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The image features an abstract design with several overlapping, wavy, horizontal bands in shades of light blue, teal, and dark blue. The lower portion of the image is a solid dark blue field filled with a grid of small, lighter blue dots. The text 'MANDARIN ROAD/PLUMMER COVE' is positioned in the bottom left corner of this dotted area.

MANDARIN ROAD/PLUMMER COVE

EXECUTIVE SUMMARY

As part of the JTAMobilityWorks Complete Streets Program, a study of the Mandarin Road and Plummer Cove Road corridor was conducted. The portion of Mandarin Road studied is approximately 6 miles long, and loops from San Jose Boulevard (SR 13) to San Jose Boulevard just north of the Julington Creek Bridge. The portion of Plummer Cove Road studied is approximately 0.6 miles long, and extends from Scott Mill Road to San Jose Boulevard.

The Mandarin Road corridor is a unique residential road with two narrow travel lanes, roadside ditches, and an extensive tree canopy along much of the corridor. The corridor serves approximately 1400 homes within its loop and provides access to two noteworthy public parks, located at the north and south ends of Mandarin Road – Walter Jones Historical Park and Mandarin Park. In addition, Brady Park/Alberts Field, which draws significant community activity, with tennis and ball fields, is located between Mandarin Road and Orange Picker Road.

Mandarin Road does not have a shoulder; therefore it is designated as a “Share the Road” facility, or “sharrow” for bicycle use. However, the corridor is deficient of pedestrian facilities, often requiring pedestrians to utilize the road during all times of the day, for residents of all ages. This incomplete network of sidewalks has been identified as a potential safety issue, as pedestrians routinely walk within the travel lanes. There are short segments of existing sidewalk at the northern and southern termini of the study corridor that are a primary focus of potential enhancements.

In order to better understand the issues and concerns of the community, a public workshop was held at the Mandarin Community Club from 6 p.m. to 8 p.m. on October 19, 2015, which was attended by approximately 75 members of the community. Workshop attendees had the opportunity to view numerous maps of the corridor and listen to a presentation by the project team. The presentation outlined the deficiencies in sidewalk connectivity throughout the corridor and also discussed the feasibility of extending the sidewalk that currently terminates at Bolton Abbey Road on the southern terminus of the corridor. Participants at the workshop conveyed the importance of sidewalk connectivity and safety, but also expressed concern for tree preservation, as the trees contribute to the unique character for the corridor. Workshop attendees also identified the need to address the increased travel speeds along the corridor.

As a result of the evaluation and community input, the priority project for the corridor recommends the extension of sidewalk from Bolton Abbey Road to Orange Picker Road. The sidewalk would be constructed on the north side, or inner loop side of the road. The design of sidewalk along this corridor will require extensive design and drainage analysis taking into consideration numerous roadside constraints including driveways, mailboxes, ditches and tree preservation.

Additionally, other segments along the corridor were reviewed for potential sidewalk construction as part of the ongoing operational and safety improvement program. The recommended sections include:

- Flynn Road/Westberry Road to San Jose Boulevard (from just south of Flynn Road/Westberry Road intersection near the intersection with San Jose Boulevard, and along San Jose Boulevard, expanding the sidewalk that currently exists to the south across the Julington Creek Bridge);
- Plummer Cove Road, and
- along Mandarin Road from Orange Picker Road to Rivergate Drive.

In the future, consideration should also be given to extending the sidewalk network around the Mandarin loop road. Specifically connecting sidewalk from Walter Jones Historic Park to Brady Road; and Brady Road to Riverplace Drive.

Further development and analysis of all the concepts and recommendations outlined in this study is essential. Moreover, continued coordination with stakeholders and other agencies may afford partnership opportunities for funding that could affect the prioritization and/or implementation of projects.

1: CONTEXT

CORRIDOR ASSESSMENT

The Mandarin Road and Plummer Road corridors were evaluated for bicycle and pedestrian connectivity as part of the JTA MobilityWorks Complete Streets initiative. Roadway segments currently lacking sidewalk include 0.4 mile along Plummer Cove Road between Scott Mill Road and San Jose Boulevard and 3.8 miles along Mandarin Road between Loretto Road and Bolton Abbey Drive. The abrupt termination of sidewalk along Mandarin Road in the vicinity of its southern terminus near San Jose Boulevard was also noted. The following sections review the existing conditions.

FIELD REVIEW

On Tuesday, August 25, 2015 a field review of the Mandarin/ Plummer Cove Road Corridors was performed by driving through the corridor while intermittently pausing to review sections in more detail on foot. The purpose of the field review was to obtain photographs and field measurements while gaining a better understanding of the corridor and the issues associated with developing a Complete Street on Mandarin Road and Plummer Cove Road. A second field review was performed on Tuesday, September 1, 2015 in order to gain additional information about the corridor. Figures 1 and 2 demonstrate the rural nature of the corridor, particularly the existing tree cover and close proximity to the roadway.

CORRIDOR OVERVIEW

The Mandarin/Plummer Cove Mobility Corridor includes two roads: Mandarin Road and Plummer Cove Road located in southeast Duval County immediately east of the St. Johns River. The Mandarin Road corridor begins at its intersection with San Jose Boulevard (SR 13) and terminates at its junction with San Jose Boulevard just north of the Julington Creek Bridge. The segments of Loretto and Westberry Roads that diverge from Mandarin Road are also included within the study area. The Plummer Cove Road portion of the corridor begins at Scott Mill Road and terminates at San Jose Boulevard just south of I-295. There is no public transit on Mandarin Road or Plummer Cove Road. Figure 3 displays the study area, which is highlighted in yellow, and identifies the major road network in this corridor.

FIGURE 1: EXISTING CONDITIONS



FIGURE 2: EXISTING CONDITIONS



FIGURE 3: LOCATION MAP



The primary deficiency of Mandarin Road and Plummer Cove Road is the lack of pedestrian accommodations. The corridor segments lacking sidewalk serve approximately 1,400 homes which have direct or indirect access via a dead-end or neighborhood roads. In addition to the high number of homes, two noteworthy recreational destinations are located at the north and south ends of Mandarin Road – Walter Jones Historical Park and Mandarin Park. In addition, Brady Park/Alberts Field, which draws significant activity, with tennis and ball fields, is located between Mandarin Road and Orange Picker Road. The following photographs (Figures 4 through 10) summarize the major considerations for the project corridor:

FIGURE 4: PATRIARCH OAKS THROUGHOUT THE CORRIDOR



FIGURE 5: CONNECTIVITY TO PARKS



FIGURE 6: CONNECTIVITY TO PARKS



FIGURE 7: EXISTING TYPICAL SECTION

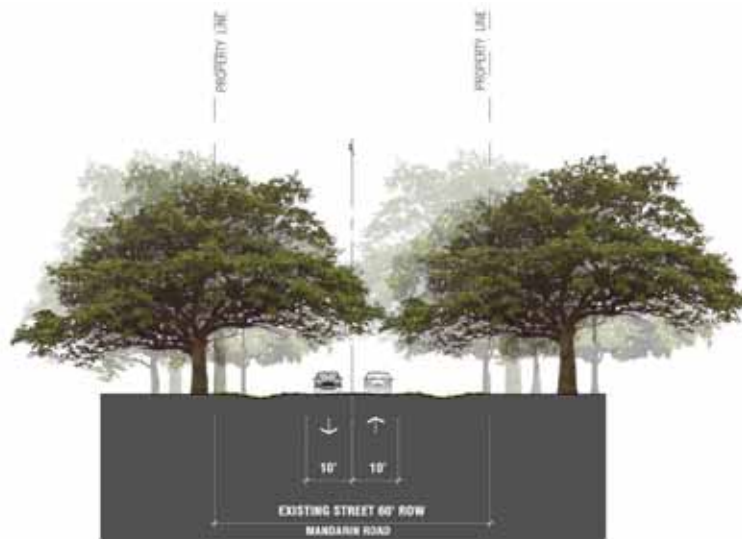


FIGURE 8: BICYCLE LANES SHARE THE ROAD SIGNS ALONG CORRIDOR



FIGURE 9: EXISTING ROAD CONDITIONS (SWALE SECTIONS)



