ATKINS
Member of the SNC-Lavalin Group

Memo – English Estates Sidewalk Justification

To:	Seminole County Public Works/Engineering Division		
From:	Chris Russo, PE, PTOE	Email:	chris.russo@atkinsglobal.com
Date:	22 December 2020	Phone:	+1 407 806 4233
Ref:		cc:	Angela Cardona PE
Subject:	English Estates Sidewalk Feasibility and Justification Study		

Background

In early 2020, the Seminole County Public Works Engineering Division organized the design of sidewalks for the English Estates neighborhood. The sidewalks were proposed to be located on Glastonberry Road, Hunterfield Road, Sunderland Road, Falmouth Road, Stratford Road, Manchester Road, Winston Road, Worthington Road, Markingham Road, and Carolton Road. A 5-foot wide sidewalk would be constructed on one side of each street. The sidewalks were intended to provide pedestrian connections between neighborhoods, two elementary schools within half a mile, a preparatory school within one mile, the Lake Howell Branch Preserve, and other recreational facilities.

Introduction & Purpose

Atkins was contracted by Seminole County to further study the feasibility of sidewalk installation within the English Estates Subdivision Unit 1, 2, and 3 in Seminole County. The primary objective of the additional sidewalk study was to develop a justification criterion based on field-collected data and local policy review in order to quantitatively and qualitatively evaluate the feasibility of previously proposed sidewalks in this neighborhood. This memorandum serves to document the work performed by Atkins and report the findings of the study.

The study focuses on the following main tasks:

- Review of historical traffic data and crash history.
- Conduct a field review to document pedestrian activity, existing sidewalks, possible connectivity options, and identify above-ground potential conflicts within the County right-of-way.
- Perform nine bidirectional 48-hour weekday counts for traffic volumes, speed, and vehicle classification.
- Creating a criterion to evaluate sidewalk warrants and justification

As part of this memo, a summary of these tasks is provided to the County to give justification for locations of proposed sidewalks for County concurrence. The results of this sidewalk justification memo are further defined by a prioritization of sidewalk applicability for each of the roadways within the study area.

ATKINS

Member of the SNC-Lavalin Group

Study Area

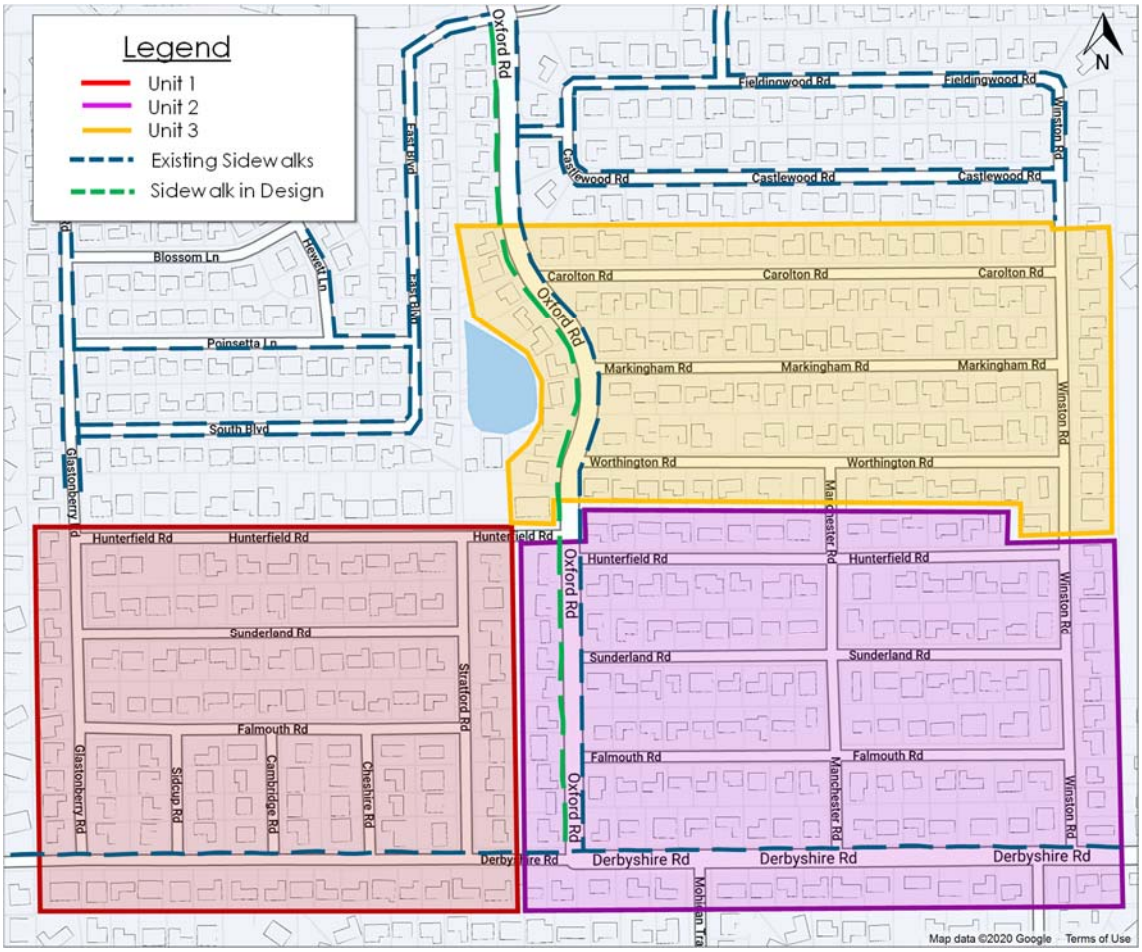
The English Estates Subdivision is located on the southern border of Seminole County between SR-436 and Derbyshire Road (Section 20, Township 21 South, Range 30E). The study area includes the English Estates Subdivision units 1, 2, and 3, which are home to 420 residences. Details of the subdivisions are as follows:

- Unit 1 (130 residencies) was platted and approved in 1959. It occupies the southwest corner of the subdivision, and includes 5 connections to Derbyshire Road, 1 connection to Oxford Road, and provides access to northern Glastonberry Road.
- Unit 2 (159 residencies) was platted and approved in 1962. It occupies the southeast corner of the subdivision, and includes 2 connections to Derbyshire Road, 3 connections to Oxford Road, and provides access to northern Winston Road.
- Unit 3 (131 residencies) was platted and approved in 1965. It occupies the northeast corner of the subdivision, and includes 3 connections to Oxford Road, and provides access to northern Winston Road.

Each of the roads in the study area is a two-lane undivided local neighborhood road with a 25-mph speed limit.

Figure 1 below provides a map of the study limits as well as where the existing sidewalk is present. Additionally, shown on the map is the current project on Oxford Road which will add sidewalks on the west side of the road between Derbyshire Road and East Boulevard.

