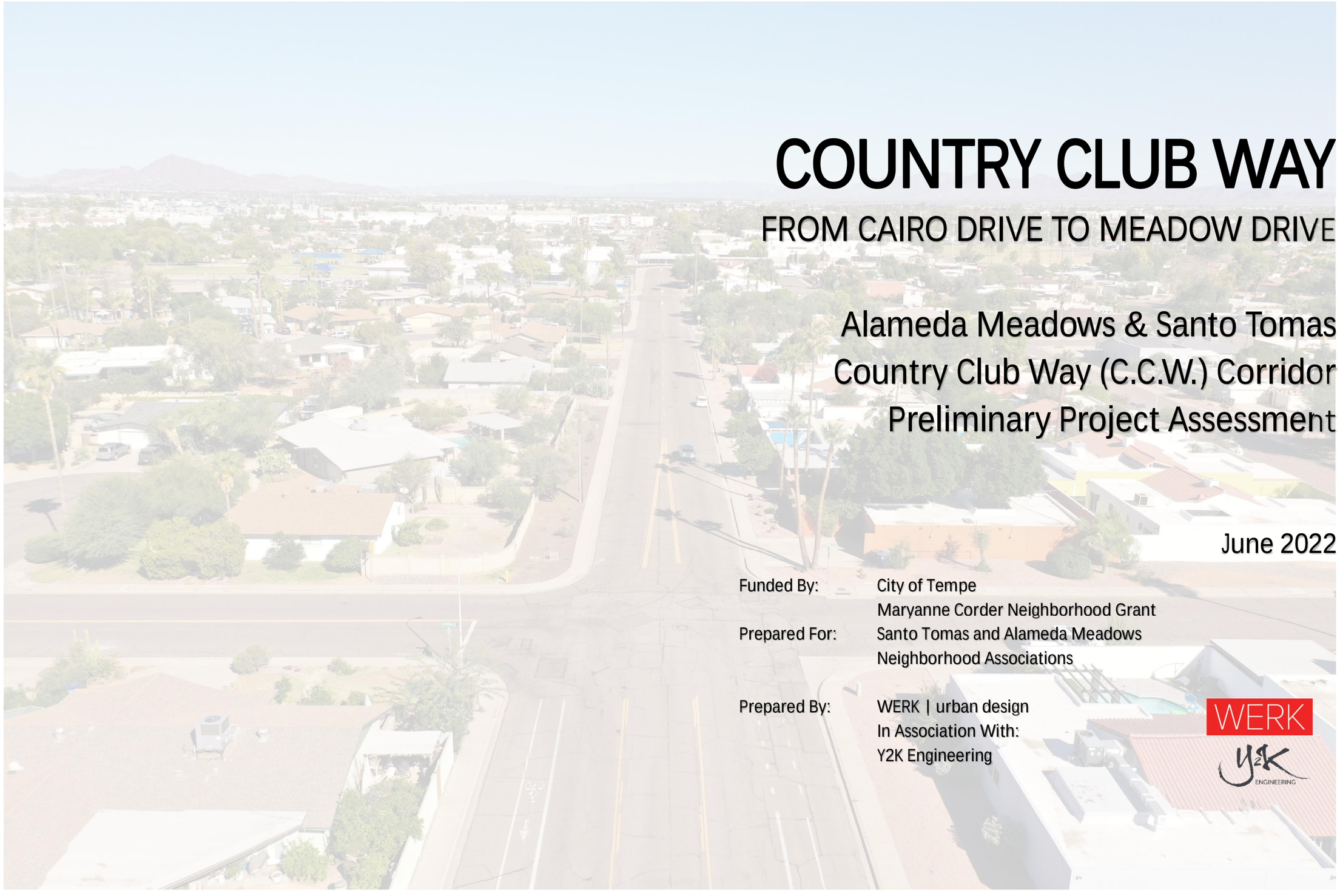

COUNTRY CLUB WAY

FROM CAIRO DRIVE TO MEADOW DRIVE

Alameda Meadows & Santo Tomas
Country Club Way (C.C.W.) Corridor
Preliminary Project Assessment

June 2022

Funded By: City of Tempe
Maryanne Corder Neighborhood Grant

Prepared For: Santo Tomas and Alameda Meadows
Neighborhood Associations

Prepared By: WERK | urban design
In Association With:
Y2K Engineering

Table of Contents

List of Figures

List of Tables

Alameda Meadows & Santo Tomas
C.C.W. Corridor Streetscape Design

1.0 Introduction

1.1 Purpose of Study

This study explores the feasibility and concept streetscape re-design of Country Club Way from East Cairo Drive to East Meadow Drive, located in Tempe, Arizona. The project will seek to achieve the long-term goals for the neighborhood, which include: walkability, increased beautification, and reduction of urban heat through the addition of Low Impact Development (LID) that include plants and trees, and improved safety of specific neighborhood issues. Significant neighborhood concerns include traffic speeds, school-related traffic, congestion, and multi-modal user safety concerns. The design will be based on neighborhood input, the data collected, and project goals. This study does not include the implementation of speed bumps or speed humps based on neighborhood input. The design seeks to achieve traffic calming, accommodating differing modes and user groups, achieving site visibility, enhancing public spaces, mitigating heat, mitigating stormwater source pollution, and enhancing the urban ecology. This study involved participation and coordination with the residents of the project area to obtain resident approval from impacted homes, where three neighborhood meetings with accompanying stakeholder opinion surveys were conducted to obtain information prior to and during design. This study was led by neighborhood representatives from the Santo Tomas and Alameda Meadows Neighborhood Associations with support from City of Tempe staff and consultant services from WERK | urban design and Y2K Engineering.

1.2 Study Area

The Country Club Way project area spans approximately 0.3 miles, just south of John J Curry Elementary School and Connolly Middle School and is located within a single-family residential development. The study area provides accessibility to schools, city and pocket parks, churches, sports fields, a nearby golf course, and bus routes. Country Club Way is a primary route in the neighborhood used by all modes of transportation, including transit. The Orbit bus route intersects with this area and is used by residents. A vicinity map is provided in **Figure 1**.

Improvements to the bike lane on this corridor will affect the Bikeit system in Tempe and is in alignment with the programmed “Reflector Route” on Country Club Way between Warner Road and SR Loop 202. The future “Wheel Route” which follows an alignment on Alameda Drive, intersects with the study corridor.

The study area includes intersection crossings at Meadow Drive, Loma Vista Drive, Alameda Drive, Balboa Drive, and Cairo Drive as well as the road segments of Country Club Way in between. The entire length of the project is within City of Tempe right-of-way. The study area is shown in **Figure 2: Study Area**.

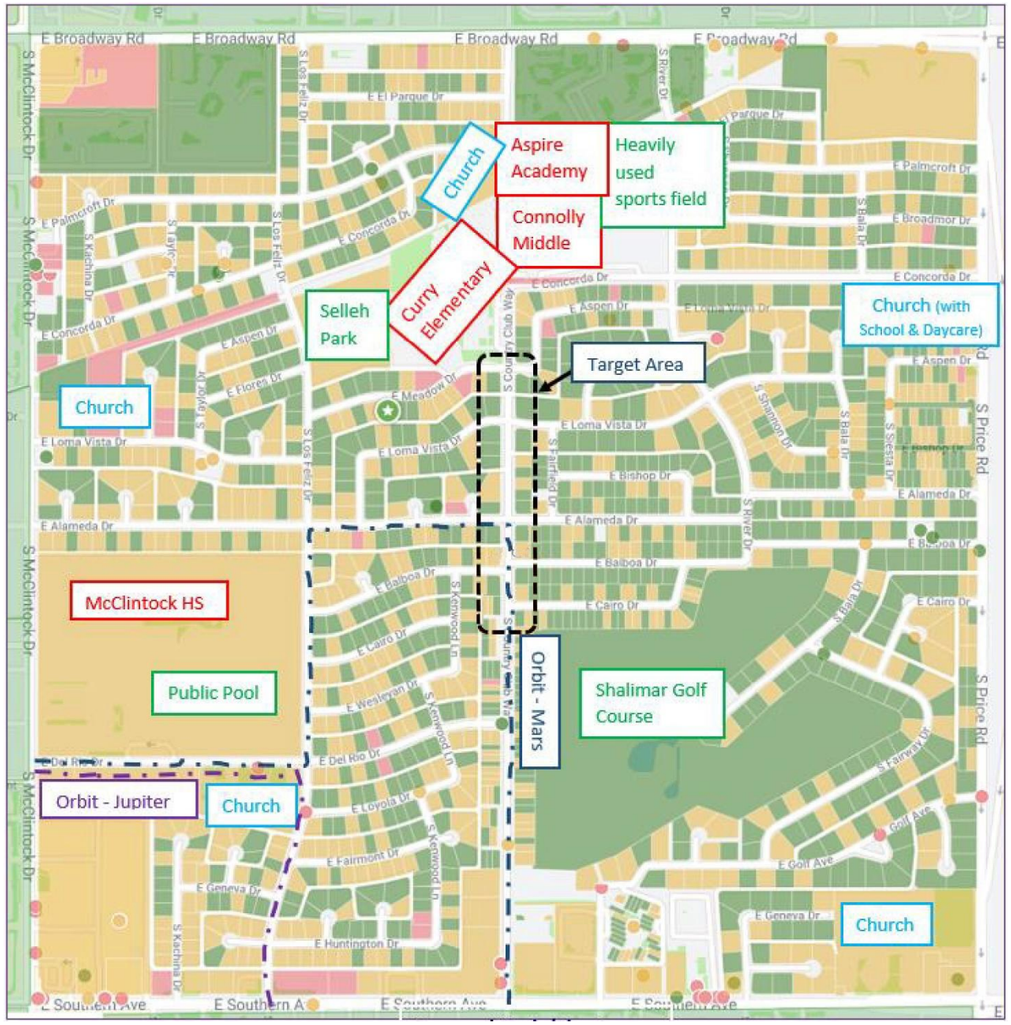

Figure 1: Vicinity Map

Figure 2: Study Area

2.0 Background Data

2.1 Maryanne Corder Neighborhood Grant Application

The Santo Tomas and Alameda Meadows communities teamed up to address serious concerns with usability, urban heat, speeding, and safety in the area. The Country Club Way corridor project, from Cairo Drive to Meadow Drive, was identified in a 2021 Maryanne Corder Neighborhood Grant Application to fill a need for landscape/environment/traffic calming implementations and improvements. The original Grant Application indicates that as informal public feedback was gathered, residents were interested in roadway improvements, including improved signage, crosswalks at intersections, medians, shade, lighting, and enhanced safety precautions. After the first public meeting, surveys were taken by residents who live near the corridor and results showed that improved crossings for pedestrians, improved walking areas, traffic calming, improved driver visibility improvements at intersections, and reduction in traffic speeds were the most significant concerns. Medians, reducing congestion, and changing lane markings were considered neutral in significance. The residents expressed interest in bicycling but have concerns about sharing roadways with vehicles and desire a safer configuration that enhances the separation between bicyclists and vehicular traffic. Other issues residents experienced or observed include buses that often drive over the speed limit, vehicles passing and parking in the center lane, difficulty turning onto Country Club Way from Alameda Drive due to the intersection geometry, and school pick up and drop off congestion, where vehicles park, often in 'no parking' zones to wait for children. Finally, some residents expressed frustration with the roadway's storm water dips, where speeding vehicles transverse these locations, make noise, waking neighbors up in the middle of the night. **Figure 3** displays images included as part of the grant application to show the traffic during school hours for drop-off/pickup north and south of the intersection of Meadow Drive and Country Club Way.

