West Warren Avenue Complete Streets Study

Alternatives Analysis Report

WEST WARREN AVENUE
Complete Streets Study

October 2021

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Introduction

The City of Longwood is conducting a complete streets study on West Warren Avenue between State Road (SR) 434 and Milwee Street. This project was approved by the City of Longwood as a part of their Complete Streets policy; a commitment to ensure that all roads are designed to comfortably accommodate all users as much as possible. The City of Longwood received Federal Highway Administration (FHWA) funds through the Florida Department of Transportation (FDOT) for this project.

West Warren Avenue in the study area is a critical connection in the City of Longwood. It provides an entrance to the City's Historic District, and is located in Longwood's Heritage Village, which is anchored by the City's SunRail station, located approximately one quarter mile from the eastern boundary of the project. West Warren Avenue is also surrounded by residential, commercial, and recreational land uses which have been growing in the past years and are projected to continue to grow. As such, the provision of multi-modal access for residents, visitors, and workers along the West Warren Avenue is key to the continued healthy growth of this corridor.

The study area limits are illustrated in Figure 1.

The purpose of this complete streets project is to:

- Enhance connectivity and accessibility between all modes of transportation, activity centers, and neighborhoods surrounding West Warren Avenue
- Create a safe and supportive environment for walking and biking
- Create a Multi-modal Vision and Plan that supports the City's Economic Development initiatives
- Develop a set of implementable improvements (alternatives) in the study area that can be designed and constructed

The objective of the alternatives analysis process is to identify technically and environmentally sound alternatives that meet the traffic, multi-modal, and safety needs of West Warren Avenue, provide benefits to the surrounding community, and are cost effective. This Alternatives Analysis report presents the proposed alternatives developed for this study, including the guiding principles, alternatives development process, and an analysis of the impacts of each alternative.

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Study Area

WEST WARREN AVENUE
Complete Streets Study

Figure 1

Project Location Map
W Warren Ave Complete Street

Guiding Principles

The FDOT District Five *Multi-Modal Corridor Planning Guidebook* states that Guiding Principles should outline the vision of the study area, who the major users are, and the desired role for the facility. The Guiding Principles provide a framework for the examination of multimodal treatment options and how to evaluate various alternatives for this corridor.

The Guiding Principles for the West Warren Avenue Complete Streets Study were developed through input provided by the Project Visioning Team (PVT – the PVT is defined in the following 'Local Input' section). Discussion of potential Guiding Principles was put in context of the City of Longwood's 2015 Complete Streets Policy. It states the City Commission's desire that Longwood be a livable and walkable community that is pedestrian and cyclist friendly, recognizing the economic value of providing transportation choices for residents, businesses, and visitors.

The policy outlines that ensuring safety and convenience for all users will lead to the following:

- Improved health
- Economic growth
- Public safety
- Recreational opportunities
- Social equality

Feedback from the PVT indicated that the City would like to improve West Warren Avenue as a means to:

- Serve as a gateway to the City of Longwood's historic district
- Connect residents and those working or staying at the hospital with Reiter Park
- Improve overall aesthetics
- Facilitate community events
- Improve public safety, especially for pedestrians and bicyclists
- Improve drainage along the corridor

When determining the safety and community benefit of a corridor, it is critical to review a variety of conditions. The following ten Healthy Community Design Principles were identified and analyzed as part of this effort:

- Maximize the Opportunity for All Residents to Get Physical Activity
- Promote Social and Environmental Equity
- Encourage Mixed Use Development
- Improve Access to Job Opportunities
- Invest in Transportation Solutions
- Drive Economic Development by Creating a Unique Identity
- Increase Housing Opportunities
- Empower Champions for Healthy Communities
- Make Education the Cornerstone of Designing or Revitalizing the Community
- Promote Access to Healthy Food

Of the ten Healthy Community Design Principles above, the first six directly address the transportation needs of the West Warren Avenue corridor and will be used to formulate the Guiding Principles for this project. The Guiding Principles will provide the basis on which alternatives will be analyzed and evaluated. The Guiding Principles listed on the following page were identified based on the existing conditions data, as well as input solicited from the PVT during the March 9, 2021 meeting.

The Guiding Principles for West Warren Avenue

- Improve Access and Connectivity Along the Corridor – Improve access to residences, jobs, medical facilities, and parks by:
  - Improve bicycle and pedestrian connections to recreational, educational, and community destinations, including Reiter Park, South Seminole Hospital, and Longwood's Historic District through addition of sidewalks or paths and enhanced crossings
  - Enhance the connections to existing and future transit services
  - Provide for additional event parking and traffic management through dynamic messaging signs
- Invest in Aesthetic and Functional Transportation Improvements – Improve the safety and experience of all roadway users by:
  - Improve drainage facilities along the corridor
  - Add street lighting where appropriate
  - Improve landscaping along the corridor, including accommodating existing trees and planting shade trees along the corridor where possible
  - Relocate and bury utilities along the corridor
  - Relocate dumpsters currently located on Heritage Business Centre property adjacent to West Warren Avenue.
  - Incorporate murals / public art on back of commercial buildings
  - Incorporate brick paver crosswalks
  - Provide intersection improvements to reduce the crash rate and improve bicycle and pedestrian connections at St. Laurent Street and West Warren Avenue
- Support the City of Longwood's Other Livability Goals – Create flexibility in infrastructure to accommodate community-building events, and enhance the balance of land uses:
  - Facilitate community events when desirable, creating synergy with local public places
  - Encourage community-building with the Historic District to enhance economic development
  - Facilitate cafes, breweries, and other community-oriented businesses with options for sidewalk seating
  - Review allocation of land uses to determine viability of bicycle or pedestrian trips
  - Improve connectivity between uses, including employment centers and residential buildings
  - Increase connectivity to existing mixed use zones, including Longwood's Historic District

Measures of Success

Evaluation measures are intended to evaluate the effectiveness and feasibility of potential alternatives for the study area. Table 1 lists the Measures of Success associated with each Guiding Principle and Objective for the West Warren Avenue corridor.

Table 1: Measures of Success

Guiding Principle	Objective	Measure
Improve Access and Connectivity Along the Corridor	Improve pedestrian and bicyclist access to recreational and community destinations	Number of pedestrian-scale amenities (e.g., lighting, shade trees, etc.)
		Quality and length of off-street pathways for bicyclists and pedestrians
		Number of parks and other recreational facilities accessible by the improved bicyclists and pedestrian network
	Enhance connections to existing and future transit services	Potential to decrease the average percent of household income spent on transportation
	Provide for additional event parking and traffic management through dynamic messaging signs	Number of additional on-street parking spaces provided
		Number of dynamic messaging signs
Invest in Aesthetic and Functional Transportation Improvements	Improve drainage facilities along the corridor	Provide net-benefit for stormwater to project area.
	Add street lighting where appropriate	Number of new lighting facilities added
	Improve landscaping along the corridor, including accommodating existing trees and planting shade trees along the corridor where possible	Percent of sidewalk that can be considered shaded
	Relocate and bury utilities along the corridor	Percent of utilities underground
	Relocate dumpsters currently located on Heritage Business Centre property adjacent to Warren Avenue	Distance of dumpsters from roadway
	Incorporate murals / public art on back of commercial buildings	Number of public art projects along corridor
	Incorporate brick paver crosswalks	Number of decorative crosswalks
	Provide intersection improvements to reduce the crash rate and improve bicycle and pedestrian connections at St. Laurent Street and West Warren Avenue	Number of crashes at St. Laurent Street and West Warren Avenue over a period of 5-years
Support the City of Longwood's Other Livability Goals	Facilitate community events when desirable, creating synergy with local public places	Number of policies written or affected, or money budgeted to incentivize community events
	Encourage community-building with the Historic District to enhance economic development	Number of policies written or affected, or money budgeted to incentivize community building in the Historic District
	Facilitate cafes, breweries, and other community-oriented businesses, with options for sidewalk seating	Density of pedestrian activity, measured by pedestrian counts
	Review allocation of land uses to determine viability of bicycle or pedestrian trips	Potential to increase percent of commuters who bike or walk to work
	Improve connectivity between uses, including employment centers and residential buildings	Quality of pedestrian and bicycle connections at the edges of the study area
	Increase connectivity to existing mixed use zones, including Longwood's Historic District	Quality of pedestrian and bicycle connections to Historic district

Local Input

Local input was sought to ensure that the needs and desires of the stakeholders and community surrounding the study area were accounted for throughout the development of alternatives. The PVT was established as a means of obtaining active input from stakeholders during the planning process, especially regarding context-sensitive design issues. Representatives of the following agencies, municipalities, and stakeholders were invited to participate in the PVT:

- City of Longwood
- Seminole County
- MetroPlan Orlando
- FDOT
- East Central Florida Regional Planning Council
- LYNX
- SunRail
- Longwood Police Department
- Longwood Fire Department
- Longwood Historic Society
- Orlando Health South Seminole Hospital
- Wood Partners Group / Alta Longwood Apartments
- Longwood Groves Subdivision
- Judy's Dolls
- Winn Dixie Plaza
- J Raymond Construction
- Bentley Architects

Two PVT meetings and one public workshop were held during the alternatives development and analysis period.

PVT Meeting #1

The first PVT meeting was held on March 9, 2021. During the meeting, the project team presented on topics including project location and background, overview of the complete streets study process, roles of the PVT, anticipated project schedule, guiding principles, existing conditions, and next steps. The following key takeaways were discussed during the open forum meeting:

- The PVT voted top guiding principles for the project as public safety, drainage improvements, enhanced connections to Reiter Park and historic district, recreational opportunities, economic growth, improve health, and social equality. The PVT suggested the following guiding principles in addition to the ones presented:
  - Aesthetics – streetscaping and business entrances; public art
  - Wildlife preservation
  - Innovative intersection treatments
  - Event parking and traffic management though dynamic messaging signs
- Be mindful during study and recommendations of wildlife and protected species in the area.
- When presenting guiding principles to the public for feedback, consider separating bicycle and pedestrian safety from traffic safety to get clear input from the public on priority.
- Review traffic with new improvements at St. Laurent Street to verify no significant impact to westbound West Warren Avenue.
- Consider benefit or disadvantage to closing off some access currently providing cut throughs from West Warren Avenue to SR 434.
- There is a need for additional parking during events at Reiter Park.
- The addition of bicycle lanes would significantly increase existing pavement width, potentially promoting high speeds. A separate path or brick paver would be recommended to accommodate bicycles. Currently there are challenges during events with pedestrians and bicyclists in sidewalk.

- Additional input:
  - Implement more brick
  - Traffic speed concerns
  - Relocate powerlines underground
  - Need safe connections and crossings
  - Need of a sidewalk from hospital to West Warren Avenue
  - Sanitary sewer main improvements

Public Workshop #1

The first public workshop was held on May 4, 2021. The workshop was presented in a hybrid format, with the public having the option to attend either an online webinar or in person. In both formats, attendees were shown a presentation providing an overview of the project, an introduction to the complete streets process and guiding principles, and summarizing the existing conditions analysis and future trends assessment. Attendees in both formats were then provided the opportunity to view project materials, ask questions to project staff, and provide feedback regarding the project. Attendees who submitted written comments were asked to indicate which of the proposed guiding principles they supported, resulting in the distribution of votes shown in Table 2.

Table 2: Public Votes for Guiding Principles

Guiding Principle	Number of Votes
Event management and parking	3
Enhance pedestrian and bicycle safety	2
Improve access to transit	2
Enhance connection to Reiter Park and Historic District	2
Innovative transportation solutions	2
Improve aesthetics with streetscaping and public art	2
Enhance vehicular safety	1
Create a healthy community	1
Support economic growth	1
Maximize opportunities for all residents to engage in recreation	1
Improve drainage	1
Other	0

In total, seven comments were received from the public on the following general subjects:

- Traffic volumes generated by new Alta Longwood Apartments
- Ped/bike facility improvements
- Transit improvements
- Controlling traffic speeds

PVT Meeting #2

The second PVT meeting was held on August 26, 2021. During the meeting, the project team presented on topics including project overview, results from the previous public workshop, guiding principles, the two alternatives developed, measures of success, and the anticipated project schedule. The following key takeaways were discussed during the open forum meeting:

- There is a separate FDOT-funded project to provide sidewalk along the west side of Milwee Street between SR 434 and West Warren Avenue. Once the project is complete, the West Warren Avenue Complete Streets project will be able to connect to the new sidewalk.

- The City of Longwood will coordinate with Orlando Health South Seminole Hospital to recommend connections to proposed crosswalk locations at the hospital campus.
- The use of sharrows and/or signage will be investigated to indicate that bicycles are sharing the road.
- Painting a mural on the back of the buildings in the Heritage Business Centre (in line with the city public art policy) and relocating the dumpsters away from the roadway will be considered as a way of improving the aesthetic experience for corridor users.
- Considerations will be made for lowering the speed along the corridor; the shifting of the travel lanes near Alta Longwood Apartments and raised crosswalks are potential methods to be used in this project.
- Landscaping will vary along the corridor. In areas where there are already shade trees, as many as possible will be preserved. In areas where there are no shade trees, we will look to add shade trees. In tighter right-of-way areas along the corridor, we will look at lower landscaping. Sight distance is a consideration for landscaping, especially in areas with multiple driveways. Additionally, rain gardens, a type of lower landscape, provide a benefit for drainage.
- Preferences regarding 8-ft-wide sidewalk or 10-ft-wide multi-use trail on the south side of West Warren Avenue:
    - As pedestrian volume is not projected to be high, an 8-ft-wide sidewalk will provide adequate capacity and will allow room for other amenities.
    - Installing 8-ft-wide sidewalks will allow for more landscaping in the area, increasing the corridor aesthetics and value.
    - FDOT has been receiving more requests from local cities and agencies to allow golf carts. A wider path might encourage golf carts and improve corridor usage.
    - Seminole County can accommodate additional impervious surface in adjacent ponds.
- Raised crosswalks:
    - Can be controversial but may help to encourage drivers to follow the posted 25 mph speed limit.
    - If used, a smoother transition is preferred to an abrupt one for the sake of cyclists.
- Rectangular Rapid-Flashing Beacons (RRFBs):
    - RRFBs are shown in the alternative renderings, however they may not be needed if pedestrian volumes remain low and vehicles yield well with the other improvements designed to slow vehicle speeds.
    - The city will assess the need for RRFBs after construction for the project is complete.
- St Laurent Street:
    - The U-turn movement on St Laurent Street at the Chase Bank drive-through entrance frequently backs up and blocks the intersection of West Warren Avenue with St Laurent Street. To remedy this, the proposed design will extend the traffic separator to prevent left turns from westbound West Warren Avenue into the drive-through entrance; vehicles will have the option to use the strip mall parking lot to complete a proper traffic movement into the drive-through entrance.
    - There are concerns that the changes to the intersection and drive through lane will only shift the location of vehicles making a U-turn, rather than removing the problem.
    - A roundabout was considered for the intersection as a means to eliminate the U-turns, but its larger footprint would reduce the queueing area and potentially cause northbound vehicles to back up to SR 434.
- Additional input:
    - Include a Best Foot Forward representative in the PVT.

Development of Alternatives

The following sections summarize the alternatives considered for individual aspects of the corridor improvement.

Right of Way

Both of the build alternatives were developed fully within the existing Right of Way (ROW) so that no additional ROW acquisition is needed.

Roadway

The existing 11-ft-wide travel lanes on West Warren Avenue provide ample space and capacity for both the existing and projected traffic demands. The existing intersections on West Warren Avenue are also all projected to operate at level of service (LOS) B or better in the future design year. As such, no roadway widening or intersection improvements for capacity are necessary.

One change that will be made is the addition of curb and gutter throughout the length of the project corridor, reducing the space needed for drainage and maximizing the bike/pedestrian facilities and landscape.

Bike & Pedestrian Facilities

Improving the availability, connectivity, and safety of the bike/pedestrian facilities along West Warren Avenue.

Bike Lanes/Sharrows

The existing Bicycle LOS for the full project corridor (both West Warren Avenue and St Laurent Street) is LOS D due to the lack of paved shoulders or bike lanes; providing bicycle facilities along the project corridor will increase the Bicycle LOS to LOS B through the design year 2040 (as shown in the *Existing Conditions Report*, under separate cover).

Several options for bicycle facilities were considered when developing alternatives, including:

- On-street bike lanes
  - Asphalt with painted markings
  - Brick pavers with painted markings
- Separate bike path
- Sharrows
- Multi-use trail/wider sidewalk

A primary concern regarding the addition of bike lanes to West Warren Avenue is the significant increase in pavement width, which may promote drivers to travel at higher speeds. As this would effectively decrease the corridor safety for all travel modes, on-street bike lanes were eliminated from the alternatives.

