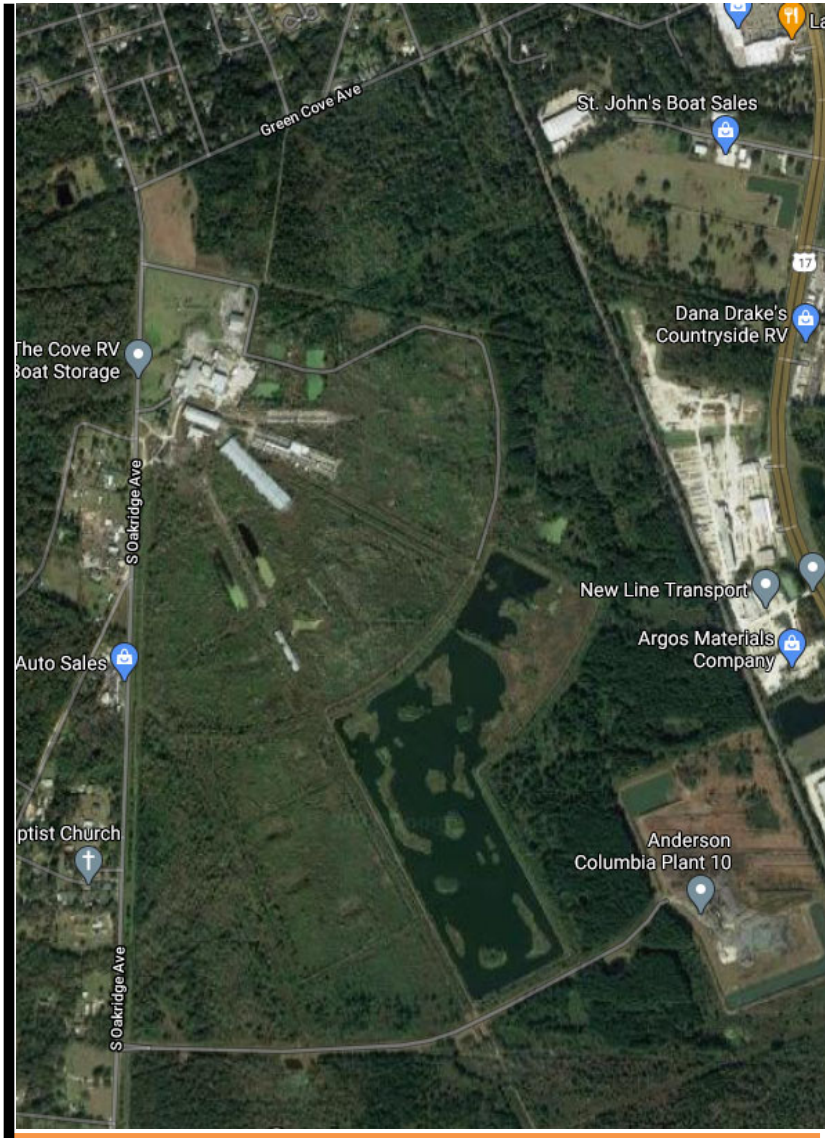
Prepared for:

D·R·HORTON
America's Builder

&

City of Green Cove Springs FLORIDA



Ayrshire PUD

Traffic Impact Study

City of Green Cove Springs, Florida

Project #: 1001-200-026
Date: Revised 02/28/2022

Prepared By:

CTSI

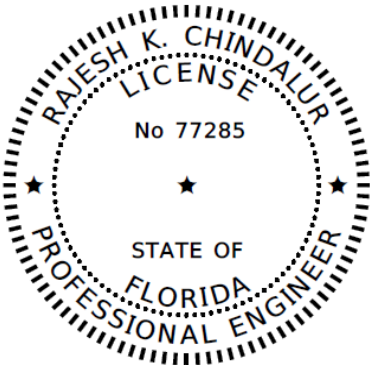
Chindalur Traffic Solutions, Inc.
8833 Perimeter Park Boulevard, Suite 103
Jacksonville, FL 32216
904.619.3368 | www.ctrafficsolutions.com

PROFESSIONAL ENGINEER CERTIFICATE

I, Rajesh Ramn K. Chindalur, PE #77285, certify that I currently hold an active license in the state of Florida and am competent through education or experience to provide engineering services in the civil discipline contained in this plan, print, specification, or report.

PROJECT:	**Ayrshire PUD – Traffic Study**
LOCATION:	City of Green Cove Springs, Florida
CLIENT:	DR. Horton, Inc.

I further certify that this plan, print, specification, or report was prepared by me or under my responsible charge as defined in Chapter 61G15-18.001 F.A.C. Moreover, if offered by a corporation, partnership, or through a fictitious name, I certify that the company offering the engineering services, Chindalur Traffic Solutions, Inc., 8833 Perimeter Park Boulevard, Suite 103, Jacksonville, Florida 32216, holds an active certificate of authorization #30806 to provide engineering service.



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VIRIFIED ON ANY ELECTRONIC COPIES.

CHINDALUR TRAFFIC SOLUTIONS, INC.
8833 PERIMETER PARK BOULEVARD, SUITE 103
JACKSONVILLE, FL 32216
CERTIFICATE OF AUTHORIZATION #30806
RAJESH RAMN K. CHINDALUR, P.E. NO. 77285

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THIS DOCUMENT IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

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Introduction

This traffic impact study (TIS) was performed in support of the proposed Ayrshire PUD rezoning application. The proposed development is anticipated to include a maximum of 2,100 residential dwelling units (1,470 single-family and 630 Multi-family Townhomes). Access to the proposed development is anticipated to be provided via three access points: (1) a roadway (bridge over the CSX railroad) connecting to US 17; (2) a new roadway access on CR 15A (Oak Ridge Avenue), and via (3) existing Jersey Avenue.

For the purpose of this traffic study, the analysis was performed under four (4) analysis phases:

- Year 2025 (Analysis Phase 01) assumed 231 single-family dwelling units with access via a roadway on Oak Ridge Avenue.
- Year 2027 (Analysis Phase 02) assumed 500 single-family dwelling units (cumulative) with access via a roadway on Oak Ridge Avenue and a four-lane bridge from the project northern entrance to US 17 across from Hall Park Road.
- Year 2030 (Analysis Phase 03) assumed 1,000 single-family dwelling units (cumulative).
- Year 2035 (Analysis Phase 04) assumed 2,100 residential dwelling units that includes 1,470 single-family and 630 Multi-family Townhomes (cumulative). A third project access via existing Jersey Avenue was also assumed for this analysis phase.

Figure 01 shows the project location. A copy of the Generalized Site Plan (GSP) provided by Dunn and Associates, Inc. is included as **Attachment A**. The methodology used in this study is consistent with the methodology discussed with the City's Planning and Zoning Director on October 29th, 2020.

Trip Generation

Trip generation for the proposed project was estimated using the equation provided in the *Trip Generation Manual*, 11th Edition published by Institute of Transportation Engineers (ITE). The proposed development is anticipated to include a maximum of 2,100 residential dwelling units (1,470 single-family and 630 Multi-family Townhomes). However, for the purpose of this analysis, all 2,100 residential dwelling units were considered single-family detached units. **Table 01** summarizes the Daily, AM peak and PM peak hour trip generation for the proposed residential development under each of the development phases.

- Year 2025 (Analysis Phase 01) development is anticipated to generate 2,215 daily trips that include 162 AM peak and 222 PM peak trips.
- Year 2027 (Analysis Phase 02) development is anticipated to generate 4,436 daily trips (cumulative) that include 322 AM peak and 451 PM peak trips
- Year 2030 (Analysis Phase 03) development is anticipated to generate 8,393 daily trips (cumulative) that include 606 AM peak and 865 PM peak trips
- Year 2035 (Analysis Phase 04) development is anticipated to generate 16,609 daily trips (cumulative) that include 1,189 AM peak and 1,738 PM peak trips

Study Area, Existing Conditions and Data Collection

As discussed with the City's Planning and Zoning Director and the City of Green Cove Springs traffic study guidelines, the study area includes the following intersections:

- SR 16 W at Oak Ridge Avenue
- SR 16 W / Ferris Ave. at US 17
- SR 16 E / Cooks Ln. at US 17
- Oak Ridge Avenue at Green Cove Avenue
- US 17 at Oak Ridge Avenue
- US 17 at Pearce Boulevard/Hall Park Road (Project Access Intersection)
- Oak Ridge Avenue at Pearce Boulevard (Project Access Intersection)
- Oak Ridge Avenue at Jersey Avenue (Project Access Intersection)

Figures 02 and **03** show the existing conditions at the above stated intersections. AM peak (7:00 AM to 9:00 AM) and PM peak (4:00 PM to 6:00 PM) period turning movement counts that includes autos, heavy vehicles, bicycles and pedestrians were obtained at the above stated intersections on April 22, 2021. These counts were further adjusted by applying a season factor of 0.94 to adjust for seasonal variations. The year 2019 season factor was used as the year 2020 season factors are anticipated to be not accurate due to the COVID 19 Pandemic. The season factors were obtained from the FDOT traffic counts online portal. **Attachment B** includes the traffic counts and season factors data. **Figure 04** includes AM peak and PM peak hour turning movements at the study intersections.

Future Background Traffic Volumes

Future year traffic projections were made by applying a growth factor to existing traffic volumes. The growth factor was estimated by performing trends analysis of the historical AADT of the roadway segments within the study area. The historical AADT was obtained from the FDOT traffic counts online portal. **Table 02** summarizes the growth rate calculations. An average growth rate of 3.754% per year was applied to the existing traffic volumes to determine year 2025 Phase 01 and year 2027 Phase 02 background traffic volumes. Additionally, a growth rate of 1.0% per year was further applied to year 2027 background traffic volumes to determine the year 2030 Phase 03 and year 2035 Phase 04 background traffic volumes.

- The future year 2025 traffic volumes at the study intersections were estimated by applying a growth factor of 1.16 (3.754% per year for 4 years) to the year 2021 traffic volumes.
- The future year 2027 traffic volumes at the study intersection were estimated by applying a growth factor of 1.25 (3.754% per year for 9 years) to the year 2021 traffic volumes.
- The future year 2030 traffic volumes at the study intersection were estimated by applying a growth factor of 1.29 (3.754% per year for 9 years and 1% per year for 2 years) to the year 2021 traffic volumes.
- The future year 2035 traffic volumes at the study intersection were estimated by applying a growth factor of 1.35 (3.754% per year for 9 years and 1% per year for 7 years) to the year 2021 traffic volumes.

Attachment C includes the historical AADT and Trends Analysis plots. **Figures 05, 06, 07** and **08** show year 2025, year 2027, year 2030 and year 2035 future conditions background traffic volumes at the study intersections respectively.

Planned and Programmed Improvements

All the planned and programmed improvements within the transportation study area identified from the FDOT Five (5) year work program, FDOT Long Range Plan and Clay County Capital Improvement Plan document were included in the model and the segment analysis. The following planned and programmed improvements were included in the analysis. Details of these projects are included in **Attachment D**.