Figure 3: School and Pedestrian Traffic Observations During Drop-off/Pickup Times

2.2 Existing Corridor Characteristics

As part of data collection and to increase concept accuracy, a topographic survey was accomplished. This survey is in a digital (AutoCAD) format and is available for future use. Drone photography of the site was also collected and is also available for future use

Along the Country Club Way corridor, north of Alameda Drive, the roadway is one lane in each direction separated by a striped, dashed, yellow line. The road segment between Meadow Drive and Loma Vista Drive and the road segment between Loma Vista Drive and Alameda Drive provide a 22-foot travel lane in each direction without bike lanes or other pavement markings. On-street parking is permitted south of Loma Vista Avenue, but not marked. Eight houses face and have access to their driveways along Country Club Way.

South of Alameda Drive, the roadway is one lane in each direction with a two-way-left-turn-lane, striped bike lanes, and striped parallel parking lane on both sides of Country Club Way.

Lighting does not exist along this roadway except at intersections. There are two access points to alley ways from Country Club Way. The segment between Meadow Drive and Loma Drive contains an access point to an alley way on both sides of the street, and utility boxes exist in the right-of-way on the east side of Country Club Way near the alley. An access point to an alley way exists on the west side of Country Club Way halfway between Alameda Drive and Loma Vista Drive. Country Club Way has a posted speed limit of 25 mph in the study corridor.

Sidewalks, curbs, and gutters exist on both the east and west sides of Country Club Way along the entire length of the study corridor. The sidewalks are 5-feet wide. Curb ramps exist at intersections. Curb ramps and driveways are not ADA compliant.

Figure 4: Roadway Corridor existing condition facing north

2.3 Schools

John J. Curry Elementary School is located on the northwest corner of the study corridor. There are a total of four driveways that drivers use to drop-off/pick up their children, where the southernmost driveway is approximately 70 feet from the intersection of Meadow Drive and Country Club Way and the northernmost driveway is the approximately 470 feet from the intersection. The northern driveway is an ingress driveway while the remaining four driveways are egress. Drivers utilizing the egress driveways can turn left or right onto Country Club Way. A 12.5-foot median separates the pick-up/drop-off location from Country Club Way.

Two yellow school crosswalks exist to cross Country Club Way, where one is at the intersection of Meadow Drive and the other is 400 feet north of Meadow Drive where Country Club Way turns east to become Concorda Drive. The latter pedestrian traffic for both the elementary school and the middle school. The section of Country Club Way adjacent to Curry Elementary School is a 15-mph school zone on normal school days indicated by school zone signs placed and removed by crossing guards or school employees.

Connolly Middle School is located north of the study corridor and east of the adjacent Curry elementary school. Country Club Way is a walking and bicycling route to this school; however, it's school property will not be directly impacted.

The neighborhood representatives have been in touch with the school Principal, David Owen (David.Owen@tempeschools.org) as well as the Assistant Director for Transportation and School Safety at the Tempe Elementary School District, Ernie D. Ontiveros (Ernie.Ontiveros@tempeschools.org). The primary considerations from school administration related to corridor improvements are student safety and access and circulation of school buses.

2.4 Existing Intersection Lane Configuration and Cross Sections

INTERSECTION OF COUNTRY CLUB WAY AND MEADOW DRIVE

Country Club Way and Meadow Drive is a four-leg minor street stop-controlled intersection. Designated turning movements do not exist at this intersection. All approaches act as a shared right/through/left lane, where the eastbound and westbound directions do not have pavement markings to signify lanes or turning movements. Sidewalks are present on all four approaches, and pedestrian crosswalks exist on the east, west, and north approaches. The north leg crosswalk is a yellow school crosswalk. Bike lanes are not present at this intersection. Lighting exists on the northwest of the corner of the intersection.

INTERSECTION OF COUNTRY CLUB WAY AND LOMA VISTA DRIVE

Country Club Way and Loma Vista Drive is a four-leg minor street stop-controlled intersection. Designated turning movements do not exist at this intersection. All approaches act as a shared right/through/left lane, where the eastbound and westbound directions do not have pavement markings to signify lanes or turning movements. Sidewalks are present on all four approaches and lighting exists on the southwest corner of the intersection. Bike lanes are not present at this intersection.

INTERSECTION OF COUNTRY CLUB WAY AND ALAMEDA DRIVE

Country Club Way and Alameda Drive is a four-leg two-way stop-controlled intersection, where the north leg transitions from a two-lane divided roadway with one lane in each direction into a three-lane roadway with a centered two way left turn lane. At this intersection, designated turning lanes do not exist for the eastbound, westbound, or southbound

direction but do exist for the northbound direction turning west. The south leg of Country Club Way is one lane in each direction with a two-way-left-turn-lane, striped bike lanes, and striped parallel parking lane on both sides. The north, east and west leg approaches act as a shared right/through/left lane, where on the south leg, the northbound approach utilizes the two-way-left-turn-lane to turn west onto Alameda Drive. Sidewalks are present on all four approaches and lighting exists on the southwest corner of the intersection. One-way bike lanes are present on the south leg of the intersection alongside the motor vehicle lanes.

The southwest corner of the intersections expands to the west by approximately 11 feet to accommodate the wider roadway cross section with on-street parking and bike lanes. Many residents and drivers have complained about turning visibility issues, where drivers traveling eastbound on Alameda Drive pull forward past the existing stop sign and stop bar to determine if it is safe to turn right onto Country Club Way. A visual portraying this issue can be seen in **Figure 5**. This is appropriate driver behavior for the situation. A.R.S. 28-773 states that the driver of a vehicle shall stop in obedience to a stop sign…and then proceed with caution yielding to vehicles that are not required to stop and that are within the intersection or are approaching so closely as to constitute an immediate hazard.

INTERSECTION OF COUNTRY CLUB WAY AND BALBOA DRIVE

Country Club Way and Balboa Drive is an offset four-leg minor street stop-controlled intersection. Designated turning movements do not exist at this intersection. Country Club Way has one lane in each direction with a two-way-left-turn-lane, striped bike lanes, and striped parallel parking lane on both sides. Balboa Drive does not have pavement markings to signify lanes or turning movements. Sidewalks are present on all four approaches and lighting exists on the northeast corner of the intersection. Bike lanes are not present on Balboa Drive.

INTERSECTION OF COUNTRY CLUB WAY AND CAIRO DRIVE

Country Club Way and Cairo Drive is a three-leg minor street stop-controlled intersection. Designated turning movements do not exist at this intersection. Country Club Way has one lane in each direction with a two-way-left-turn-lane, striped bike lanes, and striped parallel parking lane on both sides. Cairo Drive is the east leg and does not have pavement markings to signify lanes or turning movements. Sidewalks are present on all four approaches and lighting exists on the southeast corner of the intersection. Bike lanes are not present on Balboa Drive.

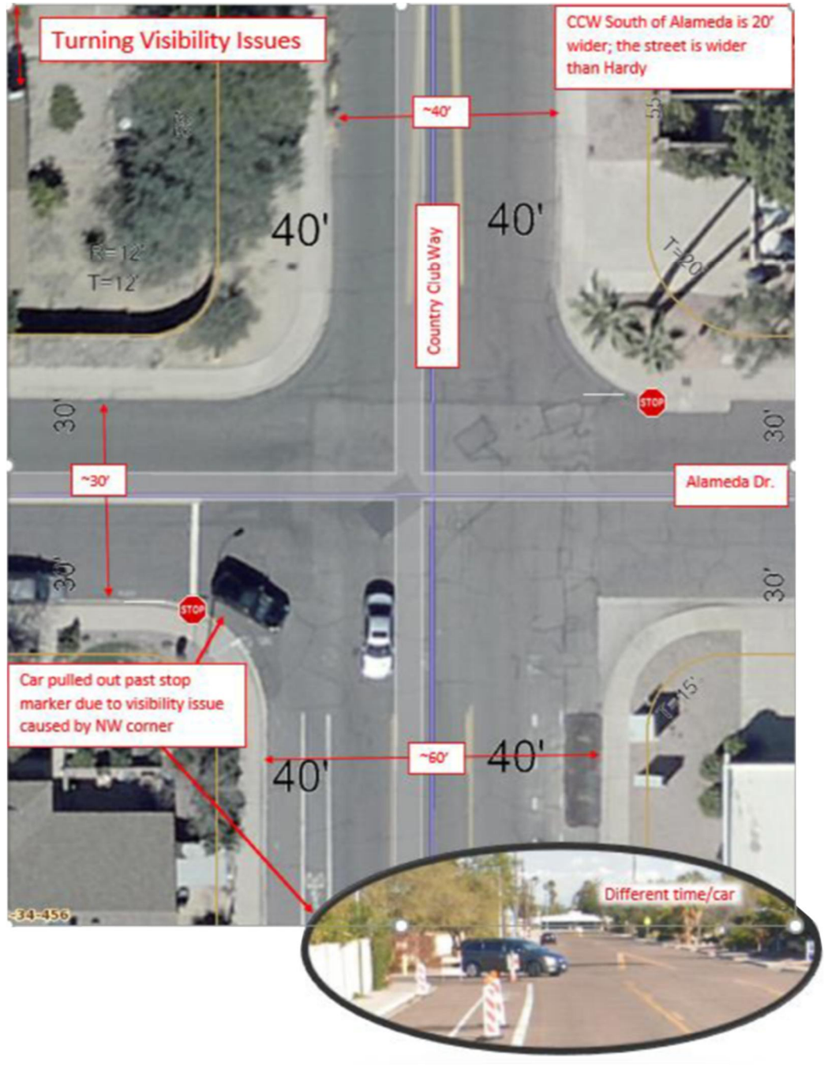

Figure 5: Turning Visibility Issues for Eastbound drivers at CCW and Alameda Drive

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EXISTING CROSS SECTION: MEADOW DRIVE TO ALAMEDA DRIVE

Country Club Way between Meadow Drive and Alameda Drive has one 22-foot lane in each direction. A 1.5-foot gutter exists on the outside edge of each travel lane. The sidewalk widths are approximately 4-feet. **Figure 7** depicts a map of the existing conditions at the north end of the study corridor.

