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in Association with
Toole Design Group

Coleman and Ringwood Avenues Transportation Study

Prepared for the County of San Mateo and City of Menlo Park

September 16, 2024

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Summary Report

Introduction

This report summarizes the study process and key findings for the *Coleman and Ringwood Avenues Transportation Study*. The Study area consisted of Coleman Avenue between Ringwood Avenue and Willow Road, and Ringwood Avenue between Middlefield Road and Bay Road. The Study was a culmination of a two-year effort led by the County of San Mateo, in partnership with the City of Menlo Park to assess the community's needs and preferences for potential improvements to Coleman and Ringwood Avenues. Residents and stakeholders have highlighted concerns about safety and mobility on these streets for more than two decades, with a focus on the lack of dedicated bicycle and pedestrian facilities and high usage of the corridors by students traveling to and from nearby schools.

Study Goal

Develop a conceptual design plan for both corridors to improve mobility for active modes of transportation and improve safety for all roadway users.

The current study effort builds on previous planning efforts including the County of San Mateo's Unincorporated Active Transportation Plan (SMC ATP) and the City of Menlo Park's Transportation Master Plan (TMP) through extensive community engagement. Stakeholders included residents and property owners many of whom were students and parents or caregivers for students, and representatives from community and technical advisory committees comprised of representatives from nearby schools, community-based organizations (CBOs), County and City staff as well as the Menlo Park Fire Protection District (MPFPD) and the San Mateo County Transit District (SamTrans).

The Study development process took place between February 2022 and March 2024 and included four phases of community engagement and improvement development, as identified in Plate 1. Each phase gathered input from the community that helped shape the development of design options and the trajectory of the Study effort.

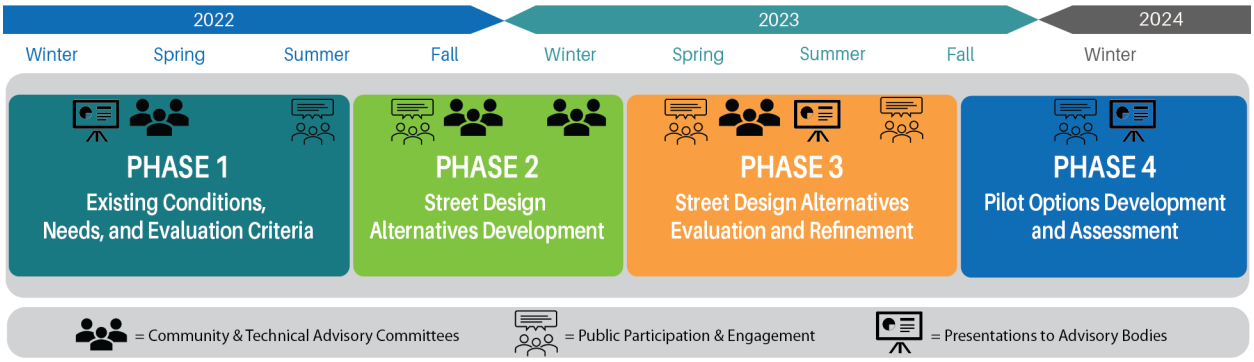

Plate 1 Study Process and Timeline

- **Phase 1** included a review of existing conditions and development of potential objectives and evaluation criteria. Community engagement included pop-up events, walking tours, and an initial community survey to build awareness of the study, solicit feedback on opportunities and challenges, and develop objectives and evaluation criteria.

- **Phase 2** included development of an initial set of design alternatives and refinement of those alternatives based on input from the Study advisory committees and from additional stakeholders, through an interactive workshop and a second community survey.

- **Phase 3** involved development of conceptual corridor design plans for the top alternatives based on input received from prior phases. Community engagement included stakeholder meetings, a public workshop, and a pop-up demonstration project on Coleman Avenue to review the concepts.

- **Phase 4** addressed community concerns received during Phase 3, with additional outreach to review potential quick build pilot options for Coleman Avenue. Outreach during this phase included a webinar and third community survey.

Existing Transportation Conditions

The Study area consists of Coleman Avenue between Ringwood Avenue and Willow Road, and Ringwood Avenue between Middlefield Road and Bay Road. Both roadways include segments that are partly within the unincorporated community of Menlo Oaks and partly within the City of Menlo Park. A map of the Study area showing the jurisdictional boundaries is shown in Plate 2.

Existing Conditions Assessment

*The complete Existing Conditions document with figures and attachments is provided in **Appendix A**, which includes a detailed description of roadway characteristics, collision history, and a summary of previous planning efforts for both corridors.*

Plate 2 Map of the Study Area

Coleman Avenue

Coleman Avenue is comprised of two distinct segments with different characteristics and adjacent land uses. Within the unincorporated community of Menlo Oaks, the roadway shoulders are a combination of gravel, dirt, and vegetation with numerous large mature oak trees and utility poles, located within the public right-of-way. The tree canopy and vegetated shoulders add to the rural character of the area. Parking is available on the shoulder in select locations with time restrictions. At the intersections with Menlo Oaks Drive, Arlington Way, and Berkeley Avenue, traffic circles with planted oak trees provide aesthetic and traffic calming benefits to the corridor. Within the City of Menlo Park, space for on-street parking is provided on both sides of the street, along with curb, gutter, and sidewalk, common for a typical urban setting.

Ringwood Avenue

Most of Ringwood Avenue is located within the County of San Mateo except for the southernmost approximately 550 feet, which is within the City of Menlo Park and Town of Atherton. Similar to Coleman Avenue, the roadway shoulders are a combination of gravel, dirt, and vegetation with numerous trees and utility poles located within the public right-of-way. Sidewalks are present on both sides of the street at the southern end of the segment within Menlo Park, which then transitions to a paved shoulder with a valley gutter on only the west side of the

street within unincorporated Menlo Oaks. Parking conditions vary across the corridor including segments where parking is prohibited at all times, permitted only during certain times, and unrestricted.

Summary of Roadway Characteristics

A summary of the roadway characteristics for both Coleman and Ringwood Avenues is provided in Table 1 and the current cross section configurations of the corridors are illustrated in Plates 3-5.

Table 1 – Summary of Roadway Characteristics

Roadway Segment	Speed Limit	85th Percentile Speed	Average Speed	Daily Vehicles	Pedestrian Facilities	Bicycle Facilities	5-Year Total Collisions	10-Year Ped/ Bike Collisions
Coleman Ave (County)	25	29	24	3,500	None	None	3	5
Coleman Ave (City)	25	30	25	3,200	Sidewalk Both Sides	None	9	1
Ringwood Ave	30	33	28	6,900	Varies - Sidewalk, Paved Shoulder	Class II Bike Lanes	8	3

Note: All speeds are in miles per hour (mph)

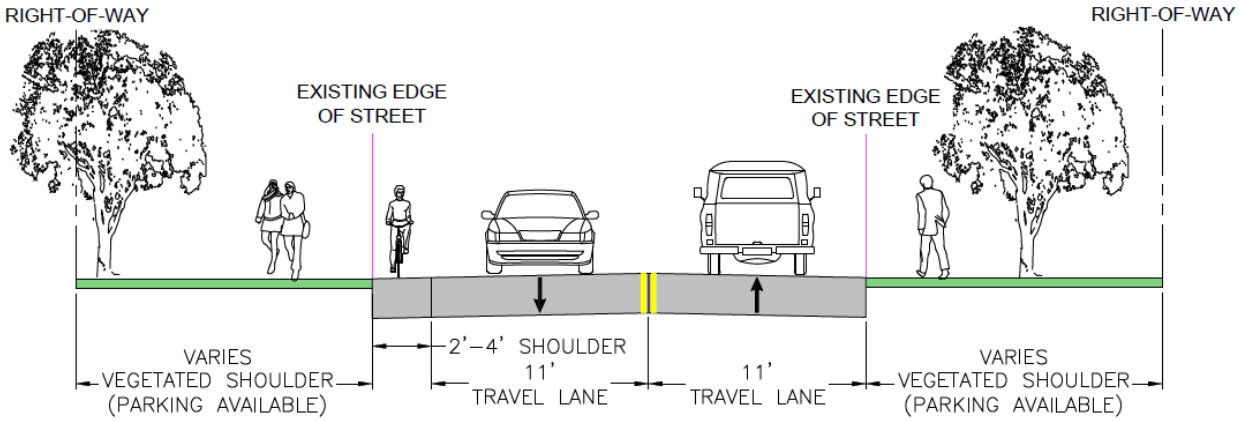

Plate 3 Coleman Avenue Existing Cross Section (Menlo Oaks) Looking East Toward Willow Road

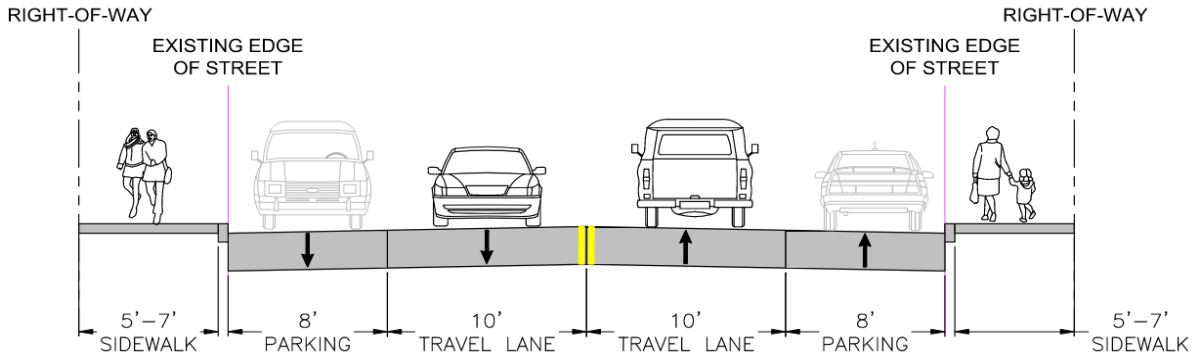

Plate 4 Coleman Avenue Existing Cross Section (City of Menlo Park) Looking East Toward Willow Road

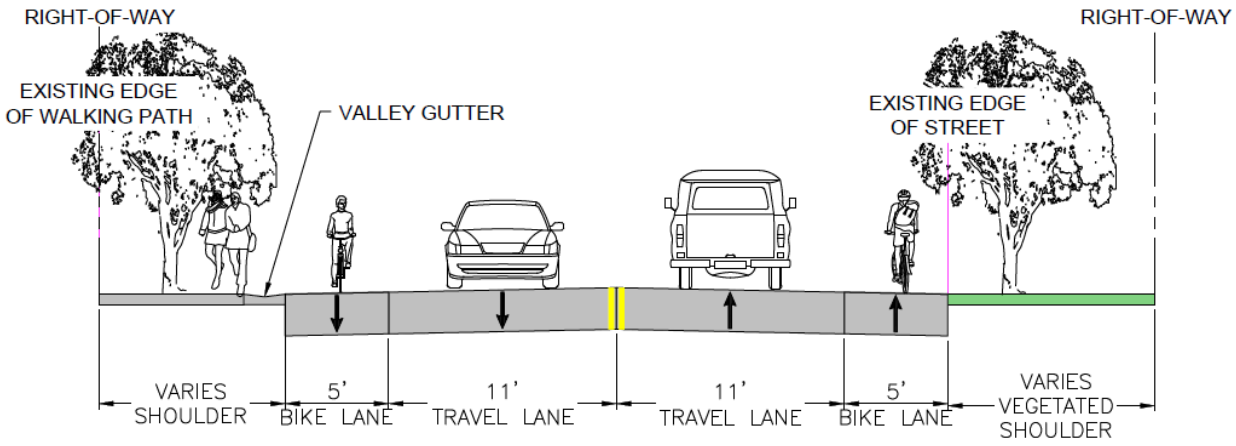

Plate 5 Ringwood Avenue Existing Cross Section (Menlo Oaks) Looking North Toward Bay Road

Community Engagement

At the core of the Study was an extensive engagement effort with community members and additional stakeholders. Input was sought on existing transportation needs and issues, community values, Study goals and objectives, potential solutions, design alternatives, and pilot options. Numerous engagement activities were conducted across the four phases of the Study, as summarized in Plate 6 with pictures from the engagement events.

Community Engagement Summary

*The complete Community Engagement Summary is in **Appendix B**, which includes a detailed description of all the engagement activities conducted throughout the project.*

Plate 6 Types of Engagement Solicited for each Phase of the Study

Summary of Alternatives

Draft Alternatives and Evaluation Criteria

*A summary of all design alternatives considered is provided in **Appendix C** and the evaluation criteria process is contained in **Appendix D**.*

The alternative development process began with a set of findings from the initial phase of outreach. The team translated these findings into design objectives, evaluation criteria, and an initial set of draft design alternatives. Early alternatives were reviewed and refined through additional public outreach on the evaluation criteria. The following sections describe the alternatives that emerged from this process.

Coleman Avenue

On Coleman Avenue, two options emerged for potential future direction: a short-term pilot project or a long-term redesign of the corridor with different designs for the Menlo Oaks and City segments based on their respective land use conditions, constraints and needs. A desire for traffic calming was identified as a common theme from the community for both the County and City segments. Speed reduction measures are a core element of the long-term alternatives across the entire corridor, and could include the following measures which may require additional evaluation:

- Speed tables;
- Narrower (10-foot) travel lanes;
- Enhancements to the existing traffic circles in Menlo Oaks with Increased deflection;
- Curb extensions at various intersections in the City;
- Centerline and edge line striping;
- Speed reduction markings; and
- New signage.

Long-term Alternative – Menlo Oaks

The long-term design alternative within the unincorporated Menlo Oaks segment of Coleman Avenue consists of the installation of Class II bike lanes in both directions and an off-street pathway on the north side of the corridor that would be separated from the street by a landscaped buffer or a raised element, as depicted in Plates 7 and 8. Key elements include pavement widening of the existing roadway to accommodate bike lanes and shifting the alignment of the road to the south in several locations to minimize tree impacts. The off-street pathway is intended primarily for use by pedestrians and would also accommodate younger school-aged cyclists and those less comfortable riding in the street with vehicular traffic. Pathway materials could be asphalt or a permeable surface. The alignment and width of the pathway would vary across the corridor in a meandering fashion to preserve trees, and minimize the cost and impact of relocating utilities and other features. It is estimated

DESIGN OBJECTIVES

Based on feedback from the community, the Study team identified design objectives to guide the development and evaluation of alternatives. These objectives provide additional specificity for the overarching goal of improved mobility for active modes of transportation and safety for all roadway users:

- ✓ Improve safety by reducing the frequency and severity of collisions,
- ✓ Reduce vehicle travel speeds, especially where different user groups interact or share space,
- ✓ Create greater separation of physical space for pedestrians and bicyclists from motor vehicles,
- ✓ Improve the level of comfort for pedestrians and bicyclists,
- ✓ Provide continuity for pedestrians and bicyclists from one side of the corridors to the other, and
- ✓ Preserve the character of the neighborhood including trees, greenery, and circulation patterns, and
- ✓ Preserve some parking within the City segment of Coleman Avenue.

Concept Design Plans

Conceptual design plans representing a 10% level design effort were prepared for the top two long-term design alternatives for each corridor and are provided in ***Appendix E****.*

that between six and 19 of the approximately 130 existing trees on the corridor would need to be removed to make room for the new facilities; the actual number would depend on the final design and the expertise and assessment of an arborist during the detailed design stage. Parking would be eliminated on the north side of the street to make room for the pathway, though much of the existing parking on the south side of the street could be retained.