- First Coast Expressway: I-10 to N. Of Argyle Forest Boulevard
- First Coast Expressway: N. of Argyle Forest Boulevard to Blanding Boulevard (SR 21)
- First Coast Expressway: Blanding Boulevard (SR 21) to North of SR 16
- First Coast Expressway: North of SR 16 to East of CR 209
- First Coast Expressway (New St. Johns River Bridge): SR 16 to CR 16A (St. Johns County) by year 2027
- First Coast Expressway (St. Johns County): CR 16A to I-95
- CR 209: Peters Creek Bridge to US 17 – Widen from 2 to 4 lanes by year 2024
- CR 209: Sandridge Road to Peters Creek Bridge – Widen from 2 to 3 lanes by year 2024
- Sandridge Road: Henley Road to CR 209 – Widen from 2 to 3 lanes by year 2024
- First Coast Connector: SR 23 to CR 315 and Maryland Avenue – New 2-lane Roadway by year 2024
- First Coast Connector: CR 315 and Maryland Avenue to US 17 – Widen from 2 to 4 lanes by year 2024

Trip Distribution and Assignment

Trip distribution for year 2025 (Analysis Phase 01) and year 2027 (Analysis Phase 02) development was determined based on existing traffic patterns (traffic entering and the exiting the City of Green Cove Springs). **Figures 09** and **10** show year 2025 and year 2027 project traffic distribution and peak hour traffic assignment at the study intersections. Following is a summary of the project traffic distribution under the year 2025 and year 2027 development conditions:

- 15% oriented to the west of SR 16 West
- 5% oriented to the south on US 17
- 35% oriented to the north on US 17
- 45% oriented to the east on SR 16E

Upon construction of the First Coast Expressway and other Clay County proposed roadway projects, the traffic patterns in the area are anticipated to change. Hence, trip distribution for year 2030 (Analysis Phase 03) and year 2035 (Analysis Phase 04) development conditions was obtained from the interim year 2030 model set of the Northeast Regional Planning Activity Based Model (NERPM_AB3v1) travel demand forecasting model, provided by the North Florida Transportation Planning Organization (NFTPO). **Figures 11** and **12** show year 2030 and year 2035 project traffic distribution and peak hour traffic assignment at the study intersections. Following is a summary of the project traffic distribution percentages in the vicinity of the proposed project under year 2030 and year 2035 development conditions:

- 35% to the north on US 17 towards Duval County
- 10% to the east on SR 16E (Shands Bridge) towards St. Johns County
- 10% to the west on SR 16W
- 5% to the west via US 17 South and First Coast Expressway to the west
- 35% to the east via US 17 South and First Coast Expressway towards St. Johns County
- 5% to the south on US17

Attachment E includes the travel demand model plots showing the project traffic distributions (unadjusted distributions). **Attachment F** includes a figure depicting the adjusted project traffic distribution percentages in the vicinity of the proposed development under each of the project development phases.

Build-Out Traffic Volumes

Build-out traffic volumes include the future background traffic volumes and the project traffic assignment under each phase for year 2025, 2027, 2030 and 2035 development conditions respectively. **Figures 13, 14, 15** and **16** show the year 2025, year 2027, year 2030 and year 2035 development conditions respectively.

Intersection Capacity Analysis

Intersection capacity analysis of the study intersections was performed during the AM peak and PM peak periods under the existing, future background and build-out conditions using Synchro 10 software. This software uses HCM 6 procedures and methodologies in calculating LOS and delay at signalized and un-signalized intersections. Existing signal timing and phasing information for the signalized study intersections were obtained from Florida Department of Transportation Traffic Operations Department. A copy of these signal timing and phasing details are included in **Attachment G.**

Existing Conditions: Tables 03 and **04** summarizes the existing conditions intersection capacity analysis Delay and LOS summary during the AM peak and PM peak conditions. As shown in these tables, all the critical approaches at all the study intersections are currently operating at LOS E or better, except for SR 16W/Ferris Street at US 17 intersection. The northbound approach on US 17 is currently operating at LOS F during the PM peak hour.

Background Conditions: Tables 04 through **11** summarize the future year 2025, year 2027, year 2030 and year 2035 background traffic conditions intersection capacity analysis Delay and LOS summary during the AM peak and PM peak conditions. As summarized in these tables, all the critical approaches at the study intersections are anticipated to operate at ***LOS E*** or ***better***, except for the following:

Year 2025 Background Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2025 AM peak
- The northbound approach on US 17 at SR 16W/Ferris Street intersection during year 2025 PM peak

Year 2027 Background Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2027 AM peak
- The northbound and southbound approaches on US 17 at SR 16W/Ferris Street intersection during year 2027 PM peak

Year 2030 Background Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2030 AM peak
- The northbound and southbound approaches on US 17 at SR 16W/Ferris Street intersection during year 2030 PM peak
- The westbound and northbound approaches at US 17 and SR 16E/Cooks Lane intersection during year 2030 PM peak
- The westbound approach on Hall Park Road at US 17 during year 2030 AM peak

Note: Under the year 2030 background conditions, 50% of the traffic to and from SR 16E was re-assigned as southbound through and northbound through traffic at US 17 and SR 16E/Cooks Lane intersection.

Year 2035 Background Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2035 AM peak
- The westbound approach on SR 16 at Oak Ridge Avenue during year 2035 PM peak
- The northbound and southbound approaches on US 17 at SR 16W/Ferris Street intersection during year 2035 PM peak
- The westbound and northbound approaches at US 17 and SR 16E/Cooks Lane intersection during year 2035 PM peak
- The westbound approach on Hall Park Road at US 17 during year 2035 AM peak

Note: Under the year 2035 background conditions, 50% of the traffic to and from SR 16E was re-assigned as southbound through and northbound through traffic at US 17 and SR 16E/Cooks Lane intersection.

Build-Out Conditions: All the signal timing/phasing and splits were optimized under each of the four (4) project development build-out conditions. **Tables 12** through **19** summarize the future year 2025 Phase 01, year 2027 Phase 02, year 2030 Phase 03 and year 2035 Phase 04 development build-out traffic conditions intersection capacity analysis Delay and LOS summary during the AM peak and PM peak conditions. A four-lane bridge connecting the proposed development and US 17 will be built by year 2027 development conditions. Upon construction, the intersection of US 17 and Pearce Boulevard is anticipated to require a traffic signal. Since US 17 is a FDOT roadway, the intersection is subject to FDOT's Intersection Control Evaluation (ICE) review and approval process. The ICE process is anticipated to result in either a traditional traffic signal or a Signalized R-Cut or a Signalized Median U-turn intersection control. However, for the purpose of this analysis a traditional traffic signal is assumed under the year 2027 Phase 02, year 2030 Phase 03 and year 2035 Phase 04 development conditions.

As summarized in these tables, all the critical approaches at the study intersections are anticipated to operate at ***LOS E*** or **better** except for the following:

Year 2027 Phase 02 Build-Out Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2030 AM peak

Year 2030 Phase 03 Build-Out Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2030 AM peak
- The southbound approach on US 17 at SR 16W/Ferris Street intersection during year 2030 PM peak

Year 2035 Phase 04 Build-Out Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2030 AM Peak
- The northbound and southbound approaches on US 17 at SR 16W/Ferris Street intersection during year 2035 PM peak

However, upon construction of the First Coast Expressway and other Clay County programmed roadway projects, traffic volumes at both SR 16 intersections on US 17 are anticipated to reduce and the Delay and LOS are anticipated to ***improve***. Additionally, due to the change in traffic patterns, FDOT is anticipated to re-time the traffic signals at these two intersections which will result in ***improved*** operational conditions.

A copy of the HCM worksheets under the existing, future background and build-out conditions are included as **Attachment H.**

Access Intersections and Turn Lanes Evaluation

US 17 and Pearce Boulevard: As stated in the previous section a four-lane bridge connecting the proposed development and US 17 will be built by year 2027 development conditions. Upon construction, the intersection of US 17 and Pearce Boulevard is anticipated to require a traffic signal. Since US 17 is a FDOT roadway, the intersection is subject to FDOT's Intersection Control Evaluation (ICE) review and approval process. The ICE process is anticipated to result in either a traditional traffic signal or a Signalized R-Cut or a Signalized Median U-turn intersection control. However, for the purpose of this analysis a traditional traffic signal is assumed under the year 2027, 2030 and 2035 development conditions. As summarized in the above-mentioned tables, the intersection is anticipated to operate at LOS D or better under the build-out conditions of the proposed development. This intersection will be designed and constructed based on the outcome of the FDOT ICE analysis. In addition to the traffic signal, appropriate auxiliary turn lanes will be constructed on US 17 at Pearce Boulevard intersection.

Oak Ridge Avenue at Pearce Boulevard: Figure 17 summarizes the southbound left turn lane evaluation on Oak Ridge Avenue at Pearce Boulevard intersection under the year 2035 build-out conditions of the proposed development. As shown in this figure, a southbound left turn lane on Oak Ridge Avenue at Pearce Boulevard is anticipated to be warranted under the build-out conditions of the proposed development. The required deceleration length for 50-mph design

speed is 290-feet (including 50-feet taper) for rural roadways. A storage length of 100-feet (4 vehicles) should be provided. Hence, a 390-feet (including 50-feet taper) southbound left turn lane is recommended on Oak Ridge Avenue at Pearce Boulevard. Separate left and right turn lanes (Westbound) are recommended on Pearce Boulevard at Oak Ridge Avenue intersection. A maximum queue of 50 feet is anticipated on Pearce Boulevard at Oak Ridge Avenue. Hence, the westbound left turn lane on Pearce Boulevard at Oak Ridge Avenue need to provide for at least 100 feet storage plus 50 feet taper.

Oak Ridge Avenue at Jersey Avenue: A 330-foot southbound left turn lane on Oak Ridge Avenue currently exists at Jersey Avenue. The 95th percentile queue length is anticipated to be no greater than 25 feet. Hence the existing southbound left turn lane is anticipated to be adequate.

Summary and Conclusions

This traffic impact study (TIS) was performed in support of the proposed Ayrshire PUD rezoning application. The proposed development is anticipated to include a maximum of 2,100 residential dwelling units (1,470 single-family and 630 Multi-family Townhomes). Access to the proposed development is anticipated to be provided via three access points: (1) a roadway (bridge over the CSX railroad) connecting to US 17; (2) a new roadway access on CR 15A (Oak Ridge Avenue), and via (3) existing Jersey Avenue. For this traffic study, the analysis was performed under four (4) analysis phases:

- Year 2025 (Analysis Phase 01) assumed 231 single-family dwelling units with access via a roadway on Oak Ridge Avenue.
- Year 2027 (Analysis Phase 02) assumed 500 single-family dwelling units (cumulative) with access via a roadway on Oak Ridge Avenue and a four-lane bridge from the project northern entrance to US 17 across from Hall Park Road.
- Year 2030 (Analysis Phase 03) assumed 1,000 single-family dwelling units (cumulative).
- Year 2035 (Analysis Phase 04) assumed 2,100 residential dwelling units that includes 1,470 single-family and 630 Multi-family Townhomes (cumulative). A third project access via existing Jersey Avenue was also assumed for this analysis phase.