The space required for the installation of a separate bike path would mean that either pedestrian facilities could only be provided on one side of West Warren Avenue, or that additional ROW would need to be purchased to accommodate all of the improvements. Therefore, a separate bike path was eliminated from the alternatives.

As the corridor has a low speed limit, sharrows will be provided for cyclists who wish to use the travel lanes (particularly high-speed cyclists) and are comfortable sharing the road with motorized vehicles.

For cyclists who wish to have a greater separation from vehicular traffic, bicycle facilities will be provided either through a multi-use trail or through wider sidewalks.

Sidewalk/Multi-Use Path

The existing Pedestrian LOS for West Warren Avenue is LOS D as sidewalks are only present on the north side of the roadway; on St Laurent Street, the complete lack of sidewalks results in a Pedestrian LOS E. New sidewalks or multi-use paths will be added along the south side of West Warren Avenue and east side of St Laurent Street, increasing the sidewalk coverage along West Warren Avenue from 50% to 100% and providing a connection to the existing sidewalk along SR 434. This will increase the Pedestrian LOS to LOS C through the design year 2040 (as shown in the *Existing Conditions Report*, under separate cover).

Drainage Needs

Stormwater runoff on West Warren Avenue currently flows to roadside swales and intermitted roadside drainage inlets, with minimal stormwater facilities to provide treatment for roadway runoff. Many of the driveways connecting to West Warren Avenue on the south side drain considerable areas from adjacent private properties on the south side. In addition, the offsite properties on the south side of West Warren Avenue ultimately outfall to the storm sewer system across, along and under West Warren Avenue.

Drainage improvements will be needed along the corridor to mitigate the impact of the proposed roadway and pedestrian facility improvements, as well as to provide stormwater collection, retention, or redirection for the south side properties to remove their outfall to West Warren Avenue which can create potentially hazardous situations for corridor users.

Lighting

The existing streetlights are mounted to aerial utility poles. As part of improving the corridor aesthetics (see the next section), the aerial utilities will be relocated underground, therefore new dedicated lighting poles will be needed along the corridor. The existing outdated sodium vapor lighting fixtures will be replaced with LED fixtures, and additional LED fixtures will be added along the corridor where possible.

Aesthetics

In order to develop the project corridor into an impactful gateway corridor for the Longwood Historic District, the overall aesthetics require improvement. Existing features which reduce the overall appeal of the corridor include aerial utilities on both sides of the roadway; the dilapidated wood fence, dumpsters, and plain gray walls at the back of the Heritage Business Centre; and the overgrown/poorly maintained landscaping at multiple locations along the corridor.

Landscape

Landscape improvements to be considered for the corridor include improving the maintenance of existing landscaping, preserving existing shade trees, and planting new shade trees along the corridor where possible. Conditions in some segments along the corridor are not conducive to planting shade trees (such as where the available ROW is too narrow, or where close spaced driveways require greater sight distances), in these areas lower landscaping will be considered. As part of the lower landscaping, rain gardens will be planted near St Laurent Street to aid with drainage along the corridor.

Hardscape

Improvements to the hardscaping to be considered include burying the aerial utilities along the corridor, marking all crosswalks and on-street parking with brick pavers, adding murals and public artwork along the backs of commercial buildings (particularly in the Heritage Business Centre), and replacing the wood fence and relocating the dumpsters at Heritage Business Centre.

No Build Alternative

The No Build Alternative, which is considered throughout the study process, assumes no improvements will be made within the study area, except for planned and programmed improvements to adjacent facilities. The advantages of the No Build Alternative include no environmental impacts, no disruption of traffic or disturbance of stakeholders along the corridor during construction, and no project cost. The disadvantage of the No Build Alternative is not satisfying the project's purpose and need to enhance the connectivity, accessibility, and safety for all modes of transportation, activity centers, and neighborhoods surrounding West Warren Avenue. Additionally, consistency with state and locally adopted plans would not be maintained.

Typical Sections

As the No Build Alternative entails making no changes to the existing roadway, the future typical sections along West Warren Avenue will be the same as the existing typical sections, which are illustrated in Figure 2 through Figure 6.

Figure 2: Existing Typical Section from St Laurent Street to 385 ft East of St Laurent St

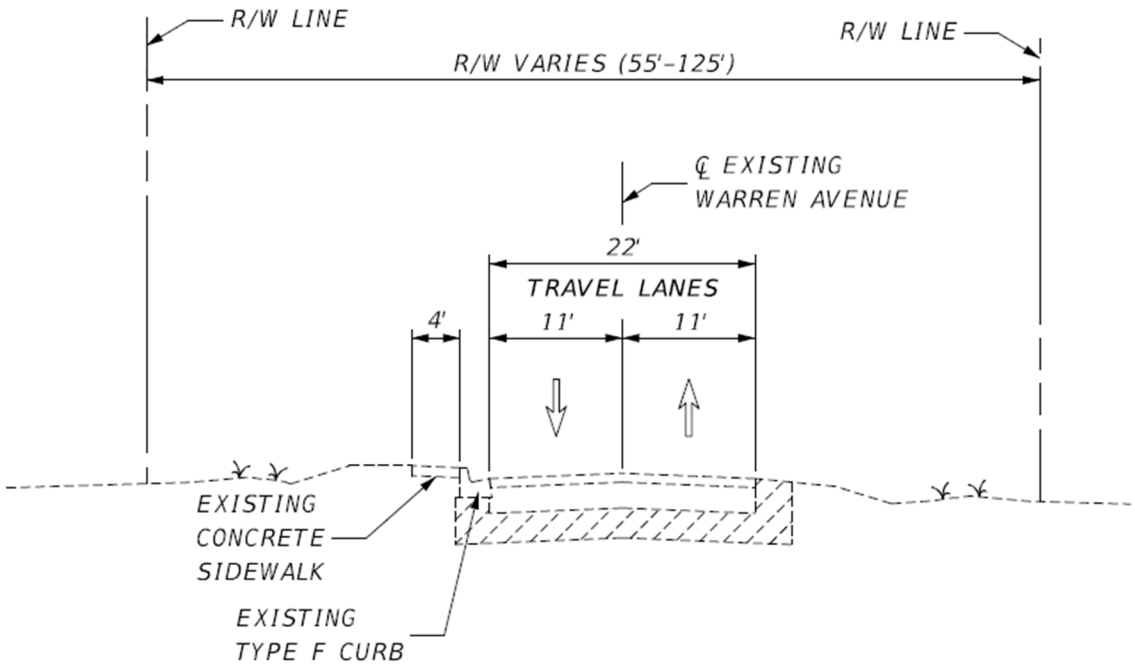


Figure 3: Existing Typical Section from 385 ft East of St Laurent St to 140 ft West of Lemon Lane

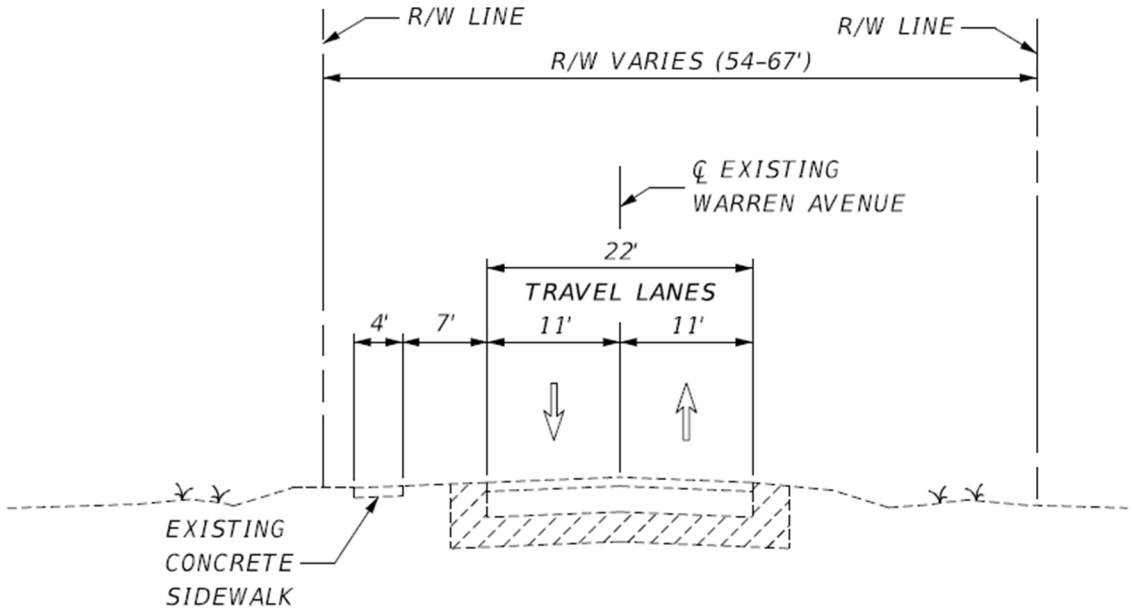


Figure 4: Existing Typical Section from 140 ft West of Lemon Lane to 320 ft East of Lemon Lane

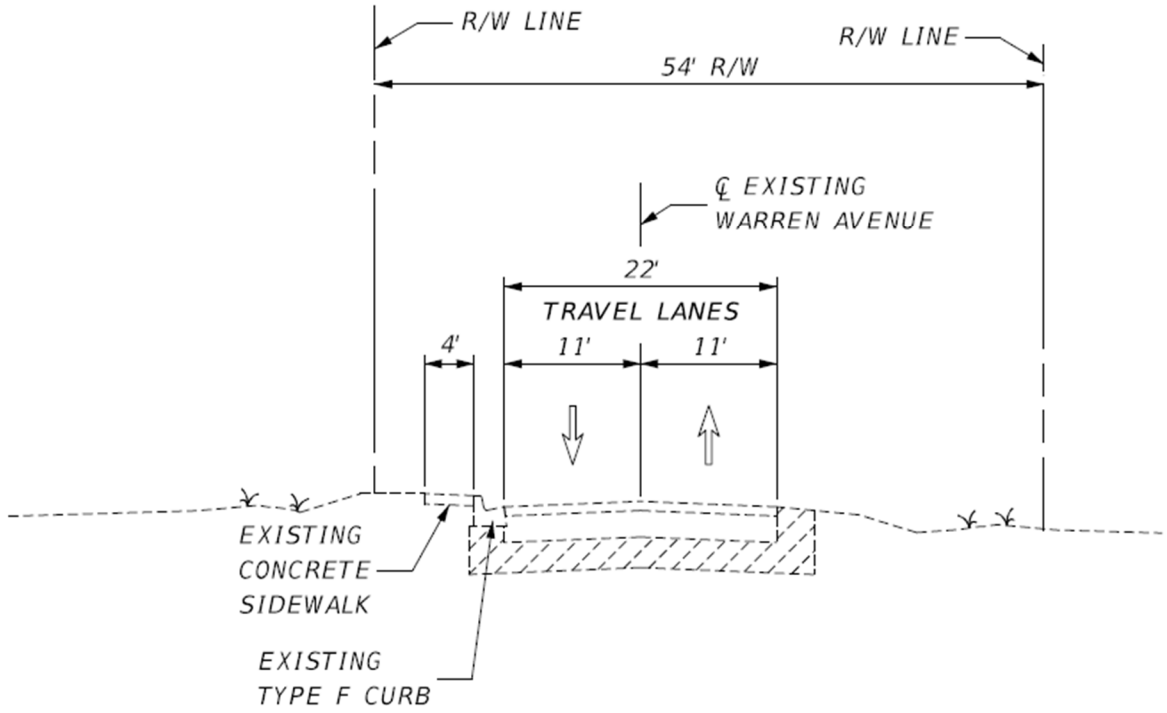


Figure 5: Existing Typical Section from 320 ft East of Lemon Lane to 680 ft West of Milwee Street

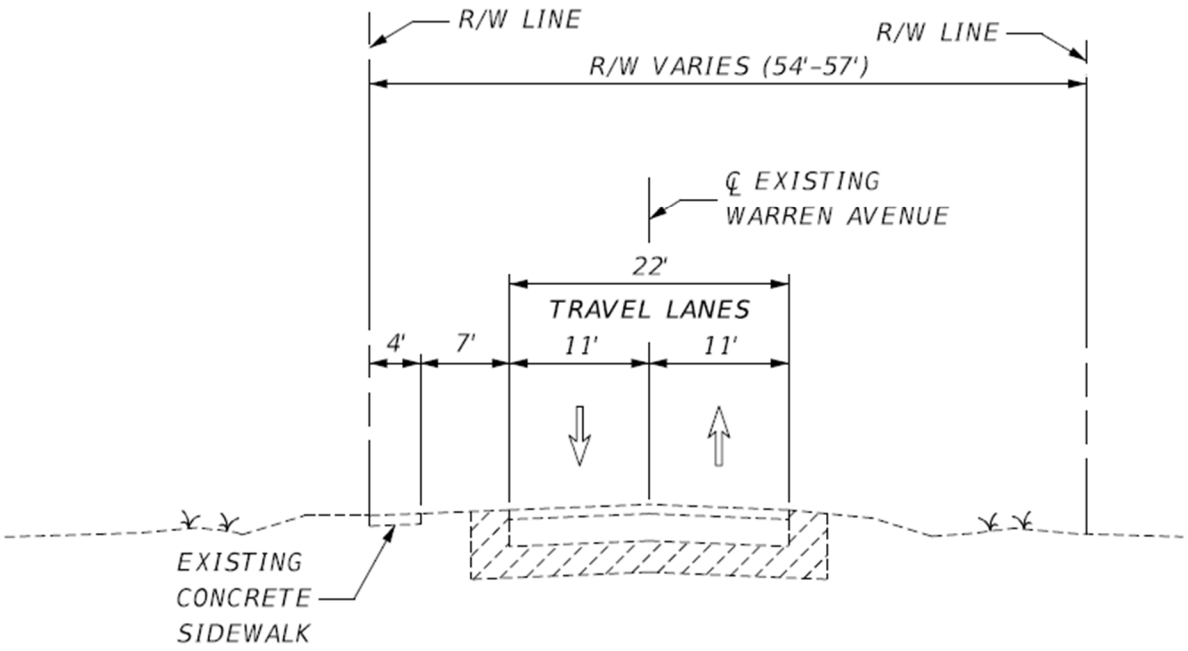
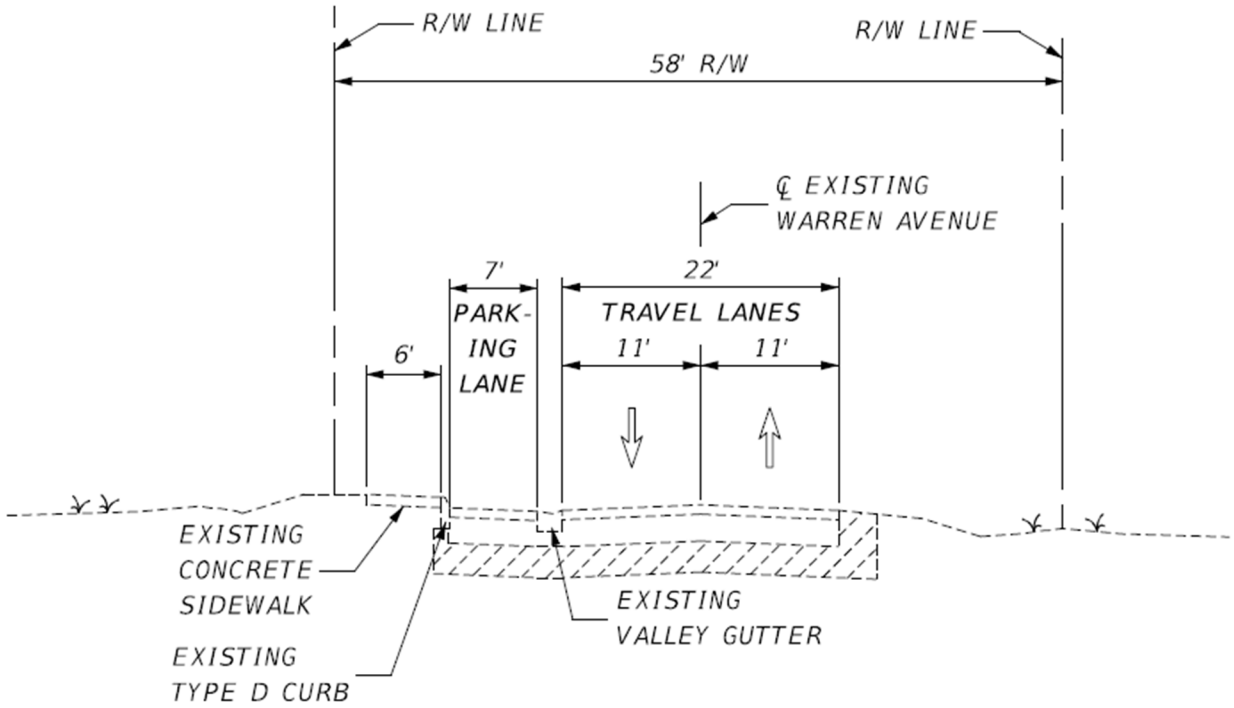


Figure 6: Existing Typical Section from 680 ft West of Milwee Street to Milwee Street



Proposed Alternatives

Two build alternatives were developed for the study area; both alternatives incorporate the following improvement strategies:

- Speed Management
- Additional On-Street Parking
- Sidewalk Improvements
- Drainage Improvements
- St Laurent Street Intersection Improvements
- Milwee Street Intersection Improvements

Both alternatives shift the alignment of West Warren Avenue north in order to accommodate either a multi-use path or a sidewalk on the south side of the roadway. The shift in the alignment varies between 0 ft and 13.7 ft, and is most significant in front of Alta Longwood Apartments.