Figure 1: Study Area Map



ATKINS

Member of the SNC-Lavalin Group

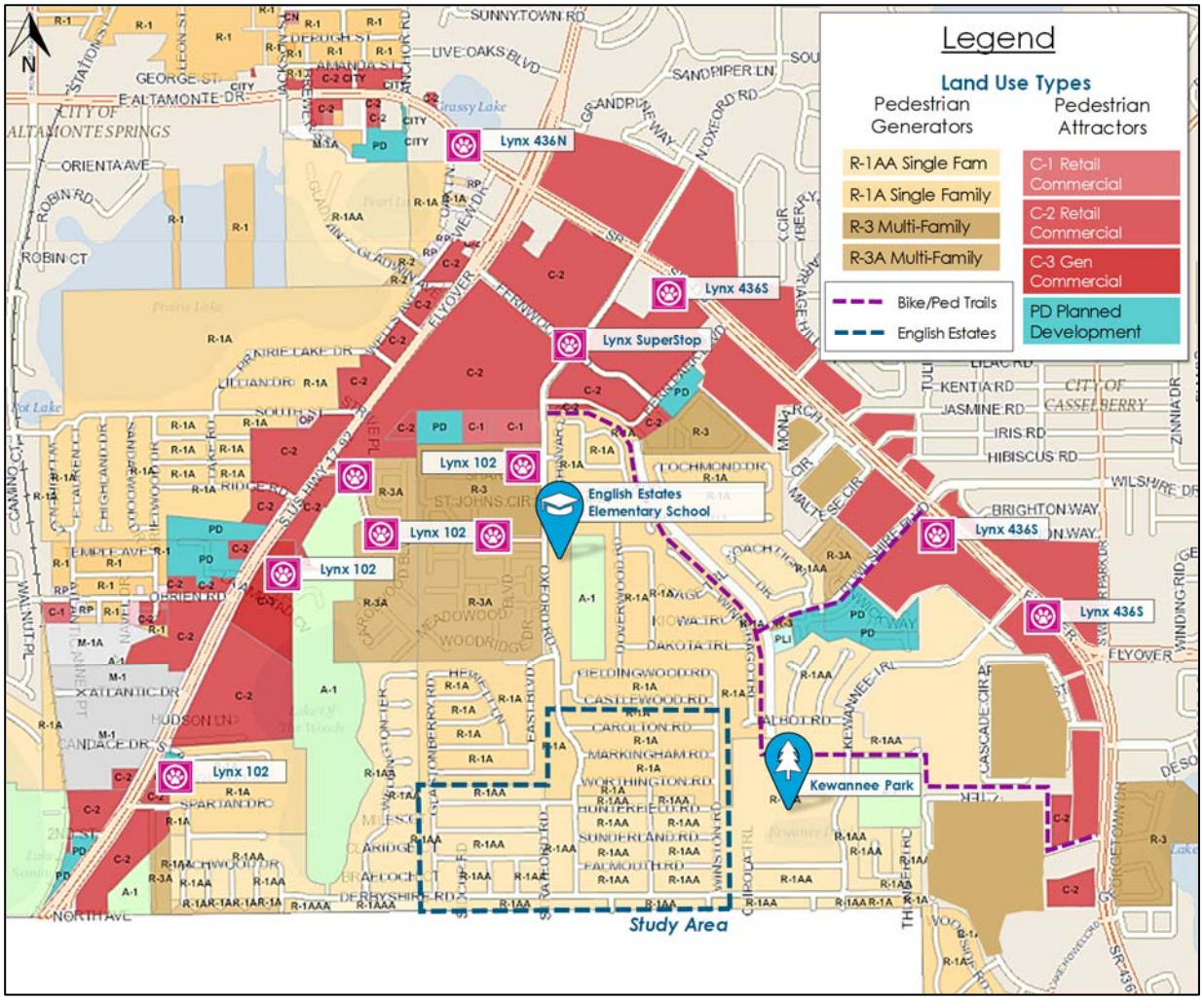
Generalized Land Use Map

The map below in Figure 2 provides pedestrian generators and attractors within and around the study area. A pedestrian generator is a land use where pedestrians would originate from, such as residencies or transit stops. In this study, the generators are single-family home residencies. The pedestrian attractors are land uses where pedestrians are destined, such as schools, parks, and businesses. In this study, the primary pedestrian attractors are the English Estates Elementary School and Kewannee Park.

Distances from major pedestrian attractors to English Estates Neighborhood are listed below. The center of the land use and neighborhood is used for the estimated distance.

- To English Estates Elementary School approximately ½ mile
- To Kewannee Park (Playground area) approximately ¾ to 1 mile
- To businesses along SRS 436 or US 17/92 approximately 1 to 1½ miles.

Figure 2: Pedestrian Generator and Attractor Map



Source: Designated Zoning for Unincorporated Seminole County

Local Policy Review

The Seminole County Comprehensive Plan Transportation Element was reviewed for a local policy that relates to connectivity elements. One purpose of the Comprehensive Plan is that it provides documented County goals to achieve a safe, convenient mobility system while emphasizing multimodal mobility and public transportation systems where feasible. The following policies make reference to the County's policy for Multi-modal Connections, facilities, and interconnecting systems.

Policy TRA 1.3.7 Consideration of Intermodal Connections in Transportation Improvements

In the planning, design and construction of transportation improvements, the County shall consider the safety and efficiency of features at intermodal connections, should any be included on rural roads. These features may include: bus stops, bus shelters, signage, pedestrian and bicycle/trail access, and handicapped access.

Policy TRA 2.3.8 Require Multi-Modal Facilities

The County shall require the construction of sidewalks on both sides of new and improved County urban arterials and collectors and all transit routes, and on at least one side of new and improved County local urban roads unless deemed unsafe. Bicycle "trails" linking new or redeveloped projects to transit stops on major transit corridors shall be incorporated into the planning for the projects.

Policy TRA 2.3.18 Require Multi-Modal School Access

In coordination with the Seminole County School Board, the neighborhood associations and affected developers, and consistent with the provisions of the 2007 Interlocal Agreement with the School Board, as amended in 2008, and approved by State agencies, the County shall coordinate with School Board, throughout the County's Development Review process, the provision of sidewalks and bicycle paths for all roadways within two miles of each elementary, middle and high school for all new, improved and existing roadways in the urban area.

Policy TRA 2.5.1 Interconnecting System of Internal Streets

The County shall enforce all policies, performance framework and regulations for the inclusion of convenient pedestrian, bicycle and vehicular linkages between abutting residential areas, transit stops, rail stations, parks, schools, libraries and shopping.

Florida Statute 1006.23 F.S. Hazardous Walking Condition

It shall be considered a hazardous walking condition with respect to any road along which students must walk in order to walk to and from school if there is not an area at least 4 feet wide adjacent to the road, having a surface upon which students may walk without being required to walk on the road surface These provisions do not apply when the road along which students must walk:

1. Is in a residential area which has little or no transient traffic;
2. Is a road on which the volume of traffic is less than 180 vehicles per hour, per direction, during the time students walk to and from school; or
3. Is located in a residential area and has a posted speed limit of 30 miles per hour or less.

Historical Data Review

Traffic Data

Seminole County provided existing year traffic volumes for adjacent mainline roadways along Derbyshire Road and Oxford Road. The traffic data was collected in January and February 2020 using "roadway tube counters" recording total volume of traffic every 15-minutes for 48 consecutive hours. The daily and peak hour volumes are listed in Table 1.

Table 1: Existing Segment Volumes

Count Location (County Site # - Location Proximity)	Daily	AM Peak	PM Peak
Location 79 – Derbyshire Rd (W of Chipola Trl)	3,988	398	592
Location 211 – Oxford Rd (N of Hunterfield Rd)	3,292	313	345

Data Collection

Atkins coordinated bidirectional 48-hour volume counts to be performed on Wednesday, November 4 through Thursday, November 5, 2020. The data collection included traffic volumes, vehicle speeds, and vehicle classification. The nine locations chosen for collection are listed below.