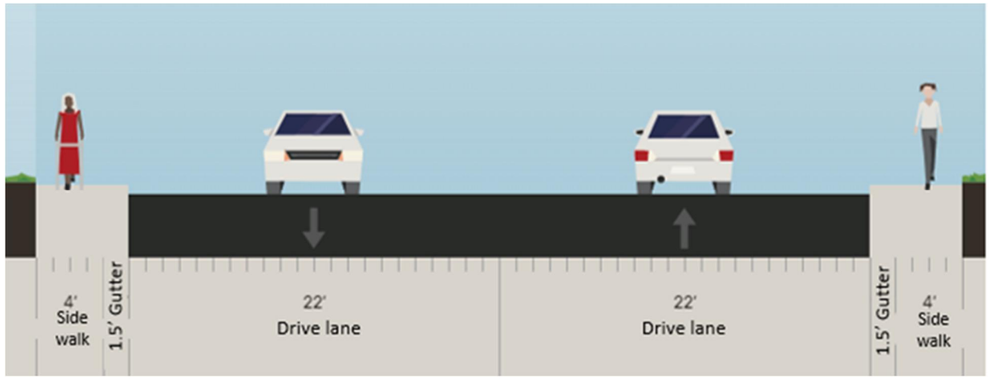

Figure 8

Figure 6: North of Alameda, looking north

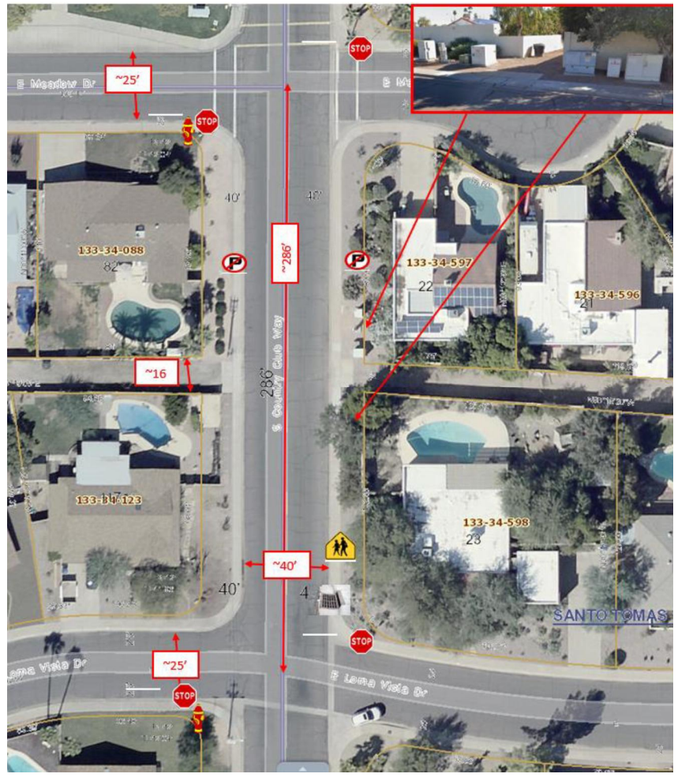

Figure 7: Existing Conditions at the north end of the study corridor

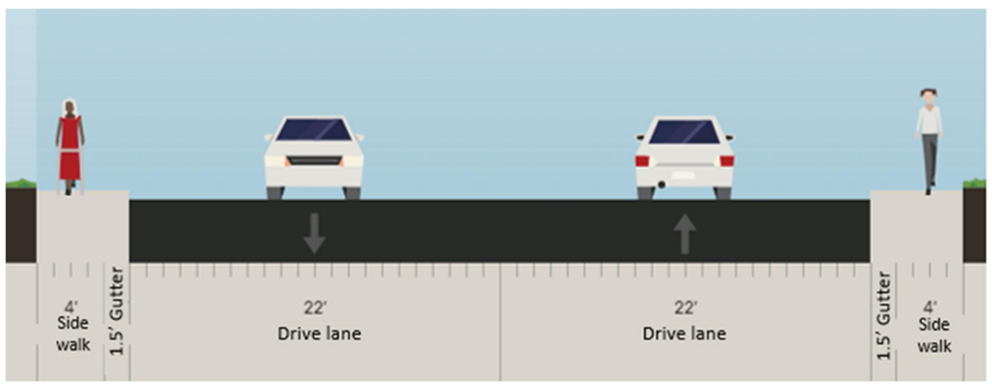

Figure 8: Existing CCW Cross section at the north end of the study corridor

EXISTING CROSS SECTION: ALAMEDA DRIVE TO CAIRO DRIVE

South of Alameda Drive, Country Club Way has an 11.5-foot travel lane with a 5-foot bike lane in each direction and a 6.5-foot parking lane in both directions along with a 1.5-foot gutter pan width and a sidewalk that is 4-feet wide on the west side and 5-feet on the east side, and a 1.5-foot gutter in both directions. This roadway contains a two way left turn lane that has a width of 14.5 feet. This cross-section, depicted in **Figure 9**, continues south to the intersection with Southern Avenue.

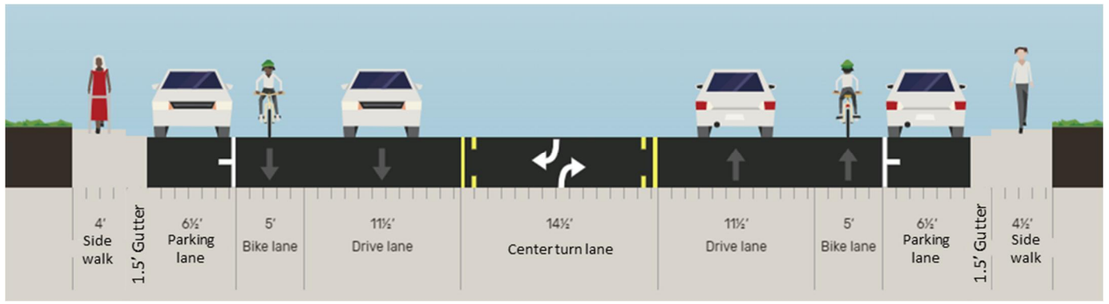

Figure 9: Existing CCW Cross section at the south end of the study corridor

2.5 Existing Right-of-Way

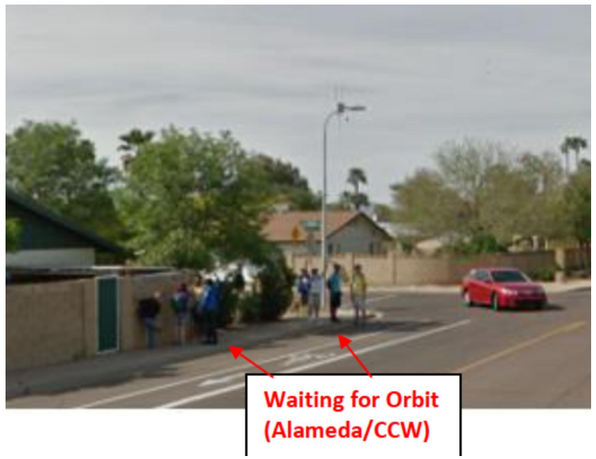

Figure 10: Pedestrians waiting for Orbit Bus at Alameda/CCW Bus Stop

The right-of-way (ROW) throughout the section is owned by the City of Tempe and is consistently 80 feet throughout the Country Club Way corridor. Adjacent ROW consists of privately own residential, and John J. Curry elementary school owned by the Tempe Unified School District.

2.6 Existing Transit

Valley Metro Tempe Orbit Mars bus route operates on Country Club Way south of Alameda Drive and north of the study area. Orbit Mars has two bus routes on Country Club Way MARS and MARZ, where the MARS bus route operates seven days a week and travels northbound from Southern Avenue/Evergreen Street to the Tempe Transportation Center, which is located north of the Arizona State University campus and southbound from Tempe Transportation Center to Southern Avenue/Evergreen Street. The Orbit bus turns north-to-west or east-to-south at the intersection of Country Club Way and Alameda Drive for this route service. **Figure 10** provides a visual for pedestrians at the bus stop location on the northwest corner of Country Club Way and Alameda Drive waiting for the Orbit MARS bus. Buses serve the stops in the study corridor every 15 minutes from 6:00 AM to 10:30 PM on weekdays and Saturday, and every 30 minutes from 8:00 AM to 7:30 PM on Sundays and holidays. Buses use the existing through lane and bike lane or parking lane space to drop-off and pick-up passengers. The Orbit routes use “flag” stops, which means that the driver will pick up and drop off passengers in neighborhoods as long as it's safe. When 15 mph speed limit signs are posted in a school zone, the Orbit will not stop in between the signs. During all other times, the Orbit may stop within the school zone.

The MARZ bus route operates on school days only and travels from Connolly Middle School to the Tempe Transit Center. The Orbit bus travels northbound and southbound on Country Club Way for the entire study corridor. In the study corridor, one bus stop exists on the west side of Country Club Way in between Alameda Drive and Balboa Drive. North of the study corridor, a bus stop exists on the north side of Concorda Drive located in front of Connolly Middle School.

3.0 Public Involvement

3.1 Outreach and Engagement

The project offered multiple opportunities for residents to meet and learn more about the ongoing project. Three public meetings were held from Fall 2021 through Spring of 2022. Meeting invitations were sent out by the City of Tempe to residents living adjacent to the study area.

The public involvement summary can be found in **Appendix B: Public Involvement Summary**.

A fly through style video of the project visualization can be found here: https://vimeo.com/699892006.

Figure 11: Project Visualization Video snip

4.0 Conceptual Design of Preferred Alternative

4.1 Process

This study explores the feasibility and concept streetscape re-design of Country Club Way from East Cairo Drive to East Meadow Drive, located in Tempe, Arizona. The project will seek to achieve the long-term goals for the neighborhood, which include: walkability, increased beautification, and reduction of urban heat through the addition of Low Impact Development (LID) that include plants and trees, and improved safety of specific neighborhood issues. The design seeks to achieve traffic calming, accommodating differing modes and user groups, achieving site visibility, enhancing public spaces, mitigating heat, mitigating stormwater source pollution, and enhancing the urban ecology. This study involved participation and coordination with the residents of the project area to obtain resident approval from impacted homes, where three neighborhood meetings with accompanying stakeholder opinion surveys were conducted to obtain information prior to and during design.

The consultant design team comprised of landscape architects and transportation engineers conducted a field review and obtaining survey for the study area. Considering the physical geometry of Country Club Way, the design team developed initial concepts based on the input received from the neighborhood associations. Concepts ranged from quick build, temporary adaptive street options that can be more quickly applied for lower cost, to longer term options that would require additional outreach, evaluation, and inclusion in the City of Tempe's Capital Improvement Program.