- Year 2025 (Analysis Phase 01) development is anticipated to generate 2,215 daily trips that include 162 AM peak and 222 PM peak trips.
- Year 2027 (Analysis Phase 02) development is anticipated to generate 4,436 daily trips (cumulative) that include 322 AM peak and 451 PM peak trips
- Year 2030 (Analysis Phase 03) development is anticipated to generate 8,393 daily trips (cumulative) that include 606 AM peak and 865 PM peak trips
- Year 2035 (Analysis Phase 04) development is anticipated to generate 16,609 daily trips (cumulative) that include 1,189 AM peak and 1,738 PM peak trips

AM peak (7:00 AM to 9:00 AM) and PM peak (4:00 PM to 6:00 PM) period turning movement counts that includes autos, heavy vehicles, bicycles and pedestrians were obtained at the above stated intersections on April 22, 2021. These counts were further adjusted by applying a season factor of 0.94 to adjust for seasonal variations. The year 2019 season factor was used as the year 2020 season factors are anticipated to be not accurate due to the COVID 19 Pandemic.

An average growth rate of 3.754% per year was applied to the existing traffic volumes to determine year 2025 Phase 01 and year 2027 Phase 02 background traffic volumes. Additionally, a growth rate of 1.0% per year was further applied to year 2027 background traffic volumes to determine the year 2030 Phase 03 and year 2035 Phase 04 background traffic volumes.

Trip distribution for year 2025 (Analysis Phase 01) and year 2027 (Analysis Phase 02) development was determined based on existing traffic patterns (traffic entering and the exiting the City of Green Cove Springs). Following is a summary of the project traffic distribution under the year 2025 and year 2027 development conditions:

- 15% oriented to the west of SR 16 West
- 15% oriented to the south on US 17
- 35% oriented to the north on US 17
- 35% oriented to the east on SR 16E

Upon construction of the First Coast Expressway and other Clay County proposed roadway projects, the traffic patterns in the area are anticipated to change. Hence, trip distribution for year 2030 (Analysis Phase 03) and year 2035 (Analysis Phase 04) development conditions was obtained from the interim year 2030 model set of the Northeast Regional Planning Activity Based Model (NERPM_AB3v1) travel demand forecasting model. Following is a summary of the project traffic distribution percentages in the vicinity of the proposed project under year 2030 and year 2035 development conditions:

- 35% to the north on US 17 towards Duval County
- 10% to the east on SR 16E (Shands Bridge) towards St. Johns County
- 10% to the west on SR 16W
- 5% to the west via US 17 South and First Coast Expressway to the west
- 35% to the east via US 17 South and First Coast Expressway towards St. Johns County
- 5% to the south on US17

Build-out traffic volumes include the future background traffic volumes and the project traffic assignment under each of the year 2025, year 2027, year 2030 and year 2035 development conditions.

A 330-foot southbound left turn lane on Oak Ridge Avenue currently exists at Jersey Avenue. The 95th percentile queue length is anticipated to be no greater than 25 feet. Hence the existing southbound left turn lane is anticipated to be adequate.

A southbound left turn lane on Oak Ridge Avenue at Pearce Boulevard is anticipated to be warranted under the build-out conditions of the proposed development. The required deceleration length for 50-mph design speed is 290-feet (including 50-feet taper) for rural roadways. A storage length of 100-feet (4 vehicles) should be provided. A 390-feet (including 50-feet taper) southbound left turn lane is recommended on Oak Ridge Avenue at Pearce Boulevard.

All the critical approaches at all the study intersections are currently operating at LOS E or better except for the northbound approach on US 17 at SR 16W/Ferris Street intersection. The northbound approach on US 17 is currently operating at LOS F during the PM peak hour.

All the critical approaches at the study intersections are anticipated to operate at LOS E or better under the future background conditions except for the following:

Year 2025 Background Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2025 AM peak

- The northbound approach on US 17 at SR 16W/Ferris Street intersection during year 2025 PM peak

Year 2027 Background Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2027 AM peak
- The northbound and southbound approaches on US 17 at SR 16W/Ferris Street intersection during year 2027 PM peak

Year 2030 Background Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2030 AM peak
- The northbound and southbound approaches on US 17 at SR 16W/Ferris Street intersection during year 2030 PM peak
- The westbound and northbound approaches at US 17 and SR 16E/Cooks Lane intersection during year 2030 PM peak
- The westbound approach on Hall Park Road at US 17 during year 2030 AM peak

All the signal timing/phasing and splits were optimized under each of the four (4) project development build-out conditions. All the critical approaches at the study intersections are anticipated to operate at LOS E or better except for the following:

Year 2027 Phase 02 Build-Out Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2030 AM peak

Year 2030 Phase 03 Build-Out Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2030 AM peak
- The southbound approach on US 17 at SR 16W/Ferris Street intersection during year 2030 PM peak

Year 2035 Phase 04 Build-Out Conditions:

- The eastbound approach on SR 16 at Oak Ridge Avenue during year 2030 AM Peak
- The northbound and southbound approaches on US 17 at SR 16W/Ferris Street intersection during year 2035 PM peak

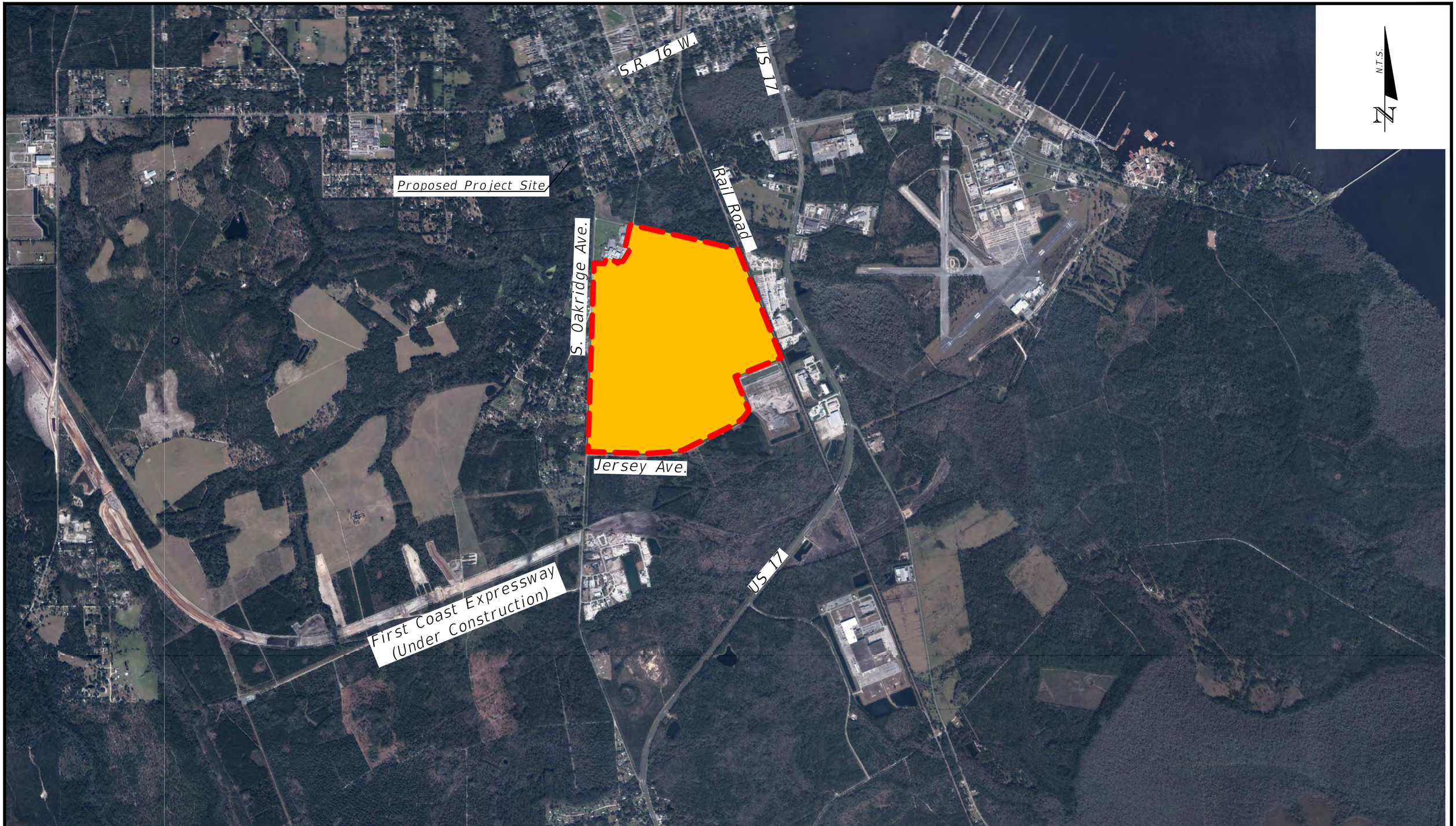
However, upon construction of the First Coast Expressway and other Clay County programmed roadway projects, traffic volumes at both SR 16 intersections on US 17 are anticipated to reduce and the Delay and LOS are anticipated to improve. Additionally, due to the change in traffic patterns, FDOT is anticipated to re-time the traffic signals at these two intersections which will result in improved operational conditions.

A four-lane bridge/roadway (Pearce Boulevard) connecting the proposed development and US 17 will be built by build-out conditions of the Phase 02 development. Upon construction, the intersection of US 17 and Pearce Boulevard is anticipated to require a traffic signal. Since US 17 is a FDOT roadway, the intersection is subject to FDOT's Intersection Control Evaluation (ICE) review and approval process. The ICE process is anticipated to result in either a traditional traffic signal or

Signalized R-Cut or Signalized Median U-turns intersection control. However, for the purpose of this analysis a traditional traffic signal is assumed under the Phase 02, Phase 03 and Phase 04 development conditions.

A southbound left turn lane on Oak Ridge Avenue at Pearce Boulevard is anticipated to be warranted under the build-out conditions of the proposed development. The required deceleration length for 50-mph design speed is 290-feet (including 50-feet taper) for rural roadways. A storage length of 100-feet (4 vehicles) should be provided. Hence, a 390-feet (including 50-feet taper) southbound left turn lane is recommended on Oak Ridge Avenue at Pearce Boulevard. Separate left and right turn lanes (Westbound) are recommended on Pearce Boulevard at Oak Ridge Avenue intersection. A maximum queue of 50 feet is anticipated on Pearce Boulevard at Oak Ridge Avenue. Hence, the westbound left turn lane on Pearce Boulevard at Oak Ridge Avenue need to provide for at least 100 feet storage plus 50 feet taper.

A 330-foot southbound left turn lane on Oak Ridge Avenue currently exists at Jersey Avenue. The 95th percentile queue length is anticipated to be no greater than 25 feet. Hence the existing southbound left turn lane is anticipated to be adequate.



Chindalur Traffic Solutions, Inc.
8833 Perimeter Park Boulevard,
Suite 103
Jacksonville, FL 32216
Phone: (904) 619-3368
www.ctrafficsolutions.com

Figure 01 – Project Location

Ayrshire CPA – Traffic Study
Clay County, Florida

S.R. 16 W. at S. Oakridge Avenue

S.R. 16 W. and Ferris Street at US 17

S. Oakridge Avenue at Green Cove Avenue

US 17 at Cooks Lane and S.R. 16 E. / Leonard C. Taylor Pkwy.

