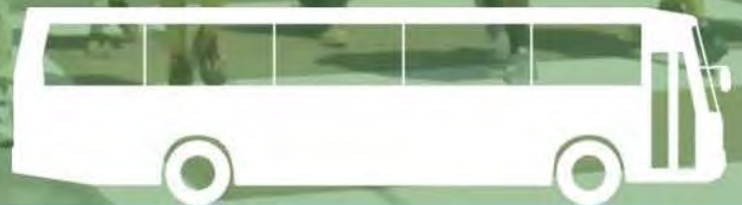


Pine Hills Road Pedestrian/Bicycle Safety Study
Final Report
Technical Memorandum No. 7



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On behalf of Orange County Mayor Teresa Jacobs, District 2 Commissioner Bryan Nelson and District 6 Commissioner Victoria P. Siplin, Orange County is pleased to present this Technical Memorandum for Safety Improvement Strategies as part of the Pine Hills Road Pedestrian/Bicycle Safety Study. The study limits are from Colonial Drive (State Road (SR) 50) to Bonnie Brae Circle, a distance of approximately 3.6 miles.

This Pine Hills Road corridor has been identified as a high crash corridor for pedestrian and bicycle crashes. In addition, there are a variety of land uses along the corridor including multiple schools, residential, retail and office land uses, as well as heavily-used transit routes, which result in a truly multi-modal corridor.

The Pine Hills Road Pedestrian/Bicycle Safety Study is a comprehensive review of the Pine Hills Road corridor which will investigate various measures to provide a safe integration of walkers and bicyclists with other modes of transportation. This study is a result of Mayor Jacobs' "Walk-Ride-Thrive!" and "INVEST in Our Home for Life" initiatives to make Orange County roads safer for all pedestrians and bicyclists.



Honorable Teresa Jacobs
Orange County Mayor



Bryan Nelson
Orange County District 2 Commissioner



Victoria P. Siplin
Orange County District 6 Commissioner

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1.0 Introduction

1.1 Overview

Orange County is taking a proactive approach to address pedestrian and bicycle safety on its roadways. As a result, Mayor Teresa Jacobs has proposed several initiatives, including “Walk-Ride-Thrive!” and “INVEST in Our Home for Life”, to make Orange County roads safer for pedestrians and bicyclists. In addition to these initiatives, Mayor Jacobs is one of 120 nationwide mayors who have signed an online pledge to participate in the “U.S. Department of Transportation’s Mayors’ Challenge for Safer People, Safer Streets.” The common goal of these initiatives is to make roads throughout the County more pedestrian and bicycle friendly by incorporating safe and convenient walking and biking facilities in transportation projects.

Orange County’s current efforts to improve pedestrian safety include the Orange County Community Traffic Safety Team and a Student-Pedestrian Safety Committee with Orange County Public Schools. The County has established a budget of \$2 million to fund designated pedestrian safety and related improvements. An additional \$3.5 million is available to fund sidewalk repairs, regular Road Safety Audit projects, school safety audits, and many other projects.¹

The “Walk-Ride-Thrive!” initiative expands on these efforts by enhancing the County’s coordination, capital planning and codes, including changes to the Comprehensive Plan and Code, and a new Pedestrian Bicycle Safety Action Plan and Complete Streets policy.

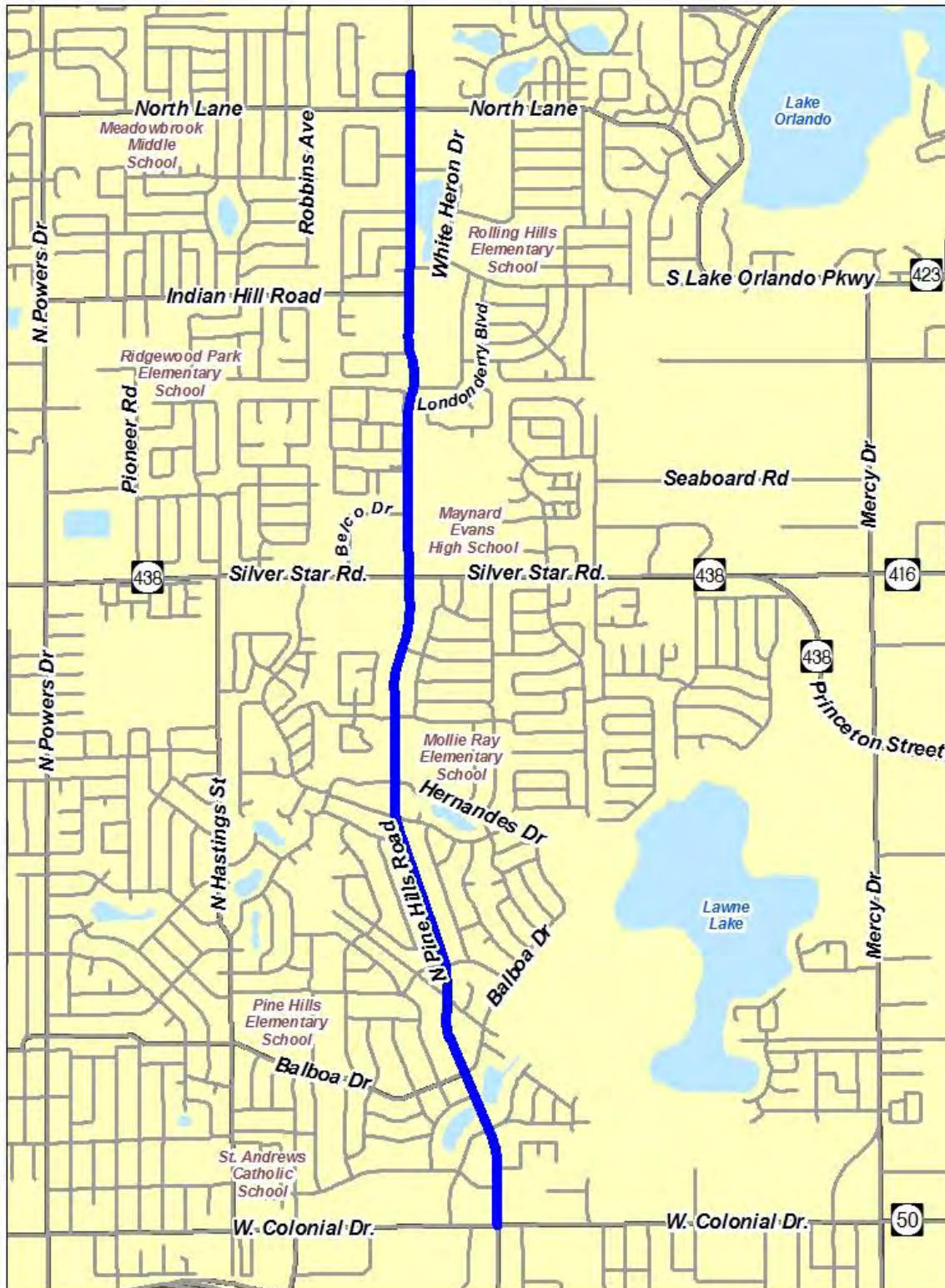
The County has created a separate “INVEST in Our Home for Life” initiative apart from the above funding that will provide an additional \$15 million for pedestrian safety improvements at intersections and other selected locations which will address sidewalks, crosswalks, signals, turn lanes, updated signage, and other necessary improvements.

Based on the Mayor’s efforts, Pine Hills Road has been identified as a desired corridor to address pedestrian and bicycle safety. **Figure 1.1** illustrates the project corridor study limits. This corridor is located within Orange County Commissioners Bryan Nelson and Victoria P. Siplin districts and has been identified as a roadway with a significant number of pedestrian and bicycle crashes. In addition, there are a variety of land uses along the corridor including multiple institutional, residential, retail, religious, and office uses. The Pine Hills Pedestrian/Bicycle Safety Study is a comprehensive review of the Pine Hills Road corridor with the objective to identify various improvements which can address and provide a safer integration of walking and riding bicycles with other modes of transportation.

The study includes detailed data collection, analysis and understanding of existing conditions, public outreach, potential safety measures, cost estimates, benefit cost analysis, and recommendations regarding proposed safety improvements.

¹ <http://www.orangecountyfl.net/TrafficTransportation/WalkRideThrive.aspx#.Vs3GsE32boo>

Figure 1.1: Project Study Corridor



2.0 Study Purpose and Scope

2.1 Purpose

The purpose of this study is to develop alternatives and strategies that identify solutions to address the mobility needs of the users along this corridor, and to provide for the safe integration of both the walking and bicycle riding public with other modes of transportation. The Pine Hills Road Study Area extends from Colonial Drive (SR 50) to Bonnie Brae Circle, a distance of approximately 3.6 miles.

One of the study goals is to place special emphasis at the Silver Star Road (SR 438) and Pine Hills Road intersection, consistent with the goals of the Pine Hills Road Neighborhood Improvement District (PHNID), by creating a safe, efficient, and attractive pedestrian gateway and associated amenities at this intersection. Besides the focus at this intersection, the study also will collect data and public input throughout the project limits to identify barriers and obsolete infrastructure, analyze the data collected, develop transportation safety countermeasures and enhancements, and estimate the cost and potential implementation schedule of these measures in the study report.

2.2 Introduction to the Study Corridor

The Pine Hills Road corridor is a 3.6-mile corridor, bounded by Colonial Drive on the south and ending at Bonnie Brae Circle on the north. Pine Hills Road is classified as a Minor Arterial and is owned and maintained by Orange County (CR 431). The posted speed limit on the corridor is 40 miles per hour (mph).

Through the study area, Pine Hills Road is generally a five-lane arterial with two travel lanes in each direction separated by a two-way left turn lane (TWLTL) along much of the corridor. Raised medians are also present at several pedestrian mid-block crossings. There are 15 pedestrian crossing locations across Pine Hills Road at eight signalized intersections and seven mid-block locations. Along the corridor, there are continuous sidewalks along both sides of Pine Hills Road.

The remainder of this document will provide additional details regarding the public involvement program, existing data collection including crash history, future traffic demands, and development of potential safety measures, cost estimates, and benefit cost analyses.

3.0 Public Involvement

This chapter outlines the public involvement process over the course of this study, including the Public Involvement Program, agency meetings and community workshops. The Public Involvement Plan (PIP) is detailed in *Technical Memorandum No. 1—Public Involvement* and a complete compilation of the public involvement activities are contained in **Appendix A**.

3.1 The Public Involvement Program

The Public Involvement Plan for the Pine Hills Road Pedestrian/Bicycle Safety Study included the following program elements:

- Identification of key stakeholders, including elected officials, internal County stakeholders, civic groups, neighborhood/homeowner associations, transportation agencies, Orange County School Board, the business community and affected property owners;
- Identification of key dates and locations for public meetings;
- Identification of public outreach methods, with particular attention to low-income, elderly, minority and disabled persons. Bilingual staff aided during community meetings;
- Contact information for key stakeholders and the Study Team; and
- Timelines for completing, reviewing, and distributing the public outreach materials and public notices.

3.2 Public Meetings

The following outreach efforts were employed during the project to notify key stakeholders and the affected public of the study and to solicit public input into the process.

3.2.1 Agency Coordination and Small Group Meetings and Public Opinion Survey

Agency Coordination Meetings

An initial meeting was held on January 26, 2017 with the following local, regional and state organizations combined – Florida Department of Transportation (FDOT) District Five, Bike/Walk Central Florida, Central Florida Regional Transportation Authority (LYNX), Orange County Utilities Department, Orange County Public Schools, the St. Johns River Water Management District (SJRWMD), and the Pine Hills Neighborhood Improvement District (PHNID).

A follow-up meeting with the above agencies was held on May 11, 2017 to inform them of the study progress and solicit their input. A third agency meeting was held with PHNID to discuss the Silver Pines Shopping Center on October 11, 2017.

Small Group Meetings

The County and members of the Study attended other related public/community meetings. These small group meetings were scheduled directly with the requesting parties and are summarized and included as part of the Public Involvement documentation (see **Appendix A**).

Public Opinion Survey

To help ensure a comprehensive public outreach process, a Public Opinion Survey was conducted in conjunction with Consensus Building Workshop (CBW) #1 to obtain public feedback on viable safety countermeasures. The survey, developed through the Survey Monkey website, was electronically distributed to residents and stakeholders by email. The survey was also available on the study website, and hard copies, along with a collection box, were available at key

locations along the corridor. The survey contained questions to prompt individuals on their ideas for safety improvements. Input was also solicited on such issues as gateway features, landscaping, and PHNID objectives.

The Public Opinion Survey was open for six (6) weeks (March to April) prior to the first community meeting to obtain initial public feedback on travel needs and preferences and two (2) weeks following the first community meeting to receive feedback on potential safety measures that may be advanced into final recommendations. The results of the Public Opinion Survey can be found as **Appendix A**.

3.2.2 Community Workshops

During the study, two CBWs were held to present the study findings, safety improvement alternatives, and study recommendations to key stakeholders and the public. Additionally, comment cards were provided so that attendees could submit their input in writing. A public review and comment period was established for the receipt of comments from citizens. The County prepared written responses to the person(s) or group(s) who posed the question or comment. A copy of all comments, questions and responses was documented in the study file located at the Transportation Planning Division.

Meeting participants had an opportunity to provide feedback on the proposed pedestrian safety countermeasures and recommendations. During each of the two workshops, displays featured various safety treatments, information from data collection efforts, potential safety countermeasures and access management alternatives.

- CBW #1
 - This workshop was conducted June 08, 2017 following the completion of the data collection and analysis activities.
 - The findings of data collection and the evaluation of barriers and challenges was presented to the public to obtain their feedback on strategies for potential pedestrian safety improvements.
 - Feedback received through the Public Opinion Survey was also presented.
- CBW #2:
 - This workshop was conducted on August 24, 2017.
 - The Safety Improvement Plan Alternatives and Benefit-Cost evaluations was presented to the public to obtain feedback on ranking and recommendations prior to the presentation of the improvement alternatives to the Orange County Local Planning Agency (LPA) and Orange County Board of County Commissioners (BCC).

The public community meeting minutes, sign-in sheets and summaries of comment cards were posted to the study website as they became available.

- LPA Meetings
 - The LPA Workshop is scheduled for November 16, 2017
 - The LPA Hearing is scheduled for conducted on December 21, 2017
- BCC Meetings
 - The BCC Workshop is anticipated for January 9, 2018
 - The BCC Hearing is anticipated for February 6, 2018

4.0 Existing Conditions

4.1 Summary of Transportation Plans

A review of various transportation plans was performed to identify planned improvements throughout the study area. The results of the review are included in a separate *Technical Memorandum No. 2—Evaluation of Existing Studies*. To summarize, the following studies are applicable to this project:

- Orange County Capital Improvement Program (CIP) and Long Range Transportation Plan (LRTP)
 - Pine Hills Trail (Alhambra Drive to Silver Star Road)
 - Roadway Lighting Improvements (Silver Star Road to North Lane)
- Orange County Walk-Ride-Thrive! Program (WRT!)
- Orange County Multi Modal Corridor Plan
 - Identified Livability Corridor (Colonial Drive to Silver Star Road)
- Orange County ADA Transition Plan
- Orange County Development Projects
 - Silver Pines (120 Multi-Family Units at Silver Star Road/Pine Hills Road)
 - Pine Hills SuperStop (Belco Drive)
- LYNX Transit Development Plan (TDP)
 - Pine Hills SuperStop (Belco Drive)
- MetroPlan Orlando Transportation Improvement Program (TIP)
 - TSM&O Improvements (Silver Star Road/Pine Hills Road intersection)
- Pine Hills Neighborhood Improvement District 2015-2045 Improvement Plan
- American Planning Association Community Planning Assistance Team (CPAT) Report
 - Town Center Master Plan

4.2 Land Use

Existing and future land use patterns along the Pine Hills Road corridor are very important to consider when evaluating current and future pedestrian and bicyclist safety. The highest share of existing land uses within the Pine Hills Road study area are residential and institutional, though most land use with frontage on Pine Hills Road are either institutional or commercial. Along the corridor, there are small businesses directly adjacent to Pine Hills Road, with neighborhoods behind and extending to the east and west of the corridor. There are several schools and major churches that contribute to the pedestrian and bicycle activity along the Pine Hills Road corridor including:

- Schools
 - Mollie E. Ray Elementary, on Hernandes Drive to the east of Pine Hills Road
 - Pine Hills Elementary, on Balboa Drive to the west of Pine Hills Road
 - Rolling Hills Elementary, on Donovan Street to the east of Pine Hills Road
 - Ridgewood Park Elementary, on Pioneer Road to the west of Pine Hills Road
 - Meadowbrook Middle School, on North Lane to the west of Pine Hills Road
 - Maynard Evans High School, on Pine Hills Road north of Silver Star Road
 - Robinswood Middle School, on Vernon Street west of Pine Hills Road
 - St. Andrews Catholic School, on N. Hastings Street west of Pine Hills Road
- Churches

- Ebenezer Baptist Church, on Pine Hills Road at Pipes O the Glen Way
- All Nation Church of God, on Pine Hills Road at Spring Hill Drive
- Joshua Generation Outreach Church, on Pine Hills Road at Indialantic Drive
- Mission of Hope Worship Center, on Pine Hills Road at Hernandes Drive
- New Covenant Church of Jesus Christ, on Pine Hills Road at Cortez Drive
- Faith Christian Center, on Pine Hills Road at Deauville Drive
- Pine Hills Community Church, on Pine Hills Road at Hernandes Drive
- Eglise Baptiste Haitienne Philadelphie, on Pine Hills Road at Deauville Drive
- Devi Mandir Hindu Temple, on Pine Hills Road, south of Silver Star Road

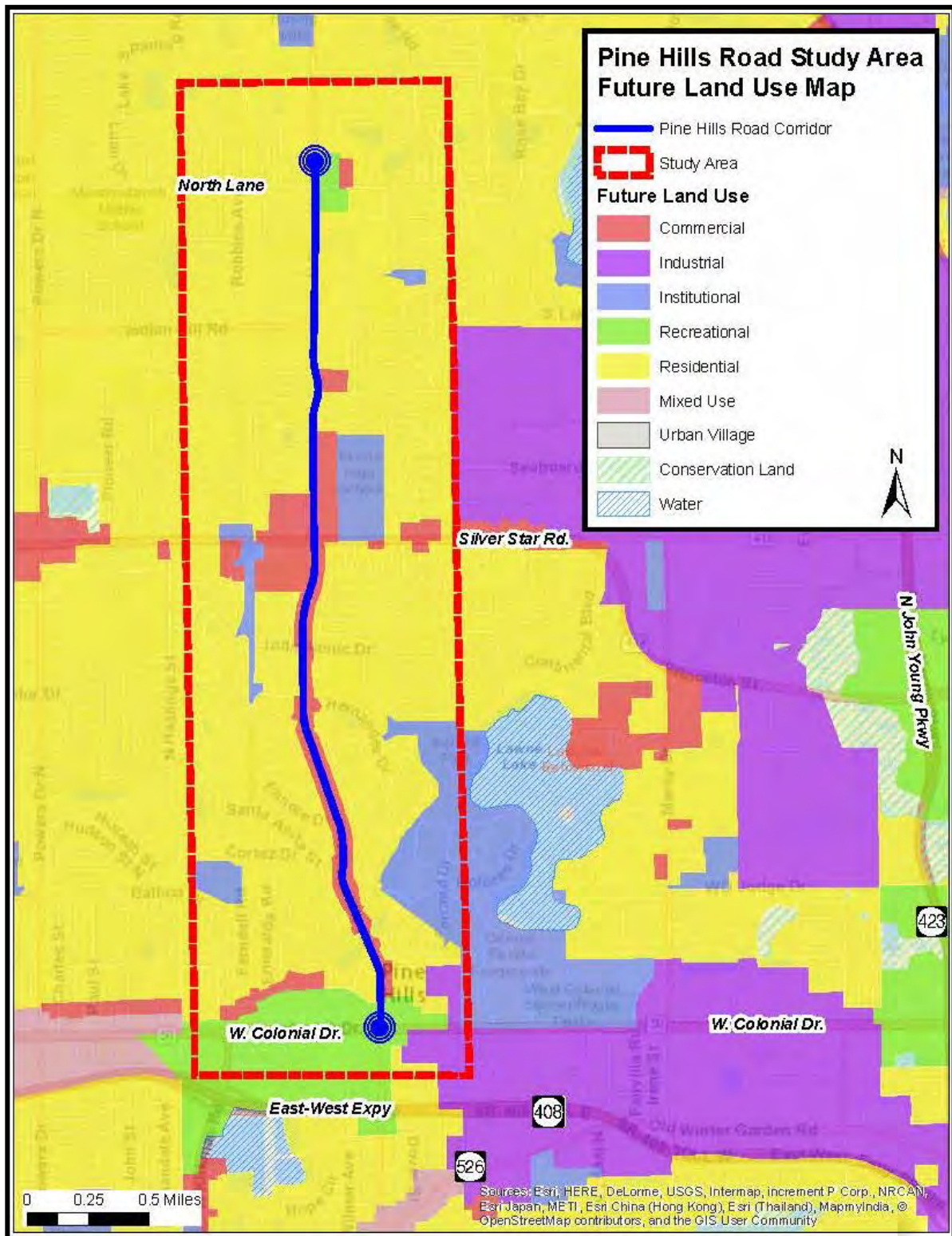
The Future Land Use (FLU) designations assigned to the study area are generally consistent with the existing land uses (displayed in **Figure 4.1**). The FLU pattern remains generally residential, with some commercial and institutional land uses along Pine Hills Road.