For both alternatives, on St Laurent Street, a raised median will be installed between SR 434 and West Warren Avenue to provide better separation between southbound vehicles on St Laurent Street and westbound right-turning vehicles from SR 434. The existing traffic separator for the entrance to the Chase Bank drive through will be extended by approximately 50 ft to prevent westbound drivers from West Warren Avenue from performing a left turn to enter the drive through lane.

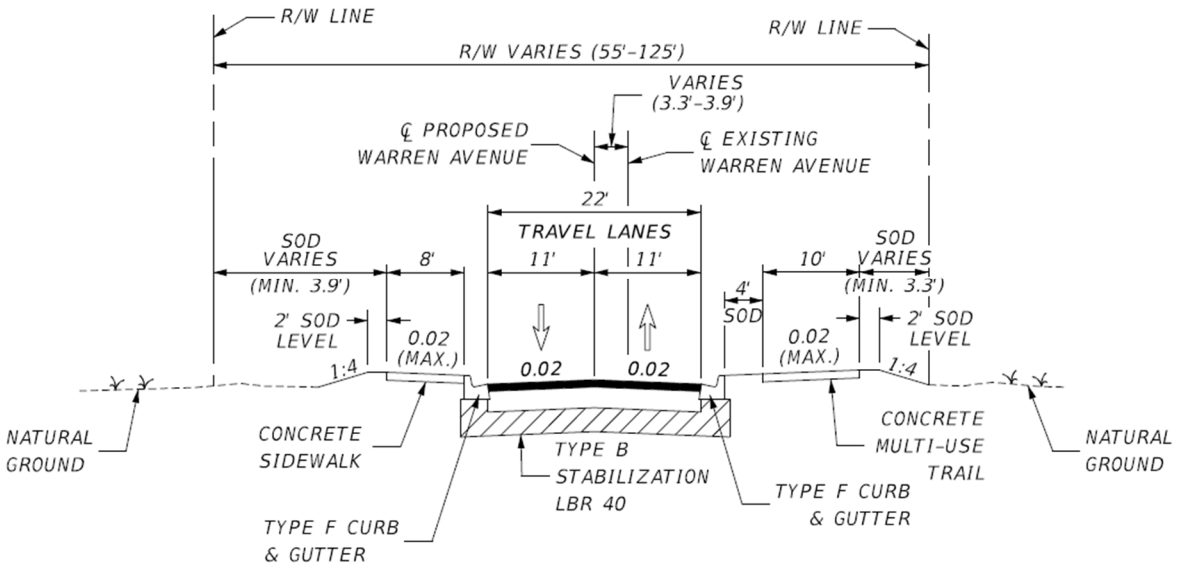
Alternative 1

Alternative 1 includes a new multi-use trail along the south side of West Warren Avenue throughout the project limits, widening of the sidewalks on the north side of West Warren Avenue, and additional on-street parking to be added on the north side of the roadway in front of Reiter Park and the office park immediately west of Reiter Park.

Typical Sections

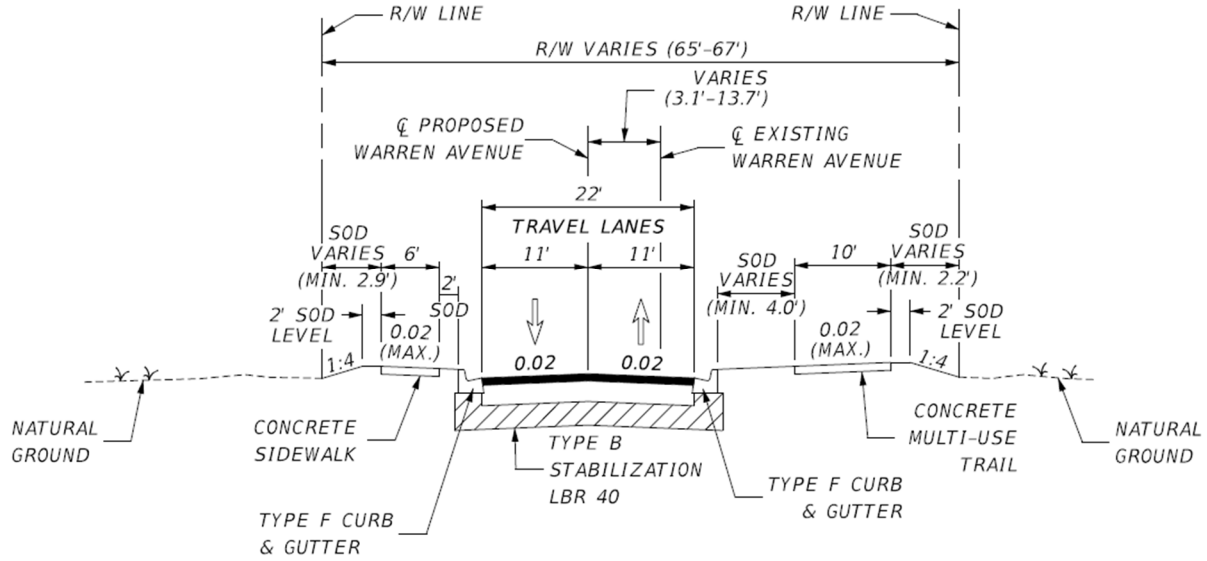
Throughout the project limits, the proposed typical sections include 11-ft-wide travel lanes with Type F Curb & Gutter (except the locations where on-street parking lanes are proposed). The proposed typical sections for Alternative 1 are illustrated in Figure 7 through Figure 12.

Figure 7: Alternative 1 Typical Section from St Laurent St to 385 ft East of St Laurent St



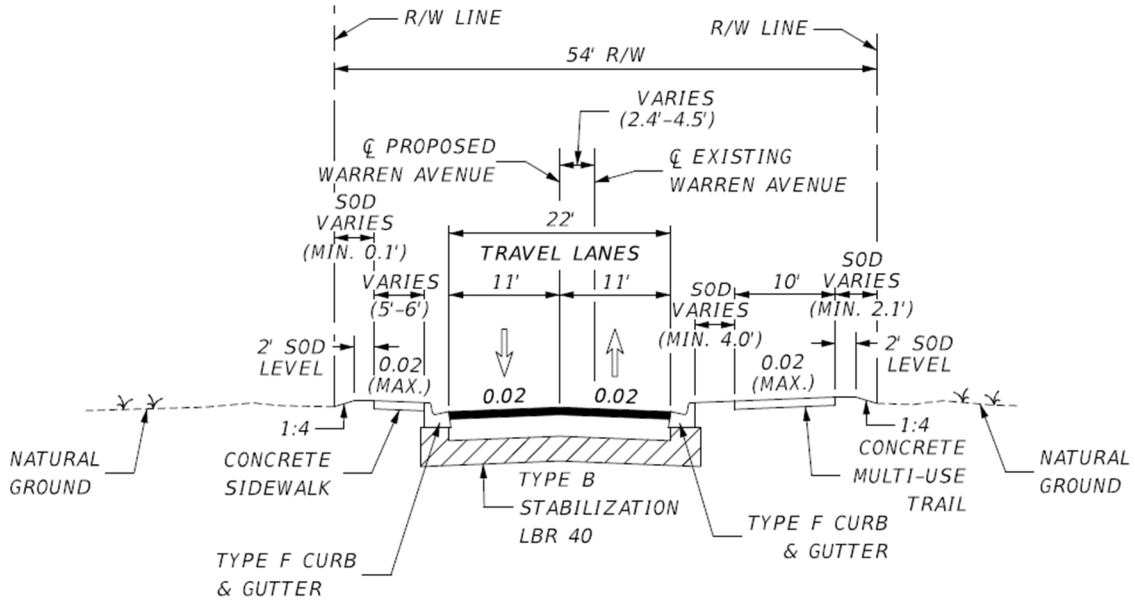
As shown in Figure 7, the proposed typical section for this segment includes an 8-ft-wide concrete sidewalk on the north side of the roadway and a 10-ft-wide concrete multi-use trail on the south side of the roadway. This section deviates from the existing alignment by 3.3 ft to 3.9 ft.

Figure 8: Alternative 1 Typical Section from 385 ft East of St Laurent Street to 500 ft West of Lemon Lane



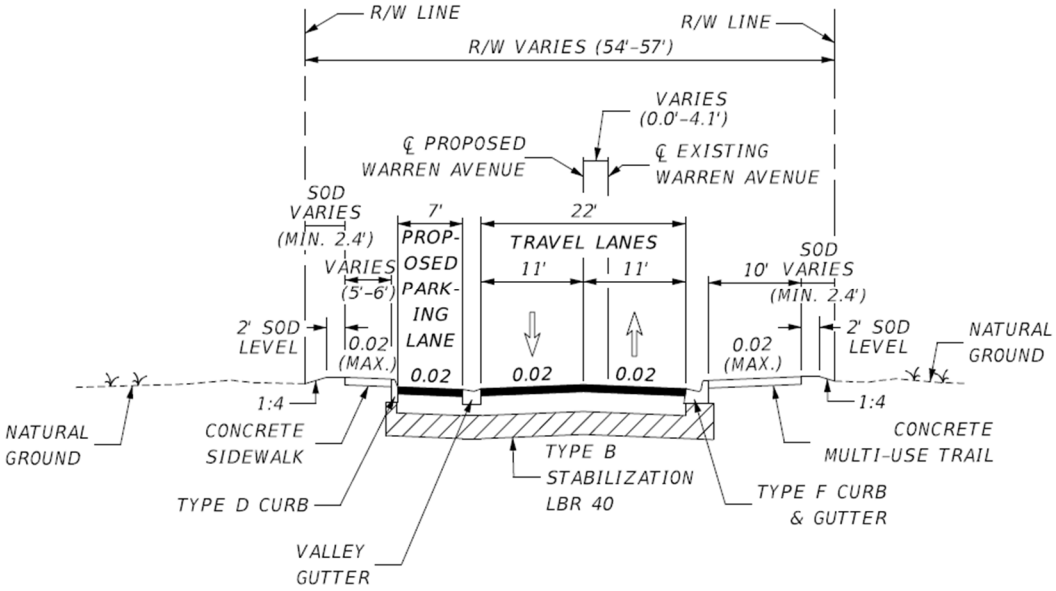
As shown in Figure 8, the proposed typical section for this segment includes a 6-ft-wide concrete sidewalk on the north side of the roadway and a 10-ft-wide concrete multi-use trail on the south side of the roadway. This section has the greatest deviation from the existing alignment; 3.1 ft to 13.7 ft.

Figure 9: Alternative 1 Typical Section from 500 ft West of Lemon Lane to 320 ft East of Lemon Lane



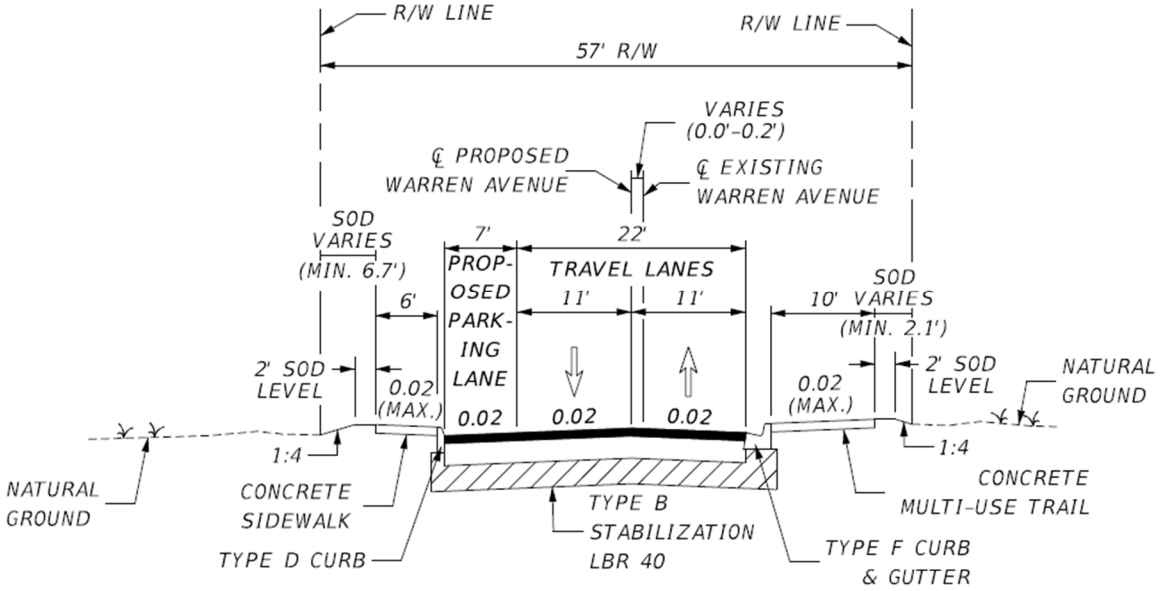
As shown in Figure 9, the proposed typical section for this segment includes a variable width (5 ft – 6 ft) concrete sidewalk on the north side of the roadway and a 10-ft-wide concrete multi-use trail on the south side of the roadway. This section deviates from the existing alignment by 2.4 ft to 4.5 ft.

Figure 10: Alternative 1 Typical Section from 760 ft East of Lemon Lane to 700 ft West of Milwee Street



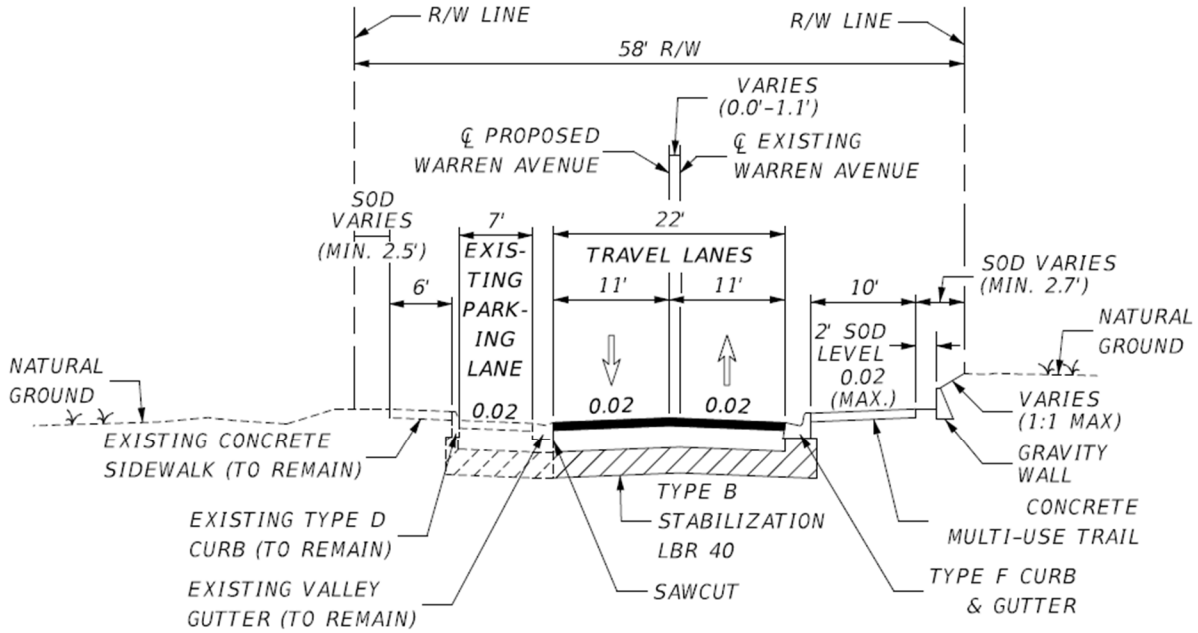
As shown in Figure 10, the proposed typical section for this segment includes a variable width (5 ft – 6 ft) concrete sidewalk and 7-ft-wide on-street parking lane on the north side of the roadway and a 10-ft-wide concrete multi-use trail on the south side of the roadway. Due to ROW constraints in this section, there is no utility strip to separate the multi-use trail from the back of curb. This section deviates from the existing alignment by 0.0 ft to 4.1 ft.