FIGURE 10: EXISTING ROADWAY CONDITIONS (MAILBOXES)



In general, existing sidewalk in the Mandarin community west of San Jose Boulevard can be characterized as sporadic and lacking connectivity between pedestrian generators and destinations, such as commercial centers on San Jose Boulevard, the Julington Creek Bridge, or the two community parks on the north and south sides of the Mandarin peninsula. Existing sidewalks are located along San Jose Boulevard, Westberry Road, Flynn Road, and Scott Mill Road. Locations of sidewalk in the project corridor include:

- On the south side of Mandarin Road, concrete sidewalk begins approximately 1,000 feet northwest of San Jose Boulevard and extends to the Mandarin Road / Westberry Road intersection. Existing sidewalk is located on the north side of Westberry Road and continues on Mandarin Road to its current terminus at Bolton Abbey Drive.
- On the north side of Mandarin Road, asphalt sidewalk begins at the San Jose Boulevard / Mandarin Road intersection and extends westward to its current terminus at Walter Jones Historical Park (approximately 600 feet east of the Mandarin Road / Loretto Road junction);
- On Loretto Road, concrete sidewalk begins at the Loretto Road / San Jose Boulevard intersection and extends to its current terminus at County Dock Road. This asphalt sidewalk also intersects with a similar asphalt sidewalk located along the west side of Scott Mill Road; and
- On Plummer Cove Road, concrete sidewalk begins approximately 500 feet west of the Plummer Cove Road / San Jose Boulevard intersection and extends to 600 feet northwest of the intersection of Scott Mill Road and Plummer Cove Road.

This incomplete network of sidewalks has been identified as a potential safety issue, as pedestrians routinely walk within the travel lanes on Mandarin Road. Mandarin Road lacks a shoulder or bike lane and therefore is a “share the road” facility. Sharrows and “Share the Road” signs are located intermittently along Mandarin Road to remind motorists that bicyclists are expected to ride within the travel lane. The dense tree canopy comprised of numerous patriarch oaks, which are a source of community pride, complicate the ability to widen Mandarin Road to accommodate a bicycle lane or pedestrian accommodations. These trees also add to line of sight limitations along winding Mandarin Road, thereby increasing safety concerns and adding to discomfort for runners, bicyclists and pedestrians. Hence, the narrow lanes and incomplete sidewalk network are concerning with respect to accommodating pedestrians in particular. Figure 11 shows the location of the existing sidewalk in the corridor. The study area is highlighted in yellow, the dark pink lines display the locations of existing sidewalk, and existing parks are shown in green.

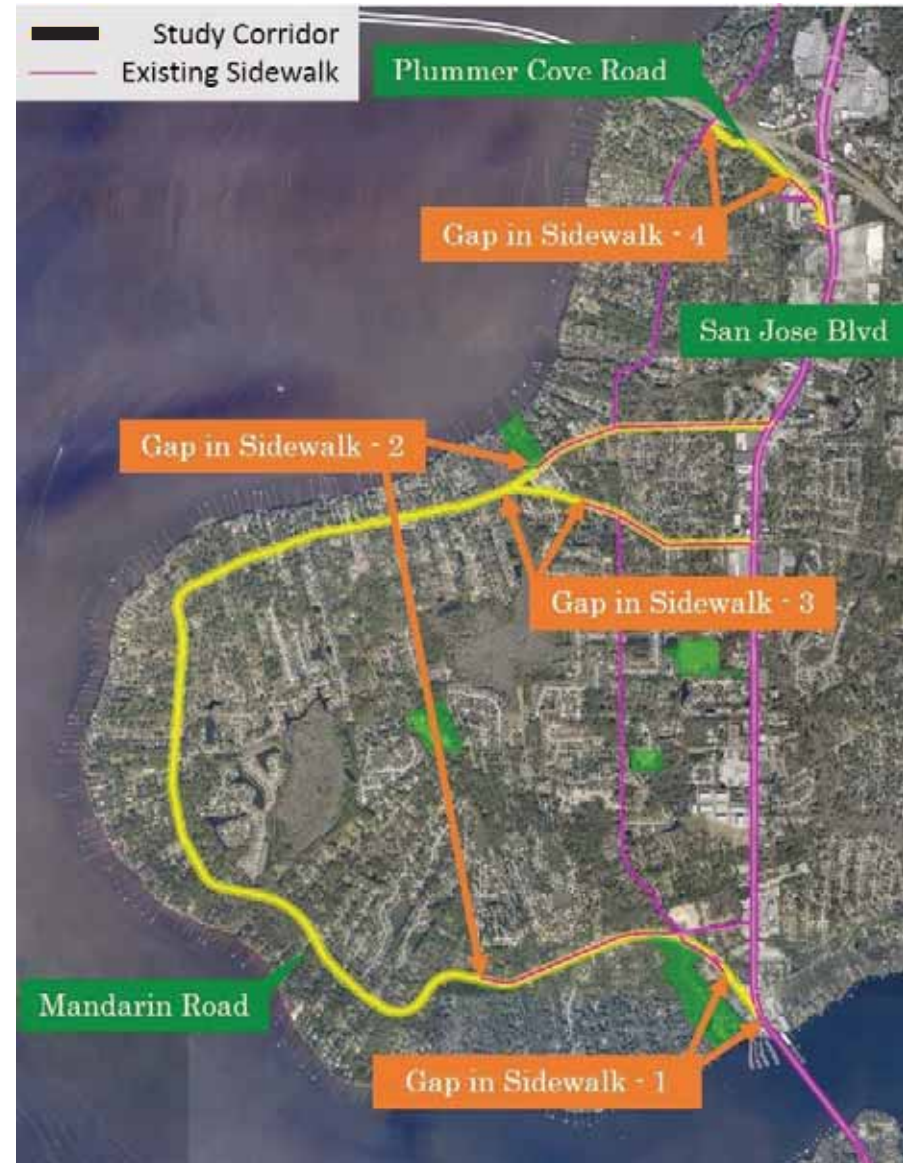
FIGURE 11: EXISTING SIDEWALK CONDITIONS



Within the Mandarin Road and Plummer Cove Road corridors, four major gaps of sidewalk are present. These gaps are shown in Figure 12, beginning at the south end of the project and moving in a clockwise direction:

- The first gap in the sidewalk occurs on the southern-most segment of Mandarin Road near San Jose Boulevard. The existing sidewalk terminates approximately 0.25 miles north of the San Jose intersection. Completing this gap connects pedestrians to St. Johns County via the dedicated sidewalk envelope on the Julington Creek Bridge.
- The second gap in the sidewalk occurs along Mandarin Road from Bolton Abbey Drive to Walter Jones Historical Park. Closing this gap of approximately 3.8 miles connects sidewalk on the north and south ends of Mandarin Road while serving nearly 1,400 households.
- The third gap in the sidewalk occurs on Loretto Road from County Dock Road to Mandarin Road. Closing this gap of 1,400 feet connects Loretto Road to Mandarin Road and facilitates access to Walter Jones Historical Park and the riverfront.
- The fourth gap in the sidewalk occurs along Plummer Cove Road between Scott Mill Road to 1,200 feet northwest of San Jose Boulevard. Closing this gap of approximately 2,000 feet connects San Jose Boulevard with Scott Mill Road via Plummer Cove Road. A short (approximately 500 feet) section of sidewalk also needs to be constructed in the vicinity of the San Jose Boulevard / Plummer Cove Road intersection to complete the pedestrian network connectivity.