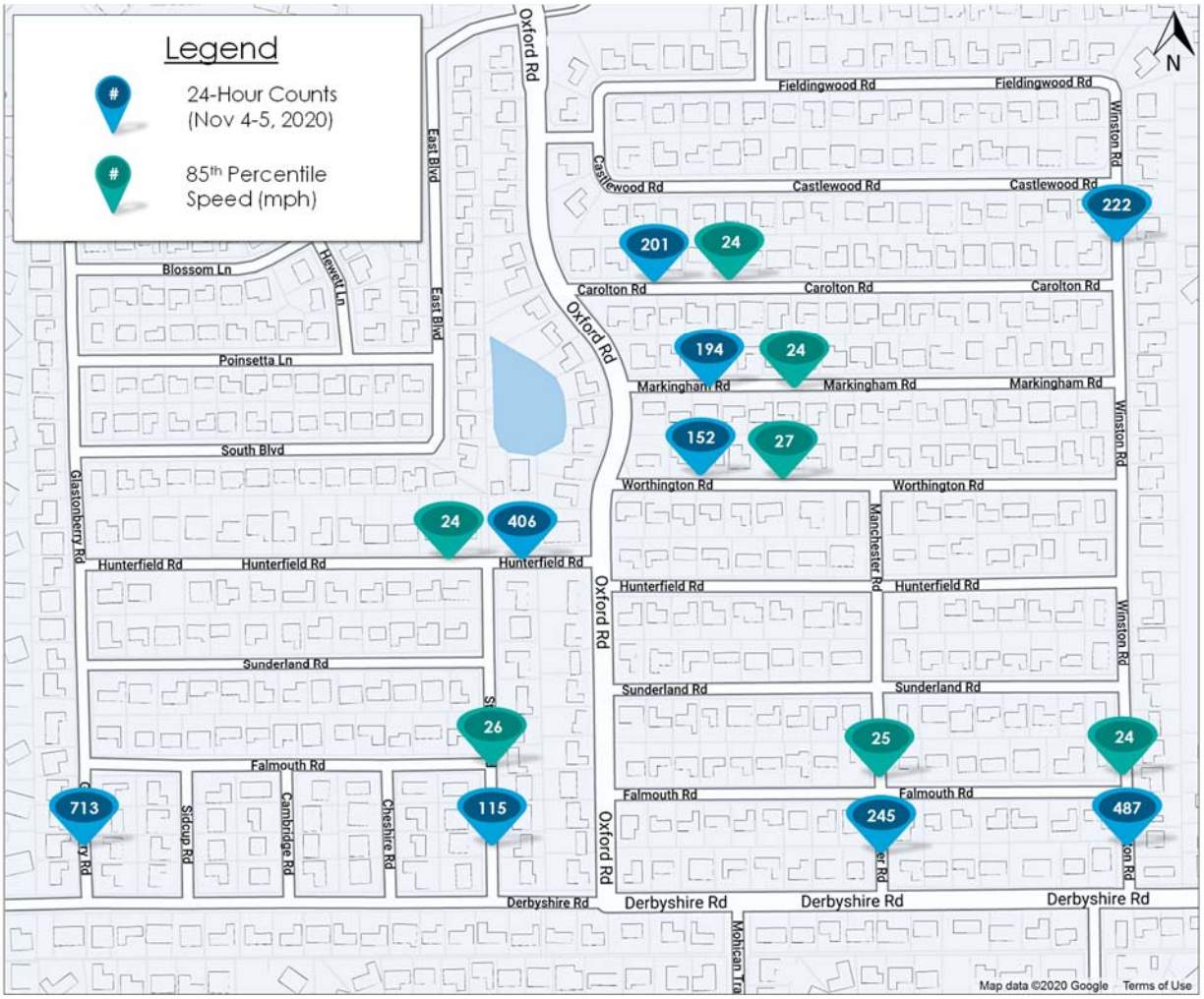
Field Data Collection Locations

- Hunterfield Road (west of Oxford Road)
- Worthington Road (east of Oxford Road)
- Glastonberry Road (north of Derbyshire Road)
- Stafford Road (north of Derbyshire Road)
- Manchester Road (north of Derbyshire Road)
- Winston Road (north of Derbyshire Road)
- Winston Road (north of Carolton Road)
- Markingham Road (east of Oxford Road)
- Carolton Road (east Oxford Road)

A summary of the average 24-hour counts and 85th percentile speeds are shown in Figure 3 below. Glastonberry Road experienced the largest daily traffic (713), followed by Winston Road (487 at the southern end) and Hunterfield Road (406). All other facilities ranged between 115-245 vehicles per day. Assuming industry convention that 9% of daily traffic occurs in the peak hour these daily volumes equate to roughly 20-60 vehicles per hour.

The recorded 85th percentile speed represents the speed at which 85 of the vehicles are at or below; also meaning that 15% of people were observed to drive faster. The 85th percentile speed ranged from 24-27 mph. Truck percentages were not listed in the map but ranged between 0.8% on Carolton Road to 2.7% on Worthington Road and 2.9% on Winston Road.

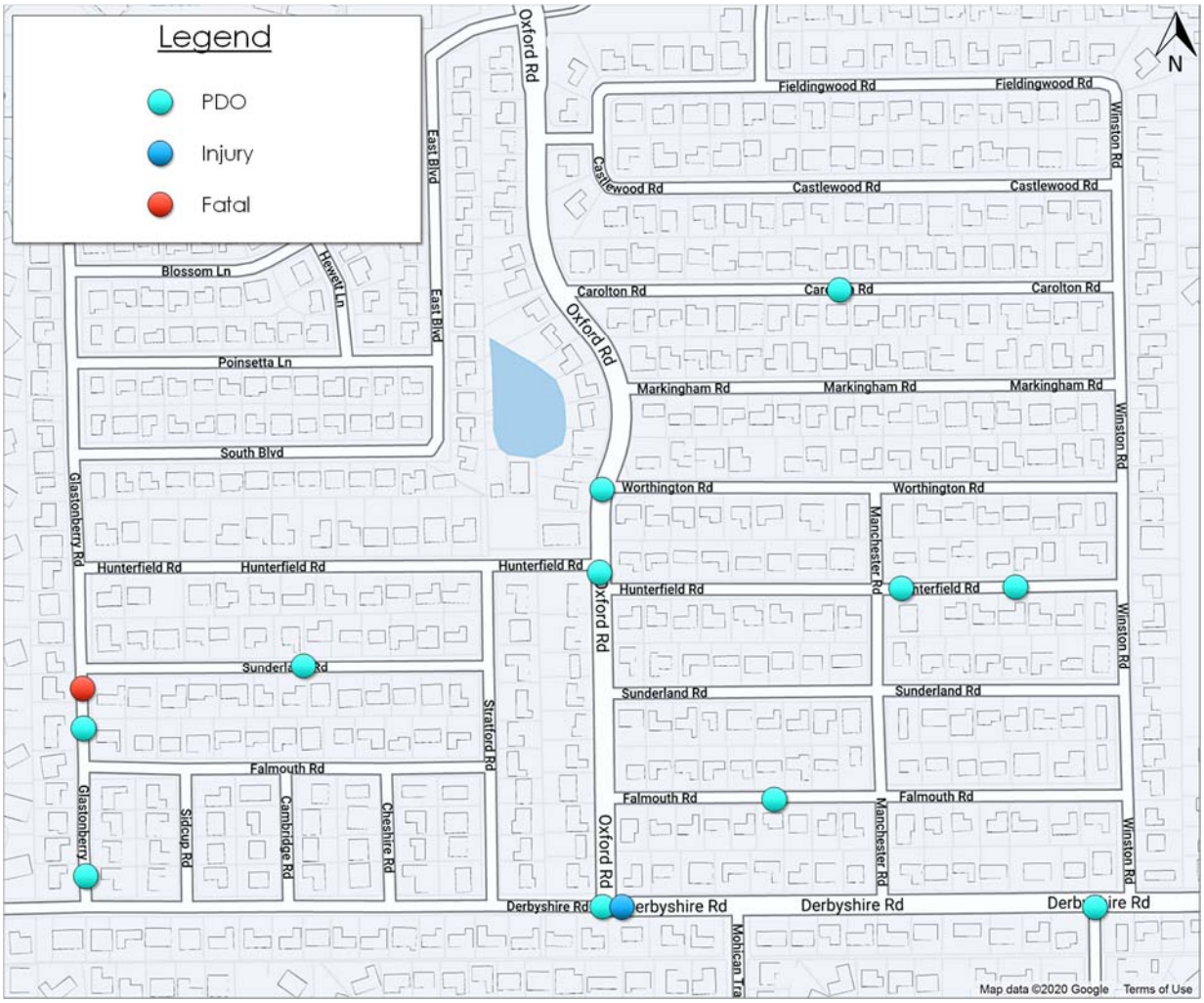
Figure 3: Traffic Count Location Summary



