimate to GGI Light

Table 4-12: 2048 CORSIM Analysis – SB I-95/Turnpike Connector

SB I-95/Turnpike Connector - AM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
SB I-95/Turnpike Connector	GU lanes	From N of SR 826 Off-Ramp to S of NW 7 Ave. Off-Ramp (4,715 feet)	Travel Time (min:sec)	4:39	1:29	1:11	GGI Light performs better than No Build. Speeds comparable in GGI Light and GGI Ultimate
			Avg. Speed (mph)	12	36	45	
	Express Lanes	From N of SR 826 Off-Ramp to S of NW 7 Ave. Off-Ramp	Travel Time (min:sec)	-	1:36	1:36	No EL connectivity provided in No Build. Speeds comparable in GGI Light and GGI Ultimate
			Avg. Speed (mph)	-	46	46	
	GU Lanes	S of NW 7 Ave. Off-Ramp	Throughput (vehs/hr.)	2900	4140	3260	GGI Light performs better than No Build. GGI Light has higher throughput than GGI Ultimate due to higher travel demand on SB I-95
	EL Lanes		Throughput (vehs/hr.)	-	1216	1172	
	GU + EL		Throughput (vehs/hr.)	2900	5356 +84.7%	4432 -17.3%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	11465	20115 +75.4%	16415 -18.4%	

SB I-95/Turnpike Connector - PM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
SB I-95/Turnpike Connector	GU lanes	From N of SR 826 Off-Ramp to S of NW 7 Ave. Off-Ramp (4,715 feet)	Travel Time (min:sec)	6:07	3:55	1:16	GGI Light performs better than No Build. GGI Ultimate performs better than GGI Light
			Avg. Speed (mph)	9	14	42	
	Express Lanes	From N of SR 826 Off-Ramp to S of NW 7 Ave. Off-Ramp	Travel Time (min:sec)	-	1:38	1:35	No EL connectivity provided in No Build. Speeds comparable in GGI Light and GGI Ultimate
			Avg. Speed (mph)	-	47	47	
	GU Lanes	S of NW 7 Ave. Off-Ramp	Throughput (vehs/hr.)	1959	3340	2944	GGI Light performs better than No Build. GGI Light has higher throughput than GGI Ultimate due to higher demand on SB I-95
	EL Lanes		Throughput (vehs/hr.)	-	834	1001	
	GU + EL		Throughput (vehs/hr.)	1959	4174 +113.1%	3945 -5.5%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	8014	17026 +112.5%	16000 -6.0%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build and GGI Ultimate to GGI Light

Table 4-13: 2048 CORSIM Analysis – EB SR 826

EB SR 826/Palmetto Expressway - AM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
EB SR 826/Palmetto Expy.	GU lanes	From W of NW 37 Ave. Off-Ramp to E of NW 167 St. Off-Ramp (18,019 feet)	Travel Time (min:sec)	22:44	4:07	9:44	GGI Light performs better than No Build. GGI Ultimate generages lower speeds due to higher throughput
			Avg. Speed (mph)	9	50	21	
	Express Lanes	From W of NW 37 Ave. Off-Ramp to E of NW 167 St. Off-Ramp	Travel Time (min:sec)	-	-	3:18	Express lanes along SR 826 only provided in GGI Ultimate
			Avg. Speed (mph)	-	-	59	
	GU Lanes	E of NW 167 St. Off-Ramp	Throughput (vehs/hr.)	1168	1475	2629	GGI Light performs better than No Build. GGI Ultimate performs better than GGI Light
	EL Lanes		Throughput (vehs/hr.)	-	-	563	
	GU + EL		Throughput (vehs/hr.)	1168	1475 +26.3%	3192 +116.4%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	4588	5649 +23.1%	11715 +107.4%	

EB SR 826/Palmetto Expressway - PM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
EB SR 826/Palmetto Expy.	GU lanes	From W of NW 37 Ave. Off-Ramp to E of NW 167 St. Off-Ramp (18,019 feet)	Travel Time (min:sec)	27:38	14:34	9:13	GGI Light Performs Better than No Build. GGI Ultimate performs better than GGI Light
			Avg. Speed (mph)	7	14	22	
	Express Lanes	From W of NW 37 Ave. Off-Ramp to E of NW 167 St. Off-Ramp	Travel Time (min:sec)	-	-	3:10	Express lanes along SR 826 only provided in GGI Ultimate
			Avg. Speed (mph)	-	-	61	
	GU Lanes	E of NW 167 St. Off-Ramp	Throughput (vehs/hr.)	800	1114	1691	GGI Light performs better than No Build. GGI Ultimate performs better than GGI Light
	EL Lanes		Throughput (vehs/hr.)	-	-	357	
	GU + EL		Throughput (vehs/hr.)	800	1114 +39.3%	2048 +83.8%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	3334	4604 +38.1%	8501 +84.6%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build and GGI Ultimate to GGI Light

Table 4-14: 2048 CORSIM Analysis – WB SR 826

WB SR 826/Palmetto Expressway - AM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
WB SR 826/Palmetto Expy.	GU lanes	From E of NW 167 St. On-Ramp to W of NW 137 St. On-Ramp (18,346 feet)	Travel Time (min:sec)	3:38	3:36	3:29	Speeds comparable in No Build, GGI Light and GGI Ultimate
			Avg. Speed (mph)	57	58	60	
	Express Lanes	From E of NW 167 St. On-Ramp to W of NW 137 St. On-Ramp	Travel Time (min:sec)	-	-	3:18	Express lanes along SR 826 only provided in GGI Ultimate
			Avg. Speed (mph)	-	-	61	
	GU Lanes	W of NW 27 Ave. On-Ramp	Throughput (vehs/hr.)	5396	5216	3894	Throughput higher in No Build due to new signal at intersection of NW 7th Avenue Ext. and Turnpike which meters WB traffic entering SR 826. This intersection is unsignalized in No Build.
	EL Lanes		Throughput (vehs/hr.)	-	-	1416	
	GU + EL		Throughput (vehs/hr.)	5396	5216 -3.3%	5310 +1.8%	
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	19653	18979 -3.4%	19305 +1.7%	

WB SR 826/Palmetto Expressway - PM PEAK HOUR - 2048							
Location			Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
WB SR 826/Palmetto Expy.	GU lanes	From E of NW 167 St. On-Ramp to W of NW 137 St. On-Ramp (18,346 feet)	Travel Time (min:sec)	3:49	4:56	3:39	Speeds lower in GGI Light than No Build due to higher throughput Speeds higher in GGI Ultimate than GGI Light
			Avg. Speed (mph)	55	42	57	
	Express Lanes	From E of NW 167 St. On-Ramp to W of NW 137 St. On-Ramp	Travel Time (min:sec)	-	-	3:20	Express lanes along SR 826 only provided in GGI Ultimate
			Avg. Speed (mph)	-	-	60	
	GU Lanes	W of NW 27 Ave. On-Ramp	Throughput (vehs/hr.)	5784	6043	5004	GGI Light performs better than No Build. GGI Ultimate performs better than GGI Light
	EL Lanes		Throughput (vehs/hr.)	-	-	1839	
	GU + EL		Throughput (vehs/hr.)	5784	6043 +4.5%	6843 +13.2%	New upstream signal at NW 7th Avenue Ext./Turnpike intersection meters WB traffic in GGI Light and GGI Ultimate
	GU + EL		Total Throughput for 4-hour Peak Period (vehs)	23224	24120 +3.9%	27186 +12.7%	

Notes: 1. Percentage change in throughput compares GGI Light to No Build and GGI Ultimate to GGI Light

Table 4-15: 2048 CORSIM Analysis – EB SR 826 to NB I-95

EB SR 826 to NB I-95 AM PEAK HOUR - 2048						
Location		Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
GU lanes	From EB SR 826 to NB I-95 (12,800 feet - No Build) (4,600 feet - GGI Light/Ultimate)	Travel Time (min:sec)	5:59	1:15	1:12	GGI Light Performs Better than No Build. GGI Light comparable to GGI Ultimate
		Avg. Speed (mph)	18	41	44	