The PHNID, working together with the American Planning Association, formed a Community Planning Assistance Team (CPAT) which created a report that envisioned various planning opportunities for Pine Hills Road including the potential for a future town center at the Silver Star Road intersection. This report was used as the basis for the Gateway Study (see Section 8.2) of this report.

4.3 Existing Transportation Infrastructure

This chapter includes an evaluation of the transportation infrastructure conditions within the corridor. The existing physical features were collected through field inspection, aerial photography, data provided by Orange County and previous plans/studies. This information is intended to identify current roadway design issues and aid in identifying study area roadway segments and intersections requiring closer examination as part of the future recommendations for the corridor.

Figure 4.1: Future Land Use



The following topics are covered below:

- Roadway Characteristics
- Right-of-Way
- Typical Section
- Intersection Geometry
- Bicycle/Pedestrian Infrastructure
- Signage, Markings, Design & Posted Speed, Traffic Volumes, & School Zones
- Spot Speed Study
- Lighting
- Transit Service and Infrastructure
- Safety and Crash Analysis

4.3.1 Roadway Characteristics

Pine Hills Road is classified as a Minor Arterial and is owned and maintained by Orange County (CR 431). The posted speed limit on the corridor is 40 miles per hour (mph). There are 15 pedestrian crossing locations across Pine Hills Road at eight signalized intersections and seven mid-block locations. Along the corridor, there are continuous sidewalks along both sides of Pine Hills Road.

The features of the corridor facilities are displayed in **Figure 4.2**, which were gathered through field inspection, aerial photography, Orange County data, and previous plans. The information is intended to identify current roadway design issues and aid in identifying study area roadway segments and intersections requiring closer examination as part of future recommendations for the corridor.

As can be seen in **Figure 4.2**, most of the Pine Hills Road frontage contains properties with single or multiple driveways directly accessing the roadway. This situation results in a high number of driveways serving low volumes of inbound and outbound traffic.

Figure 4.2: Corridor Characteristics

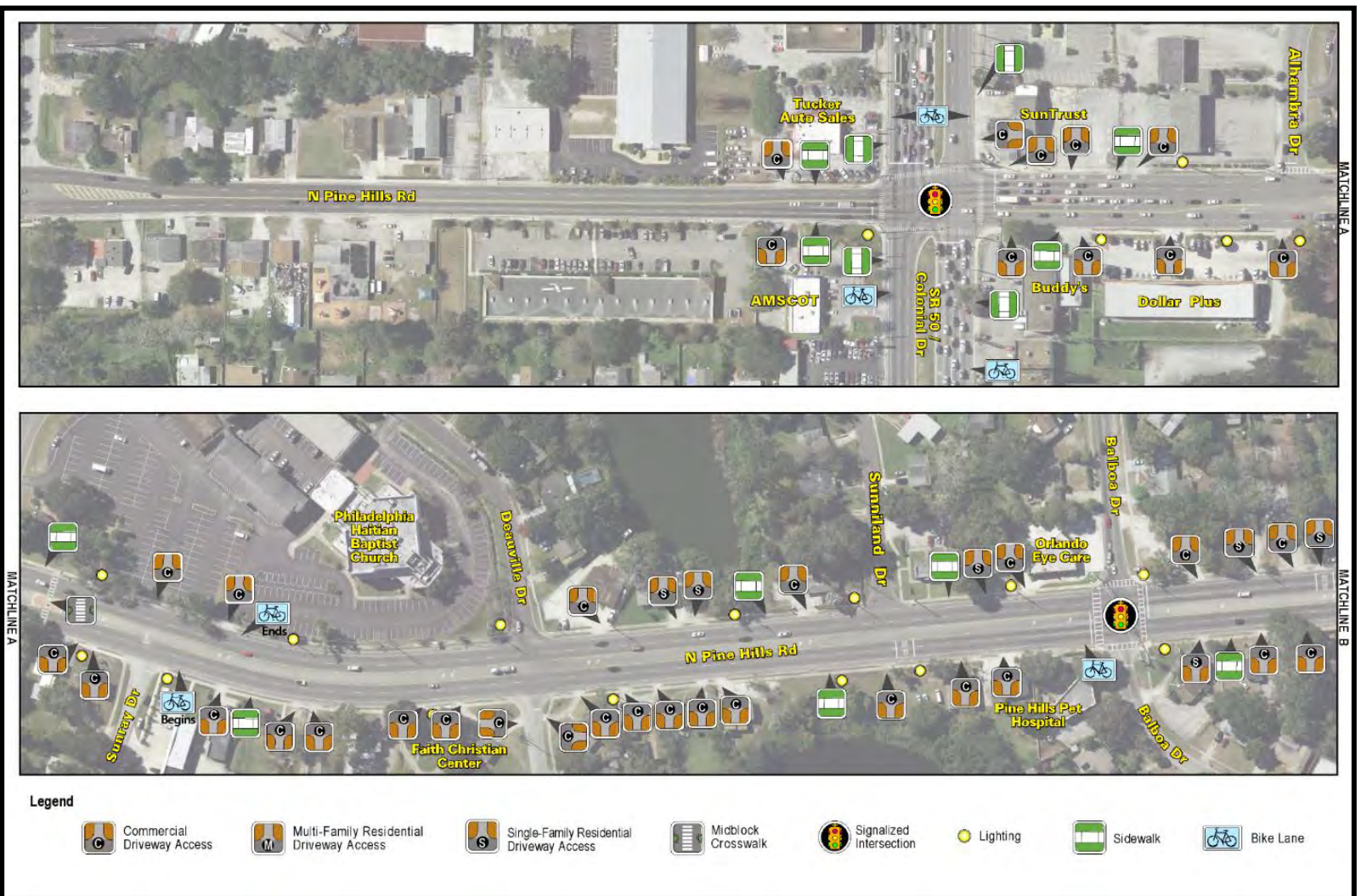


Figure 4.2 (continued): Corridor Characteristics



Figure 4.2 (continued): Corridor Characteristics



Figure 4.2 (continued): Corridor Characteristics



Figure 4.2 (continued): Corridor Characteristics



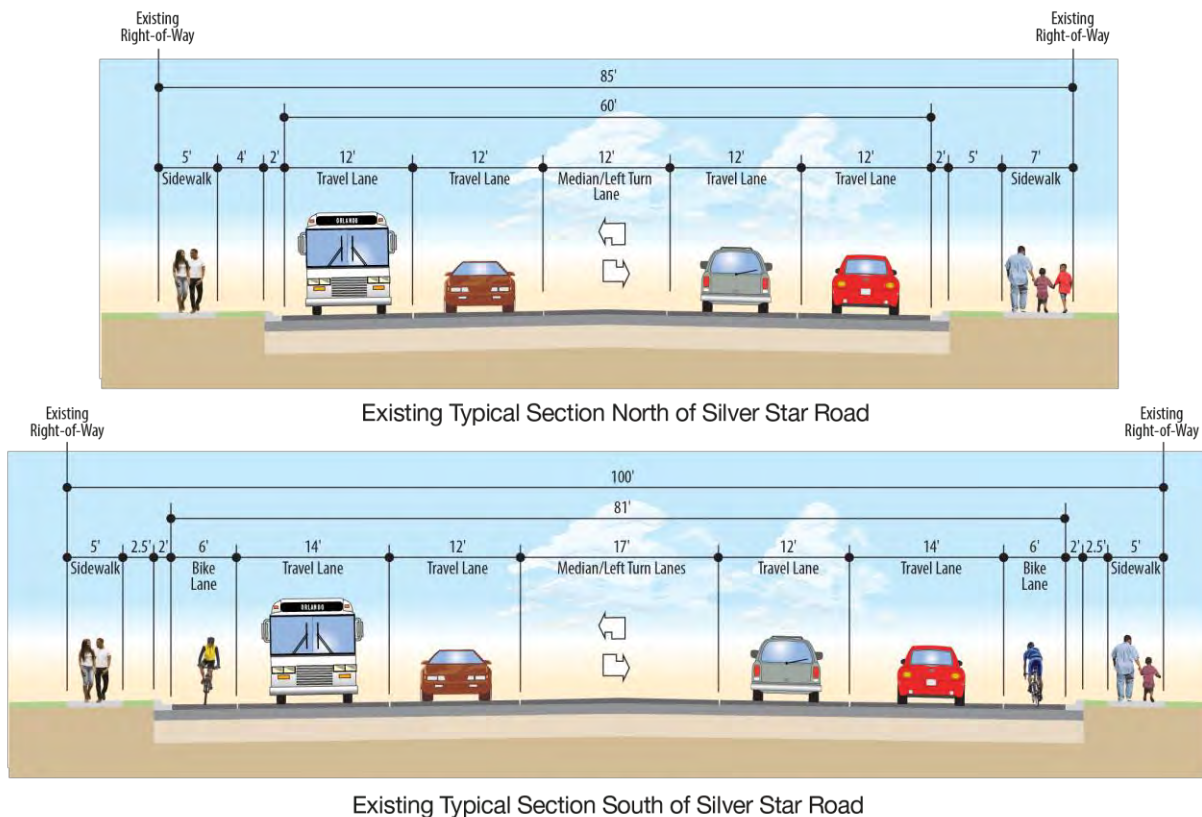
4.3.2 Typical Sections

There are two typical sections along the study area corridor consisting of Pine Hills Road north of Silver Star Road (SR 438) and Pine Hills Road south of Silver Star Road (SR 438).

- **Pine Hills Road (North of Silver Star Road)** - the typical section consists of four 12-foot travel lanes (two in each direction), a 12-foot two-way left turn lane, 2-foot curb and gutters, 4 to 5-foot grass buffer strips, a 5-foot sidewalk on the west side of the roadway, and a 7-foot sidewalk on the east side of the roadway.
- **Pine Hills Road (South of Silver Star Road)** - the typical section consists of four 12 to 14-foot travel lanes (two in each direction), a 17-foot two-way left turn lane, 6-foot bicycle lanes, 2-foot curb and gutters, 2.5-foot grass buffer strips, and 5-foot sidewalks on both sides of the roadway.

The roadway right-of-way (ROW) information was obtained using available property appraisal parcel data. The ROW varies along the corridor ranges from 85 north of Silver Star Road to 100 feet south of Silver Star Road. No additional right-of-way is expected to be needed south of Silver Star Road, although the proposed access management changes north of Silver Star Road may precipitate the need for minor right-of-way takes to address flares and curb bulb-outs needed to accommodate U-turn movements. **Figure 4.3** illustrates the existing typical sections for Pine Hills Road.

Figure 4.3: Typical Sections



4.3.3 Intersection Geometry

Figure 4.4 illustrates the intersection geometries for the following signalized and non-signalized intersections:

- Colonial Drive (SR 50) (signalized)*
- Alhambra Drive
- Sunray Drive
- Deauville Drive
- Sunniland Drive
- Balboa Drive (signalized)
- Dolores Drive (signalized) **
- Cortez Drive
- Elinore Drive
- Ferdinand Drive
- Golf Club Parkway
- Hernandez Drive (signalized)
- Indialantic Drive (planned signal) **
- Figwood Lane
- Silver Star Road (SR 438) (signalized)
- Belco Drive (signalized)
- Spring Hill Drive
- El Trio Way
- Via Maior
- Londonderry Blvd (signalized)
- Pipes O the Glen Way
- Champagne Circle
- Indian Hill Road (signalized)
- White Heron Drive
- Palisades Drive
- Van Aken Drive
- Grandview Drive
- Fir Drive
- North Lane (signalized)
- Bonnie Brae Circle

** It should be noted that characteristics were collected and included in the study for the signalized intersection of Colonial Drive (SR 50) and Pine Hills Road. These characteristics included lane geometry, signage, sidewalks and bicycle lanes. Per the scope of the study identified by Orange County, existing traffic counts and analysis were not included for the intersection of Colonial Drive (SR 50) and Pine Hills Road.*

*** New signals have recently been installed at Pine Hills Road and Dolores Drive and new signals are planned at Indialantic Drive.*

Left turn lanes (on Pine Hills Road) are provided at the signalized intersections as well as the northbound approach of the unsignalized intersection of Alhambra Drive. The remaining unsignalized intersections utilize the center lane of the undivided five-lane section for left turn movements.

Orange County is responsible for the operation and maintenance of all eight traffic signals within the study area. In addition, new signal improvements are planned at Pine Hills Road at Indialantic Drive. Signals have recently been installed at Dolores Drive which will accommodate the proposed extension of the Pine Hills Trail Spur to Barnett Park.

