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MARCH 2015

Orange Avenue

PRELIMINARY ENGINEERING
CONCEPT PLAN
FROM PARKLINE BOULEVARD TO LANCASTER ROAD

03.27.2015

PREPARED FOR:

ORANGE COUNTY, FLORIDA
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I. INTRODUCTION

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I. INTRODUCTION

After many years of planning, the Sand Lake Road SunRail station opened to riders in May 2014. The station, located at Orange Avenue/ State Road (SR) 527, is projected to generate new development and increased pedestrian and bicycle activity to the corridor. In anticipation of this change, Orange County and the Florida Department of Transportation (FDOT) have coordinated to study the corridor in order to develop a unified preliminary engineering concept plan that converts this segment of Orange Avenue into an urban corridor.

As part of this study, public meetings were held on three occasions to gather input on areas of concern, present alternatives for addressing those concerns, and present the final preliminary engineering concept plan. The development of the preliminary engineering concept plan is part of a two-phase process. FDOT initiated the first phase of the project by preparing the Corridor Planning Study, which encompassed a wider scope for planning for the segment of Orange Avenue/ SR 527 from Sand Lake Road to Hoffner Avenue. The Corridor Planning Study set the stage for the second phase by identifying the improvement recommendations used as a base to develop the final preliminary engineering concept plan. Orange County focused on developing the preliminary engineering concept plan by extending the limits of the study south of Sand Lake Road, from Parkline Boulevard to Lancaster Road, in order to encompass the area surrounding the Sand Lake Road SunRail station. Figure 1 displays the limits of both the FDOT Phase 1 Corridor Planning Study and the Orange County Phase 2 Preliminary Engineering Concept Plan.

The preliminary engineering concept plan incorporates the alternatives developed in the FDOT Corridor Planning Study, and uses Transportation Design for Livable Communities (TDLC) standards. The Orange County study is funded by the U.S. Department of Housing and Urban Development (HUD) as part of its Sustainable Communities Program grant to facilitate planning efforts that support transit, housing and employment options.

Figure 1 | FDOT and Orange County Study Limits

II. OVERVIEW

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II. OVERVIEW

This joint effort between the Florida Department of Transportation (FDOT) and Orange County came about through the desire to develop the Orange Avenue corridor into an urban corridor. The impetus for the project was the imminent opening of the Sand Lake Road Commuter Rail Station and the recommendations derived from the Sand Lake Road Station Area Concept Plan. One of the most important recommendations from the Station Area Concept Plan, was improving pedestrian safety and enhancing mobility along the Orange Avenue Corridor by introducing Transit-Oriented Development (TOD) around the station. All stakeholders agreed that a true TOD could not be achieved without making Orange Avenue a safe, functioning multi-use corridor. As part of the corridor study process, both organizations conducted a number of outreach events and special activities in order to undertake various yet complementary aspects of the study. FDOT's scope encompassed broader project limits and planning level analysis. Orange County used the recommendations developed by FDOT to create a preliminary design concept for the portion of Orange Avenue surrounding Sand Lake Road, and provided additional opportunities for a more enhanced public involvement process. The entire process has engaged residents, business owners, property owners, agency representatives, and other interested individuals in the shaping of this corridor. The HUD Sustainable Communities Grant used to fund the Orange County portion of the study, has been coordinated by the East Central Florida Regional Planning Council and the grant consortium as part of the Enhance Central Florida initiative. The end product is a preliminary engineering concept plan that can be used to acquire funding for the next phases of the project, including design and construction.

Following is a summary of key guiding elements for the transition from a rural to a more urban corridor for this segment of Orange Avenue.

LIVABILITY PRINCIPLES

Six principles of livability make up a sustainable community, which are based on improving access to affordable housing, increasing transportation options, and lowering transportation costs while protecting the environment. These principles are embedded in the drivers of the corridor redevelopment, and are summarized below:

- **Provide more transportation choices** along the corridor to decrease household transportation costs, reduce our dependence on oil, improve air quality and promote public health.

- **Promote equitable, affordable housing** along and surrounding the corridor by expanding location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation.

- **Improve economic competitiveness** of neighborhoods along the corridor and regionally, by giving people reliable access to employment centers, educational opportunities, services and other basic needs.

- **Support existing communities** by targeting federal funding toward existing communities – through transit-oriented and land recycling – to revitalize communities, reduce public works costs, and safeguard rural landscapes.

- **Coordinate and leverage federal policies and investment** along and surrounding the corridor by aligning federal policies and funding to remove barriers to collaboration, leverage funding and increase the effectiveness of programs to plan for future growth.

- **Value communities and neighborhoods** along and surrounding the corridor by enhancing the unique characteristics of all communities by investing in healthy, safe and walkable neighborhoods, whether rural, urban or suburban.

THE IMPORTANCE OF RAIL

The development of rail service in the region was identified in the Central Florida 2050 How Shall We Grow Vision Plan as one of the most significant investments needed to ameliorate the impacts of future population growth and assist in making Central Florida economically viable. In May of 2014, the vision became a reality, when Central Florida welcomed the opening of the SunRail Commuter Rail Service. Spanning 61 miles and three Counties, and including 17 Stations, SunRail is the initial spine of a planned and robust rail network. Sand Lake Road Station is one of two stations that Orange County has jurisdiction over. The

Sand Lake Road Station primarily serves the communities of Pine Castle, Sky Lake, Belle Isle and Taft. The SunRail Commuter service is currently connected to downtown Orlando, two major hospital complexes, and multiple cities in Central Florida. Additionally, the Sand Lake Road Station could potentially be the hub of future east-west transit lines connecting the Orlando International Airport and area attractions.

Orange County began planning for the Sand Lake Road Station Area in 2008 when the County's TOD Ordinance was adopted. The Sand Lake Road Station Area Concept Plan was finalized in October 2011 and identified a list of action items necessary to transform the area into a successful TOD location. One of the main items identified, was the importance of transforming the segment of Orange Avenue surrounding the Sand Lake Road Station into a true multi-modal corridor. Orange Avenue runs parallel to the SunRail line and is the principal arterial in the area, with a five-lane configuration (two-lanes in each direction and a center turning lane) near the Sand Lake Road Station. The corridor services large trucks and high volume traffic, making its transition to a pedestrian and bicycle friendly corridor a challenge.

In 2012 FDOT initiated a study of the Orange Avenue Corridor both in Orange County and the City of Orlando. At around the same time the FDOT Study began, the Enhance Central Florida Consortium received a HUD Sustainable Communities Grant Award in the amount of $125,000 to study the segment of Orange Avenue near the Sand Lake Road Station Area. The project limits include Parkline Boulevard to the south and Lancaster Avenue to the north. A study of the Orange Avenue Corridor is the first step towards reaching the region's sustainability and livability goals.