Figure 11: Alternative 1 Typical Section from 700 ft West of Milwee Street to 440 ft West of Milwee Street



As shown in Figure 11, the proposed typical section for this segment includes a 6-ft-wide concrete sidewalk and 7-ft-wide on-street parking lane on the north side of the roadway and a 10-ft-wide concrete multi-use trail on the south side of the roadway. Due to ROW constraints in this section, there is no utility strip to separate the multi-use trail from the back of curb. This section only deviates minimally from the existing alignment; 0.0 ft to 0.2 ft.

Figure 12: Alternative 1 Typical Section from 440 ft West of Milwee Street to Milwee Street



As shown in Figure 12, the proposed typical section for this segment includes a 6-ft-wide concrete sidewalk and 7-ft-wide on-street parking lane on the north side of the roadway and a 10-ft-wide concrete multi-use trail on the south side of the roadway. Due to ROW constraints in this section, there is no utility strip to separate the multi-use trail from the back of curb. This section deviates from the existing alignment by 0.0 ft to 1.1 ft.

Multimodal Components

Pedestrian

The sidewalk on the north side of the roadway will be reconstructed between St Laurent Street and Reiter Park and a new multi-use path will be constructed on the south side of the roadway between St Laurent Street and Milwee Street. A new 8-ft-wide sidewalk will be constructed on the west side of St Laurent Street between the existing sidewalk on SR 434 and West Warren Avenue. The multi-use path will connect to the sidewalk along St Laurent Street at the west end of the corridor, and to the planned new sidewalk along the west side of Milwee Street at the east end of the corridor.

At the intersection with St Laurent Street, the existing crosswalk over West Warren Avenue will be relocated approximately 70 ft west to provide better connectivity to the sidewalk along St Laurent Street.

Two new mid-block crossings will be added; one will be located just east of the new entrance to Alta Longwood Apartments, and the other will be located at Reiter Park where there is an existing sidewalk providing access from the on-street parking to the park. The existing midblock crossing just east of the West Warren Professional Center will be relocated approximately 120 ft east so that it no longer terminates in the driveway to the South Seminole Hospital parking lot. All of the crosswalks along the corridor – both across West Warren Avenue and across side streets and driveways - will be bricked to improve their visibility and to enhance the aesthetics of the corridor. Americans with Disabilities Act (ADA) compliant curb ramps and detectable warnings will be installed at all crosswalks.

Bike

Sharrows marked on the pavement will allow high-speed cyclists to use the travel lanes alongside vehicular traffic and the new multi-use trail on the south side of the roadway will provide ample space for both pedestrians and bicyclists.

Transit

There are no existing transit routes along West Warren Avenue, and at this time the City of Longwood has no plans to provide new transit routes along the corridor, therefore, no additional transit facilities are proposed. The addition of wider sidewalks to the south side of the road will provide easier access to and from the SunRail station for pedestrians and bicyclists – particularly those whose origin/destination is the commercial center at the west end of the corridor.

Alternative 2

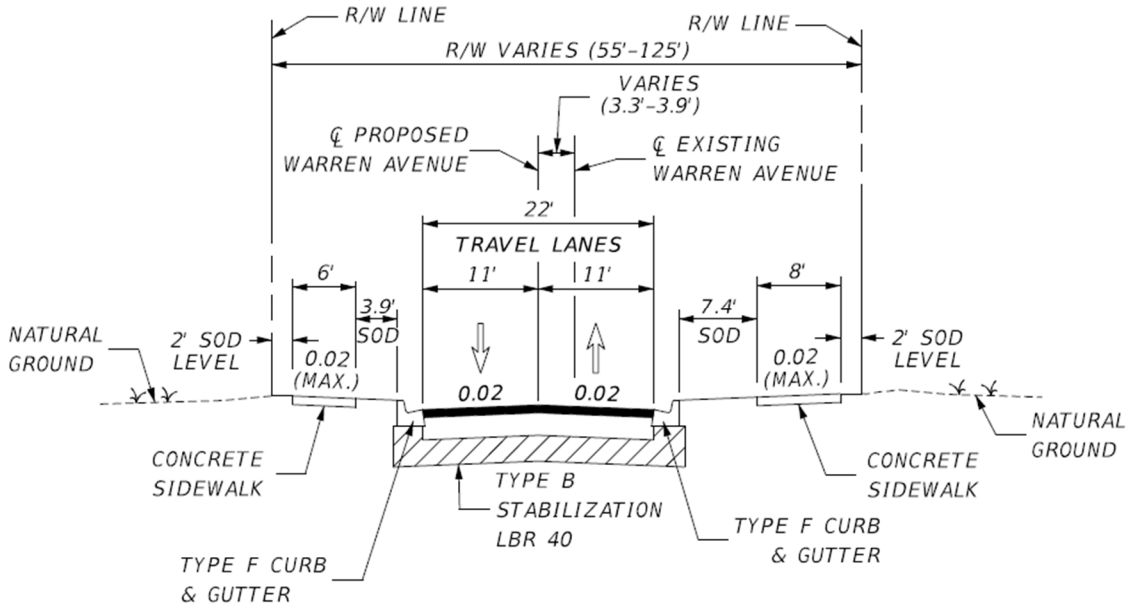
Alternative 2 includes a new concrete sidewalk along the south side of West Warren Avenue throughout the project limits, widening of the sidewalks on the north side of West Warren Avenue, and additional on-street parking to be added on the north side of the roadway in front of Reiter Park and the office park immediately west of Reiter Park.

Typical Sections

Throughout the project limits, the proposed typical sections include 11-ft-wide travel lanes with Type F Curb & Gutter (except the locations where on-street parking lanes are proposed), 6-ft-wide concrete

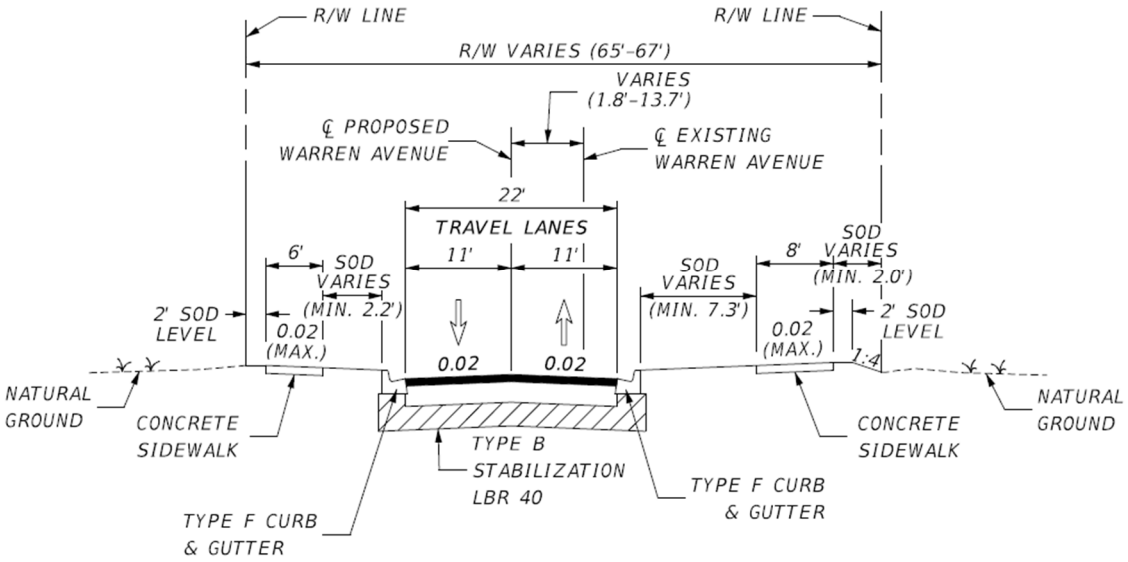
sidewalks on the norths ide of the roadway, and 8-ft-wide sidewalks on the south side of the roadway. The proposed typical sections for Alternative 2 are illustrated in Figure 13 through Figure 18.

Figure 13: Alternative 2 Typical Section from St Laurent St to 385 ft East of St Laurent St



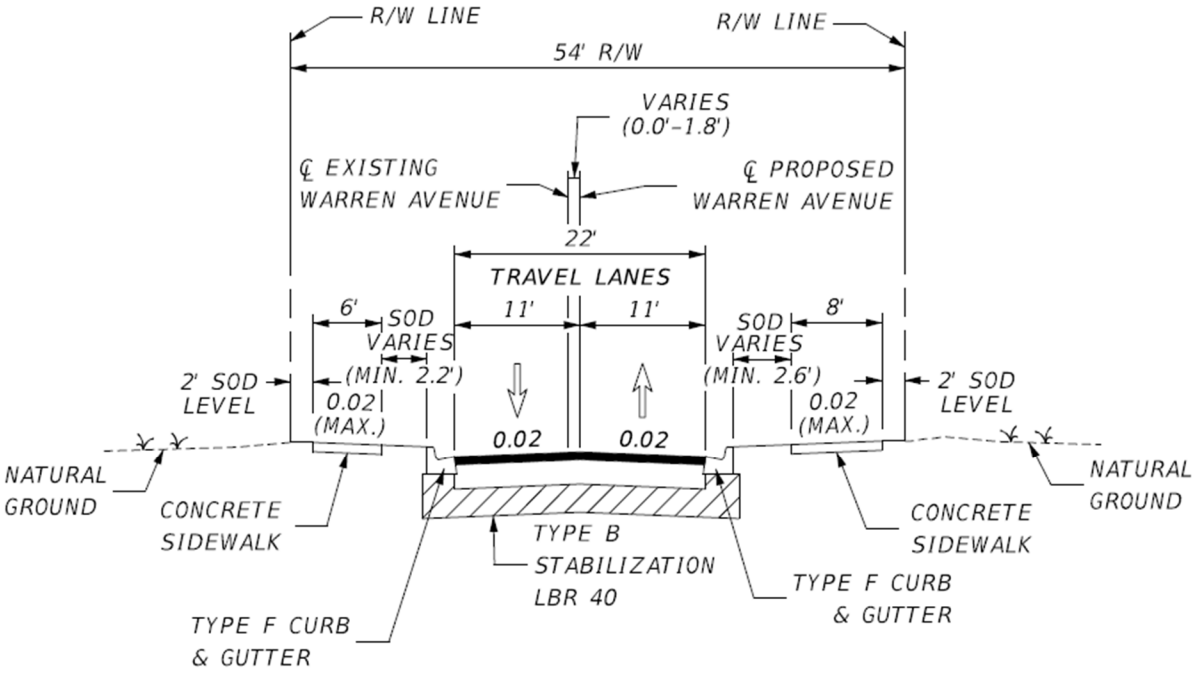
As shown in Figure 13, the proposed typical section for this segment includes a 6-ft-wide concrete sidewalk on the north side of the roadway, separated from the ravel lanes by an approximately 4-ft-wide utility strip, and an 8-ft-wide concrete sidewalk on the south side of the roadway, separated from the ravel lanes by a 7.4-ft-wide utility strip. This section deviates from the existing alignment by 3.3 ft to 3.9 ft.

Figure 14: Alternative 2 Typical Section from 385 ft East of St Laurent Street to 500 ft West of Lemon Lane



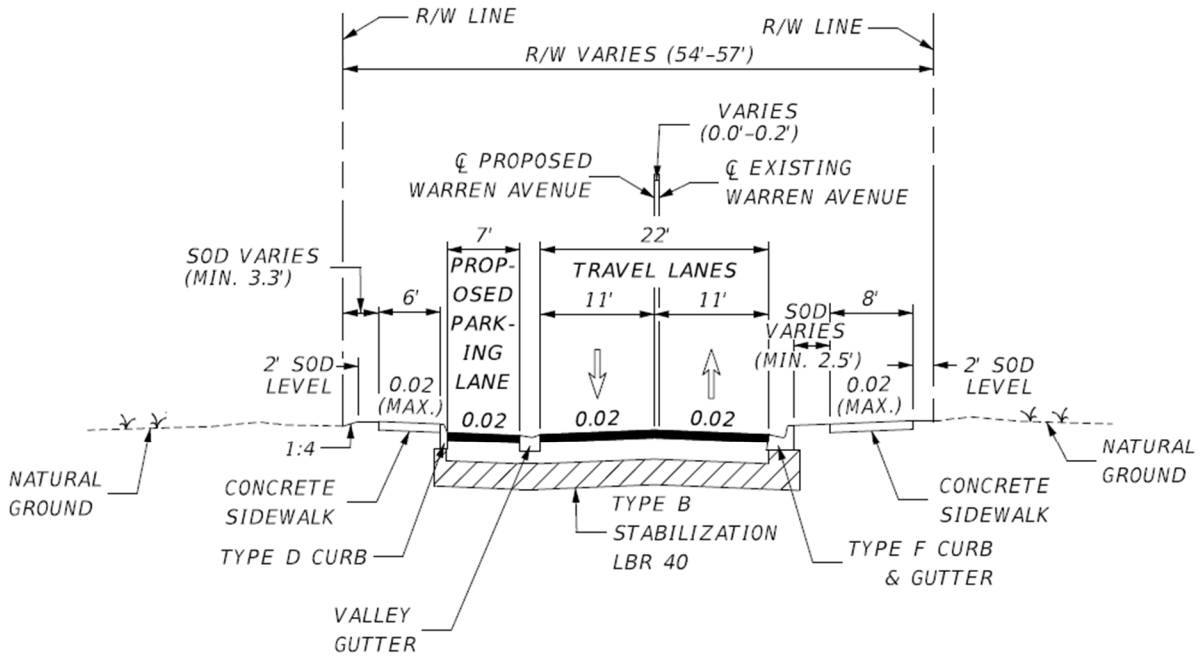
As shown in Figure 14, the proposed typical section for this segment includes a 6-ft-wide concrete sidewalk on the north side of the roadway, separated from the ravel lanes by a variable width (minimum 2.2 ft) utility strip, and an 8-ft-wide concrete sidewalk on the south side of the roadway, separated from the ravel lanes by a variable width (minimum 7.3 ft) utility strip. This section has the greatest deviation from the existing alignment; 1.8 ft to 13.7 ft.

Figure 15: Alternative 2 Typical Section from 500 ft West of Lemon Lane to 320 ft East of Lemon Lane



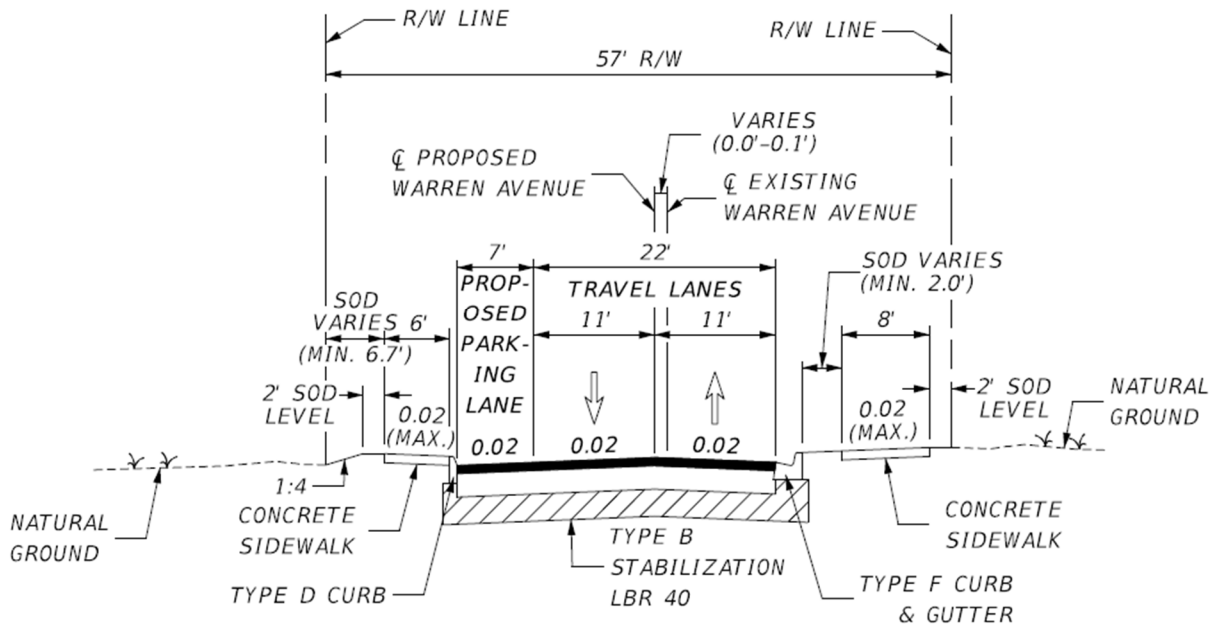
As shown in Figure 15, the proposed typical section for this segment includes a 6-ft-wide concrete sidewalk on the north side of the roadway, separated from the ravel lanes by a variable width (minimum 2.2 ft) utility strip, and an 8-ft-wide concrete sidewalk on the south side of the roadway, separated from the ravel lanes by a variable width (minimum 2.6 ft) utility strip. This section only deviates slightly from the existing alignment; 0.0 ft to 1.8 ft.