FIGURE 12: EXISTING SIDEWALK GAPS



2: PROCESS

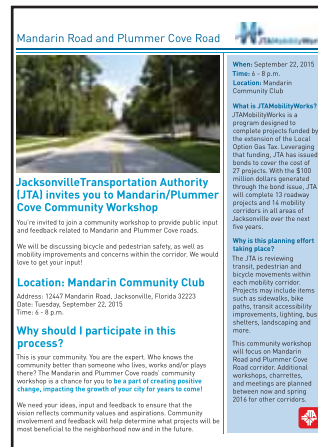
COMMUNITY WORKSHOP

A two-hour community workshop was used to inform residents about the JTAMobilityWorks Complete Streets Program, as well as obtain comments on potential sidewalk extensions, transit, lighting, bicycle paths and landscaping in the Mandarin community. Soliciting comments from local residents assisted with the prioritization of potential construction projects should funding become available.

COMMUNITY FEEDBACK/KEY ISSUES

The Community Workshop was held on October 19, 2015 from 6 to 8 p.m. at the Mandarin Community Club (see Figure 13) located on Mandarin Road. Full size exhibits (1 inch=100 feet) of the corridor were displayed on exhibit boards supported by tripods, while half-size plots were displayed on tables. Additional tripods included flip charts to accommodate post-it notes containing comments from the public. Attendees were provided an opportunity to place a circle sticker on a flip chart next to their preference for sidewalk on various segments of Mandarin Road. The public was encouraged to complete and submit comment forms at the meeting or send to the JTA via e-mail.

FIGURE 13: MANDARIN COMMUNITY CLUB LOCATION



MANDARIN ROAD OUTREACH FLYER

A formal presentation began shortly before 6:30 p.m. and continued to 7:30 p.m. The presentation addressed the purpose of the JTAMobilityWorks program and the Complete Streets initiative followed by an analysis of the corridor characteristics, possible sidewalk segments, challenges to accommodating sidewalks, and methods of minimizing impacts to the historic trees and root zone. Numerous questions were asked by the audience. Councilman Matt Schellenberg and Fred Jones, JTA, addressed many of the questions and comments. The presentation concluded at approximately 7:30 p.m. and the participants were encouraged to view the exhibits, provide comments, or speak to the professionals in attendance.

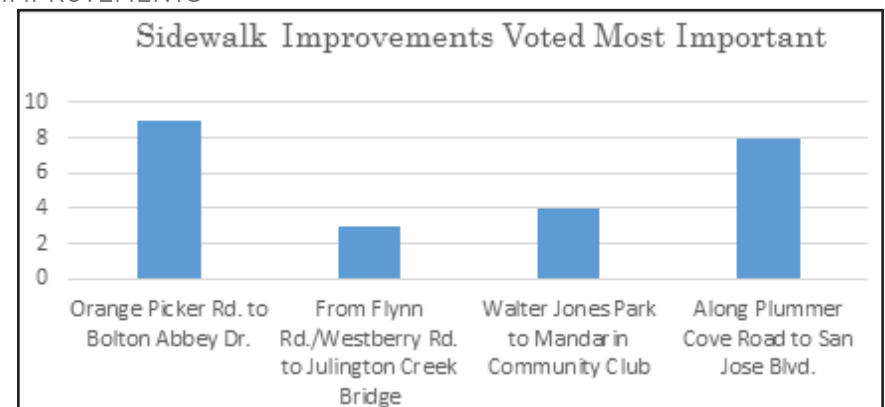


MANDARIN ROAD WORKSHOP PRESENTATION

Approximately 77 members of the public signed the attendance register at the front table of the workshop. In addition to Councilman Shellenberg, the elected officials in attendance included Councilman Tommy Hazouri. Former Councilwoman Sharon Copeland was also in attendance, as were eight members of the Mandarin Community Club.

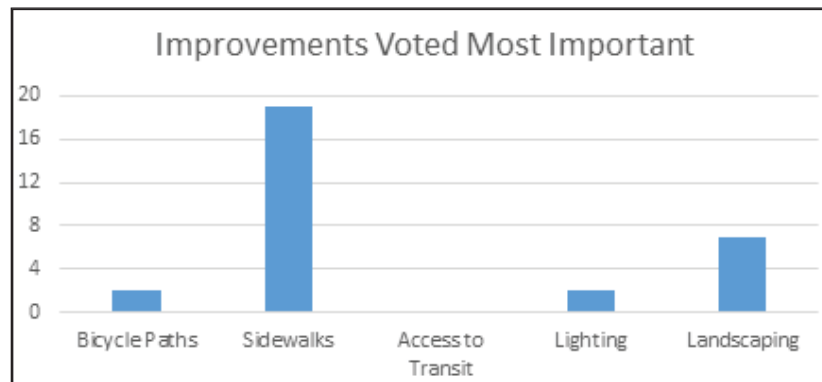
Participants were asked to rank sidewalk segment improvements in order of personal importance. The segments that were rank as "1" were tallied below in Figure 14.

FIGURE 14: COMMUNITY INPUT MOST IMPORTANT SIDEWALK IMPROVEMENTS



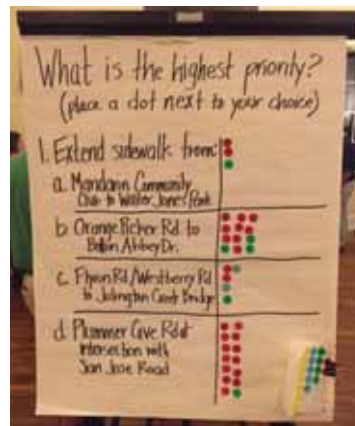
Participants were also asked to rank their personal improvement priorities. The improvements that were ranked as “1” were tallied below as illustrated in Figure 15.

FIGURE 15: COMMUNITY INPUT MOST IMPORTANT IMPROVEMENTS



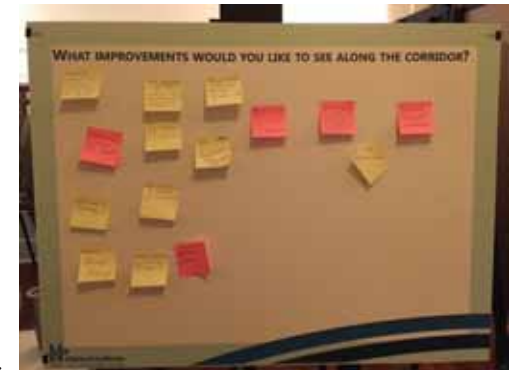
The prevalent themes identified by the workshop attendees include the following:

- Speed through the corridor is too fast – slow it down;
 - Speed humps / Speed bumps
- Preservation of trees is critical;
 - Cut dead limbs over road;
 - Plant new oaks to replace old ones;
 - Trimming trees for overhead power lines is killing trees;
 - Preserve tree canopy;
- Safety – All of Mandarin Road needs sidewalks and bike paths;
- Sidewalks are needed to get pedestrians out of the road;
 - Alternative sidewalk material should be considered;
 - More trail-like than sidewalk (natural/permeable);
 - Consider a boardwalk to minimize impacts to trees; (Figure 16)
 - Put sidewalks behind trees on dedicated easements;
 - Maintenance of existing and future sidewalks;
 - No sidewalks - preserve trees;



MANDARIN ROAD WORKSHOP INPUT

- Connect existing neighborhoods with sidewalks to Mandarin Road;
- Need additional pedestrian crossings at Walter Jones and Presbyterian Church;
- Mandarin Road is historic with a rural feel – no additional sidewalks;
- Improve drainage on Mandarin Road;
 - Bury pipes to replace drainage ditches on Mandarin Road to increase usable pathway
- Need additional lights on Plummer Cove Road; and
- Aesthetics of the corridor should be considered.