THE STATION AREA

The Sand Lake Road Station Area located 6-miles from downtown Orlando, is a mix of commercial, industrial and residential development. It is lined with 1-2 story suburban commercial and industrial development with parking located in the front. The land use behind Orange Avenue consists mostly of single- family residential. Of the 1,790 land parcels that make up the 1-mile area surrounding the station, 76% are single-family and 2% are multi-family land uses; predominantly located in the northern half of the station area. There is one assisted housing property located within the station area to the west of the station, which has a total of 312 units. Although non-residential land uses account for only 22% of the land parcels, they cover approximately 74% of the land area, and are located chiefly in the southern half of the station area, south of Sand Lake Road.

There are few vacant parcels within the ½-mile walk-shed of the station. One that has been identified for near-term development is an 18-acre undeveloped parcel for sale, located across the street from the station. This site has been entitled for multi-family/mixed-use development and has been available for purchase for several years. Several affordable housing developers have expressed interest in the site. However, because there is no grocery store and health facility located within one mile, the site does not score high enough to qualify for Low Income Housing Tax Credits (LIHTC). Another alternative is the possibility of developing the six-acre station site itself in the future. Additionally, once the County adopts a development regulating plan or modifies its existing Land Use Code, it is anticipated that densities and intensities will increase in the area, making the importance of transit even greater.

POPULATION

There are six census tracts located within a 1-mile radius of the station. The tracts range from upper level income to moderate income levels. The median income when the study began in 2012 was $58,200. Five of the six census tracts are majority-minority tracts. As an example, census tract 143.02 has a minority population of approximately 78% (62% Hispanic), with 28% of the total tract population living below the poverty-level. This tract is located approximately one-mile from the station entrance.

IDENTIFIED DEFICIENCIES

There are several notable deficiencies along Orange Avenue between Sand Lake Road and Lancaster Road.

- **Bicycle Lanes:** there are no dedicated bicycle lanes along this segment of the corridor; however there are four-foot wide paved shoulders. The existing paved shoulder is not sufficient for accommodating cyclists due to grass overgrowing the lane (which reduces the effective bike lane width). In addition

the narrow 10-foot adjacent vehicle travel lane, relatively high existing vehicle speeds, and presence of large vehicles (trucks, buses, landscaping trailers, etc.) further discourages bicycle use.

- **Sidewalks:** sidewalks are present along the west side of Orange Avenue and generally not along the east side. Small sections of non-contiguous sidewalk exist on the east side, including approximately 1,000 feet of sidewalk north of Sand Lake Road, and non-continuous segments of sidewalk between Nela Avenue and Lancaster Road. There are opportunities to further increase the sidewalk connectivity of the study area by constructing continuous sidewalks along the eastern side of Orange Avenue.

- **Crossing Opportunities:** there are currently only three opportunities to cross Orange Avenue between Sand Lake Road and Lancaster Road - at Sand Lake Road, at Glenrose Road and at Lancaster Road. This results in a ¾-mile length of Orange Avenue that provides no marked pedestrian crossing. In addition, several bus stops are currently located at midblock locations or at intersections without marked crosswalks across Orange Avenue, which leads to pedestrians crossing Orange Avenue at unmarked locations after alighting at a bus stop.

NEEDED IMPROVEMENTS

Much is needed to begin to retrofit this auto-oriented corridor into a thriving transit friendly corridor. This study is a vital piece of an intricate puzzle needed to create a sustainable future that meets the livability goals of the Sustainable Communities Grant.

Many of the needed improvements are identified in the Phase 1 FDOT study, which came out of the extensive public involvement activities, and are summarized in Section III of this report.

PUBLIC ENGAGEMENT

One important aspect of the Phase 2 Orange County study is the emphasis on public engagement and input, so that Orange County could develop a project that meets the needs of the area and is supported by the community it is intended to serve. As part of the stipulations of the HUD grant, public engagement is a vital part of the concept development process.

At project inception, Orange County developed a Public Outreach Plan to outline the process for engaging residents, business owners,

property owners, agency representatives, and other interested individuals in the planning and community design process. The Plan identified ways to build capacity and include previously underserved and underrepresented groups in the planning process. The project team used this public outreach plan as a guide to create a master list of individuals to invite to the public meetings. In preparation for the three meetings, FDOT and Orange County coordinated on the types of notification materials used to advertise the meetings and on the target audience for the meetings.

III. SUMMARY OF PHASE 1 FDOT CORRIDOR PLANNING STUDY

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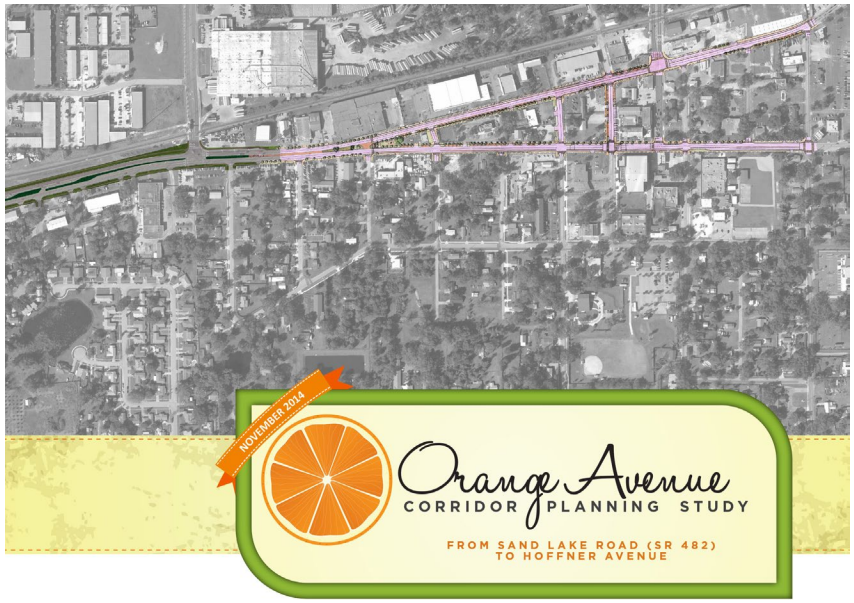
III. SUMMARY OF PHASE 1 FDOT CORRIDOR PLANNING STUDY

The Florida Department of Transportation (FDOT) initiated the Corridor Planning Study in October 2012 to evaluate SR 527 (Orange Avenue) between Sand Lake Road and Hoffner Avenue. The Phase 1 FDOT study was completed in November 2014, and identifies a range of multi-modal solutions to improve mobility along the corridor, as well as advance the long-term vision for the corridor. The result of the Phase 1 study is a Corridor Management Plan outlining long-term strategies that guide future development within the corridor, including proposed TOD around the station. The plan also includes specific improvements that can be advanced near-term through local agency participation and/or by FDOT as 3-R (Resurfacing, Restoration and Rehabilitation) projects, safety enhancements or push-button projects. Special consideration is given to improve connectivity to the SunRail Sand Lake Road Station Area and future TOD.