EB SR 826 to NB I-95 PM PEAK HOUR - 2048						
Location		Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
GU lanes	From EB SR 826 to NB I-95 (12,800 feet - No Build) (4,600 feet - GGI Light/Ultimate)	Travel Time (min:sec)	8:59	1:13	1:21	GGI Light Performs Better than No Build. GGI Light comparable to GGI Ultimate
		Avg. Speed (mph)	12	42	39	

Table 4-16: 2048 CORSIM Analysis – Networkwide Performance

Networkwide Performance - 2048 AM peak				
Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
Total Delay (hours)	14,540	11,120 -23.5%	8,969 -19.3%	GGI Light Performs Better than No Build. GGI Ultimate Performs Better than GGI Light.
Total Vehicle-Miles Traveled	502,527	565,727 12.6%	601,124 6.3%	GGI Light Performs Better than No Build. GGI Ultimate Performs Better than GGI Light.
Average Speed (mph)	21	26 23.8%	30 15.4%	GGI Light Performs Better than No Build. GGI Ultimate Performs Better than GGI Light.
Unmet Demand (vehs)	26,667	10,297 -61.4%	6,378 -38.1%	GGI Light Performs Better than No Build. GGI Ultimate Performs Better than GGI Light.

Networkwide Performance - 2048 PM peak				
Performance Measure	No Build	GGI Light	GGI Ultimate	Comments
Total Delay (hours)	23,207	19,811 -14.6%	16,760 -15.4%	GGI Light Performs Better than No Build. GGI Ultimate Performs Better than GGI Light.
Total Vehicle-Miles Traveled	523,469	623,437 19.1%	676,508 8.5%	GGI Light Performs Better than No Build. GGI Ultimate Performs Better than GGI Light.
Average Speed (mph)	16	20 25.0%	23 15.0%	GGI Light Performs Better than No Build. GGI Ultimate Performs Better than GGI Light.
Unmet Demand (vehs)	50,484	24,372 -51.7%	20,122 -17.4%	GGI Light Performs Better than No Build. GGI Ultimate Performs Better than GGI Light.

Notes:

1. Unmet Demand = Accumulated total Demand Volume minus Simulated Volume at network entry points along NB I-95, SB I-95, EB SR 826, and SB Turnpike.

.2. Percentage change compares GGI Light to No Build and GGI Ultimate to GGI Light

5 SAFETY

A safety analysis was conducted to assess safety conditions of the existing GGI Interchange and the anticipated safety performance with the proposed design modifications per the GGI Light Design Concept and the GGI Ultimate Design Concept. The safety analysis focused on the mainline segments of I-95 and SR 826, located within the study limits of the SIMR Re-evaluation. The safety analysis included an evaluation of historical crash data for the existing (No Build) condition and an assessment of future safety conditions with the proposed interchange design modifications. The safety analyses are discussed in the following sections.

5.1 Historical Safety Analysis

FDOT's Crash Analysis Reporting System (CAR Online) was used to gather historical crash records for the segments of I-95 and SR 826 within the study limits. CAR Online is a database maintained annually by the FDOT for crashes reported along state highway facilities. The database provides information on various characteristics associated with each crash including collision type, severity, weather conditions and road surface conditions. The CAR Online database was researched to identify and extract crashes reported along the study segments during the five-year period from January 2015 through December 2019. Due to the complexities of the GGI Interchange, the crash analysis procedures could not reasonably evaluate safety conditions for the entire GGI Area of Influence (see also limitations discussed under Section 5.2). Hence, the crash analysis focused on the two primary freeway corridors, I-95, and SR 826, within the study limits. The crashes were analyzed to assess safety conditions along the study segment of I-95 and SR 826. Crash data reported by Signal Four Analytics (an alternative crash data source hosted by University of Florida) was also researched to provide a reasonableness check on the number of crashes reported from CAR Online. Findings from the crash analysis are discussed below.

I-95 Mainline Historical Crash Analysis

Table 5-1 contains a summary of the historical crashes reported along the I-95 segments within the study limits. A total of 9,860 crashes were reported during the five-year study period (2015 – 2019), which equates to an average of 1,972 crashes per year. Three thousand and ninety-two (or 31%) of the crashes involved injuries and 24 fatal crashes were reported during the five-year period – 8 in 2015, 10 in 2016, and 2 each in 2017, 2018 and 2019. Most of the crashes experienced along the study corridor were rear end collisions accounting for 5,476 crashes (or 55.5%), followed by sideswipes accounting for 2,126 crashes (or 21.6%). Approximately 63% of the crashes occurred during daylight conditions, and 31% of the crashes occurred during dark conditions. The remaining 6% of the crashes occurred during dusk or dawn. The percentage of crashes experienced under dark conditions (31%) is relatively consistent with FDOT's D6 average of approximately 30%. Approximately 87% of the crashes occurred under dry roadway surface conditions, and 13% occurred under wet roadway surface conditions. The percentage of crashes experienced under wet conditions (13%) is consistent with FDOT's average of approximately 13%.

In order to identify possible high crash locations, the I-95 corridor was segmented into 14 smaller homogenous segments. The segmentation was done following the procedures described in the Highway Safety Manual for conducting predictive safety analysis which is discussed later under the Future Safety Analysis. Following the HSM procedures, segments were identified based on consistency in mainline geometry and traffic volumes. Figure 5-1 shows the resulting segmentation for the I-95 corridor.

The historical crashes occurring within each I-95 segment were summed and plotted in the bar graph shown in Figure 5-2. As shown is Figure 5-2, a larger proportion of the crashes occurring along I-95 are concentrated within Segment 4 (from NW 151st Street to GGI). Statistical tests were also performed, per FDOT's procedures, to determine if the crashes experienced within this segment were abnormally high when compared to similar freeway segments statewide. Results of the statistical test are summarized in the Table 5-2. The results indicate that Segment 4 of the I-95 corridor experienced an abnormally high number of crashes in each year from 2015 through 2019 when compared to similar locations statewide. Furthermore, the crash rate was abnormally high in both NB and SB directions with NB being the more critical direction of travel. These statistical finding all exceeded 99.95% confidence level (FDOT's threshold for identifying high crash locations in urbanized areas).

In addition to the above, the CAR Online database was also researched to identify locations along I-95 that were screened by the FDOT and categorized as high crash locations. This research also identified the segment of I-95 from NW 151st Street to GGI as a high crash location. This segment of I-95 (NW 151st Street to GGI) appears on the FDOT's high crash list for all five years of study period (2015 through 2019). The segment of I-95 in the vicinity of the Miami Gardens Interchange also appears on the FDOT's high crash list in years 2015 through 2019. This interchange (I-95 at Miami Gardens Drive) is located within the limits of an on-going I-95 PD&E Study from Miami Gardens Drive to Miami-Dade County Line (FM No.: 414964-1). This PD&E Study will examine safety and operational improvements at the I-95/Miami Gardens Drive Interchange.

The results of the crash analysis indicate that a large proportion of the crashes experienced along I-95 occur along the Segment between NW 151st Street and the GGI. Statistical analysis confirm that crashes experienced within this segment are abnormally high. This segment of I-95 is heavily congested during peak period and has multiple weaving movements and lane changes occurring between on-ramps, off-ramps and the express lanes ingress and egress points. The excessive congestion and weaving activities generate multiple conflicts within the traffic stream and likely the probable cause for the high number of crashes experienced within this segment of I-95. The proposed new I-95/Turnpike Connectors, per GGI Light and GGI Ultimate will reduce crash risk within this segment of I-95 by eliminating much of the weaving activities.