While the neighborhood representatives and City of Tempe Transportation Division should explore temporary adaptive street options for spot improvements in response to the community needs identified during this study, the primary objective of this study is to develop a permanent streetscape design concept solution for the corridor.

Concepts were evaluated by the neighborhood through public engagement which consisted of a virtual meeting to present the information and answer questions, followed by accompanying stakeholder opinion surveys. Coordination meetings were also held with City of Tempe staff. A preferred concept was identified in consultation with the neighborhood group and other stakeholders.

The selected concept advanced to 15% design plans and cost estimate, published in this study, which concludes the grant funded portion of the project. The project will be carried forward by the Community Development Department into the City of Tempe's city-wide evaluation and prioritization process for potential programming as a green infrastructure, active transportation, and/or safe routes to school capital improvement project.

4.2 Proposed Cross-Sections And Intersections

The final design concept plans for the Alameda Meadows & Santo Tomas Country Club Way Corridor Streetscape Design project are provided in **Appendix A: Concept Plans**. A discussion of intersection, cross-section design, and design details are described in this and subsequent sections. The existing conditions on Country Club Way vary throughout the corridor to provide specific solutions to the unique circumstances that exist at different points. As such, any new mitigations or design changes will also need to provide location-specific conditions to allow for maximum safety and access for all users. All cross sections proposed are described from the north end of the corridor to the south end of the corridor.

PROPOSED INTERSECTION AT MEADOW DRIVE

On the north end of the study corridor, south of John J. Curry elementary school on Country Club Way will have improvements to all four corners of the intersection. On the northern approach, the roadway width is altered to a 12-foot travel lane in both directions and contains a median on both sides of the roadway that measures to 11-feet in width. Two trees will be present in each median. The northwest sidewalk corner will extend approximately 11-feet from the existing curb location to create a curb extension and accommodate for two crosswalk ramps in the southbound direction and the eastbound direction. The northeast sidewalk corner will extend approximately 11-feet from the existing location and will also contain a bulb out design that is approximately 34-feet in length, which will shorten the Meadow Drive pavement width by 6-feet. The crosswalks will be updated to ladder style crossings as depicted in **Figure 12**. Updated curb ramps are the only changes that will be made to the southwest and southeast corners.

Figure 12: Rendering of proposed improvements on the north leg of CCW & Meadow Dr

Alameda Meadows & Santo Tomas
C.C.W. Corridor Streetscape Design

PROPOSED CROSS SECTION MEADOW DRIVE TO LOMA VISTA DRIVE

After the intersection of Meadow Drive and Country Club Road, travel lanes will be narrowed to 11-foot lanes in each direction due to the implementation of center median with trees and bike lanes with buffers on Country Club Way. The bike lane width on the both sides of the street will be approximately 5-feet wide (not including the gutter), and the buffers will be 2-feet wide. The sidewalks and outer curb will be maintained as existing. The width of the center median will be 5-feet and extend approximately 100-feet south to provide a break at the existing alley way. The median will extend another 75-feet south where the next intersection begins. The cross section is depicted in **Figure 13** and a rendering is provided in **Figure 14**.

Figure 13: Proposed Cross Section of CCW between Meadow Dr & Loma Vista Dr

Figure 14: Rendering of proposed improvements on CCW between Meadow Dr & Loma Vista Dr

PROPOSED INTERSECTION AT LOMA VISTA DRIVE

This intersection does not endure any alterations, except for updated curb ramps on all corners of the intersection.

PROPOSED CROSS SECTION LOMA VISTA DRIVE TO ALAMEDA DRIVE

South of the intersection of Loma Vista Drive and Country Club Way, one-way directional buffered 6.5-foot bike lanes are proposed, protected by a landscaped raised median where feasible. A center median island is not present on this segment of the roadway. The travel lane will be approximately 10.5-feet. North of Alameda, on the west side of Country Club way, four on-street parking spaces will be maintained, where the spaces will be approximately 21-feet long and 8-feet wide. The bike will be protected on the outside of the on-street parking with a raised curb. The sidewalks and outer curb will be maintained as existing.

The east side of Country Club Way has several front facing homes. To maintain access, the bike lanes will have a painted buffer.

A rendering of proposed improvements in the area with on-street parking, just north of Alameda Drive is depicted in **Figure 15** and the cross section of Country Club Way, just south of Loma Vista Drive is provided in **Figure 16**.

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C.C.W. Corridor Streetscape Design

Figure 15: Rendering of proposed improvements on CCW south of Loma Vista Dr

Figure 16: Proposed Cross Section of CCW north of Alameda Dr

PROPOSED INTERSECTION AT ALAMEDA DRIVE

At this intersection of Alameda Drive and Country Club Way, curb extensions will also be implemented on the northwest and southwest corners of Alameda Drive. The length of the bulb out on the northwest corner will be approximately 90-feet and the width of the bulb out will be approximately 9-feet wide. The length of the northeast bulb out will be approximately 35-feet long and approximately 8.5 feet wide. New directional curb ramps would be constructed on each intersection corner. The sight distance issue for the eastbound approach is resolved with this proposed reconstruction.

PROPOSED CROSS SECTION ALAMEDA DRIVE TO CAIRO DRIVE

At the south end of the corridor, the roadway segment proposed reconstruction of the outside curb to narrow the roadway and landscaped raised medians with protected bike lanes in each direction. A bus pullout is proposed on the west side of Country Club Way, south of Alameda Drive. Directional curb ramps will be installed at intersection corners. The cross section of Country Club Way, south of Alameda Drive is provided in **Figure 17**. A rendering of proposed improvements in the vicinity of Cairo Drive is depicted in **Figure 18.**

Figure 17: Proposed Cross Section of CCW south of Alameda Dr

Figure 18: Rendering of proposed improvements on CCW south of Alameda Dr

5.0 Development Considerations

5.1 Traffic Signs and Pavement Markings

All existing traffic signs within the project limits will be reviewed during final design for compliance with the most current version of the MUTCD. It is anticipated that most existing traffic control signs will remain. Signs are anticipated to be added or replaced at mid-block crossings and school crosswalks, including signs for cyclists to yield to pedestrians and cyclists to not travel contraflow to traffic. All traffic signs will be located and installed to current City of Tempe and MUTCD standards.

5.2 Right-of-Way Requirements

Right-of-way acquisition is not anticipated for this project unless driveways are reconstructed for ADA compliance. Driveway reconstruction is currently not included in the proposed design and preliminary cost estimate.

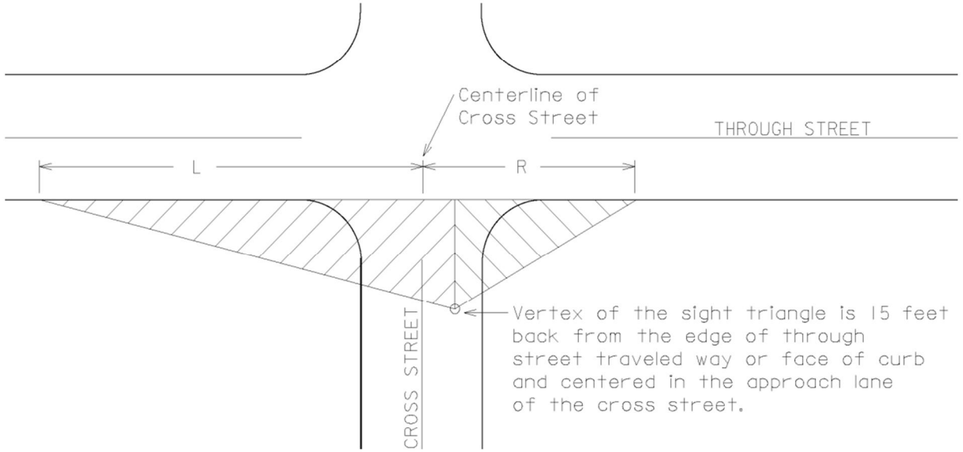
5.3 Intersection Sight Distance

Insufficient sight distance can be a contributing factor in intersection traffic crashes. Intersection sight distance is typically defined as the distance a motorist can see approaching vehicles before their line of sight is blocked by an obstruction near the intersection. It is important for approaching motorists on the major road to see side street vehicles approaching the Stop sign, and for minor road motorists to see approaching major road vehicles before entering the intersection.

The City of Tempe publishes intersection sight distance requirements which apply to all streets, alleys or driveways that intersect a public collector or arterial street. The relevant excerpt is provided in **Figure 19**. Values of "L" and "R" are measured from the centerline of the cross street along the face of curb or edge of traveled way of the through street and are based on AASHTO Geometric Design of Highways and Street 2004 Intersection Sight Distance for Left Turn Maneuvers from a Stop, Level Grade, Passenger Car and design speed of 5 mph over the posted speed limit. Hatched areas must be clear of obstructions that might block a driver's view of potentially conflicting vehicles. Landscaping should be 2 feet or less in height. Multi-trunk trees should be eliminated from this area and any trees planted must be trimmed up to at least 8 feet. The spacing of trees in this area could create a picket fence effect if planted too closely together.

Under these guidelines, the project landscape types will be limited. The 2018 version of A Policy on Geometric Design of Highways and Streets indicates the object height for intersection sight distance is 3.5 feet and that the object to be seen by the driver in an intersection sight distance situation is another vehicle. The City of Tempe currently cites a 2-foot landscape height and is encouraged to evaluate the allowable height requirements for landscaping on this project during final design. The City of Tempe may also consider evaluating the intersection sight distance based on the vertex of the sight triangle being measured from the edge of the motor vehicle lane or four feet back from the face of curb (shortest distance allowed for stop bar placement per the MUTCD).

City of Tempe
Intersection Sight Distance



Speed Limit on Through Street	Through Street Cross Section	L (feet)	R (feet)
25 MPH	Collector Street (41 feet back of curb)	195	125
	Collector Street (49 feet back of curb)	180	110

Figure 19: City of Tempe Intersection Sight Distance

5.4 Site Landscape

From the project beginning, the project goals have included the enhancement of public space, heat mitigation, and urban ecology. Therefore, landscape enhancements have been an integral part of the conceptualization of this project. In addition to these goals, enhanced landscape will help manage stormwater, add visual interest, increase property values, and provide shade and comfort to residents and users.

Currently, the existing landscape conditions are typical for a larger roadway, with low water use plants associated with the roadway edges, on private lot frontages, and on a city owned parcel west of the right of way line. Curry Elementary School, at the north end of the project area, has natural grass lawn and large trees on campus, and serves as visual greenspace. This portion of Country Club road does not have vegetated bump outs or medians.