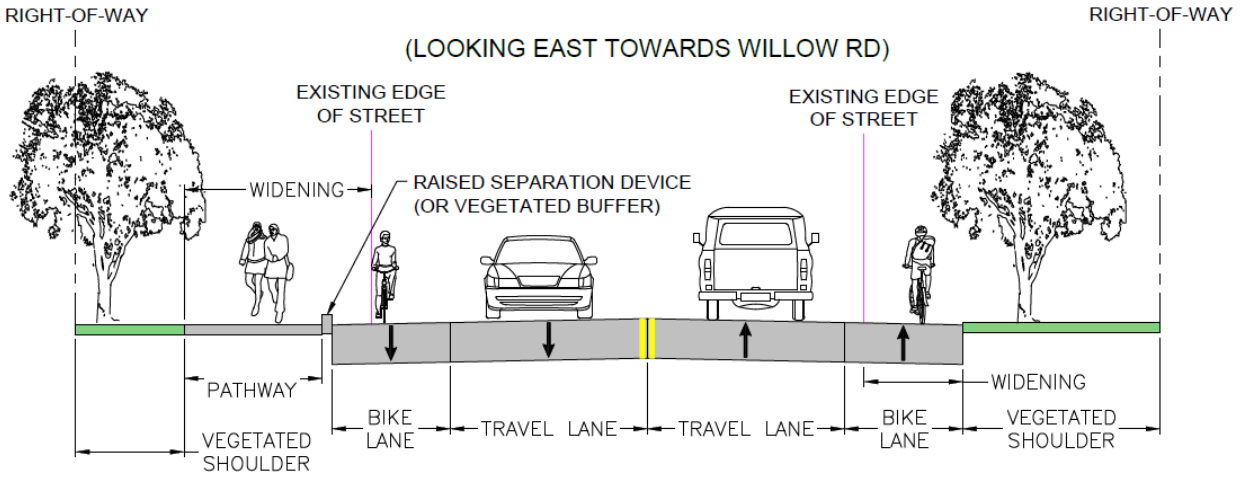

Plate 7 Coleman Avenue (Menlo Oaks) Long-term Alternative Cross Section
Bike Lanes with Off-street Pathway

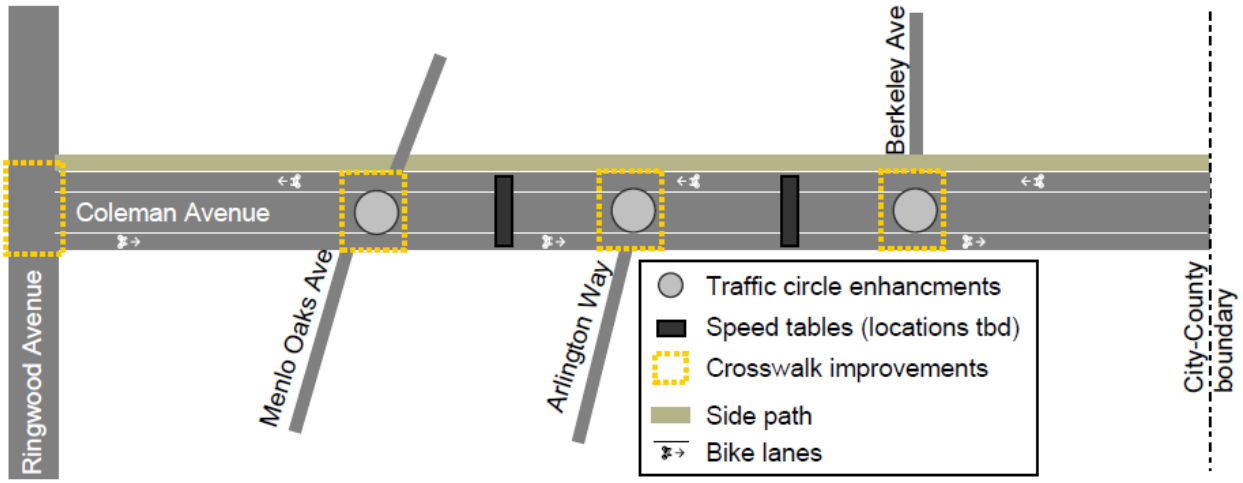

Plate 8 Coleman Avenue (Menlo Oaks) Long-term Plan View Schematic
Bike Lanes with Off-street Pathway

Other alternatives considered as part of the Study included:

- a bicycle boulevard with a wider off-street pathway;
- adding a shared use pathway on the north side of the street with no bike lanes or roadway widening;
- conversion to a one-way street;
- traffic calming only; and
- a no-build alternative that retained existing conditions.

The long-term design alternative balances the community's desire for improved pedestrian and bicycle infrastructure while preserving the character of the neighborhood, including retaining the existing traffic circles and as many trees as possible. However, due to the presence of numerous trees near the edge of the existing paved roadway, it is unlikely that the new bicycle and pedestrian infrastructure could be constructed without removing a single tree. While there was a general preference for the alternative with bike lanes, there were ongoing concerns from community members about tree removal, widening the paved surface, and drainage issues.

Long-term Alternative – City of Menlo Park

The long-term design alternative for the City of Menlo Park segment of Coleman Avenue includes the removal of parking on one side of the street to make room for an expanded sidewalk/multi-use pathway on the north side of the corridor, as depicted in Plates 9 and 10. The pathway would be separated from the street by a landscape strip where possible. The existing curb, gutter, and sidewalk on the south side of the street would remain in their current configuration. School-aged and less experienced bicyclists would share the pathway with pedestrians, while traffic calming measures would make riding in the street and sharing the travel lanes with motorists more comfortable for experienced cyclists. The alignment of the shared use pathway on the north side of the street would be continuous and connect with the pathway identified in the long-term alternative for the County segment of Coleman Avenue, though specific design details (materials, width, height, separation, etc.) could vary. The design includes a raised crossing near Riordan Place to allow eastbound cyclists riding in the bike lane in the County segment of Coleman Avenue to transition to the shared use pathway in the City segment of Coleman Avenue.

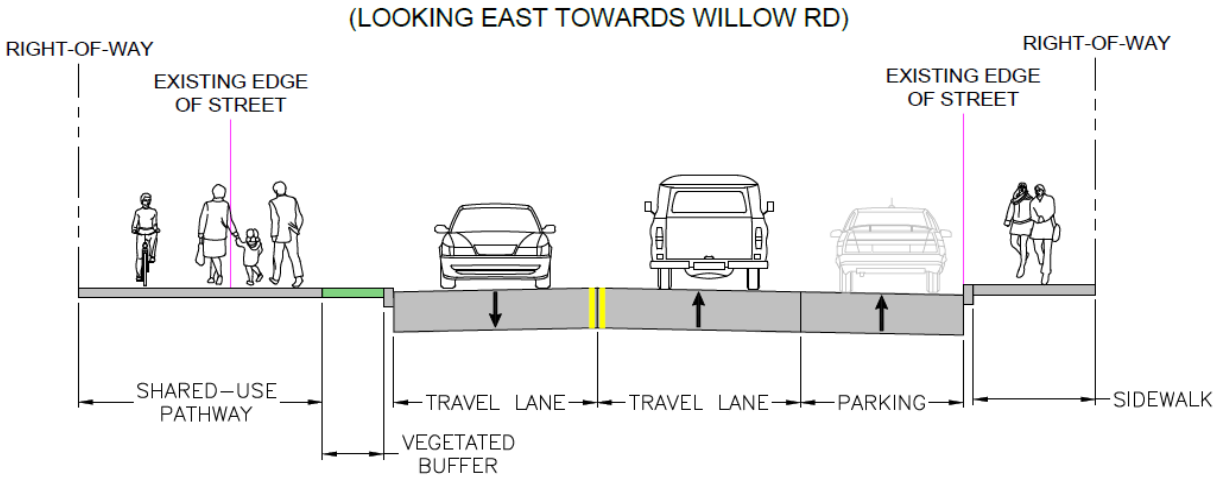

Plate 9 Coleman Avenue (City of Menlo Park) Long-term Alternative Cross Section
Bicycle Boulevard with Shared Use Pathway and Parking on One Side

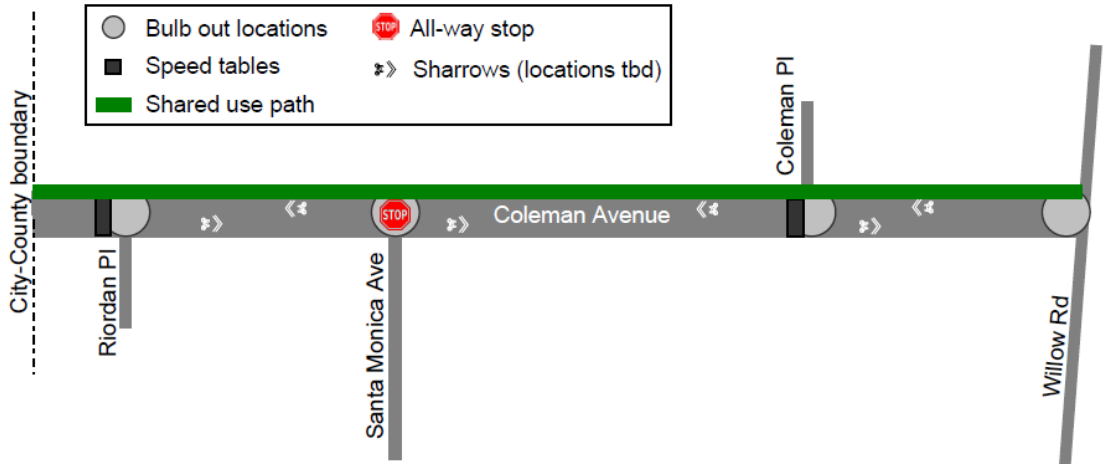

Plate 10 Coleman Avenue (City of Menlo Park) Long-term Alternative Plan View Schematic Bicycle Boulevard with Shared Use Pathway and Parking on One Side

Other long-term design alternatives considered for the City segment included:

- a bicycle boulevard that retained parking on both sides of the street;
- removing parking on a one side of the street to make room for narrow bike lanes (less than 5 feet);
- removing parking on both sides of the street to install buffered bike lanes;
- traffic calming only; and
- a no-build alternative that would retain the existing conditions.

The long-term design alternative balances the needs of all users of the corridor, including pedestrians, experienced and inexperienced cyclists, and motorists, while retaining some on-street parking, which is heavily used by residents of the apartments along Coleman Avenue. The side of the street for which parking would be retained was discussed throughout the Study, with some preferring parking on the north side of the street for convenience to the higher density housing, and others preferring parking to be on the opposite side of the street in order to minimize potential conflicts with users of the new pathway and to maintain or improve sight lines at driveways. Parking is currently shown on the south side of Coleman Avenue in the cross section and concept plans, but the final location would be confirmed during the detailed design phase.

Short-term Pilot Options

While there was support for the long-term alternatives, the outreach process revealed an interest in reducing traffic volumes especially during peak periods and concerns with pavement widening, tree removal, and parking removal. As a result, a set of four potential pilot options were developed that would reduce traffic volumes on Coleman Avenue without requiring any pavement widening or tree removal. These options would be expected to result in a lower stress experience for active modes of transportation sharing the street with motorists due to the reduction in vehicular traffic volumes. These options are proposed as pilots because of the potential impacts to circulation in the vicinity. The pilots would include an evaluation framework to assess the effectiveness and potential impacts of the changes to circulation.

The team presented the following pilot options to the community for input, which are illustrated in Plates 11 through 14. Some outreach participants strongly preferred a pilot while others strongly preferred a long-term design alternative.

1. Turn restrictions during school drop-off and pick-up periods;
2. No through traffic for passenger vehicles (road closure);
3. One-way operation westbound through the County section of Coleman Avenue; and
4. Installing temporary traffic calming elements.
5. Bike lane westbound and shared lane eastbound (City only); and
6. Narrow bike lanes (City Only).

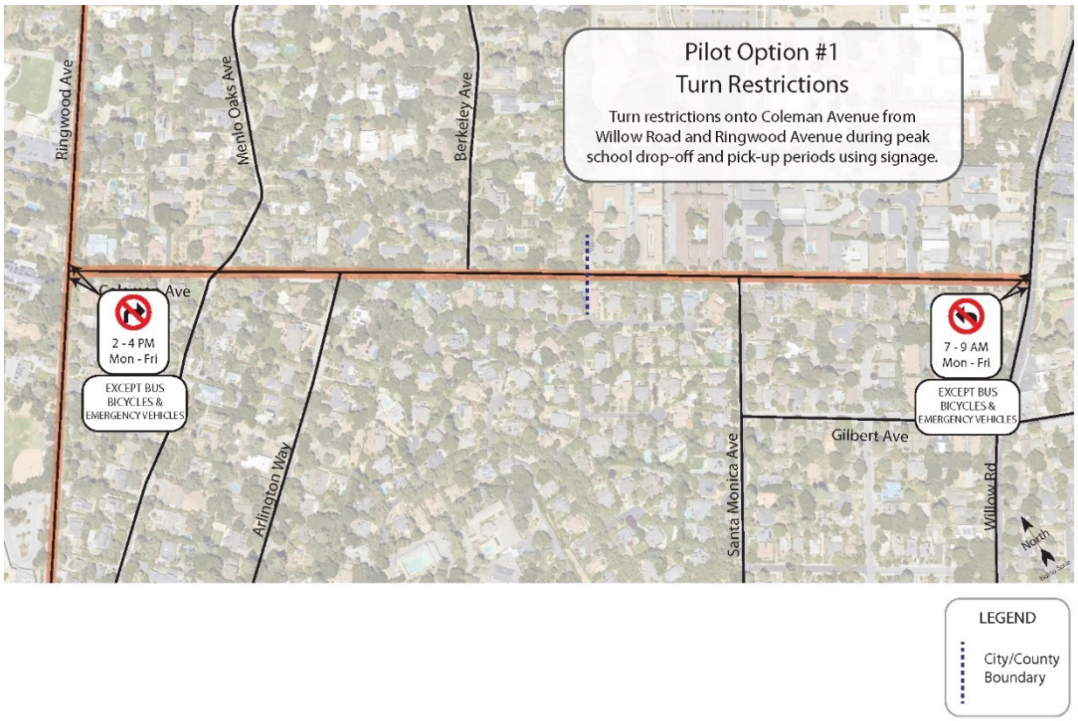

Plate 11 Pilot Option 1 – Turn Restrictions

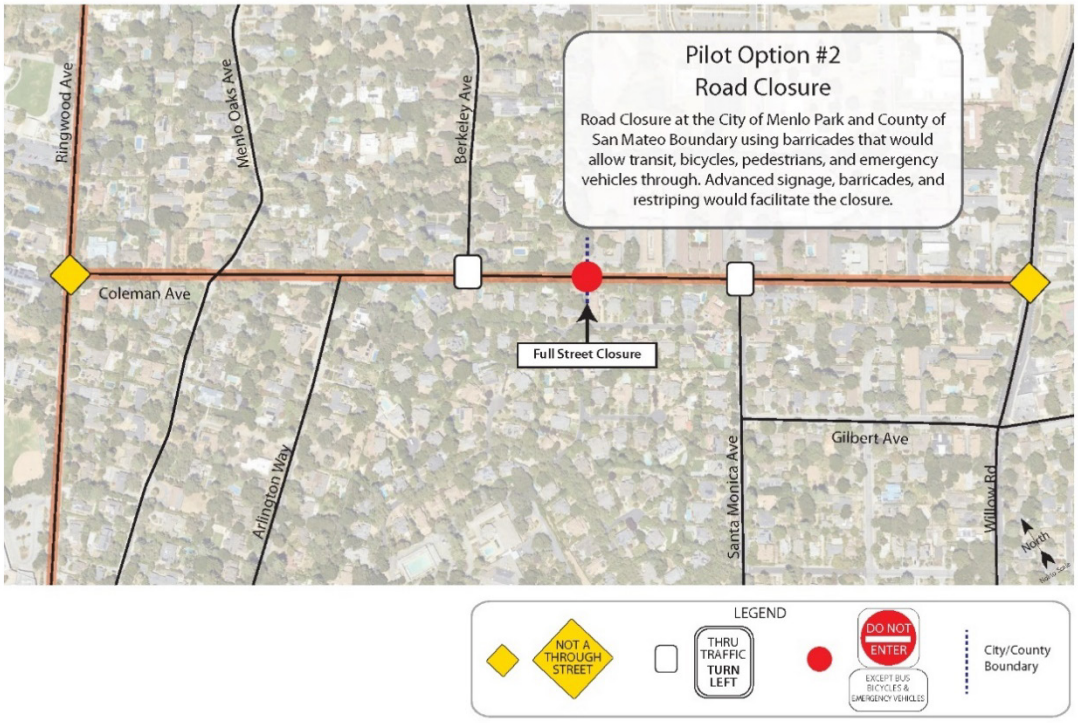

Plate 12 Pilot Option 2 - Through Traffic Restriction (Road Closure)