Table 5-1: Crash Summary – I-95 from South of Opa-Locka Blvd. to Miami Gardens Drive

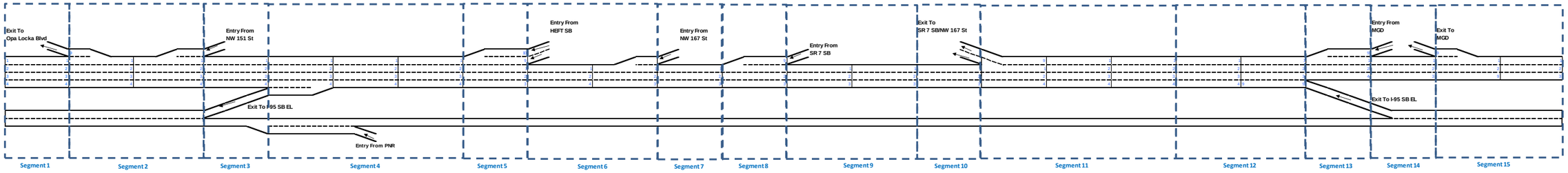
I-95 From South of Opa-Locka Blvd (MP 10.9) to North of Miami Gardens Drive (MP 14.30)		Number of Crashes Year 2015	2016	2017	2018	2019	5 Year Total Crashes	Mean Crashes Per Year	%
CRASH TYPE	Rear End	1188	1154	1060	1050	1024	5476	1095	55.5%
	Head On	0	0	0	0	0	0	0	0.0%
	Angle	74	68	74	64	59	339	68	3.4%
	Left Turn	0	0	0	0	0	0	0	0.0%
	Right Turn	0	0	0	0	0	0	0	0.0%
	Sideswipe	472	442	376	422	414	2126	425	21.6%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	4	0	4	4	4	16	3	0.2%
	Bicycle	0	0	0	0	0	0	0	0.0%
	Fixed Object	*162*	*227*	*182*	*168*	*190*	*929*	*186*	*9.4%*
	Others	274	211	152	200	137	974	195	9.9%
	Total Crashes	**2174**	**2102**	**1848**	**1908**	**1828**	**9860**	**1972**	**100.0%**
SEVERITY	PDO Crashes	1474	1330	1254	1378	1308	6744	1349	68.4%
	Fatal Crashes	8	10	2	2	2	24	5	0.2%
	Injury Crashes	692	762	592	528	518	3092	618	31.4%
LIGHTING CONDITIONS	Daylight	1380	1354	1192	1178	1138	6242	1248	63.3%
	Dusk	42	52	58	66	36	254	51	2.6%
	Dawn	32	50	84	88	34	288	58	2.9%
	Dark	720	642	514	576	620	3072	614	31.2%
	Unknown	0	4	0	0	0	4	1	0.0%
SURFACE CONDITIONS	Dry	1958	1800	1586	1708	1532	8584	1717	87.1%
	Wet	216	300	262	198	294	1270	254	12.9%
	Others	0	2	0	2	2	6	1	0.1%
WEATHER CONDITIONS	Clear	1644	1474	1422	1510	1400	7450	1490	75.6%
	Cloudy	412	436	276	306	238	1668	334	16.9%
	Rain	112	190	150	92	190	734	147	7.4%
	Fog, Smog, Smoke	6	0	0	0	0	6	1	0.1%
	Other	0	2	0	0	0	2	0	0.0%

Table 5-2: Crash Statistics – I-95 from NW 151st Street to GGI

I-95 from North of NW 151st St to GGI (NB + SB) – Figure 5-1, Segment 4					
Year	**2015**	**2016**	**2017**	**2018**	**2019**
Number of Crashes	530	556	440	432	514
Actual Crash Rate (ACR)	6.259	6.740	4.940	5.058	5.235
District 6 Average Crash Rate (A)	2.641	2.694	2.395	2.009	2.058
Critical Crash Rate (CCR)	3.217	3.283	2.929	2.508	2.529
Safety Ratio	1.946	2.053	1.687	2.017	2.070
Confidence Level	99.99%	99.99%	99.99%	99.99%	99.99%

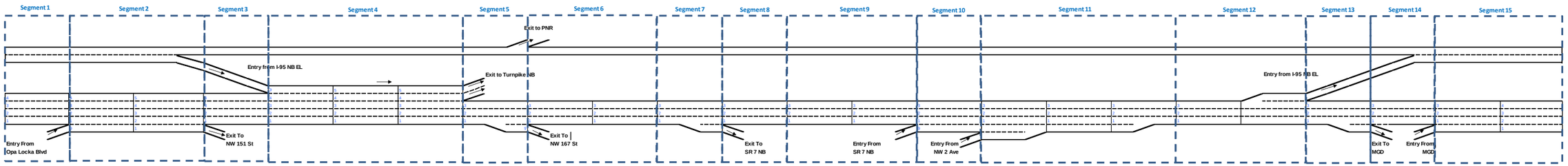
I-95 from North of NW 151st St to GGI (NB Only)					
Year	**2015**	**2016**	**2017**	**2018**	**2019**
Number of Crashes	312	300	250	244	308
Actual Crash Rate (ACR)	7.369	7.274	5.614	5.714	6.274
District 6 Average Crash Rate (A)	2.641	2.694	2.395	2.009	2.058
Critical Crash Rate (CCR)	3.452	3.523	3.147	2.711	2.722
Safety Ratio	2.135	2.065	1.784	2.108	2.305
Confidence Level	99.99%	99.99%	99.99%	99.99%	99.99%

I-95 from North of NW 151st St to GGI (SB Only)					
Year	**2015**	**2016**	**2017**	**2018**	**2019**
Number of Crashes	218	256	190	188	206
Actual Crash Rate (ACR)	5.149	6.207	4.267	4.402	4.196
District 6 Average Crash Rate (A)	2.641	2.6934	2.394	2.009	2.058
Critical Crash Rate (CCR)	3.452	3.523	3.147	2.711	2.722
Safety Ratio	1.492	1.762	1.356	1.624	1.541
Confidence Level	99.99%	99.99%	99.99%	99.99%	99.99%



I-95 SOUTHBOUND ←

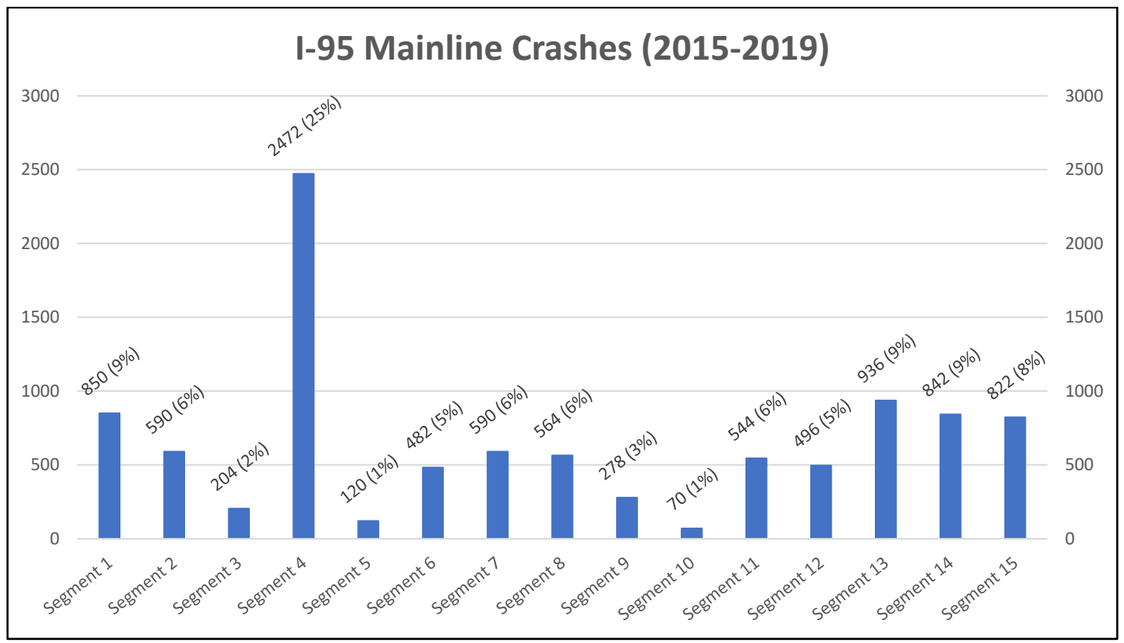
I-95 NORTHBOUND →



I-95 Mainline – Existing (No Build)

FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange	Safety Analysis Segmentation of I-95 Mainline	Figure 5-1 Sheet 1 of 1

Figure 5-2: I-95 Mainline Crash Distribution



Notes: 1. Segments defined per Figure 5-1.