Figure 20 - Aerial Perspective photo facing north

The project strives to introduce more landscape to the roadway corridor, occurring in bump out areas, medians, and linear planters. Plants include native and arid adapted trees, shrubs, and accents. Plant selection will also respect roadway users needs, such as keeping sight visibility areas clear or planted with low lying plantings. When geometries require different plant forms, such as the center median, non-native arid adapted trees may be selected. Starting at Alameda and heading north, the project has low rise overhead power lines, which reduce the ability to plant shade trees in the area.

The planter groundplanes will be topped with organic mulch, which matches the recent landscape enhancement south of Curry Elementary parking lot. Like decomposed granite (dg), organic mulch functions to slow evaporation of water from the surface of the soil. Unlike dg, organic mulch keeps the soil surface cooler. Organic mulch is created by shredding trimmed tree limbs and similar organic material, and it therefore breaks down and adds nutrients to the soil. The Organic Mulch will need to be re-applied regularly. Sources for mulch include city owned parks and roadways, or tree pruning professionals.

Figure 21: School Community Garden with organic mulch

Soil enhancements such as suspended pavement, structural soil, or the use of soil additive Bio Char are recommended for these new planting areas. The new planting area will have been under a roadway for years. The soil will be compacted will have minimal organic content. This landscape will benefit from the removal of the existing soil in the planting areas, and replacement with friable high quality planting soil. Additional rooting space can be provided using suspended pavement, wherein sidewalks or parking areas are paved over the top of a suspension device, which provides uncompacted soil for tree health.

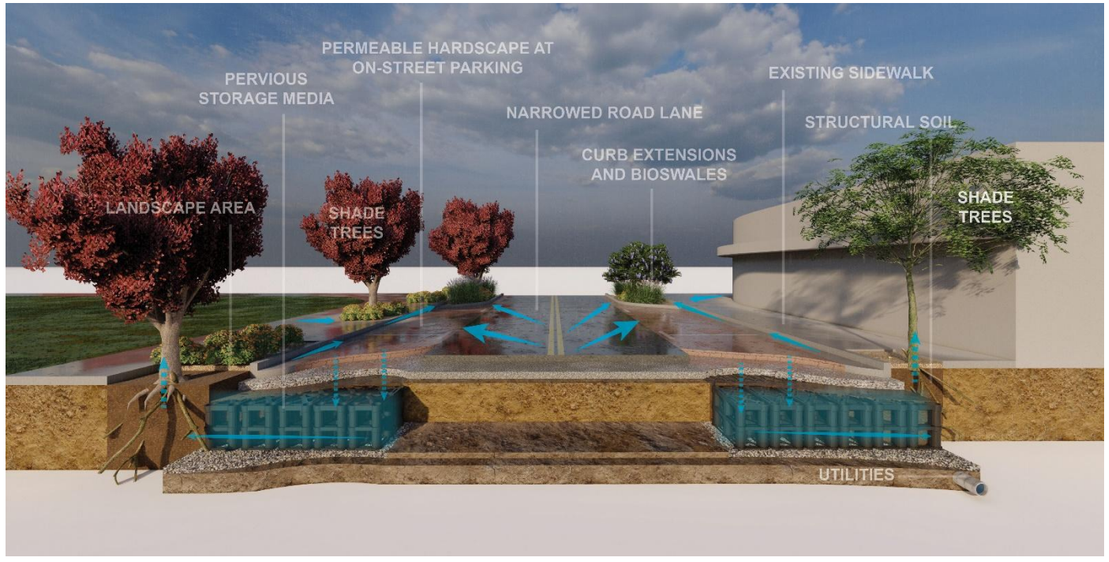


Figure 22: Suspended Pavement in roadway study graphic

A low water use irrigation system will be installed at the time of plant installation. This irrigation is necessary to sustain the plants through hot dry periods but is expected to become less utilized as the plants become established and supplemental rainwater harvesting is captured. The irrigation system can utilize modern technologies such as moisture sensors and evapotranspiration gauges that will allow the system to be "smart" and highly efficient.

5.5 Green Infrastructure

American Rivers defines Green Infrastructure as "… an approach to water management that protects, restores, or mimics the natural water cycle. Green infrastructure is effective, economical, and enhances community safety and quality of life". To fully leverage natural processes and provide urban ecology, several green infrastructure approaches are recommended. In addition to organic mulch and soil enhancements described above, rainwater harvesting is a critical component to the success of this landscape.

Rainwater harvesting can be achieved by lowering the grade of the planters and enabling stormwater to run into the planters during rain events. The planting areas will be protected with a 6" vertical curb, which will have frequent and intentional curb cuts that will allow surface drainage to enter the planting area. The collected surface water will infiltrate into the local area soil profile, which will supplement the irrigation and support healthy plants. An additional benefit will be the removal of the captured stormwater from downstream storm surges. This approach is a typical Green Infrastructure design approach.

Figure 23: Curb Extension in roadway image

Due to the existing roadway profile, most of the proposed planting areas are on the outside of the road. Country Club road is a crown section roadway, where the center of the road is higher than the edges of the road. Water will run off the center to the sides of the road, where it can enter the planters.

Another foundational green infrastructure approach is to preserve existing trees in place to the extent possible. This project has existing trees in or near the roadway at the northeast corner of the project, as well as in the city-owned parcel west of Country Club north of Alameda. Existing trees will be preserved to the extent possible.

5.6 Maintenance

The roadway will require maintenance. Maintenance activities will include replacement of unhealthy plants, pruning and trimming shrubs and trees to keep them out of visibility triangles and from overhanging the travel lanes, and maintenance of the irrigation system. However, typical management practices such as pruning accents and shrubs into ball-like forms are discouraged. Plant selection will observe the anticipated mature form and size of the plants, and over-pruning will not be necessary.

When pruning does occur, the tree limbs and pruned material can be shredded on site and re-applied to thin areas of the organic mulch.

Erosion can be reduced using rip rap at stormwater entry and exit points, but some erosion may occur. Any displaced soil or mulch should be replaced or repaired.

Figure 24: Landscape featuring plants allowed to grow into a natural form

Through a multi-layered approach to landscape enhancement including tree preservation, rainwater harvesting, species selection, soil enhancements, smart irrigation, and careful management, the landscape can grow into a healthy, thriving landscape that supports an urban ecology that will contribute to enhancing residents' quality of life.

5.7 Coordination with Nearby Projects

This project is anticipated to be designed and constructed as a standalone transportation improvement project and is not planned to be combined with or part of a larger transportation improvement project.

Project implementation should be coordinated with Tempe's pavement management program. The project corridor is scheduled for a full width mill and 1.5" rubber overlay in Fiscal Year 2026.

Project implementation should be coordinated with Tempe's ADA transition plan. More than one third of the project cost is related to building curb extensions and curb ramps at intersection corners.

Project implementation should continue to be coordination with Tempe's Transit department for operation of the MARS and MARZ Orbit bus circulator routes. Their preliminary review has been incorporated into the proposed concept.

Improvements to the bike lane on this corridor will affect the Bikeit system in Tempe and is in alignment with the programmed "Reflector Route" on Country Club Way between Warner Road and SR Loop 202. The future "Wheel Route" which follows an alignment on Alameda Drive, intersects with the study corridor. The proposed concept takes into consideration a future bikeway alignment on Alameda Drive, where it crosses at the Country Club Way intersection. As the non-motorized transportation network expands in the City of Tempe, it should connect with the BikeIt "Reflector" and "Wheel" Routes and include wayfinding elements.

5.8 Funding Source

The selected concept advanced to 15% design plans and cost estimate, published in this study, which concludes the grant funded portion of the project. The project will be carried forward by the Community Development Department into the City of Tempe's city-wide evaluation and prioritization process for potential programming as a green infrastructure, active transportation, and/or safe routes to school capital improvement project. Due to the small size and scope of this project compared to other capital improvement transportation projects, as well as having context-sensitive urban design components, it is recommended to use non-federal funding sources. The project design, bid, and construction phases would be administered by the City of Tempe with the use of non-federal funding sources.

5.9 Estimated Costs

A conceptual level cost estimate is provided in the table below for the preferred alternative. An itemized cost estimate will be developed and refined at various points in the project design process.

Facility	Unit Cost	Project Qty	Total
1-Way Separated bike lane (curb median separation)	$500,000 per mile	0.3	$ 150,000.00
Lighting, pedestrian scale	$420,000 per mile	0.3	$ 126,000.00
Wayfinding sign	$300 each	6	$ 1,800.00
Curb extension	$25,000 each corner	11	$ 275,000.00
Curb ramp	$3,500 each	7	$ 24,500.00
High-visibility marked crosswalk	$3,000 each	3	$ 9,000.00
Raised Median	$20,000 per 100 feet	2	$ 40,000.00
Landscape Planting, Irrigation & Green Infrastructure	$20 per square foot	12,000	$ 240,000.00
	Subtotal	$	866,300.00
	30% adjustment for 2022 market conditions	$	259,890.00
	Grand Total - Construction	$	1,126,190.00
	Grand Total - Design (15% of Construction)	$	168,928.50

Table 1 - Estimated Cost

6.0 Summary

Redevelopment of Country Club Way from East Cairo Drive to East Meadow Drive is feasible and would result in an environment that is more attractive to multi-modal use. While this is a short portion of road, it experiences use pressures like larger roadways. Through outreach to the public and an involved stakeholder group, a concept focused on traffic mitigation, green infrastructure, and multi-modal use has been developed. The public outreach process was accomplished through three public meetings with accompanying public opinion surveys. Throughout the course of the project, the public was also invited to provide open ended comments on the project through the WERK | urban design website. Those comments were collected and that feedback was incorporated into the design as well. The concept focuses on narrowing travel lanes and providing traffic calming and safety measures, while also providing abundant areas for planting and water harvesting.

COUNTRY CLUB WAY: CAIRO TO MEADOW
APPENDIX A: CONCEPT PLANS

ALAMEDA

WERK
ur·ban | design

Y2K ENGINEERING

Tempe.

BACKGROUND

PROJECT GOALS

- TRAFFIC CALMING
- ACCOMMODATE DIFFERENT MODES AND USER GROUPS
- SITE VISIBILITY
- ENHANCE PUBLIC SPACE
- HEAT MITIGATION
- STORMWATER POLLUTION MITIGATION
- URBAN ECOLOGY
- AN ACHIEVABLE PLAN

Alameda Meadows & Santo Tomas
Country Club Way, Meadow to Cairo Streetscape
June 2022

PROPOSED PROJECT SITE:
COUNTRY CLUB WAY

E Cairo Dr.