CORRIDOR PLANNING STUDY STRATEGIES

The Phase 1 FDOT study examined existing conditions, looked at current and future land uses, and identified strategies along and adjacent to the corridor. Specifically, for the southern portion of the corridor from Sand Lake Road to Lancaster Road, the Phase 1 study focused on potential multimodal strategies. In developing the corridor improvement strategies, FDOT collaborated with Orange County for the public involvement efforts, which had an emphasis on engaging the previously underserved and underrepresented populations impacted by the corridor. The recommended improvements in the Phase 1 FDOT study were used to create the final preliminary engineering concept plan for the southern segment of the corridor from Sand Lake Road to Lancaster Road, extending south to Parkline Boulevard. The concept plan is summarized in the next section of this report.



TYPICAL CROSS-SECTION

The segment of the corridor from Parkline Boulevard to Sand Lake Road currently exhibits an urban cross section; therefore, the concept layout for this section maintains the existing lane widths and curb lines but incorporates the raised medians and landscaping proposed for the northern portion of the corridor.

The typical sections set the curb-to-curb width needed to accommodate U-turns. However, the distribution of the space between the curbs can still be revisited as the project moves into the Design Phase. This could include further discussion between Orange County and FDOT regarding some of the alternatives in light of recent travel lane width and bicycle lane width guidance released by FDOT Central Office.

A summary of the evolution of the typical section for the Southern portion of the Orange Avenue corridor from Sand Lake Road to Lancaster Road is included as Appendix A.

IV. SUMMARY OF PHASE 2 PRELIMINARY ENGINEERING CONCEPT PLAN

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IV. SUMMARY OF PHASE 2 PRELIMINARY ENGINEERING CONCEPT PLAN

This section of the report summarizes the Concept Design and Evaluation for the segment of the corridor from Parkline Boulevard to Lancaster Road, and is based on the strategies identified in the Phase 1 FDOT study. The focus of this section is to incorporate the improvement strategies identified in the Phase 1 Study, into a concept design that reflects the input received from the various stakeholders and addresses the multimodal corridor needs. Again, with the adjusted project limits for the Phase 2 Orange County HUD study, the improvements are primarily focused around the areas closest to the Sand Lake Road station.

This section of the report summarizes the following tasks, leading to the final preliminary engineering concept plan:

1. **Public Engagement**
2. **Parameters for Preliminary Engineering Concept Plan**
3. **Overview of Preliminary Engineering Concept Plan**
4. **Drainage Consideration**
5. **Preliminary Engineering Cost Estimates**

PUBLIC ENGAGEMENT

One important aspect of the Phase 2 Orange County HUD study is the emphasis on public engagement and input, in order to develop a project that meets the needs of the area, and is supported by the community it is intended to serve. As part of the stipulations of the HUD grant, public engagement is a vital part of the concept development process. Orange County first created a Public Outreach Plan to identify outreach strategies, determine types of media and languages needed for publication, mailing areas, identifying key stakeholders, identifying ways to reach the previously underrepresented and underserved and time frames. The Public Outreach Plan is included as part of Appendix B.

In January 2013, key stakeholders from LYNX, Orange County, City of Orlando, City of Belle Isle, City of Edgewood, Pine Castle Safe Communities Preservation Association, and Ardaman & Associates were interviewed. They helped generate a comprehensive list of issues and opportunities, which provided the basis for potential improvements for the Orange Avenue Corridor.

In May of 2013, a Station Area Working Group (SAWG) was assembled to guide outreach efforts and include previously underserved and underrepresented stakeholders to the planning process. The extensive public involvement efforts included walking tours, public workshops and separate group presentations, which were conducted to create a more inclusive experience. In total two SAWG meetings and three public meetings were held.

The first public meeting was in the form of a walking audit, where members of the community were able to walk the corridor and point out specific issues they wanted to see addressed in the planning study. The second meeting presented the findings from the walking audit and the initial improvement concepts and cross-sections from the Phase 1 FDOT study. The final meeting presented the preliminary engineering concept plan that was created based on the strategies recommended from the Phase 1 study, the community's concerns, and requests for improvements along Orange Avenue. At each of these meetings, the public has been encouraged to provide comments regarding what they would like to see implemented along the corridor.

An overview of the public involvement activities is summarized below. A detailed summary including Federal notification requirements, is included in Appendix B.

- **Meeting #1 Summary – Walking Audit**
  On August 26, 2013, stakeholders, including community residents, businesses, and agencies were invited to participate in a walking audit to provide feedback pertaining to their current issues with the corridor, and their vision of the future for the Orange Avenue corridor. Although this meeting was hosted by Orange County, the walking audit covered the limits of both FDOT's and Orange County's study areas for the corridor, from Parkline Boulevard to Hoffner Avenue. The audit provided an opportunity for the public to assess the condition of the entire corridor length at street level, allowed for an unbiased review of the transportation environment by including the members of the community, and enabled the identification of concerns for multiple travel modes and potential alternatives or solutions for these modes.

Figure 2 | Preliminary Engineering Concept Plan

- **Meeting #2 – Open House**
  Following the walking audit, the project team compiled the comments and concerns raised by the public, and created several options for improvements, including typical sections, for the corridor. These conceptual typical sections were presented at the second Public Meeting, held on September 12, 2013, also at the Pine Castle Woman's Club.

For the southern portion of the corridor, the focus of the improvements were to change the character of the area around the Sand Lake Road SunRail station into an urban environment that promotes the County's planned Transit Oriented Development (TOD). The northern portion identifies a variety of possible improvements to address parking, pedestrian, bicycle, and maintenance issues.

- **Meeting #3 – Preliminary Engineering Concept Plan Presentation**
  After the Open House on September 12, 2013, the project team assembled and agreed upon a preferred typical section that incorporates Orange County's vision of an urban landscape that would support the future TOD plan for the Sand Lake Road SunRail station and that provided the safety and aesthetic enhancements the public desires. The final

Figure 2 | Preliminary Engineering Concept Plan, continued

typical section includes a landscaped median and landscaped buffers on both sides of the roadway to provide pedestrian protection from the travel lane. It also includes a continuous 6-foot sidewalk and a 5-foot bicycle lane on both sides of the roadway. The landscaped buffer can be converted to on-street parking in the future when land use changes occur and it becomes advantageous to have parking along the roadway.

A preliminary engineering concept plan was developed for Orange Avenue from Parkline Boulevard to Sand Lake Road, based on the preferred typical section selected by FDOT and Orange County, and described in the Phase 1 FDOT Corridor Planning Study. This preliminary engineering concept plan was presented to the public at the final public meeting on October 28, 2014 at the Comfort Suites Orlando Airport on McCoy Road. A copy of the preliminary engineering concept plan is shown above in Figure 2 and in detail in Appendix C.

PARAMETERS FOR PRELIMINARY ENGINEERING CONCEPT PLAN

The concept plan was developed based on Transportation Design for Livable Communities (TDLC) principles, the typical sections presented in the Phase 1 FDOT study, and in coordination with the FDOT Traffic Operations group. Chapter Three of the Phase 1 FDOT study details the specific issues and opportunities reviewed by the project team. The following provides a synopsis of the parameters that were evaluated while developing the concept plan.

- **Geometric Design**
  In order to guarantee an achievable final design, geometric parameters were considered when developing the concept plan. These included geometric improvements for intersection modifications, an assessment of right-of-way impacts, intersection details, major utilities, anticipated stormwater facilities, pedestrian and bicycle facilities, alternative pavement treatments, lighting, speed control, and access management recommendations.