SR 826 Mainline Historical Crash Analysis

Table 5-3 contains a summary of the historical crashes reported along the SR 826 segments within the study limits. A total of 1,644 crashes were reported during the five-year study period (2015 - 2019), which equates to an average of 329 crashes per year. Five hundred and twenty-four (or 31.9%) of the crashes involved injuries and 7 fatal crashes were reported during the five-year period – 1 in 2015, 2 in 2017, 1 in 2018 and 3 in 2019. Most of the crashes experienced along the study corridor were rear end collisions accounting for 805 crashes (or 49.0%), followed by sideswipes accounting for 319 crashes (or 19.4%) and fixed object crashes 250 (15.2%). Approximately 67% of the crashes occurred during daylight conditions, and 28% of the crashes occurred during dark conditions. The remaining 5% of the crashes occurred during dusk or dawn. The percentage of crashes experienced under dark conditions (28%) marginally below FDOT's D6 average of approximately 30%. Approximately 79% of the crashes occurred under dry roadway surface conditions, and 21% occurred under wet roadway surface conditions. The percentage of crashes experienced under wet conditions (21%) is higher than FDOT's average of approximately 13%. Resurfacing of SR 826 with new friction course will help to address wet weather related crashes.

In order to identify possible high crash locations, the SR 826 Corridor was segmented into 9 smaller homogenous segments. The segmentation was done following the procedures described in the Highway Safety Manual for conducting predictive safety analysis which is discussed later under the Future Safety Analysis. Following the HSM procedures, segments were identified based on consistency in mainline geometry and traffic volumes. Figure 5-3 shows the resulting segmentation for the SR 826 corridor. The historical crashes occurring within each SR 826 segment were summed and plotted in the bar graph shown in Figure 5-4. As shown is Figure 5-4, a majority of the crashes reported along SR 826 occurred within the segments west of NW 12th Avenue.

Statistical tests were performed, per FDOT's procedures, to determine if the crashes experienced within the SR 826 mainline (from west of NW 27th Avenue to GGI - Figure 5-3. Segments 1 to 9) were abnormally high when compared to similar freeway segments statewide. Results of the statistical test are summarized in the Table 5-4. The results indicate that mainline segment of SR 826 experienced an abnormally high number of crashes in each year from 2015 through 2019 when compared to similar locations statewide. Furthermore, the crash rate was abnormally high in both EB and WB directions with EB being the more critical direction of travel. These statistical finding are calculated within a 99.95% confidence level.

In addition to the above, the CAR Online database was also researched to identify locations along SR 826 that were screened by the FDOT and categorized as high crash locations. This research identified the segment of SR 826 within the vicinity of NW 27th Avenue Interchange as a high crash location – appearing on the FDOT's High Crash List in 2016, 2017 and 2019. This interchange is (SR 826 at NW 27th Avenue) will be modified to a Single Point Urban Interchange as part of the GGI Ultimate Improvements. The proposed interchange modifications together with planned improvements to SR 826 mainline will alleviate congestion and improve safety at the interchange.

The results of the crash analysis confirm that crashes experienced within mainline segment of SR 826 are abnormally high. This segment of SR 826 (from NW 27th Avenue to GGI) is heavily congested during peak periods, particularly in the eastbound direction in the AM peak period. The excessive congestion and lane changing activities are probable cause for the high number of crashes experienced within this segment of SR 826. The proposed new connector for EB SR 826 to NB I-95, per GGI Light and GGI Ultimate, will provide congestion relief within this segment with a corresponding reduction in crash risk.

Table 5-3: Crash Summary – SR 826 from West of NW 27th Avenue to GGI

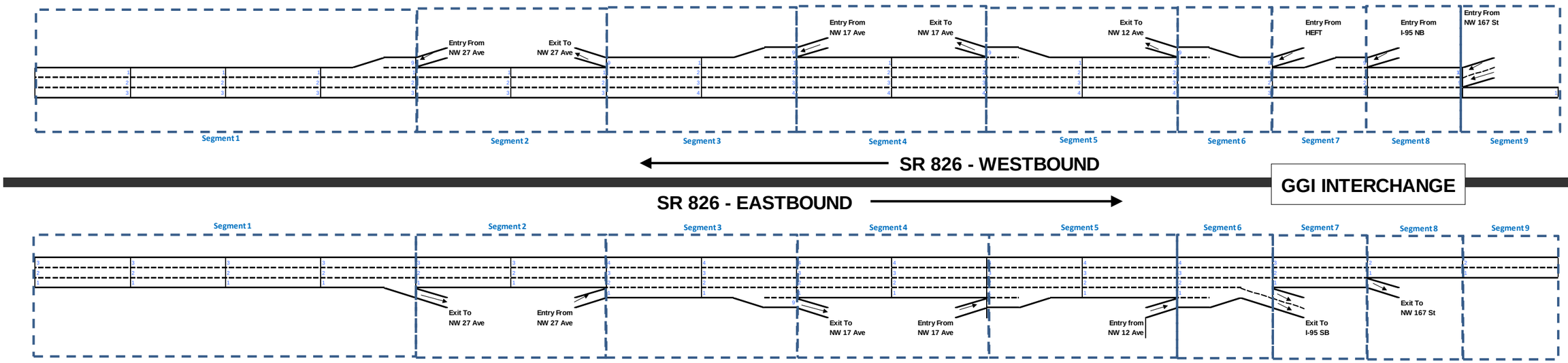
SR-826 From West of NW 27th Ave (MP 21.530) to GGI (MP 24.33)		Number of Crashes Year 2015	2016	2017	2018	2019	5 Year Total Crashes	Mean Crashes Per Year	%
CRASH TYPE	Rear End	124	160	179	171	171	805	161	49.0%
	Head On	0	1	0	0	0	1	0	0.1%
	Angle	12	10	18	14	19	73	15	4.4%
	Left Turn	0	3	5	2	5	15	3	0.9%
	Right Turn	0	0	0	1	0	1	0	0.1%
	Sideswipe	58	71	74	47	69	319	64	19.4%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	0	0	2	0	1	3	1	0.2%
	Bicycle	1	0	0	0	0	1	0	0.1%
	Fixed Object	*49*	*50*	*54*	*44*	*53*	*250*	*50*	*15.2%*
	Others	34	39	32	30	41	176	35	10.7%
	Total Crashes	**278**	**334**	**364**	**309**	**359**	**1644**	**329**	**100.0%**
SEVERITY	PDO Crashes	191	226	250	201	245	1113	223	67.7%
	Fatal Crashes	1	0	2	1	3	7	1	0.4%
	Injury Crashes	86	108	112	107	111	524	105	31.9%
LIGHTING CONDITIONS	Daylight	176	220	246	215	249	1106	221	67.3%
	Dusk	10	9	8	5	10	42	8	2.6%
	Dawn	6	12	8	8	7	41	8	2.5%
	Dark	86	93	102	80	93	454	91	27.6%
	Unknown	0	0	0	1	0	1	0	0.1%
SURFACE CONDITIONS	Dry	209	252	296	254	284	1295	259	78.8%
	Wet	69	82	68	54	75	348	70	21.2%
	Others	0	0	0	1	0	1	0	0.1%
WEATHER CONDITIONS	Clear	179	201	276	226	258	1140	228	69.3%
	Cloudy	60	80	47	49	50	286	57	17.4%
	Rain	39	53	41	33	51	217	43	13.2%
	Fog, Smog, Smoke	0	0	0	0	0	0	0	0.0%
	Sleet/Hail/Freezing Rain	0	0	0	0	0	0	0	0.0%
	Blowing Sand, Soil, Dirt	0	0	0	0	0	0	0	0.0%
	Severe Crosswinds	0	0	0	0	0	0	0	0.0%
	Other	0	0	0	1	0	1	0	0.1%