Figure 4.4: Intersection Geometry

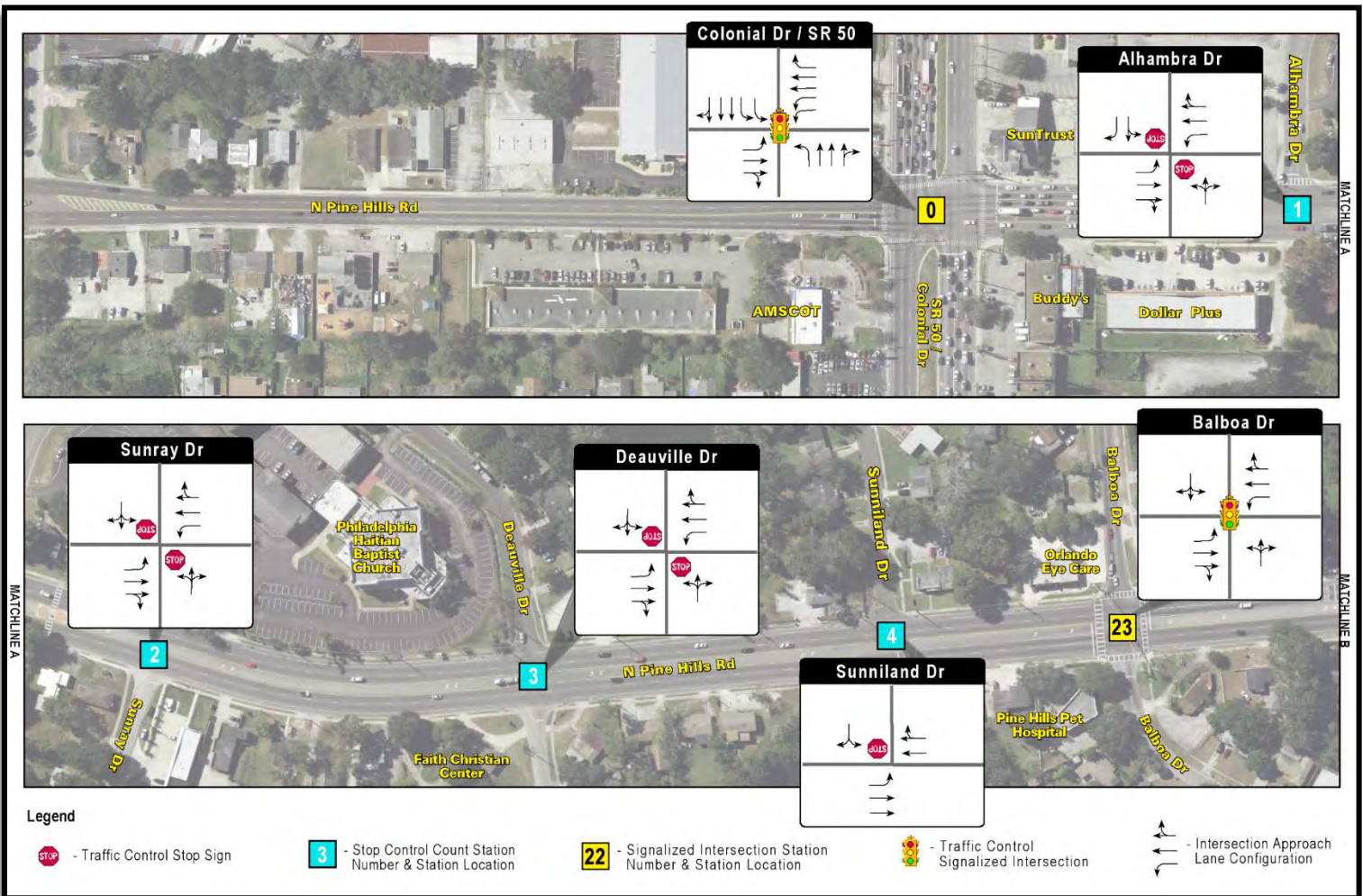


Figure 4.4 (continued): Intersection Geometry

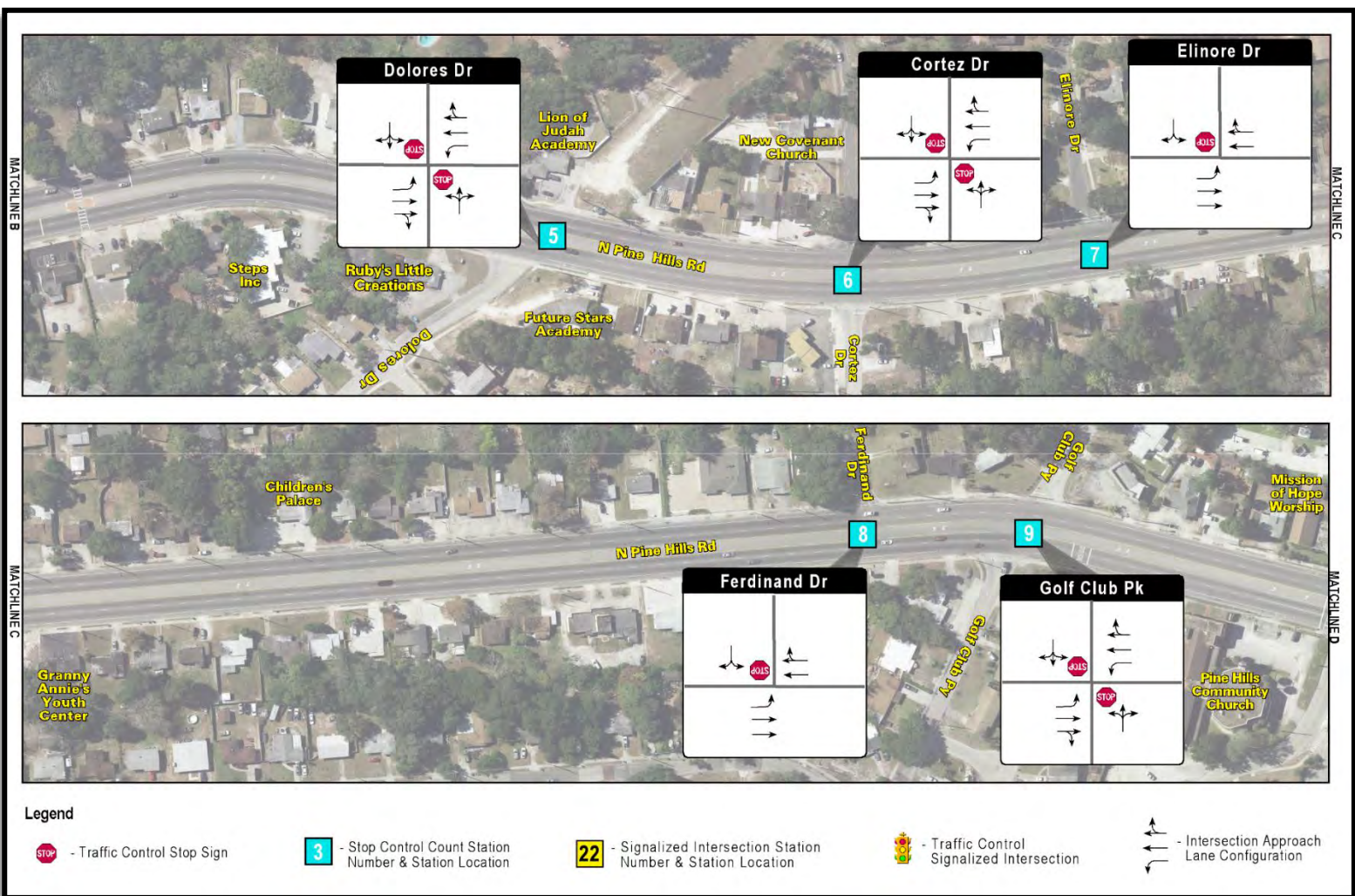


Figure 4.4 (continued): Intersection Geometry

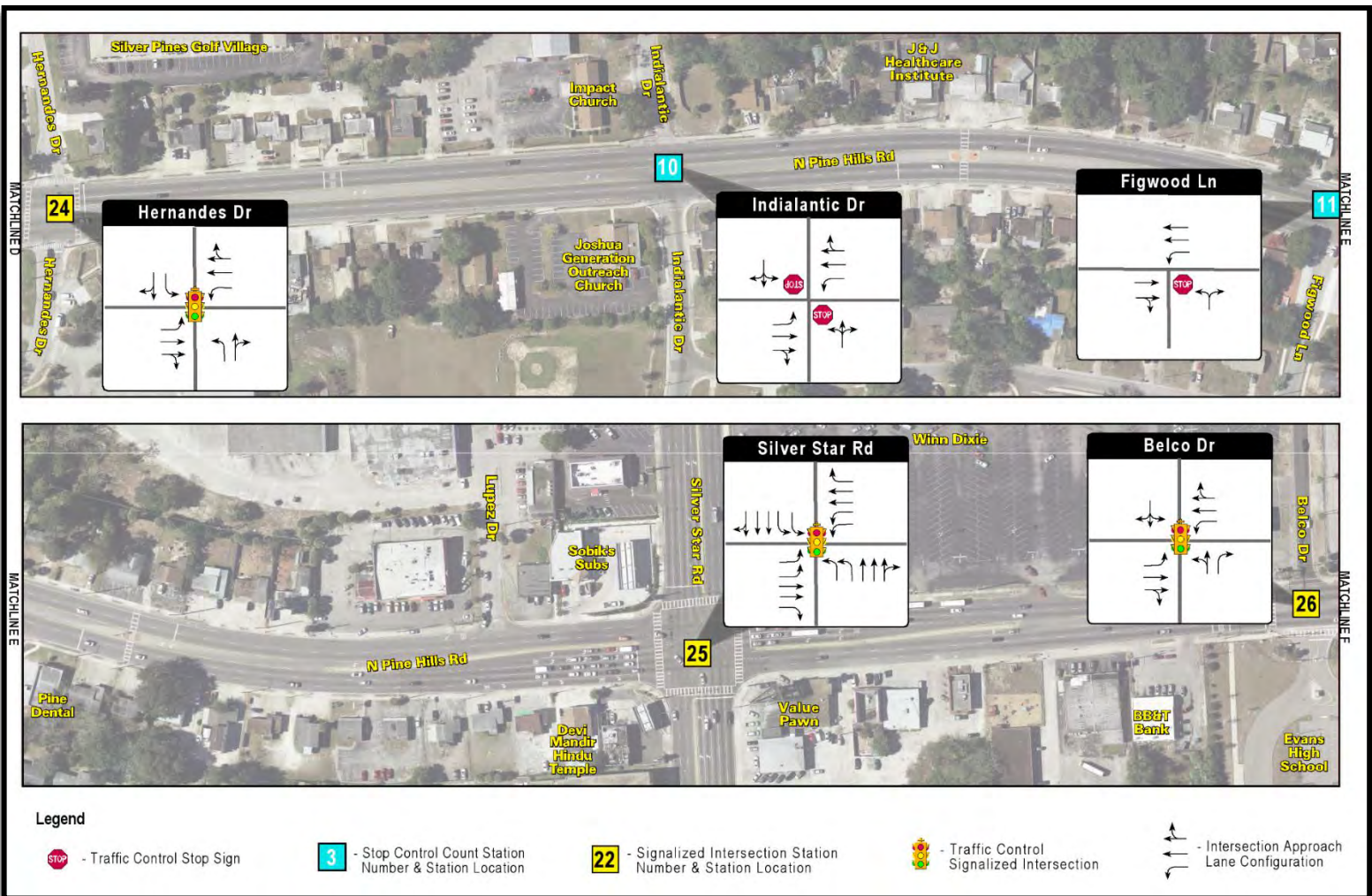


Figure 4.4 (continued): Intersection Geometry

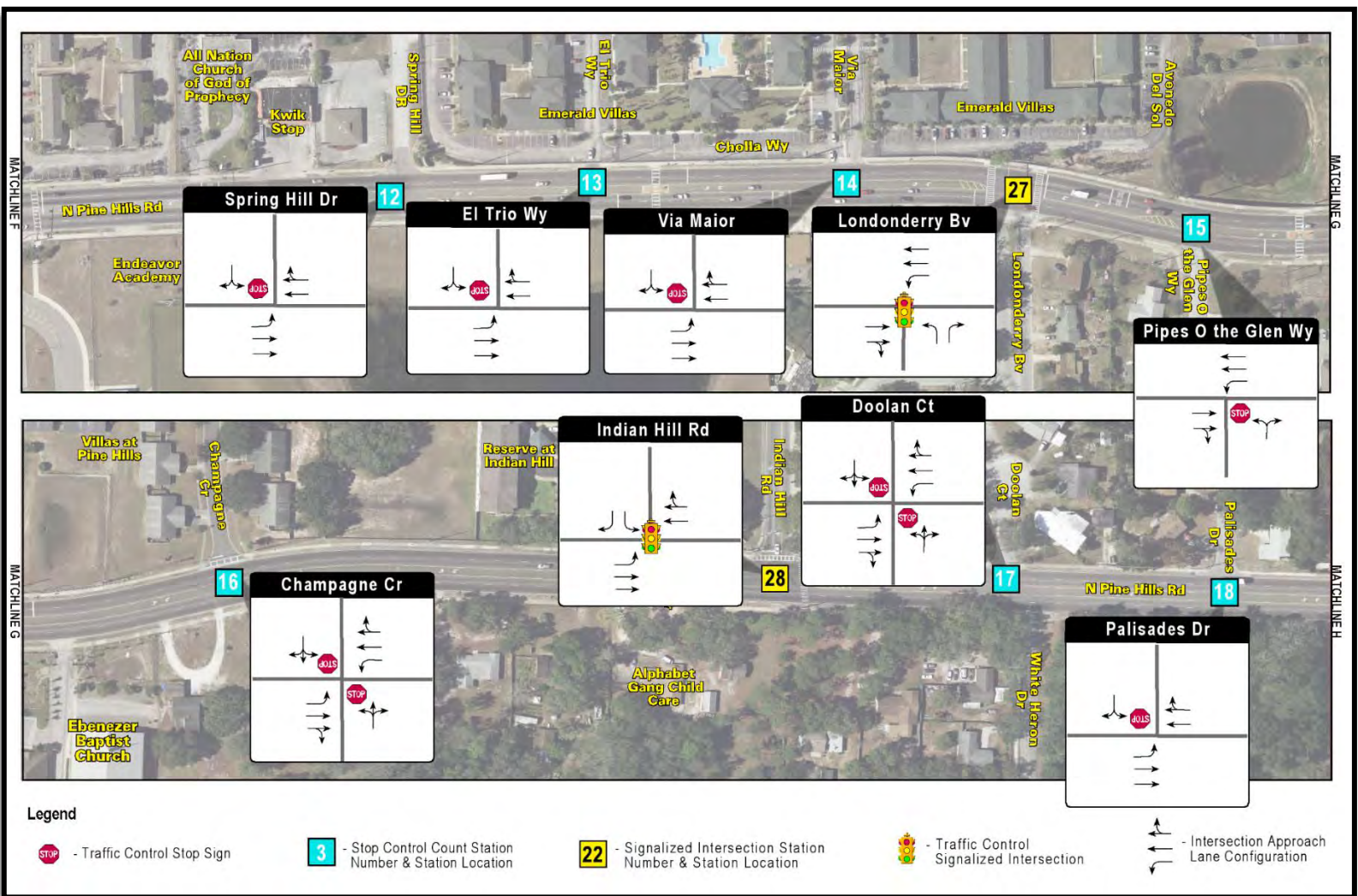
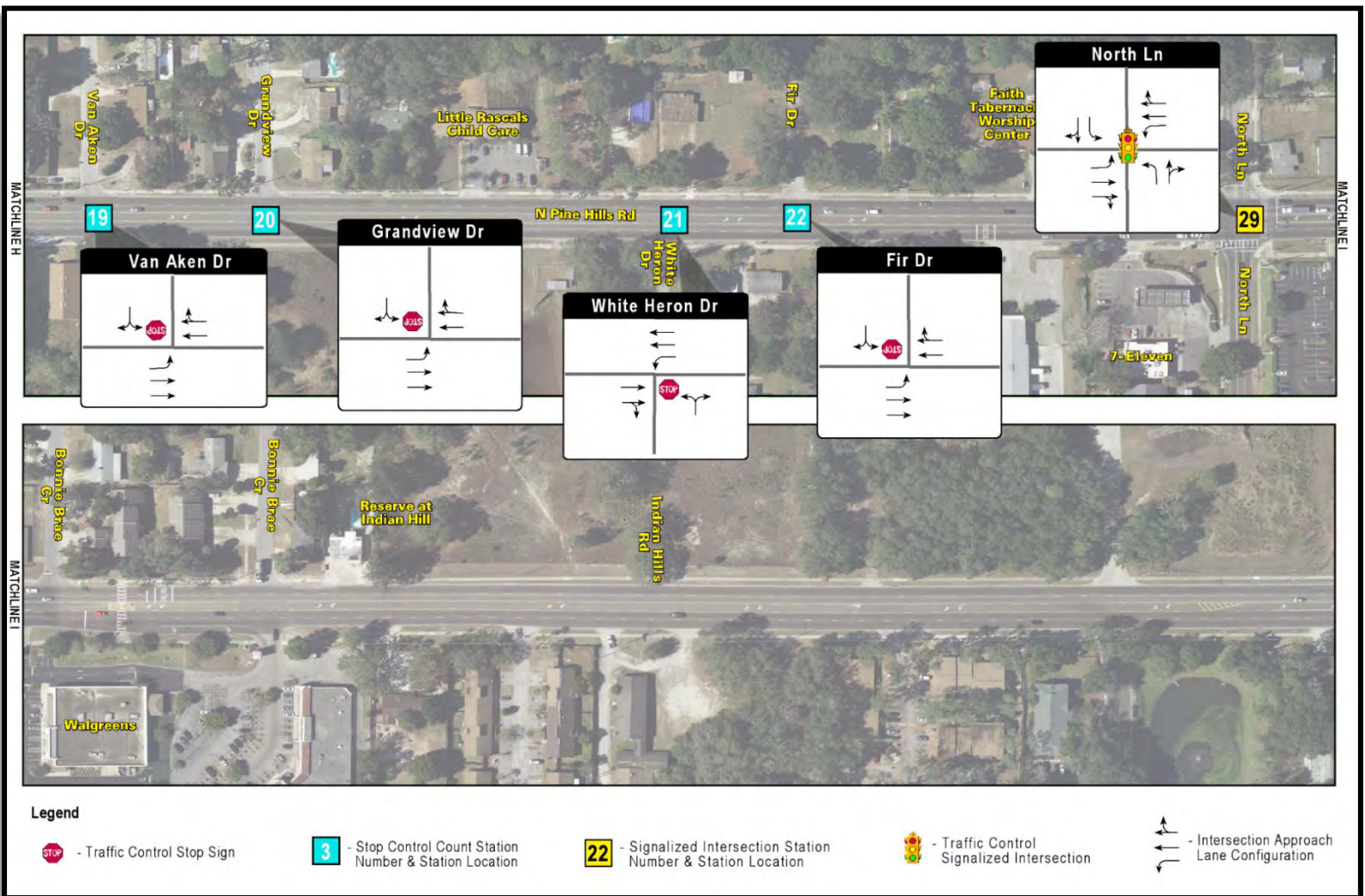


Figure 4.4 (continued): Intersection Geometry



4.3.4 Pedestrian and Bicycle Infrastructure

This section provides the location, interconnectivity and continuity of sidewalks/crosswalks, bicycle trails/facilities (e.g. Pine Hills Trail), and crossings at and away from intersections and in relation to the transit network (include any multi-use paths). The pedestrian and bicycle infrastructure details are included in *Technical Memorandum No. 3 – Existing Conditions* (see **Appendix C**).

Bicycle Lanes

An inventory of bicycle lanes was completed for the corridor utilizing the latest Google Earth aerial photography and field visits. South of Figwood Lane, existing bicycle lanes are generally 6 feet wide, adjacent to the outside vehicular travel lanes, and delineated with pavement markings along both northbound and southbound Pine Hills Road. North of Figwood Lane, no bicycle lanes are present, and bicyclists either ride in the outside vehicle travel lane or on the adjacent sidewalks.

Pedestrian Facilities

Pedestrian facilities along the corridor consist of sidewalks, crosswalks, and trails. Similar to the bicycle lane inventory, an inventory of pedestrian facilities was completed for the study area utilizing the latest Google Earth aerial photography and field visits.

Sidewalks

There are continuous sidewalks on both sides of the roadway, over the entire limits of the Pine Hills Road study area. The sidewalk width along the corridor is typically five feet in width. North of Belco Drive along the east side of Pine Hills Road, the sidewalk width is seven feet. The sidewalks are shaded by trees in several locations along the corridor; however, the majority of the sidewalks are without shade. Street furniture is limited to transit infrastructure. No other sidewalk amenities and enhancements were identified along the corridor. Sidewalks are generally in fair condition along the corridor although there are various obstructions that may impede pedestrian movements in some areas such as overgrown landscaping of adjacent properties, utility poles, and road signs which effectively narrow the sidewalk width.

Crosswalks

There are 24 intersections with some type of pedestrian crossings within the corridor - 15 pedestrian crossing locations are *across* Pine Hills Road at 8 signalized intersections and seven mid-block locations, and nine pedestrian crossings are along Pine Hills Road at unsignalized intersection approaches to Pine Hills Road (**Table 4.1**). At those 24 intersections, there are a total of 47 crosswalk legs (23 across Pine Hills Road, 24 along Pine Hills Road).

Detailed information about the pedestrian crosswalks along Pine Hills Road is provided in **Table 4.1**, including crosswalk location, traffic control, crosswalk type, warning type, maximum crossing distance, median/refuge island width, marking patterns, number of legs, and general condition. The distance between pedestrian crosswalks *across* Pine Hills Road varies from approximately 241 feet to 3,871 feet, averaging 1,059 feet (0.20 mile). The longest distance without either a pedestrian crossing or a mid-block crosswalk is 3,871 feet (0.73 mile), between the mid-block crossing north of Balboa Drive and the signalized crossing at Hernandez Drive. This high average spacing between pedestrian

crosswalks along Pine Hills Road is one of the factors that may encourage pedestrians or bicyclists to cross the road outside of a marked crosswalk.

For a number of unsignalized intersections, the minor street did not have any crosswalks marked across the approach. These intersections are listed below:

- Sunray Drive
- Deauville Drive
- Sunniland Drive
- Spring Hill Drive
- White Heron Drive
- Palisades Drive
- Van Aken Drive
- Grandview Drive
- Fir Drive
- Bonnie Brae Circle

Two locations (Balboa Drive and the crossing north of Indialantic Drive) with ladder markings were identified as not meeting FDOT criteria for special emphasis markings since the gaps between markings did not meet standards.