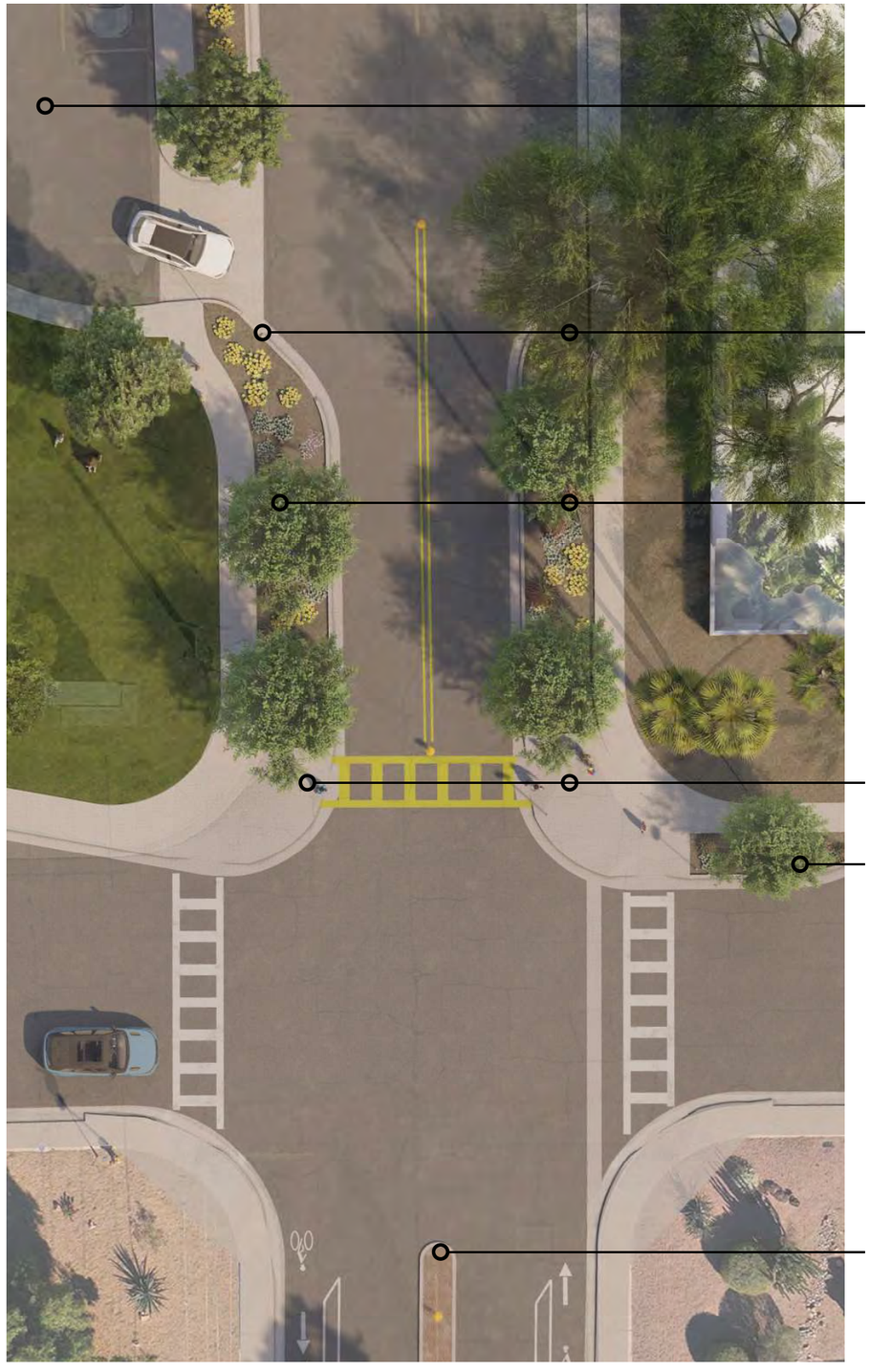
E Balboa Dr.

E Alameda Dr.

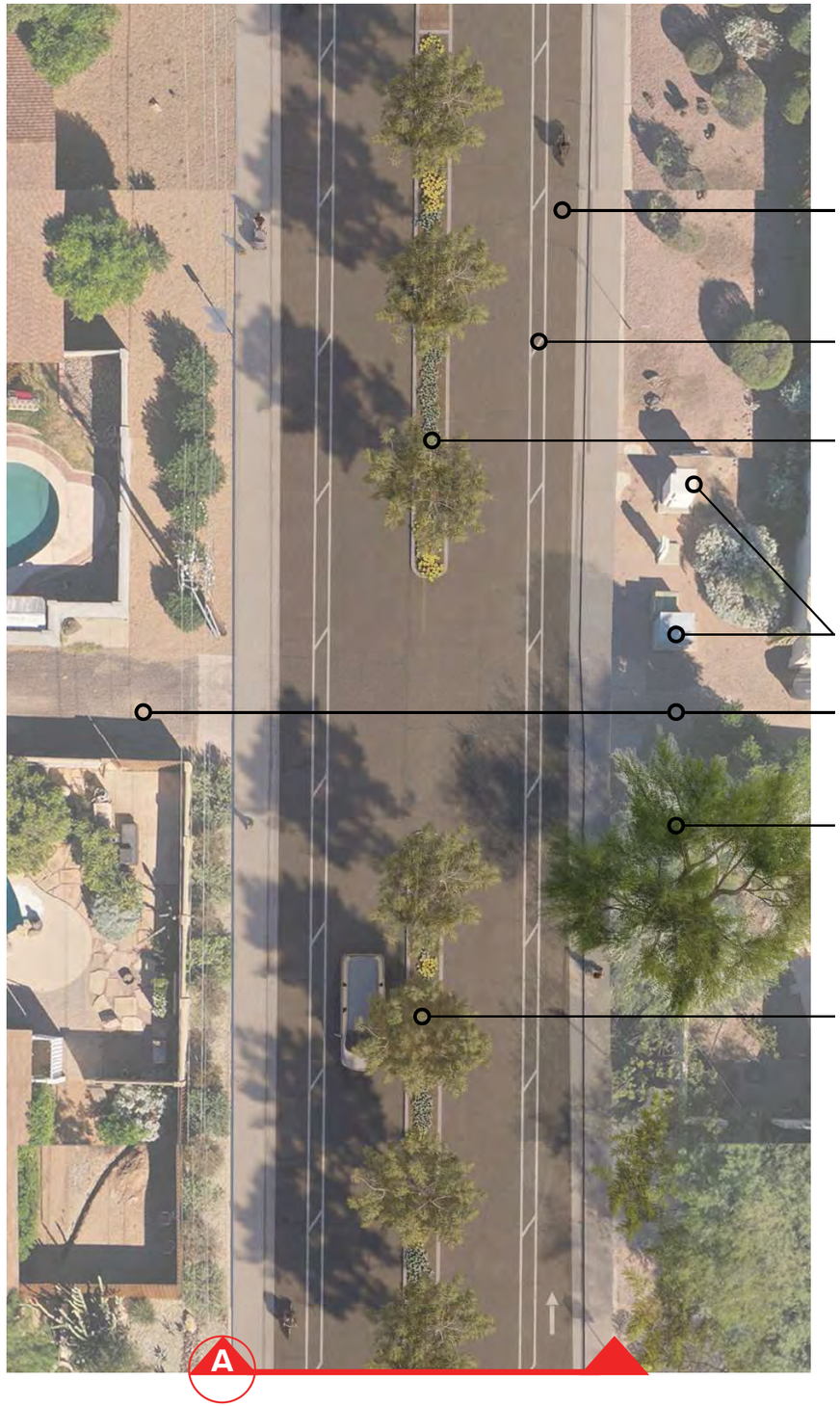
E Loma Vista

Meadow Dr.