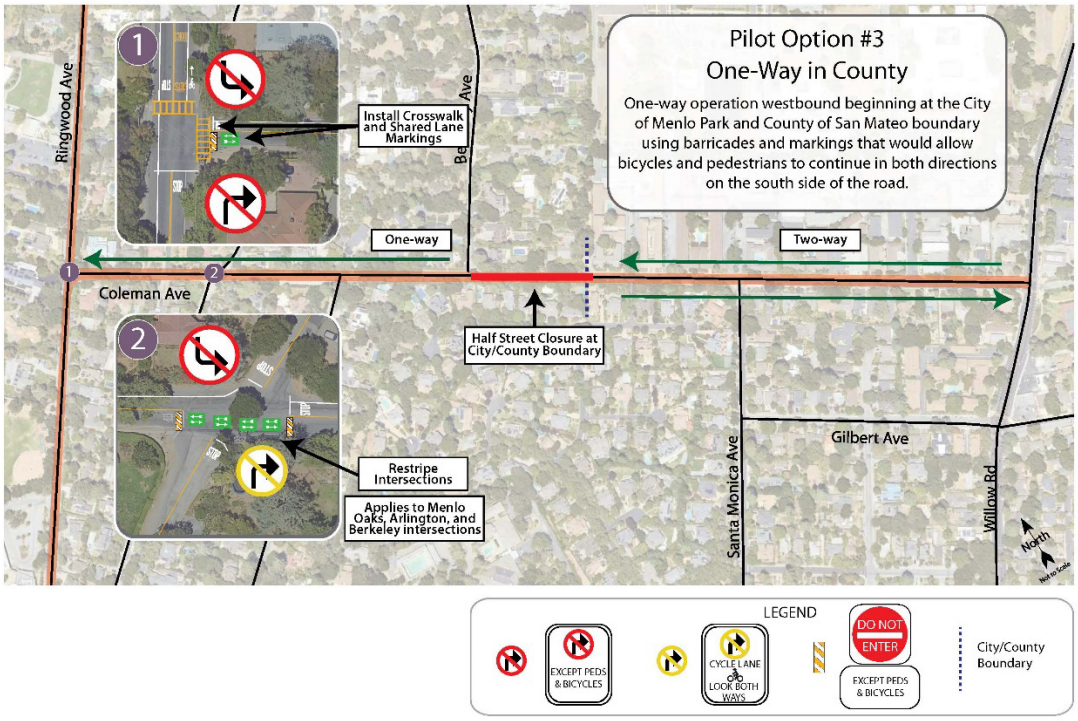

Plate 13 Pilot Option 3 – One-way Circulation in County

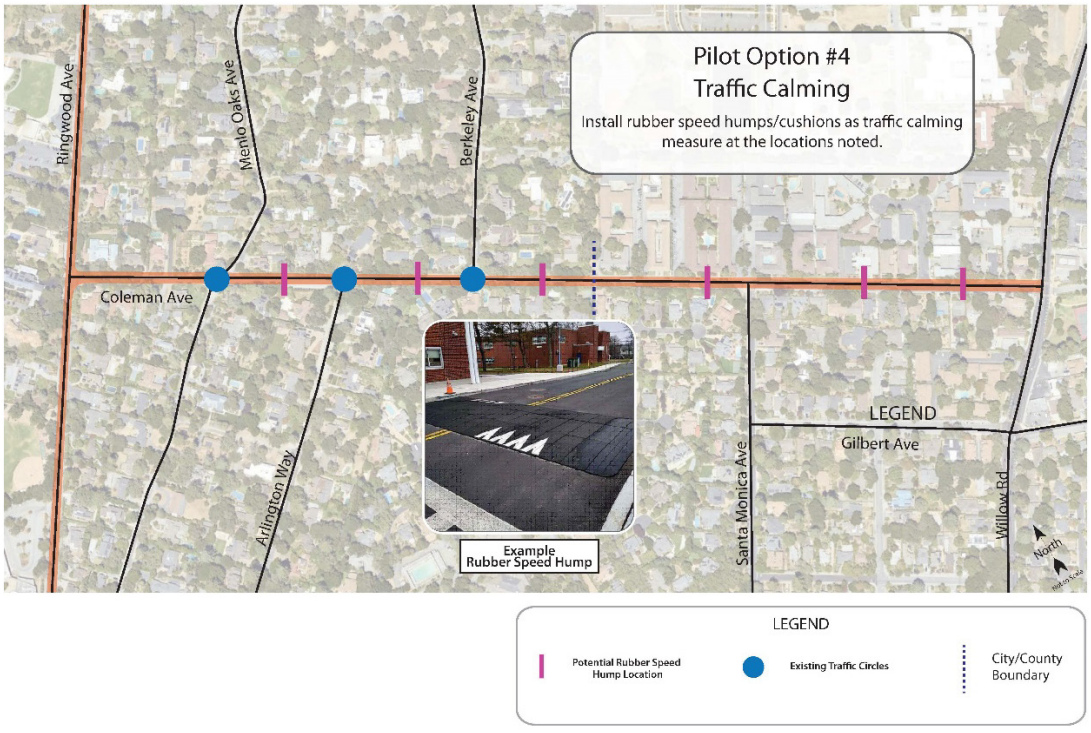

Plate 14 Pilot Option 4 – Traffic Calming

Two additional pilot options were developed for the City segment of Coleman Avenue subsequent to public outreach effort. These pilot options would require parking removal on one side of Coleman Avenue and are illustrated in Plates 15 and 16. If one of these options is selected, careful consideration will need to be given to the transitions at Willow Road and the County segment.

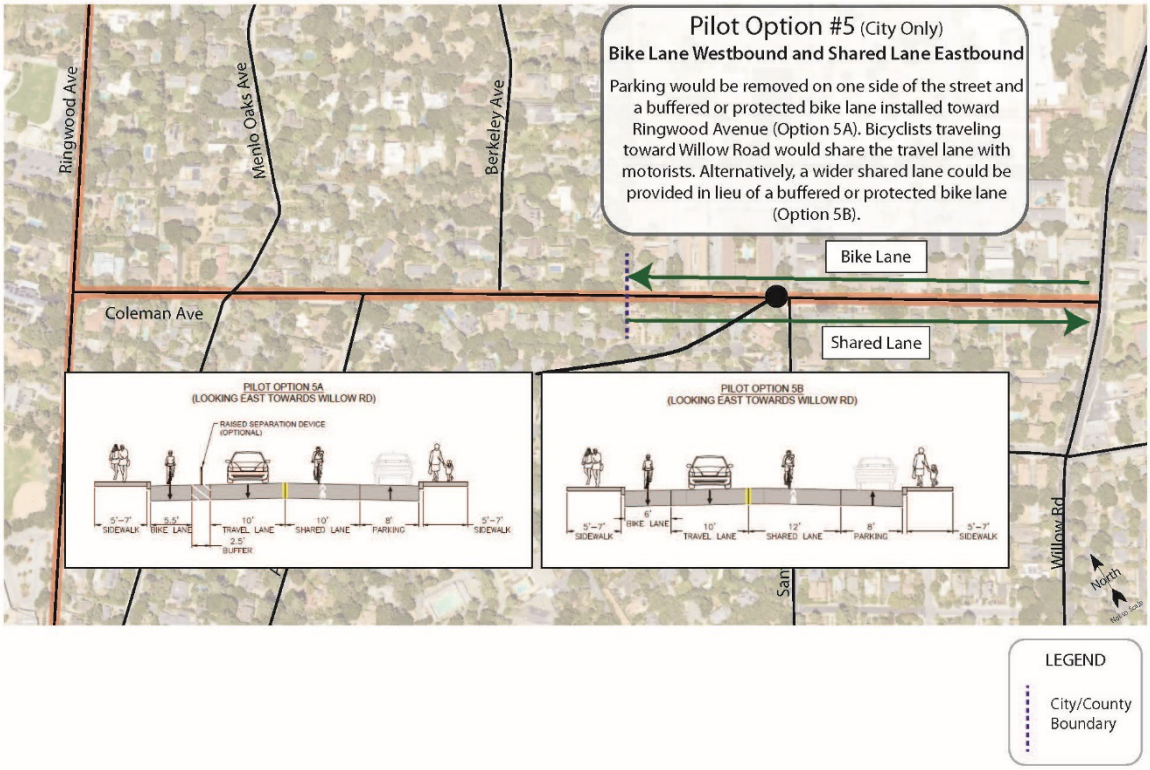

Plate 15 Pilot Option 5 (City only) – Bike Lane Westbound and Shared Lane Eastbound

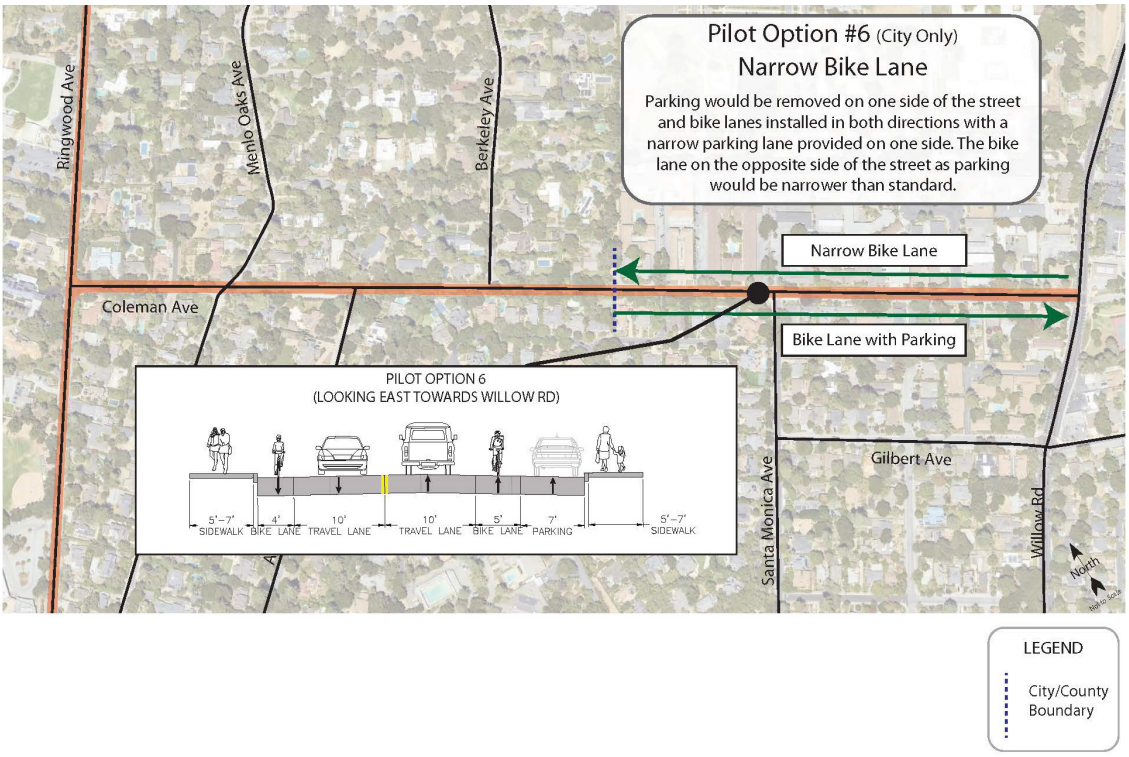

Plate 16 Pilot Option 6 (City only) – Narrow Bike Lanes

Ringwood Avenue

For Ringwood Avenue, a single long-term design alternative was identified. This alternative includes retaining the existing bike lanes and formalizing an asphalt pathway on the west side of the corridor (the same side as the schools). Some pavement widening would be required near Laurel School Lower Campus to install a protected bike lane in the southbound direction, which would prevent vehicles from queuing in the bike lane during school pick-up and drop-off. Like Coleman Avenue, the alignment of the off-street pathway would be flexible to minimize tree removal, with between 16 and 25 of the approximately 425 existing trees estimated to be impacted depending on final design and the expertise of an arborist at a future stage. The alternative could include the following traffic calming measures dependent on further evaluation:

- Speed tables;
- Narrower (10 foot) travel lanes;
- Green bike lane conflict zone markings;
- Speed feedback signs;
- Speed reduction markings;
- Enhancements to the intersection with Coleman Avenue including new crosswalks on all legs; and
- Tighter turning radii at the intersection with Colby Avenue.

The long-term design alternative is illustrated conceptually in Plates 17-19 which represent the segments adjacent to the high school and elementary schools, respectively.

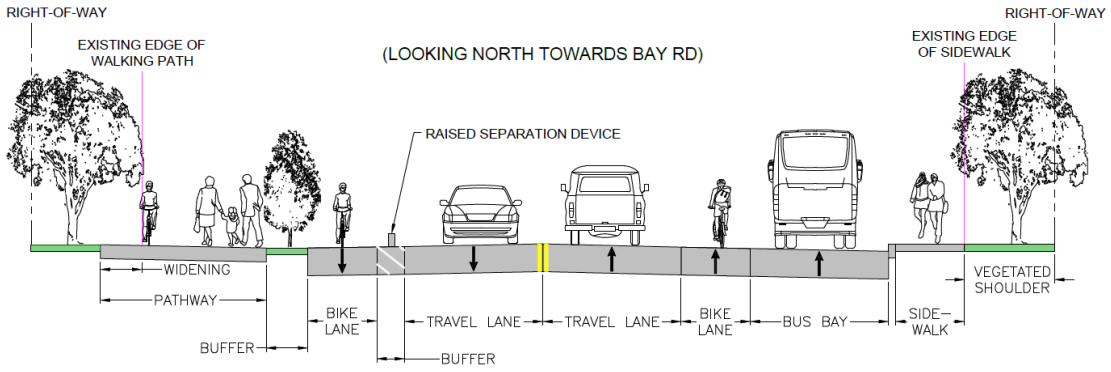

Plate 17 Ringwood Avenue (Menlo Atherton High School) Long-term Alternative Bike Lanes (Protected near Schools) with Off-street Pathway

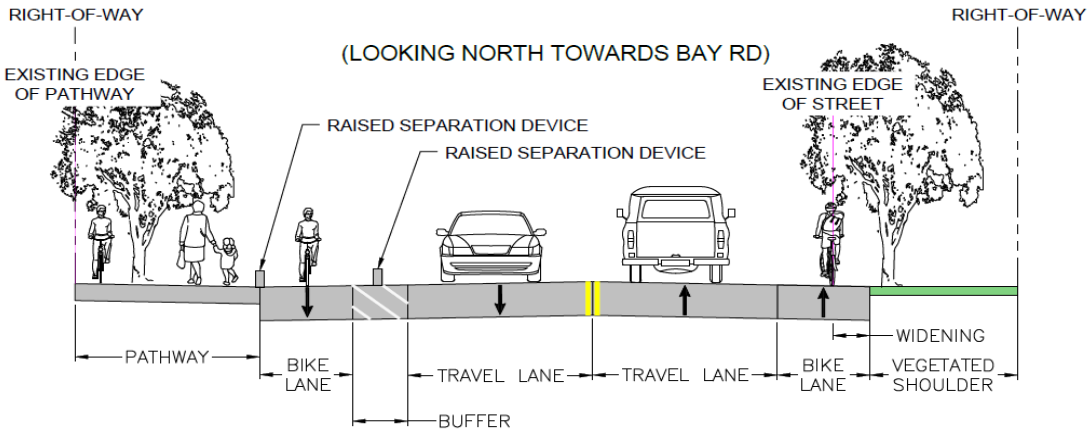

Plate 18 Ringwood Avenue (Laurel School Lower Campus) Long-term Alternative Bike Lanes (Protected near Schools) with Off-street Pathway

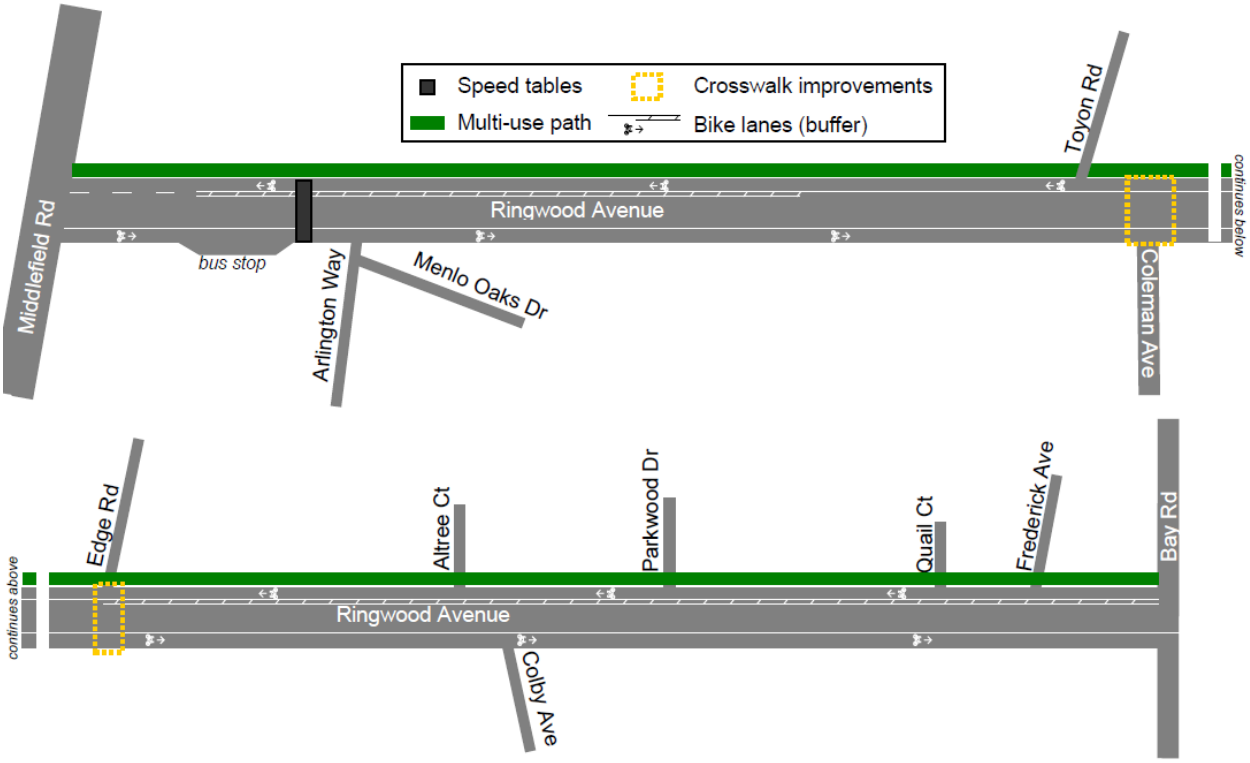

Plate 19 Ringwood Avenue Long-term Alternative Plan View Schematic Bike Lanes (Protected near Schools) with Off-street Pathway

Other alternatives considered for Ringwood Avenue included:

- removing the existing bike lanes in exchange for a dedicated loading and parking zone with a wide shared use pathway;
- bike lanes and dedicated pedestrian pathways;
- pursuing only traffic calming; and
- a no-build alternative that retained existing conditions.

In general, the removal of some trees to provide space for the pathway, and pavement widening were not viewed as negatively by the community for Ringwood Avenue compared to Coleman Avenue. There were greater concerns expressed if removal of the right turn lane at the high school would be required and the associated potential impacts to queueing during the critical afternoon pick-up period.