  The FDOT Traffic Operations group provided the project team with feedback concerning access management, appropriate lane and median widths and driveway radii for the intersection improvements at Sand Lake Road. Feedback was incorporated into the preferred typical section, and ultimately into the preliminary engineering concept plan. The preliminary lane widths were determined based on the consensus between public comments, FDOT standards, and County comments. The final cross-section will be reviewed and evaluated during the next phase of the project leading into final design, and may be subject to minor revisions.

- **Operational Improvements**
  Along with physical upgrades to the corridor, operational improvements were also considered to enhance Orange Avenue. The overall goal of this study is to enhance multimodal connectivity as opposed to adding lanes. There are few regional roadways that provide a north-south alternative route to Orange Avenue, therefore, operational improvement strategies that could address the future capacity along the roadway were studied.

  There are currently three signalized intersections on Orange Avenue between Parkline Boulevard and Lancaster Road: Sand Lake Road, Nela Avenue, and Lancaster Road. A flashing signal has recently been installed at the Orange Avenue/Office Court intersection to facilitate future turning movements into and out of the SunRail station. Once the appropriate warrants are met, this signal will be fully operational.

- **Pedestrian and Bicycle Improvements**
  The ultimate goal of the corridor study is to provide more transportation choices to support the communities surrounding the Sand Lake Road SunRail station. The improvements to the corridor include options such as bicycle lanes, wider sidewalks, landscaping, etc. that promote the use of multimodal transportation modes. At the initial public meetings, the community expressed their desire for sidewalks to be upgraded to comply with Americans for Disabilities Act (ADA) standards, to be continuous throughout the corridor, and to be buffered from the travel lanes. The public also agreed that bicycle facilities should be upgraded to promote multimodal options along Orange Avenue. These elements were incorporated into the concept plan to create a safe, pedestrian- and bicycle-friendly facility.

- **Land Use Policy Modifications**
  A large section of the corridor has existing land uses that do not support walking, bicycling, or transit use. There are also vacant and underutilized properties that present opportunities for future Transit Oriented Development (TOD) around the Sand Lake Road SunRail station. The preferred typical section for the Orange Avenue corridor was selected under the premise that the area around the Sand Lake Road SunRail station will transition into a more urban environment as Orange County intends to promote TOD at the station. The Concept Plan for the Sand Lake Road Commuter Rail Station Area outlines the potential land uses changes for the area surrounding the station. The County, is working on advancing the next steps of rezoning and working with property owners to facilitate TOD.

- **Transit System Improvements**
  SunRail is expected to have a positive impact on transit use in the Orlando area. The Sand Lake Road SunRail station is the end-

of-the-line station for SunRail's first phase; therefore, it is imperative for this station to provide connectivity for all transportation modes, especially walking and bicycling. LYNX has updated their operating schedules to provide efficient connecting bus service to SunRail, including six service lines (Routes 11, 18, 42 (peak hours only), 111, 208 and 418). These service lines deliver service workers from this area to many of the service destinations along International Drive as well as the Orange County Convention Center.

The concept plan developed in this phase of the corridor study provides continuous sidewalks and bicycle lanes that connect to the SunRail station. The urban cross-section allows bus landing pads to be placed directly behind the curb, which is an ADA requirement. Along with the signal at Office Court, the concept plan includes a new crosswalk to allow safe pedestrian passage across Orange Avenue to reach the SunRail station.

OVERVIEW OF PRELIMINARY ENGINEERING CONCEPT PLAN

The Corridor Planning Study focuses on cross-sections that encourage multi-modal transportation uses along Orange Avenue. The focus of the Phase 2 Orange County HUD study is on developing a preliminary engineering concept plan based off the urban cross-sections developed in the Phase 1 FDOT study, for the segment of the corridor from Parkline Boulevard to Lancaster Road. As part of this effort, additional components such as landscaping options and pavement treatments were considered and incorporated into the concept layout. The needs for improvement change for the various segments and intersections along the corridor.

ORANGE AVENUE BETWEEN PARKLINE BOULEVARD AND SAND LAKE ROAD

The portion of Orange Avenue between Parkline Boulevard and Sand Lake Road is currently an urban cross section with curb and gutter and sidewalks. The existing cross-section would be maintained in this section, with a landscaped median replacing the existing striped median. Other forms of landscaping would also be considered as a means to temper the industrial environment as vehicles and pedestrians approach the revitalized SunRail station area. Figures 3 and 4 depicts the existing configuration and the proposed improvements.