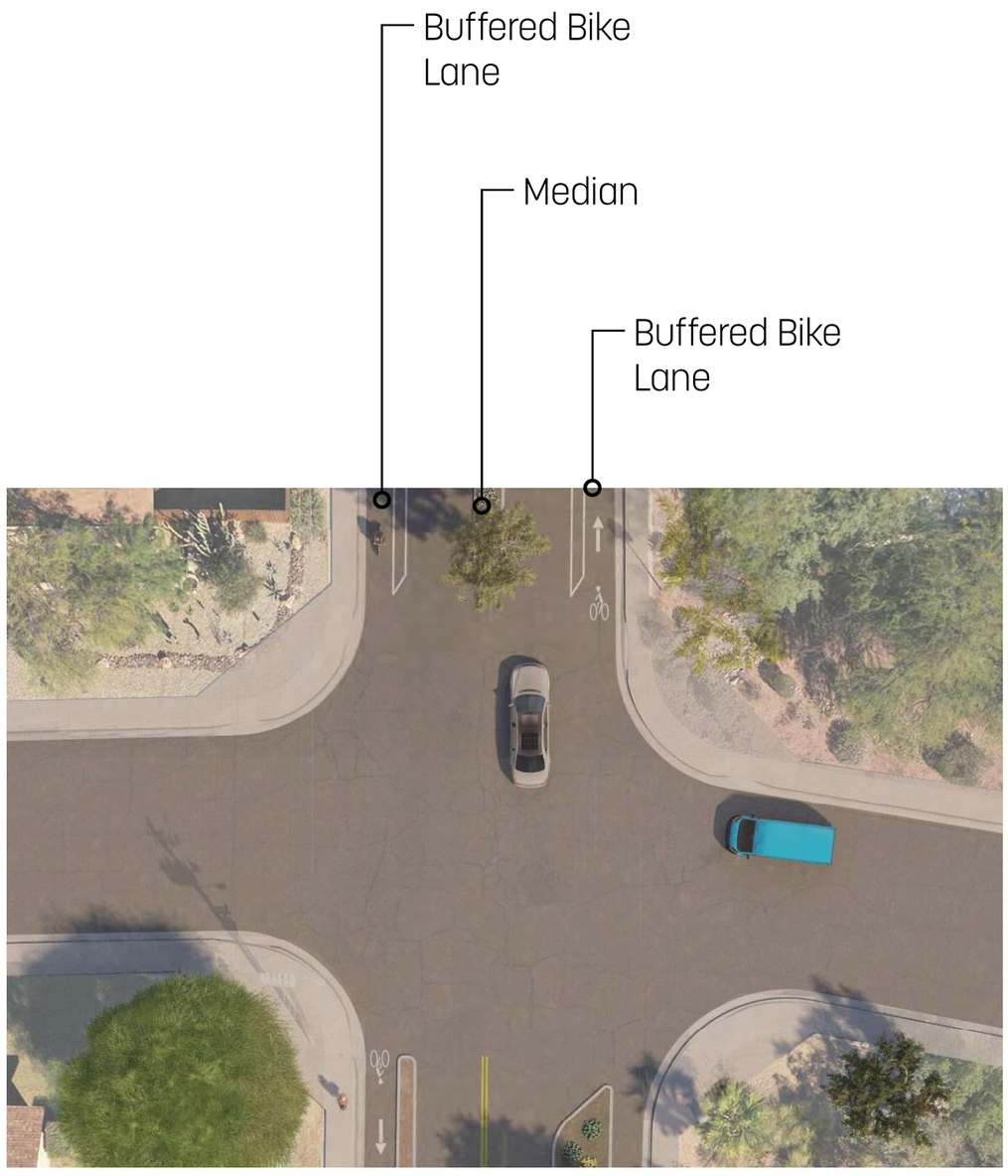
COUNTRY CLUB WAY:
AREA 1 - MEADOW DRIVE INTERSECTION



COUNTRY CLUB WAY:
AREA 2 - MEADOW DRIVE TO E LOMA VISTA



COUNTRY CLUB WAY:
AREA 3 - LOMA VISTA DRIVE INTERSECTION



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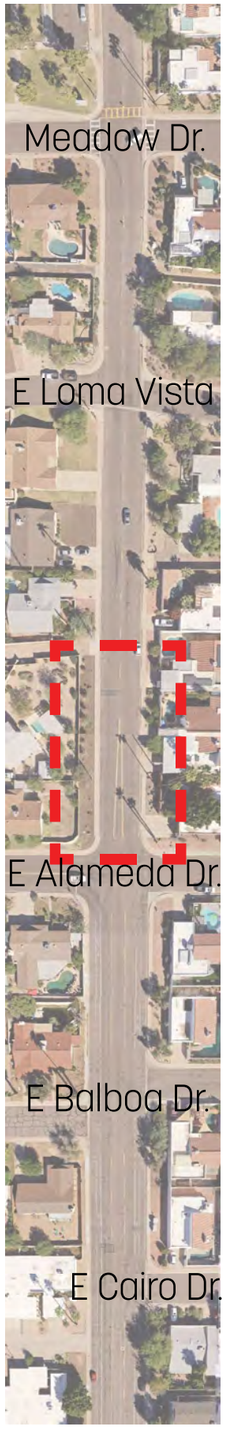
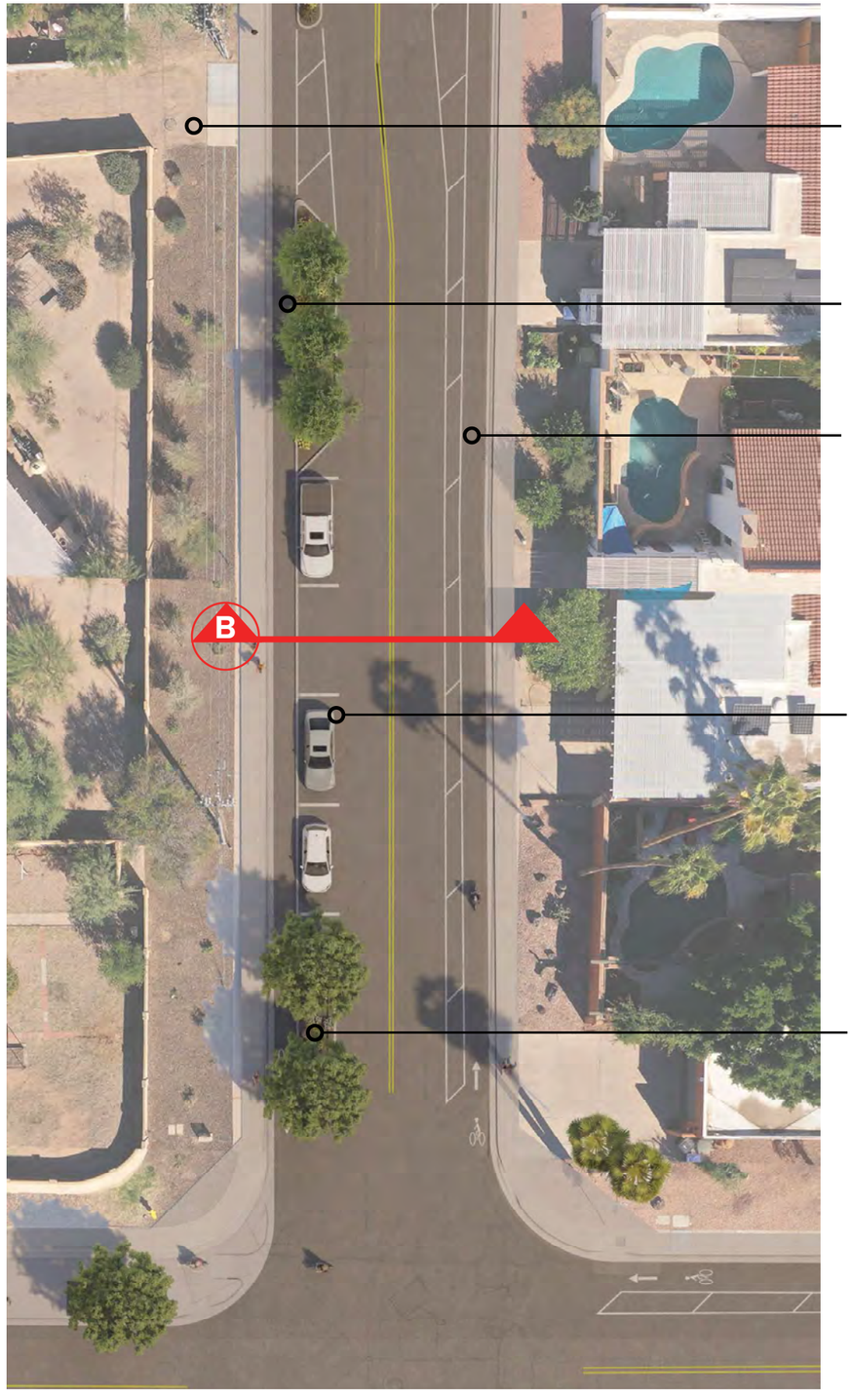
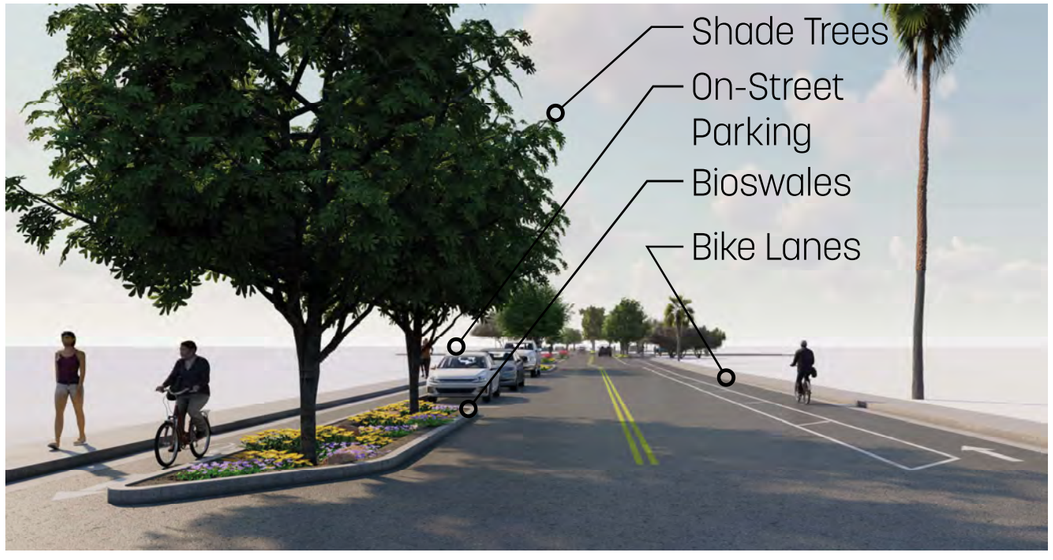
Country Club Way, Meadow to Cairo Streetscape
June 2022