Cost Estimates

Planning-level cost estimates were prepared for all long-term alternatives considering environmental clearance, design, right-of-way engineering, construction, and project administration. Additionally, costs were estimated for the pilot options considering installation, design services, data collection, evaluation, and public engagement. These estimates were developed based on conceptual design details and actual costs will vary depending on various factors including the final design details and construction costs during the year that the project goes out to bid. These costs are summarized in Table 2.

Detailed Cost Estimates

Cost Estimates for the top two long-term design alternatives for each corridor and all six pilot options are contained in ***Appendix F****.*

Table 2 – Planning Level Cost Estimates		
Roadway	**County Cost**	**City Cost**
Coleman Avenue		
Long-Term Alternative	$3,728,000	$3,931,000
Total	**$7,659,000**	
Pilot Option 1	$82,000	
Pilot Option 2	$101,000	
Pilot Option 3 (County only)	$159,000	-
Pilot Option 4	$125,000	
Pilot Option 5 (City only)	-	$137,000
Pilot Option 6 (City only)	-	$117,000
Ringwood Avenue		
Long-Term Alternative	$6,569,000	$1,472,000*
Total	**$8,041,000**	

*A portion of these improvements would be within the Town of Atherton

Next Steps

All design alternatives and pilot options evaluated as part of this Study include tradeoffs based on the existing conditions and constraints present on the corridors. On the Coleman Avenue segment within Menlo Oaks, the dialogue with the community revolved around the potential loss of trees in exchange for new bike and pedestrian infrastructure, and potential increases in traffic volumes on neighboring streets in exchange for reduced traffic volumes on Coleman Avenue. Along the City of Menlo Park segment of Coleman Avenue, the tradeoffs include reduced on-street parking to achieve improved walking and biking conditions. On Ringwood Avenue, tradeoffs discussed included potential increases in vehicle delays and queuing during peak school periods to provide safer dedicated bike and pedestrian facilities.

Recognizing that there is no single perfect solution, this Study identified a set of potential options that would largely be accepted by the community. The County of San Mateo and City of Menlo Park will work together to discuss potential next steps to implement mobility and safety improvements on Coleman and Ringwood Avenues.

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Community Based Organizations

Live in Peace
Climate Resilient Communities

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Appendix A

Existing Conditions Memorandum

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Memorandum

Date: October 12, 2022

Project: SMX900-2

To: Vanessa Castro,
County of San Mateo; and
Hugh Louch, City of Menlo Park

From: Mark Spencer
mspencer@w-trans.com

Subject: Coleman and Ringwood Avenues Transportation Study – Existing Conditions

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This memorandum serves to summarize the existing transportation conditions and previous planning efforts that will inform the development of potential design alternatives for Coleman and Ringwood Avenues moving forward. W-Trans has reviewed existing background and planning documentation relative to transportation conditions in the study area and compiled various data sources including traffic counts, vehicle speed data, roadway cross section measurements, and capacity results. In addition, the collision histories for both corridors were reviewed in detail and collision rate calculations have been prepared.

Study Area

The study area consists of Coleman Avenue between Ringwood Avenue on the west and Willow Road on the east and Ringwood Avenue between Middlefield Road on the south and Bay Road on the north. It is noted that while both roadways are aligned on a skewed orientation from true north-south or east-west, for the purposes of this study Coleman Avenue was assumed to be oriented east-west and Ringwood Avenue north-south. Both roadways are partly within the unincorporated community of Menlo Oaks and the City of Menlo Park. The County of San Mateo's jurisdiction on Coleman Avenue extends from Ringwood Avenue to approximately 150 feet west of Riordan Place at the beginning of the Coleman Arms Apartments frontage; the City of Menlo Park has jurisdiction from this point to the east. On Ringwood Avenue, the section at the southern end of the study area between Middlefield Road and Arlington Way is located within the City of Menlo Park, while the rest of the roadway up to Bay Road is located within the County of San Mateo; the properties fronting the west side of the corridor are located within the Town of Atherton. A map of the study area is shown in the attached Figure 1.

The land uses along Coleman Avenue are primarily residential with many single-family homes accessed directly from the roadway in the County's jurisdiction. Within the City of Menlo Park, Coleman Avenue is fronted by numerous apartment buildings on the north side of the street and single-family homes on the south side. Ringwood Avenue is also fronted by primarily residential uses, though two schools are located on the west side of the corridor. Menlo-Atherton High School (MAHS) fronts the southern approximately one-third of the study area and Laurel School Lower Campus (serving kindergarten through second grade) is positioned near the middle of the segment to the north of the intersection with Edge Road. There is a combination of homes that are accessed from side streets and those with their driveways directly on Ringwood Avenue. The attached Figure 2 shows the land use zoning for the study area, which is composed of residential, public facilities, and school districts. The existing uses are consistent with the zoning and the study area is mostly built out, though recent State legislation and County regulations such as the County's Accessory Dwelling Unit (ADU) Ordinance allow for additional housing units to be built in certain areas, including the Study Area. These regulations could impact future traffic volumes and patterns if owners in the area decide to build additional units on their properties. However, given the current zoning in this area, it is unlikely for large new development to occur; therefore, traffic volumes and

patterns are unlikely to substantially change in the future as a result of new development. Modifications to the schools located on the corridors and enrollment adjustments would have the greatest potential to impact future traffic volumes.

Roadway Characteristics

Coleman Avenue

Coleman Avenue spans approximately 0.7 miles between Ringwood Avenue and Willow Road and has a single travel lane in each direction. Within the County's jurisdiction, the roadway has two 11-foot travel lanes separated by a raised pavement marker centerline and a striped shoulder on the north side of the street that varies between two and four feet wide. The roadway shoulders are occupied by a combination of gravel, dirt, and vegetation with numerous large mature oak trees and utility poles located within the public right-of-way. It should also be noted that the intersections with Menlo Oaks Drive, Arlington Way, and Berkeley Avenue have traffic circles with oak trees in the center of the intersections. The right-of-way available on Coleman Avenue is approximately 63 feet wide between Ringwood Avenue and Menlo Oaks Drive, 55 feet wide between Menlo Oaks Drive and Arlington Way, and varies between 50 and 58 feet wide between Arlington Way and County/City Limits. A typical cross section for this section of Coleman Avenue west of Berkeley Avenue is shown in Plate 1.

Plate 1 Coleman Avenue West of Berkeley Avenue (County of San Mateo) Looking East

The section of Coleman Avenue in unincorporated San Mateo County has a posted speed limit of 25 miles per hour (mph) with an 85th percentile speed of 29 mph and an average travel speed of 24 mph based on speed data collected in March 2016. Both the measured 85th percentile and average travel speeds are consistent with expectations for the posted speed limit. This section of the roadway has an average daily traffic (ADT) volume of approximately 3,500 vehicles on weekdays, with a split of 1,900 vehicles eastbound and 1,600 vehicles westbound. The peak hours are generally aligned with the start and end times of local schools with the morning peak hour occurring between 7:45 and 8:45 a.m. which is the highest hour of the day and the afternoon peak hour occurring between 2:30 and 3:30 p.m.

Within the City of Menlo Park's jurisdiction, Coleman Avenue is classified as a Bike Boulevard according to the City's General Plan and has a curb-to-curb width of approximately 36 feet, which allows for a single travel lane in each direction and on-street parking on both sides of the street. Full sidewalk connectivity is provided except for a section about 120 feet long on the south side of the street to the west of Riordan Place. The public right-of-way available to the east of College Avenue is approximately 50 feet, which includes two feet of property behind the sidewalk on both sides of the street. A typical cross section for Coleman Avenue within the City of Menlo Park is shown in Plate 2.

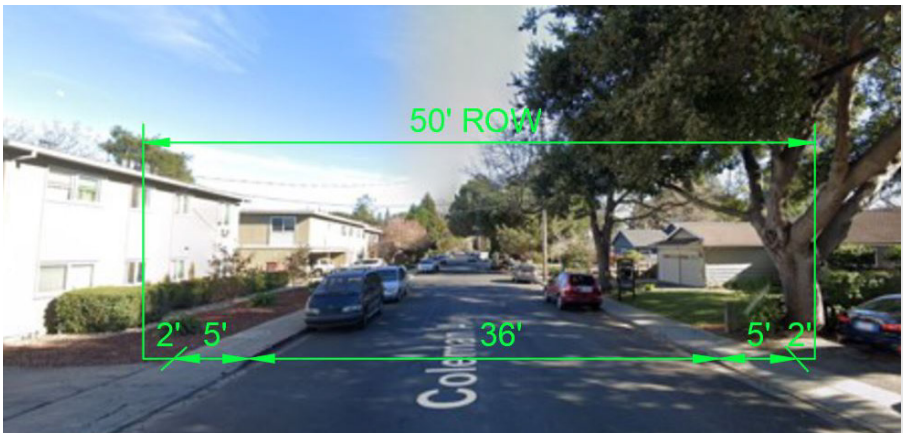


Plate 2 Coleman Avenue East of Santa Monica Avenue (City of Menlo Park) Looking East

Based on traffic count data collected in April 2017, this section of Coleman Avenue has an ADT of approximately 3,200 vehicles on weekdays, including 2,000 eastbound and 1,200 westbound. The directional split for any given street is generally relatively balanced over the course of a typical day so the fact that Coleman Avenue carries a traffic load that is approximately 40 percent higher eastbound than westbound may indicate that the street is being used as a "cut-through" by motorists that that would otherwise have used Middlefield Road and Willow Road. Given the documented congestion on these roadways during the afternoon and evening peak periods, many motorists wishing to travel eastbound on Middlefield Road and then northbound on Willow Road have likely found it to be quicker to use Ringwood and Coleman Avenues as a bypass or are directed to do so by mobile traffic apps such as Waze, Google, or Apple maps.

Streetlight Data from 2019 was used to estimate the percentage of trips on Coleman Avenue that pass through the entire study area without making a stop at a destination on either Coleman or Ringwood Avenue or turning onto a connecting minor street, thus indicating a cut-through trip. It is estimated that approximately 28 percent of the average daily weekday trips are of passing through the neighborhood. While Coleman Avenue may provide a shorter route from motorists traveling to the adjacent neighborhoods of Lindenwood or Belle Haven, it is more likely that the cut-through traffic is associated with avoiding congestion on Middlefield Road, Willow Road, or Bay Road.

Ringwood Avenue

The section of Ringwood Avenue between Middlefield Road and Bay Road is approximately 0.9 miles long with two 11-foot travel lanes to the north of Arlington Way and three travel lanes to the south. A southbound right-turn lane is provided at the MAHS driveway and continues to the intersection with Middlefield Road. Class II bicycle lanes are provided in both directions. Most of Ringwood Avenue is located within the County of San Mateo except for the southernmost approximately 550 feet which is within the City of Menlo Park and Town of Atherton. The public right-of-way available on Ringwood Avenue is 55 feet wide along most of the segment, though is slightly wider at 57 feet near the intersection with Middlefield Road. Private fences are generally set at the right-of-way boundaries, though there is private landscaping encroaching on the right-of-way near Laurel School Lower Campus. Similar to Coleman Avenue, the roadway shoulders are occupied by a combination of gravel, dirt, and vegetation with numerous trees and utility poles located within the public right-of-way. A typical cross section for the portion of Ringwood Avenue within the County is shown in Plate 3.

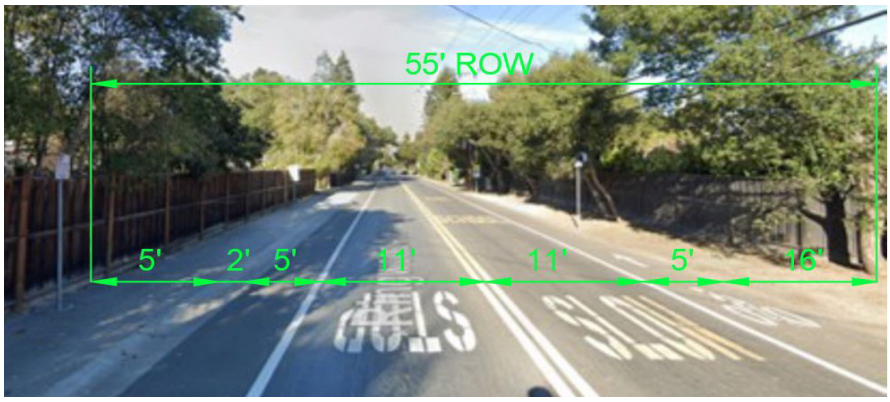


Plate 3 Ringwood Avenue North of Coleman Avenue (County of San Mateo) Looking North

The roadway has a posted speed limit of 30 mph with an 85th percentile speed of 33 mph and an average travel speed of 28 mph based on speed data collected in March 2016. Traffic volumes are relatively consistent across the study segment, though taper off slightly from south to north with a weekday ADT of about 7,100 vehicles along the MAHS frontage, 6,900 vehicles near the middle of the segment north of Coleman Avenue, and 6,800 vehicles at the northern end of the segment near Bay Road. The morning peak hour on Ringwood Avenue aligns with the school drop-off period from 7:30 a.m. to 8:30 a.m. and the highest volumes of the day occur during the evening peak hour between 4:30 and 5:30 p.m., though volumes are consistently elevated between approximately 3:00 and 6:00 p.m. due to a combination of school and commute traffic.

Streetlight Data from 2019 indicates that approximately 38 percent of the average daily weekday trips on Ringwood Avenue originate outside of the study area and pass through the study area without stopping at a designation or turning onto a connecting minor street. Compared to Coleman Avenue, this percentage is approximately ten percent higher, which is consistent with expectations given that Ringwood Avenue is a primary connection between Middlefield Road and Bay Road.

Potential COVID-19 Impacts on Data

While the government mandates and restrictions associated with the COVID-19 public health pandemic have eased in 2022, the pandemic is still ongoing to some degree, so the decision was made to rely upon pre-pandemic traffic volume and speed data for this study rather than collect new data or use data that was collected during the height of the pandemic in 2020 and 2021. The lasting effects of COVID-19 on our transportation system remain to be seen and will certainly vary from one facility and location to another based on many factors, though given the shift to permanent or part-time remote work in many industries both full- and part-time, many jurisdictions in the Bay Area have observed a decrease in traffic volumes as fewer people are commuting to work five days a week compared to before the pandemic. Data collected in May 2021 indicates that traffic volumes have decreased approximately seven percent on Coleman Avenue since 2017 and nearly 25 percent on Ringwood Avenue since 2016, though given the uncertainty surrounding to what degree traffic volumes will rebound to pre-pandemic levels, the higher pre-pandemic volume data was retained to provide a conservative assessment of existing transportation conditions.

Existing Pedestrian Facilities

Pedestrian facilities include sidewalks, pathways, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a connected network of sidewalks is provided on the sections of Coleman and Ringwood Avenues within the City of Menlo Park, while pedestrian facilities are limited within the County of San Mateo. Neither the County of San Mateo nor the City of Menlo Park have any adopted standards for evaluating the operation of pedestrian facilities such as Pedestrian

Quality of Service (QOS) or Level of Traffic Stress (LTS). The attached Figure 3 presents a map of the existing pedestrian, bicycle, and transit facilities in the study area.

Coleman Avenue

A dedicated pedestrian facility is lacking on the section within the County of San Mateo, though there is a striped shoulder on the north side of the street that varies between one and four feet wide that many pedestrians use in conjunction with the adjacent soft shoulder composed of mostly dirt and gravel. The paved shoulder is four feet wide on average, though the usable pavement area is less along some parts of the corridor as portions of the pavement have eroded away or are covered with dirt or gravel. Within the City of Menlo Park, full sidewalk coverage is provided on both sides of the street except for a short section on the south side of the street to the west of Riordan Place. The only crosswalks across Coleman Avenue are provided at the side-street stop-controlled intersection with Santa Monica Avenue and the signalized intersection with Willow Road. The uncontrolled crossing at Santa Monica Avenue is a yellow ladder-style crosswalk on the west leg of the intersection with curb ramps and pedestrian crossing signage on both sides of the street. Additionally, a curb extension is provided on the southeast corner of the intersection. The intersection of Coleman Avenue/Willow Road has yellow continental style crosswalk markings with pedestrian phasing on all four legs of the intersection; curb ramps are provided on all four corners.

Ringwood Avenue

Sidewalks are present on both sides of the street at the southern end of the study segment within the City of Menlo Park, then transition to a paved shoulder with a valley gutter on only the west side of the street within unincorporated Menlo Oaks. The paved shoulder with valley gutter extends all the way to Bay Road, though the section along the Laurel School frontage includes an asphalt concrete (AC) dike for additional separation, which is essentially a six-inch raised curb between the pathway and the bike lane. A valley gutter is used primarily for drainage purposes and as such does not provide much protection to pedestrians, while an AC dike offers more protection and has a better chance of redirecting an errant vehicle away from the walking path. The AC dike is show in Plate 5 and the paved shoulder with valley gutter is shown in Plate 4.

Plate 5 Asphalt concrete (AC) dike

Plate 4 Valley gutter

Crosswalks across Ringwood Avenue are provided at the following locations.