Figure 16: Alternative 2 Typical Section from 760 ft East of Lemon Lane to 700 ft West of Milwee Street



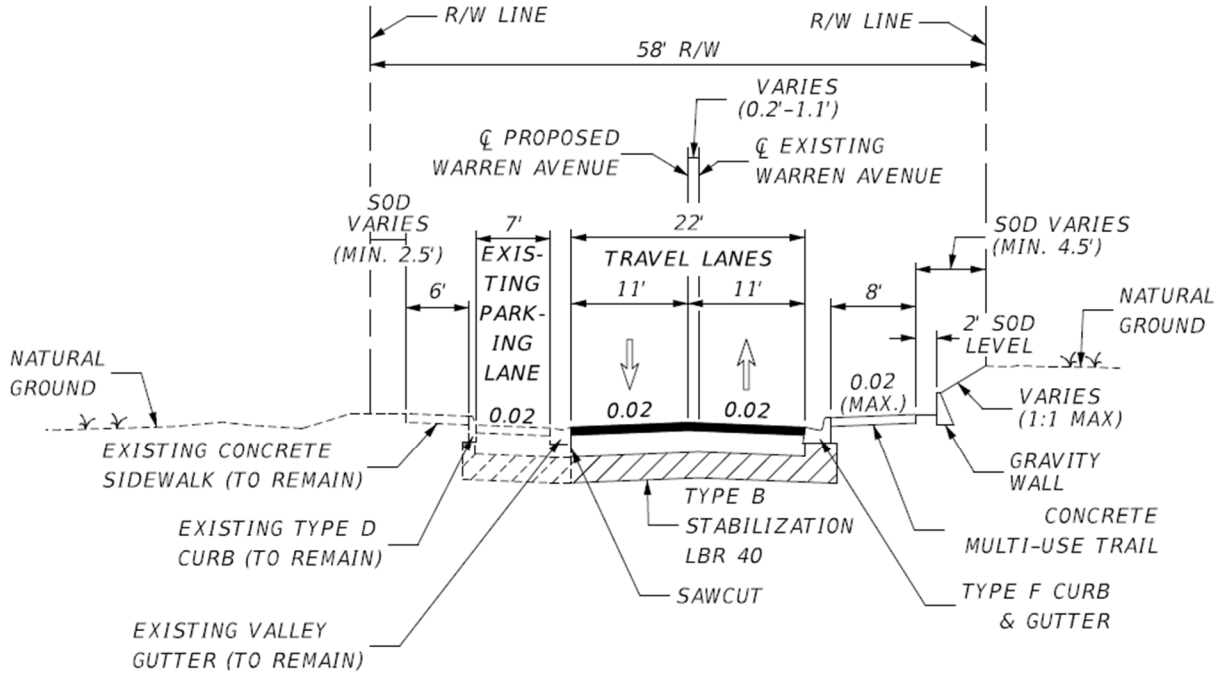
As shown in Figure 16, the proposed typical section for this segment includes a 7-ft-wide on-street parking lane on the north side of the roadway, a 6-ft-wide concrete sidewalk on the north side of the roadway, and an 8-ft-wide concrete sidewalk on the south side of the roadway, separated from the ravel lanes by a variable width (minimum 2.5 ft) utility strip. Due to ROW constraints in this section, there is no utility strip to separate the north sidewalk from the back of curb. This section deviates minimally from the existing alignment; 0.0 ft to 0.2 ft.

Figure 17: Alternative 2 Typical Section from 700 ft West of Milwee Street to 440 ft West of Milwee Street



As shown in Figure 17, the proposed typical section for this segment includes a 7-ft-wide on-street parking lane on the north side of the roadway, a 6-ft-wide concrete sidewalk on the north side of the roadway, and an 8-ft-wide concrete sidewalk on the south side of the roadway, separated from the ravel lanes by a variable width (minimum 2 ft) utility strip. Due to ROW constraints in this section, there is no utility strip to separate the north sidewalk from the back of curb. This section deviates minimally from the existing alignment; 0.0 ft to 0.1 ft.

Figure 18: Alternative 2 Typical Section from 440 ft West of Milwee Street to Milwee Street



As shown in Figure 18, the proposed typical section for this segment includes the existing 7-ft-wide on-street parking lane and 6-ft-wide concrete sidewalk on the north side of the roadway, as well as a new 8-ft-wide concrete sidewalk on the south side of the roadway. Due to ROW constraints in this section, there is no utility strip to separate the south sidewalk from the back of curb. This section deviates from the existing alignment by 0.2 ft to 1.1 ft.

Multimodal Components

Pedestrian

The sidewalk on the north side of the roadway will be reconstructed between St Laurent Street and Reiter Park and a new 8-ft wide sidewalk will be constructed on the south side of the roadway between St Laurent Street and Milwee Street. A new 8-ft wide sidewalk will also be constructed on the west side of St Laurent Street between the existing sidewalk on SR 434 and West Warren Avenue. The sidewalk on the south side of West Warren Avenue will connect to the sidewalk along St Laurent Street at the west end of the corridor, and to the planned new sidewalk along the west side of Milwee Street at the east end of the corridor.

At the intersection with St Laurent Street, the existing crosswalk over West Warren Avenue will be relocated approximately 70 ft west to provide better connectivity to the sidewalk along St Laurent Street.

Two new mid-block crossings will be added; one will be located just east of the new entrance to Alta Longwood Apartments, and the other will be located at Reiter Park where there is an existing sidewalk providing access from the on-street parking to the park. The existing midblock crossing just east of the West Warren Professional Center will be relocated approximately 100 ft east so that it no longer terminates in the driveway to the South Seminole Hospital parking lot. All of the crosswalks along the corridor – both across West Warren Avenue and across side streets and driveways - will be bricked to improve their visibility and to enhance the aesthetics of the corridor. Americans with Disabilities Act (ADA) compliant curb ramps and detectable warnings will be installed at all crosswalks.

Bike

Sharrows marked on the pavement will allow high-speed cyclists to use the travel lanes alongside vehicular traffic and the new sidewalk on the south side of the roadway will provide ample space for both pedestrians and bicyclists.

Transit

There are no existing transit routes along West Warren Avenue, and at this time the City of Longwood has no plans to provide new transit routes along the corridor, therefore, no additional transit facilities are proposed. The addition of wider sidewalks to the south side of the road will provide easier access to and from the SunRail station for pedestrians and bicyclists – particularly those whose origin/destination is the commercial center at the west end of the corridor.

Initial Concept Plans

Conceptual layouts of the proposed improvements for both build alternatives are included in Appendix A.

Alternatives Assessment

Community Impacts

Right of Way and Parcels

Both alternatives are contained entirely within the existing ROW and therefore will cause no impacts to either the ROW or the parcels surrounding the project area.

Cultural Resources

One resource group, The Longwood Historic District, is located within the study area and covers the eastern end of the project corridor near the intersection of West Warren Avenue and Miliwee Street. The proposed project encroaches into the footprint of this resource group. Two Cultural Resource Assessment Surveys (CRAS) have been conducted within the study area. The *Cultural Resources Study of Seminole County, Florida: Historical and Architectural Resources, Volume III*, covers the entire project corridor for both alternatives. The second CRAS, SR 434 PD&E Study, encroaches into a very small portion of both alternatives in this southwest portion on SR 434. However, these areas are encompassed by the existing roadway which is unlikely to be disturbed as part of the trail project (see Exhibit 1 in Appendix B).

There is no difference between the alternatives within the area of the Longwood Historic District, as the area has been thoroughly surveyed. Thus, the potential to impact cultural resources is low.

Social Resources

There are seven (7) Social Resource sites identified within the existing conditions assessment, compromising four (4) Health Care Facilities, one (1) Hospital, one (1) City Park (Reiter Park), and one (1) Fire Station (City Longwood Fire Station and Rescue Station). Two (2) facilities, Reiter Park and Azel Vandre Do & Associates are located within the project area. The remaining five (5) facilities are located outside of the project footprint for each of the two concept alternatives being considered (see Exhibit 2 in Appendix B). Reiter Park is administered to City of Longwood, FL, is 7.73 acres, and is located in the northeast portion of the study area. Azel Vandre Do & Associates, (a health care facility) is located near the eastern end of the project corridor, at the intersection of West Warren Avenue and Miliwee

Street. Although a new sidewalk will be constructed closer to these two social resources, the design allows for avoidance of the sites.

There is no difference in impacts to social resources between either of the alternatives given that no resources will be impacted.

Environmental Impacts

Contamination

There are twenty-two (22) "potential" hazard and risk sites identified within the existing conditions assessment, compromising five (5) U.S. EPA Resource Conservation and Recovery Act (RCA) regulated facilities which include the generation, transportation, treatment, storage and/or the disposal of hazardous waste, five (5) national pollutant discharge elimination systems (NPDES), four (4) hazardous waste facilities, four (4) biomedical waste facilities, three (3) storage tank contamination monitoring sites (STCM), and one (1) petroleum contamination monitoring site (PCMS). These facilities are located outside of the project footprint for each of the two concept alternatives considered (see Exhibit 3 in Appendix B).

One listed RCA regulated facility, EZR CO, is located to the south at the western end of West Warren Avenue. This facility is no longer in operation and the property was noted as vacant in 2011 by the Florida Department of Environmental Protection (FDEP). The four other "potential" hazardous RCA facilities are Orlando Regional South Seminole located south of the study area, Energy Systems & Service located south of the study area, Tire Kingdom located south of the study area, and E-Z Go Textron located north of the study area. Energy Systems & Service is no longer in operation, the property is now occupied by Avantapure. E-Z Go Textron is no longer in operation, with the property developed as apartments.

"Potential" hazardous and risk sites associated with NPDES are Alta Longwood Apartments, Oak Reserve, and Warren Professional Center located north of West Warren Avenue, and AM South Longwood, and Orlando Regional South Seminole located south of West Warren Avenue.

"Potential" hazardous and risk sites associated with hazardous waste facilities are EZR CO, Tire Kingdom, Energy Systems & Service, and South Seminole Hospital Plaza. According to the Hazardous Waste Inspection Report # FLD982122988 dated on 06/07/2011, EZR CO is no longer in operation and the property is vacant. On 02/11/2021 there was a Hazardous Waste Inspection at Tire Kingdom, and this facility received 2 violations. The first is a violation is to federal code 279.22(c)(1) and Florida Administrative Code 62-710.401(6) in which containers and aboveground tanks used to store used oil at generator facilities must be labeled or marked clearly with the words "Used Oil." The second violation is to Florida Administrative Code 62-710.850(5)(a) in which all persons storing used oil filters shall store used oil filters in above ground containers which are clearly labeled "Used Oil Filters". According to the Hazardous Waste Inspection Report # FL0000609578 dated on 06/07/2011, Energy Systems & Service is no longer in operation, the property is now occupied by Avantapure. According to the Florida Department of Environmental Protection (FDEP) Report #FLD984195099, South Seminole Hospital Plaza is currently permitted/active with "No Active Hazardous Waste Treatment, Storage, or Disposal Permit".

Internal Medicine Connection, to the north of West Warren Avenue is listed as a biomedical waste facility. The three other biomedical sites are Orlando Health Behavior Group located north of the study area, South Seminole Women's Imaging Center, located south of the study area, and Orlando Health South Seminole located south of the study area. These four sites are likely to be far enough away from the concept alternatives that they have no effect on the project.

The three contamination sites classified as STCMs are Rational Therapy Center located north of West Warren Avenue, and South Seminole Medical Plaza Condo and OH-SSEM located south of West Warren

Avenue. According the FDEP, the underground storage tank located at the Rational Therapy Center was removed in 1992 and documents indicate that there is no known soil or water contamination at the site. According to DEP records the underground storage tank located at South Seminole Medical Plaza Condo was removed in 1999. At the time of the removal, contamination was identified within the soil beneath the tank. No additional work was required at the time. However, the site has not been certified clean and further assessment of this site may be required in the future. OH-SSEM was inspected on 10/15/2019, and the facility was deemed to be in compliance with FDEPs storage tank rules and regulations.

The "potential" hazardous and risk site associated with PCMS is South Seminole Medical Plaza Condo located south of West Warren Avenue, discussed above.

Potential contamination associated with the South Seminole Medical Plaza Condo site cannot be determined to not affect either of the two alternatives at this stage. However, there is not likely to be a significant difference between the two alternatives from any potential impact from this site. The other twenty-one sites are likely to be far enough away from the concept alternatives that they have no effect on the project.

The study area is within in a brownfield area known as the Longwood Economic Enhancement Program (LEEP), as designated on April 04, 2012. Brownfield designations are sought to encourage economic development, and environmental remediation and rehabilitation.

There is no significant difference, with respect to contamination, between either alternative.

Threatened and Endangered Species

Publicly available Geographic Information System (GIS) data was reviewed to determine the potential for protected species within the two alternatives. The state Threatened gopher tortoise (*Gopherus polyphemus*) and state listed plant species have a low potential to occur in either of the alternatives. Protected wading birds and the federally threatened wood stork (*Mycteria americana*) are not anticipated to occur within either of the alternatives. Florida sandhill cranes (*Grus canadensis pratensis*) may periodically utilize grassy areas within and adjacent to Alternatives 1 and 2 for foraging.

Overall, the is a low potential for protected species within the project area, and thus there is no difference between either alternative (see Exhibit 4 in Appendix B).

Wetlands and Surface Waters

There are no wetlands or surface waters within the project area for either alternative. However, there is one permitted stormwater system located within both alternatives. This system is located at the eastern end of the project corridor, south of West Warren Avenue (see Exhibit 5 in Appendix B). No impacts will occur to this system from either alternative. Although a new sidewalk will be constructed closer to this stormwater pond than the existing one, the project design allows for avoidance of this system. Several other permitted stormwater systems are located along the corridor, but are outside of the project area for both alternatives.

There is no significant difference between either alternative with respect to wetlands and surface waters as no impacts will occur.

Floodplain

No floodplains are mapped within the Alternative 1 or 2 (see Exhibit 6 in Appendix B). Therefore, this resource does not affect the alternatives analysis.

Drainage Impacts

The drainage plan for the West Warren Avenue corridor will be the same for both alternatives. The addition of curb and gutter along West Warren Avenue will remove the existing informal drainage system where runoff flows to the grassed areas alongside the roadway. As such, the project will have to qualify for a general permit by proving that the project provides a net benefit to the stormwater conditions along West Warren Avenue. The study area is broken into two sub-basins:

- Lake Searcy Sub-Basin: from St Laurent Street to Lemon Lane
- East Lake Sub-Basin: from Lemon Lane to Milwee Street

A summary of the proposed improvements for each sub-basin are shown in Table 3.

Table 3: Proposed Net Drainage Improvements

	Lake Searcy Sub-Basin		East Lake Sub-Basin	
	Pre-development	Post-development	Pre-development	Post-development
Total ROW Area (acres)	2.65	2.65	1.82	1.82
Runoff Area (acres)				
To Impervious	1.73	1.50	0.79	0.77
To roadside grass	0.92	-	0.74	-
To South Seminole Hospital	-	-	0.29	0.29
To new rain garden at St Laurent St	-	0.55	-	-
To proposed swales on South side in front of Heritage Business Centre	-	0.60	-	-
To Reiter Park Pond*	-	-	-	0.66
To exfiltration trench	-	-	-	0.10
Net Improvement	**0.23 acres**		**0.02 acres**	

** Reiter Park has capacity for an additional 0.37 acres of impervious area. Which is equivalent to approximately 0.66 acres of ROW area that could runoff to Reiter Park Stormwater pond.*

As shown in Table 3, various drainage improvement strategies will be proposed for different areas of the study corridor. Near St Laurent Street, a new rain garden will be planted as part of the roadside landscaping; new swales will be constructed on the south side of West Warren Avenue at the Heritage Business Centre; a new exfiltration trench will be constructed at the east end of the corridor; and existing stormwater retention facilities at Reiter Park and the South Seminole Hospital will be used.