Crash Data

Historical Crash data dating back to 2015 was obtained from Florida's Signal-4 Analytics crash reporting system (*https://s4.geoplan.ufl.edu*). Between 2015 and 2020, a total of 14 crashes were reported within the study area. The crash record narratives were reviewed to verify each corresponding crash data included properly marked fields such as crash location, crash severity, crash type, manner of collision, and pedestrian/bicycle involvement. Upon review, it was determined that no pedestrian or biking related crashes were reported (One crash was incorrectly coded as a pedestrian crash after a passenger fell from the vehicle). Of the 14 crashes, 8 of them involved collisions with a parked vehicle, 4 were intersection crashes, and 2 involved driveway backing crashes. Figure 4 below provides a map of the crash locations.

Figure 4: Crash History Map



PDO = Property Damage Only Crash

Field Review

Atkins staff conducted a field review during the afternoon of Wednesday, November 4, 2020, between 1:00-3:00 PM. The review was conducted under clear and sunny weather conditions with temperatures ranging from 78-82 degrees. The objectives of the field review were to observe the level of pedestrian activity and to document visible above-ground conflicts if a sidewalk were constructed.

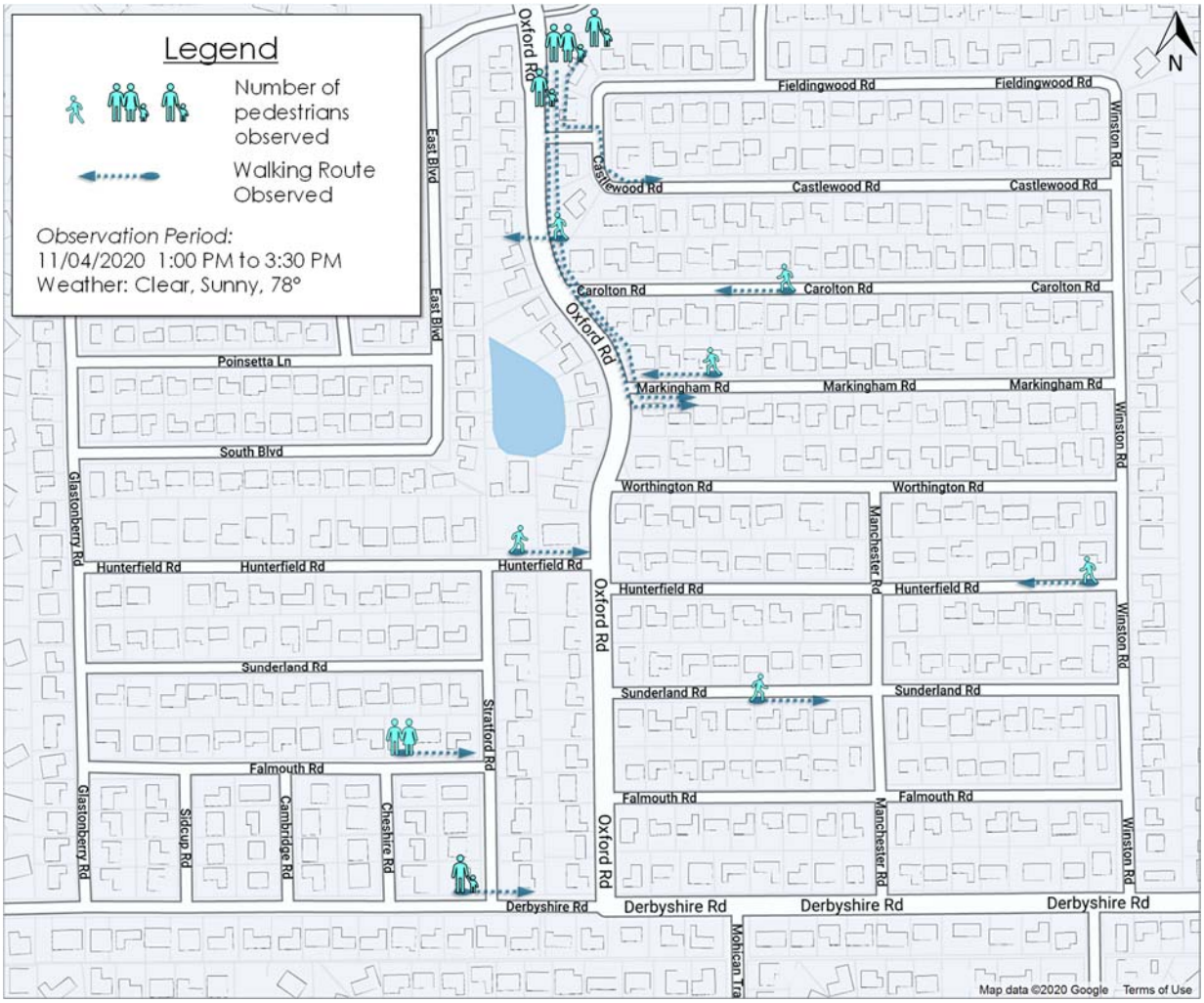
Pedestrian Activity

The field review was conducted during a weekday afternoon during a time of higher pedestrian usage. This period overlapped with the nearby English Estates Elementary School dismissal period in which the team could review the level of pedestrian activity associated with the school. The team observed pedestrian activity and recorded the location, direction, and number of pedestrians observed. A summary of all the pedestrian observations during the period is provided in Figure 5.

During the school dismissal period, several adults walked with students from the English Estates Elementary School, north of the study area, to a destination either along Markingham Road or further south. At other times the team observed other pedestrian activity across the study area without evidence of a specific walking pattern.