Figure 3 | Existing Conditions - Parkline Boulevard to Sand Lake Road

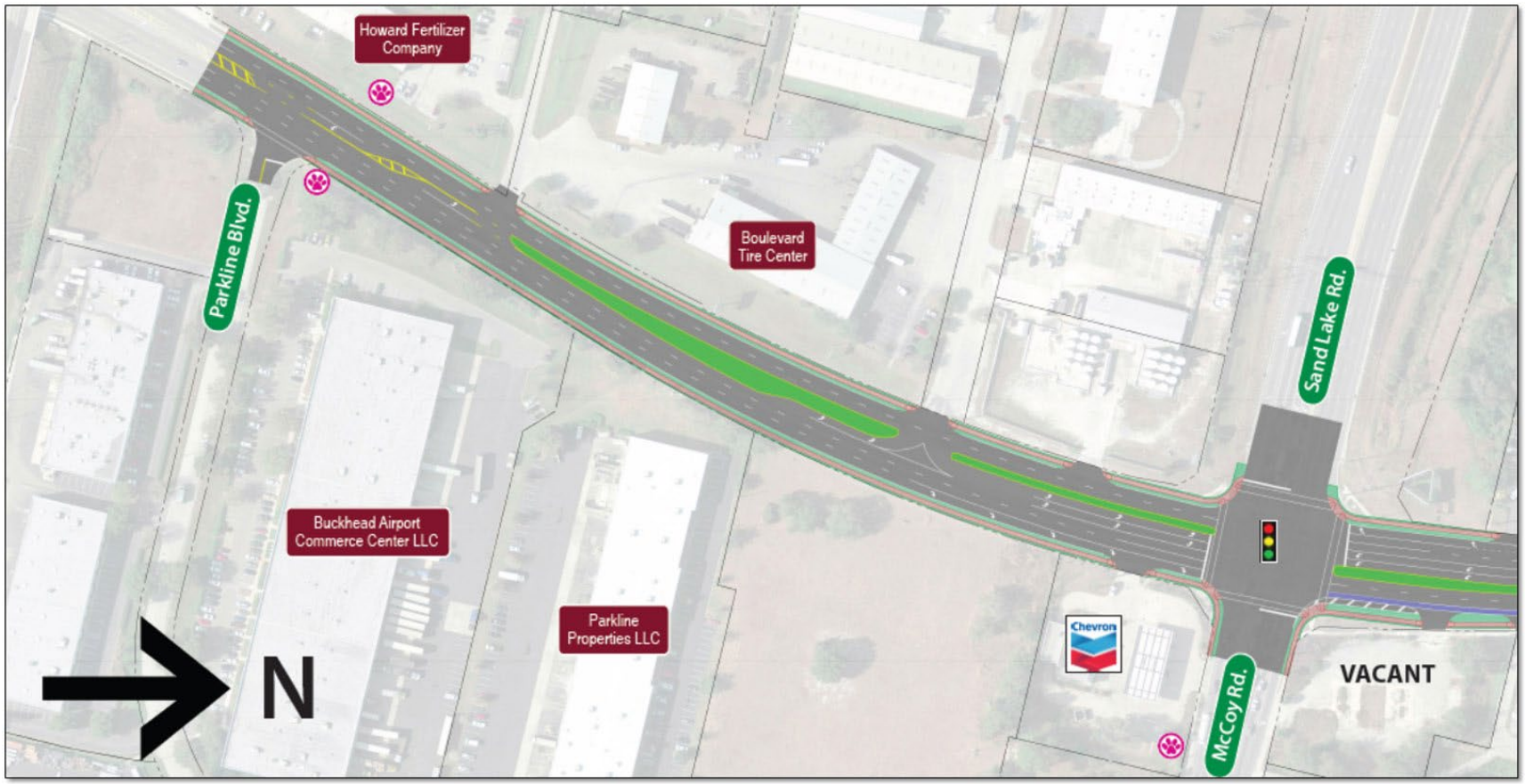


Figure 4 | Preliminary Engineering Concept Plan - Parkline Boulevard to Sand Lake Road

ORANGE AVENUE/SAND LAKE ROAD INTERSECTION

The Orange Avenue/Sand Lake Road intersection is a major intersection with dual left turn lanes and channelized right turn lanes at each approach. The channelized right turn lanes present a difficult crossing for pedestrians because the right turning vehicles are not controlled by a signal, forcing pedestrians to cross in three stages. As part of the concept development, the channelized right turn lanes were eliminated to enhance the Sand Lake Road intersection from a multi-modal perspective. The shorter crossing distance and ability to cross during one cycle length will make this intersection much less discouraging for pedestrians. The existing and proposed configurations are illustrated in Figure 5.

Orange County expressed a desire for this intersection to act as a gateway for this section of Orange Avenue and the SunRail station. The existing design is tailored to move passenger vehicles through the intersection and does not provide a conducive environment for pedestrian activity. The landscaping team created a vision that would include pedestrian plazas at each quadrant of the intersection. These plazas would have extra landscaping features and elements such as pavement treatments to highlight this node of the corridor. The plaza design helps to distinguish the area as a place that encourages people to walk and congregate. An illustrative rendering of the gateway is included as Figure 6. This rendering is illustrative only and will require further refinement as the project progresses. It should also be noted that illustrative renderings were provided for the three key locations along this segment of the corridor that are important gateway, crossing and SunRail access locations.

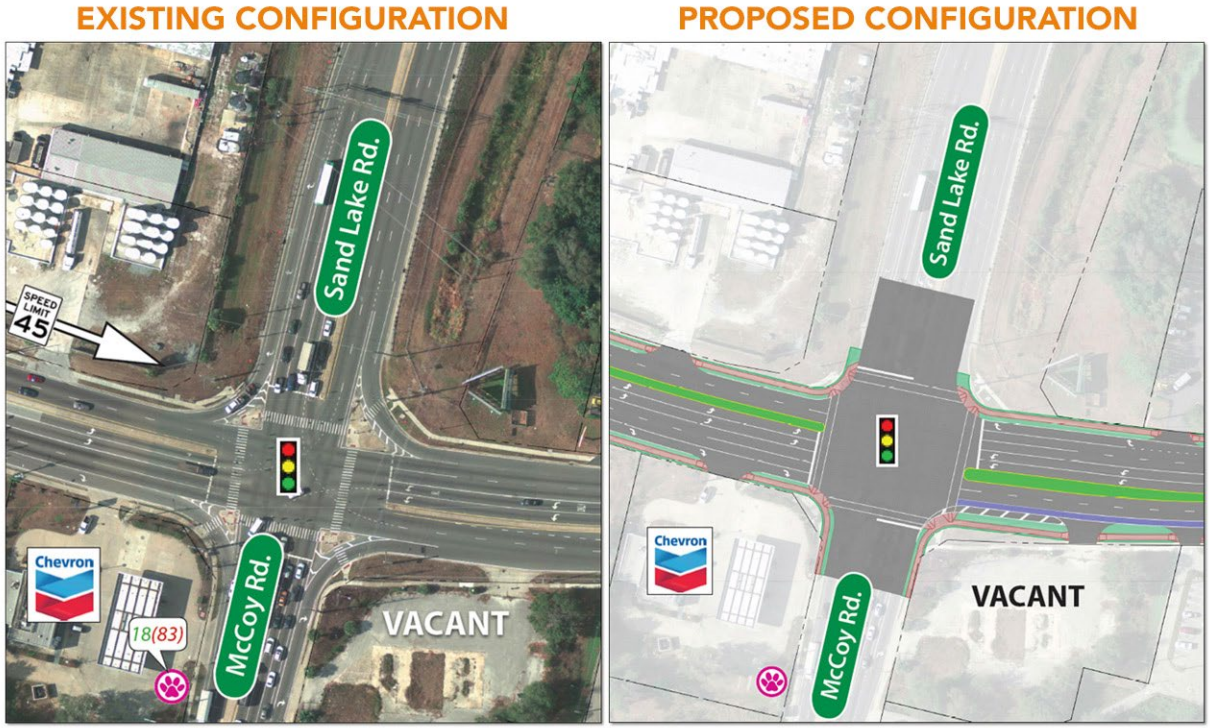


Figure 5 | Orange Avenue/Sand Lake Road Intersection

Figure 6 | Orange Avenue/Sand Lake Road Intersection – Illustrative Rendering

ORANGE AVENUE FROM SAND LAKE ROAD TO THE SAND LAKE ROAD STATION ENTRANCE

The section of Orange Avenue from Sand Lake Road to the Sand Lake Road Station entrance just south of Office Court is also currently an urban cross section. Though this area has existing curb and gutter and sidewalks, the concept proposes to adjust the edge of pavement so that the roadway is centered within the right of way, with sidewalks and landscaped buffers on both sides of the roadway. The concept plan shows a landscaped traffic separator beginning at Sand Lake Road and transitioning into a directional median opening (northbound left) at the station entrance. A bicycle lane is shown in the northbound direction. The plan also shows the removal of the channelized right turn lanes at the Sand Lake Road intersection. Figures 7 and 8 depicts the existing configuration and the proposed improvements.