Table 5-4: Crash Statistics – SR 826 from West of NW 27th Avenue to GGI

SR 826 from W of NW 27th Ave to GGI (EB + WB) – Figure 3, Segments 1 to 9					
Year	**2015**	**2016**	**2017**	**2018**	**2019**
Number of Crashes	278	334	364	309	359
Actual Crash Rate (ACR)	5.170	6.189	6.296	6.132	7.387
District 6 Average Crash Rate (A)	2.316	2.161	2.271	1.997	2.047
Critical Crash Rate (CCR)	2.989	2.810	2.915	2.642	2.712
Safety Ratio	1.730	2.202	2.160	2.321	2.724
Confidence Level	99.99%	99.99%	99.99%	99.99%	99.99%

SR 826 from W of NW 27th Ave to GGI (EB Only)					
Year	**2015**	**2016**	**2017**	**2018**	**2019**
Number of Crashes	161	181	206	179	223
Actual Crash Rate (ACR)	5.922	7.048	7.018	17.672	7.786
District 6 Average Crash Rate (A)	2.316	2.161	2.271	1.997	2.047
Critical Crash Rate (CCR)	3.258	3.096	3.170	3.408	2.909
Safety Ratio	1.818	2.276	2.214	5.185	2.676
Confidence Level	99.99%	99.99%	99.99%	99.99%	99.99%

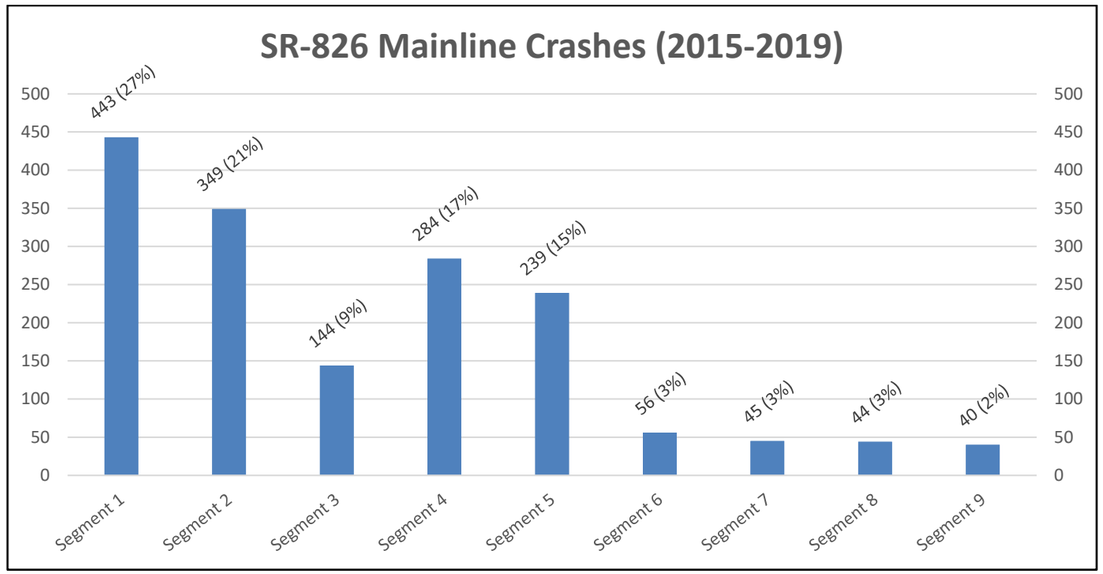
SR 826 from W of NW 27th Ave to GGI (WB Only)					
Year	**2015**	**2016**	**2017**	**2018**	**2019**
Number of Crashes	117	153	158	130	136
Actual Crash Rate (ACR)	4.352	5.788	5.192	8.801	5.333
District 6 Average Crash Rate (A)	2.316	2.161	2.271	1.997	2.047
Critical Crash Rate (CCR)	3.263	3.083	3.154	3.173	2.960
Safety Ratio	1.334	1.878	1.646	2.774	1.802
Confidence Level	99.99%	99.99%	99.99%	99.99%	99.99%



SR-826 Mainline – Existing (No Build)

FDOT	SR 826/Palmetto Expressway PD&E Study From SR 93/I-75 to Golden Glades Interchange	Safety Analysis Segmentation of SR-826 Mainline	Figure 5-3 Sheet 1 of 1

Figure 5-4: Sr 826 Mainline Crash Distribution



Notes: 1. Segments defined per Figure 5-1

5.2 Future Safety Analysis of Proposed Interchange Modifications

A quantitative safety analysis was performed for I-95 Mainline and SR 826 Mainline per the HSM predictive crash procedures. Consistent with the FDOT's Interchange Access Request (IAR) User's Guide Safety Analysis Guidance, an initial step in the process was to assess the applicability of the Predictive Method for evaluating the future safety performance of the GGI Interchange under No Build, GGI Light and GGI Ultimate conditions. This assessment included detailed reviews of the FDOT's IAR Users Guide Safety Analysis Guidance, the HSM Part C Methodology and current publications from NCHRP and FHWA related to the Predictive Method and analysis tools. From this assessment, several limitations of the Predictive Method were noted which restrict its applicability for evaluating the future GGI No Build and Build conditions. These limitations include:

- The procedure does not perform safety analysis for freeway segments with managed lanes. This limitation is relevant to the GGI Interchange Project given that express lanes are present along I-95 for all future scenarios (Build and No Build) and express lanes are present along SR 826 in the GGI Ultimate Design Concept.
- The procedure does not perform safety analysis for ramp and C-D Roads with 3 or more lanes in an urban area. This limitation is relevant to the GGI Interchange Project given that segments of the I-95/Turnpike Connectors (NB and SB) contain 3 or more lanes in the future No Build and Build Scenarios.

In addition to the above limitations of the Predictive Method, it was also noted that the AADTs along segments of I-95 and SR 826 exceeded the applicable range of the safety performance functions currently developed for the Predictive Method. It should also be noted that the Empirical Bayes method is not applicable for this study as the Existing Conditions differ significantly from the proposed Build Conditions. FDOT has also not yet developed calibration factors for interstate crash prediction analysis. Application of the Empirical Bayes Method and calibration factors would enhance the accuracy of the crash prediction process.

Given the above limitations of the Predictive Method, it was determined that the procedure would not provide a reliable prediction of the expected crashes along I-95 and SR 826 for the alternative future scenarios. Hence, the Predictive Method was applied solely as an indicator to assess the relative safety performance of the GGI Interchange under the future Build and No Build scenarios. In addition, only mainline GU lanes and ramp merge/diverge areas were considered in the analysis. Ramp roadway segments were not considered in the analysis given the limited applicability of Predictive Method for the GGI Interchange Project.

Crash predictions for the future No Build and Build scenarios were computed using the Interactive Highway Safety Design Module (IHSDM). This software tool automates the calculations in Part C of the HSM. The analysis required gathering various input data for I-95 and SR 826 segments, ranging from geometric elements, such as alignment and cross section data, roadside and ramp access data and annual average daily traffic (AADT) data. These procedures were used for comparing the predicted crashes in the design year (2048) under No Build and Build scenarios.

The analysis was not performed for the project design life (2028 through 2048) since the objective of the predictive crash analysis was only to assess the relative safety performance of the alternatives and the implementation schedule for the Ultimate Design Concept is unknown, at this time.

For conducting the predictive analysis, I-95 Mainline and SR 826 Mainline were segmented into homogenous segments per the HSM methodology. The segmentation aimed to subdivide the I-95 and SR 826 mainline into segments with consistent geometry and AADT, to the extent possible. Achieving a consistent geometry was not feasible along several mainline segments due to the complex geometry of the GGI Interchange. In such cases, the crash analysis used an averaging procedure, per HSM methodology. For example, crashes on a 7-lane segment (3 lanes in one direction and 4 lanes in opposite direction) would be estimated by averaging the predicted crashes for a 6-lane facility and an 8-lane facility.) AADTs used for the calculations were estimated by applying applicable K-Factors (refer to MLOU under Appendix A.) to the directional peak hour volumes contained under Appendix B. The resulting segmentation of the mainlines used for the crash analysis are depicted in Figure 5-1 (for I-95 Mainline, No Build) and Figure 5-3 (for SR 826 Mainline, No Build). Detailed output reports from the IHSDM for the crash analysis are contained under Appendix D. The results are summarized in Tables 5-5.