Utility Impacts

Both alternatives will have significant impacts on the existing utilities along the project corridor. Currently, both the aerial and underground utilities on the north and south sides of the corridor are located within 10 ft of the edge of the travel lanes. In order to accommodate the roadway alignment shift to the north and the new multi-use trail (Alternative 1) or sidewalk (Alternative 2) on the south side, all existing utilities will need to be buried. Both alternatives provide either a utility strip between the sidewalk/multi-use trail and the travel lanes or enough space between the back-of-sidewalk and edge-of-ROW to accommodate the buried utilities.

Aesthetic Impacts

Both alternatives will provide aesthetic improvements to the West Warren Avenue corridor through the maintenance of existing landscaping, addition of new landscaping, burying the existing aerial utilities, and incorporation of murals and public artwork where possible along the corridor. Alternative 2 provides more space for landscaping improvements than Alternative 1, therefore also providing greater potential aesthetic improvements for the corridor.

Cost Estimate

Cost estimates for both alternatives were developed based on the proposed improvements as shown in the concept plans (see Appendix A). The design phase costs are estimated as 25% of the construction cost, and the contingency costs are estimated as 25% of the sum of the construction and design costs. The cost estimates are summarized in Table 4.

Table 4: Cost Estimate Summary

Component	Alternative 1	Alternative 2
PE (Design Phase)	$698,214.05	$683,646.11
Construction Cost	$2,792,856.20	$2,734,584.43
Contingency (25%)	$872,767.56	$854,557.64
Total Project Cost	**$4,363,837.81**	**$4,272,788.18**

The full detailed cost estimates are included in Appendix C.

Evaluation Matrix

The qualitative evaluation matrix for the No Build Alternative, Alternative 1, and Alternative 2 is shown in Table 5 below.

Table 5: Evaluation Matrix

Evaluation Criteria	No Build Alternative	Alternative 1	Alternative 2
Purpose and Need			
Enhances connectivity and accessibility for all travel modes	No	Yes	Yes
Creates a safe and supportive environment for walking and biking	No	Yes	Yes
Supports the City's Economic Development initiatives	No	Yes	Yes
Guiding Principles			
Improve Access and Connectivity Along the Corridor	No	Yes	Yes
Invest in Aesthetic and Functional Transportation Improvements	No	Yes	Yes
Support the City of Longwood's Other Livability Goals	No	Yes	Yes
Potential Community Impacts			
Number of Parcels Potentially Impacted	0	0	0
ROW Acquisition	0	0	0
Potential Utility Impacts (Low/Moderate/High)	None	High	High
Potential Historic/Archaeological Impacts (Low/Moderate/High)	None	Low	Low
Potential Environmental Impacts			
Wetlands (acres)	0.0	0.0	0.0
Floodplains (acres)	0.0	0.0	0.0
Threatened and Endangered Species (Low/Moderate/High)	None	Low	Low
Potential Contamination Sites (Low/Medium/High)	None	22/0/0	22/0/0
Estimated Project Cost			
Estimated Design Cost	$0	$698,214.05	$683,646.11
Estimated Construction Cost	$0	$2,792,856.20	$2,734,584.43
Contingency (25%)	$0	$872,767.56	$854,557.64
Total Estimated Cost	$0	$4,363,837.81	$4,272,788.18

Appendices

Appendix A
Initial Concept Plans

WINN DIXIE

BEALLS OUTLET

ST LAURENT STREET

EXISTING R/W

CHASE BANK

ONLY

EXISTING R/W

WARREN AVENUE

EXISTING R/W

WENDY'S

SR 434

EXISTING R/W

MCDONALD'S

SAVAGE COURT

TIRE KINGDOM

DUNKIN' DONUTS

N

0 10 50

Feet

MATCHLINE - SEE SHEET 2

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
WARREN	SEMINOLE	

WARREN AVE PD&E - ALTERNATIVE 1 - SHEET 1

SHEET NO.

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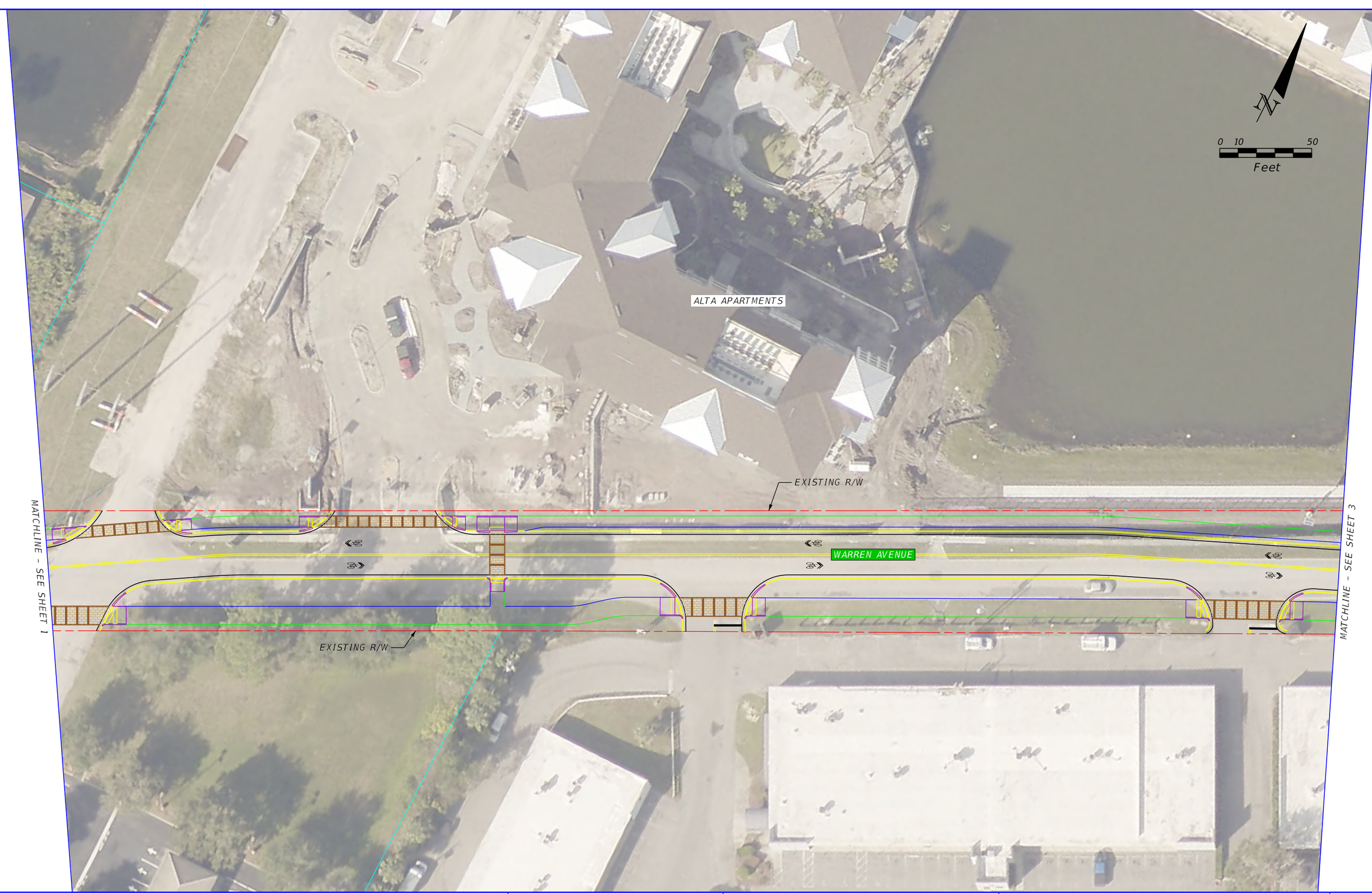

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DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
WARREN	SEMINOLE	

WARREN AVE PD&E - ALTERNATIVE 1 - SHEET 2

SHEET NO.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
WARREN	SEMINOLE	

WARREN AVE PD&E - ALTERNATIVE 1 - SHEET 3

SHEET NO.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
WARREN	SEMINOLE	

WARREN AVE PD&E - ALTERNATIVE 1 - SHEET 4

SHEET NO.

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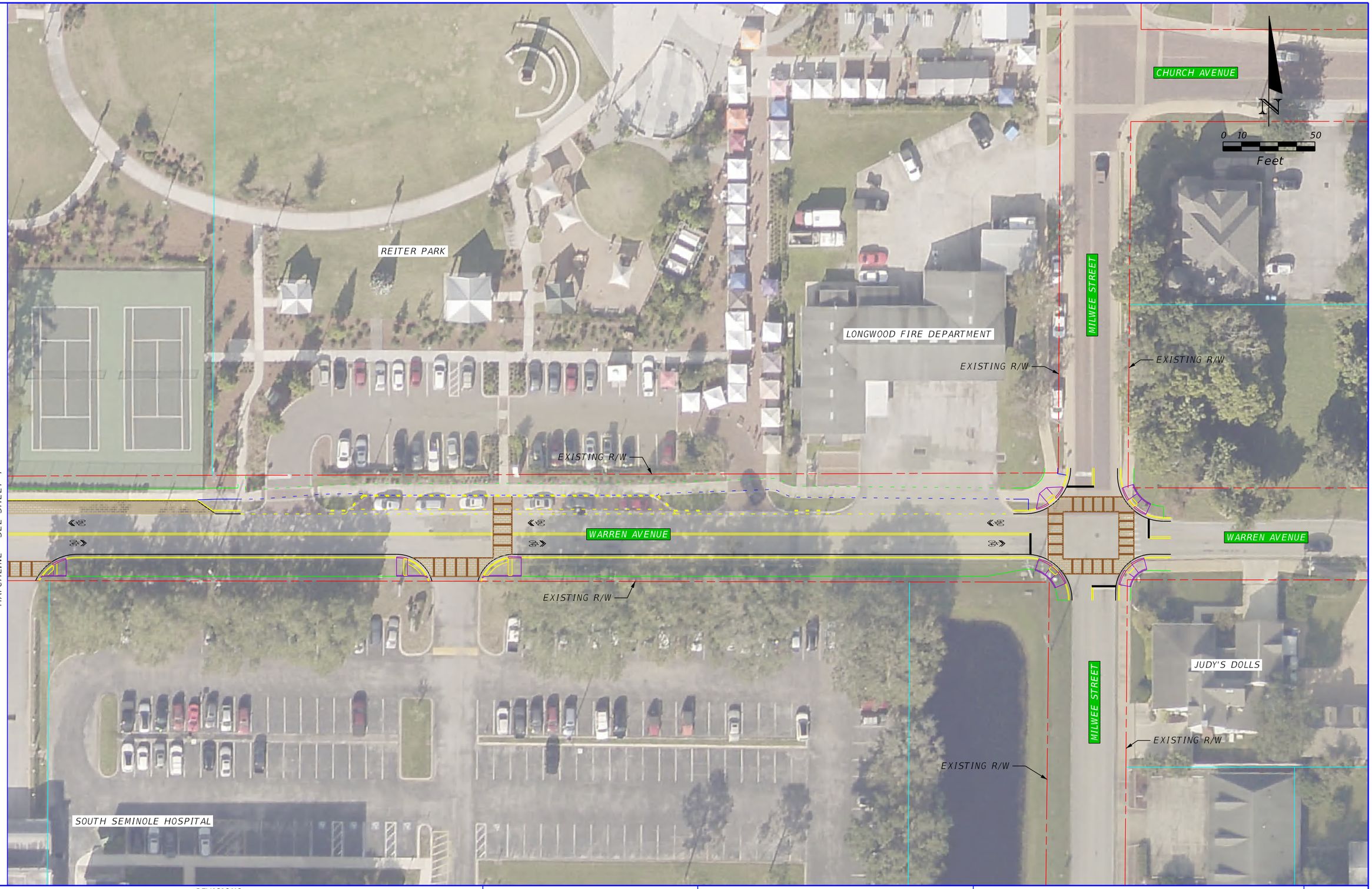

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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WARREN AVE PD&E - ALTERNATIVE 1 - SHEET 5

SHEET NO.

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WINN DIXIE

BEALLS OUTLET

ST LAURENT STREET

EXISTING R/W

CHASE BANK

ONLY

EXISTING R/W

WARREN AVENUE

EXISTING R/W

WENDY'S

SR 434

EXISTING R/W

MCDONALD'S

SAVAGE COURT

TIRE KINGDOM

DUNKIN' DONUTS

N

0 10 50

Feet

MATCHLINE - SEE SHEET 2

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
WARREN	SEMINOLE	

WARREN AVE PD&E - ALTERNATIVE 2 - SHEET 1

SHEET NO.

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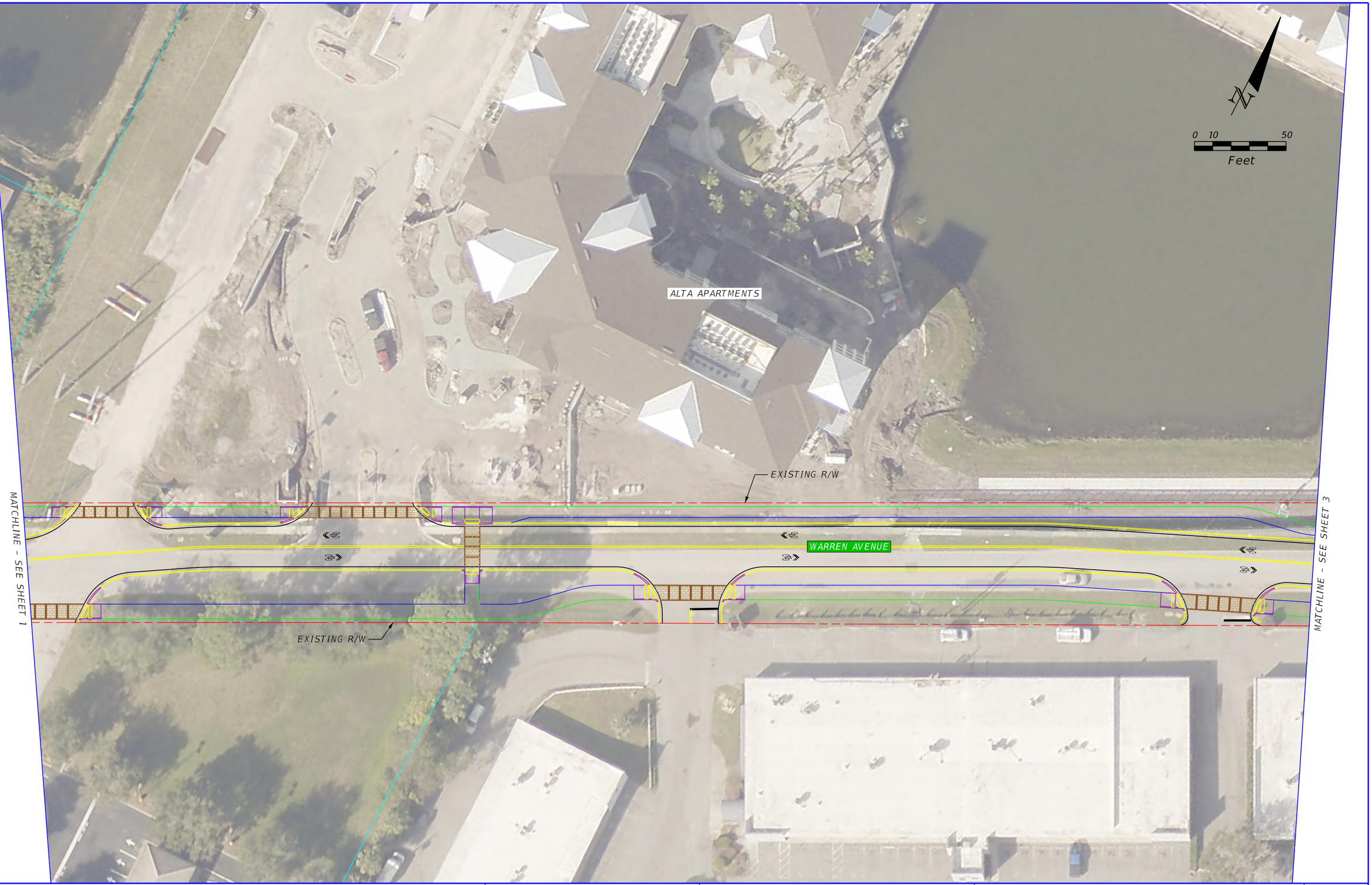


REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
WARREN	SEMINOLE	

WARREN AVE PD&E - ALTERNATIVE 2 - SHEET 2

SHEET NO.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
WARREN	SEMINOLE	

WARREN AVE PD&E - ALTERNATIVE 2 - SHEET 3

SHEET NO.