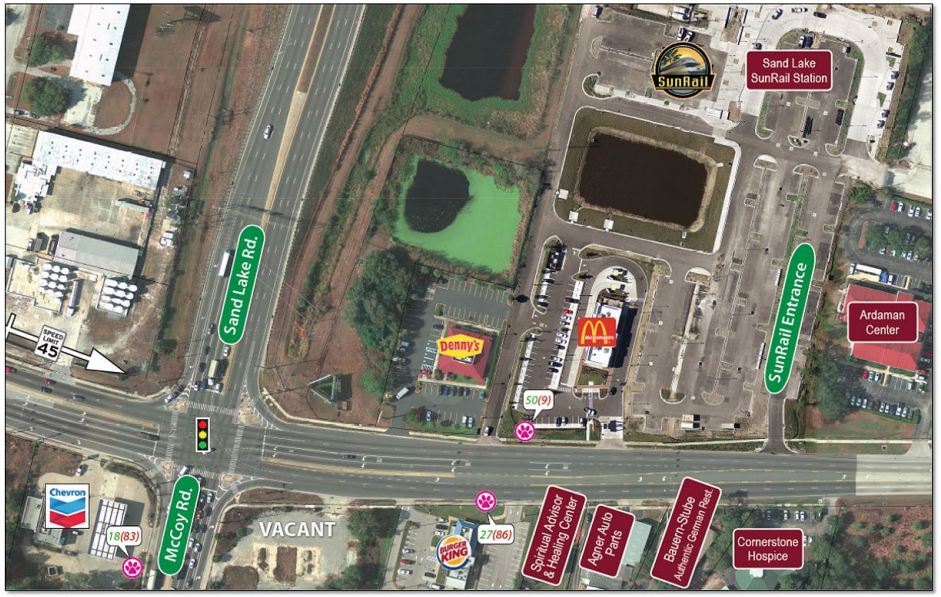


Figure 7 | Existing Conditions - Sand Lake Road to Sand Lake Road SunRail Station South Entrance

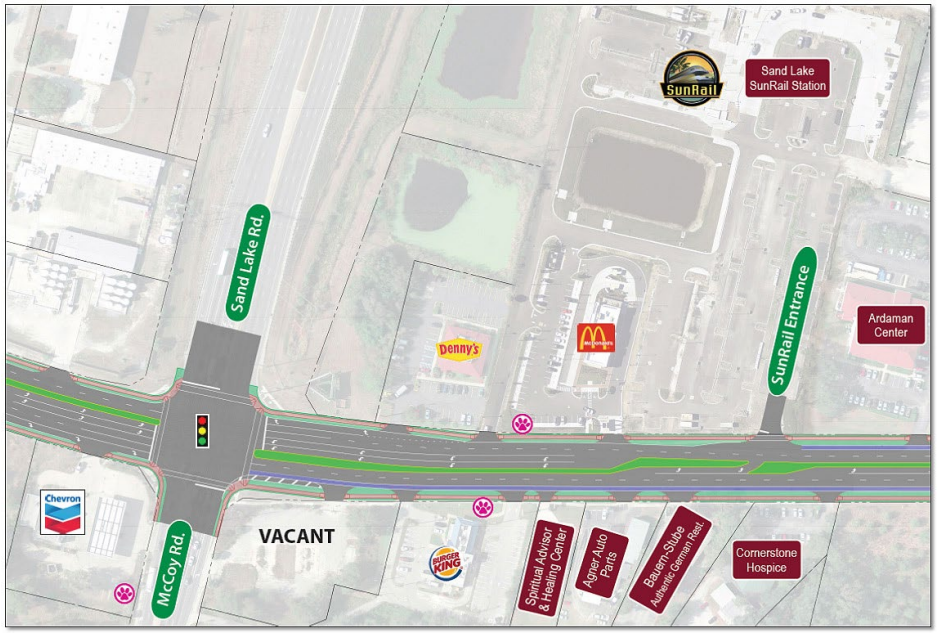


Figure 8 | Preliminary Engineering Concept Plan - Sand Lake Road to Sand Lake Road SunRail Station South Entrance

ORANGE AVENUE FROM THE SAND LAKE ROAD STATION ENTRANCE TO LANCASTER ROAD

The remainder of the corridor from the Sand Lake Road Station entrance to Lancaster Road – is currently a rural/suburban cross section with open drainage. The concept plan uses the preferred cross-section developed in the Phase 1 FDOT Corridor Planning study for this segment of the corridor. Median opening locations along this section were developed in coordination with FDOT. Access management along this segment is critical for operational improvements to reduce the number of vehicle conflicts that are inevitable with the existing two-way-left-turn lane. The raised medians also provide an opportunity for landscaping improvements that can produce a traffic calming effect to the corridor. Figures 9 and 10 depicts the existing configuration and the proposed improvements.

Figure 9 | Existing Conditions - Sand Lake Road SunRail Station South Entrance to Lancaster Road

Figure 10 | Preliminary Engineering Concept Plan - Sand Lake Road SunRail Station South Entrance to Lancaster Road

ORANGE AVENUE/OFFICE COURT INTERSECTION

The Office Court intersection is the main access point to the SunRail station for vehicles. It is currently unsignalized, but is planned to operate as a full signal. On the eastern side of Orange Avenue between Sand Lake Road and Office Court, there are gaps in the sidewalk system. Of utmost importance at the Office Court intersection is providing pedestrian access across Orange Avenue and into the SunRail station; therefore, a major focus at this intersection was to implement pedestrian crosswalks and plazas and to fill in the sidewalk gaps along Orange Avenue. Again, the plaza design helps to highlight that this intersection is a place for pedestrians to feel welcome, especially since it is the primary full access entrance to the SunRail station.

The existing and proposed configurations are illustrated in Figure 11. Illustrative renderings of the intersection are included as Figure 12. The renderings are illustrative only and will require further refinement as the project progresses.