MANDARIN ROAD WORKSHOP INPUT

FIGURE 16: BOARDWALK PERSPECTIVE RENDERING



3: CONCEPTS

DESIGN CONCEPTS

Based on the existing conditions, gaps in the sidewalk, and public input, five segments were analyzed for consideration as potential future projects along the corridor:

- Plummer Cove Road;
- Flynn Road/Westberry Road intersection to San Jose Boulevard (includes 0.2 miles near southern terminus at Mandarin Road/San Jose Boulevard intersection lacking sidewalk);
- Bolton Abbey Drive to Orange Picker Road;
- Orange Picker Road to Riverplace Drive; and
- Riverplace Drive to Walter Jones Historic Park.

Although a sidewalk gap currently exists on Loretto Road connecting to Mandarin Road, this segment is not included as a potential project because the roadside conditions including large swale sections would complicate the addition of sidewalk. Many residents in the area currently use the Mandarin Presbyterian Church parking lot to connect to Mandarin Road and Walter Jones Historical Park. Although completing this sidewalk segment is desirable, the alternate route through the Mandarin Presbyterian Church campus allows this segment to be a low priority and not recommended for carrying forward at this time given the higher priorities along Mandarin Road.

As previously discussed, the design will need to consider significant roadside constraints including numerous trees, driveways, as well as ditches and gaps in sidewalk. During the design and construction phase, attention will be given to drainage requirements and the potential to fill in portions of the roadside ditches, constructing a continuous culvert or identifying other design practices to address the drainage needs. While some sections of Mandarin Road currently lack a ditch and may not require inlets, a detailed drainage analysis is required to refine these assumptions. A detailed design survey and drainage analysis will allow the stormwater plan to be optimized.

Planning-level preliminary cost estimates are in development to help understand funding needs and requirements for the recommended projects. Due to the potential high cost of adding sidewalks to all of the segments studied, an analysis was also performed to determine the number of households served in the various sections. Using the estimated households served as an additional criteria, the termini of the various sidewalk projects may be optimized. Using parcel lines from the Duval County Property Appraiser, the number of residential parcels currently abutting Mandarin Road or located on a dead-end side road or neighborhood with direct access to Mandarin Road were considered. The assessment by segment is as follows.

Plummer Cove Road

Plummer Cove Road is one of the five potential sidewalk projects recommended for further study because the roadway is currently a narrow two-lane facility with no bicycle or sidewalk accommodations. Moreover, pedestrians wishing to access San Jose Boulevard must walk to either Oak Bluff Lane or Claire Lane, two connections to San Jose Boulevard located approximately 0.6 mile (3,200 feet) north and south of Plummer Cove Road. By extending the existing Plummer Cove sidewalk approximately 0.38 mile (2,000 feet) to the west, pedestrians along Scott Mill Road, as well as the 16 households along Plummer Cove Road will have access to San Jose Boulevard. Figure 17 shows the project area and the potential sidewalk extension in green.

FIGURE 17: PLUMMER COVE ROAD POTENTIAL SIDEWALK EXTENSION - SCOTT MILL ROAD



Flynn / Westberry Intersection to San Jose Boulevard

This segment of Mandarin road features sidewalk along the west side of Mandarin Road for approximately 0.2 miles (1,000 feet) south of the intersection. The existing sidewalk terminates abruptly at a JEA pump station and stops short of San Jose Boulevard by approximately 0.18 mile (950 feet). Extending the sidewalk in this location accommodates pedestrians safely to San Jose Boulevard, which includes a dedicated, barrier-protected sidewalk envelope on the Julington Creek Bridge. This sidewalk connection also facilitates pedestrian travel to the Julington Creek Marina and various restaurants and shops along San Jose Boulevard. A noteworthy point regarding sidewalk accommodation is that the west side of Mandarin Road in this section has wide ditches and relatively little tree canopy featuring large trees within the existing right-of-way. Figure 18 shows the project area and the potential sidewalk extension in green.

FIGURE 18: PLUMMER COVE ROAD POTENTIAL SIDEWALK EXTENSION - FLYNN/WESTBERRY TO SAN JOSE BOULEVARD



Bolton Abbey Drive to Orange Picker Road

This segment of Mandarin Road was identified by the community for potential improvements based on input from local residents, including a 400-signature petition. This segment of sidewalk extension connects the south end of Mandarin Road to a prominent local roadway (Orange Picker) and serves approximately 460 households along Mandarin Road or on adjacent dead-end side streets. This proposed sidewalk extension is approximately 0.9 mile (4,600 feet) in length and occurs along a segment of Mandarin Road with a less dense tree canopy within the existing right-of-way in comparison to the north side. While some tree removal will be required, placing the sidewalk along the east side of the roadway appears to be feasible if the existing ditch is filled and replaced with a continuous pipe culvert with ditch bottom inlets placed at various locations. One possible alteration to this corridor is to extend the limits northward to a more logical pedestrian generator, as Orange Picker Road is a narrow two-lane road with no bicycle or sidewalk accommodations. Figure 19 shows the project area and the potential sidewalk extension in green.

FIGURE 19: MANDARIN ROAD POTENTIAL SIDEWALK EXTENSION - BOLTON ABBEY DRIVE TO ORANGE PICKER ROAD



Orange Picker Road to Riverplace Drive

The segment between Orange Picker Road and Riverplace Drive is one of the sidewalk segments recommended as a potential project because of the numerous neighborhoods bordering this segment of Mandarin Road. In fact, sidewalk along this heavily populated segment of Mandarin Road serves approximately 560 households. As with the segment to the south, this approximately 1.4-mile (7,500-foot) segment is characterized by less dense tree canopy and a clearer roadside, potentially facilitating the installation of sidewalk and reducing the possibility of tree damage. Again, much of the existing ditch requires filling and replacing with an enclosed drainage system. Figure 20 shows the project area and the potential sidewalk extension in green.

The addition of this segment as measured from Bolton Abbey Drive would create a total sidewalk length of approximately 2.3 miles, which may be cost-prohibitive in the short term. If funding allows, extending the northern terminus from Orange Picker Drive to Rivergate Drive (an extension of 0.9 mile) would provide access to three major neighborhoods: Long Cypress, Red Cypress, and Rivergate.

These three communities comprise approximately 477 of the 563 (85%) households along this roadway segment between Orange Picker Road and Riverplace Drive. Instead of extending the sidewalk 2.3 miles from Bolton Abbey Drive, consideration should be given to extending sidewalk approximately 1.8 miles to Rivergate Drive in order to maximize the return on the limited funds. Figure 21 displays this potential alternate terminus.