1" = 100'

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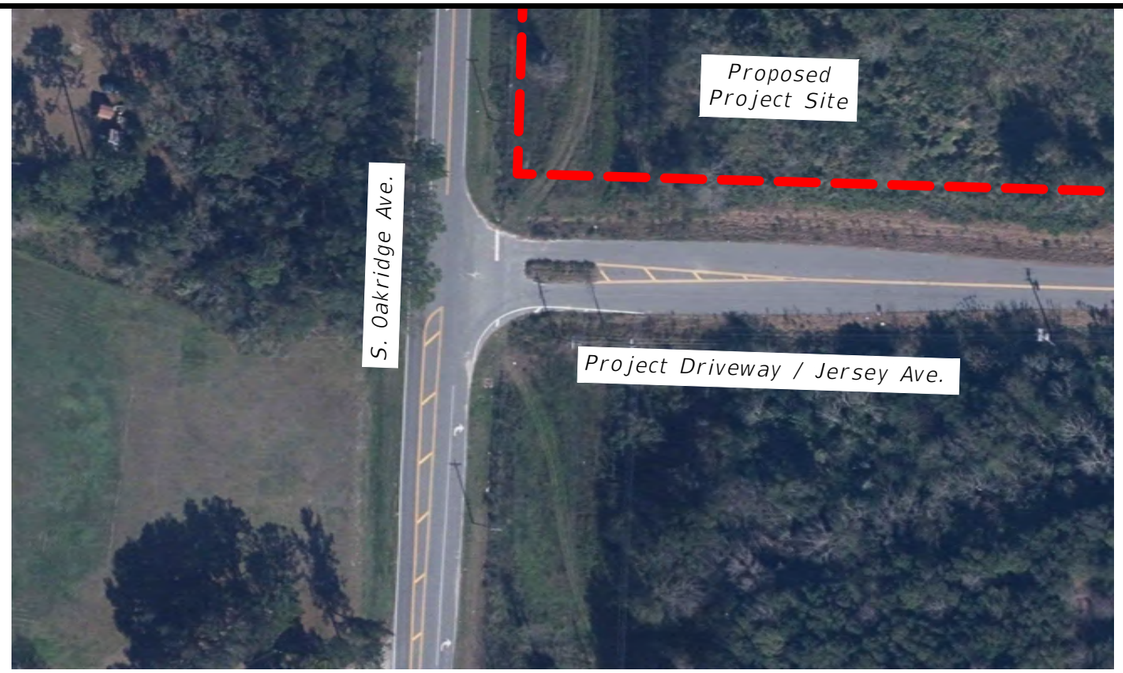
Figure 02 – Existing Conditions

Ayrshire CPA – Traffic Study
Clay County, Florida

S. Oakridge Avenue at Project Driveway



S. Oakridge Avenue at Project Driveway / Jersey Avenue

1" = 100'

N

S. Oakridge Avenue at US 17

US 17 at Hall Park Road

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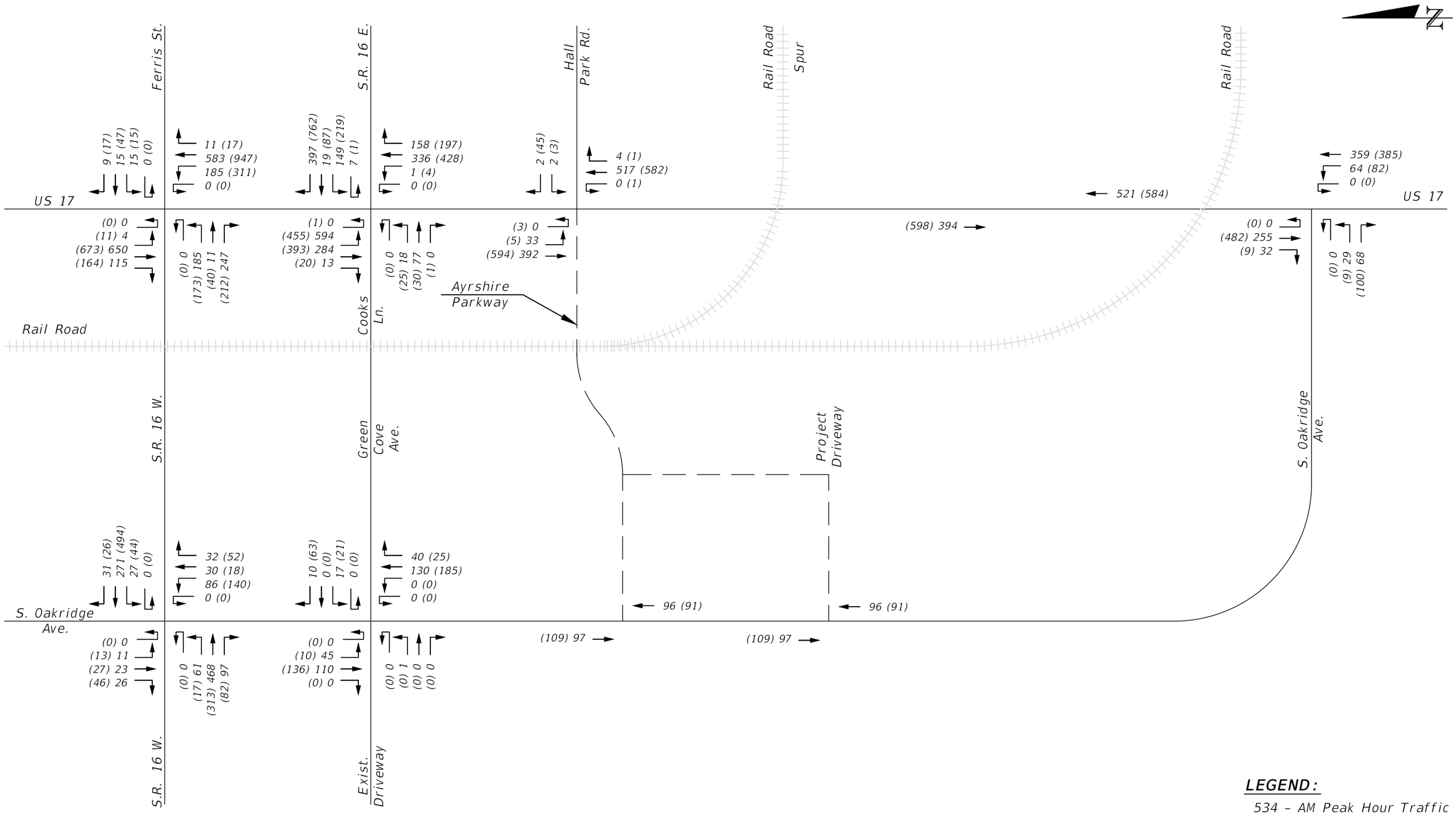
Figure 03 – Existing Conditions

Ayrshire CPA – Traffic Study
Clay County, Florida



LEGEND:

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

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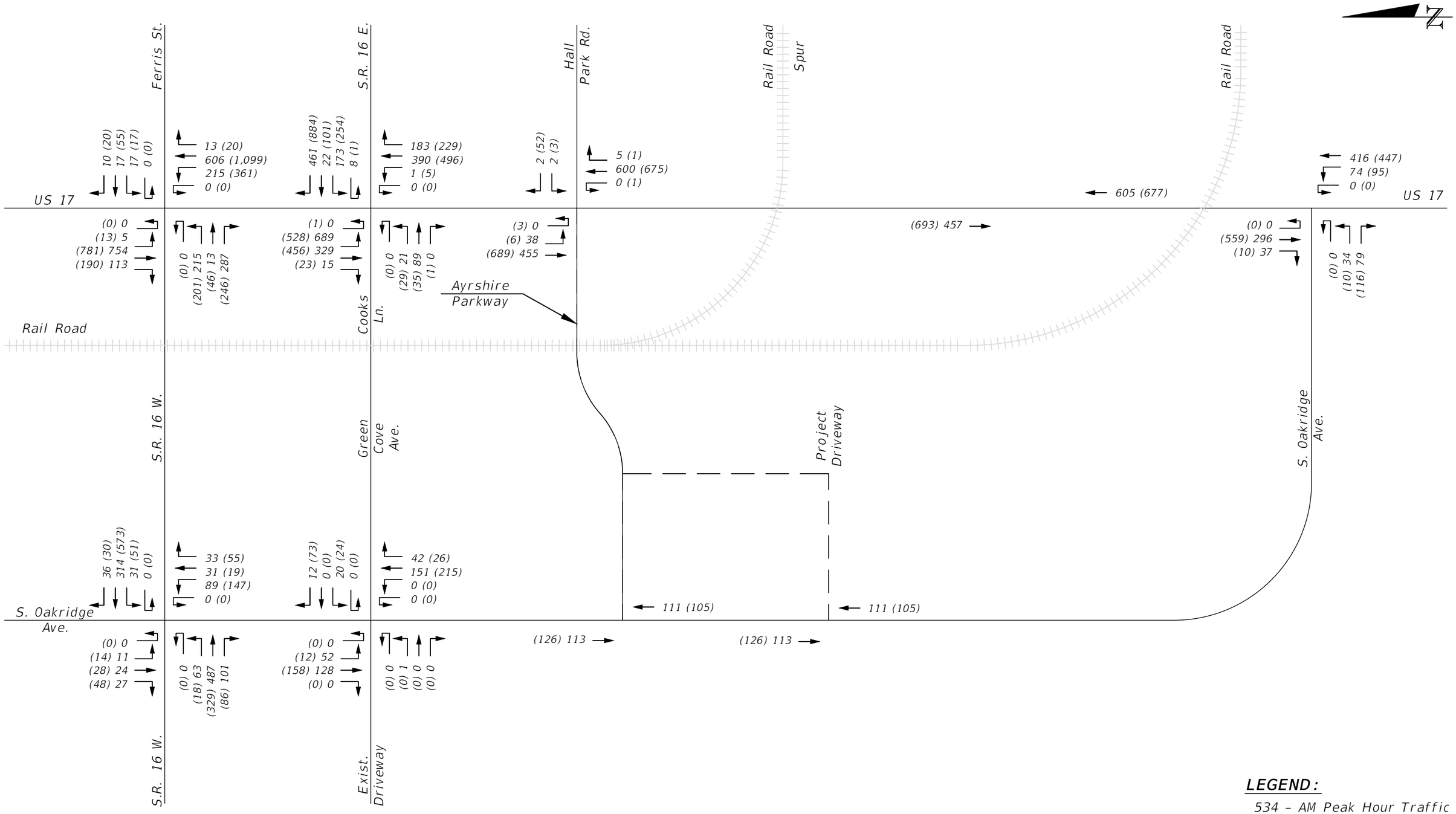
Figure 04 – Year 2021 AM and PM Peak Hour Traffic Volumes

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



LEGEND:

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

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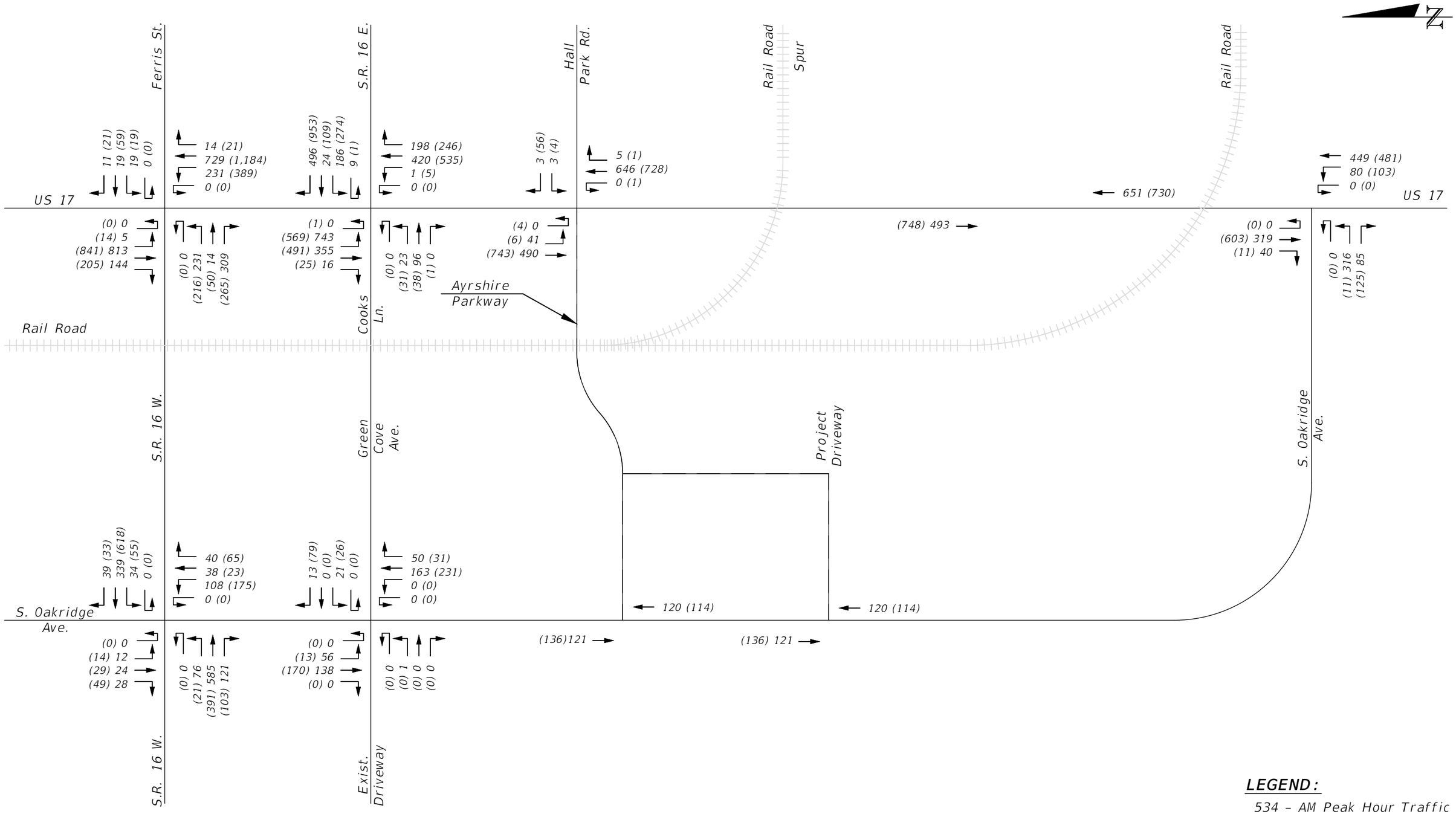
Figure 05 – Year 2025 AM and PM Peak Hour (Analysis Phase 01) Background Traffic Volumes

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



LEGEND :

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

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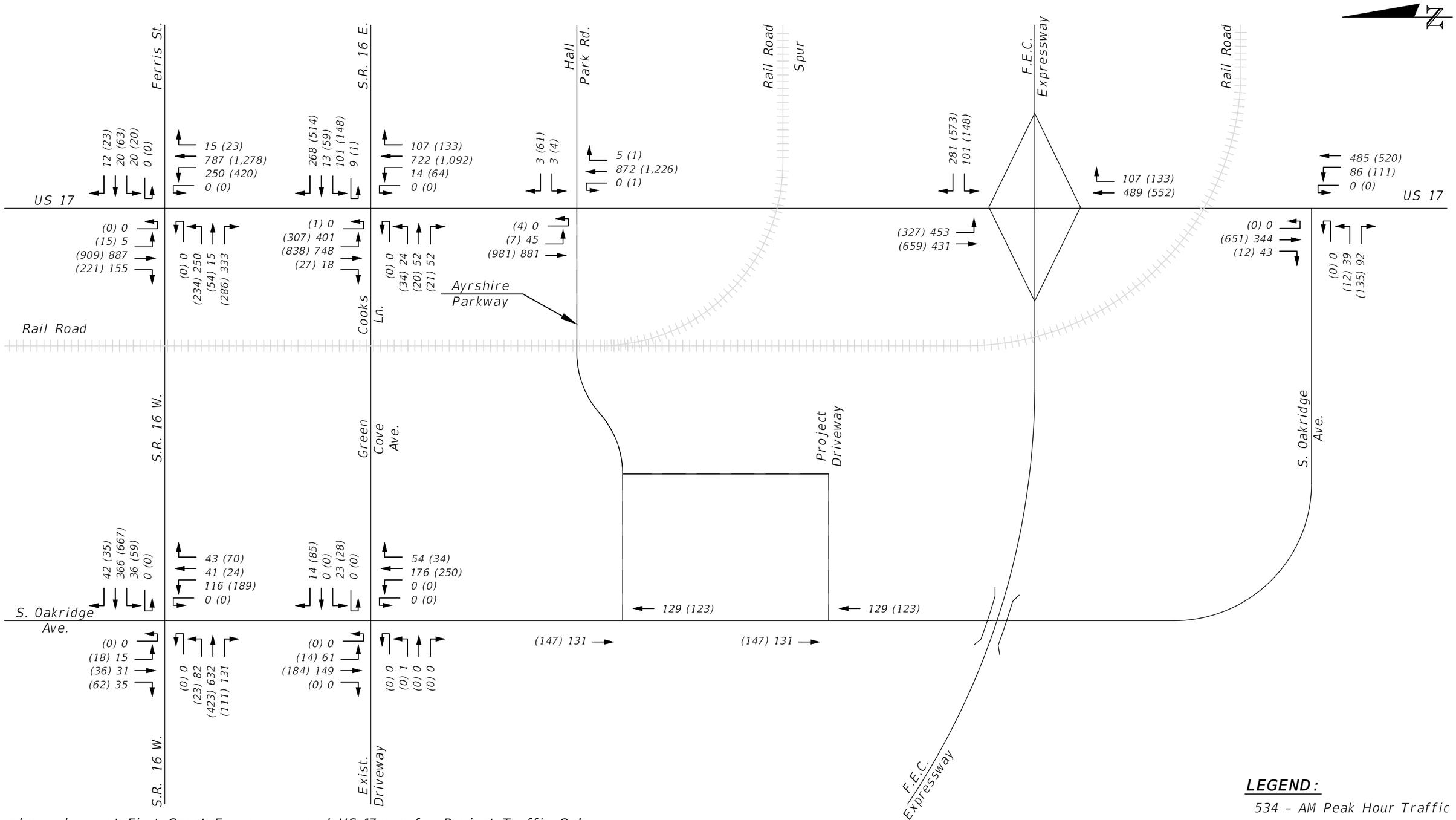
Figure 06 – Year 2027 AM and PM Peak Hour (Analysis Phase 02) Background Traffic Volumes

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



Numbers shown at First Coast Expressway and US 17 are for Project Traffic Only.

LEGEND:

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

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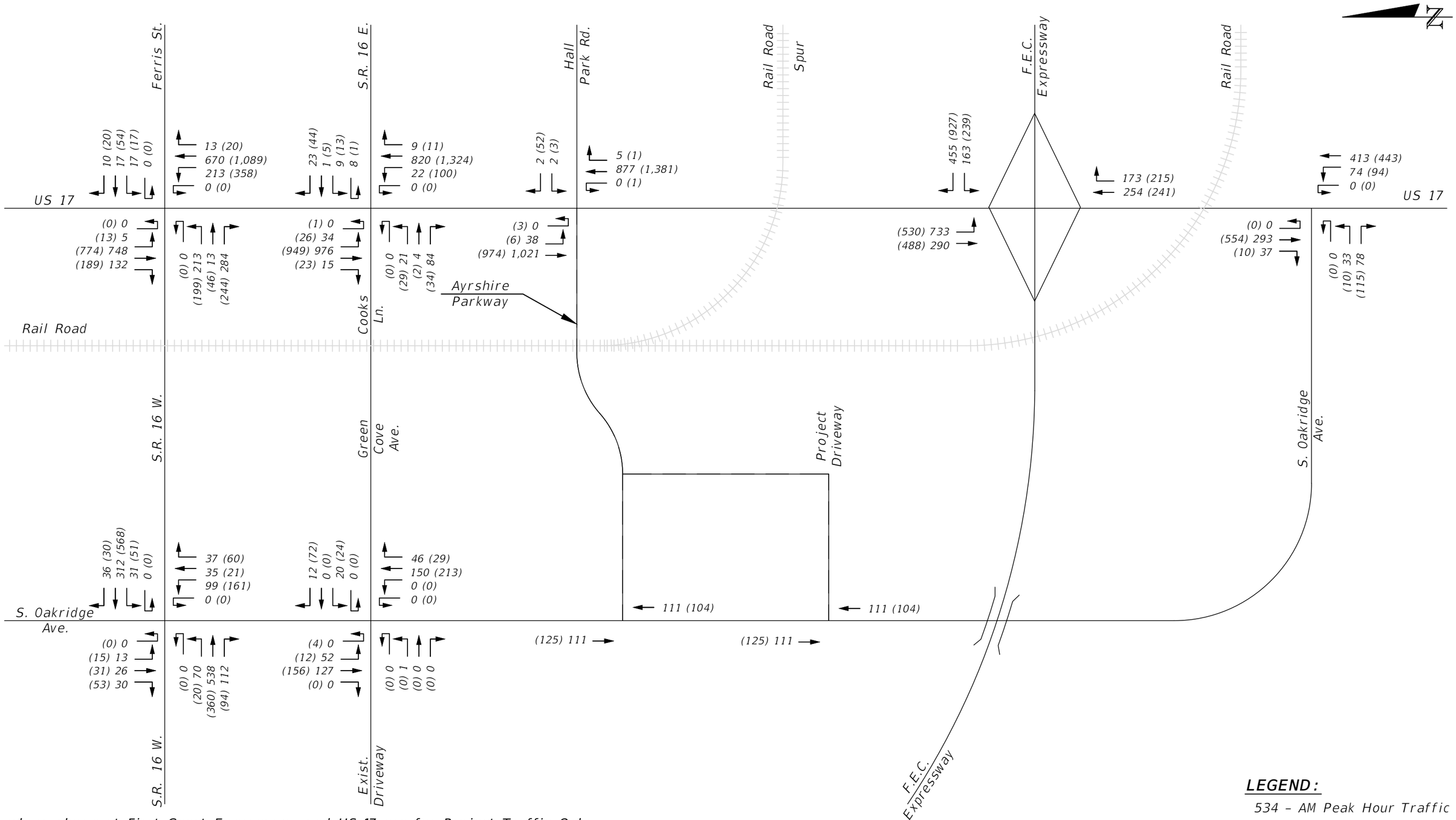
Figure 07 – Year 2030 AM and PM Peak Hour (Analysis Phase 03) Background Traffic Volumes

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



Numbers shown at First Coast Expressway and US 17 are for Project Traffic Only.