Table 4.1: Crosswalk Locations along Pine Hills Road

#	Crosswalk Location (along Pine Hills Road)	Type	Across or Along Pine Hills Road	Crossing Type	Maximum Crossing Distance (ft.)	Distance to Previous E-W Crosswalk (ft.)	Distance to Nearest LYNX Bus Stop (ft.)	Median/Refuge Island (width in ft.)	Marking Patterns and Legs	General Conditions
1	Colonial Drive (SR 50)	Signalized Intersection	Both	Pedestrian	134	0	185	None	Continental (4)	Fair
2	Alhambra Drive	Stop-Controlled Intersection	Along	None	56	N/A	115	None	Ladder (1-W)	Good
3	109 ft. N of Alhambra Drive	Uncontrolled Midblock Crossing	Across	Pedestrian	80	566	30	Raised (12)	Ladder	Fair
4	Balboa Drive	Signalized Intersection	Both	School	89	1,567	160	None	Ladder (4)	Good
5	405 ft. N of Balboa Drive	Uncontrolled Midblock Crossing	Across	Pedestrian	84	371	220	Raised (12)	Ladder	Fair
6	Dolores Drive	Stop-Controlled Intersection	Along	None	79	N/A	130	None	Continental (1-E)	Fair
7	Cortez Drive	Stop-Controlled Intersection	Along	None	54	N/A	330	None	Continental (1-E)	Worn
8	Elinore Drive	Stop-Controlled Intersection	Along	None	54	N/A	45	None	Transverse (1-W)	Worn
9	Ferdinand Drive	Stop-Controlled Intersection	Along	None	58	N/A	585	None	Transverse (1-W)	Worn
10	Golf Club Parkway	Stop-Controlled Intersection	Along	None	67	N/A	360	None	Continental (1-E) Transverse (1-W)	Worn
11	Hernandes Drive	Signalized Intersection	Both	School	88	3,871	110	None	Continental (2-N/S) Ladder (2-E/W)	Good (N/S), Fair (E/W)
12	Indialantic Drive	Stop-Controlled Intersection	Along	None	56	N/A	100	None	Continental (1-E) Transverse (1-W)	Worn
13	440 ft. N of Indialantic Drive	Uncontrolled Midblock Crossing	Across	Pedestrian	80	1,310	300	Raised (12)	Ladder	Fair
14	Figwood Lane	Stop-Controlled Intersection	Along	None	54	N/A	20	None	Continental (1-E)	Fair
15	160 ft. N of Figwood Lane	Uncontrolled Midblock Crossing	Across	Pedestrian	82	716	230	Raised (12)	Ladder	Fair
16	Silver Star Road (SR 438)	Signalized Intersection	Both	Pedestrian	124	780	500	None	Ladder (4)	Good
17	Belco Drive	Signalized Intersection	Both	School	82	787	10	None	Ladder (4)	Good (N/S), Fair (E), Worn (W)
18	375 ft. N of Belco Drive	Uncontrolled Midblock Crossing	Across	Pedestrian	60	917	100	Raised (12)	Ladder	Fair
19	Londonderry Blvd.	Signalized Intersection	Both	School	77	495	230	None	Ladder (3)	Fair
20	136 ft. N of Pines O' The Glen Way	Uncontrolled Midblock Crossing	Across	Pedestrian	62	388	50	Raised (12)	Ladder	Fair
21	Champagne Circle	Stop-Controlled Intersection	Along	None	60	N/A	475	None	Transverse (1-W)	Good
22	Indian Hill Road	Signalized Intersection	Both	School	64	1,338	85	None	Ladder (1-W) Continental (1-N)	Good

23	North Lane	Signalized Intersection	Both	School	73	2,541	10	None	Ladder (1-E) Continental (3-N/W/S)	Good
24	Bonnie Brae Circle	Uncontrolled Midblock Crossing	Across	Pedestrian	67	241	350	Raised (12)	Ladder	Fair
Color represents "Signalized Intersection"										
Color represents "Uncontrolled Midblock Crossing"										

Trails

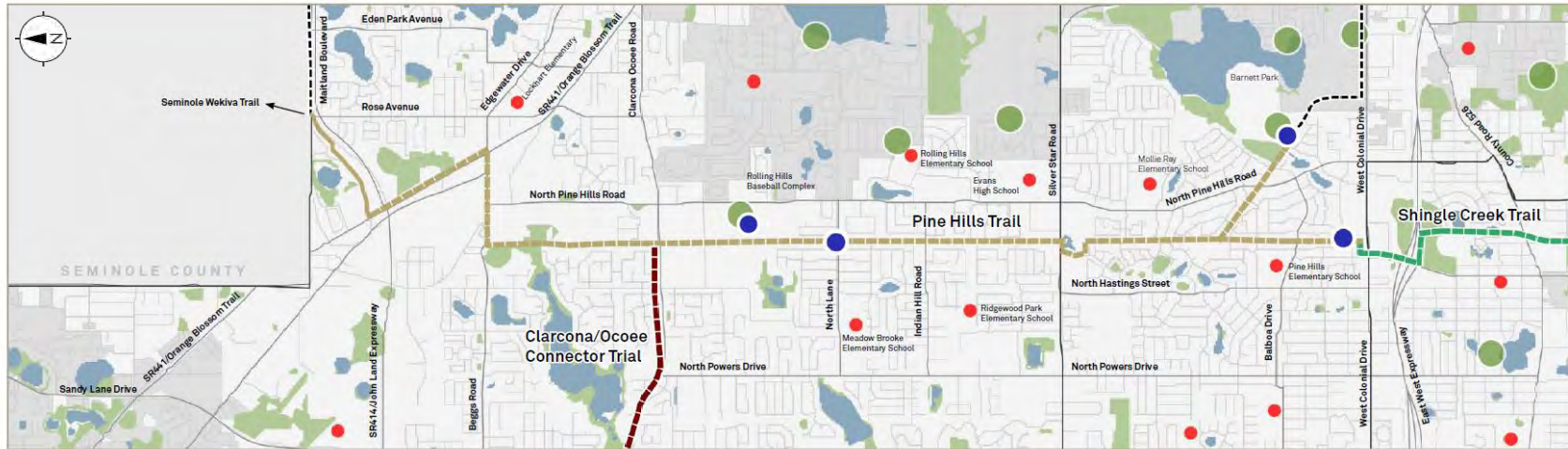
In addition to sidewalks, bicycle lanes, and crosswalks, existing and planned regional trails that cross through the study area were also inventoried. Trails are multi-use paths that are used by runners, bicyclists and other non-motorized users.

As part of the Orange County Trails Master Plan, the Pine Hills Trail was completed west of Pine Hills Road, from Colonial Drive to Silver Star Road (Phase 1), as shown in **Figure 4.5**. The second phase of the Pine Hills Trail will complete the 8.2 miles long trail north of Silver Star Road at a later date. The County is currently considering routing the trail improvements along Pine Hills Road north of Silver Star Road and rebuilding the existing sidewalk to accommodate a multiuse path.

The trail primarily utilizes an existing Duke Energy power-line corridor in its alignment from Colonial Drive (SR 50) for Phase 1. In addition to the connection to the Seminole Wekiva Trail and Seminole County's trail system, the intersection of Clarcona Ocoee Road provides a link west to the West Orange Trail (WOT) and Lake County's trail system.

The Pine Hills Trail spur along Dolores Drive, connecting to Barnett Park, has recently been completed, and includes crosswalk markings along with a new signal.

Figure 4.5: Pine Hills Trail



Source: Orange County Trails Master Plan, page 9 (2012).

4.3.5 Vehicle Gap Size Study

As part of the existing conditions analysis, a vehicle gap size study was conducted to determine the size and the number of gaps in the vehicular traffic stream for pedestrians crossing Pine Hills Road. For pedestrians to utilize mid-block crossings or attempt to cross Pine Hills Road at undesignated locations, a certain vehicle gap size should be available. Vehicle gap studies were conducted at two (2) locations along Pine Hills Road during the AM and PM peak hours.

The gap size study concluded that there were adequate gaps in the traffic stream to accommodate two-stage pedestrian crossings over Pine Hills Road. Under the full pavement width crossing scenario, the number of adequate gaps greater than 14 seconds are reduced, and significantly lower than the pedestrian crossing demand. The 14 seconds represents the minimum time needed to cross the full pavement width of Pine Hills Road. Details of the gap size analysis are included in *Technical Memorandum No. 3—Existing Conditions*.

4.3.6 Signage, Markings, Posted Speed, Traffic Volumes, and School Zones

The pedestrian, bicycle, and school crossing signage along the corridor is illustrated in **Figures 4.6 and 4.7**. There are 15 marked pedestrian crosswalks across Pine Hills Road. A summary of the signage along the corridor includes the following:

- Seven crosswalk legs at mid-block crosswalks
- Twenty-nine crosswalk legs at signalized intersections
- Six crosswalks signed with school crossing signs
- Thirteen crosswalks signed with pedestrian crossing signs

Most of the school and pedestrian crosswalk warning signs (MUTCD Type S1-1 and W11-2, respectively) are supplemented by downward diagonal arrow plaques (MUTCD Type W16-7) and have advance school and pedestrian crosswalk warning signs which are supplemented with “Ahead” (MUTCD Type W-15-9p) plaques. It was noted that the W16-7 signs were missing for the north leg crosswalk at Londonderry Boulevard.

In addition, crosswalks are present at Balboa Drive, Hernandes Drive, Belco Drive (Evans High School access), Londonderry Boulevard, Indian Hill Road, and North Lane to support nearby schools. All of these crossings have advance school pavement markings and school ahead signs. However, there are no designated school zones along Pine Hills Road with reduced speed limits.

Schools that exist along or in the vicinity of Pine Hills Road include:

- Mollie E. Ray Elementary, Hernandes Drive to the east of Pine Hills Road
- Pine Hills Elementary, Balboa Drive to the west of Pine Hills Road
- Rolling Hills Elementary, Donovan Street to the east of Pine Hills Road
- Ridgewood Park Elementary, Pioneer Road to the west of Pine Hills Road
- Meadowbrook Middle School, North Lane to the west of Pine Hills Road
- Maynard Evans High School, Pine Hills Road north of Silver Star Road (SR 438)
- Robinswood Middle School, Vernon Street west of Pine Hills Road
- St. Andrews Catholic School, N. Hastings Street west of Pine Hills Road

Details of the signage along the corridor are included in *Technical Memorandum No. 3—Existing Conditions*.

4.3.7 Spot Speed Study

The posted speed limit is 40 mph for the entire corridor. To analyze existing travel speeds along the corridor, spot speed studies were performed to collect speed data. Spot speed studies were conducted for a 24-hour period at three different locations along the Pine Hills Road corridor: south of Indian Hill Road, and north and south of Balboa Drive. The locations were selected based upon crash history, sections where drivers would not be constrained from speeding, areas prime for pedestrians and bicyclists crossing mid-block, and the lack of an adjacent traffic signal that could result in platooning of vehicles.

The studies were performed utilizing MetroCount tube counters and analyzed using the methods prescribed in the Manual on Uniform Traffic Studies (MUTS) and the FDOT Manual on Speed Zoning for Highways, Roads and Streets. Several statistical measures are used to determine the basis for establishing the regulatory speed limit on a roadway, including the following:

- 85th Percentile Speed: The speed at which 85% of the free-flowing vehicles are traveling along the road.
- 50th Percentile Speed or Mean Speed: The speed at which 50% of the free-flowing vehicles are traveling along the road.
- Pace: A 10-mph range that includes the highest number of vehicles observed. For this study, the pace is 35-45 miles per hour

Generally, the 85th percentile speed and the 10 miles per hour (mph) pace represent the speed range recorded by the highest number of vehicles along the corridor, which can serve as the basis for setting the posted speed limit on a road segment.

The 85th percentile speed data revealed that northbound and southbound traffic travel above the posted speed limit at all of the studied locations. The 50th percentile speed indicates the speed at which 50% of the traffic is traveling at. The pace is the 10-mph range which contains the most vehicles and for this project, has a range of 35 mph and 45 mph. Overall, the speed data indicate that much of the traffic along Pine Hills Road are traveling at or near the posted speed limit.

Table 4.2 contains the details of the spot speed study. Further information of the spot speed study along the corridor are included in *Technical Memorandum No. 3—Existing Conditions*.

Table 4.2: Spot Speed Study

LOC ID	Location (Posted Speed)	Direction	85 th Percentile Speed	50 th Percentile Speed	Pace
65	Pine Hills Rd South of Indian Hills Road (40 mph)	NB	47.12	41.63	35 - 45
		SB	47.46	41.95	35 - 45
		Combined	47.31	41.79	35 - 45
66	Pine Hills Rd South of Balboa Drive Crosswalk (40 mph)	NB	47.3	39.81	35 - 45
		SB	46.95	39.00	35 - 45
		Combined	47.13	39.47	35 - 45
67	Pine Hills Rd North of Balboa Drive Crosswalk (40 mph)	NB	46.61	41.50	35 - 45
		SB	49.77	44.00	40 - 50
		Combined	48.24	42.33	35 - 45

4.3.8 Lighting

Street lighting and pedestrian lighting were evaluated along the corridor. Conventional High Pressure Sodium (HPS) street lighting is present along both sides of Pine Hills Road throughout the project. Lighting at all the signalized intersection crosswalks do not meet FDOT standards. Only four of the northbound stops and seven of the southbound transit stops were found to have sufficient lighting conditions. It should be noted that 27 stops had no lighting. The Accessing Transit Design Handbook for Florida Bus Passenger Facilities states that “when lighting at the stop is not provided by the transit agency at night, local stops without shelter should be located within 30 feet of overhead light source.” Based on this requirement, there are 15 transit stops that exceed 30 feet to the nearest overhead light source.

Details of the lighting study and luminosity measurements are included in *Technical Memorandum No. 3—Existing Conditions*.

4.4 Transit Service and Infrastructure

Transit service in the study is provided by LYNX, which provides transit service to Orange, Seminole, and Osceola counties. The following sections summarize information about LYNX, transit service, ridership and infrastructure along the study corridor.

Overview of LYNX

LYNX's service area covers more than 2,500 square miles extending through Orange, Seminole and Osceola Counties and serving over 1.8 million residents. LYNX also offers shuttle service to special events; commuter assistance with vanpools and carpools; special door-to-door transportation for customers who cannot use the regular bus service; and special fares for students, physically and mentally challenged customers and riders aged 65 and older. Throughout Orange, Seminole, and Osceola counties, there are 4,402 bus stops available from which 3,334 bus stops are located in Orange County. A total number of 1,108 Active Shelters are provided from which 771 shelters are located in Orange County.

4.4.1 Transit Service

There are four LYNX routes that serve Pine Hills Road between Colonial Drive (SR 50) and Bonnie Brae Drive, including Routes 49, 301, 302, and 613. There are other LYNX routes that intersect the study area but do not travel along Pine Hills Road, including Routes 9, 48, 105, 125, and 443. The following is a description of the four LYNX routes serving the study area:

- *Route 49 (Colonial Drive/Pine Hills)* – This route begins at LYNX Central Station, serving the Central Florida Fairgrounds, Pine Hills, Evans High School, Meadowbrook, North Lane, Rolling Hills, Silver Hills Center, and the Department of Children and Families.
- *Route 301 (Pine Hills/Animal Kingdom)* - This route begins at Walt Disney World's Animal Kingdom, serving several Disney hotels and theme parks, and serves Conroy/Vineland, Kirkman Road, Pine Hills Road, and Silver Star Road.
- *Route 302 (Rosemont/Magic Kingdom)* - This route begins at Walt Disney World's Magic Kingdom, serving several Disney hotels and theme parks, and serves Kirkman Road, Ivey Lane, Mercy Drive, Pine Hills Road, and Rosemont.
- *Route 613 (NeighborLink 613 – Pine Hills Neighborhood Link)* - This route is based out of the West Oaks Mall bus transfer area, and provides on-demand service within the Pine Hills area (bordered by the West Oaks Mall, Silver Star Road, Pine Hills Road, and Colonial Drive (SR 50)).

LYNX service in the study area is provided on weekdays, Saturdays, and Sundays/Holidays. The earliest route begins at 4:30 AM and the latest route ends at 12:45 AM. Frequencies vary by route, time of day, and day of the week. There are 33 transit stops along Pine Hills Road to accommodate the LYNX routes servicing the area. The average daily ridership along the corridor is based on the latest four-month service period, from December 2015 to April 2016.

The average distance from an existing LYNX bus stop to a designated pedestrian crossing across Pine Hills Road (at a signalized intersection or mid-block crossing) is 495 feet. The shortest distance between a bus stop and a crossing is 10 feet (Stop #10 located just north of the Belco Drive intersection) and the longest distance between a bus stop and a crossing is 2,300 feet (Stop #6 located south of Ferdinand Drive).

There are four LYNX bus stops that are more than 1,000 feet from a designated pedestrian crossing across Pine Hills Road (Stops #5, #6, #21, and #22) that are all located within the segment of Pine Hills Road between Hernandes Drive and the mid-block crossing 405 feet north of Balboa Drive. The boarding and alighting information is an average daily estimate based on sampled ridership data during the last service period, which occurs three times per year. The LYNX stops are illustrated in **Figure 4.6** and the corridor ridership summary and features for each of the bus stops are listed in **Table 4.3**.

4.4.2 Transit Stop Infrastructure

A review was performed using current aerial footage and LYNX data to assess the bus stop infrastructure within the study area. Amenities for existing transit stops may include availability of landing pad, shelter, seating, and lighting.

Out of the 33 LYNX bus stops within the study area, only five stops have landing pads (15 percent), which provide a connection from the sidewalk to bus doors. Over half of the LYNX bus stops within the study area have seating (58 percent) and over half have lighting (52 percent).

There is only one stop, which has a landing pad, shelter, seating, and lighting. There are five stops that do not have any of the above infrastructure elements, and merely consist of a sign. Transit stop infrastructure data at the LYNX bus stops along the corridor are summarized and displayed in **Figure 4.6**.