FIGURE 20: MANDARIN ROAD POTENTIAL SIDEWALK EXTENSION - ORANGE PICKER ROAD TO RIVER PLACE DRIVE



Riverplace Drive to Walter Jones Historic Park

The sidewalk extension from Riverplace Drive to Walter Jones Historic Park is the most controversial of the three primary segments along Mandarin Road because of the dense tree canopy, patriarch oaks, utilities, and a sharp curve located in the northwest corner of the segment. This sidewalk extension is approximately 1.5 miles (8,000 feet) and likely needs to switch sides of the road in order to minimize impacts to the patriarch oak trees. In order to further minimize impacts to the oaks and root zones, alternate sidewalk materials should be considered including wooden boardwalks, crushed stone, or coquina as an alternative to concrete or asphalt sidewalk.

FIGURE 21: MANDARIN ROAD POTENTIAL SIDEWALK EXTENSION - ORANGE PICKER ROAD TO RIVERGATE DRIVE



Figure 22 shows the project area and the potential sidewalk extension in green. Due to this length of this segment and the added difficulty of accommodating a sidewalk within the constrained roadside, a smaller segment is recommended for consideration as a potential short term project. Extending the existing sidewalk by approximately 0.85 mile (4,500 feet) westward from its current terminus at Walter Jones Historical Park to the Mandarin Community Club at Brady Road yields a connection between the park with the Mandarin Community Club and historic post office. This sidewalk extension accommodates pedestrians during the various festivals at the Mandarin Community Club, including the art festival held every Easter weekend. Moreover, Mandarin Presbyterian Church allows parking for the festival, and sidewalk facilitates travel between parking and the festival site. However, this segment is characterized by some of the largest oaks on the project, many of which are located just beyond the white edge line on the roadway.

Alternate sidewalk materials are strongly recommended for consideration during subsequent project phases. Consultation with the city arborist during development of design plans is encouraged for all segments of Mandarin Road, but especially for this segment. Figure 23 shows the project area and the potential sidewalk extension in green.

FIGURE 22: MANDARIN ROAD POTENTIAL SIDEWALK EXTENSION - RIVERPLACE DRIVE TO WALTER JONES HISTORIC PARK



FIGURE 23: MANDARIN ROAD POTENTIAL SIDEWALK EXTENSION - MANDARIN COMMUNITY CLUB TO WALTER JONES HISTORIC PARK



4: RECOMMENDATIONS

Based on the consideration of engineering judgment, public input, preliminary cost estimates, and number of households served, the Mandarin Road and Plummer Road corridor segments, the following potential keystone, operational and safety or long term vision projects are summarized below.

KEYSTONE PROJECTS

The segment that provides the potential greatest benefit to pedestrian mobility is the 0.9-mile section between Bolton Abbey Drive to Orange Picker Road. In order to maximize number of households served, consideration should be given to extending the sidewalk an additional 0.9-mile to Rivergate Drive. If sidewalk is extended from Bolton Abbey Drive to Rivergate Drive, an estimated 940 (68%) of the total of 1,378 parcels within the Mandarin Road loop, will have either direct sidewalk access or access from their neighborhood road. Figure 24 illustrates the recommended sidewalk extensions.

The segment from Bolton Abbey Drive to Orange Picker Road was identified by the community as the most desirable for enhancing pedestrian connectivity. The proposed sidewalk would be constructed along the north side of the road, on the interior of the Mandarin Loop Road. For the purposes of developing preliminary construction cost estimates, it is assumed that the sidewalks will be concrete. Proposed design for the sidewalks will take into consideration tree preservation, roadside ditches, and access to driveways.

OPERATIONAL/SAFETY ENHANCEMENTS

All the five project segments identified for sidewalk connectivity within the Mandarin community were also analyzed for short term operational and safety improvements; and additional sidewalk extensions to build upon the keystone project identified above.

- **Flynn Road/Westberry Road to San Jose Boulevard:** Priority should be given to complete the 0.2 mile of sidewalk near the southern terminus of Mandarin Road, from just south of Flynn Road/Westberry Road intersection near the intersection with San Jose Boulevard, and along San Jose Boulevard. The completion of this sidewalk gap would connect an extensive sidewalk system extending into St. Johns County with the existing and future sidewalk system in the Mandarin community west of San Jose Boulevard.
- **Plummer Cove Road:** Completing sidewalk along Plummer Cove Road for approximately 0.4 miles, serving approximately 16 households. Figure 25 illustrates the recommended Plummer Cove Road sidewalk extension.
- **Orange Picker Road to Rivergate Drive:** If sidewalk is extended from Orange Picker Road to Rivergate Drive; the additional connectivity to Riverplace Drive will serve an additional estimated 81 households.

FIGURE 24: RECOMMENDED MANDARIN ROAD SIDEWALK EXTENSIONS

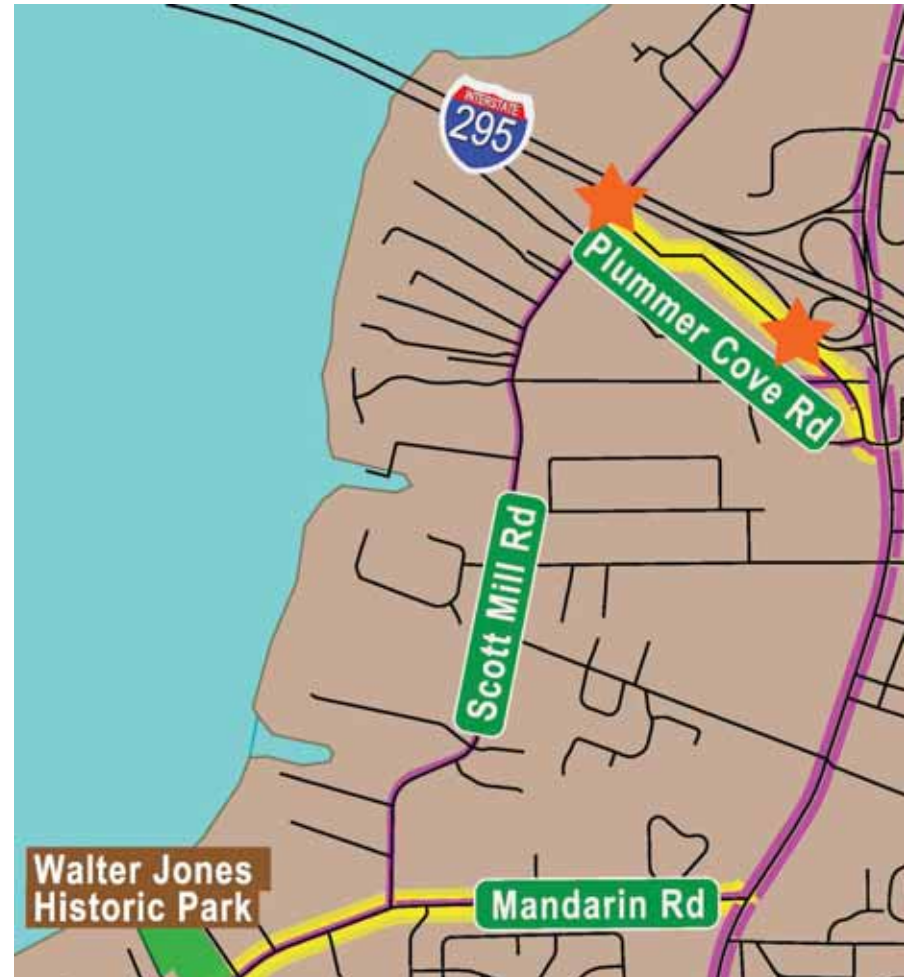


LONG TERM VISION

The long term vision projects for Mandarin Road include completing sidewalk connections along Mandarin Road's north segment, from Brady Road to Walter Jones Historic Park and Riverplace Drive to Brady Road, where the greatest challenge with respect to tree preservation will be encountered. These are identified as long term vision projects because of the design preparation work required for these projects. Preservation of the Patriarch Oaks is essential to the Natural Scenic Drive designation for Mandarin Road and serves as a vital part of the Mandarin community.