Based on communication with the English Estates Elementary School staff, the school was operating with approximately 70% of their students attending on-campus learning during the 2nd semester (October – December 2020). Lower on-campus attendance has multiple impacts on pedestrian volumes; it means less children attending school, so less possible walkers, but it may also mean shorter car drop-off times, which can influence parents to drop off their students rather than choose to walk.

Figure 5: Pedestrian Activity Summary

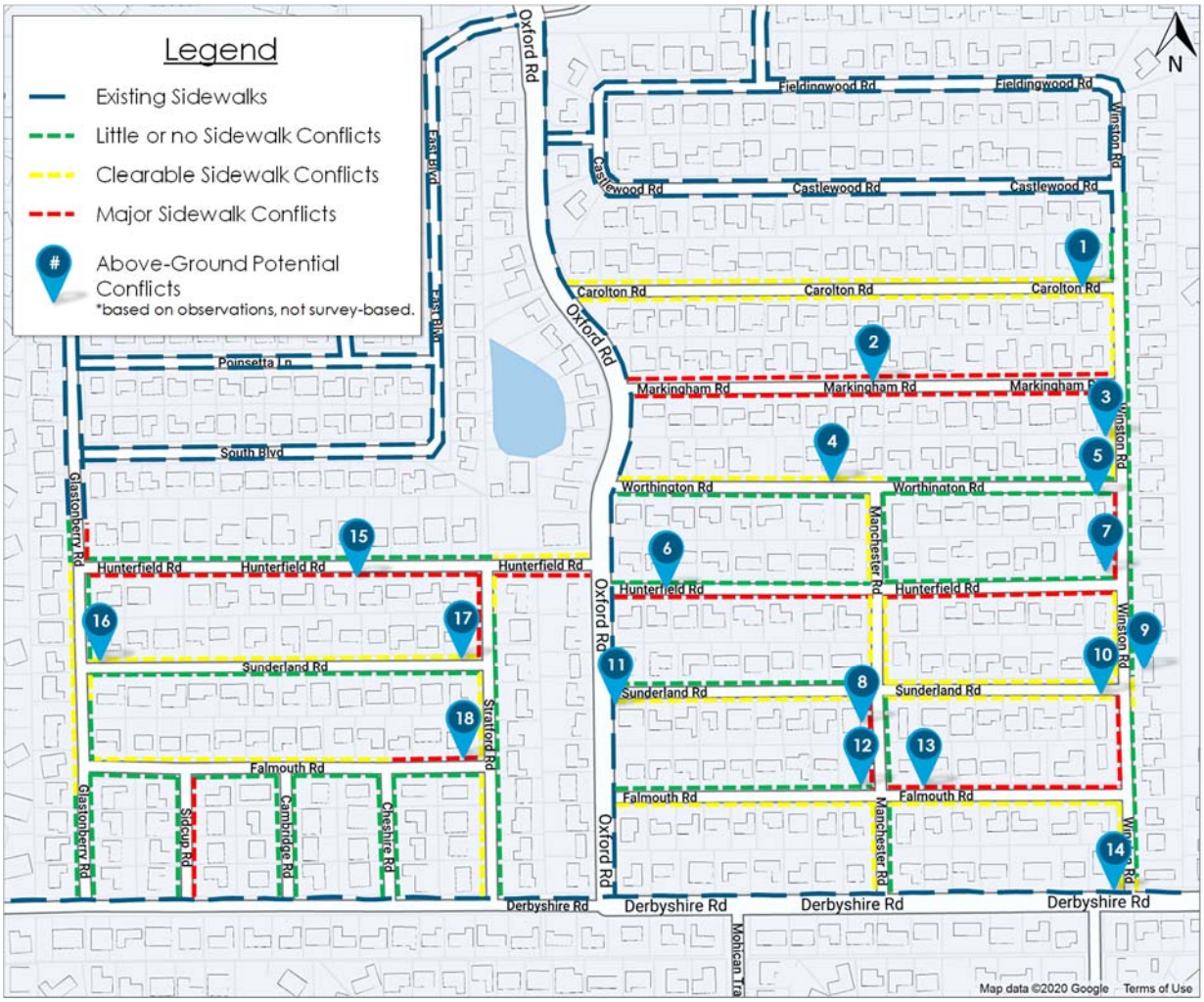


Sidewalk Above-Ground Potential Conflicts

The study team recorded the locations of visible potential above-ground conflicts with the proposed sidewalk. The type of potential conflicts noted included structure conflicts, above-ground utility conflicts, extensive landscaping, sloped yards, and large diameter tree growth. A location summary of the recorded above-ground potential conflict is provided in Figure 6. Roadways shown in red represent major conflicts, roadways in yellow represent moderate, clearable conflicts, and roadways in green represent those with little, or no visible above ground conflicts. What is not included in this review are underground conflicts, such as: utilities, storm sewer, septic systems, etc. Underground conflicts will be located during final design.

The following photos and descriptions beginning on the next page specifically depict each potential above-ground conflict. The noted observations are not intended to be a compressive list of all conflicts. It is provided as supplemental information used for sidewalk justification criterion support.

Figure 6: Above-Ground Potential Conflict



1. South Side of Carolton Rd
Extensive landscaping and retaining blocks conflicts.

2. Both Sides of Markingham Rd
Several large-diameter tree conflicts.

3. West Side of Winston Rd
Several lighting pole conflicts.

4. North Side of Worthington Rd
Steep ground line and driveway slopes present.

5. Southwest Corner of Worthington Rd and Winston Rd
Light pole conflict.

6. South Side of Hunterfield Rd
Extensive landscaping and light pole conflicts.

7. Northwest Corner of Winston Rd and Hunterfield Rd
Large-diameter tree conflict.

8. West Side of Manchester Rd
Several large diameter tree conflicts.

9. East Side of Winston Rd
Existing drainage structure and light pole conflicts.

10. Northwest Corner of Winston Rd and Sunderland Rd
Existing drainage structure conflict.

11. Southeast Corner of Oxford Rd and Sunderland Rd
Vegetation conflict.

12. West Side of Manchester Rd
Several light pole conflicts.

13. Northeast corner of Falmouth Rd and Manchester Rd
Large-diameter tree conflict.

14. Northwest corner of Winston Rd and Derbyshire Rd
Existing drainage structure conflict.

15. South Side of Hunterfield Rd
Several large diameter tree conflicts.

16. North Side of Sunderland Rd
Steep ground line and driveway slopes present.

17. North Side of Sunderland Rd
Landscaping and vegetation conflicts.

18. North Side of Falmouth Rd
Landscaping and vegetation conflicts.

Justification Criterion

In determining the justification for sidewalk installation, the following criterion was reviewed for their impact or influence on sidewalk needs.

Crash History and Safety Review

A review of the crash history indicates there have been no reported pedestrian or bicycle-related crashes in the study area. It's important to note that crash reports are documented only when an actual crash occurs and is reported. Therefore, crash reports alone are not a good indication of safety concerns or for evaluating situations that tend to result in near misses.

What stands out in the data, and also has the potential for pedestrian safety concerns, is the number of parked vehicles that were struck (8 of the 14 crashes). This pattern is a concern because if drivers have trouble seeing a parked vehicle, then it is possible that drivers also have difficulty seeing a much smaller pedestrian walking or biking in the roadway. The on-street parked vehicles are also a visual and physical obstruction blocking the path for pedestrians to walk on one side of the road. As a result, pedestrians are required to walk towards the center of the roadway to walk around vehicles, thus increasing their exposure to moving vehicles in both directions.