- Ringwood Avenue/Middlefield Road: Yellow "basic" style crosswalk markings are provided on all four legs of the intersection with pedestrian signal phasing and curb ramps on all four corners, though three of the four curb ramps do not have truncated domes.
- Ringwood Avenue/Coleman Avenue: Yellow continental-style crosswalk markings are provided on the north leg of the all-way stop-controlled intersection.
- Ringwood Avenue/Edge Road: Yellow ladder-style crosswalks are striped on the north and west legs of the side-street stop-controlled intersection. The uncontrolled crossing on Ringwood Avenue has advance yield markings and pedestrian-activated flashing crossing signage.
- Ringwood Avenue/Colby Avenue: A yellow ladder-style crosswalk is marked on the north leg of the intersection with advance yield markings and pedestrian-activated flashing crossing signage.

Pedestrian count data collected in April 2017 indicates that approximately 70 pedestrians cross Ringwood Avenue near Coleman Avenue during the morning peak hour and 114 pedestrians cross during the afternoon peak hour when school lets out.

Existing Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2017, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway. A Bicycle Boulevard is a variation of a Class III facility.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a physical separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

Generally, the comfort level and safety for cyclists tends to progressively increase beginning with Class III then moving to Class II to Class IV and ending with Class I, though there are many factors to consider when selecting the preferred type of bicycle facility for a specific location such as roadway context, vehicle speeds, and traffic volumes. Neither the County of San Mateo nor the City of Menlo Park have any adopted standards for evaluating the operation of bicycle facilities such as Level of Traffic Stress (LTS).

Ringwood Avenue has existing five-foot wide Class II bike lanes in both directions between Middlefield Road and Bay Road. These are the only existing dedicated facilities for cyclists in the study area. Count data collected in 2016 indicates a volume of approximately 137 cyclists on Ringwood Avenue near Coleman Avenue during the morning peak hour and 77 cyclists during the afternoon peak hour. While Coleman Avenue is classified as a Bicycle Boulevard in the City's General Plan, no signage or striping is provided to warn motorists to the presence of potential cyclists. Count data collected in February 2017 indicates a volume of approximately 100 cyclists on Coleman Avenue near Santa Monica Avenue during the morning peak hour and 81 cyclists during the afternoon peak hour.

While bicycle lanes are provided on Ringwood Avenue, parked vehicles can be an obstacle for cyclists as parking is permitted at several locations north of Coleman Avenue. The west side of the street is signed for "No Stopping" between 7:30 – 8:30 a.m. and 1:30 – 3:30 p.m. near Laurel Lower School, though motorists waiting in the loading zone queue block the bicycle lane during pick-up and drop-off periods at the school. Coleman Avenue is signed for "No Parking" between 7:30 – 9:30 a.m. and 2:00 – 4:00 p.m. within the Menlo Oaks area, though again parked

vehicles can be an obstacle for pedestrian and cyclists during times when parking is allowed. The type and locations of the various parking and stopping restrictions on the corridors is shown in the attached Figure 4.

Existing Transit Facilities

The San Mateo County Transit District (SamTrans) provides fixed route bus service in the study area and has transit stops on Coleman Avenue at Menlo Oaks Drive and Santa Monica Avenue and on Ringwood Avenue adjacent to MAHS, Coleman Avenue, Laurel School, Colby Avenue, and Fredrick Court. These stops are served by Routes 82, 86, and 88. SamTrans Routes 82 and 88 provide school bus service within Atherton and Menlo Park and Route 86 provides service between MAHS and Alpine Road south of I-280. It should be noted that transit services can change over time, though this information is accurate for the planned route changes effective as of August 7, 2022. The transit stop locations on the corridors are shown in Figure 3.

Collision History

5-Year Total Collisions

The collision history for both corridors was reviewed to determine any trends or patterns that may indicate a safety issue for motorists, pedestrians, or cyclists in the study area. Segment collision rates were calculated based on records available from the California Highway Patrol (CHP) as published in their Statewide Integrated Traffic Records System (SWITRS) reports as well as information within the Transportation Injury Mapping System (TIMS) database. The most current five-year period available is January 1, 2016, through December 31, 2020.

As presented in Table 1, the calculated collision rates for Coleman and Ringwood Avenues were compared to average collision rates for similar facilities statewide, as indicated in *2018 Collision Data on California State Highways*, California Department of Transportation (Caltrans). These average rates statewide are for roadways in the same environment (urban, suburban, or rural), with the same number of lanes and access restrictions, and similar travel speeds (less than or greater than 45 mph). The study roadways were compared to other two-lane conventional facilities in a suburban environment with travel speeds less than 45 mph.

Table 1 – Collision Rates for the Study Roadways

Study Roadway	Number of Collisions (2016–2020)	Calculated Collision Rate (c/mvm)	Statewide Average Collision Rate (c/mvm)
Coleman Ave – Ringwood Ave to Willow Rd	12	2.68	1.60
Ringwood Ave – Middlefield Rd to Bay Rd	8	0.71	1.60

Note: c/mvm = collisions per million vehicle miles

During the five-year study period, a total of 12 collisions were reported on Coleman Avenue, six of which resulted in injuries, translating to a calculated collision rate higher than the statewide average for similar facilities. A total of eight collisions were reported on Ringwood Avenue resulting in five injuries and a calculated collision rate below the statewide average. Even though average speeds on Coleman Avenue are approximately four mph less than Ringwood Avenue and volumes are about half of those on Ringwood Avenue, four more collisions occurred on Coleman Avenue compared to Ringwood Avenue. The collision rate calculations are attached along with Figures 5 and 6, which map the total collisions that were reported on each segment by type and primary collision factor (PCF).

Of the 12 total collisions that occurred on Coleman Avenue, five were attributed to improper turning or driving including two collisions with parked vehicles and one with a fixed object, four were attributed to unsafe speed,

two were intersection automobile right-of-way violations, and the details for one collision are unknown. In terms of location, three collisions occurred near the intersection of Coleman Avenue/Menlo Oaks Drive (a rear-end, broadside, and a hit-object) and three collisions occurred near the intersection of Coleman Avenue/Willow Road (all rear-ends). Two collisions occurred near the intersection of Coleman Avenue/Coleman Place (a broadside and a rear-end) and four collisions occurred along an approximately 500-foot segment of Coleman Avenue between the Coleman Arms Apartments and Santa Monica Avenue (two sideswipes, a hit-object, and a collision with a cyclist).

Five of the eight collisions that occurred on Ringwood Avenue were attributed to unsafe speed, while two were intersection automobile right-of-way violations, and one was due to improper turning. Three of the collisions occurred near the intersection with Middlefield Road all of which were rear-ends, two collisions occurred near the intersection with Toyon Road both of which were broadsides, two collisions occurred on the north leg of the intersection with Coleman Avenue both of which were rear-ends, and a single rear-end collision was recorded at the intersection of Ringwood Avenue/Quail Court. The breakdown of crashes on each facility by PCF is summarized in Plate 6 and the individual collision details are summarized in Table 2.

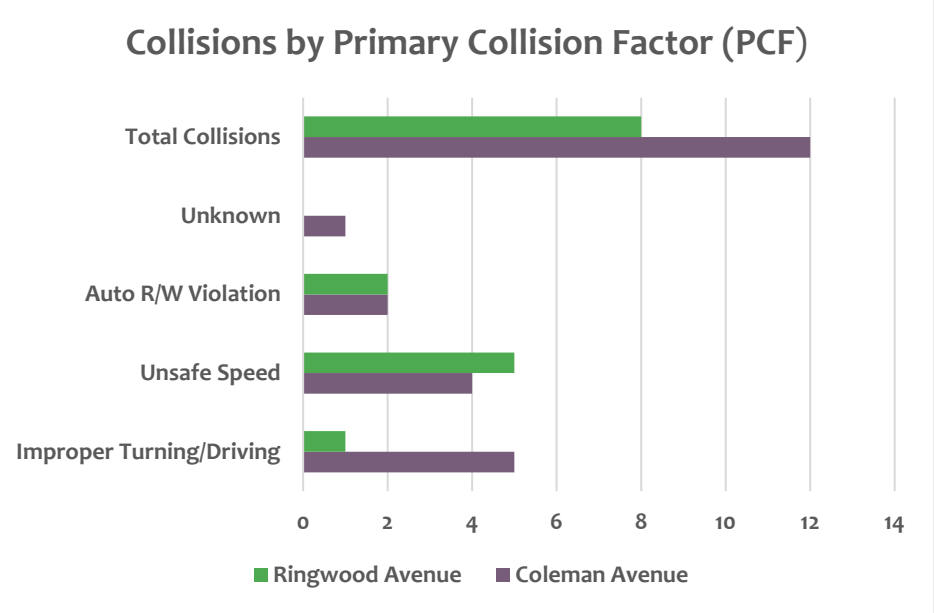


Plate 6 5-Year Total Collisions by Primary Collision Factor

Table 2 – 5-Year Individual Collision Details

Study Roadway Nearest Intersection	Date	Type	PCF	Injury (Severity)
Coleman Ave				
Coleman Pl	2/15/2016	Broadside	Improper Turning	No
Menlo Oaks Dr	2/22/2016	Rear-end	Unsafe Speed	No
Santa Monica Ave	6/15/2016	Bicycle	Auto R/W Violation	Yes (Other Visible)
Menlo Oaks Dr	9/8/2016	Broadside (Bicycle)	Auto R/W Violation	Yes (Other Visible)
Riordan Pl (72' East)	9/16/2016	Hit Object	Unknown	Yes (Other Visible)
Willow Rd	10/30/2016	Rear-end	Unsafe Speed	No
Menlo Oaks Dr	12/14/2016	Hit Object	Improper Turning	Yes (Other Visible)
Willow Rd	1/20/2017	Rear-end	Unsafe Speed	No
862 Coleman Ave	1/7/2018	Sideswipe	Improper Turning	No
Willow Rd	1/29/2018	Rear-end	Unsafe Speed	No
Santa Monica Ave (220' West)	2/12/2019	Sideswipe	Improper Turning	Yes (Other Visible)
Coleman Pl	5/19/2019	Rear-end	Improper Turning	Yes (Complaint of Pain)
Ringwood Ave				
Coleman Ave (56' North)	7/11/2016	Rear-end	Unsafe Speed	Yes (Other Visible)
Middlefield Rd	8/1/2016	Rear-end	Unsafe Speed	Yes (Unknown)
Toyon Rd	10/16/2016	Broadside	Auto R/W Violation	No
Middlefield Rd	10/27/2016	Rear-end	Unsafe Speed	Yes (Complaint of Pain)
Quail Ct	8/13/2017	Rear-end	Unsafe Speed	No
Middlefield Rd	12/4/2017	Rear-end	Improper Turning	No
Coleman Ave (46' North)	6/7/2019	Rear-end	Unsafe Speed	Yes (Other Visible)
Toyon Rd	10/1/2019	Broadside	Auto R/W Violation	Yes (Complaint of Pain)

Note: R/W = Right-of-way

10-Year Pedestrian and Bicyclist Collisions

In addition to total collisions for the most recent complete five years, crashes that involved pedestrians and bicyclists were reviewed for the last ten years. During the study period between January 1, 2011, and December 31, 2020, there were two collisions reported with pedestrians on Coleman Avenue, including one near the intersection with Ringwood Avenue and another at the intersection with Arlington Way. There were also four collisions reported with cyclists, including one each at the intersections with Menlo Oaks Drive, Arlington Way, Berkeley Avenue, and Santa Monica Avenue. All six collisions resulted in an injury to the pedestrian or cyclist. During the ten-year study period, three collisions involving bicyclists were reported on Ringwood Avenue, including one each near Coleman Avenue, Colby Avenue, and approximately 200 feet north of Parkwood Drive; the collision near Colby Avenue was the only incident not to result in an injury. Of the nine pedestrian or bicycle-involved crashes in the study area, seven occurred in 2015 or prior, two occurred in 2016, and none have been

reported since 2016. Figure 7 attached shows the pedestrian and cyclist-involved crashes in the study area and the individual collision details are summarized in Table 3.

Table 3 – 10-Year Individual Pedestrian and Bicycle Collision Details

Study Roadway Nearest Intersection	Date	Type	PCF	Injury (Severity)
Coleman Ave				
Arlington Wy	1/8/2014	Bicycle	Auto R/W Violation	Yes (Other Visible)
Ringwood Ave	3/5/2014	Pedestrian	Improper Turning	Yes (Other Visible)
Arlington Wy	9/20/2014	Pedestrian	Unsafe Starting/ Backing	Yes (Other Visible)
Berkeley Ave	3/18/2015	Bicycle	Wrong Side of Road	Yes (Other Visible)
Santa Monica Ave	6/15/2016	Bicycle	Auto R/W Violation	Yes (Other Visible)
Menlo Oaks Dr	9/8/2016	Bicycle	Auto R/W Violation	Yes (Other Visible)
Ringwood Ave				
Colby Ave	5/9/2013	Bicycle	Wrong Side of Road	No
Parkwood Dr (200' North)	2/22/2015	Bicycle	Improper Turing	Yes (Complaint of Pain)
Coleman Ave	6/16/2015	Bicycle	Unsafe Speed	Yes (Other Visible)

Note: R/W = Right-of-way

Vehicle Capacity

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. Operating conditions at key intersections in the study area, as analyzed for other recent planning efforts, were reviewed; no new capacity analysis was prepared for this project. Operating conditions at the intersection of Ringwood Avenue/Bay Road were most recently analyzed in the *Final EIR Traffic Impact Study for the Flood County Park Landscape Plan*, 2018 while the intersections of Ringwood Avenue/Middlefield Road and Coleman Avenue/Willow Road were most recently analyzed for the *City of Menlo Park Transportation Impact Fee Nexus Study*, 2020.

As shown in Table 4, the intersection of Ringwood Avenue/Bay Road operates at LOS C during the p.m. peak hour. While the a.m. peak hour was not evaluated in the traffic analysis prepared for the Flood County Park project, the evening peak hour is the critical peak hour in the study area with the highest volumes of the day so operations would be expected to be LOS C or better during the a.m. peak hour. The intersections of Ringwood Avenue/Middlefield Road and Coleman Avenue/Willow Road both operate at LOS C during the morning peak hour and at LOS F during the evening peak hour with delays that are well above what is considered the reasonable upper limit of the Highway Capacity Manual (HCM) methodologies.

Table 4 – Existing Peak Hour Intersection Levels of Service

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay	LOS	Delay	LOS
Ringwood Ave/Bay Rd	-	-	21.2	C
Ringwood Ave/Middlefield Rd	33.7	C	**>80**	**F**
Coleman Ave/Willow Rd	21.1	C	**>80**	**F**

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; **Bold** text denotes unacceptable operation per appliable jurisdiction standard

Planning Context

This effort is not the first time that these corridors have been studied for potential circulation improvements and in fact, there have been multiple previous planning efforts as residents and stakeholders have highlighted concerns about safety, accessibility, and need for improvements for more than two decades. Most recently, pedestrian and bicycle improvements to Coleman and Ringwood Avenues have been identified as priority projects in the *Unincorporated San Mateo County Active Transportation Plan* (ATP), 2021. Below is a summary of the notable previous studies and planning efforts conducted for the corridors.

2003 - San Mateo County Coleman Avenue Improvement Options Evaluation

The County evaluated six different alternatives for potential improvements to Coleman Avenue to improve mobility for all modes of transportation, and specifically walking and bicycling. Alternatives considered included the following:

- Option 1 – Class I multi-use pathway on one side of the street.
- Option 2 – Paved shoulder on both sides of the street.
- Option 3 – Sidewalk on a single side of the street.
- Option 4 – Sidewalk on both sides of the street.
- Option 5 – Graded shoulder area on one side of the street.
- Option 6 – Limit parking with minimal clearance.

Options 5 and 6 were supported by the community and ultimately implemented so are now part of the existing conditions.

2007 - Menlo Park Laurel School Safe Routes to School Study

Various improvements were evaluated, recommended, and ultimately installed on Ringwood Avenue to improve connectivity to Laurel School for active transportation modes. Improvements implemented as a result of the Safe Routes to School study included installation of:

- All-way stop controls at the intersection of Ringwood Avenue/Coleman Avenue along with a marked crosswalk on the north leg of the intersection,
- Crosswalks on Ringwood Avenue at Colby Avenue and Edge Road, and
- An asphalt concrete (AC) dike on the west side of Ringwood Avenue next to Laurel School.

As part of the study, improvements were also considered for Coleman Avenue, including closing the roadway at the County/City line, implementing a one-way eastbound path of travel for motorists, installing Class II bike lanes, and a multi-use pathway on one side of the street; however, no improvements were implemented.

2016 – Menlo-Atherton High School Transportation Demand Management Report

Prepared for an increase in school enrollment, this document established a Transportation Demand Management (TDM) Plan for MAHS and includes detailed travel mode statistics along with maps outlining the available options for sustainable modes of transportation in the vicinity of the school including bicycle facilities, pedestrian facilities, transit routes, and availability on-street parking. The goal of the TDM Plan is to achieve a combined 45 percent travel mode split for transit, walking, biking, and carpooling meaning that 45 percent of all trips to and from the school would be made by these modes of transportation. The Plan recommended the following TDM measures:

- Provide full and reduced sale transit passes to students.*
- Provide bike racks located in convenient spaces around campus.*
- Require a permit for students to park on campus.*
- Provide carpool incentives and coordination assistance.
- Organize school-wide walk and bike to school events.*
- Work with SamTrans to improve transit operations, specifically to relocate the southbound transit stop near Middlefield Road to improve pedestrian access for students and to improve vehicle access out of the southernmost MAHS driveway.*

Note: * = indicates measure has been implemented.