Therefore, further detailed analysis, engineering, and design work is necessary to ensure the sidewalk connectivity from Riverplace Drive to Brady Road is completed with tree preservation as a major goal and emphasis. This initiative would provide the Mandarin community with long term vision that preserves trees and provides safety and operational improvements along the corridor.

FIGURE 25: RECOMMENDED PLUMMER COVE ROAD SIDEWALK EXTENSION





3.0 FUNDING OPTIONS & INTER-AGENCY COORDINATION

POTENTIAL FUNDING SOURCES

As with any public infrastructure project, a dedicated revenue source will need to be identified for Complete Streets Projects. The following table provides a range of potential sources of revenue from federal, state and local sources. It is unlikely that full funding will come from any one of these sources, but rather some combination therein.

Sponsor	Program Name	Description of Funding Program	How it Can Assist with Complete Streets
NEW SOURCES			
USDOT			
FHWA / FTA	Metropolitan Planning (23 USC 104(f))	Transportation planning in urbanized areas in accordance with 23 USC 134 and 49 USC 5303.	Transit, bicycle, and pedestrian planning as part of the metropolitan planning process.
FHWA / FTA	Statewide Planning (23 USC 505)	Statewide transportation planning in accordance with 23 USC 135 and 49 USC 5304.	Transit, bicycle and pedestrian planning as part of the statewide planning process.
FHWA	National Highway System (NHS) (23 USC 103)	Improvements to rural and urban roads that are part of the NHS or that are NHS Intermodal connectors.	Construction of pedestrian walkways and bicycle transportation facilities on land adjacent to highway on the NHS. NHS funds may also be used to fund transit improvements in NHS corridors.
FHWA	Surface Transportation Program (STP) (23 USC 133)	Construction, reconstruction, rehabilitation, resurfacing, restoration, and operational improvements for highways and bridges including construction or reconstruction necessary to accommodate other transportation modes. The Surface Transportation Program (STP) (23 U.S.C. 133) provides the greatest flexibility in the use of funds. These funds may be used (as capital funding) for public transportation capital improvements, car and vanpool projects, fringe and corridor parking facilities, bicycle and pedestrian facilities, and intercity or intracity bus terminals and bus facilities. As funding for planning, these funds can be used for surface transportation planning activities, wetland mitigation, transit research and development, and environmental analysis. Other eligible projects under STP include transit safety improvements and most transportation control measures.	Construction of pedestrian walkways and bicycle transportation facilities; nonconstruction projects for safe bicycle use; modify public sidewalks to comply with the Americans with Disabilities Act. Projects do not have to be within the right-of-way of a Federal-aid highway.
FHWA	Congestion Mitigation and Air Quality Improvement Program (CMAQ) (23 USC 149)	Funds projects in nonattainment and maintenance areas that reduce transportation related emissions.... – The CMAQ program has the objective of improving the Nation's air quality and managing traffic congestion. CMAQ projects and programs are often innovative solutions to common mobility problems and are driven by Clean Air Act mandates to attain national ambient air quality standards. Eligible activities under CMAQ include transit system capital expansion and improvements that are projected to realize an increase in ridership; travel demand management strategies and shared ride services; pedestrian and bicycle facilities and promotional activities that encourage bicycle commuting. Programs and projects are funded in air quality nonattainment and maintenance areas for ozone, carbon monoxide (CO), and small particulate matter (PM-10) that reduce transportation-related emissions. Funds are apportioned to States based on a formula that considers the severity of their air quality problems.	Capital and Operating funds for new transit service. Construction of pedestrian walkways and bicycle transportation facilities; nonconstruction projects for safe bicycle use. Projects do not have to be within the right-of-way of a Federal-aid highway, but must demonstrate an air quality benefit.
USDOT	TIGER	The Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grant program, provides a unique opportunity for USDOT to invest in road, rail, transit and port projects that promise to achieve national objectives. Since 2009, Congress has dedicated more than \$4.1 billion for six rounds of TIGER to fund projects that have a significant impact on the Nation, a region or a metropolitan area. - See more at: https://www.transportation.gov/tiger	Funding was available to units of government - including state, tribal and local governments, transit agencies, port authorities, MPOs and multi-jurisdictional entities - for capital investments in highway or bridge projects; public transportation projects; passenger and freight rail transportation projects; port infrastructure investments; and intermodal facilities. Additional TIGER solicitations are anticipated.
FHWA	Recreational Trails Program (23 USC 206)	Develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses.	Nonmotorized or mixed use (motorized and nonmotorized) trails. Eligible categories are trail maintenance and rehabilitation, trailside or trailhead facilities, construction and maintenance of equipment, trail construction, trail assessments, and trail safety.
FHWA	National Scenic Byways Program	Grants and technical assistance are provided to states and Indian tribes to implement projects on highways designated as National Scenic Byways, All-American Roads, America's Byways, and state scenic or Indian tribe scenic byways and to plan, design, and develop a state or Indian tribe scenic byway program.	Funds shall be available for an activity related to the planning, design, or development of a state or Indian tribe scenic byway program; development and implementation of a byway corridor management plan; safety improvements to accommodate increased traffic; improvements to enhance access; protection of resources adjacent to the byway; development and implementation of a marketing program; development and provision of tourist infrastructure; and construction of bicycle and pedestrian facilities, interpretive facilities, overlooks, and other enhancements for scenic byway travelers.
FHWA	Safe Routes to School (SRTS) (S-LU Sec. 1404)	1. To enable and encourage children, including those with disabilities, to walk and bicycle to school; 2. To make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and 3. To facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.	Eligible Infrastructure Projects are planning, design, and construction of infrastructure-related projects that will substantially improve the ability of students to walk and bicycle to school, including sidewalk improvements, traffic calming and speed reduction improvements, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, secure bicycle parking facilities, and traffic diversion improvements in the vicinity of schools. Eligible Noninfrastructure activities to encourage walking & bicycling to school, including public awareness campaigns and outreach to press and community leaders, traffic education and enforcement in the vicinity of schools, student sessions on bicycle and pedestrian safety, highway