In 2020 the neighborhood HOA has been in discussion with Seminole County seeking approval to allow golf carts on local roads within the community. If golf carts are approved, it is possible golf cart use may reduce the vehicular or pedestrian volumes within the community. The golf carts will have to navigate parked vehicles in the roadway in a similar fashion as the pedestrians are currently doing in the roadways.

Pedestrian Volumes

The pedestrian activity noted in the site visit did not suggest there are many school-based trips occurring to, or from, English Estates Elementary School. The recorded pedestrian activity alone does not warrant sidewalk justification. It is possible that the lack of existing sidewalks is contributing to the low pedestrian activity.

Vehicular Volumes

Vehicular volumes were used as a criterion for sidewalk justification as the more vehicles on the roadway the more exposure there is between pedestrians and vehicles. The collected daily traffic volumes showed a distinct variation between the local roads and collector roads. On the collector roadways (Glastonberry Road, Winston Road, and West Hunterfield Road) the daily volumes ranged between 406 and 713 vehicles per day. The remaining roadways experienced less than 245 vehicles per day. The traffic volumes alone do not warrant sidewalk justification, yet volumes show that collector roads with larger volumes would benefit most from having sidewalks.

Speeds

Vehicular speed was proposed as a sidewalk justification criteria to determine how safely vehicles were traveling. The speed review showed that the majority (85th percentile) of vehicles were traveling below the 25-mph speed limit with all roadways under 27-mph. This data does not indicate that a speeding problem exists within the study area.

Sidewalk Connectivity

Based on the Seminole County Comprehensive Plan, the County shall enforce all policies, performance framework, and regulations for the inclusion of convenient pedestrian, bicycle, and vehicular linkages between abutting residential areas, transit stops, rail stations, parks, schools, libraries, and shopping. Based on this policy, sidewalk connectivity was identified as a key evaluation criterion when determining the justification for sidewalks. Within the study area facilities, there are no existing sidewalks. However, sidewalks are present adjacent to the neighborhood along Oxford Road, Derbyshire Road, and on the northern segments of Glastonberry Road and Winston Road. The roadways in this study offer no sidewalk connectivity to these locations outside of sharing the roadway with vehicles.

Above-Ground Obstructions

As summarized in the field review section, visible obstructions within the County right-of-way were documented so construction feasibility could be included as part of the sidewalk justification criterion. The obstruction levels (low, medium, and high) were used to distinguish which roadways would be most feasible for sidewalk construction.

Recommendations & Prioritization

The sidewalk justification criteria were referenced to develop a prioritization for sidewalk feasibility and constructability. The resulting recommendations and priorities are listed as follows.

Priority Recommendation 1 – Connectivity on Higher Volume Roads

The first recommendation for sidewalk installation was based on connecting the existing sidewalk network through neighborhood roads with the priority being to install a sidewalk network on the collector roads. The neighborhood collectors were shown to experience the greatest traffic volumes and would benefit most from providing sidewalk coverage. Based on the network connectivity criterion, the recommendation is that sidewalks be prioritized for collector roadways. The Priority Recommendation 1a is to complete the collector road sidewalk network in the north/south direction by extending the existing sidewalks along Glastonberry Road and Winston Road from their respective northern terminus to the south connecting with Derbyshire Road. Also, the recommendation includes constructing an east/west sidewalk connection that bridges Glastonberry Road, Oxford Road, and Winston Road by installing a sidewalk along Hunterfield Road. This recommendation is illustrated in Figure 7 below.

As an additional alternative (1b), the east/west connectivity can be accomplished by utilizing Worthington Road west of Oxford and adding a sidewalk to Manchester Road to create another connection to Derbyshire Road. This Priority Recommendation 1b is illustrated in Figure 8 below.