Annual monitoring was completed for five years following implementation of the TDM measures. Between 2015 and 2019, the percentage of students commuting to and from school via sustainable transportation modes such as walking, biking, and transit increased from 30 to 40 percent during the a.m. peak period and from 43 to 51 percent during the p.m. peak period.

2019 – City of Menlo Park Safe Routes to School Strategy

As part of a Citywide effort to support families walking, biking, and carpooling to school, "Walk and Roll to School" maps that identify preferred walking and biking routes to school were developed for Laurel School and MAHS. The maps include identification of intersection control types, crosswalks, bike parking, loading zones, bus routes and other facilities for active transportation modes on Coleman and Ringwood Avenues.

Links to online maps: *Laurel School Lower Campus*, *Menlo Atherton High School*

2020 – City of Menlo Park Transportation Master Plan

As a comprehensive evaluation of multimodal circulation within the City of Menlo Park, the Transportation Master Plan (TMP) includes numerous data sources and recommendations relative to the current effort for Coleman and Ringwood Avenues. The TMP recommends installation of Class II bike lanes on Coleman Avenue between Willow Road and Menlo Park City Limits as a Tier 1 Project, which would require removal of parking on one side of the street. The TMP also recommends coordination with the County of San Mateo for the roadway segment between the Menlo Park City Limits and Ringwood Avenue. Other recommended intersection improvements relative to the corridors are summarized below concept design plans are attached for reference.

- **Coleman Avenue/Willow Road**
  - Install right-turn lane on the eastbound Coleman Avenue approach with bike detection.
  - Refresh decorative crosswalk.
  - Evaluate the feasibility of protected-permitted left-turn phasing on Willow Road.
- **Ringwood Avenue/Bay Road**
  - Install a traffic signal.
  - Convert the northern Sonoma Avenue and Ringwood Avenue legs to one-way couplets.

  - Install left-turn lanes, as deemed necessary during design, on the northbound Ringwood Avenue and westbound Bay Road approaches.
- **Ringwood Avenue/Arlington Way**
  - Install a Rectangular Rapid Flashing Beacon (RRFB) system and a new high visibility crosswalk on Ringwood Avenue with ADA-compliant curb ramps.
- **Ringwood Avenue/Middlefield Road**
  - Remove eastbound Middlefield Road channelized right-turn lane and reconstruct curb ramp with reduced radius.
  - Replace crosswalks on the west and south legs.
  - Install two-stage left-turn queue boxes for cyclists traveling form Middlefield Road to Ringwood Avenue.

Link to online document: *City of Menlo Park Transportation Master Plan*

2021- Unincorporated San Mateo County Active Transportation Plan

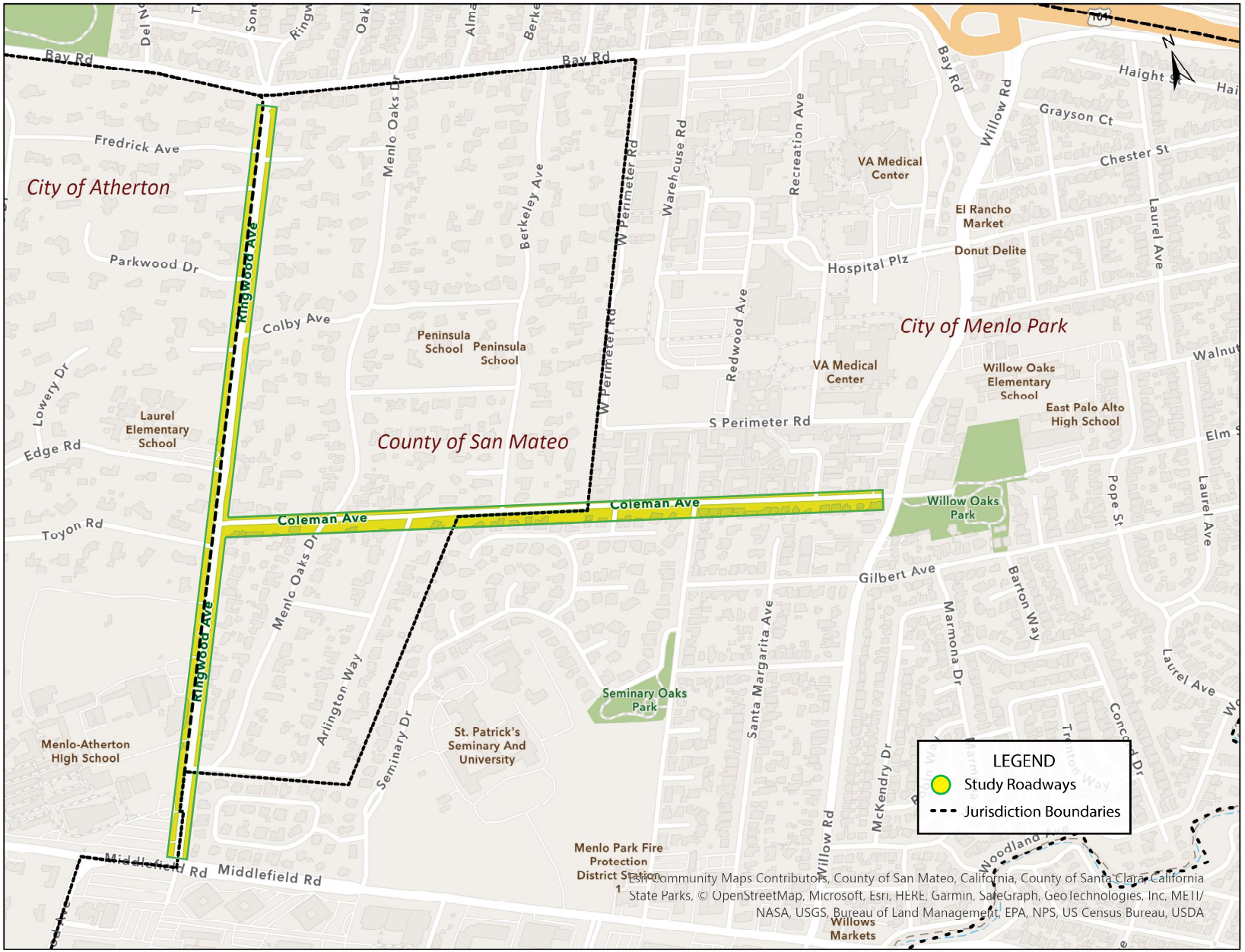
The County's Active Transportation Plan (ATP) establishes the framework to improve active transportation conditions for people walking and biking throughout unincorporated San Mateo County and identifies specific improvements for both Ringwood Avenue and Coleman Avenue with supporting conceptual improvement graphics. The ATP identifies the provision of traffic calming elements and a Class III Bicycle Boulevard on Coleman Avenue between Ringwood Avenue and County/City Limits and the provision of a shared-use path on Ringwood Avenue between Arlington Way and Bay Road. The Plan also identifies Laurel School and MAHS as a priority focus area that needs pedestrian enhancements and recommends provision of a pedestrian pathway along the north side of Coleman Avenue with vertical separation from the travel way.

Link to online document: *Unincorporated San Mateo County Active Transportation Plan*

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

MES/cn/SMX900-2.M1

Attachments: Figure 1 (Study Area)
Figure 2 (Land Use Zoning)
Figure 3 (Intersection Controls and Existing Pedestrian, Bicycle, and Transit Facilities)
Figure 4 (Parking Restrictions)
Collision Rate Calculations
Figure 5 (5-Year Total Collisions by Type)
Figure 6 (5-Year Total Collisions by Primary Collision Factor)
Figure 7 (10-Year Pedestrian and Bicycle Collisions)
Menlo Park TMP Conceptual Improvement Plans



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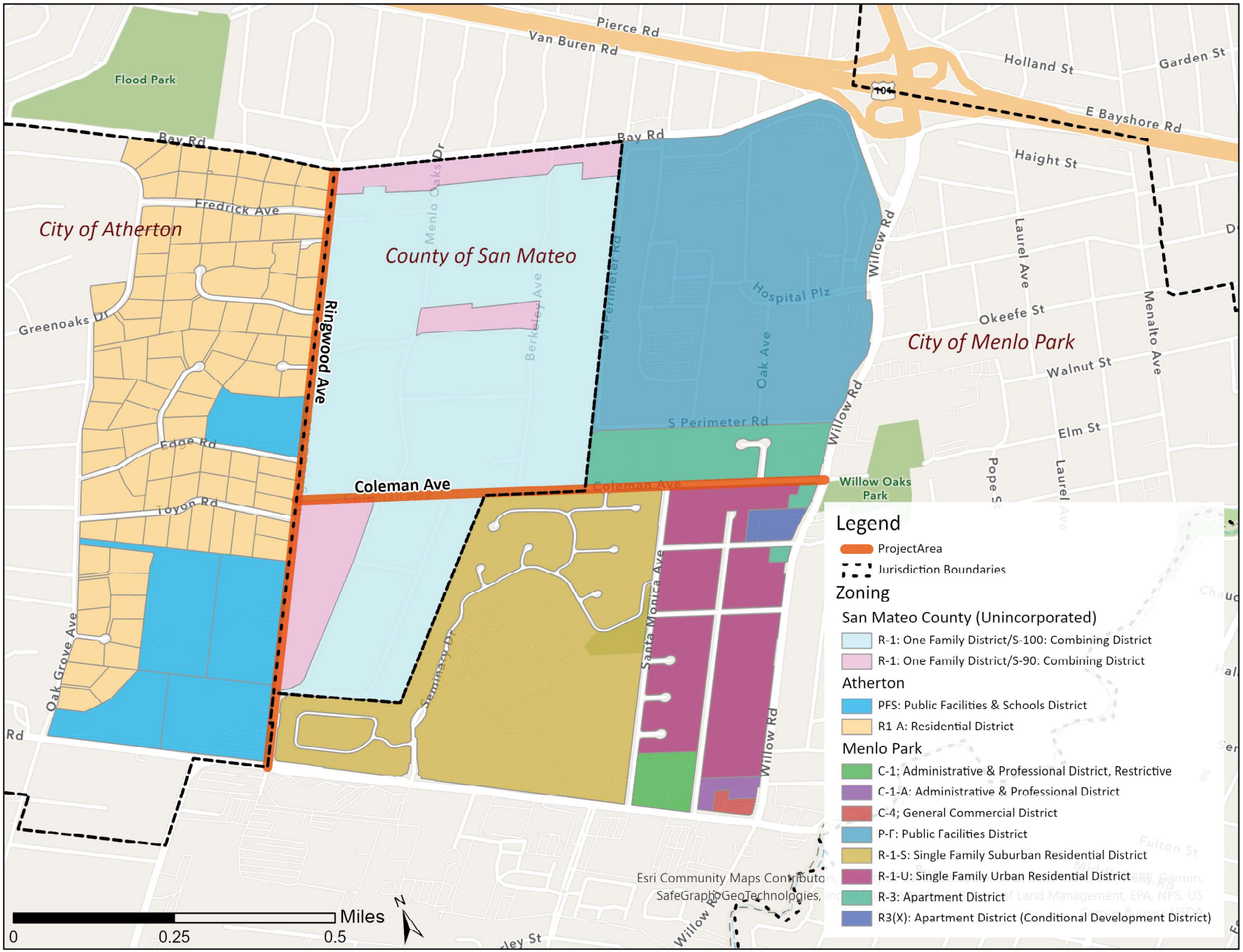
Coleman and Ringwood Avenues Transportation Study - Existing Conditions

Figure 1 – Study Area



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Coleman and Ringwood Avenues Transportation Study - Existing Conditions

Figure 2 – Zoning Map

W-Trans

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Coleman and Ringwood Avenues Transportation Study - Existing Conditions

Figure 3 – Intersection Controls and Existing Pedestrian, Bicycle, and Transit Facilities

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Coleman and Ringwood Avenues Transportation Study - Existing Conditions

Figure 4 – On-Street Parking Restrictions

Roadway Segment Collision Rate Worksheet

Coleman and Ringwood Avenues Transportation Study

Location: Ringwood - Middlefield to Bay

Date of Count: Friday, April 1, 2022
Average Daily Traffic (ADT): 6,900

Number of Collisions: 8
Number of Injuries: 5
Number of Fatalities: 0
Start Date: January 1, 2016
End Date: December 31, 2020
Number of Years: 5

Highway Type: Conventional 2 lanes or less
Area: Suburban
Design Speed: ≤45

Segment Length: 0.9 miles
Direction: North/South

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Segment Length} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{8 \times 1{,}000{,}000}{6{,}900 \times 365 \times 0.9 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**0.71 c/mvm**	**0.0%**	**62.5%**
Statewide Average*	**1.60 c/mvm**	**1.0%**	**38.3%**

Notes
ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* 2018 Collision Data on California State Highways, Caltrans

Location: Coleman - Ringwood to Willow

Date of Count: Friday, April 1, 2022
Average Daily Traffic (ADT): 3,500

Number of Collisions: 12
Number of Injuries: 6
Number of Fatalities: 0
Start Date: January 1, 2016
End Date: December 31, 2020
Number of Years: 5

Highway Type: Conventional 2 lanes or less
Area: Suburban
Design Speed: ≤45

Segment Length: 0.7 miles
Direction: East/West

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Segment Length} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{12 \times 1{,}000{,}000}{3{,}500 \times 365 \times 0.7 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**2.68 c/mvm**	**0.0%**	**50.0%**
Statewide Average*	**1.60 c/mvm**	**1.0%**	**38.3%**

Notes
ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* 2018 Collision Data on California State Highways, Caltrans

smx900-2.ai 5/22

Coleman and Ringwood Avenues Transportation Study - Existing Conditions

Figure 5 – 5-Year Total Collisions by Type

smx900-2.ai 5/22

Coleman and Ringwood Avenues Transportation Study - Existing Conditions

Figure 6 – 5-Year Total Collisions by Primary Collision Factor

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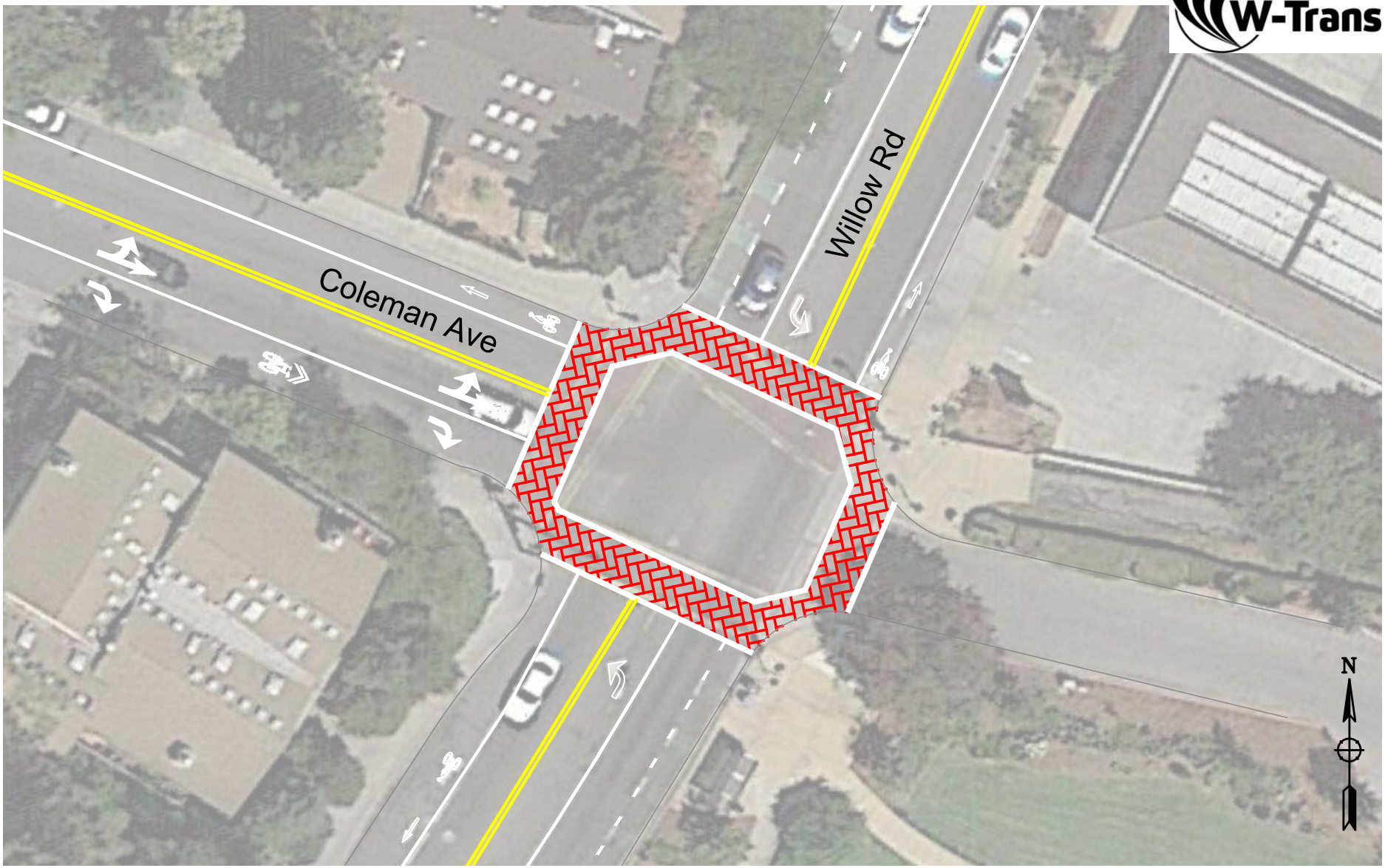
Coleman and Ringwood Avenues Transportation Study - Existing Conditions