Sponsor	Program Name	Description of Funding Program	How it Can Assist with Complete Streets
		NEW SOURCES	
			and environment, and funding for training, volunteers, and managers of safe routes to school programs
FHWA	Highway Bridge Replacement and Rehabilitation (HBRRP) (23 USC 144)	Replace and rehabilitate deficient highway bridges and to seismically retrofit bridges located on any public road.	Pedestrian walkways and bicycle transportation facilities on highway bridges. If a highway bridge deck is replaced or rehabilitated, and bicycles are permitted at each end, then the bridge project must include safe bicycle accommodations (within reasonable cost). (23 USC 217(e))
FHWA	Highway Safety Improvement Program (HSIP) (23 USC 148)	The overall purpose of this program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads through the implementation of infrastructure-related highway safety improvements.	Improvements for pedestrian or bicyclist safety. Construction and yellow-green signs at pedestrian crossings and in school zones. Identification of and correction of hazardous location sections, and elements (including roadside obstacles, railway-highway crossing needs, and unmarked or poorly marked roads) that constitute a danger to bicyclists and pedestrians. Highway safety improvement projects on publicly owned bicycle or pedestrian pathways or trails.
FTA	Urbanized Area Formula Grants (49 USC 5307)	Transit capital and planning assistance to urbanized areas with populations over 50,000 and operating assistance to areas with populations of 50,000 - 200,000.	Funding can be used for planning, engineering design and evaluation of transit projects, and technical transportation-related studies. Funding can also be used for capital investments in transit and bus-related activities such as replacement, overhaul, and rebuilding of buses. For urbanized areas with populations of 200,000 or more, at least one percent of the funding apportioned to each area must be used for transit enhancement activities such as historic preservation, landscaping, public art, pedestrian access, bicycle access, and enhanced access for persons with disabilities.
FTA	Urbanized Area Formula Grants Transportation Enhancements Set-aside (49 USC 5307(k))	1% set-aside of section 5307 funds for areas with population over 200,000 population for 9 specific activities included in the definition of Transit Enhancement Activities in 49 USC 5302(a)(15).	Pedestrian and bicycle access, bicycle storage facilities, and installing equipment to transport bicycles on mass transportation vehicles.
FTA	Paul S. Sarbanes Transit in the Parks Discretionary Grant Program	Purpose: To enhance the protection of national parks and public lands and increase the enjoyment of those visiting the parks and public lands. Eligible project areas include any federally owned or managed park, refuge, or recreational area open to the general public, including: National Parks, National Wildlife Refuges; Bureau of Land Management recreational areas; Bureau of Reclamation recreational areas; and National Forests. Eligible projects may also include the communities and land surrounding these federal lands.	Program funds may support capital and planning expenses for new or existing alternative transportation systems in the vicinity of an eligible area. Alternative transportation includes transportation by bus, rail, or any other publicly available means of transportation and includes sightseeing service. It also includes non-motorized transportation systems such as pedestrian and bicycle trails. Operating costs, such as fuel and drivers' salaries, are not eligible expenses.
FTA	Job Access and Reverse Commute Program (49 USC 5316)	To provide transportation to connect welfare recipients and low income persons to jobs and employment support services such as child care and training.	Eligible Projects: Capital, planning and operating expenses for projects that transport low income individuals to and from jobs and activities related to employment, and for reverse commute projects.
FTA	Major Capital Investments (New Starts & Small Starts) (5309(b)(1))	The transit capital investment program (49 U.S.C. 5309) provides capital assistance for three primary activities: New fixed guideway systems (New Starts program and Small Starts) New and replacement buses and facilities (Bus and Bus Related Facilities program), and Modernization of existing rail systems (Fixed Guideway Modernization program). The New Starts program provides funds for construction of new fixed guideway systems or extensions to existing fixed guideway systems. The Small Starts program provides funds to capital projects that either (a) meet the definition of a fixed guideway for at least 50 percent of the project length in the peak period or (b) are corridor-based bus projects with 10 minute peak/15 minute off-peak headways or better while operating at least 14 hours per weekday. The Federal assistance provided or to be provided under Section 5309(e) must be less than \$75 million and the project must have a total capital cost of less than \$250 million, both in year of expenditure dollars	Eligible activities are light rail, rapid rail (heavy rail), commuter rail, monorail, automated fixed guideway system (such as a "people mover"), or a busway/high occupancy vehicle (HOV) facility. Extension of any of these. Projects become candidates for funding under this program by successfully completing the appropriate steps in the major capital investment planning and project development process.
FTA	Bus and Bus Facilities (5309, 5318)	The transit capital investment program (49 U.S.C. 5309) provides capital assistance for three primary activities: New and replacement buses and facilities (Bus and Bus Related Equipment and Facilities program). Modernization of existing rail systems (Fixed Guideway Modernization program). New fixed guideway systems (New Starts program and Small Starts).	Eligible capital projects include the purchasing of buses for fleet and service expansion, bus maintenance and administrative facilities, transfer facilities, bus malls, transportation centers, intermodal terminals, park-and-ride stations, acquisition of replacement vehicles, bus rebuilds, bus preventive maintenance, passenger amenities such as passenger shelters and bus stop signs, and miscellaneous equipment such as mobile radio units, supervisory vehicles, fare boxes, computers, and shop and garage equipment.
FTA	New Freedom Program (5317)	The New Freedom formula grant program aims to provide additional tools to overcome existing barriers facing Americans with disabilities seeking integration into the work force and full participation in society. Lack of adequate transportation is a primary barrier to work for individuals with disabilities. The 2000 Census showed that only 60 percent of people between the ages of 16 and 64 with disabilities are employed. The New Freedom formula grant program seeks to reduce barriers to transportation services and expand the transportation mobility options available to people with disabilities beyond the requirements of the Americans with Disabilities Act (ADA) of 1990.	Capital and operating expenses for new public transportation services and new public transportation alternatives beyond those required by the American with Disabilities Act of 1990 (ADA), that are designed to assist individuals with disabilities.
FTA	Alternatives Analysis (5339)	The objective of the Alternatives Analysis program (49 U.S.C. 5339) is to assist in financing the evaluation of all reasonable modal and multimodal alternatives and general alignment options for identified transportation needs in a particular, broadly defined travel corridor. The transportation planning process of Alternatives Analysis: Includes an assessment of a wide range of public transportation or multimodal alternatives, which will address transportation problems within a corridor or subarea. Provides ample information to enable the Secretary to make the findings of project justification and local financial commitment. Supports the selection of a locally preferred alternative. Enables the local Metropolitan Planning Organization to adopt the locally preferred alternative as part of the long-range transportation plan.	Funds may be used to assist State and local governmental authorities in conducting alternative analyses when at least one of the alternatives is a new fixed guideway system or an extension to an existing fixed guideway system.