LEGEND:

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

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Figure 08 – Year 2035 AM and PM Peak Hour (Analysis Phase 04) Background Traffic Volumes

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida

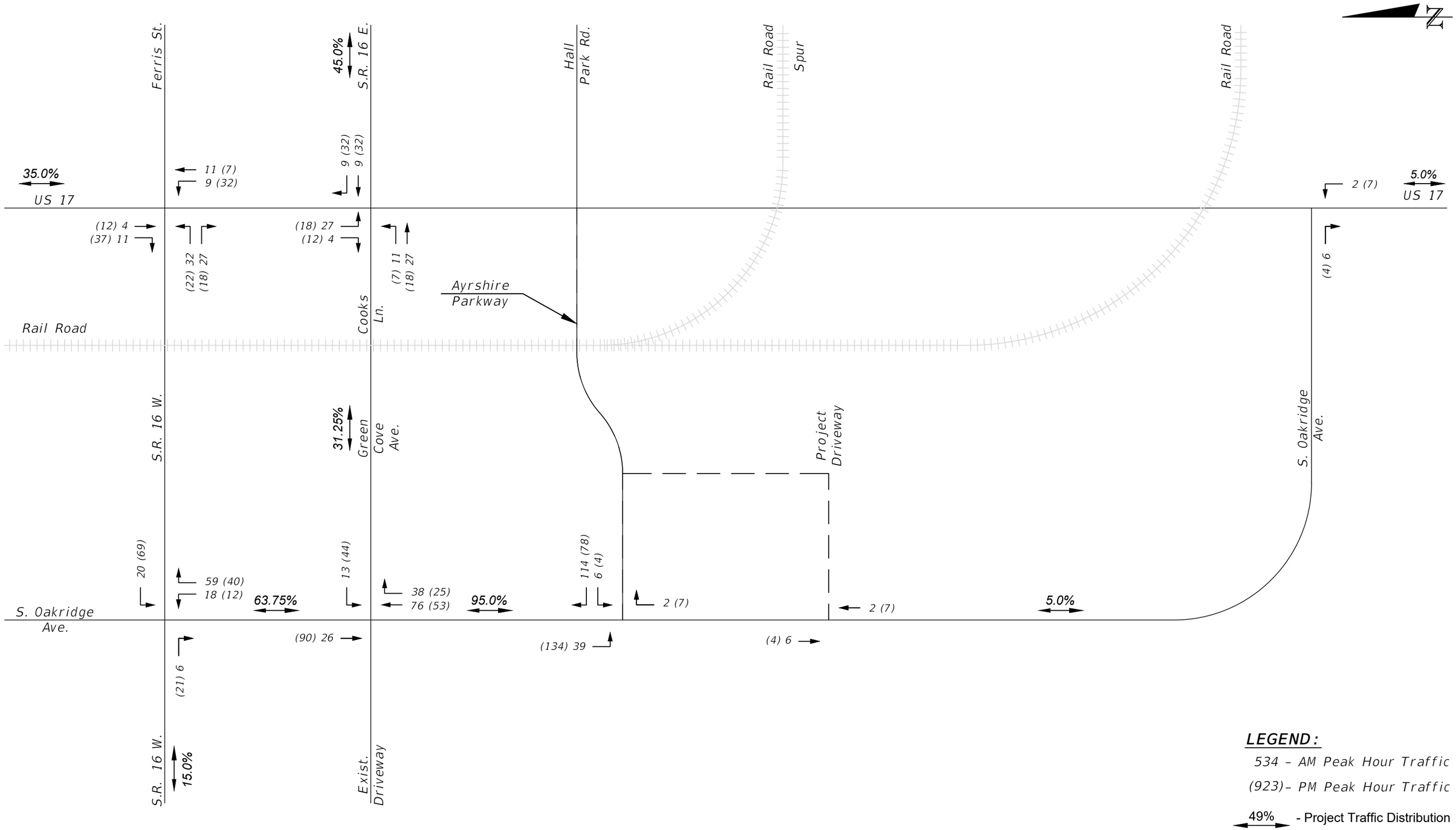

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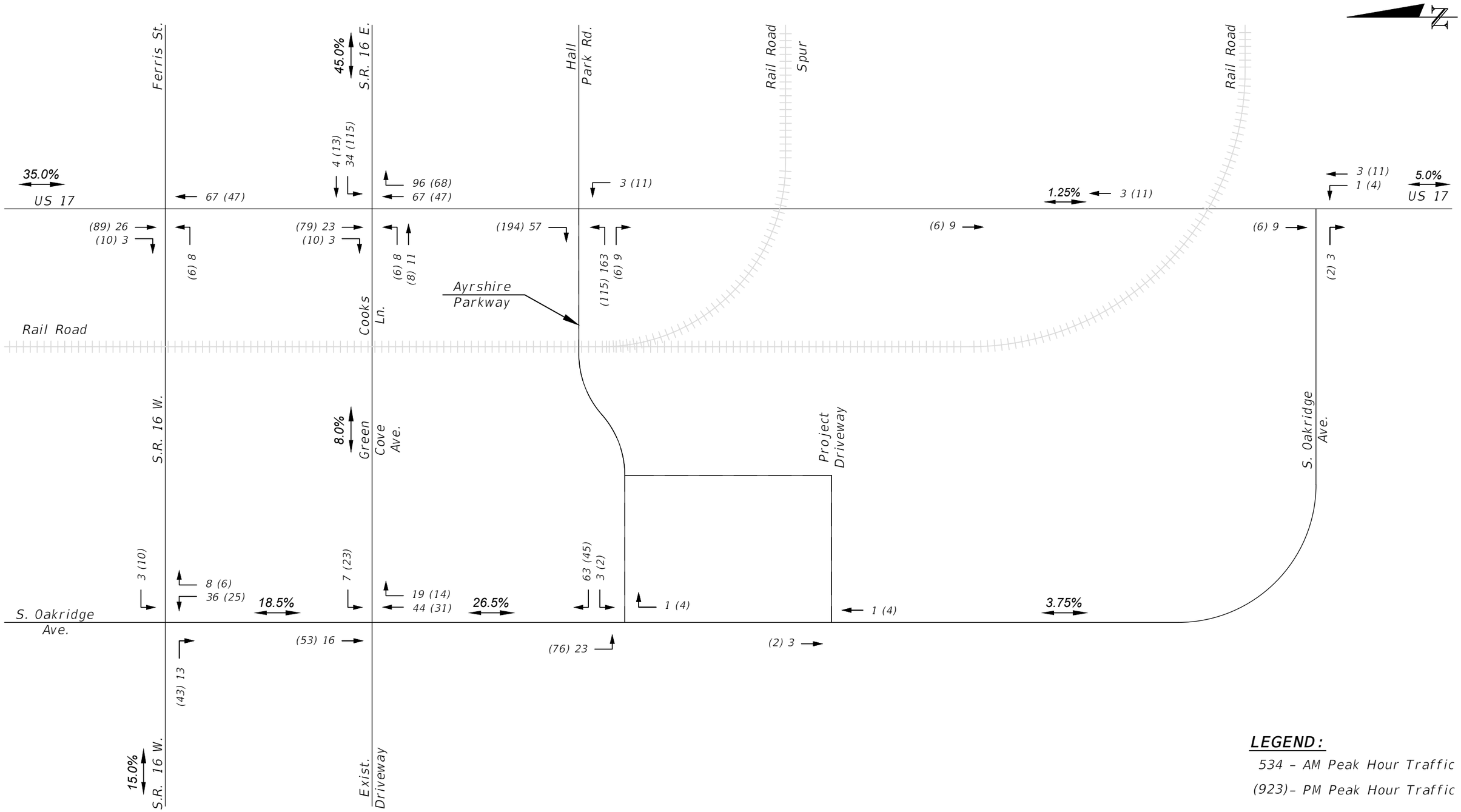
Figure 09 – Year 2025 AM and PM Peak Hour (Analysis Phase 01) Project Traffic Distribution and Assignment

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



LEGEND :

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

49% - Project Traffic Distribution

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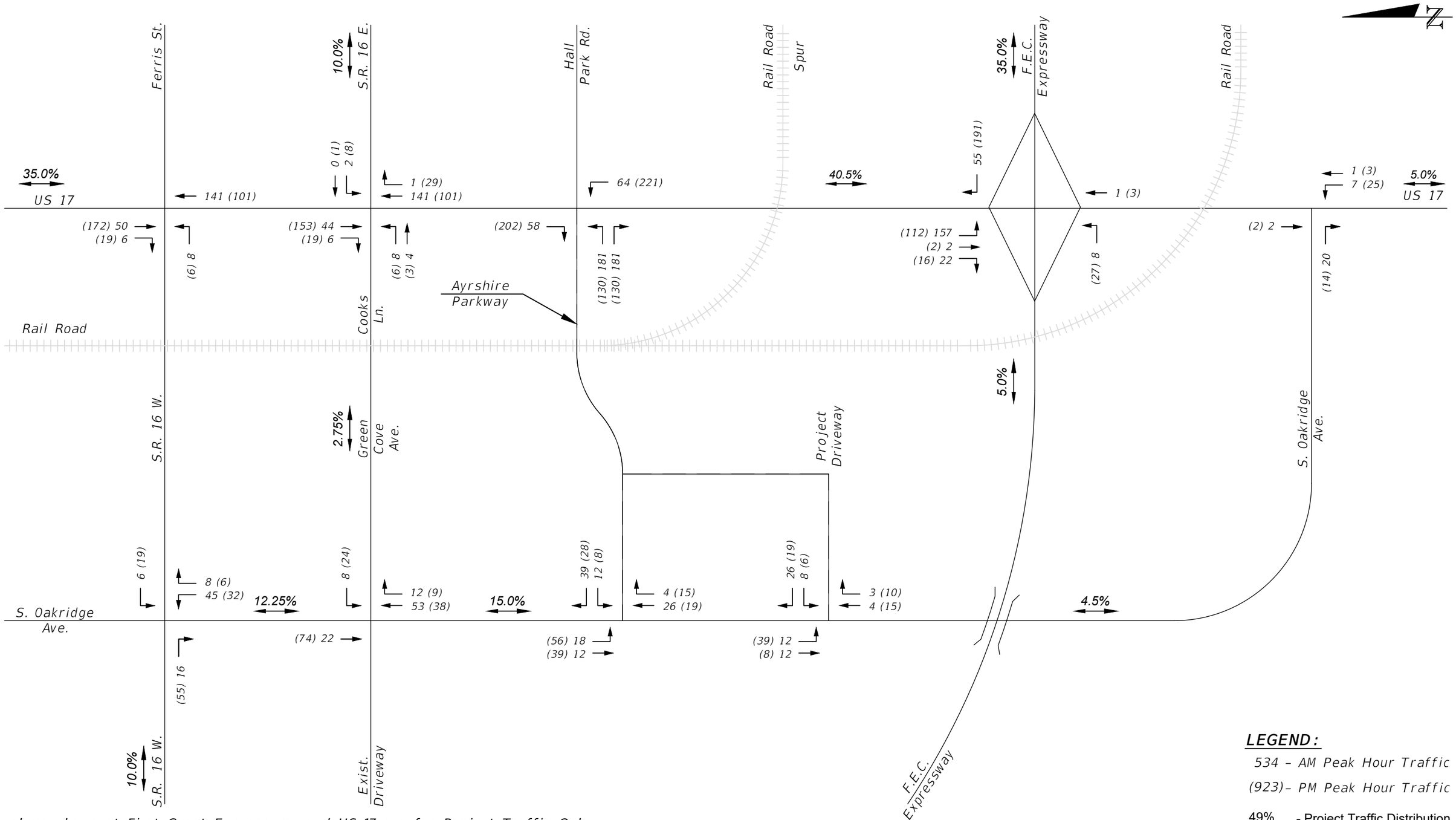
Figure 10 – Year 2027 AM and PM Peak Hour (Analysis Phase 02) Project Traffic Distribution and Assignment