Figure 4.6: Existing Bus Routes and Stops

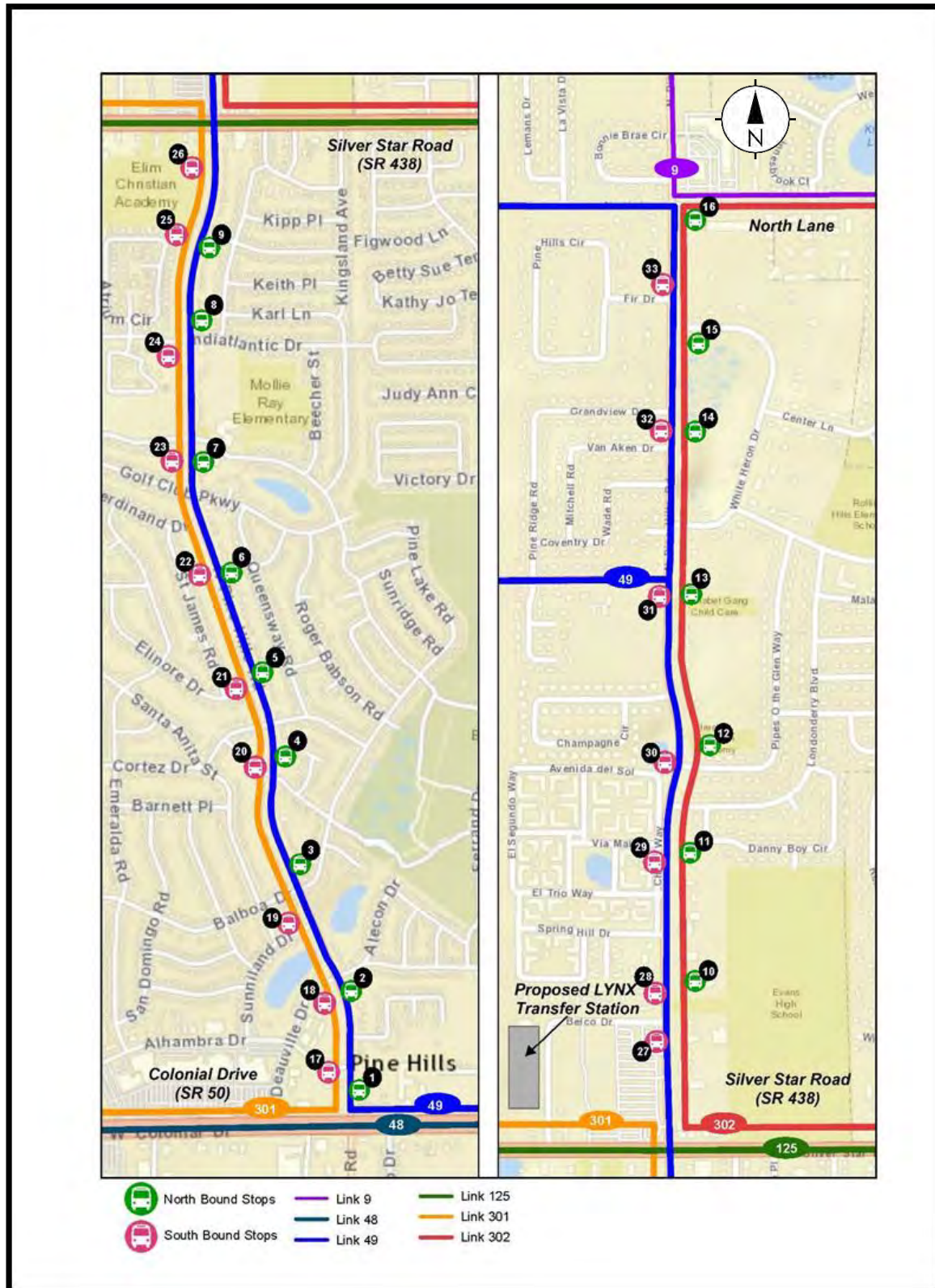
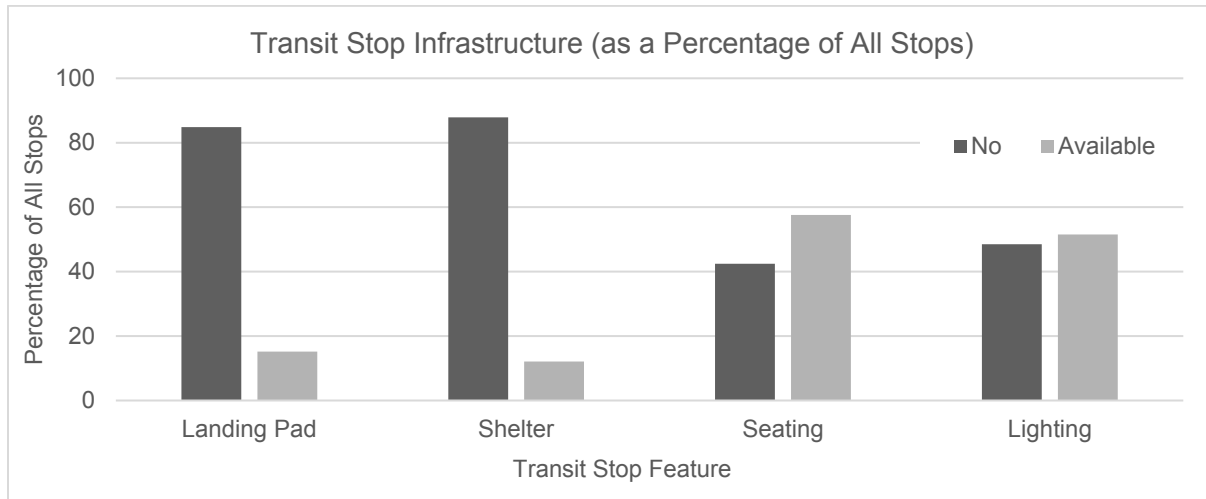


Table 4.3: LYNX Existing Bus Stop Ridership Summary

No. ²	Location	LYNX Bus Stop ID	Avg. Daily On	Avg. Daily Off	Total	Routes	Shelter
Northbound Direction							
1	N of Colonial Drive	2065	81	51	132	49, 301	No
2	S of Deauville Drive	2066	7	10	17	49, 301	No
3	N of Balboa Drive	2758	6	14	20	49, 301	No
4	N of Dolores Drive	2759	12	37	49	49, 301	No
5	N of Elinore Drive	2760	0	0	0	49, 301	No
6	S of Ferdinand Drive	2761	1	7	8	49, 301	No
7	S of Hernandez Drive	2762	8	36	44	49, 301	No
8	N of Indialantic Drive	2763	2	29	31	49, 301	No
9	S of Figwood Lane	2764	6	86	92	49, 301	No
10	N of Belco Drive	2081	46	64	110	49, 302	No
11	S of Via Maior	2082	4	24	28	49, 302	No
12	N of Pipes O the Glen Way	2083	4	17	21	49, 302	No
13	S of Indian Hill Road	2765	0	0	0	49, 302	No
14	N of Van Aken Drive	2766	0	1	1	302	No
15	S of White Heron Drive	2767	0	0	0	302	No
16	S of North Lane	2768	0	2	2	302	Available
Southbound Direction							
17	N of Alhambra Drive	2113	7	61	68	49, 301	No
18	S of Deauville Drive	2112	7	6	13	49, 301	Available
19	N of Sunniland Drive	2111	14	7	21	49, 301	No
20	S of Dolores Drive	2920	29	9	38	49, 301	Available
21	N of Elinore Drive	6014	21	5	26	49, 301	No
22	S of Ferdinand Drive	2110	4	3	7	49, 301	No
23	S of Hernandez Drive	2109	44	11	55	49, 301	No
24	S of Indialantic Drive	2108	37	4	41	49, 301	No
25	S of Figwood Lane	2107	10	1	11	49, 301	No
26	S of Lupez Drive	2106	84	6	90	49, 301	No
27	S of Belco Drive	2105	49	14	63	49, 302	No
28	N of Belco Drive	9166	16	19	35	49, 302	Available
29	N of El Trio Way	2103	10	1	11	49, 302	No
30	S of Pipes O the Glen Way	2102	5	3	8	49, 302	No
31	S of Indian Hill Road	2101	18	2	20	49, 302	No
32	N of Van Aken Drive	2100	14	4	19	49, 302	No
33	N of Fir Drive	2099	13	3	16	49, 302	No

² Refer to stop locations on Figure 4.6.

Table 4.4: Transit Stop Infrastructure



4.5 Safety and Crash Analysis

A historical crash review was performed for the corridor to identify the pedestrian and bicycle crash patterns and hotspots within the corridor. To identify crash patterns along the corridor, crash data was obtained from the Orange County Traffic Engineering Division for crashes that involved only pedestrians or bicycles for the previous three years (January 1, 2014 to December 31, 2016) within 150 feet of the Pine Hills Road centerline. Two additional fatal pedestrian crashes that occurred in 2017 are included in the analysis. The inclusion of the two 2017 fatalities tends to show a higher percentage of fatalities and pedestrian crashes than if only 2014-2016 were analyzed.

Crash diagrams indicating the locations of crashes are shown in **Figure 4.7** (along with the 2017 fatalities).

4.5.1 Sight Line Analysis

In addition to crash diagrams, the crash data compiled for driveways and intersections within the Pine Hills Road study limits were reviewed to identify high crash pedestrian locations. Based on the crash data reviewed, a threshold of at least two or more crashes occurring within a given area were considered to be a high crash location. At these locations, the visibility of pedestrians and bicycles was evaluated from the perspective of motorists being able to detect pedestrian or bicycle activities. The locations were examined for potential sight-line obstructions and the results are shown of this assessment are shown in **Appendix F**.