The results of the predictive crash analysis indicate that the GGI Light Design Concept and the GGI Ultimate Design Concept will perform better than the No Build Condition. This result is consistent with expectations given that much of the crashes experienced along I-95 and SR 826 are associated with excessive congestion and weaving activities within segments of the corridor. The proposed I-95/Turnpike express lanes connectors (per GGI Light and GGI Ultimate) will reduce congestion, weaving activities, and corresponding crash risk within the segment of I-95 which currently experiences the highest crash rates (i.e., segment of I-95 from NW 151st Street to GGI). Similarly, the proposed new flyover for connecting EB SR 826 to NB I-95 (per GGI Light and GGI Ultimate) will reduce congestion and corresponding crash risk along SR 826. The proposed SR 826/I-95 Express Lanes connects will further reduce congestion and corresponding crash risk along SR 826.

It should be noted that AADT is a key input used in the Predictive Method and the analysis presented herein only considers traffic using the general use lanes. Since the express lanes are better utilized in the Build Alternatives, AADT is lower in the GU lanes along several mainline segments when compared in the No Build Alternative. This reduction in AADT presents a reduction in exposure and a corresponding reduction in crashes, which is reflected in the results of the Predictive Method.

Table 5-5: Predictive Crash Summary

Corridor	Total Predicted Crashes - Year 2048			Comments
	No Build	GGI Light	GGI Ultimate	
I-95	351	307	315	GGI Light and GGI Ultimate perform better than No Build
SR 826	267	249	234	GGI Light and GGI Ultimate perform better than No Build

5.3 Qualitative Safety Assessment of Proposed Interchange Modifications

As explained under Section 5.2 of the SIMR the HSM crash prediction procedures are not directly applicable to the GGI Interchange project due to the unique conditions and complex geometry of the interchange. Such unique conditions and complex geometries are not covered by the HSM crash prediction methods. Hence, to support the safety analysis of the project a qualitative assessment of the proposed interchange modifications was also considered. The following improvements support expectations that the GGI Light and GGI Ultimate Design Concepts will provide significant safety benefits when compared to the No Build Condition:

1. **Reduction in weaving activity**. The proposed NB and SB I-95/Turnpike Express Lane Connectors will reduce weaving for travel along the road segments connecting I-95 Express Lanes and Florida Turnpike. The dedicated express lane connectors will eliminate the need

for weaving to/from GU lanes and express lanes - for travel to/from I-95 Express and Florida Turnpike. The weaving activity in the No Build Condition is a source of conflicts and crashes at the GGI Interchange. This is especially problematic along the NB segment of I-95 south of the GGI Interchange which experiences the highest crash rate within the study area. Reducing weaving activity will significantly enhance safety within this segment and other segments along the I-95/Turnpike Connectors.

2. **Reduction in traffic exposure**. The proposed new flyover connecting EB SR 826 and NB I-95 will eliminate the need for drivers to use the long circuitous route via GGI P&R intersections to access NB I-95. This will reduce the amount of traffic using these intersections, resulting in a corresponding reduction in traffic exposure and reduction in crash risk at the intersections. Similarly, traffic using links along the circuitous route will be reduced with a corresponding reduction in traffic exposure and crash risk. Furthermore, the traffic analyses presented herein indicate that the proposed improvements will yield an overall reduction in networkwide vehicle-miles travelled. This reduction in vehicle-miles travelled will generate a networkwide reduction in traffic exposure and corresponding crash risk at the interchange with the proposed improvements.
3. **Increase interchange capacity**. The proposed new ramp connectors, widening along ramp segments and addition of turn lanes will all collectively increase the capacity of the GGI Interchange. The increase in capacity will correspondingly provide congestion relief at the interchange and reduce associated crashes – particularly rear-end collisions.

6 DESIGN VARIATIONS AND EXCEPTIONS

6.1 Anticipated Design Variations and Exceptions

Based on current design plans, design exceptions and variations have been prepared for the proposed design elements associated with the SIMR Re-evaluation. Design variations are along I-95, SR 826 and along the GGI ramp systems for: horizontal alignment (length of curve), shoulder width, border width, express lanes buffer separation, and height of noise walls. Design exceptions include lane width along I-95 GU lanes, horizontal curve radius and stopping sight distance along various ramps at the GGI. These design exceptions and variations are currently being reviewed and in the process of being approved as part of the final design efforts on the project.

7 PLANNING CONSISTENCY

7.1 Consistency with Other Plans/Projects

The proposed design changes are components of the GGI Interchange Improvement project and the SR 826 Express Lanes (East-West) Improvement Project. These on-going projects resulted from previously approved GGI PD&E Study and the SR 826 PD&E Study. The improvements resulting from these studies are consistent with improvement plans incorporated in Florida's Strategic Intermodal System (SIS) 2045 Long Rang Cost Feasible Plan and the Statewide Transportation Improvement Program (STIP). The proposed improvements are also included in the current 2045 Cost Feasible Long Range Transportation Plan (LRTP), adopted by Miami Dade County, Metropolitan Planning Organization (MPO). The improvements are also incorporated in the MPO's Transportation Improvement Program (TIP).

The GGI Light and GGI Ultimate Design Concepts were developed in coordination with the following adjacent Projects:

- I-95 Master Plan (Miami-Dade County): The FDOT's I-95 Master Plan evaluated the long-term improvements for I-95 mainline and interchanges throughout Miami-Dade County. This includes segments of I-95 mainline, the GGI and other interchanges within the area of influence for this project.
- Turnpike PD&E Study. Florida Turnpike Enterprise PD&E Study examined the potential for adding express lanes to the Turnpike System located immediately north of the GGI. The I-95/Turnpike Express Lane Connectors (described herein) may provide direct connections to future express lanes along the Florida Turnpike System.

8 ASSESSMENT OF FHWA POLICY POINTS

The FHWA's Policy on Access to the Interstate System provides the requirements for the justification and documentation necessary to substantiate any proposed changes in access to the Interstate System. The policy is published under the Federal Register, Volume 74, Number 165, updated May 22, 2017. The current SR 826 SIMR Re-evaluation (approved May 2019) incorporates an assessment of the two considered requirements that are specified in the current FHWA's Policy on Access to the Interstate System. The assessment compared the No Build Alternative and the 2019 SIMR Design Concept (current approved GGI Ultimate Design Concept). It demonstrated that the 2019 SIMR Design Concept satisfies the FHWA's Policy requirements on access to the interstate system. While the FHWA's Policy Assessments and commitments remain applicable, updates are necessary for approving and authorizing the interim GGI Light Design Concept. In this regard, the following updated responses are offered for Policy Point #1 and Policy Point #2.

Policy:

It is in the national interest to preserve and enhance the Interstate System to meet the needs of the 21st Century by assuring that it provides the highest level of service in terms of safety and mobility. Full control of access along the Interstate mainline and ramps, along with control of access on the crossroad at interchanges, is critical to providing such service. Therefore, FHWA's decision to approve new or revised access points to the Interstate System under Title 23, United States Code (U.S.C.), Section 111, must be supported by substantiated information justifying and documenting that decision. The FHWA's decision to approve a request is dependent on the proposal satisfying and documenting the following requirements

Considerations and Requirements

Policy Point 1 (previously Item No. 3)

An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).

Addendum to Policy Point No. 1 Response (pertaining to documentation contained herein for the GGI Light Design Concept)

Detailed operations analyses were performed comparing the No Build Alternative, the current approved GGI Ultimate Design Concept (per 2019 SIMR Re-evaluation) and the proposed interim GGI Light Design Concept. The analyses confirmed that the GGI Light Design Concept will not have any adverse safety or operational impacts on I-95 and SR 826. The analyses demonstrated that the GGI Light Design Concept will provide better traffic operating conditions within the GGI Study Area when compared to the No Build Alternative. The analyses also demonstrated that the GGI Ultimate Design Concept will provide better overall traffic operating conditions than the GGI Light Design Concept. However, implementation of the GGI Light Design Concept (an interim improvement) will not result any critical operational failures which would otherwise be mitigated by the GGI Ultimate Design Concept, through the design year 2048. These findings are support by the results from the analyses presented below.