EXISTING CONFIGURATION

PROPOSED CONFIGURATION

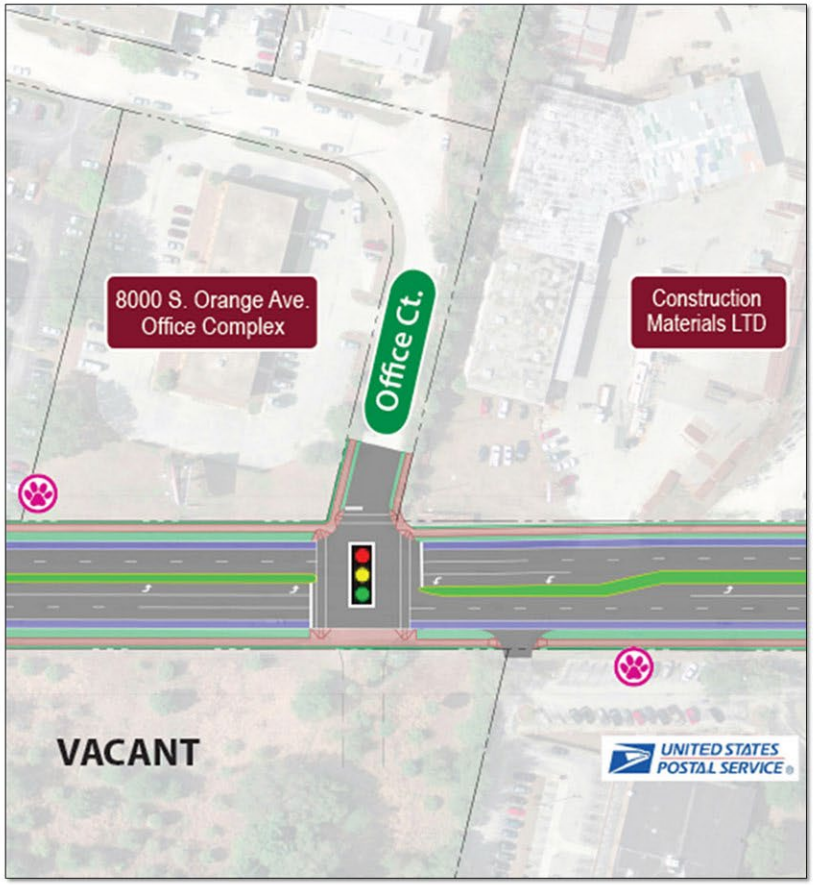


Figure 11 | Orange Avenue/Office Court Intersection

Figure 12 | Orange Avenue/Office Court Intersection – Illustrative Rendering

ORANGE AVENUE/PERKINS ROAD INTERSECTION

The Perkins Road intersection is currently an unsignalized intersection and is planned to remain unsignalized. A full median access was provided here to accommodate truck turning movements at the industrial parcels located nearby. After coordination with FDOT Traffic Operations, it was decided that a 22-foot median would be needed at this intersection to provide a full unsignalized median opening wide enough for storing vehicles making a two-stage movement from the stop controlled minor street.

ORANGE AVENUE/NELA AVENUE INTERSECTION

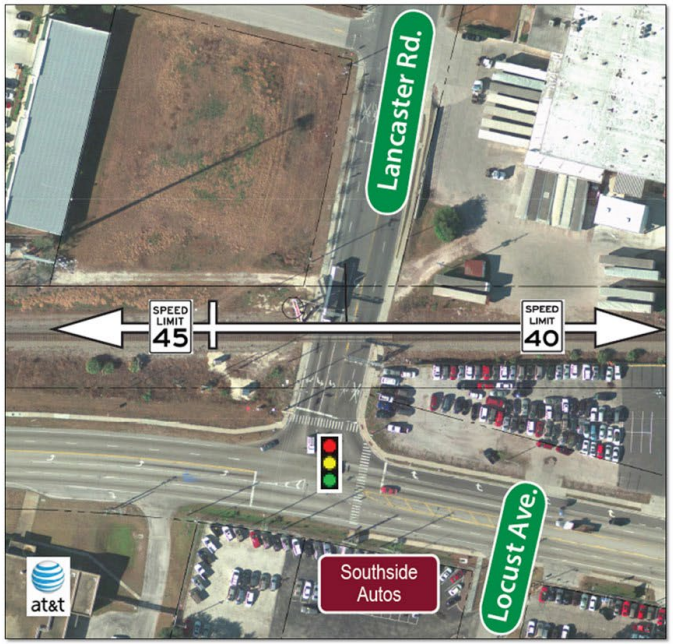
The Nela Avenue intersection is currently a signalized intersection. The major focus here was to upgrade the pedestrian crosswalks and integrate the preferred cross section. No major reconfigurations are planned for this intersection.

ORANGE AVENUE/ LANCASTER ROAD INTERSECTION

The Lancaster Road intersection is the northern terminus of the HUD Study. The intersection will need to be realigned to transition smoothly into the proposed cross section. The major focus here was to upgrade the pedestrian crosswalks and integrate the preferred cross section.

The existing and proposed configurations for the Lancaster Road intersection improvements are illustrated in Figure 13. An illustrative rendering of the intersection is included as Figure 14. This rendering is illustrative only and will require further refinement as the project progresses.

EXISTING CONFIGURATION



PROPOSED CONFIGURATION

Figure 13 | Orange Avenue/ Lancaster Road Intersection

Figure 14 | Orange Avenue/Lancaster Road Intersection – Illustrative Rendering

DRAINAGE CONSIDERATIONS

The preliminary engineering concept plan changes the corridor from a five-lane rural section with swales on both sides of the roadway for drainage, to an urban typical section with curb and gutter, eliminating the drainage swales. As a result, drainage will have to be accommodated via an off-site drainage facility.

Since the project is in a preliminary planning phase, no detailed hydrologic/hydraulic models were created. The size of the preliminary stormwater management facilities are based on water quality requirements from the St. John's River Water Management District (SJRWMD) and Orange County, and runoff volumes for the 25-year 24-storm using the methodology described in Technical Release 55.

Available data was collected through a variety of sources to delineate the drainage basins, calculate curve numbers, and estimate the rainfall for the 25-year 24-hour storm. These data include:

- One foot contour information from Orange County
- Soils information from the NRCS Soil Survey for Orange County
- Land use data from existing aerials
- Permit information from SJRWMD Permit No. 40-095-114454-9 (Sand Lake Road Sunrail Station)

Based on the analyses described above, along with meetings with Orange County, preliminary pond sizes were estimated for the project. Assuming that swales or roadside ditches will not be practical alternatives, and given the soil characteristics along Orange Avenue, the proposed stormwater ponds will be wet detention ponds. A total pond area (measured at top of bank) of approximately 3.0 acres would be required to meet the requirements of Orange County and the SJRWMD.

It is recommended that as the project moves forward a pre-application meeting be held with the SJRWMD to verify the approach for the project. In addition, given the preliminary nature of the completed analysis, a more detailed analysis will be required.

Figure 15 shows five potential sites that are currently not encumbered by development rights, which meet the water quality and pond size requirements (as standalone sites or as multiple sites). These sites are not intended to be final candidates for the off-site drainage pond, but more as a starting point for potential locations. The final site location(s) will be refined as the project progresses to the Design phase.