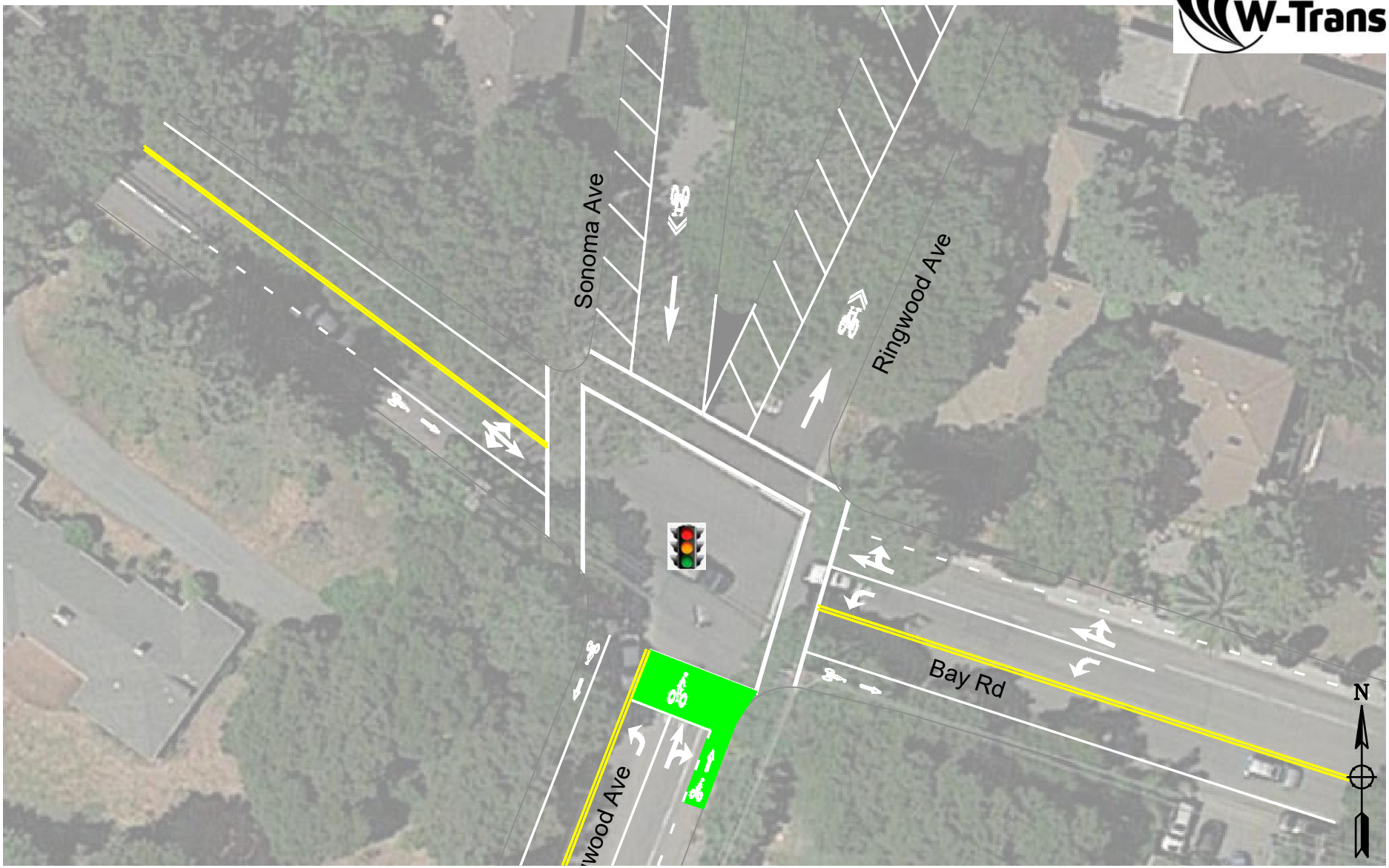
Figure 7 – 10-Year Pedestrian and Bicycle Collisions



Recommendation #45: Install right turn lane on north leg of Coleman Ave, install bike lanes on Coleman Ave north of Willow Road.

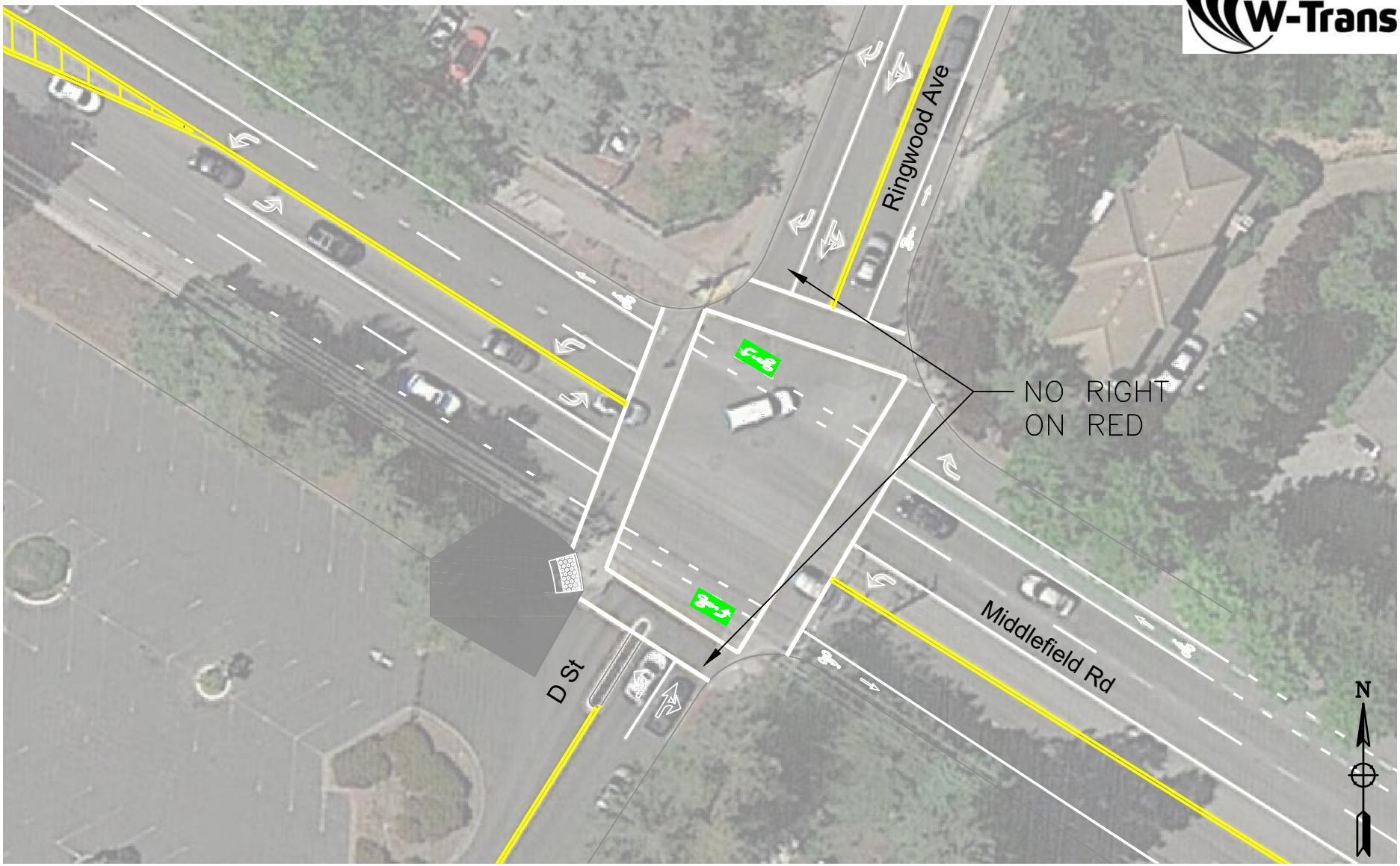
Advantages: improve overall intersection flow, provide dedicated bike lanes

Disadvantages: require on-street parking removal



Recommendation #53: Install signal and convert east legs to one-way couplets. Install left-turn lanes as necessary.

Advantages: Improved traffic flow. Average delays during the a.m. peak period are expected to be reduced by 23 seconds. Average delays during the p.m. peak period are expected to be reduced b
Disadvantages: removal of landscaping on Bay Road and Ringwood Avenue



Recommendation #64: Install two-stage left-turn boxes, crosswalks, conflict detection markings, and reconstruct northwest curb ramp

Advantages: improved pedestrian and bicycle crossings, reduced vehicle speeds

Disadvantages: right-turns are restricted when bicycles are present

Appendix B

Community Engagement Summary

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TOOLE DESIGN

1635 BROADWAY
SUITE 200
OAKLAND, CA 94612

510.298.0740
TOOLEDESIGN.COM

To: City of Menlo Park, County of San Mateo

From: Toole Design

Date: February 1, 2024

Study: Coleman and Ringwood Avenues Transportation Study

Subject: Community Engagement Summary

This memo provides a summary of all community engagement undertaken as part of the Coleman and Ringwood Avenues Transportation Study ("the Study"). Engagement was conducted over four phases:

- Phase 1, May 2022 – September 2022
  - Purpose: Build awareness of the study and solicit feedback on existing conditions and potential solutions
- Phase 2, May 2023 – June 2023
  - Purpose: Present preliminary design alternatives for both corridors and collect feedback
- Phase 3, September 2023 – October 2023
  - Purpose: Provide community with more time to review full concept plans, including slightly revised draft alternatives, and an opportunity to discuss the plans with City, County, and consultant team staff
- Phase 4, November 2023 – December 2023
  - Purpose: Assess public interest for potential Coleman Avenue Pilot Programs in additional to longer-term alternative options

PHASE 1 ENGAGEMENT

The summary below outlines the Phase 1 engagement activities, in rough chronological order, which occurred between May 2022 and September 2022. During this phase of engagement, the Study team encouraged stakeholder participation to build awareness of the study and solicit feedback on existing conditions and potential solutions for both avenues. Activities included:

- Pop-up Events (5 total)
- Community Survey #1
- Outreach Community Events (2 total)
- Walking Tours (2 total)

POP-UP EVENTS

The purpose of the Phase 1 pop-ups was to build Study awareness, generate feedback on existing conditions, and define values to inform future work. A summary of event dates, times, and locations for the Phase 1 pop-up events are provided below. Each of the pop-up events was managed and staffed on-site by a combination of two Toole Design staff and at least two County and City staff. Each event was held outdoors during an existing event

and/or during a time in which pedestrian and bike activity would be high (school free/lunch period and from immediately after school dismissal to commuting hours).

1: Menlo-Atherton High School (MAHS), Feel Good Friday Event

- Date: Friday, May 20, 2022
- Time: 12:40-1:25pm
- Location: Menlo-Atherton High School Campus

2: Ringwood Avenue

- Date: Friday, May 20, 2022
- Time: 2:30-5:30pm
- Location: Directly outside MAHS Soccer Field at the bike lockers along Ringwood Avenue

3: Coleman Avenue

- Date: Wednesday, May 25, 2022
- Time: 2:30-5:30pm
- Location: 868 Coleman Pl, Menlo Park, 94025

4: Laurel School Lower Campus (LSLC)

- Date: Monday, June 6, 2022
- Time: 2:30-2:30pm
- Location: On-campus next to library in courtyard used for child pick-up

5: Youth Day / Back to School

- Date: Saturday, August 13, 2022
- Time: 1:00-4:00pm
- Location: Bell Street Park, 550 Bell St, East Palo Alto, CA 94303

Ringwood Avenue Pop-Up

Activities and Materials

The following activities and materials were provided in both English and Spanish at each pop-up event:

- **Activity Board 1 –** Map Activity
    - Participants were asked to place stickers on a map to identify*:

        - Places the participant frequently visits
        - Places that participant feels need improvements for people walking, biking, or taking transit
- **Activity Board 2 –** Mode and Values Activity
    - Participants were asked to place stickers in the squares that best describe how they travel on Coleman / Ringwood Avenues (walk, bicycle, drive, take transit)*
    - Participants were asked to place stickers by the values that should guide the Study.* Values included but were not limited to safety, comfortable places to walk and bike, neighborhood character, and parking.

*More than one selection could be made

Post-its were provided so pop-up attendees could elaborate on their selections and add comments directly to the boards. Bottled water and granola bars were provided as incentives for completion of one or both activity boards.

- **Comment Card:** Simplified version of the online survey with comment field
- **Demographic Slip:** Elective information on participant demographics
- **Email Sign-up Sheet:** Name and email
- **Study Flyer:** Included a Study description and QR code to Study website/online survey

In addition to the activities and materials above, facilitators solicited informal feedback through one-on-one conversations with participants.

In-Person Input Collected

Menlo-Atherton High School (MAHS), Feel Good Friday Event

Activity	Total Responses
Activity Board 1 (stickers)	15**
Activity Board 2 (stickers)	96**
Comment Card	39*
Demographic Slip	14*

Ringwood Avenue

Activity	Total Responses
Activity Board 1 (stickers)	16**
Activity Board 2 (stickers)	56**
Comment Card	39*
Demographic Slip	14*

Coleman Avenue

Activity	Total Responses
Activity Board 1 (stickers)	58**
Activity Board 2 (stickers)	105**
Comment Card	18
Demographic Slip	13

Laurel School Lower Campus (LSLC)

Activity	Total Responses
Activity Board 1 (stickers)	27**
Activity Board 2 (stickers)	63**
Comment Card	3
Demographic Slip	1

Kids Day / Back to School Event

Activity	Total Responses
Activity Board 1 (stickers)	18**
Activity Board 2 (stickers)	33**
Comment Card	0
Demographic Slip	0

TOTAL

Activity	Total Responses
Activity Board 1 (stickers)	134**
Activity Board 2 (stickers)	353**
Comment Card	60
Demographic Slip	28

*Total responses from both MAHS and Ringwood Avenue pop-up events
**Total responses are not representative of total participants, as multiple responses/selections were allowed per participant.

Demographic Summary

Though pop-ups 1, 2 and 4 engaged primarily MAHS and LSLC students and parents, facilitators were able to speak with pass-through travelers and people of various ages, abilities, and demographics at each pop-up event. Pop-up 5 was particularly diverse with facilitators observing that most participants were Latino or Hispanic, and African American or Black.

Approximately half of the participants who completed demographic slips identified as white (45%), followed by Latino/a/e/x or Hispanic (25%), Asian or Asian American (17%), African American or Black (7%), and Multiracial (6%). This demographic breakdown is comparable to the greater Menlo Park area. The racial makeup of East Palo Alto and Belle Haven residents, however, who represent a significant Study stakeholder group, have a much higher percentage of African American or Black and Latino/a/e/x residents as compared to that of greater Menlo Park. This suggests remaining CBO-led Phase 1 activities and future Study engagement efforts target East Palo Alto and Belle Haven residents to capture more representative feedback from key stakeholders.

Key Takeaways

Key takeaways integrate the feedback received via the activity boards, comment cards, and individual conversations recorded between facilitators and participants.

Topic	Needs and Values
General (applies to both Coleman and Ringwood Avenues)	• Overwhelming support for improved bike and pedestrian infrastructure. • Safety, comfortable places to walk and bike, and preserving trees and greenery were frequently identified as the most important Study values. On-street parking was consistently ranked as a low-priority/value. • Speeding is an issue and there is a need for traffic calming measures. • Where there are sidewalks available, there is congestion, as many cyclists ride on the sidewalk due to a lack of on-street bike facilities.

Topic	Needs and Values

	• Side-by-side and social group bicycle riding is common in the area.
	• "Dooring" along both avenues was a noted safety issue for cyclists.
	• Desire for consistent and continuous bike and sidewalk facilities as well as streetscape amenities along both avenues.
	• Safe Routes to Schools efforts are underway to promote biking between Laurel School Upper and Lower Campuses at pick-up/drop-off times (for parents who have children who attend both schools).
	• Need for safety improvements at the intersections of Ringwood and Coleman.
	  ○ Road and shoulder narrow at far west end of Coleman which reduces the amount of travel room available for pedestrians and cyclists.
	  ○ Making a right turn from Coleman onto Ringwood, when biking, feels unsafe due to vegetation and parked cars which both reduce visibility and exacerbate the lack of area available for cyclists.
	• Belle Haven and East Palo Alto (EPA) residents sometimes feel unwelcome when traveling west of 101 and along the study corridors, particularly with law enforcement and unwelcoming neighbors. This was confirmed by the CBO Live in Peace, who added that police often harass Belle Haven/EPA residents in the study area/adjacent neighborhoods

Coleman Avenue	• Mid-block crossing opportunities along Coleman. • Speeding and poor visibility when coming out of east-end Coleman apartment complexes is an issue. Interest in either adding red curb to increase sight distance or putting up mirrors across from driveways to help exiting residents see past parked cars. • Sidewalk and roadway width vary along street, which makes the road unpredictable and more dangerous for those traveling on bikes who are suddenly forced further into traffic. • Coleman had more areas identified for improvement than Ringwood likely due to lack and inconsistency of sidewalks, bike lanes, and other streetscape amenities.
Ringwood Avenue	• There are serious safety concerns during MAHS and LSLC pickup/drop-off (the words *congestion* and *chaos* were used frequently). • Illegally parked cars (in shoulder and bike lane) impact cyclist safety. This is a particular issue during school pick-up and drop-off times as there are insufficient passenger pickup and drop off locations. • Cyclists cross Ringwood without crosswalks or crossing guards and this can be dangerous.