Figure 4.7: Past Crash Locations and Types

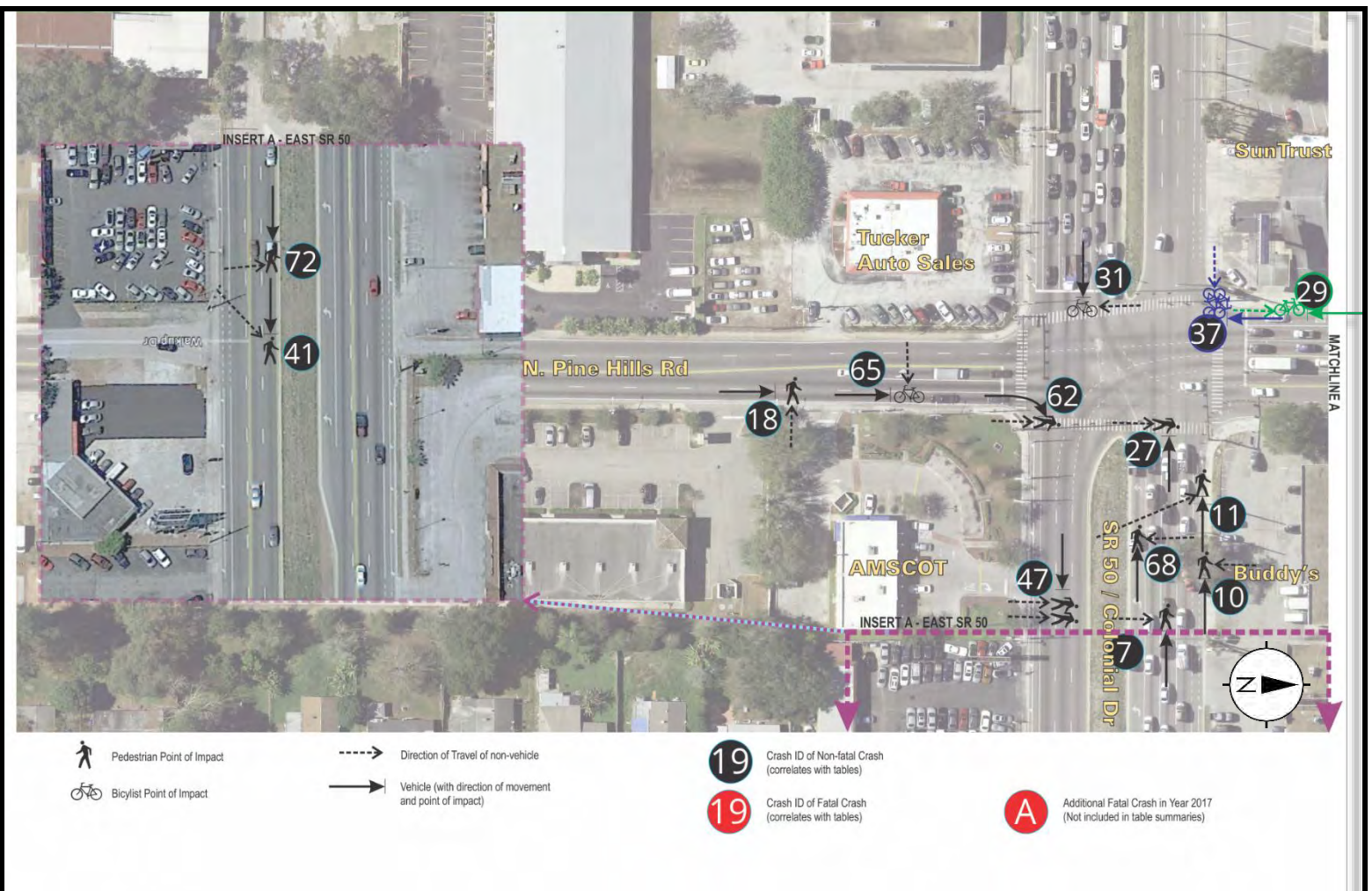


Figure 4.7 (continued) : Past Crash Locations and Types



Figure 4.7 (continued) : Past Crash Locations and Types

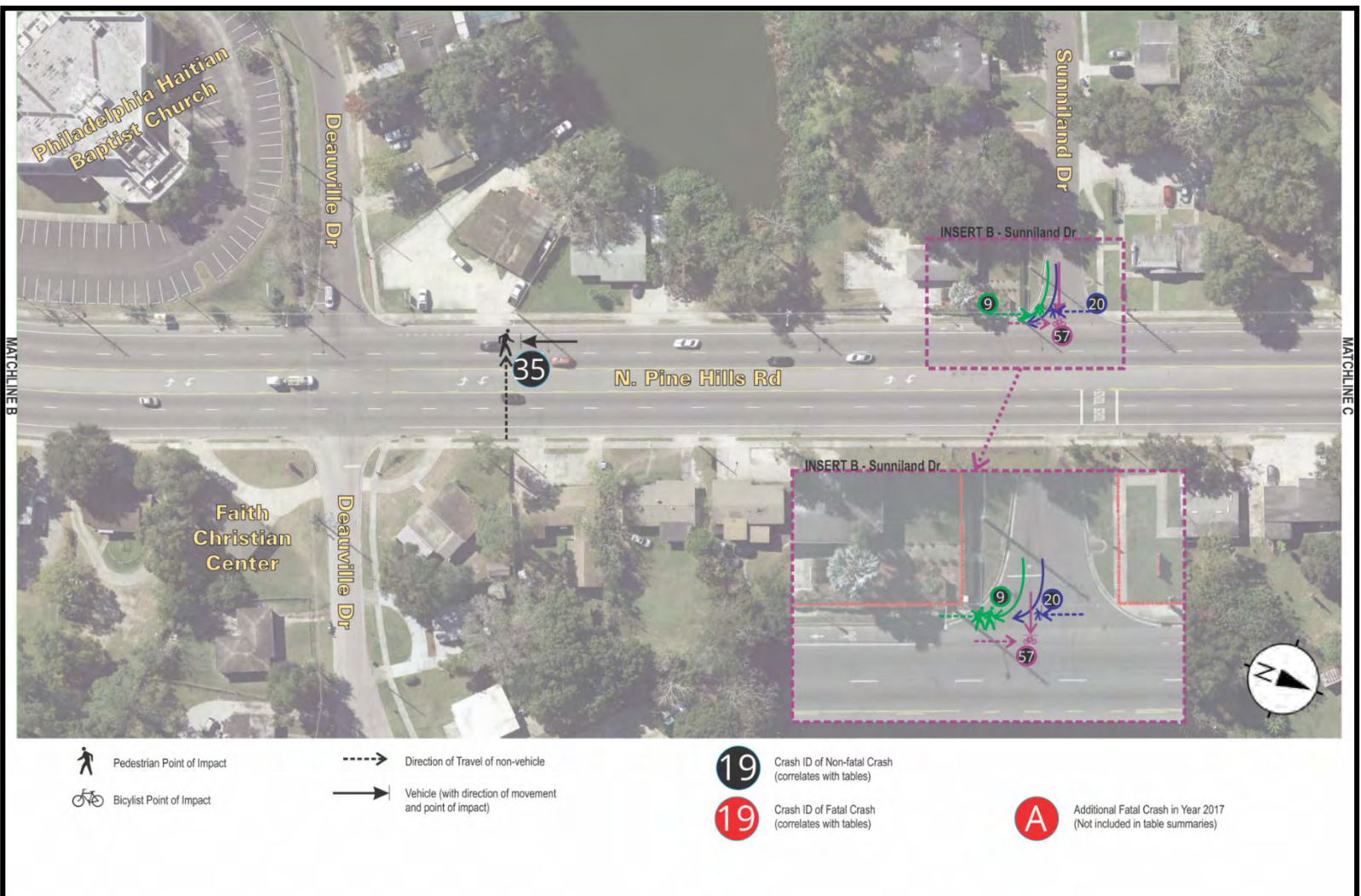


Figure 4.7 (continued): Past Crash Locations and Types



Figure 4.7 (continued): Past Crash Locations and Types



Figure 4.7 (continued): Past Crash Locations and Types



Figure 4.7 (continued) : Past Crash Locations and Types



Figure 4.7 (continued) : Past Crash Locations and Types

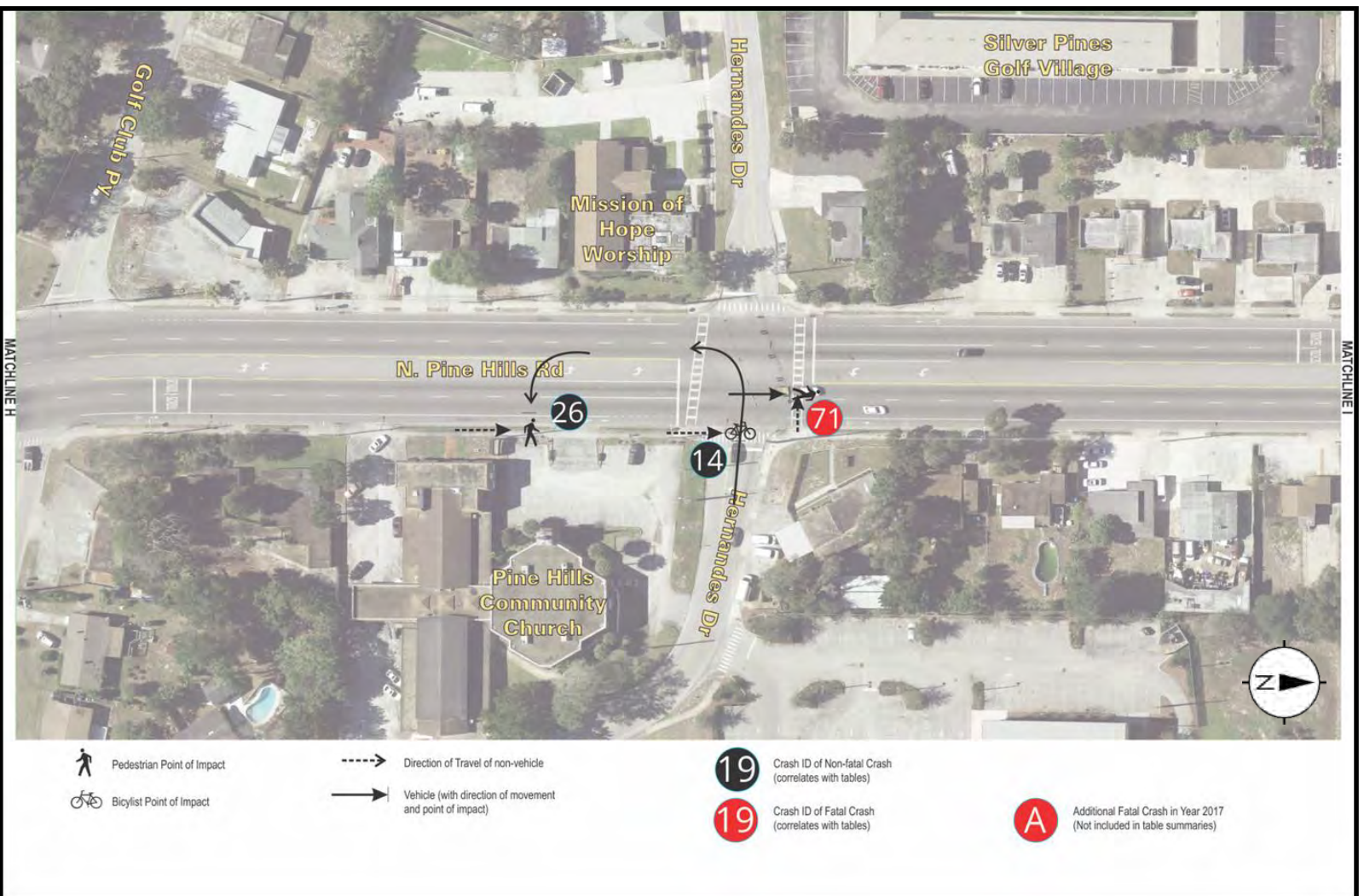


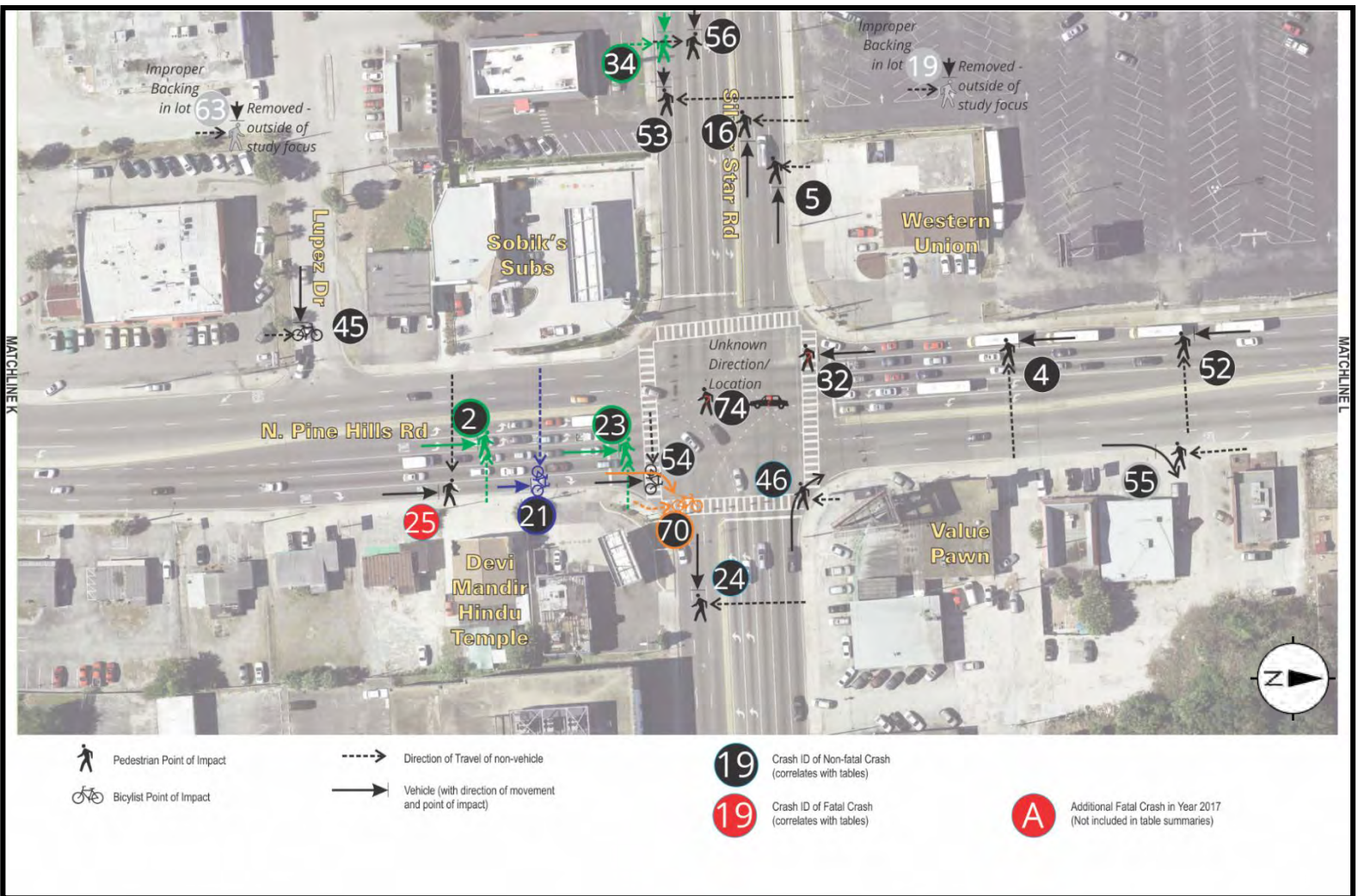
Figure 4.7 (continued) : Past Crash Locations and Types



Figure 4.7 (continued) : Past Crash Locations and Types



Figure 4.7 (continued) : Past Crash Locations and Types



Winn Dixie

Citgo

Belco Dr

All Nation Church of God of Prophecy

Kwik Stop

N. Pine Hills Rd

BB&T Bank

Evans High School

Endeavor Academy

Crash ID of Non-fatal Crash (correlates with tables)

Crash ID of Fatal Crash (correlates with tables)

Additional Fatal Crash in Year 2017 (Not included in table summaries)

Legend:

- Pedestrian Point of Impact
- Bicyclist Point of Impact
- Direction of Travel of non-vehicle
- Vehicle (with direction of movement and point of impact)

Figure 4.7 (continued): Past Crash Locations and Types



Figure 4.7 (continued) : Past Crash Locations and Types



Figure 4.7 (continued): Past Crash Locations and Types



Figure 4.7 (continued): Past Crash Locations and Types



Figure 4.7 (continued) : Past Crash Locations and Types



Figure 4.7 (continued): Past Crash Locations and Types



4.5.2 Crash Summary

Based on the crash data from January 2014 to December 2016, a total of 73 pedestrian and bicycle crashes were recorded within the corridor from 2014-2016 and early 2017 which reflected less than 5% of the total 1,462 crashes. Per the police reports, 59 crashes (81 percent) resulted in some type of injury, and seven crashes (10 percent) resulted in a fatality. Based on the pavement conditions mentioned in the police reports, a total of 33 crashes (45 percent) occurred during dusk or night conditions. More details on crashes by year and condition as well as bicycle and pedestrian crashes by signalized intersection and roadway segment within the corridor, including the distribution of crashes along the corridor (crashes by location) are included in *Technical Memorandum No. 3—Existing Conditions*.

4.6 Existing Travel Demand Characteristics

This chapter summarizes existing travel demand characteristics along the Pine Hills Road corridor, using daily and hourly traffic volume data for vehicular traffic, bicycle traffic, and pedestrian traffic.

4.6.1 Existing Travel Volumes

Weekday daily and hourly traffic volumes along the corridor were collected by LTEC and supplemented from Florida Transportation Information (FTI). These counts included the following:

- 6-hour turning movement counts from 7:00 – 9:00 AM, 11:00 – 1:00 PM and 4:00 – 6:00 PM; at 22 intersections (Type A)
- 8-hour turning movement counts from 7:00 – 9:00 AM, 11:00 – 1:00 PM and 2:00 – 6:00 PM; at 7 intersections (Type B)
- AM and PM Major driveway counts at 6 locations from 7:00 – 9:00 AM and 4:00 – 6:00 (Type C)
- 72-hour bidirectional volume counts (12 locations) (Type D)
- 24-hour classification counts (2 locations) (Type E)
- Mid-block crossing pedestrian and bicycle counts at 11 locations over three days for 4 hours from 7:00 – 9:00 AM and 4:00 – 6:00 (Type F)
- 72-hour speed counts (3 locations) (Type G)
- Gap Studies (Type H)

The counts were collected in January and February, 2017. **Table 4.5** contains a detailed list of each count location containing a 72-hour traffic volume count. The peak-hour counts illustrated in **Figure 4.8** represent the highest hour of each of the peak study periods, AM (7:00-9:00), Mid-Day (11:00-1:00 PM), School (2:00-4:00 PM, signalized intersections only) and PM (4:00-6:00 PM).

Based on the 72-hour volume counts, the annual average daily traffic (AADT) along the Pine Hills Road corridor ranges from a low of 25,060 daily trips south of Deauville Drive to a high of 34,733 daily trips south of Silver Star Road (SR 438). North of Silver Star Road, AADT volumes range from 29,606 to 32,671 daily trips. The percentage of truck volumes along the corridor range from a low of approximately 7.2 percent of the AADT north of Balboa Drive to a high of approximately 8.2 percent of AADT north of Belco Drive.

Table 4.5: 72-Hour Traffic Volume Counts

Roadway/ Segment ID	Roadway/ Segment	Traffic Count Date	Measured Characteristics							Seasonal Factor	Adjusted AADT
			ADT	Peak Hour Total	NB/EB Volume	SB/WB Volume	Peak Time	"K"	"D"		
36	Pine Hills Rd: South of Deauville Dr	1/17/17-1/19/17	24,213	1,913	1,328	586	4:45-5:45 PM	0.079	0.694	1.035	25,060
37	Pine Hills Rd: South of Silver Star Rd	1/17/17-1/19/17	33,558	2,648	1,556	1,093	5:00-6:00 PM	0.079	0.588		34,733
38	Pine Hills Rd: South of Indian Hill Rd	1/17/17-1/19/17	31,566	2,401	1,305	1,095	5:00-6:00 PM	0.076	0.544		32,671
39	Pine Hills Rd: South of North Ln	3/7/17-3/9/17	28,605	2,101	1,187	914	5:00-6:00 PM	0.073	0.565		29,606
40	Balboa Dr: West of Pine Hills Rd	1/17/17-1/19/17	4,652	448	191	258	5:15-6:15 PM	0.096	0.576		4,815
41	Dolores Dr: East of Pine Hills Rd	1/17/17-1/19/17	315	22	11	12	5:00-6:00 PM	0.069	0.569		326
42	Hernandes Dr: East of Pine Hills Rd	1/17/17-1/19/17	2,055	214	107	109	6:00-7:00 PM	0.104	0.509		2,127
43	Hernandes Dr: West of Pine Hills Rd	1/17/17-1/19/17	1,247	138	56	83	5:15-6:15 PM	0.111	0.601		1,291
44	Silver Star Rd: East of Pine Hills Rd	1/17/17-1/19/17	46,177	4,140	2,999	1,142	5:00-6:00 PM	0.090	0.724		47,793
45	Silver Star Rd: West of Pine Hills Rd	1/17/17-1/19/17	38,841	2,869	1,791	1,078	5:00-6:00 PM	0.074	0.624		40,200
46	Belco Dr: West of Pine Hills Rd	1/17/17-1/19/17	2,329	241	112	128	7:00-8:00 AM	0.103	0.531		2,411
47	Evan HS: East of Pine Hills Rd	1/17/17-1/19/17	111	8	5	3	7:00-8:00 AM	0.072	0.667		115
48	Londonderry Blvd: East of Pine Hills Rd	1/17/17-1/19/17	3,999	326	144	183	3:15-4:15 PM	0.082	0.561		4,139
49	Indian Hill Rd: West of Pine Hills Rd	1/17/17-1/19/17	6,734	555	237	318	5:15-6:15 PM	0.082	0.573		6,970
50	North Ln: East of Pine Hills Rd	1/17/17-1/19/17	10,145	839	397	440	5:30-6:30 PM	0.083	0.524		10,500
51	North Ln: West of Pine Hills Rd	1/17/17-1/19/17	7,703	616	310	308	5:00-6:00 PM	0.080	0.503		7,973