In evaluating the operational performance of the design alternatives, it must be recognized that the GGI operates in a congested environment where peak period traffic demand volumes exceed the capacity of the network. In such conditions, capacity improvements will often yield an increase in

throughput accompanied by a decrease in operating speeds along some road segments. Hence, in comparing the GGI design alternatives, throughput is used as the principal performance measure for determining if one alternative performs better or worse than another. This approach is consistent with FDOT's policy of maximizing throughput on facilities operating under congested conditions, similar to the GGI. The following results from the analyses support these findings.

Comparison of 2028 Operating Conditions for No Build and GGI Light Design Concept: Results from the 2028 operations analysis indicate that the GGI Light Design Concept generates higher throughput (GU lanes + express lanes) when compared to the No Build for all the major routes of interest for the study: NB I-95 (11.6%/14.2% increase in AM/PM); SB I-95 (28.9%/40.4% increase in AM/PM), NB I-95/Turnpike Connector (8.3%/7.3% increase AM/PM), SB I-95/Turnpike Connector (79.8%/112.9% in AM/PM), EB SR 826 (33.4%/30.4% increase in AM/PM) and WB SR 826 (2.4%/9.0% increase in AM/PM). In addition, average operating speeds in the GU lanes are higher or comparable under the GGI Light Concept when compared to the No Build Alternative. Average operating speeds for the peak direction of travel in GU lanes for GGI Light / No Build are:

- NB I-95 - 42 mph / 34 mph, PM peak
- SB I-95 – 47 mph / 53 mph, AM peak (GGI has higher throughput of approximately 1,300 vehs. /hr.)
- NB I-95/Turnpike Connector – 16 mph / 13 mph, PM peak
- SB I-95/Turnpike Connector – 44 mph / 12 mph, AM peak
- EB SR 826 – 45 mph / 10 mph, AM peak
- WB SR 826 – 45 mph / 57 mph, PM peak (GGI Light has higher throughput of approximately 500 vehs. /hr.)

In addition to the above, the GGI Light Design Concept performs better across all networkwide performance measures including, total delay (decrease by 40.0%/14.2% in AM/PM), total vehicle-miles travelled (increase by 13.8%/19.3% in AM/PM), average speed (increase by 34.8%/21.1% in AM/PM) and unmet (latent) demand (decrease by 75.7%/83.5% in AM/PM).

Comparison of 2048 Operating Conditions for No Build and GGI Light: Results from the 2048 operations analysis indicate that the GGI Light Design Concept will generate higher throughput (GU lanes + express lanes) when compared to the No Build for all the major routes of interest for the study: NB I-95 (11.1%/19.4% increase in AM/PM); SB I-95 (23.3%/41.8% increase in AM/PM), NB I-95/Turnpike Connector (8.5%/16.2% increase AM/PM), SB I-95/Turnpike Connector (84.7%/113.1% increase in AM/PM), EB SR 826 (26.3%/39.3% increase in AM/PM) and WB SR 826 (4.5% increase in PM). WB SR 826 shows a decrease in throughput of 3.3% in AM peak due to new signals installed at upstream intersection (NW 7th Avenue at NB Turnpike On-Ramp) under the GGI Light Design Concept. In addition to higher throughput, average operating speeds in the GU lanes are mostly higher or comparable under the GGI Light Design Concept when compared to the No Build Alternative. Average operating speeds for the peak direction of travel in GU lanes for GGI Light / No Build are:

- NB I-95 - 44 mph / 34 mph, PM peak
- SB I-95 – 28 mph / 51mph, AM peak. (Lower speed in GGI Light is due to the higher throughput in the GU lanes – an increase of approximately 850 vehs/hr compared to No Build)
- NB I-95/Turnpike Connector – 17 mph /14 mph, PM peak
- SB I-95/Turnpike Connector – 36 mph / 12 mph, AM peak
- EB SR 826 – 50 mph / 9 mph, AM peak
- WB SR 826 – 42 mph/55 mph, PM peak (Lower speed in GGI Light due to higher throughput – an increase of approximately 250 vehs/hr compared to No Build)

In addition to the above, the GGI Light Design Concept performs better across all networkwide performance measures including, total delay (decrease by 23.5%/14.6% in AM/PM), total vehicle-miles travelled (increase by 12.6%/19.1% in AM/PM), average speed (increase by 23.8%/25.0% in AM/PM) and unmet (latent) demand (decrease by 61.4%/51.7% in AM/PM).

Comparison of 2048 Operating Conditions for GGI Light and GGI Ultimate: Results from the 2048 operations analysis indicate that the GGI Ultimate Design Concept will generate higher throughput (GU lanes + express lanes) when compared to the GGI Light Design Concept for most of the major routes of interest for the study, including: NB I-95 (3.4%/5.1% increase in AM/PM); NB I-95/Turnpike Connector (3.6%/5.0% increase AM/PM), EB SR 826 (116.4%/83.8% increase in AM/PM) and WB SR 826 (1.8%/13.2% increase in AM/PM). The most significant increase in

throughput occurs along EB SR 826 due to the presence of the express lanes which provides additional capacity in the GGI Ultimate Design Concept. The presence of the SR 826 express lanes in the GGI Ultimate Design Concept also generates some rerouting of traffic to SR 826 and a reduction in demand along SB I-95. Hence, the GGI Ultimate Design Concept reflects a lower throughput along SB I-95 (-7.2% / -6.5% in AM/PM) and along SB I-95/Turnpike Connector (-17.3% /-5.5% in AM/PM). Average operating speeds in the GU lanes are mostly higher or comparable under the GGI Ultimate Design Concept when compared to the GGI Light Design Concept. Average operating speeds for the peak direction of travel in GU lanes for GGI Ultimate / GGI Light Design Concept:

- NB I-95 - 34 mph /44 mph, PM peak (Lower speed in GGI Ultimate is due to higher throughput – an increase of approximately 300 vehs./hr. when compared to GGI Light)
- SB I-95 – 48 mph / 28 mph, AM peak (Lower speed in GGI Light due to higher throughput – an increase of approximately 700 vehs./hr. compared to GGI Ultimate. Demand volumes also higher under GGI Light)
- NB I-95/Turnpike Connector – 46 mph / 17 mph, PM peak (Lower speed in GGI Light due to capacity restriction at the one lane off-ramp to WB SR 826 which is widened to 2 lanes in GGI Ultimate)
- SB I-95/Turnpike Connector – 45 mph / 36 mph, AM peak (Lower speed in GGI Light due to higher throughput – an increase of approximately 880 vehs./hr. compared to GGI Ultimate. Demand volume also higher under GGI Light)
- EB SR 826 – 21 mph / 50 mph, AM peak (Lower speed in GGI Ultimate due to higher throughput. Demand volume also higher under GGI Ultimate)
- WB SR 826 – 57 mph / 42 mph, PM peak. (Lower speed in GGI Light is due to the higher volume in the GU lanes – an increase of approximately 1000 vehs./hr compared to GGI Ultimate. Total throughput is still higher under GGI Ultimate since it includes express lanes on SR 826 which are not present in GGI Light.

The GGI Ultimate Design Concept performs better than GGI Light across all networkwide performance measures including, total delay (decrease by 19.3%/15.4% in AM/PM), total vehicle-miles travelled (increase by 6.3%/8.5% in AM/PM), average speed (increase by 15.4%/15.0% in AM/PM) and unmet (latent) demand (decrease by 38.1%/17.4% in AM/PM).