MATCHLINE - SEE SHEET 3

MATCHLINE - SEE SHEET 5

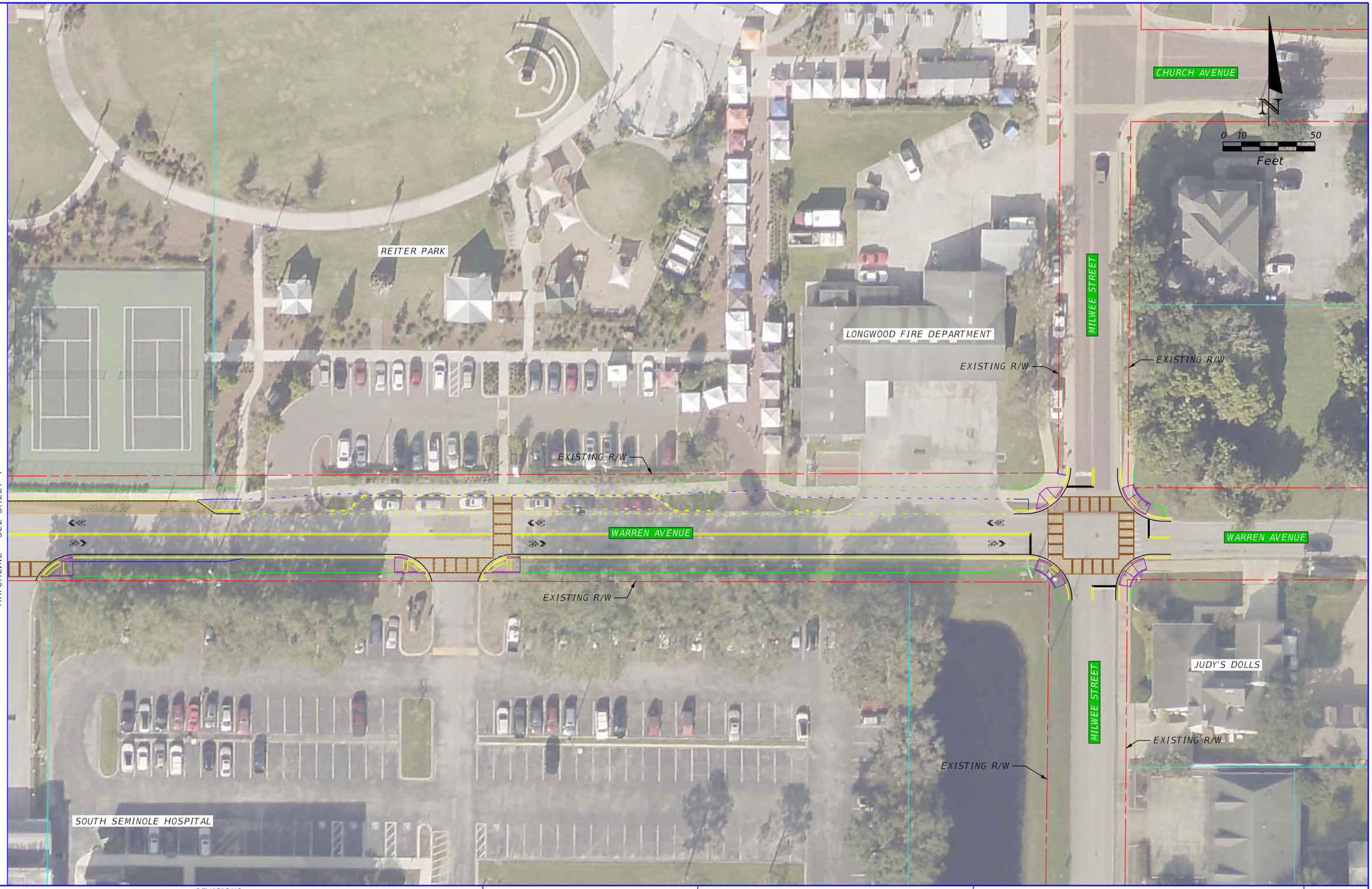
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
WARREN	SEMINOLE	

WARREN AVE PD&E - ALTERNATIVE 2 - SHEET 4

SHEET NO.



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DATE	DESCRIPTION	DATE	DESCRIPTION

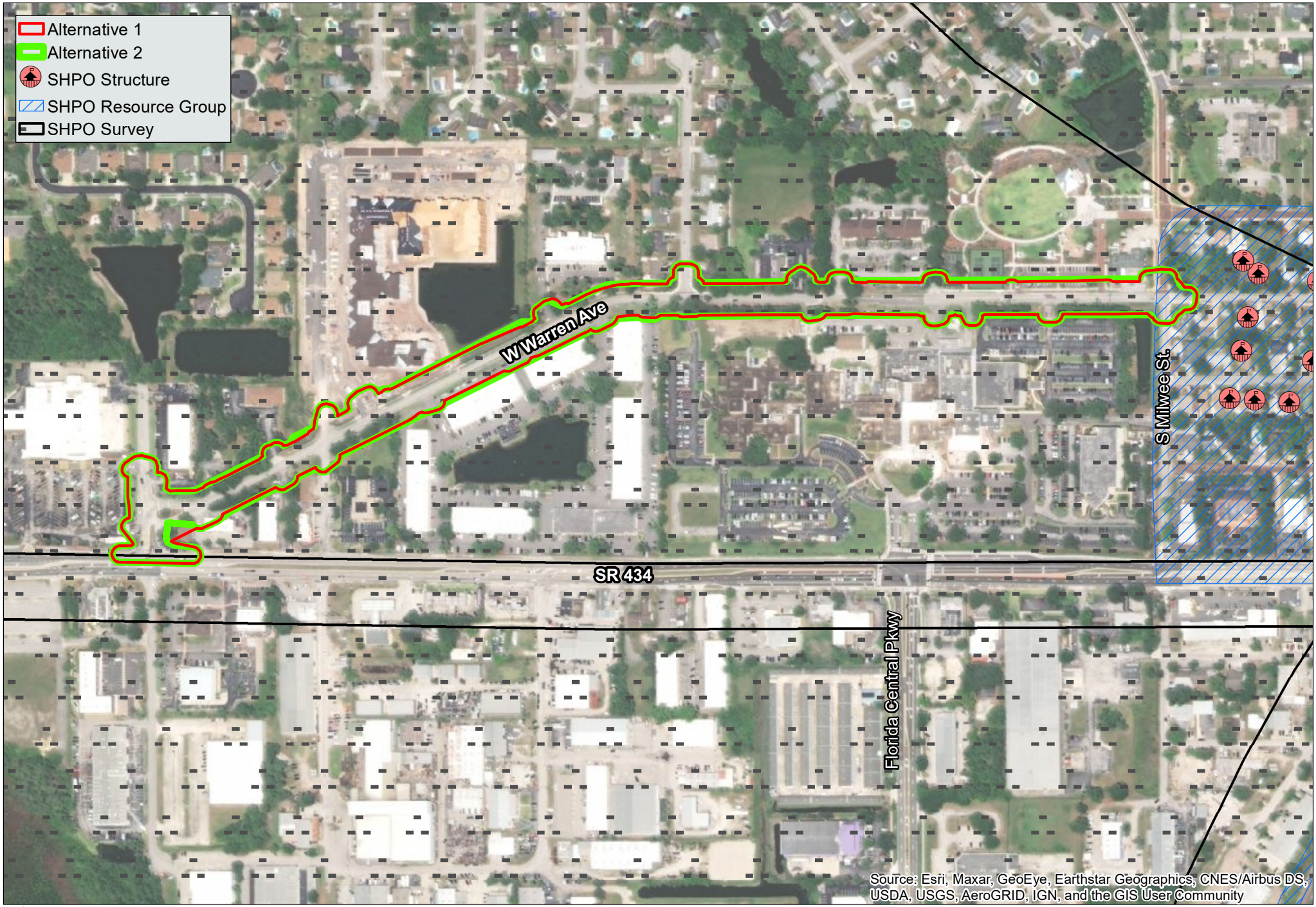
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
WARREN	SEMINOLE	

WARREN AVE PD&E - ALTERNATIVE 2 - SHEET 5

SHEET NO.

Appendix B
Environmental Analysis Maps



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Warren Avenue
Longwood, FL
Cultural Resources Map
October 2021

Exhibit 1

0 250 500 Feet

N

Note: GIS data downloaded from FGDL Dec. 2020.

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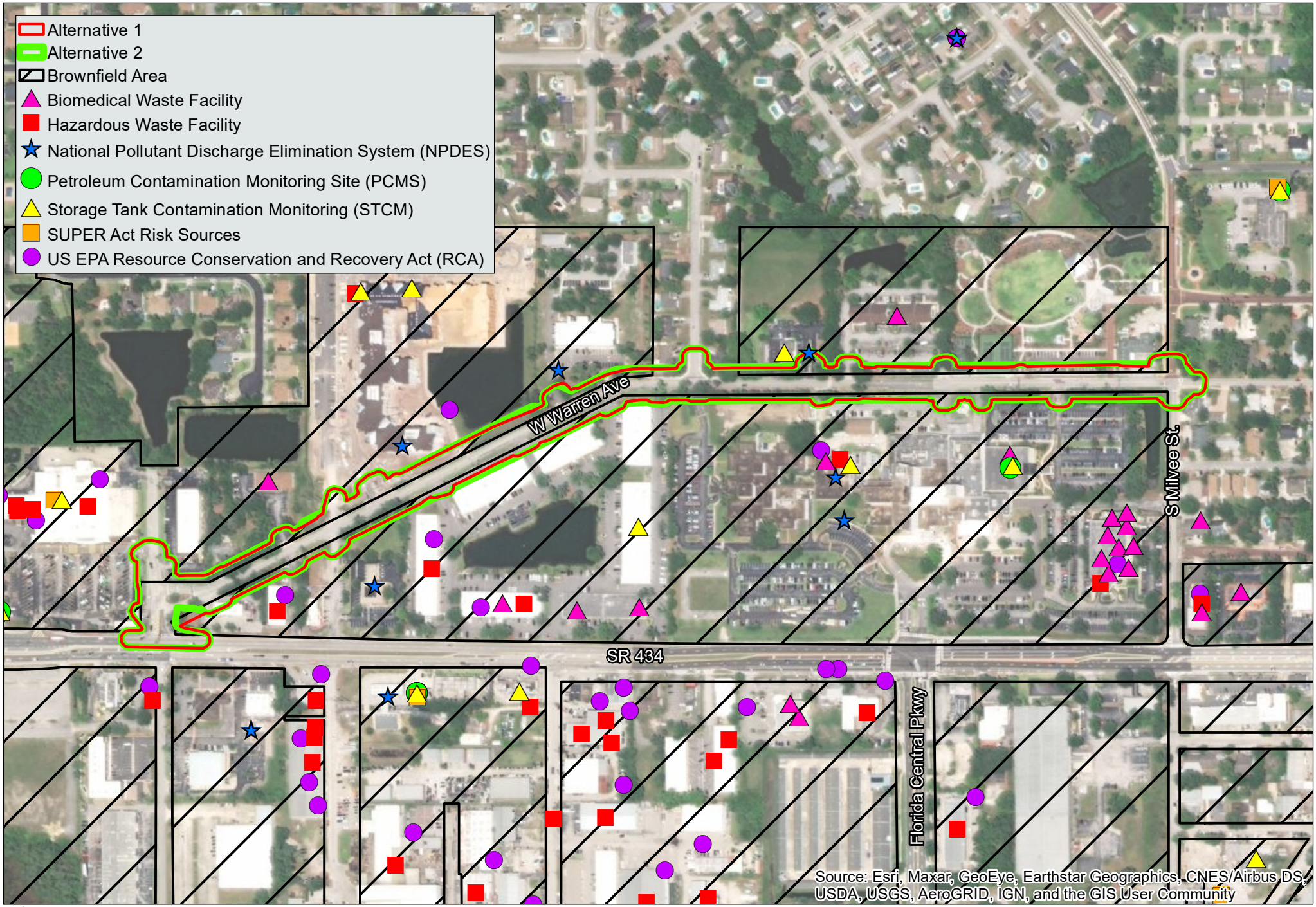
Note: GIS data downloaded from FGDL Dec. 2020.

Warren Avenue
Longwood, FL
Social Resources Map
October 2021

Exhibit 2

0 245 490 Feet

N



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Note: GIS data downloaded from FGDL Sep. 2021 and sourced to FDOH (Boimedical, SUPER Act), FDEP (PCMS, STCM, Hazardous Waste), FDEP/DWM/BWC (Brownfield), USEPA (NPDES).

Warren Avenue
Longwood, FL

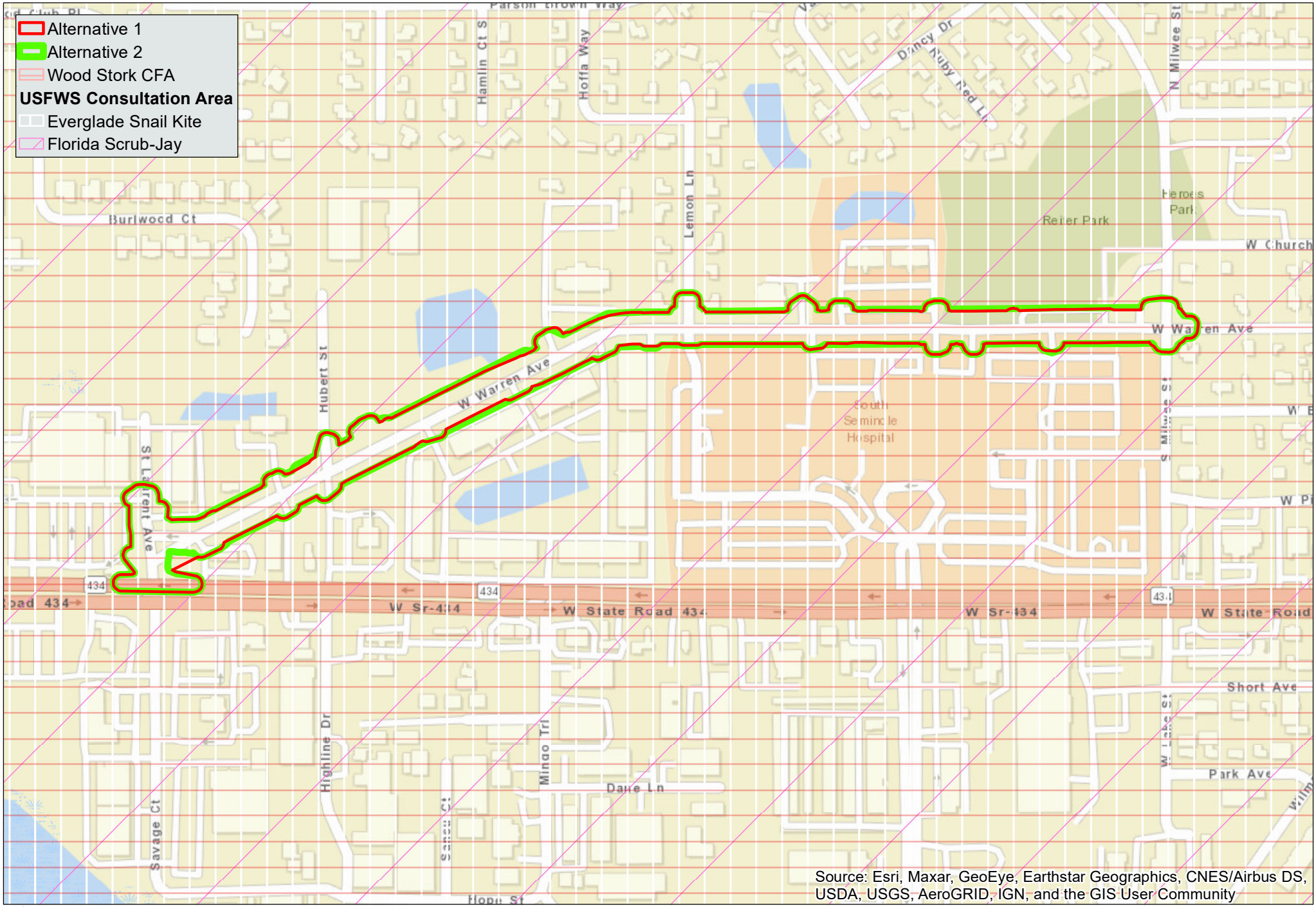
Contamination Map

October 2021

Exhibit 3

0 250 500 Feet

N



vhb
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Note: U.S. Fish and Wildlife Service GIS data (Wood Stork CFA Consultation Areas).