Figure 4.8: Turning Movement Counts

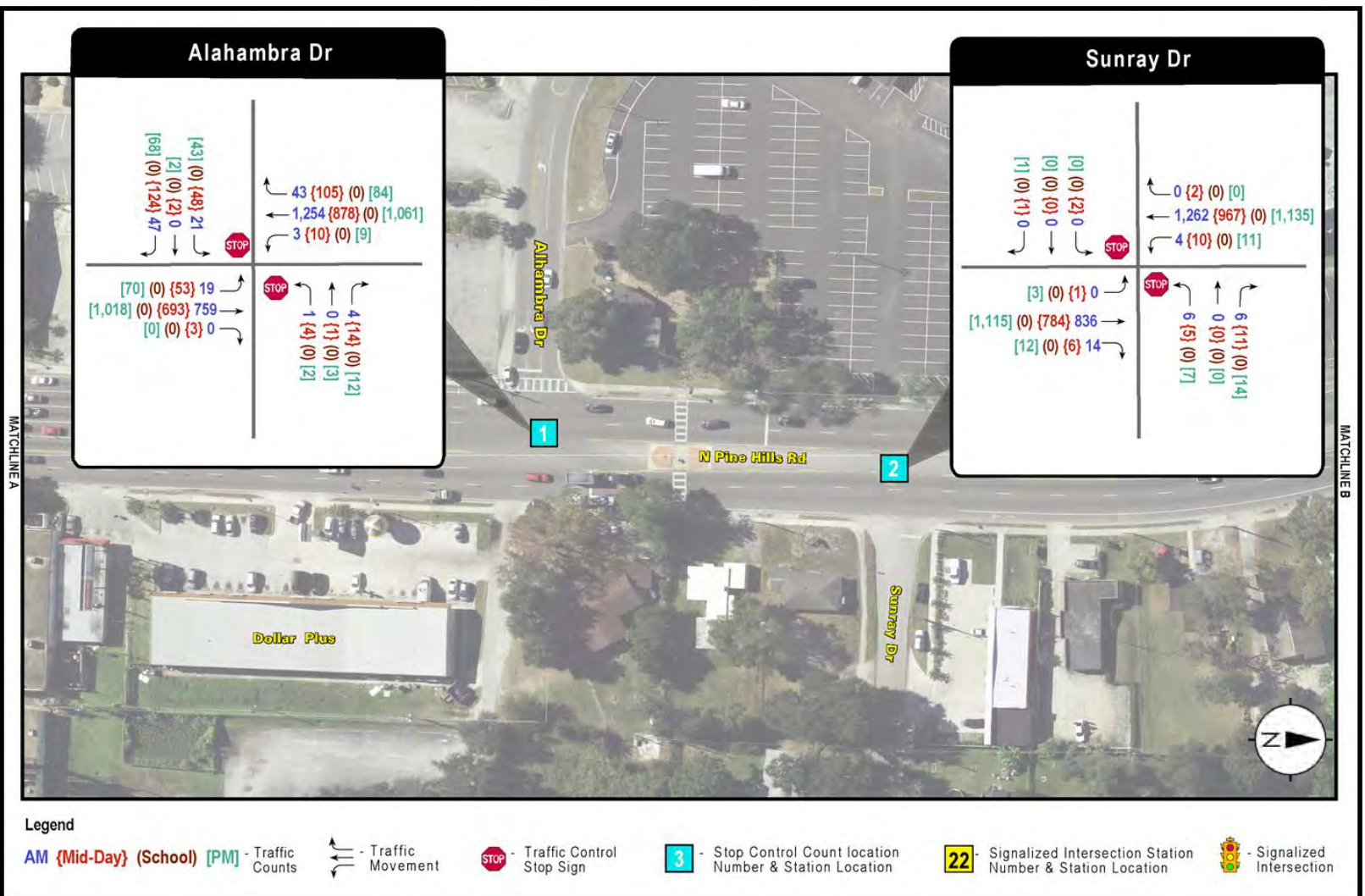


Figure 4.8 (continued): Turning Movement Counts

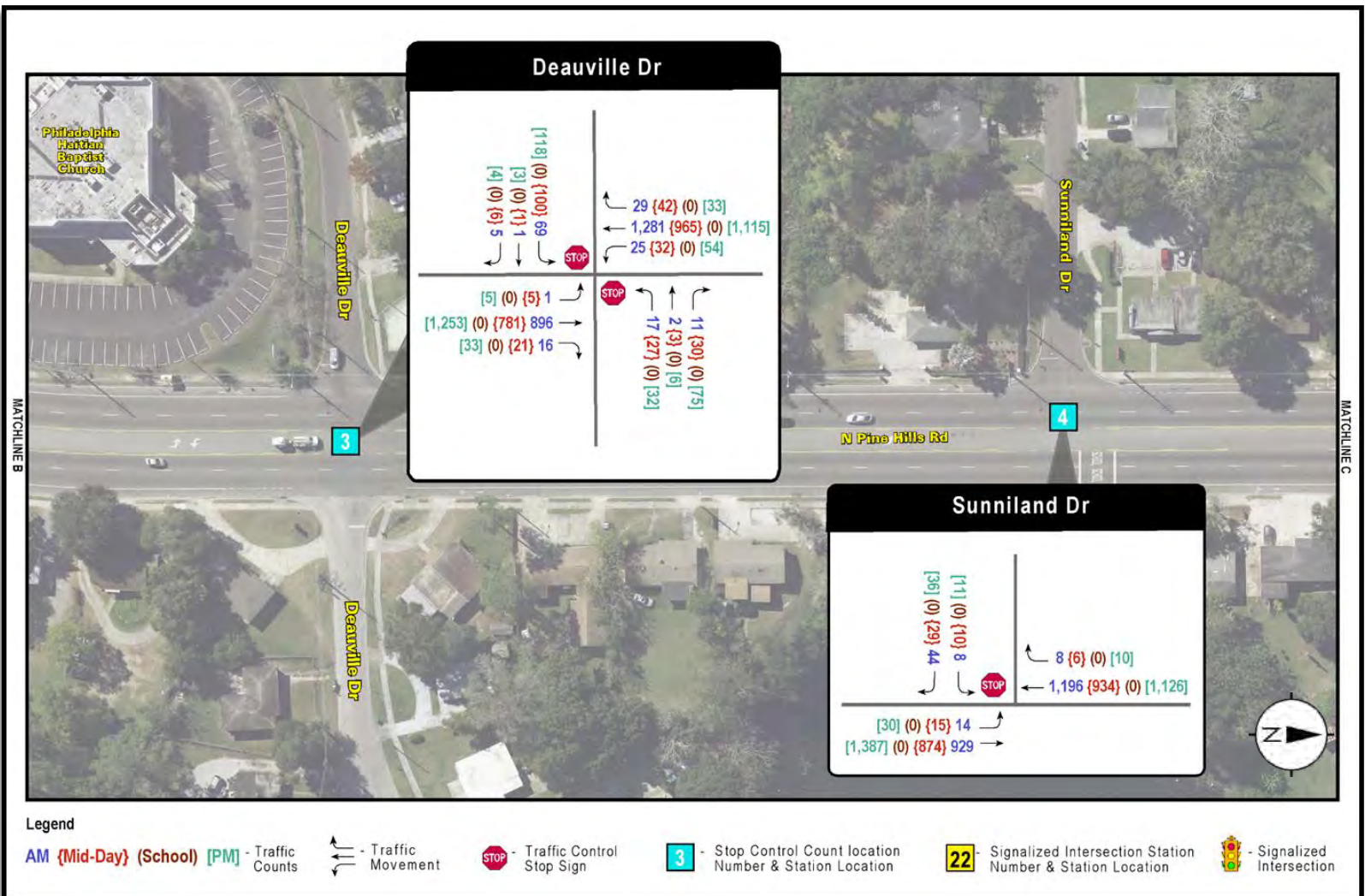


Figure 4.8 (continued): Turning Movement Counts

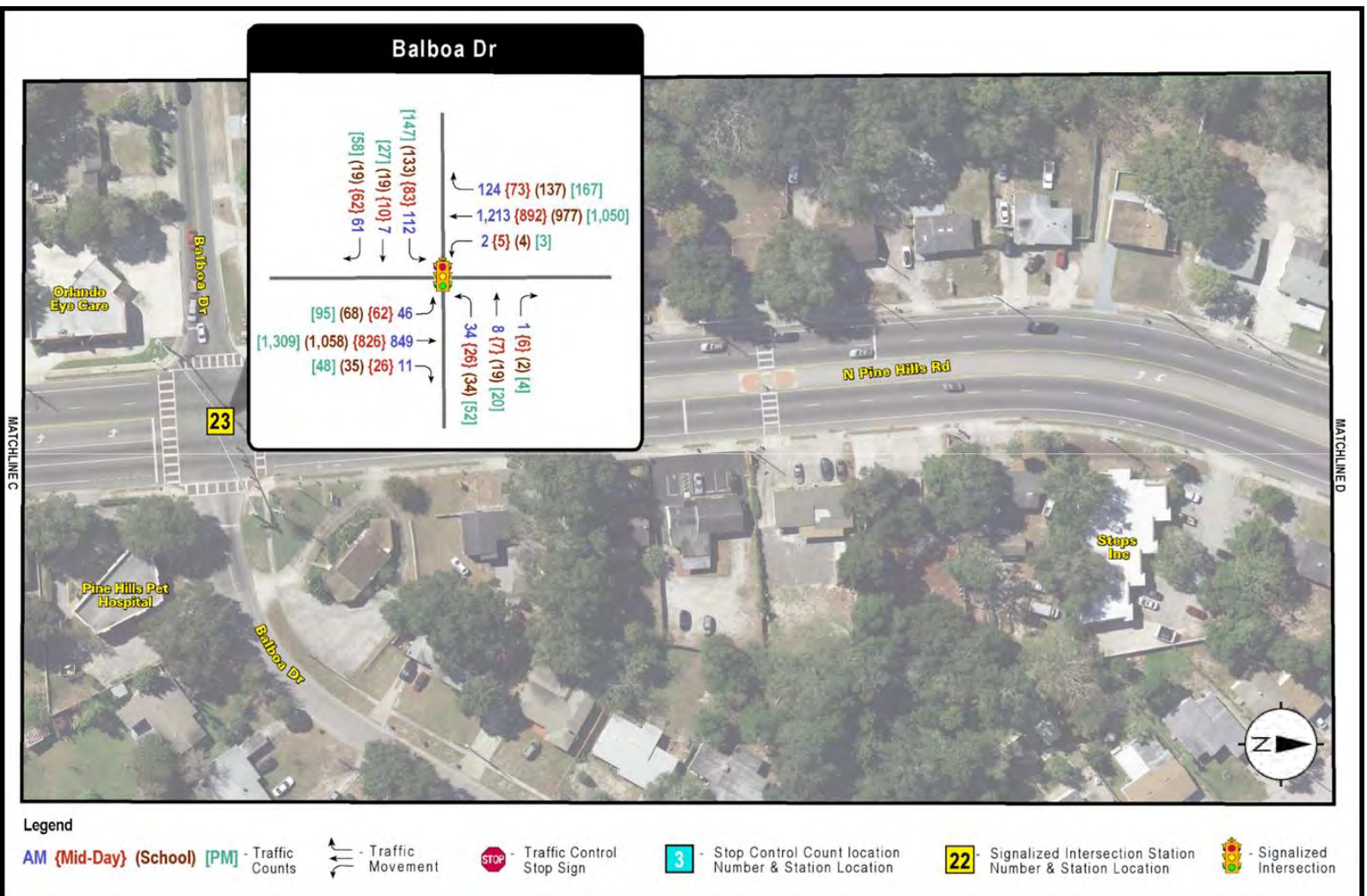


Figure 4.8 (continued): Turning Movement Counts

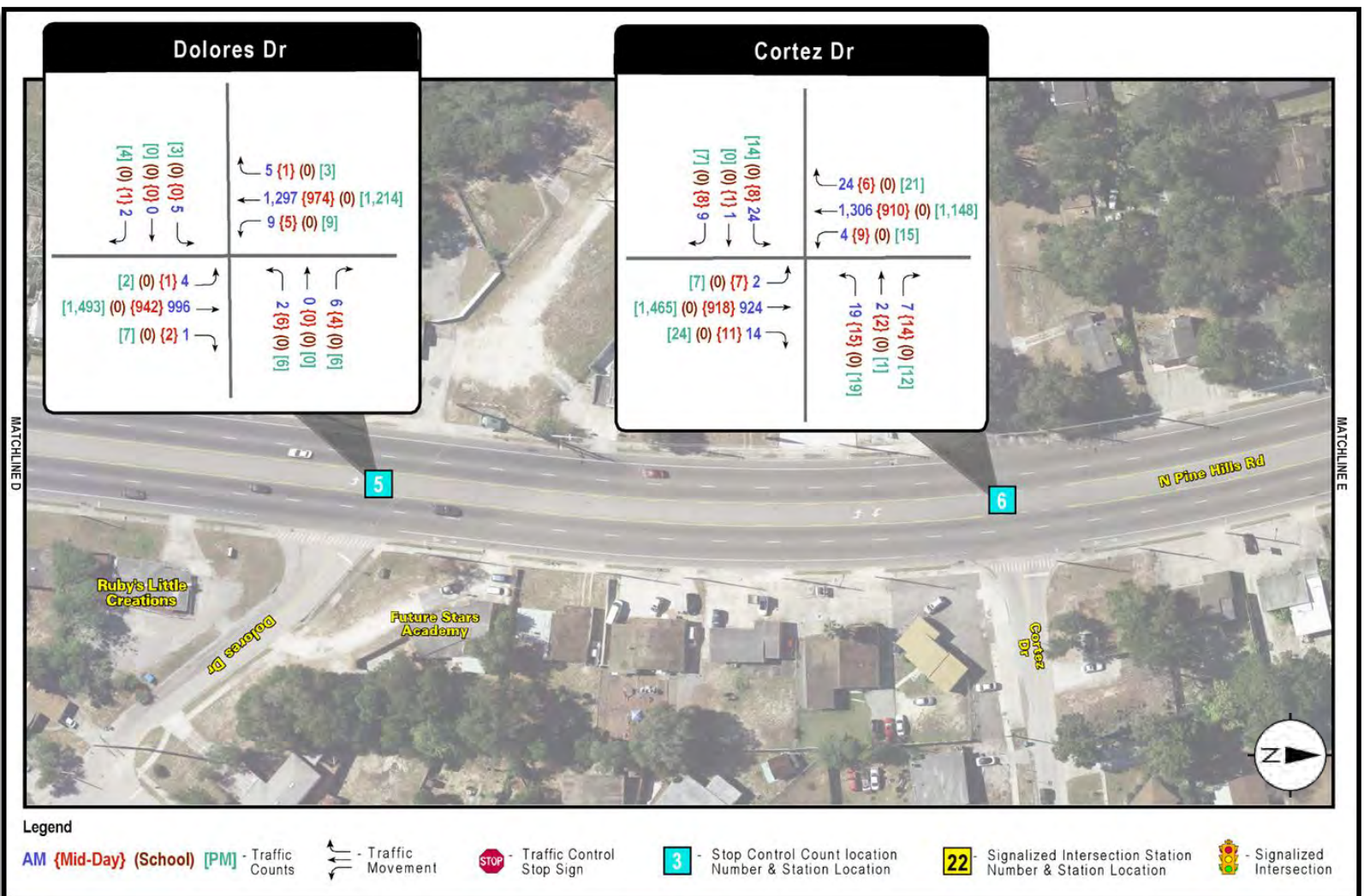


Figure 4.8 (continued): Turning Movement Counts



Figure 4.8 (continued): Turning Movement Counts



Figure 4.8 (continued): Turning Movement Counts

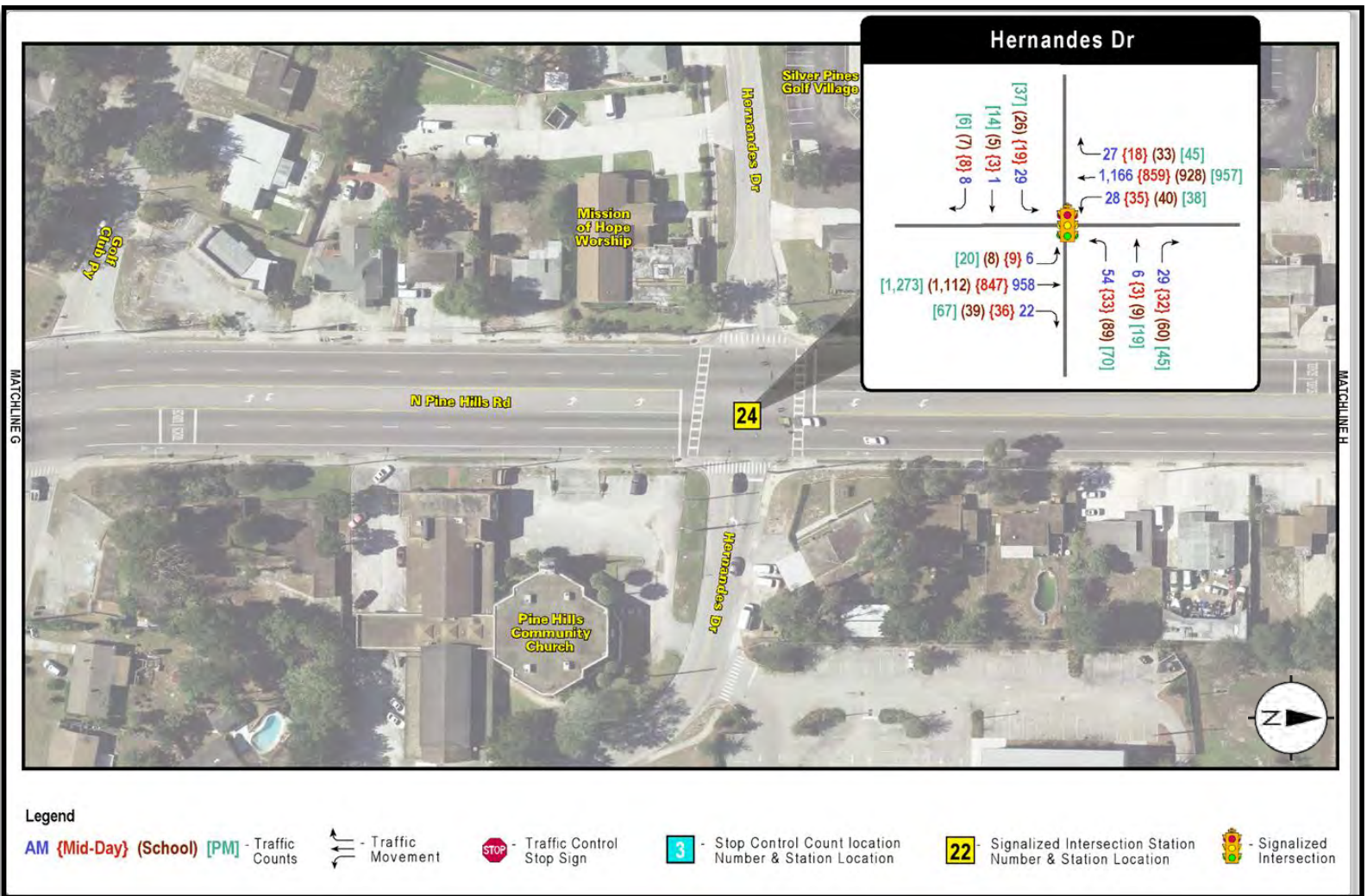


Figure 4.8 (continued): Turning Movement Counts

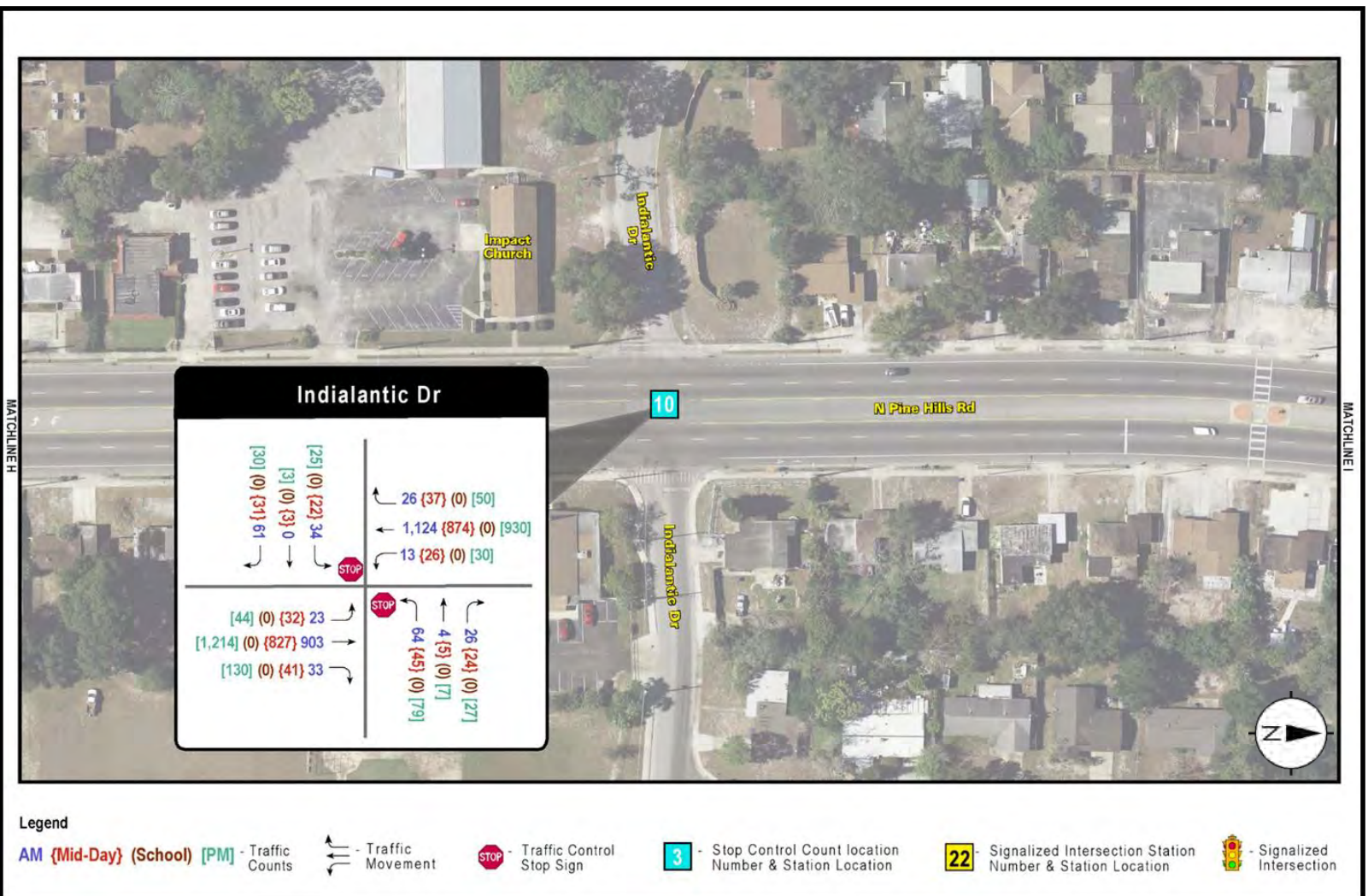


Figure 4.8 (continued): Turning Movement Counts

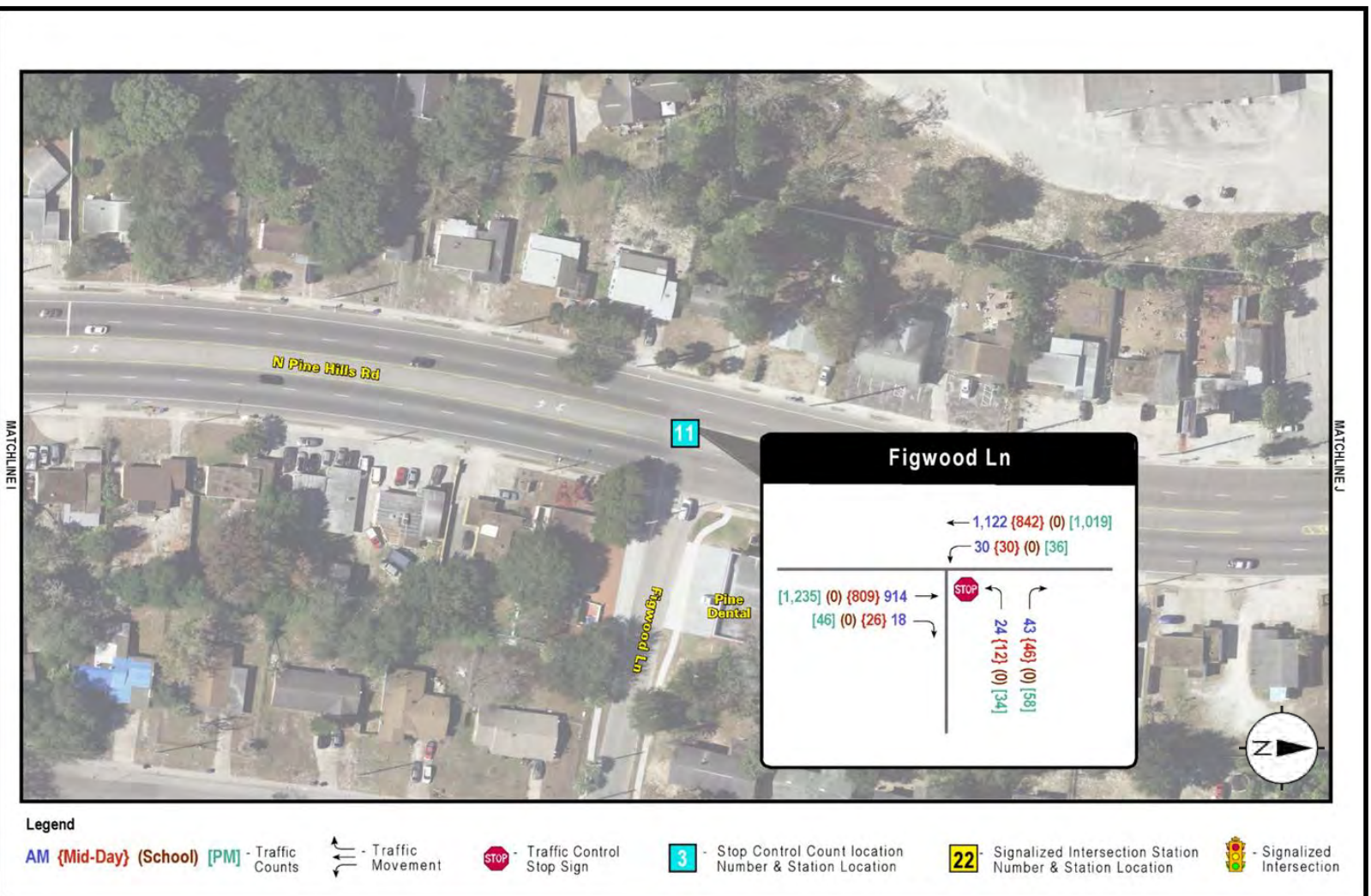


Figure 4.8 (continued): Turning Movement Counts

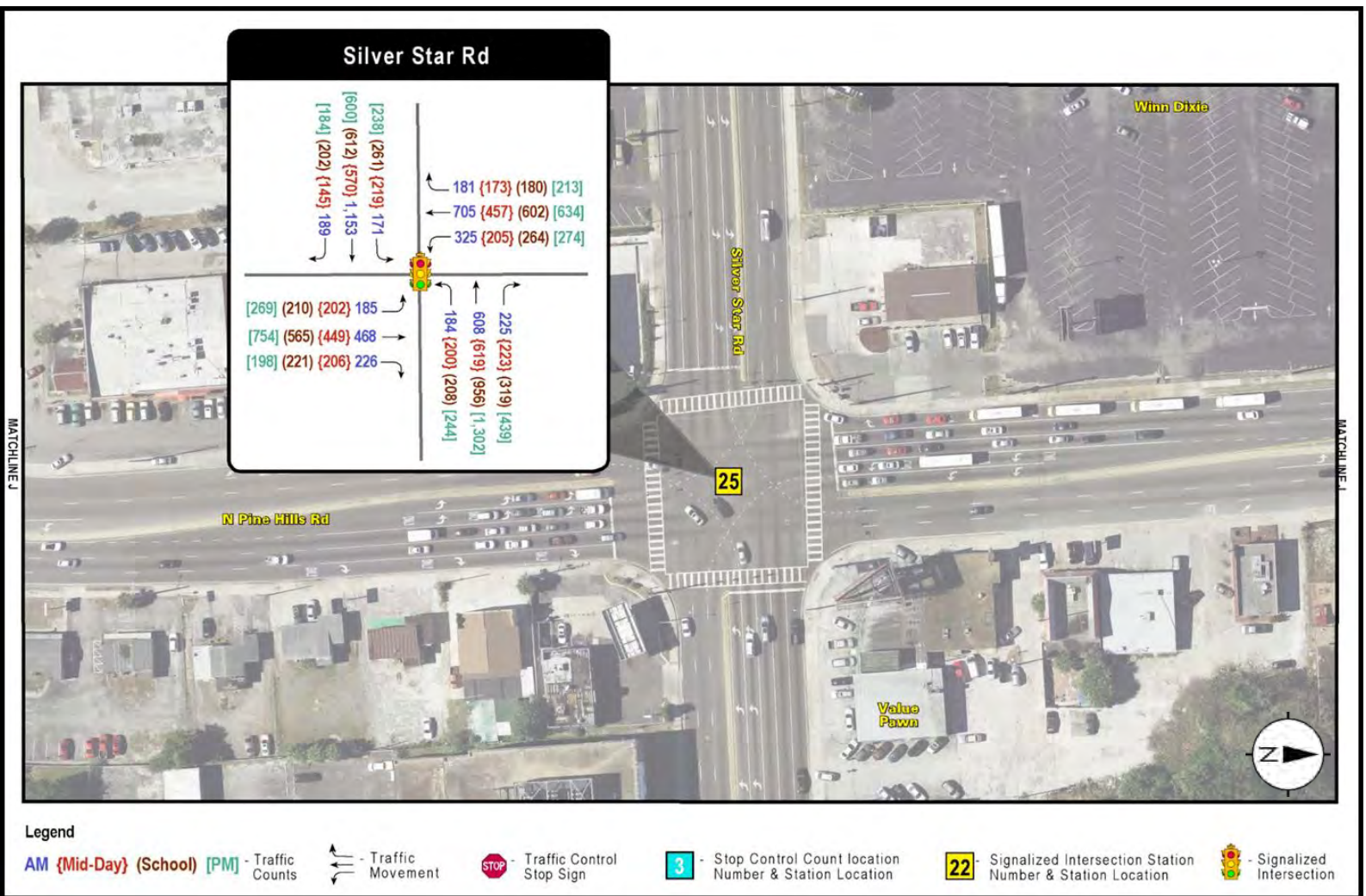


Figure 4.8 (continued): Turning Movement Counts

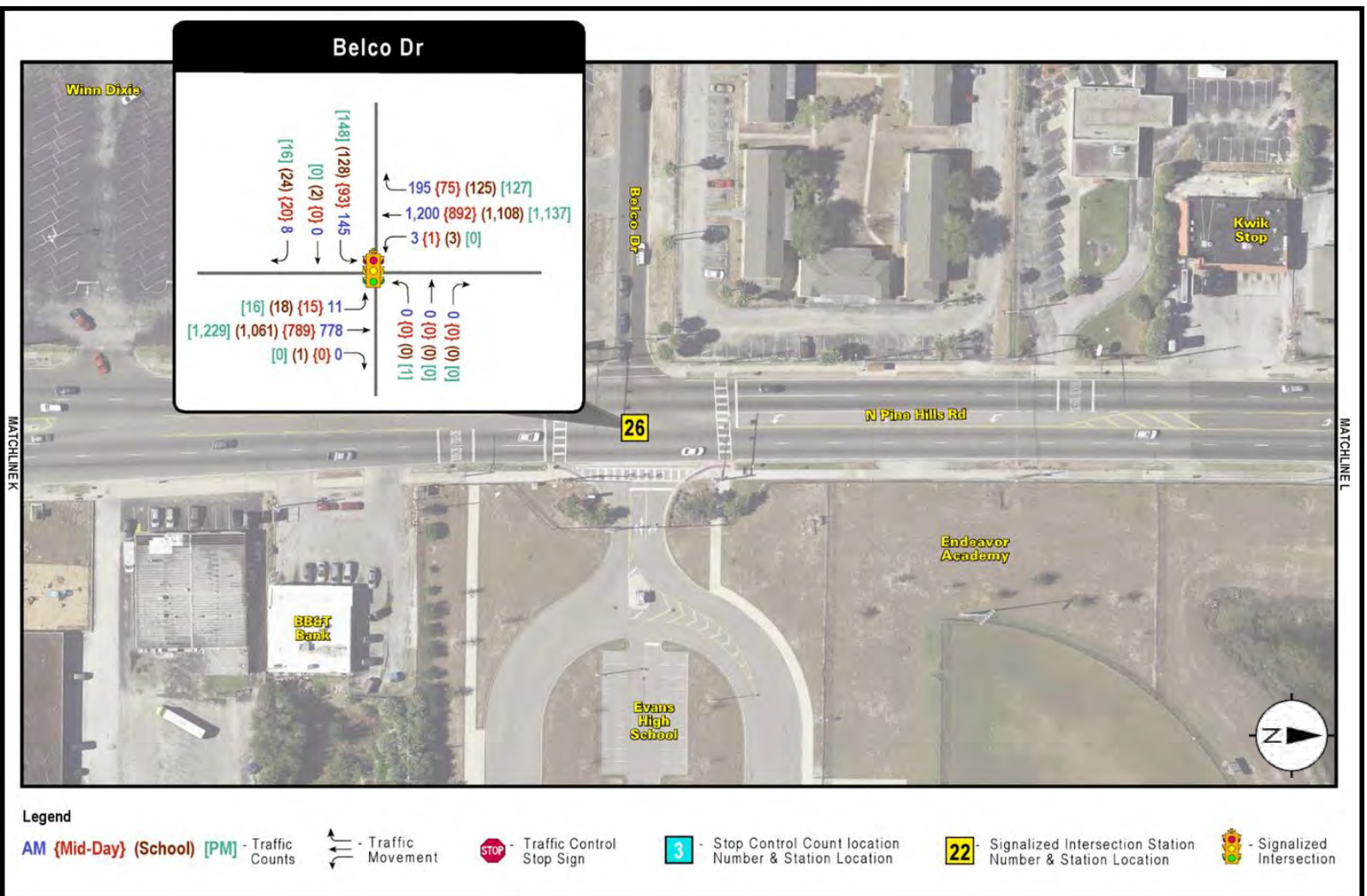