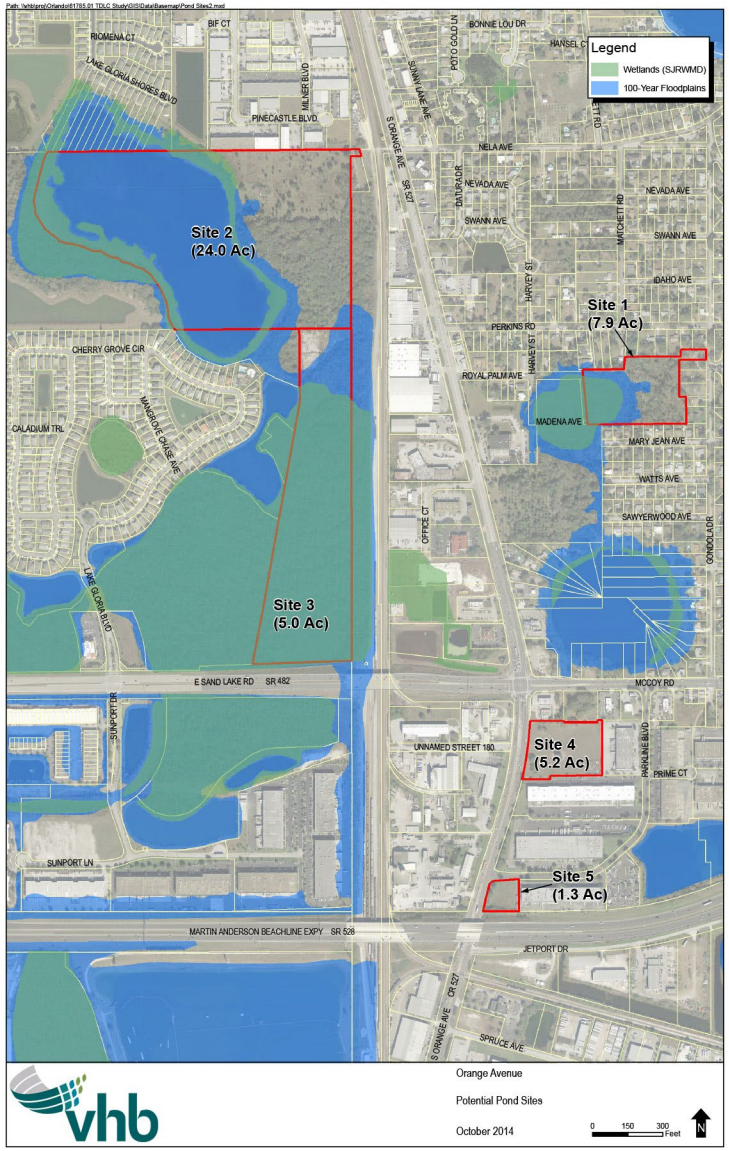


Figure 15 | Potential Off-Site Drainage Pond Locations

PRELIMINARY ENGINEERING COST ESTIMATE

A preliminary engineering cost estimate was developed for construction of the preliminary engineering concept plan. The preliminary cost estimate is based on the FDOT pay items listed in the Long-Range Estimating Tool and do not include drainage pond acquisition and pond right-of-way costs. No additional right-of-way costs are expected for the corridor, as the proposed improvements are within the existing the right-of-way limits.

The total estimated construction cost for the concept plan is approximately $9.4 million, which includes a contingency cost to account for miscellaneous items not detailed in the preliminary estimate.

A summary of the major cost categories for this preliminary estimate is included below and detailed in Appendix D, and will be refined during the Design phase of this project.

ROADWAY AND CURB – $4.4 MILLION

The primary categories under this cost includes curb and gutter, mobilization, maintenance of traffic, new pavement, and clearing and grubbing.

LANDSCAPING – $1.7 MILLION

This category includes basic landscaping for FDOT approved plants and street-scaping

DRAINAGE (NOT INCLUDING POND ACQUISITION AND POND RIGHT-OF-WAY COSTS) - $1.5 MILLION

The primary categories under this cost includes piping materials, manholes and inlets

SIDEWALK/TURF – $430,000

This category includes concrete for the sidewalks and sod for the turf

SIGNING AND PAVEMENT MARKINGS – $66,000

This category includes the various thermoplastic road solid and skip striping, directional arrows, other surface markings, and reflective pavement markers

TRAFFIC SIGNAL – $375,000

This costs includes a full traffic signal system (lights, post, wiring, etc.)

V. CONCLUSION

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V. CONCLUSION

The preliminary engineering concept plan was created from cross-sections that were developed from the concerns and comments provided by the community members who use the Orange Avenue corridor on a daily basis.

As part of this study, public meetings were held on three occasions to gather input on areas of concern, present alternatives for addressing those concerns, and present the final preliminary engineering concept plan. The development of the preliminary engineering concept plan is part of a two-phase process.

The FDOT initiated the first phase of the project by preparing the Corridor Planning Study. The Corridor Planning Study set the stage for the second phase by identifying the improvement recommendations used as a base to develop the final preliminary engineering concept plan.

This process was a truly collaborative effort between Orange County, FDOT, City of Belle Isle, City of Edgewater, businesses and residents along and adjacent to the corridor. The improvements identified in the Phase 1 FDOT Corridor Planning Study along with the Phase 2 preliminary engineering concept plan are based on the six livability principles that make up a sustainable community, which includes improved access to affordable housing, increased transportation option, and lower transportation costs while protecting the environment. They lay the groundwork for implementing Orange County's vision (illustrated in Figure 16) of creating a corridor for users of all ages and abilities; with safe and easy street crossings, shops and work places within walking distances of each other, easy access to and from the Sand Lake Road SunRail Station, increased transit opportunities, and an economic boost to the local community.

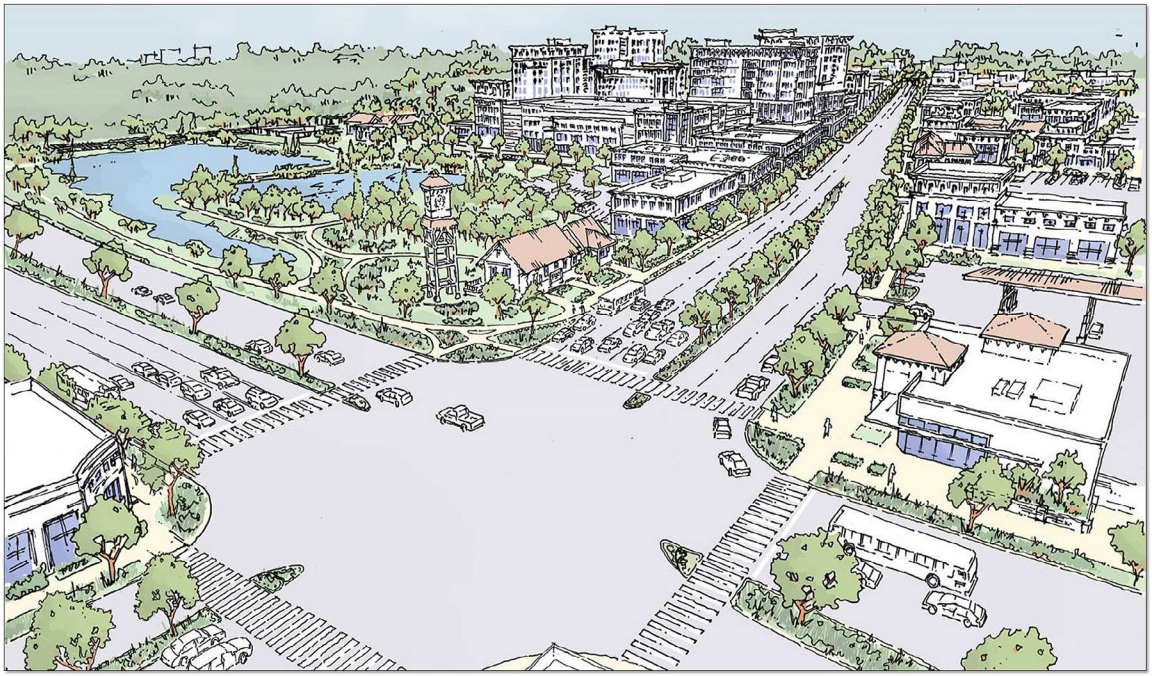

Figure 16 | Sand Lake Gateway Vision