Warren Avenue
Longwood, FL
Protected Species Map
October 2021

Exhibit 4

0 250 500 Feet

N

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Note: Wetland and suface water habitats from SJRWMD Land Use and Cover-2014 and field verified by VHB scientists on September 15th, 2021

Warren Avenue
Longwood, FL

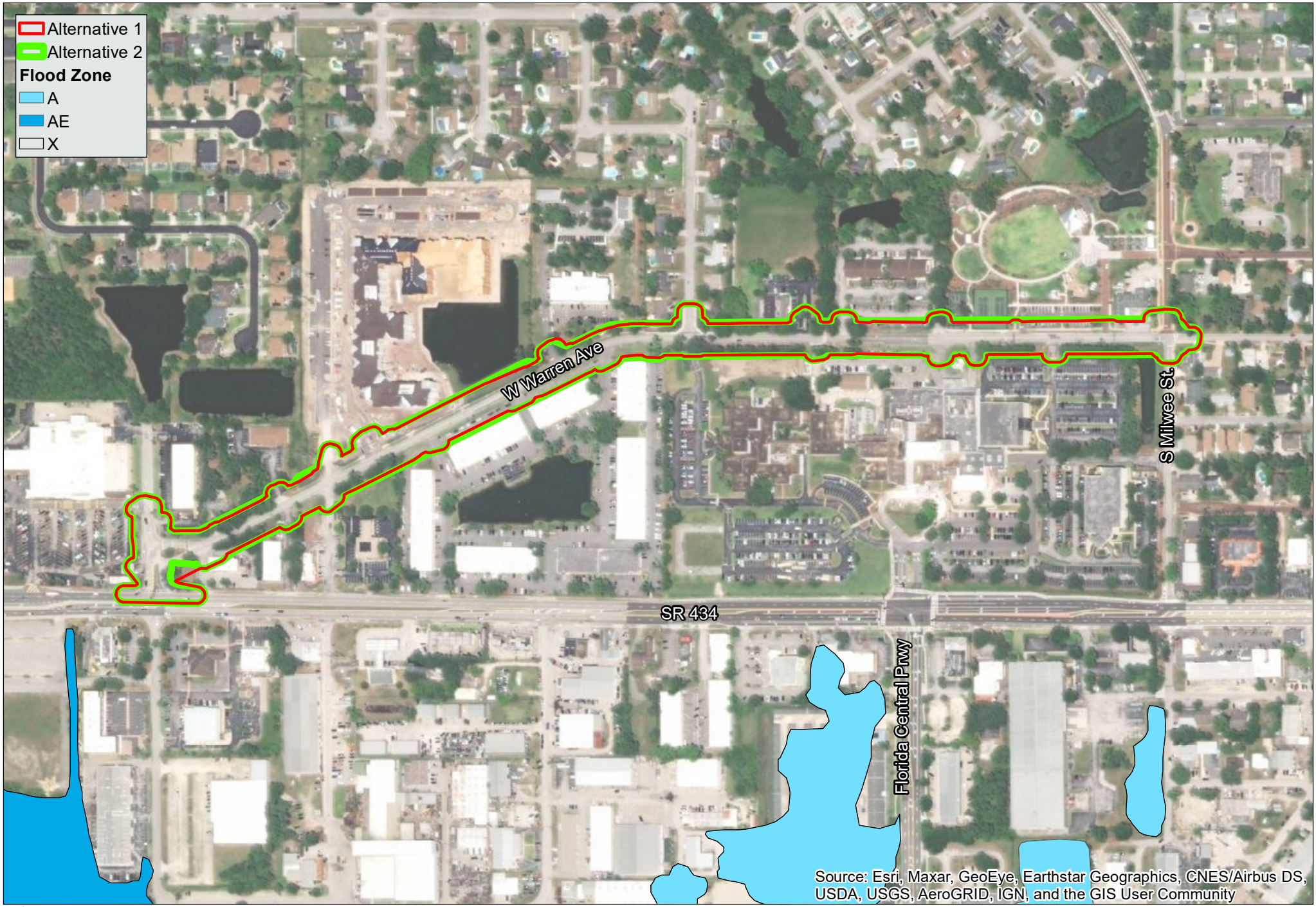
Wetland and Surface Water Map

October 2021

Exhibit 5

0 250 500 Feet

N



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Warren Avenue
Longwood, FL
Floodplain Map
October 2021

Exhibit 6

0 250 500 Feet

N

Note: GIS data downloaded from FGDL Dec. 2020 and sourced to FEMA (DFIRM).

Appendix C
Initial Cost Estimate

Warren Avenue Alternative 1 Cost Estimate

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
101-1	Mobilization	LS	1	$ 232,738.02	$ 232,738.02
102-1	Maintenance of Traffic	LS	1	$ 232,738.02	$ 232,738.02
110-1-1	Clearing and Grubbing	AC	4.8	$ 20,015.84	$ 96,212.87
110-4-10	Removal of Existing Concrete	SY	11,631.9	$ 18.82	$ 218,912.36
160-4	Type B Stabilization	SY	11,270.2	$ 6.56	$ 73,932.51
285-709	Optional Base, Base Group 09	SY	11,270.2	$ 18.95	$ 213,570.29
334-154	Superpave Asphalt Concrete Friction Course, Traffic D, PG76-22 (165lb/yd^2)	TN	844.1	$ 96.39	$ 81,365.51
337-7-81	Asphalt Concrete Friction Course, Traffic B, FC-12,5, PG 76-22 (165 lb/yd^2)	TN	844.1	$ 113.59	$ 95,884.51
425-1311	Inlets, Curb, Type P-1, <10'	EA	2.0	$ 8,726.76	$ 17,453.52
425-1321	Inlets, Curb, Type P-2, <10'	EA	5.0	$ 6,925.91	$ 34,629.55
425-1351	Inlets, Curb, Type P-5, <10'	EA	14.0	$ 5,318.94	$ 74,465.16
425-1361	Inlets, Curb, Type P-6, <10'	EA	1.0	$ 5,646.37	$ 5,646.37
425-1451	Inlets, Curb, Type J-5, <10'	EA	2.0	$ 11,957.27	$ 23,914.54
425-1521	Inlets, DT Bot, Type C, <10'	EA	1.0	$ 4,118.71	$ 4,118.71
425-1561	Inlets, DT Bot, Type F, <10'	EA	4.0	$ 4,662.63	$ 18,650.52
425-1711	Inlets, Gutter, Type V, <10'	EA	4.0	$ 5,463.48	$ 21,853.92
430-175-118	Pipe Culvert, Optional Material, Round, 18" S/CD	LF	3,321.0	$ 85.11	$ 282,650.31
430-175-124	Pipe Culvert, Optional Material, Round, 24" S/CD	LF	953.0	$ 101.85	$ 97,063.05
430-982-125	Mitered End Section, Optional Round, 18" CD	EA	1.0	$ 1,789.99	$ 1,789.99
443-70-3	French Drain, 18"	LF	246.0	$ 147.82	$ 36,363.72
520-1-07	Concrete Curb & Gutter, Type E	LF	197.7	$ 24.15	$ 4,774.46
520-1-10	Concrete Curb & Gutter, Type F	LF	5,589.7	$ 25.66	$ 143,431.70
520-2-01	Concrete Curb, Type A	LF	315.5	$ 25.81	$ 8,143.06
520-3	Valley Gutter, Concrete	LF	137.5	$ 29.35	$ 4,035.63
520-5-11	Traffic Separator Concrete - Type I, 4' Wide	LF	39.8	$ 51.90	$ 2,065.62
522-1	Concrete Sidewalk and Driveways, 4" Thick	SY	4,636.9	$ 43.19	$ 200,265.79
526-1-1	Pavers, Architectural, Roadway	SY	1,038.3	$ 228.49	$ 237,251.32
527-2	Detectable Warnings	SF	705.0	$ 29.71	$ 20,945.55
570-1-2	Performance Turf, Sod	SY	2,023.7	$ 2.69	$ 5,443.66
630-2-11	Conduit, Furnish & Install, Open Trench	LF	3,900.0	$ 9.41	$ 36,699.00
635-2-11	Pull & Splice Box, F&I, 13" X 24" Cover Size	EA	17.0	$ 759.96	$ 12,919.32
654-2-21	Midblock Crosswalk: Rectangular Rapid Flashing Beacon, Furnish & Install - Solar, Complete Sign Assy - Single Direction	AS	12.0	$ 7,318.95	$ 87,827.40
710-11-101	Painted Pavement Marking, Standard, White, Solid, 6"	GM	1.24	$ 1,006.09	$ 1,249.25
710-11-123	Painted Pavement Marking, Standard, White, Solid, 12"	LF	2,401	$ 0.88	$ 2,112.53
710-11-124	Painted Pavement Marking, Standard, White, Solid for Diagonal or Chevron, 18"	LF	9	$ 2.34	$ 21.06
710-11-125	Painted Pavement Markings, Standard, White, Solid for Stop Line or Crosswalk, 24"	LF	1,584	$ 1.61	$ 2,550.24
710-11-141	Painted Pavement Marking, Standard, White, 2-4 Dotted Guideline / 6-10 Dotted Extension, 6"	GM	0.04	$ 586.16	$ 21.61
710-11-160	Painted Pavement Marking, Standard, White, Message	EA	6	$ 53.19	$ 319.14
710-11-201	Painted Pavement Marking, Standard, Yellow, Solid, 6"	GM	1.27	$ 1,025.10	$ 1,304.67
710-11-224	Painted Pavement Marking, Standard, Yellow, Solid for Diagonal or Chevron, 18"	LF	18	$ 1.40	$ 24.92
715-1-13	Lighting Conductors, F&I, Insulated, No 4 to No 2	LF	4,240	$ 2.39	$ 10,133.60
715-4-13	Light Pole Complete, Furnish & Install Standard Pole Standard Foundation, 40' Mounting Height	EA	17	$ 5,730.19	$ 97,413.23
715-7-12	Load Center, F&I, Primary Voltage	EA	1.0	$ 10,750.00	$ 10,750.00
	Rain Garden	SF	3,920.0	$ 10.00	$ 39,200.00

Construction Cost:	$ 2,792,856.20
PE (Design Phase):	$ 698,214.05
Contingency (25%):	$ 872,767.56
TOTAL PROJECT COST:	$ 4,363,837.81

Warren Avenue Alternative 2 Cost Estimate

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
101-1	Mobilization	LS	1	$ 227,882.04	$ 227,882.04
102-1	Maintenance of Traffic	LS	1	$ 227,882.04	$ 227,882.04
110-1-1	Clearing and Grubbing	AC	4.8	$ 20,015.84	$ 96,091.24
110-4-10	Removal of Existing Concrete	SY	11,585.1	$ 18.82	$ 218,031.37
160-4	Type B Stabilization	SY	11,274.5	$ 6.56	$ 73,960.57
285-709	Optional Base, Base Group 09	SY	11,274.5	$ 18.95	$ 213,651.35
334-154	Superpave Asphalt Concrete Friction Course, Traffic D, PG76-22 (165lb/yd^2)	TN	855.5	$ 96.39	$ 82,458.58
337-7-81	Asphalt Concrete Friction Course, Traffic B, FC-12,5, PG 76-22 (165 lb/yd^2)	TN	855.5	$ 113.59	$ 97,172.63
425-1311	Inlets, Curb, Type P-1, <10'	EA	2.0	$ 8,726.76	$ 17,453.52
425-1321	Inlets, Curb, Type P-2, <10'	EA	5.0	$ 6,925.91	$ 34,629.55
425-1351	Inlets, Curb, Type P-5, <10'	EA	14.0	$ 5,318.94	$ 74,465.16
425-1361	Inlets, Curb, Type P-6, <10'	EA	1.0	$ 5,646.37	$ 5,646.37
425-1451	Inlets, Curb, Type J-5, <10'	EA	2.0	$ 11,957.27	$ 23,914.54
425-1521	Inlets, DT Bot, Type C, <10'	EA	1.0	$ 4,118.71	$ 4,118.71
425-1561	Inlets, DT Bot, Type F, <10'	EA	4.0	$ 4,662.63	$ 18,650.52
425-1711	Inlets, Gutter, Type V, <10'	EA	4.0	$ 5,463.48	$ 21,853.92
430-175-118	Pipe Culvert, Optional Material, Round, 18" S/CD	LF	3,321.0	$ 85.11	$ 282,650.31
430-175-124	Pipe Culvert, Optional Material, Round, 24" S/CD	LF	953.0	$ 101.85	$ 97,063.05
430-982-125	Mitered End Section, Optional Round, 18" CD	EA	1.0	$ 1,789.99	$ 1,789.99
443-70-3	French Drain, 18"	LF	246.0	$ 147.82	$ 36,363.72
520-1-07	Concrete Curb & Gutter, Type E	LF	197.7	$ 24.15	$ 4,774.46
520-1-10	Concrete Curb & Gutter, Type F	LF	5,621.2	$ 25.66	$ 144,239.99
520-2-01	Concrete Curb, Type A	LF	354.3	$ 25.81	$ 9,144.48
520-3	Valley Gutter, Concrete	LF	175.9	$ 29.35	$ 5,162.67
520-5-11	Traffic Separator Concrete - Type I, 4' Wide	LF	39.8	$ 51.90	$ 2,065.62
522-1	Concrete Sidewalk and Driveways, 4" Thick	SY	4,088.2	$ 43.19	$ 176,570.32
526-1-1	Pavers, Architectural, Roadway	SY	905.2	$ 228.49	$ 206,821.53
527-2	Detectable Warnings	SF	713.4	$ 29.71	$ 21,195.11
570-1-2	Performance Turf, Sod	SY	2,455.2	$ 2.69	$ 6,604.58
630-2-11	Conduit, Furnish & Install, Open Trench	LF	3,900.0	$ 9.41	$ 36,699.00
635-2-11	Pull & Splice Box, F&I, 13" X 24" Cover Size	EA	17.0	$ 759.96	$ 12,919.32
654-2-21	Midblock Crosswalk: Rectangular Rapid Flashing Beacon, Furnish & Install - Solar, Complete Sign Assy - Single Direction	AS	12.0	$ 7,318.95	$ 87,827.40
710-11-101	Painted Pavement Marking, Standard, White, Solid, 6"	GM	1.23	$ 1,006.09	$ 1,240.77
710-11-123	Painted Pavement Marking, Standard, White, Solid, 12"	LF	2,307	$ 0.88	$ 2,029.72
710-11-124	Painted Pavement Marking, Standard, White, Solid for Diagonal or Chevron, 18"	LF	9	$ 2.34	$ 21.06
710-11-125	Painted Pavement Markings, Standard, White, Solid for Stop Line or Crosswalk, 24"	LF	1,473	$ 1.61	$ 2,370.89
710-11-141	Painted Pavement Marking, Standard, White, 2-4 Dotted Guideline / 6-10 Dotted Extension, 6"	GM	0.04	$ 586.16	$ 21.61
710-11-160	Painted Pavement Marking, Standard, White, Message	EA	6	$ 53.19	$ 319.14
710-11-201	Painted Pavement Marking, Standard, Yellow, Solid, 6"	GM	1.27	$ 1,025.10	$ 1,305.84
710-11-224	Painted Pavement Marking, Standard, Yellow, Solid for Diagonal or Chevron, 18"	LF	18	$ 1.40	$ 24.92
715-1-13	Lighting Conductors, F&I, Insulated, No 4 to No 2	LF	4,240	$ 2.39	$ 10,133.60
715-4-13	Light Pole Complete, Furnish & Install Standard Pole Standard Foundation, 40' Mounting Height	EA	17	$ 5,730.19	$ 97,413.23
715-7-12	Load Center, F&I, Primary Voltage	EA	1.0	$ 10,750.00	$ 10,750.00
	Rain Garden	SF	3,920.0	$ 10.00	$ 39,200.00

Construction Cost:	$ 2,734,584.43
PE (Design Phase):	$ 683,646.11
Contingency (25%):	$ 854,557.64
TOTAL PROJECT COST:	$ 4,272,788.18