Figure 7: Sidewalk Priority Route 1a

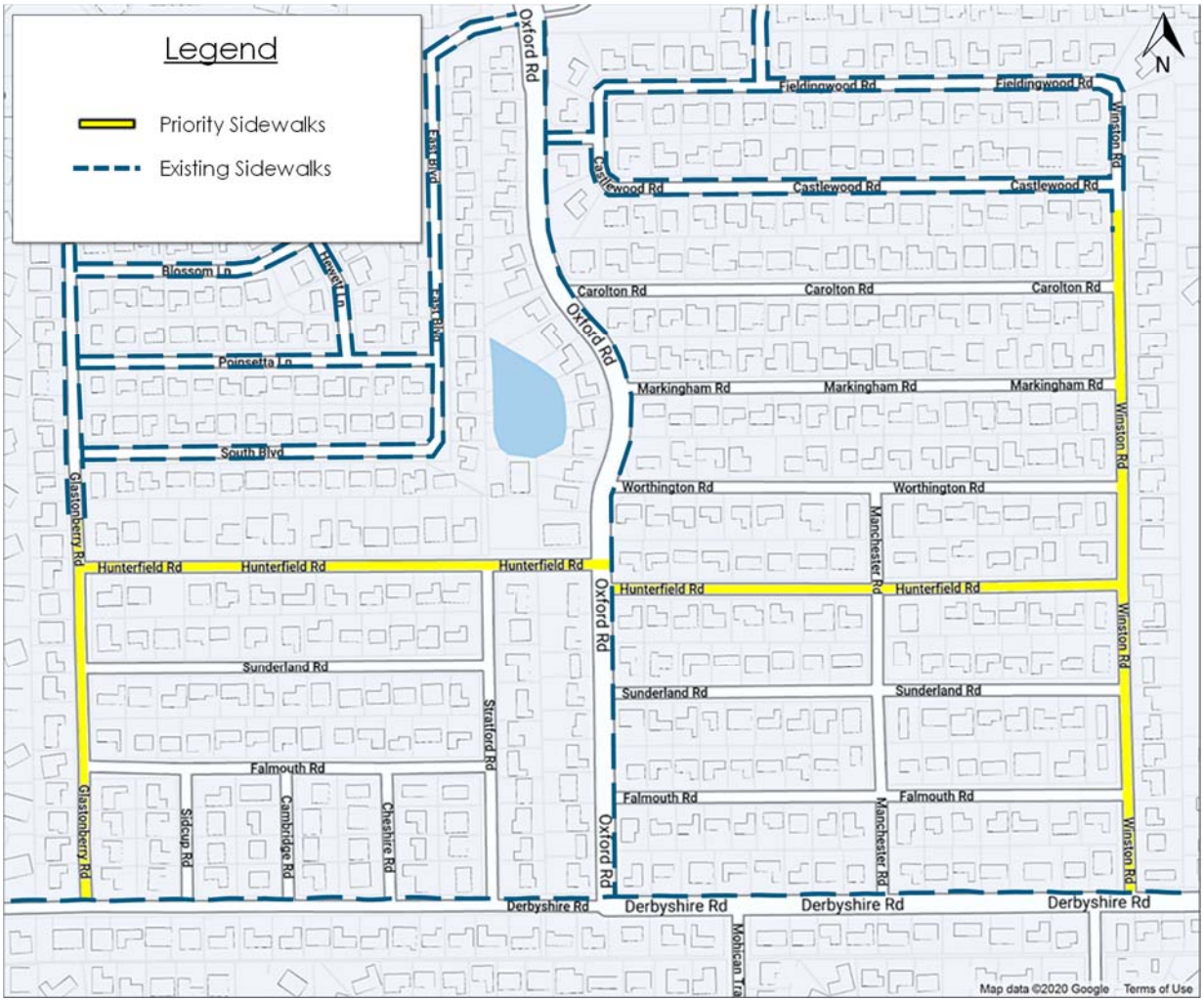
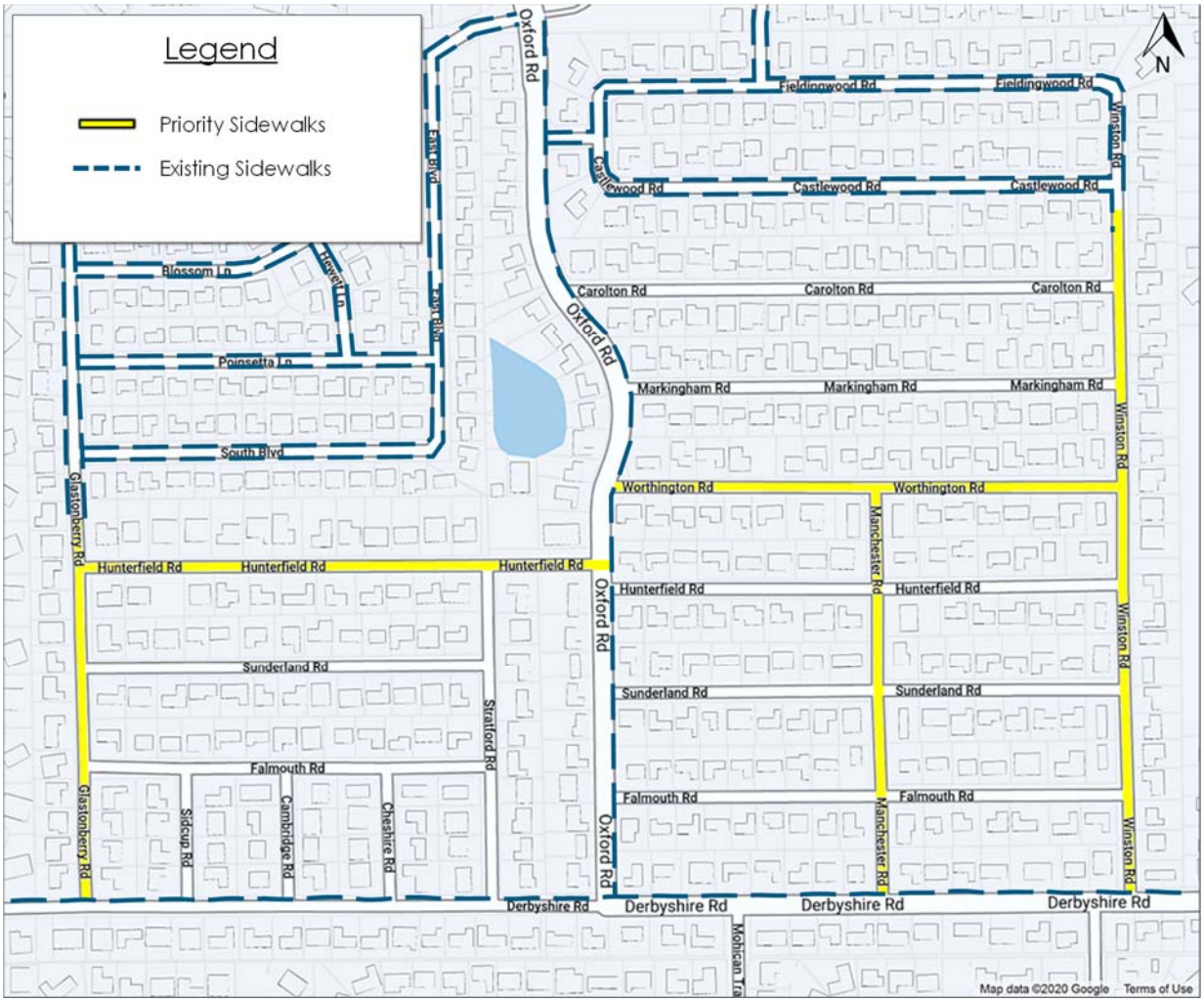