Safety: A safety analysis was performed which revealed that segments of the existing I-95 and SR 826 corridors experienced abnormally high cates during the 5-year period 2015 through 2019. If no improvements are implemented, the existing high crash rates will continue in the future. The segment of highest safety concern is along I-95 mainline from NW 151st Street to GGI. Excessive congestion and weaving activities are contributing causes for the high crash rates experienced within this segment of I-95. The proposed I-95/Turnpike Express Lane Connectors, per the GGI Light and GGI Ultimate Design Concepts, will improve safety within this segment of I-95 by reducing congestion and weaving activities. Similarly, the proposed new flyover for connecting EB SR 826 to NB I-95 (per GGI Light and GGI Ultimate) will reduce congestion and corresponding crash risk along SR 826. The proposed SR 826/I-95 Express Lanes connects (GGI Ultimate) will further reduce congestion and corresponding crash risk along SR 826.

Due to several limitations of the current Highway Safety Manual (HSM) crash prediction methodology, a limited crash prediction analysis was performed solely as an indicator to assess the relative safety performance of the GGI Interchange under the future Build and No Build scenarios. The results from the crash prediction analysis were consistent with the qualitative safety assessment indicating that the implementation of the GGI Light Design Concept and the GGI Ultimate Design Concept will improve safety conditions at the interchange

A Conceptual Master Signing Plan for the GGI Light Design Concept is included under Appendix E.

Policy Item #2 (previously Item No. 4)

The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access, such as managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). In rare instances where all basic movements are not provided by the proposed design, the report should include a full-interchange option with a comparison of the

operational and safety analyses to the partial-interchange option. The report should also include the mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections, mitigation of driver expectation leading to wrong-way movements on ramps, etc. The report should describe whether future provision of a full interchange is precluded by the proposed design

Addendum to Policy Point No. 2 Response (pertaining to documentation contained herein for the GGI Light Design Concept)

The SIMR proposes no new interchanges along any of the freeway facilities within the project limits (I-95 and SR 826). All existing interchanges provide access to public roads only. The improvements proposed at the interchanges will maintain full access to the existing interstate facilities and cross streets and accommodate all movements. The proposed access modifications will be designed to meet or exceed current design standards, to the extent possible.

The design changes proposed per the GGI Light Design Concept have been developed with due consideration for all applicable FDOT and FHWA design criteria.

9 PROJECT FUNDING

The proposed GGI Light improvements are funded in FDOT's Five Year Work Program as a conventional design-bid-build project. The proposed improvements are funded for design and construction with an anticipated letting date in July 2023 and open to traffic in 2028. Estimated construction cost for the GGI Light Improvements is approximately $472 Million. Letting is scheduled for 2031 for the portion of the improvements to implement an auxiliary lane on NB I-95 north of NW 2nd Avenue On-Ramp. All other proposed improvements are scheduled to be open by 2028.

The GGI Ultimate Design Concept is planned to be implemented at a future date, concurrent with the proposed new SR 826 Express Lanes. Funding and scheduling for the ultimate Improvements are undetermined, at this time.

10 CONCLUSIONS AND RECOMMENDATIONS

In May 2019, the FDOT received approval from FHWA for the SIMR Re-evaluation of proposed improvements within the Golden Glades Interchange. The improvements approved in the 2019 SIMR Re-evaluation constitute the current GGI Ultimate Design Concept. Following this approval, the FDOT determined that some of the proposed improvements per the GGI Ultimate Design Concept would be indeterminately delayed due to unresolved conflicts with the Florida Gas Transmission pipelines. As a result, the FDOT is seeking to advance construction of an interim design concept, known as the GGI Light Design Concept, which will accommodate the Florida Gas Transmission facilities in their current location. The GGI Light Design Concept incorporates all the proposed improvements in in the GGI Ultimate Design Concept except for the following:

- GGI Light excludes the proposed new flyover ramps providing direct connections between the proposed SR 826 Express Lanes and I-95 Express lanes (North). It also excludes widening required along SR 826 and I-95 to accommodate the future express lanes connection. This proposed new connection will be implemented with the planned SR 826 Express Lanes.
- GGI Light excludes the proposed widening along some ramps within the GGI system, per the Ultimate Design Concept. Notably it eliminates the proposed widening for the following ramps:
    - Loop ramp connecting movements from NB I-95 (GU) to WB SR 826. Proposed widening from one to two lanes (per GGI Ultimate) is not included in GGI Light.
    - Ramp connecting movements from EB SR 826/Palmetto Expressway to EB SR 826/NW 167th Street is not included in GGI Light.
- Proposed 3-lane off-ramp from EB SR 826/Palmetto Expressway (per GGI Ultimate) is modified to a one-lane off-ramp serving NB I-95 traffic only.
- GGI Light assumes that the planned SR 826 Express Lanes and improvements to the interchanges at NW 27th Avenue and NW 17th Avenue will not be implemented by the design year 2048.

The FDOT determined that a re-evaluation of the current approved 2019 SIMR Re-evaluation was necessary to support implementation of the interim GGI Light Design Concept. An analysis of the GGI Light Design Concept was performed in accordance with the related MLOU and the FDOT's Interchange Access Request (IAR) Users' Guide. Results from the analyses and conclusions reached are:

- The GGI Light Design Concept satisfies the FHWA's Policy on Access to the Interstate System. The design change will not result in any adverse impacts to safety or operations along I-95 and SR 826.
- The GGI Light Design Concept will provide better traffic operating conditions within the GGI Study Area when compared to the No Build Alternative in the opening year 2028 and design year 2048. The operations analyses indicate that the GGI Light Design Concept will generate higher throughput (GU lanes + express lanes) when compared to the No Build for all the major routes of interest for the study, this includes I-95, I-95/Turnpike Connector and SR 826. In addition, the operating speeds are generally higher or comparable in the GGI Light Design Concept when compared to the No Build Alternative. In cases where the GGI Light Design Concept generates noticeably lower speeds this results from the increase in throughput generated in the GGI Light Design Concept. Furthermore, the GGI Light Design Concept performs better than the No Build Concept across all networkwide performance measures including, total delay, total vehicle-miles travelled, average speed and unmet demand (latent demand).
- The GGI Ultimate Design Concept will provide better overall traffic operating conditions than the GGI Light Design Concept. However, implementation of the GGI Light Design Concept will not result any critical operational failures which would otherwise be mitigated by the GGI Ultimate Design Concept, through the design year 2048. The operations analyses indicate that the GGI Ultimate Design Concept will mostly generate higher throughput (GU lanes + express lanes) when compared to the GGI Light Design Concept. In cases where the GGI Ultimate Design Concept generates less throughput than the GGI Light Design Concept this is due to the rerouting of some traffic in response to additional capacity provided by the proposed SR 826 Express Lanes which is only present in the GGI Ultimate Design Concept. Operating speeds are generally lower in the GGI Ultimate Design Concept except for cases where substantially higher throughput is generated in the GGI Ultimate Design Concept (i.e., EB SR 826). Furthermore, the GGI Ultimate Design Concept performs better than the GGI Light

Concept across all networkwide performance measures including, total delay, total vehicle-miles travelled, average speed and unmet demand (latent demand).

- Safety analyses reveal that segments of the existing I-95 and SR 826 corridors experienced abnormally high crash rates during the 5-year period 2015 through 2019. If no improvements are implemented, the existing high crash rates will continue in the future. The segment of highest safety concern is along I-95 mainline from NW 151st Street to GGI. Excessive congestion and weaving activities are contributing causes for the high crash rates experienced within this segment of I-95. The proposed I-95/Turnpike Express Lane Connectors, per the GGI Light and GGI Ultimate Design Concepts, will improve safety within this segment of I-95 by reducing congestion and weaving activities. Similarly, the proposed new flyover for connecting EB SR 826 to NB I-95 (per GGI Light and GGI Ultimate) will reduce congestion and corresponding crash risk along SR 826. The proposed SR 826/I-95 Express Lanes connects (GGI Ultimate) will further reduce congestion and corresponding crash risk along SR 826.

Based on the above findings, the GGI Light Design Concept is offered as an interim improvement for the GGI Interchange. The GGI Ultimate Design Concept, per the current approved 2019 SIMR Re-evaluation, will remain along with all previously agreed commitments.