COUNTRY CLUB WAY:
AREA 4 - E LOMA VISTA DRIVE TO UNPAVED ALLEY

COUNTRY CLUB WAY:
AREA 5 - UNPAVED ALLEY TO E ALAMEDA DRIVE







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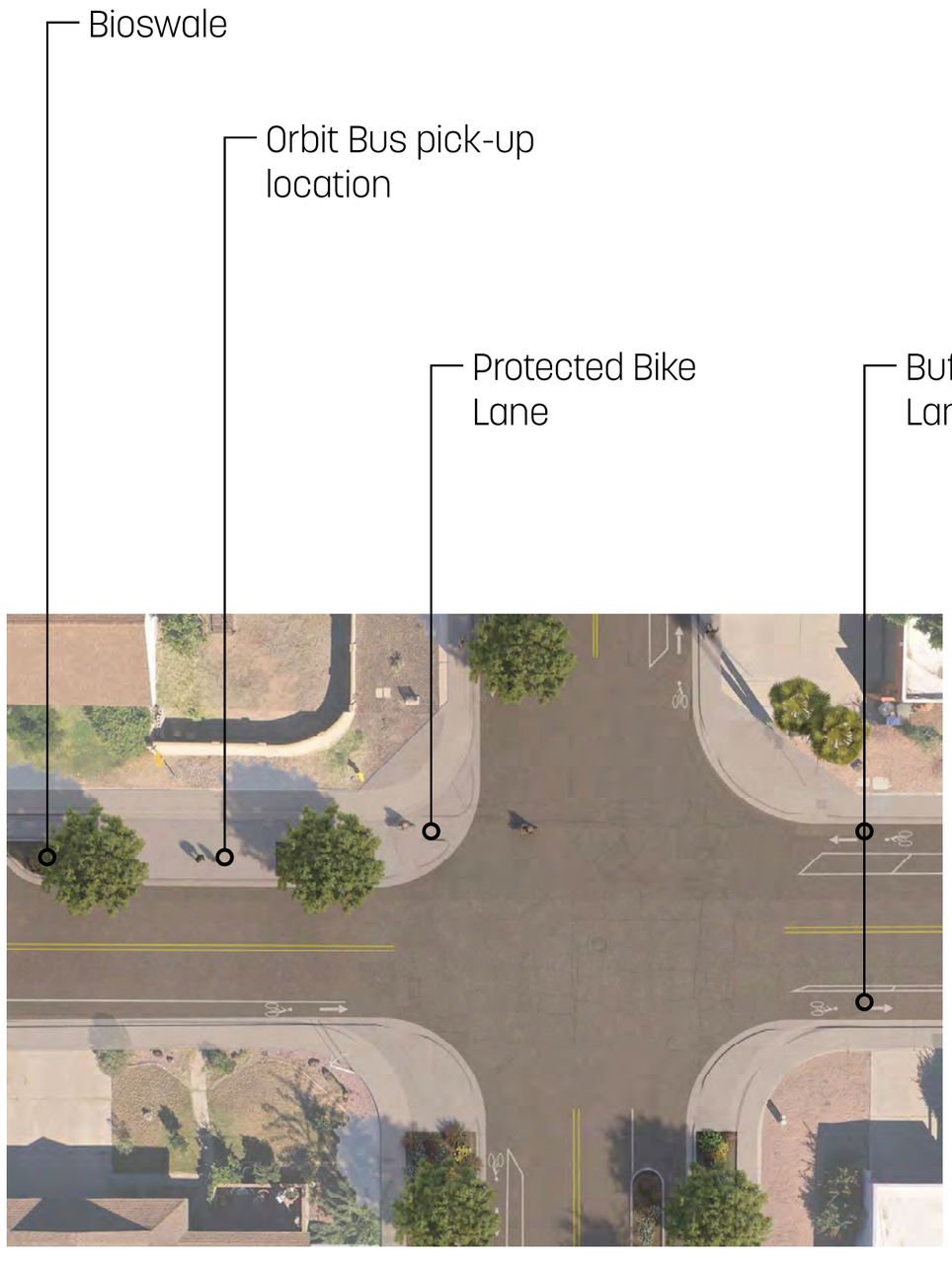
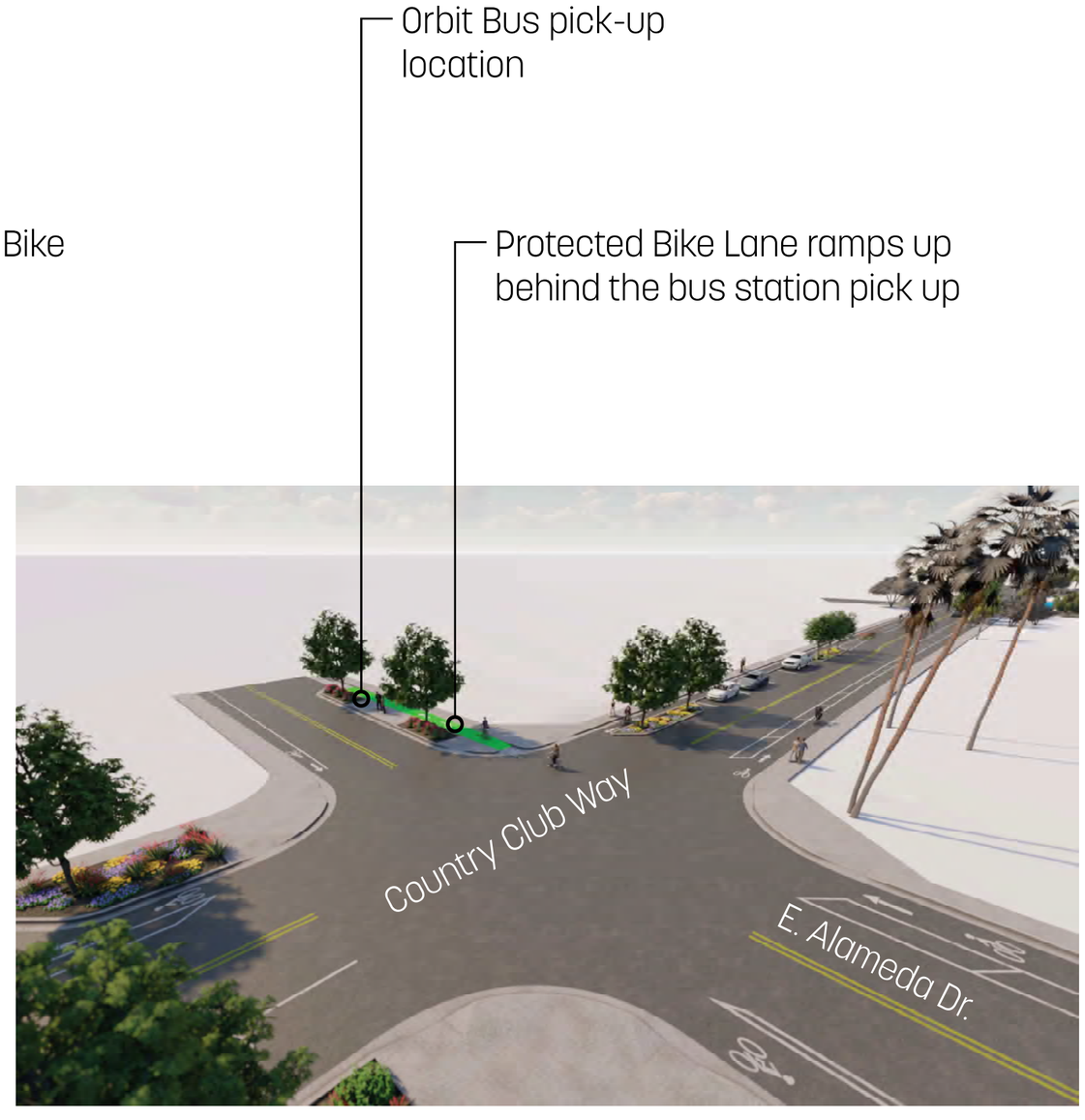
Country Club Way, Meadow to Cairo Streetscape
June 2022

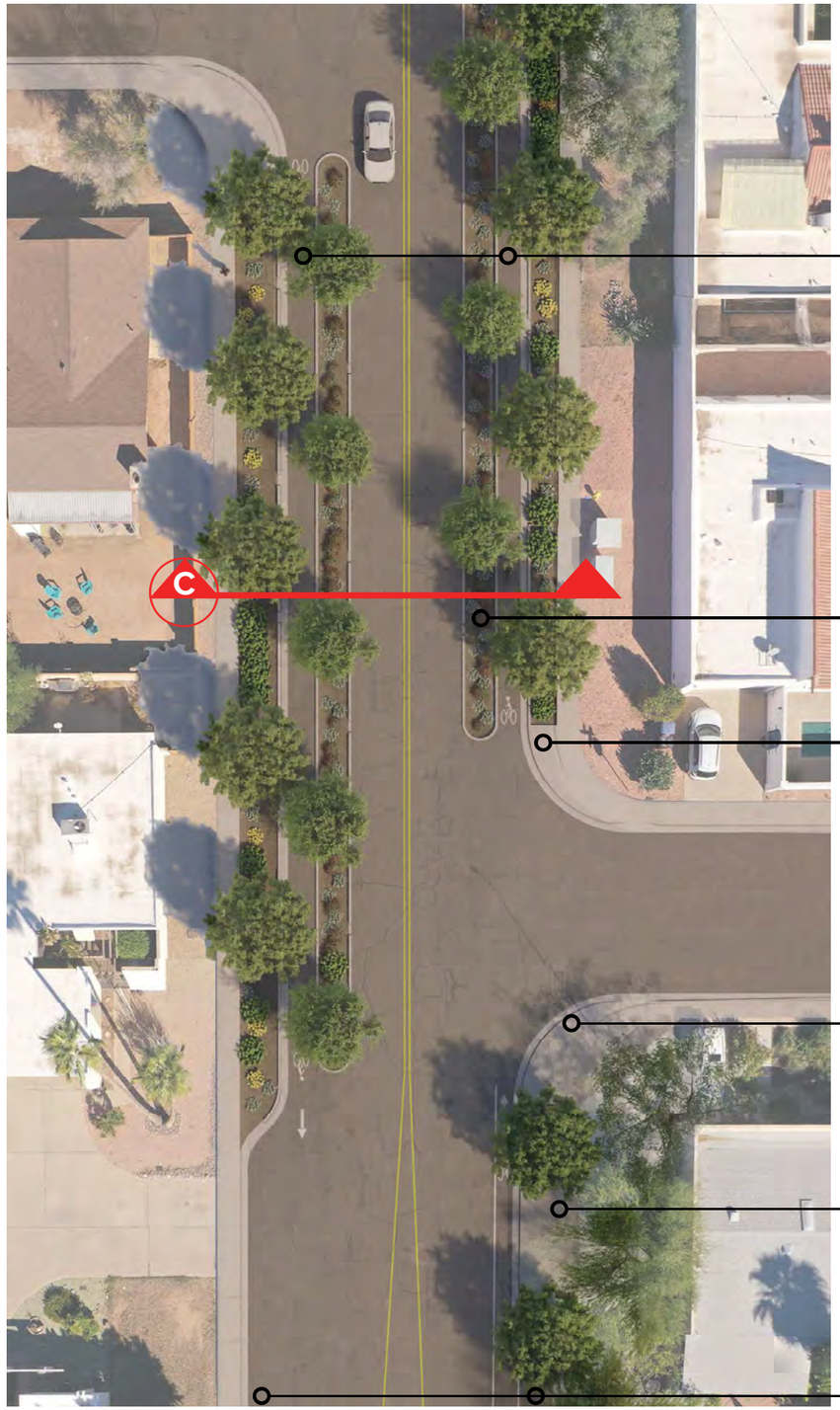
COUNTRY CLUB WAY:
AREA 6 - E ALAMEDA DRIVE INTERSECTION

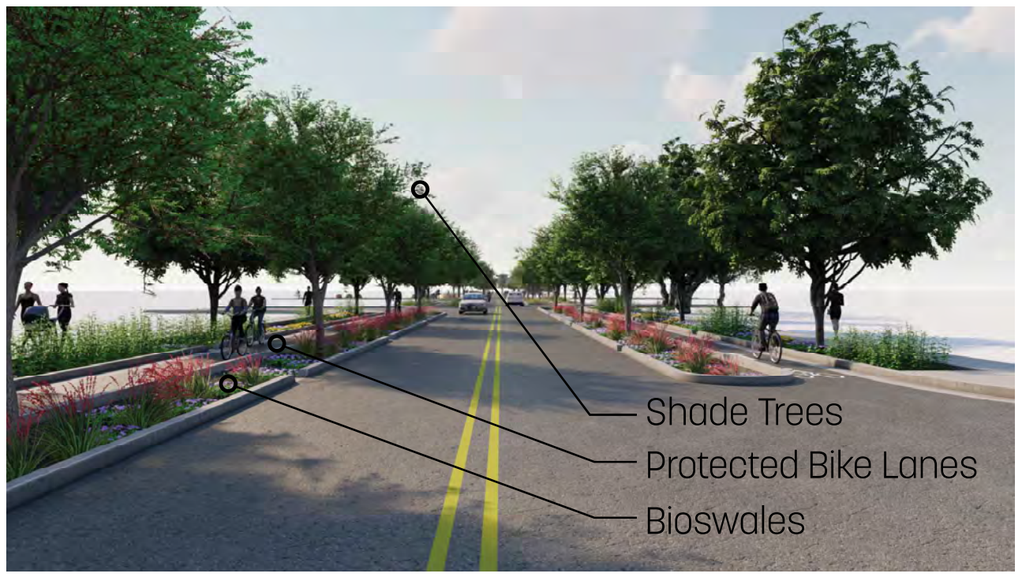




COUNTRY CLUB WAY:
AREA 7 - E ALAMEDA DRIVE TO E BALBOA DRIVE

COUNTRY CLUB WAY:
AREA 8 - E BALBOA DRIVE TO E CAIRO DRIVE





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Country Club Way, Meadow to Cairo Streetscape
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