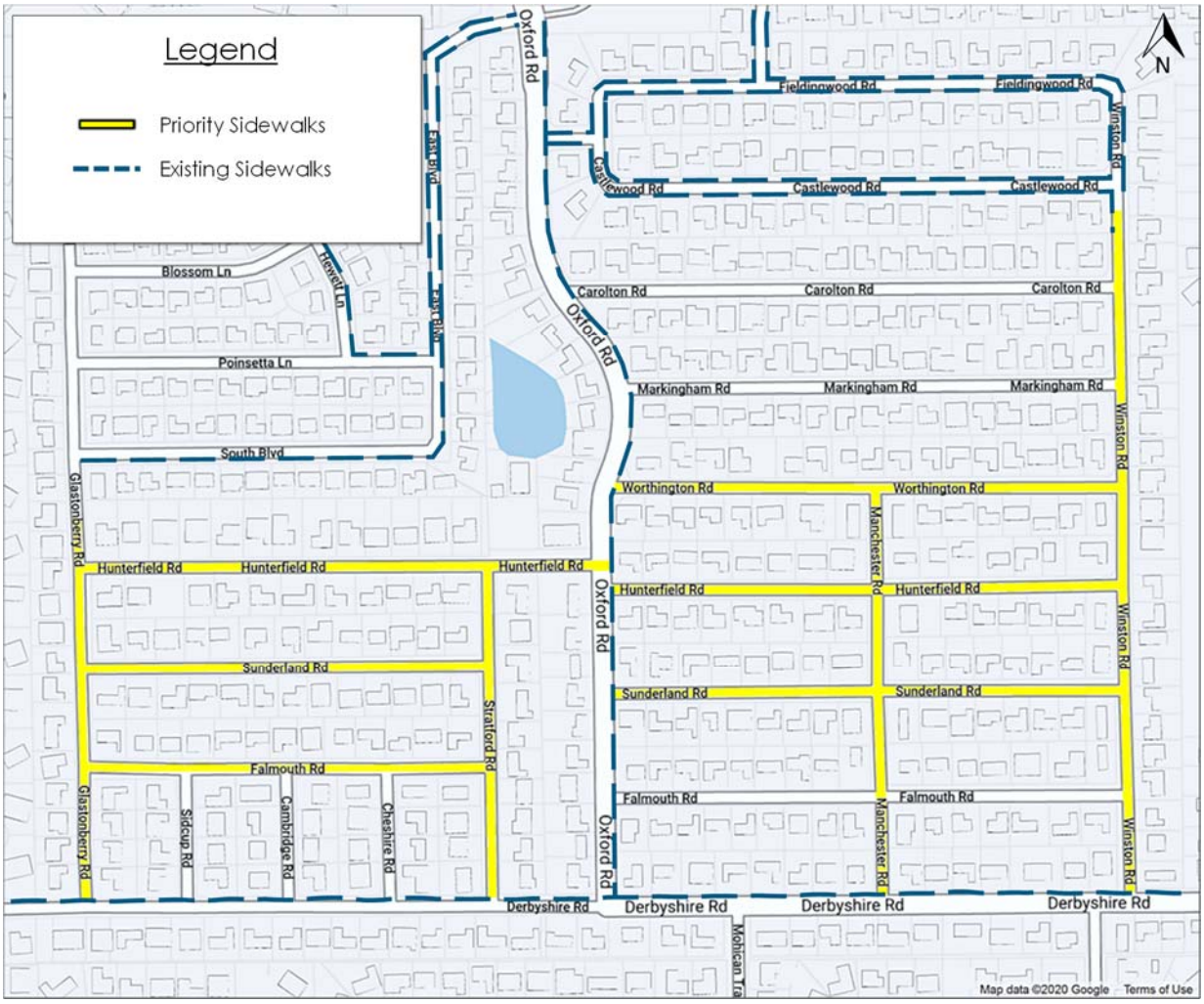
Figure 8: Sidewalk Priority Route 1b



Priority Recommendation 2 - Obstruction Based

The field review revealed several obstructions that currently exist within the County right-of-way that potentially complicates the installation of sidewalks on particular sides (or both sides) of the roadway. Consideration was given in the sidewalk justification for obstructions that would either result in excessive costs to install (such as large slopes, mature landscaping, or stormwater infrastructure) or drastically change the aesthetics of the streetscaping and neighborhood feel (such as mature landscaping). Based on the obstruction and constructability criterion, the recommendation is that sidewalks be prioritized for roadways within the study area that result in the least amount of impacts. Figure 9 below highlights the facilities with the most manageable above ground obstructions.

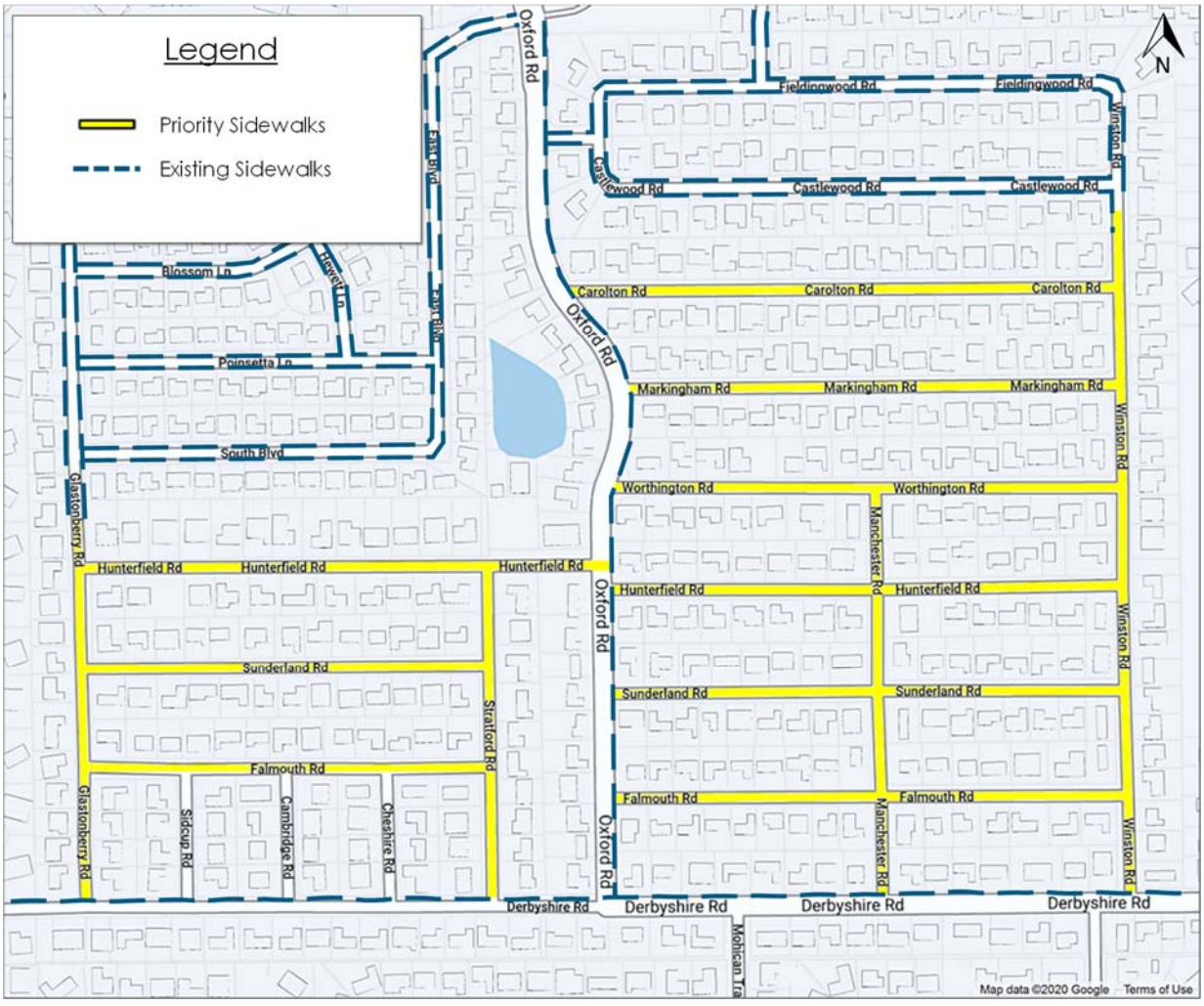
Figure 9: Sidewalk Priority Route 2



Priority Recommendation 3 – Safety/Pedestrian Paths/Parked Vehicles

Traffic volumes within the study area roads are not so high that it would be impracticable to allow vehicles and pedestrians to share the same road. Additionally, the lack of pedestrian crashes indicates that there is not a historical pedestrian crash problem. However, sharing the road becomes more difficult with the amount of on-street parked vehicles observed during the site visits. While on-street parking is potentially influencing the lower speeds on these roads, the on-street vehicles can also create physical obstructions requiring pedestrians and vehicles to enter into the center of the roadway to navigate the road. Additionally, the parked vehicles create visual obstructions that may be leading to more pedestrian and vehicle interactions. The challenge of this situation is when both pedestrians and vehicles are both attempting to get around a parked vehicle and enter into the same path, but their vision of that path is obstructed by the parked vehicle. The safety review showed that the most prevalent crash type in this study area is “hit parked vehicle”, which indicates an issue with on-street parking exists. While no direct safety correlation is revealed in the data, a consideration could be that all roads that also allow on-street parking to have a sidewalk installed so as to separate pedestrian and vehicle interactions. Figure 10 below illustrates this recommendation and shows all roadways highlighted.

Figure 10: Sidewalk Priority Route 3



Conclusion

Based on the analysis detailed above, high emphasis should be placed on connectivity. This concept furthers Goals, Objectives, and Policies in the Seminole County Comprehensive Plan. Providing neighborhood pedestrian connectivity with the primary streets in the area (Oxford Road and Derbyshire Road) allows for multimodal access to businesses, schools, and parks, and other attractors. Furthermore, sidewalk investments would be most beneficial on streets with higher traffic volumes. As such, the following street segments should be prioritized:

- Glastonberry Road, between South Boulevard and Derbyshire Road
- Winston Road, between Castlewood Road and Derbyshire Road
- Hunterfield Road (west), between Glastonberry Road and Oxford Road

In order to maximize connectivity, sidewalks should also be installed on Hunterfield Road (east), between Oxford Road and Winston Road.