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



Numbers shown at First Coast Expressway and US 17 are for Project Traffic Only.

LEGEND:

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

49% - Project Traffic Distribution

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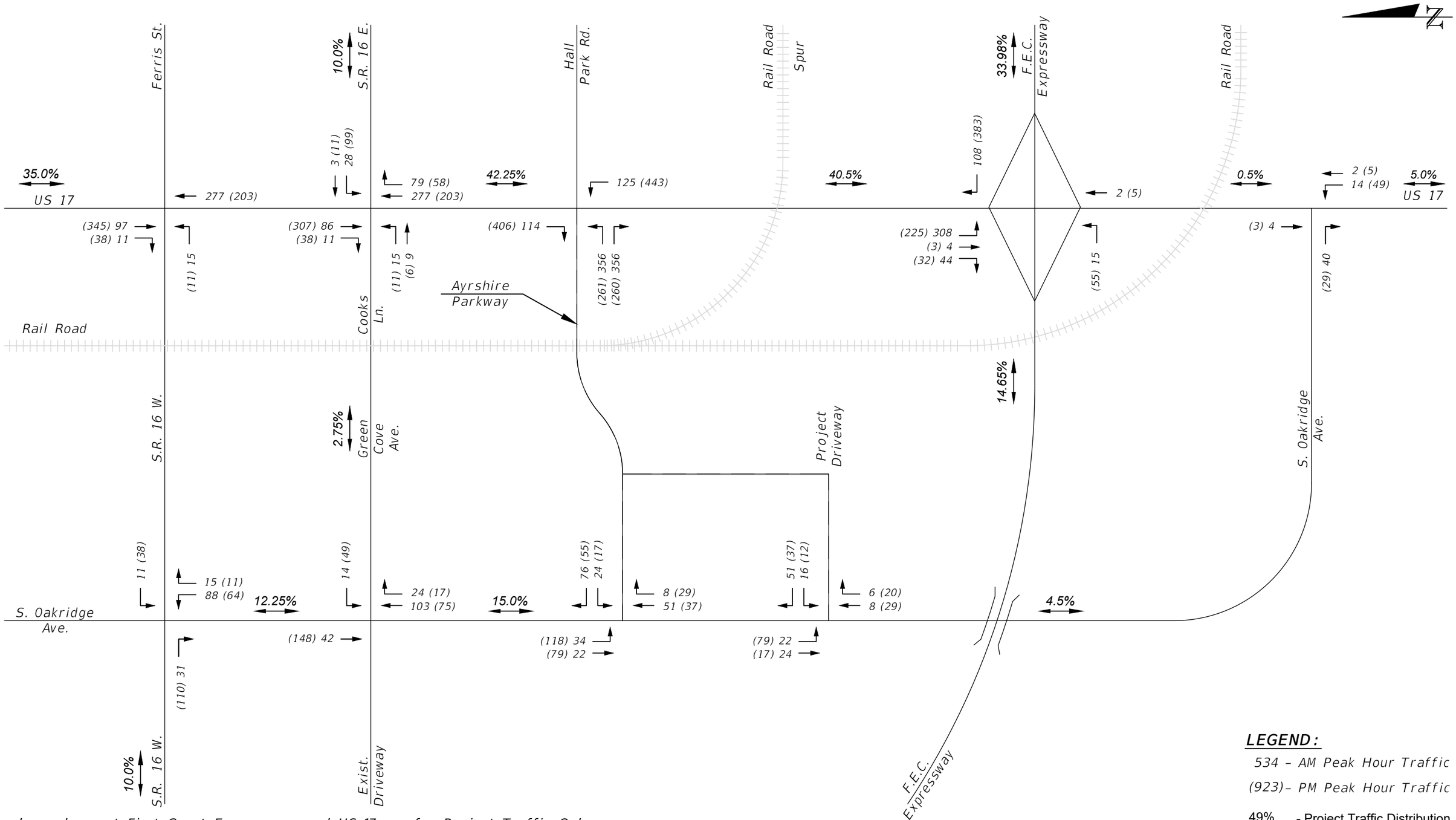
Figure 11 – Year 2030 AM and PM Peak Hour (Analysis Phase 03) Project Traffic Distribution and Assignment

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



Numbers shown at First Coast Expressway and US 17 are for Project Traffic Only.

LEGEND:

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

49% - Project Traffic Distribution

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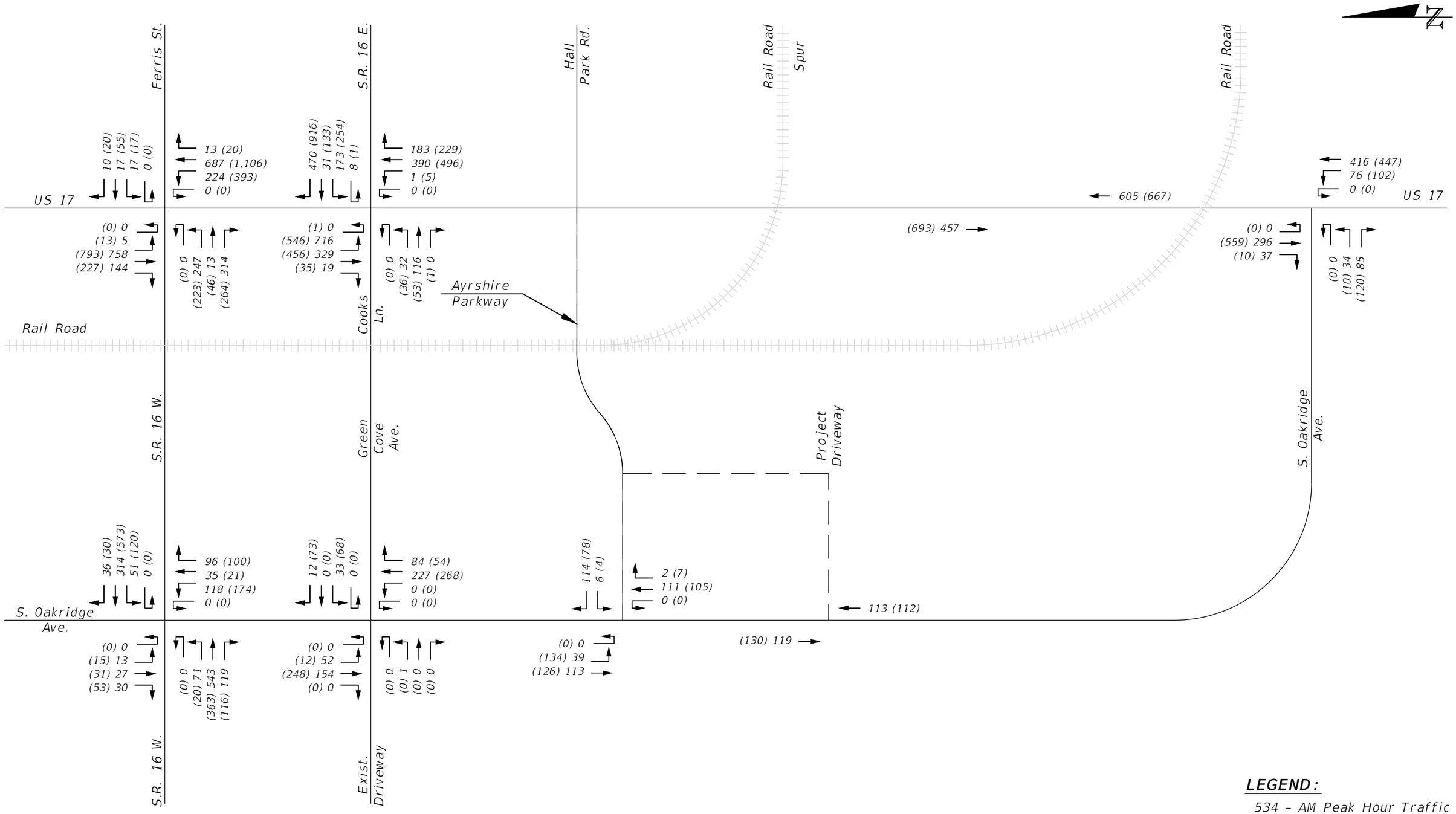
Figure 12 – Year 2035 AM and PM Peak Hour (Analysis Phase 04) Project Traffic Distribution and Assignment

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



LEGEND:

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

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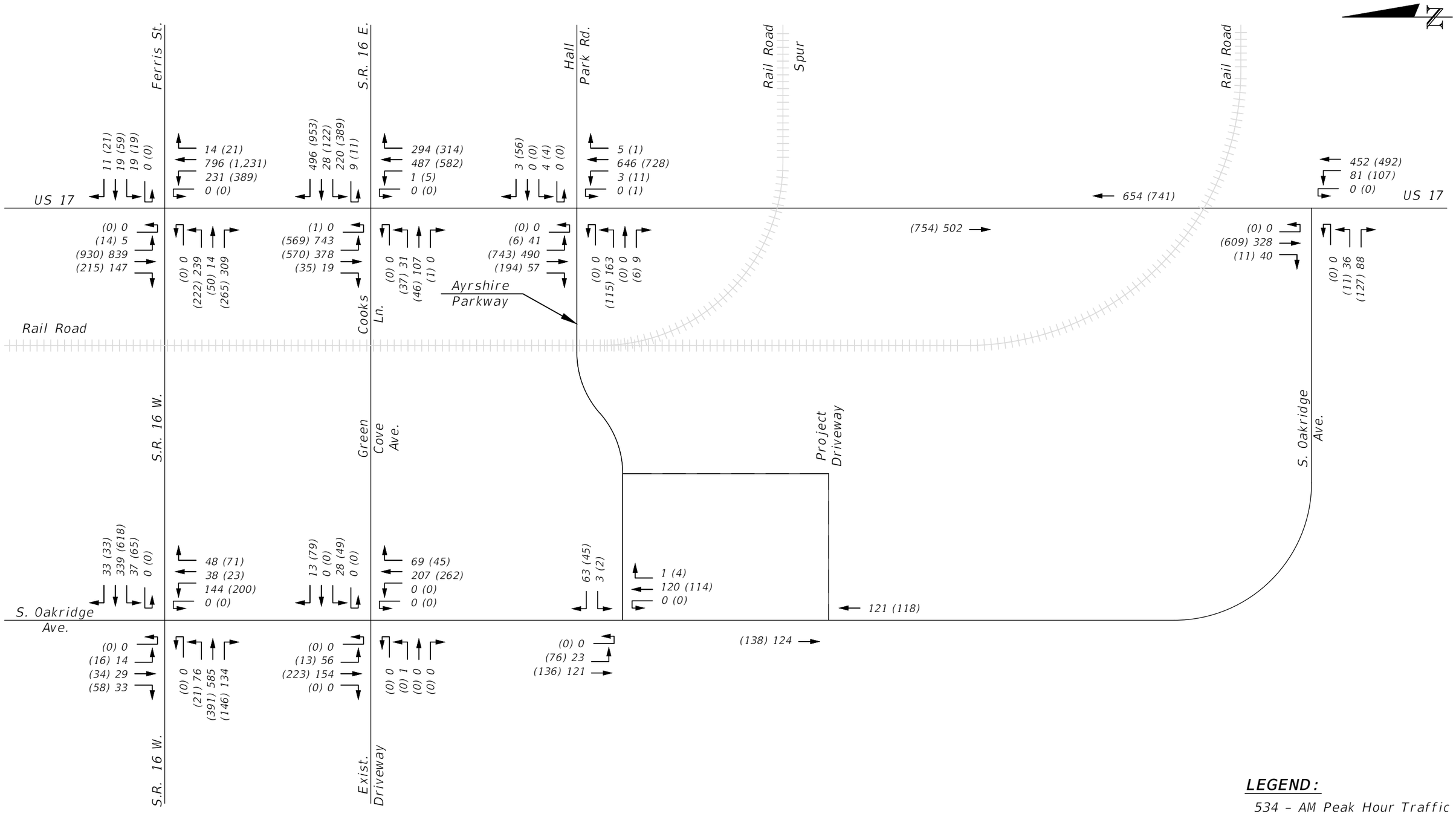
Figure 13 – Year 2025 AM and PM Peak Hour (Analysis Phase 01) Build-Out Traffic Volumes

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



LEGEND:

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

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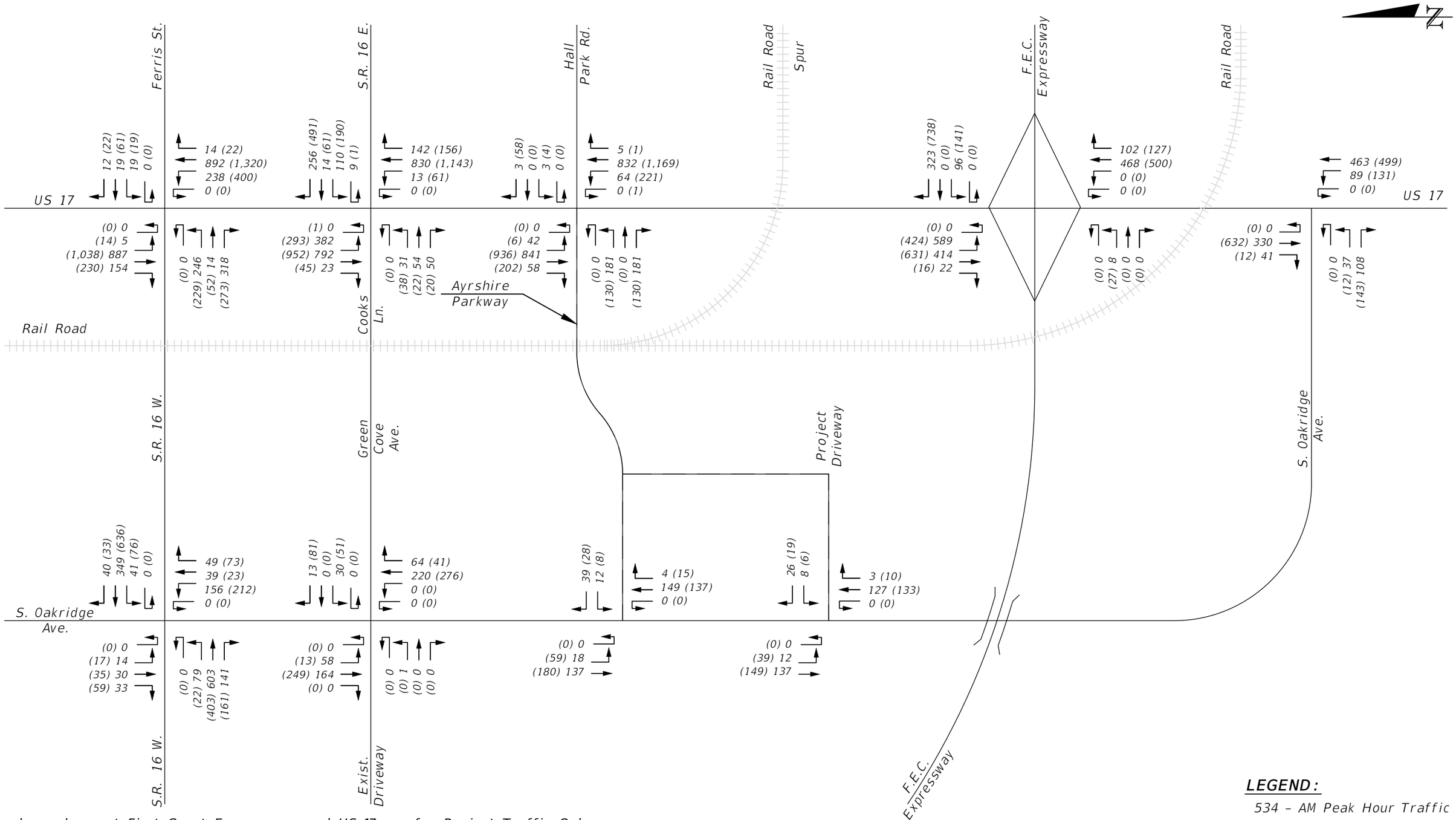
Figure 14 – Year 2027 AM and PM Peak Hour (Analysis Phase 02) Build-Out Traffic Volumes

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



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LEGEND :

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

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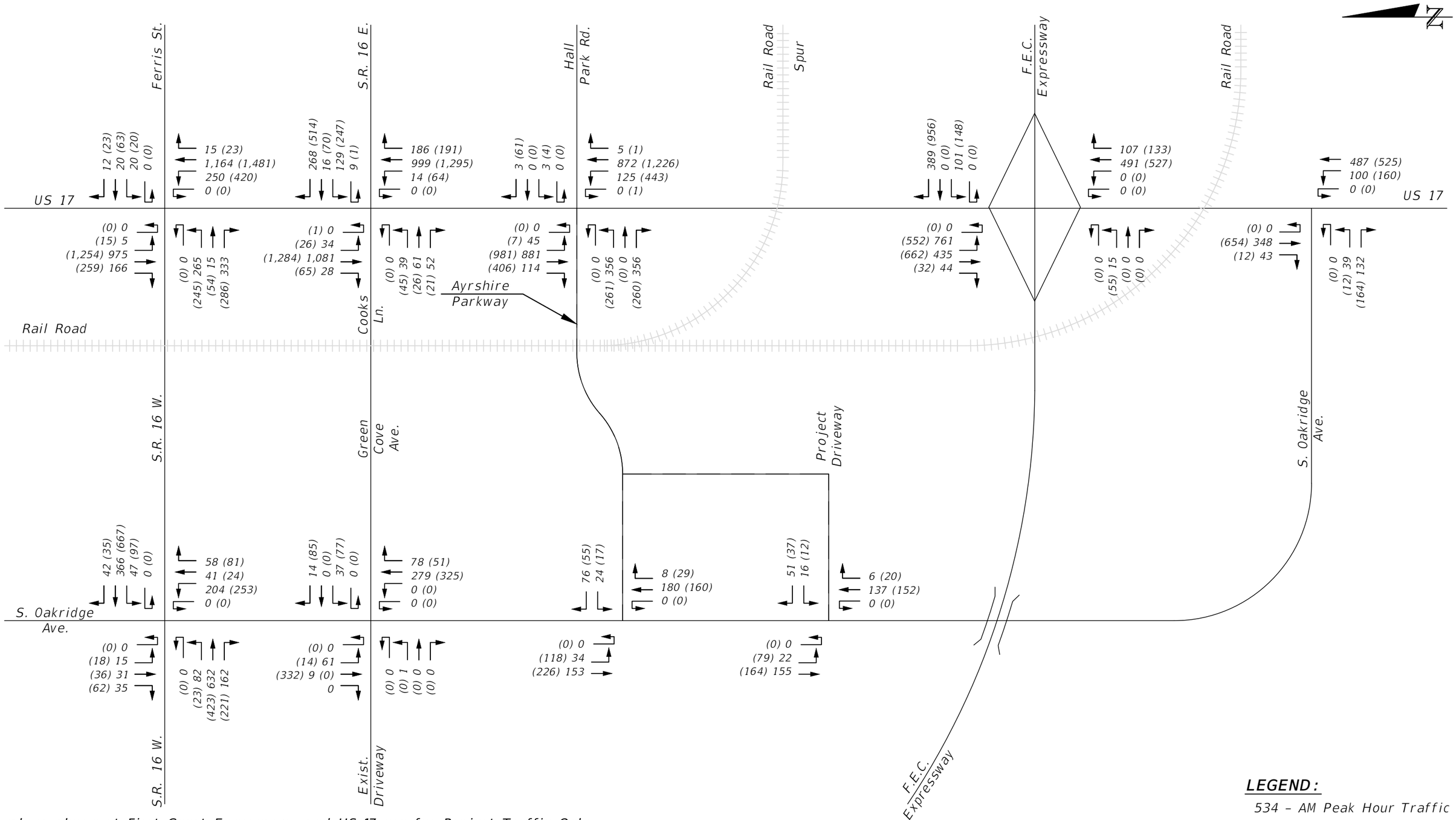
Figure 15 – Year 2030 AM and PM Peak Hour (Analysis Phase 03) Build-Out Traffic Volumes

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida



Numbers shown at First Coast Expressway and US 17 are for Project Traffic Only.

LEGEND:

534 – AM Peak Hour Traffic

(923)– PM Peak Hour Traffic

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Figure 16 – Year 2035 AM and PM Peak Hour (Analysis Phase 04) Build-Out Traffic Volumes

Ayrshire CPA – Traffic Study
City of Green Cove Springs, Florida