Sponsor	Program Name	Description of Funding Program	How it Can Assist with Complete Streets
HUD			
HUD	CDBG Section 108	Section 108 is the loan guarantee provision of the Community Development Block Grant (CDBG) program. Section 108 provides communities with a source of financing for economic development, housing rehabilitation, public facilities, and large-scale physical development projects. This makes it one of the most potent and important public investment tools that HUD offers to local governments. It allows them to transform a small portion of their CDBG funds into federally guaranteed loans large enough to pursue physical and economic revitalization projects that can renew entire neighborhoods.	CDBG funds may be used for activities which include, but are not limited to: Construction of public facilities and improvements, such as water and sewer facilities, street neighborhood centers, and the conversion of school buildings for eligible purposes;
HUD/EPA	Sustainable Communities Regional Planning Grant	This year's Regional Planning Grant program encourages grantees to support regional planning efforts that integrate housing, land-use, economic and workforce development, transportation, and infrastructure developments in a manner that empowers regions to consider how all of these factors work together to bring economic competitiveness and revitalization to a community. The program places a priority on partnerships, including the collaboration of arts and culture, philanthropy, and innovative ideas to the regional planning process.	<ul style="list-style-type: none"> Category 1 Funds: Can be used to support the preparation of Regional Plans for sustainable development. Category 2 Funds: Can be used to support efforts to modify existing regional plans so that they are in accordance with the Partnership for Sustainable Communities' six Livability Principles. Category 2 Funds also may be used to prepare more detailed execution plans for an adopted regional plan for sustainable development and limit predevelopment planning activities for other projects.
HUD/EPA	Community Challenge Planning Grants	The program provides grants to enable communities in fostering reform and reducing barriers to achieving affordable, economically vital, and sustainable communities. Such efforts may include amending or replacing local master plans, zoning codes, and building codes, either on a jurisdiction-wide basis or in a specific neighborhood, district, corridor, or sector to promote mixed-use development, affordable housing, the reuse of older buildings and structures for new purposes, and similar activities with the goal of promoting sustainability at the local or neighborhood level. This Program also supports the development of affordable housing through the development and adoption of inclusionary zoning ordinances and other activities such as acquisition of land for affordable housing projects.	Funding for regulations to support community-wide Complete Streets.
HUD	Community Development Block Grant (CDBG) - Entitlement Communities Grant & State Administered	The program provides annual grants on a formula basis to entitled cities and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons.	CDBG funds may be used for activities which include, but are not limited to: Construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes;
HUD	Brownfields Economic Development Initiative (BEDI)	The Brownfields Economic Development Initiative (BEDI) is a key competitive grant program that HUD administers to stimulate and promote economic and community development. BEDI is designed to assist cities with the redevelopment of abandoned, idled and underused industrial and commercial facilities where expansion and redevelopment is burdened by real or potential environmental contamination. BEDI grant funds are primarily targeted for use with a particular emphasis upon the redevelopment of brownfields sites in economic development projects and the increase of economic opportunities for low-and moderate-income persons as part of the creation or retention of businesses, jobs and increases in the local tax base.	BEDI projects must increase economic opportunity for persons of low-and moderate-income or stimulate and retain businesses and jobs that lead to economic revitalization
EPA			
JSEPA	Clean Water Act Section 319 Grants	Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects.	Stormwater, landscaping, and green infrastructure aspects of Complete Streets
JSEPA	Healthy Communities Grant Program	The Healthy Communities Grant Program is a main competitive grant program to work directly with communities to reduce environmental risks to protect and improve human health and the quality of life.	May assist with some Planning and green infrastructure
JSEPA	Brownfields Assessment Grant	Assessment grants provide funding for a grant recipient to inventory, characterize, assess, and conduct planning and community involvement related to brownfields sites. An eligible entity may apply for up to \$200,000 to assess a site contaminated by hazardous substances, pollutants, or contaminants (including hazardous substances co-mingled with petroleum) and up to \$200,000 to address a site contaminated by petroleum.	Assessment and remedial planning
JSEPA	Brownfields Cleanup Grant	Cleanup grants provide funding for a grant recipient to carry out cleanup activities at brownfield sites. An eligible entity may apply for up to \$200,000 per site.	Cleanup (e.g. capping, etc.)
JSEPA	Brownfields Revolving Loan Fund Grants	Revolving Loan Fund (RLF) grants provide funding for a grant recipient to capitalize a revolving loan fund and to provide subgrants to carry out cleanup activities at brownfield sites.	To be used for cleanups of brownfields sites. RI Economic Development Corporation has one of these grants and is always looking for other sites and applicants
JSEPA	Brownfields Area-Wide Planning Pilot Program	EPA is piloting this area-wide planning approach to community brownfield challenges, which recognizes that revitalization of the area surrounding the brownfield site(s) is critical to the successful reuse of the property as assessment, cleanup, and redevelopment of an individual site. The area-wide planning approach will enhance EPA's core brownfields assistance programs by encouraging continued meaningful involvement in a locally-driven planning process that will result in a strategy for making brownfields site assessment, cleanup and/or redevelopment decisions for the future.	Site assessment, clean up, redevelopment

Sponsor	Program Name	Description of Funding Program	How it Can Assist with Complete Streets
OTHER FED GOV'T ORGANIZATIONS			
NEA	Access to Artistic Excellence, "Our Town" Program (National Endowment For the Arts)	Through Our Town, based on the availability of funding, the National Endowment for the Arts will provide a limited number of grants, ranging from \$25,000 to \$250,000, for creative placemaking projects that contribute toward the livability of communities and help transform them into lively, beautiful, and sustainable places with the arts at their core. The Arts Endowment plans to support a variety of diverse projects, across the country in urban and rural communities of all sizes. Projects may include planning, design, and arts engagement activities.	Predevelopment, design fees, and community planning are eligible; however, no Arts Endowment or matching funds may be directed to the costs of physical construction or renovation or toward the purchase costs of facilities or land.
DOI/NPS	Land and Water Conservation Fund (Dep't of the Interior / National Park Service)	For planning, acquisition and development of facilities that provide recreational opportunities.	Recreational bicycle and pedestrian facilities in parks and other outdoor recreation areas
NEFH	America's Historic Places Grants (National Endowment for the Humanities)	As part of the We the People initiative, NEH seeks proposals for public programs that use one or more historic sites to address themes and issues central to American history. Projects may interpret a single historic site, a series of sites, whole neighborhoods, communities or towns, or larger geographical regions. The place taken as a whole must be significant to American history and the project must convey its importance to visitors.	Provides funding for public programs related to the interpretation of historic sites such as driving or walking trails or tours, signs, and publications, that address themes central to American history. (non-construction)
PRIVATE FOUNDATIONS			
Conservation Fund	American Greenways Program	Provides up to \$2,500 to organizations that are growing our nation's network of greenways, blueways, trails and natural areas. Preference given to non-profit organizations.	Eligible projects could include activities such as green- or blueway or trail mapping, ecological assessments, surveying, conferences, and design; developing brochures, interpretative displays, audio-visual productions or public opinion surveys; building a foot bridge, signage or other physical improvement or addition to a green- or blueway; planning a bike path; and many other creative projects. In general, grants can be used for any appropriate expense needed to complete, expand or improve a greenway including planning, technical assistance, legal and other cost.
Bikes Belong Coalition	Grant Program	These grants are designed to foster and support partnerships between city or county governments, non-profit organizations, and local businesses to improve the environment for bicycling in the community. Grants will primarily fund the construction or expansion of bicycle facilities such as bike lanes, trails, and paths. The grants committee will also consider advocacy projects that promote bicycling as a safe and accessible mode of transportation. In a previous grant cycle, Bikes Belong introduced Community Partnership Grants. These grants fund collaborations between non-profit organizations, businesses, and government entities on bicycle infrastructure or advocacy projects.	Fundable projects include paved bike paths, lanes, and rail-trails as well as mountain bike trails, bike parks, BMX facilities, and large-scale bicycle advocacy initiatives.

Local Options

- **Local Option Gas Tax (LOGT):** JTA Mobility Works is a program created to implement projects funded by the extension of the LOGT. A total of \$100 in bond revenue has been leveraged by the LOGT to fund 13 road projects and projects in 14 mobility corridors over the next five years. Approximately \$18 million of that total has been earmarked for Complete Streets projects. Merrill Road and University Boulevard, as mobility corridors, are eligible to receive this funding.
- **Community Redevelopment Area (CRA) Funding Mechanisms:** The City of Jacksonville is in the process of creating a Community Redevelopment Area for Arlington, which includes the Complete Streets study areas for Merrill Road and University Boulevard (see Figure 23). A big part of the CRA will be the establishment of a tax increment finance (TIF) district. A TIF leverages redevelopment-induced marginal property tax increases to fund capital projects. Projects emanating from the charrette vision and recommendations are eligible for funding as part of the CRA.
- **Municipal Services Taxation Unit (MSTU):** An MSTU is created to fund specific municipal projects or services within a defined geographic area. Funding for an MSTU is created by an ad valorem property tax on affected property owners. A municipal services benefit unit (MSBU) is a similar concept, but funding is created by a fixed assessment on property owners as opposed to an ad valorem tax. An MSTU or MSBU, which may be created through a vote of affected property owners, could be used to generate revenue for Complete Streets projects on Merrill Road and University Boulevard.
- **Developer-funded:** Complete Streets projects may be implemented on an ad-hoc basis through developer-funded projects. Typically developer-funding projects are generated through the establishment of design standards or incentives. For example, an overlay district may establish streetscape design standards that call for the construction of wide sidewalks. Alternatively, developers may be incentivized to provide transit or bicycle and pedestrian amenities through reduced parking requirements.