Figure 4.8 (continued): Turning Movement Counts

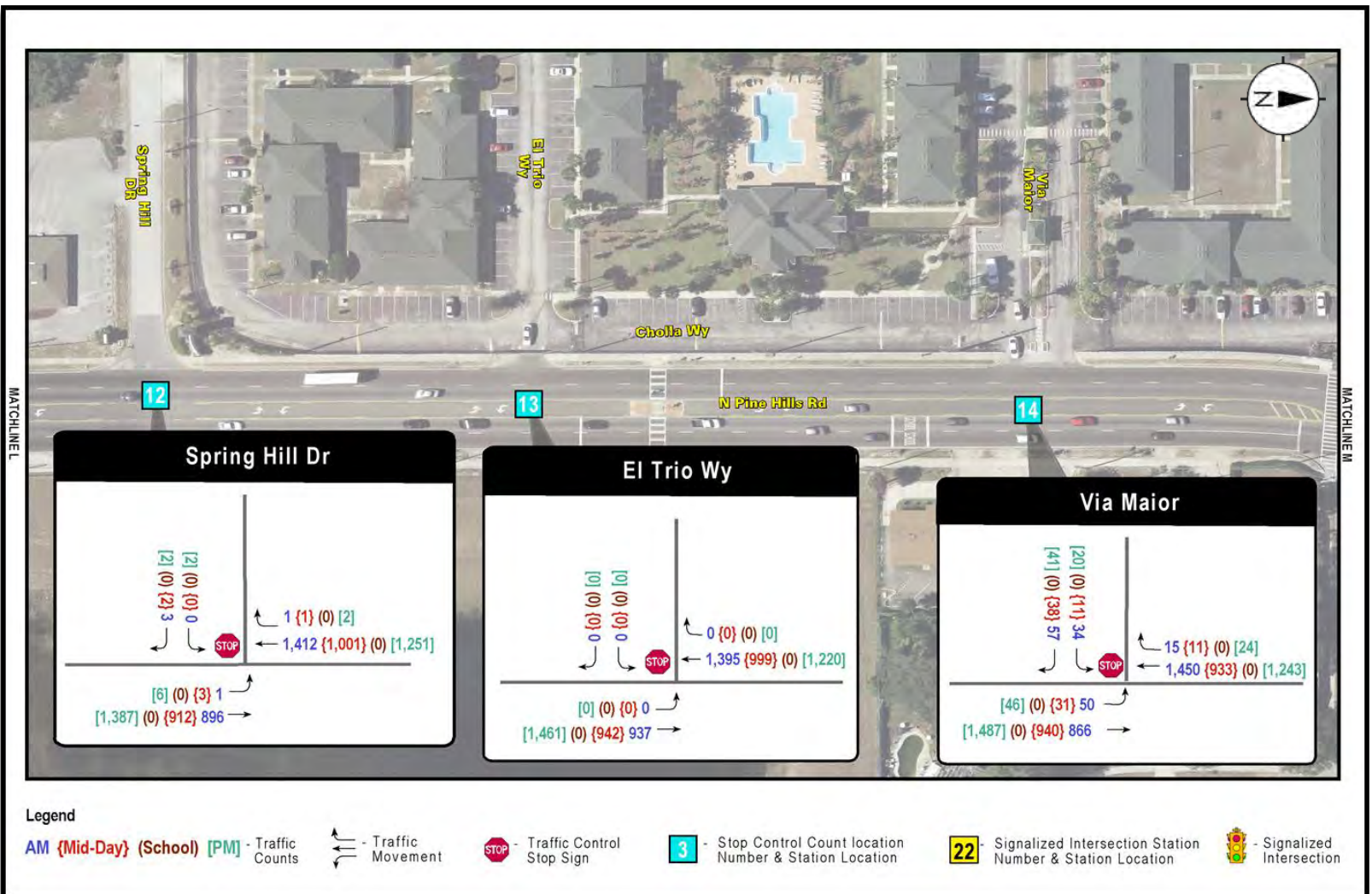
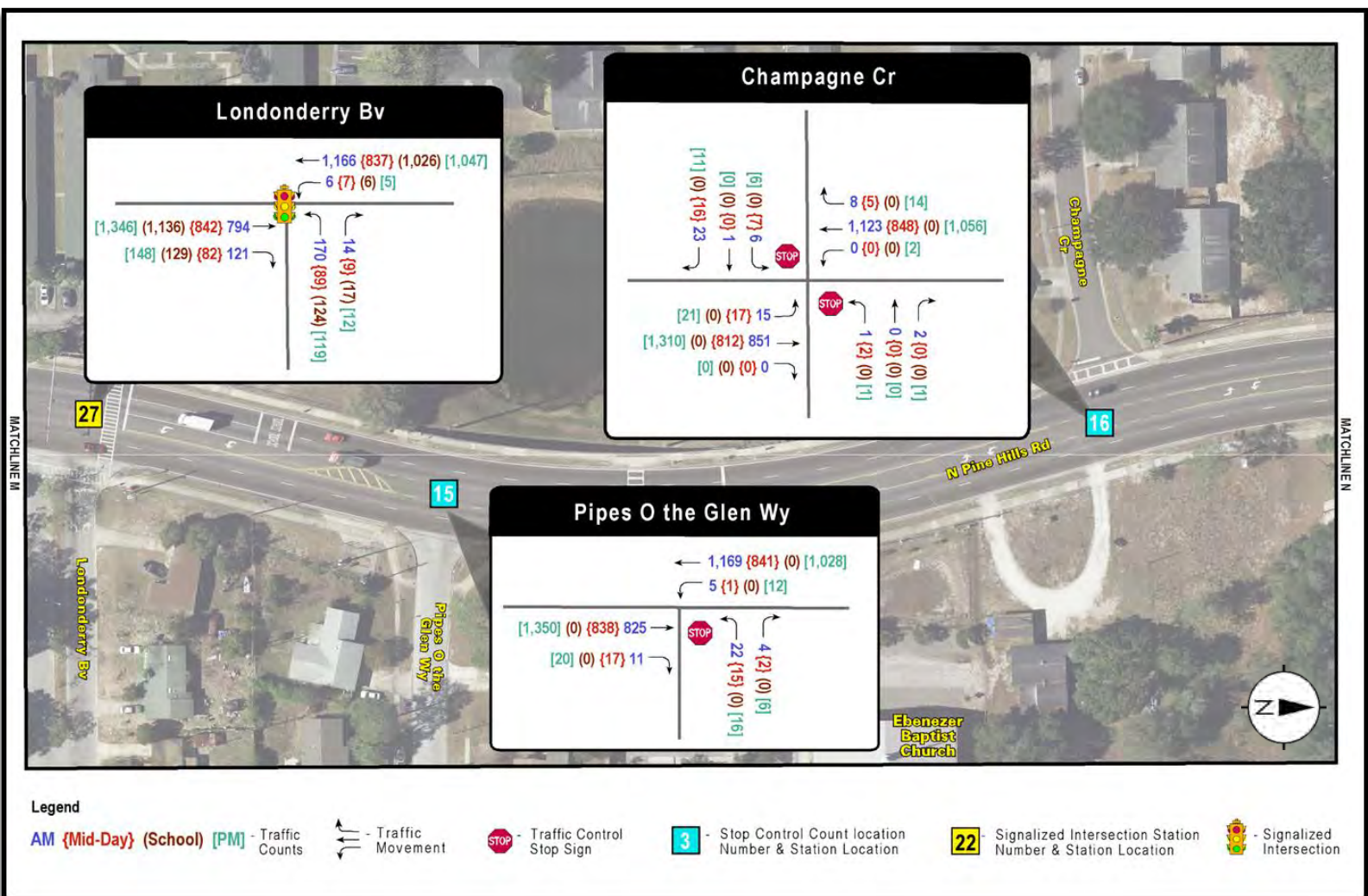


Figure 4.8 (continued): Turning Movement Counts



Indian Hill Rd

N Pine Hills Rd

28

Reserve at Indian Hill

Alphabet Gang Child Care

Legend

- AM {Mid-Day} (School) [PM] - Traffic Counts
- Arrows - Traffic Movement
- STOP - Traffic Control Stop Sign
- 3 - Stop Control Count location Number & Station Location
- 22 - Signalized Intersection Station Number & Station Location
- Traffic Light Icon - Signalized Intersection

Indian Hill Rd

N Pine Hills Rd

28

Reserve at Indian Hill

Alphabet Gang Child Care

Legend

- AM {Mid-Day} (School) [PM] - Traffic Counts
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Figure 4.8 (continued): Turning Movement Counts



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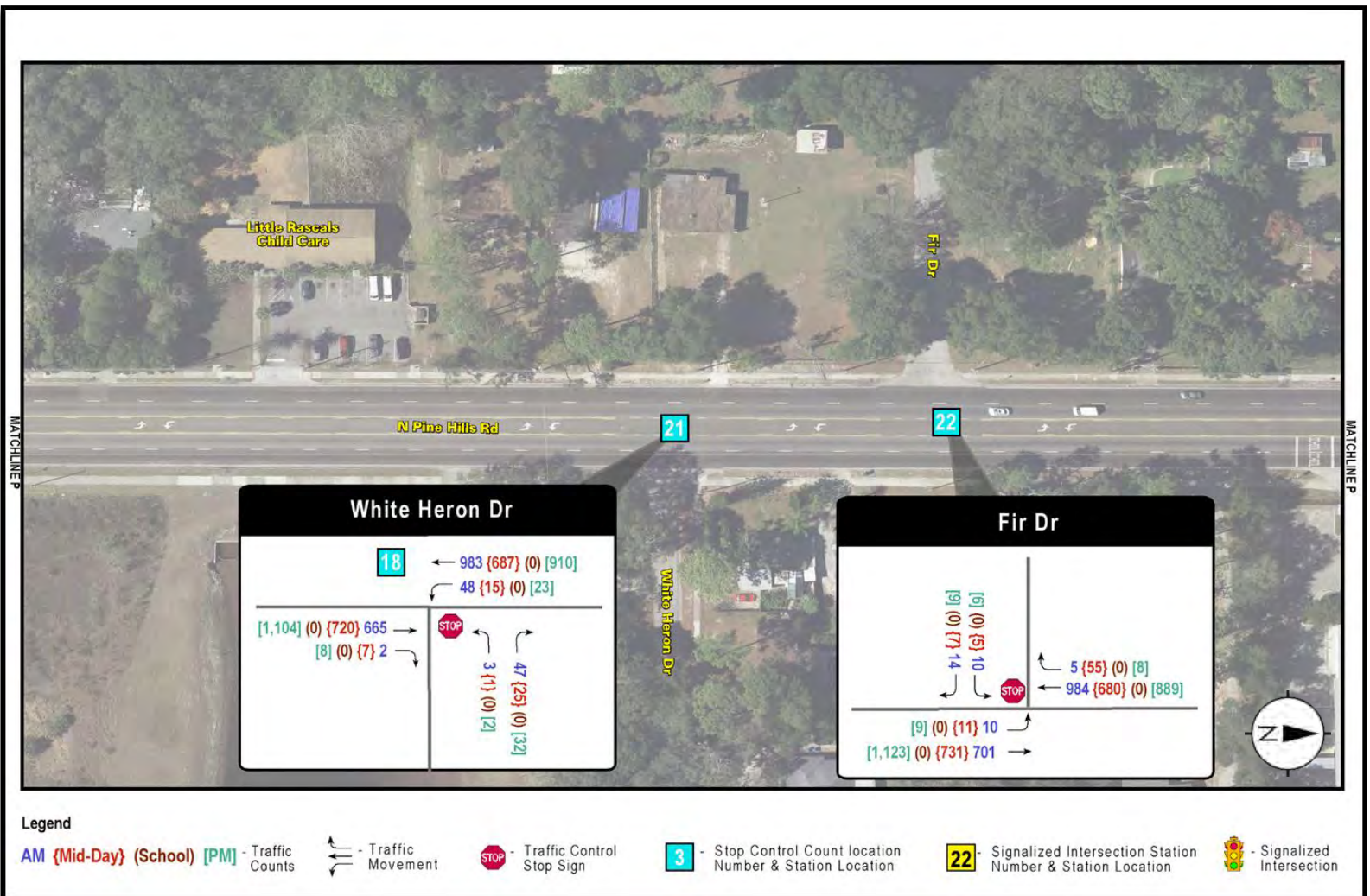


Figure 4.8 (continued): Turning Movement Counts