ONLINE SURVEY

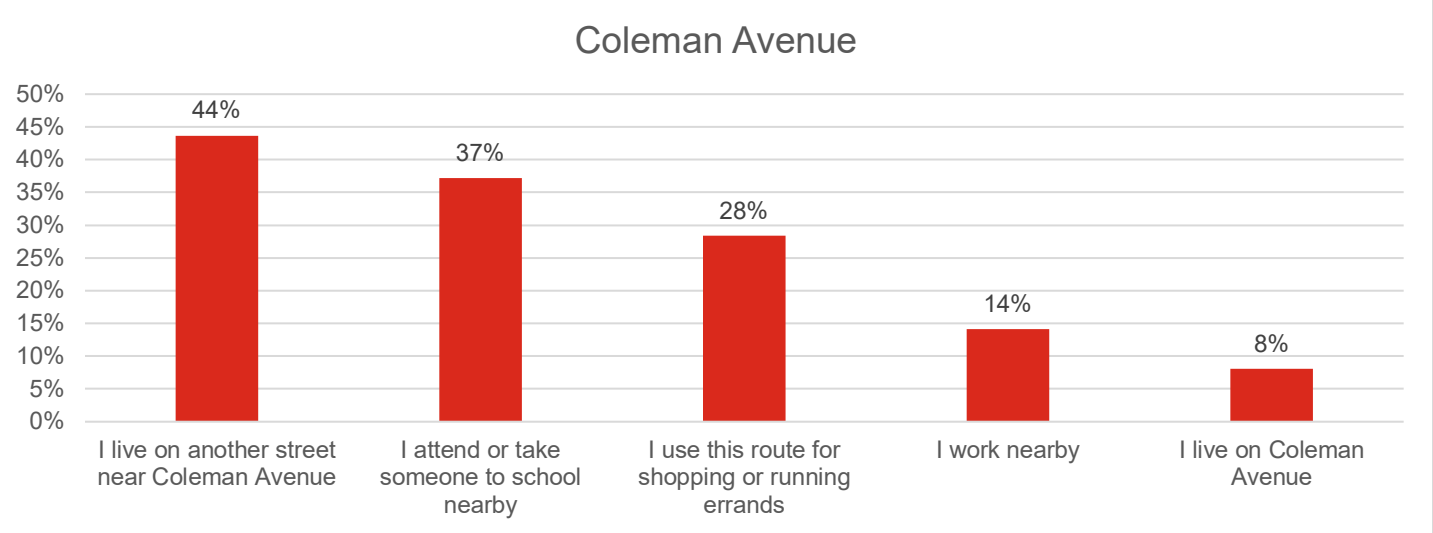
The first of two Study surveys were launched in Phase 1 and gathered feedback on community members' perceptions, priorities, and use of the corridors. The survey paired multiple choice questions on both avenues with an interactive map; where users could drop "points" at locations where they currently have issues or concerns. The questionnaire was open from May 20, 2022 – August 19, 2022, during which time the Study team received 238 submitted surveys, 197 of which came from unique IP addresses. The results below also include the multiple choice and demographic question results from 25 paper/physical surveys that were distributed and collected at Live in Peace Family Night.

Multiple Choice Questions

In this portion of the survey, questions were focused on understanding participants' reason for travel on both avenues, as well as priority Study values, and key safety concerns. In most instances, response breakdowns for key questions are provided as percentages. Percentages were calculated by dividing the number of total selections by the total number of submitted surveys, as such percentages do not always add up to 100% as respondents were allowed multiple selections in response to a question.

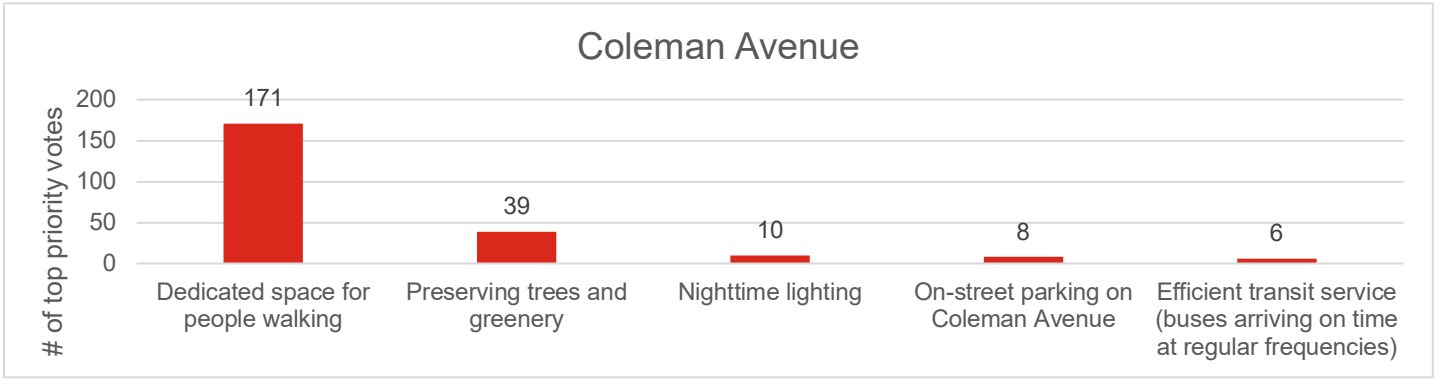
Why do you travel on Coleman and Ringwood Avenues? (Select all that apply)

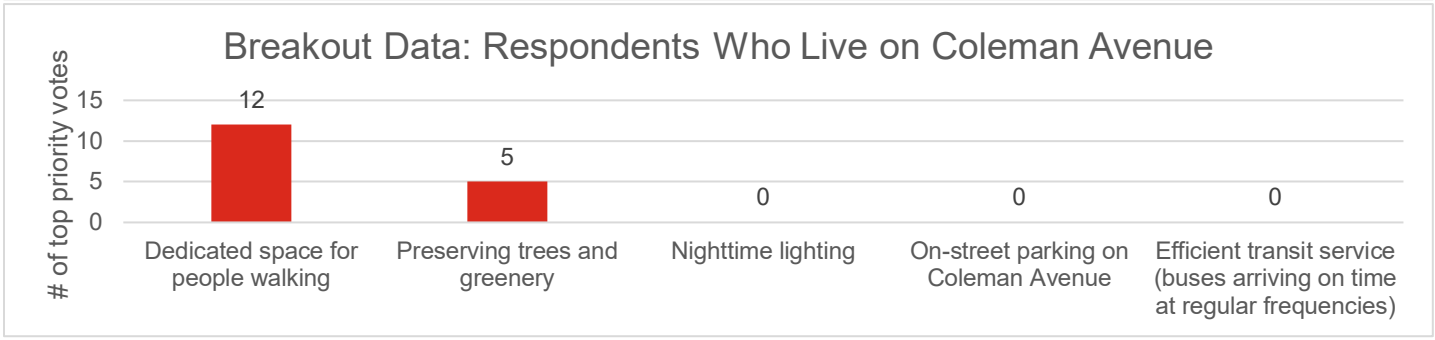
Most respondents selected that they live near Ringwood and Coleman, followed by shopping or running errands and taking someone to school nearby as their reason for traveling on the avenues.

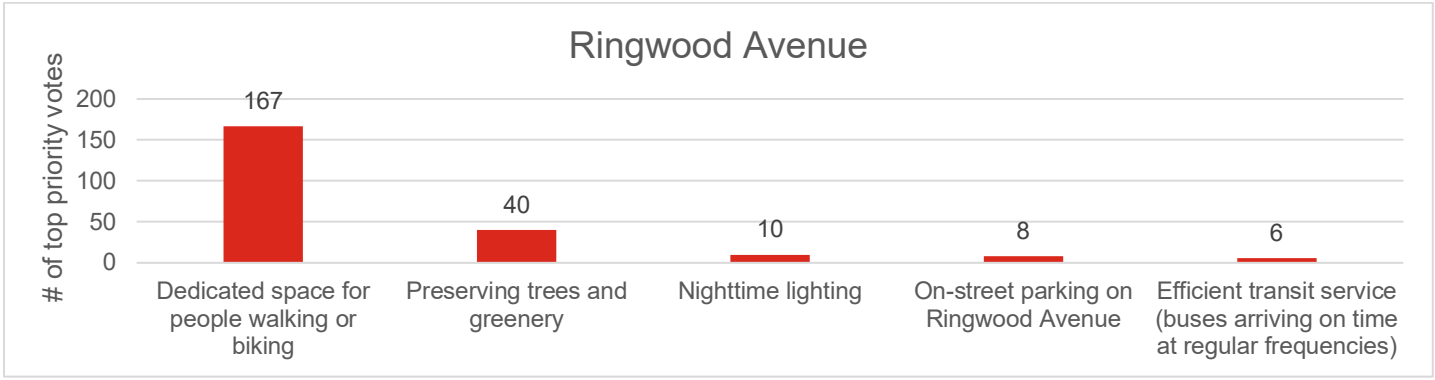


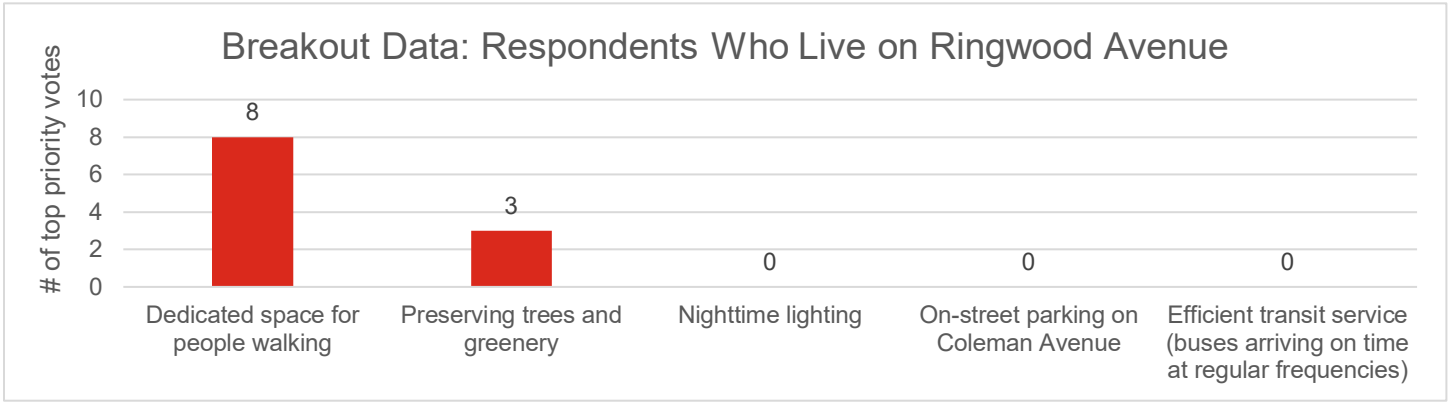
Rank the following priorities in order of importance to you for Ringwood and Coleman Avenue

Participants overwhelmingly selected dedicated space for people walking or biking, followed by preserving trees and greenery as their number one priority for both Coleman and Ringwood Avenues. On street parking and efficient transit service received the fewest top priority votes.



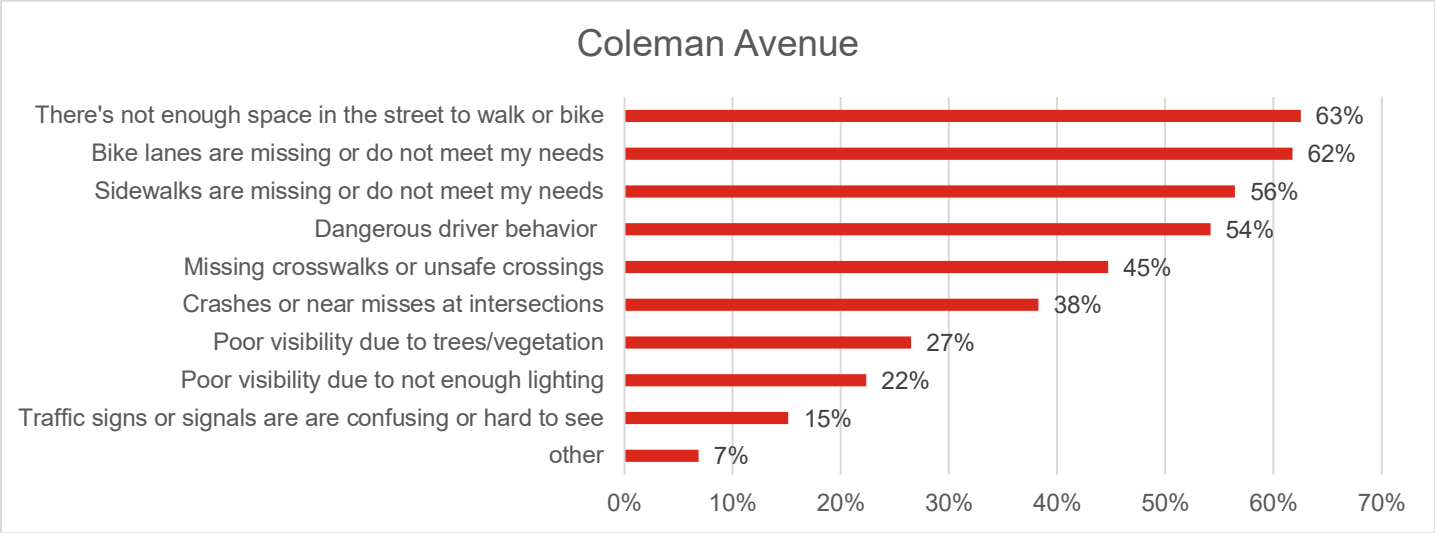


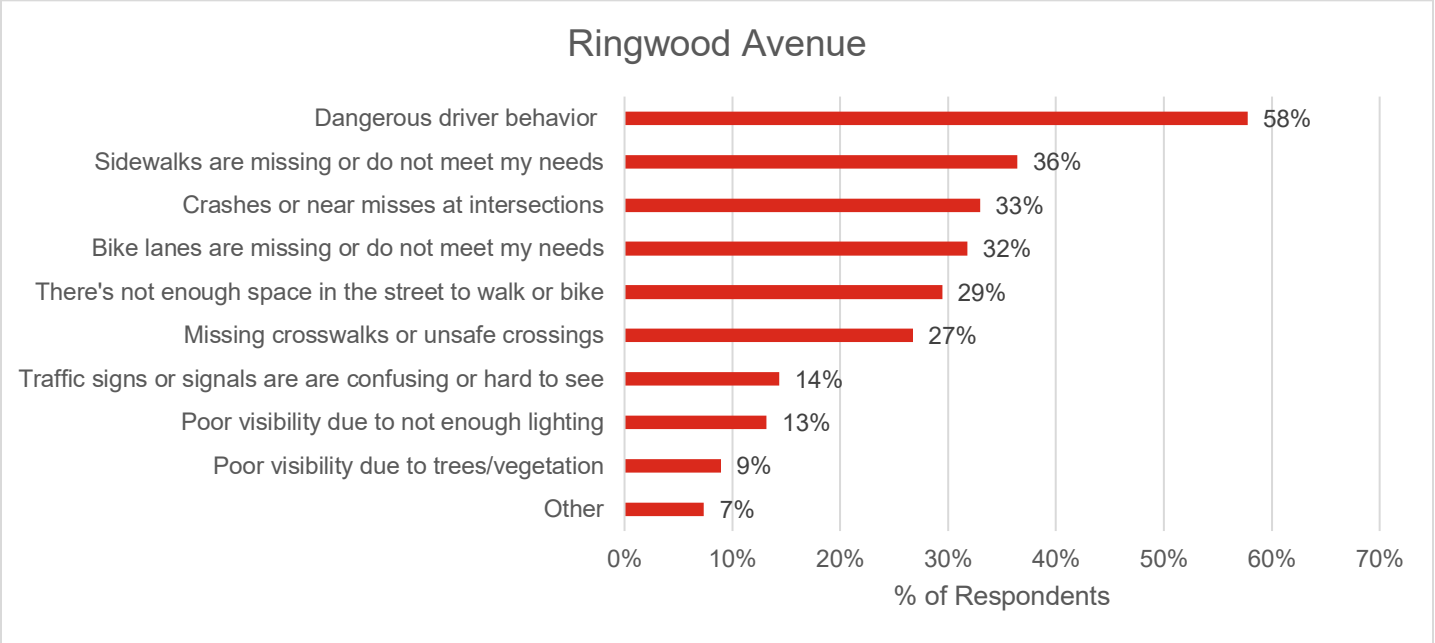




What traffic safety concerns exist? (Select all that apply)

Not enough space on the street to walk or bike and missing bike lanes and sidewalks were reported as the most common safety concerns on Coleman Avenue. Dangerous driving was the most selected safety concern on Ringwood Avenue.





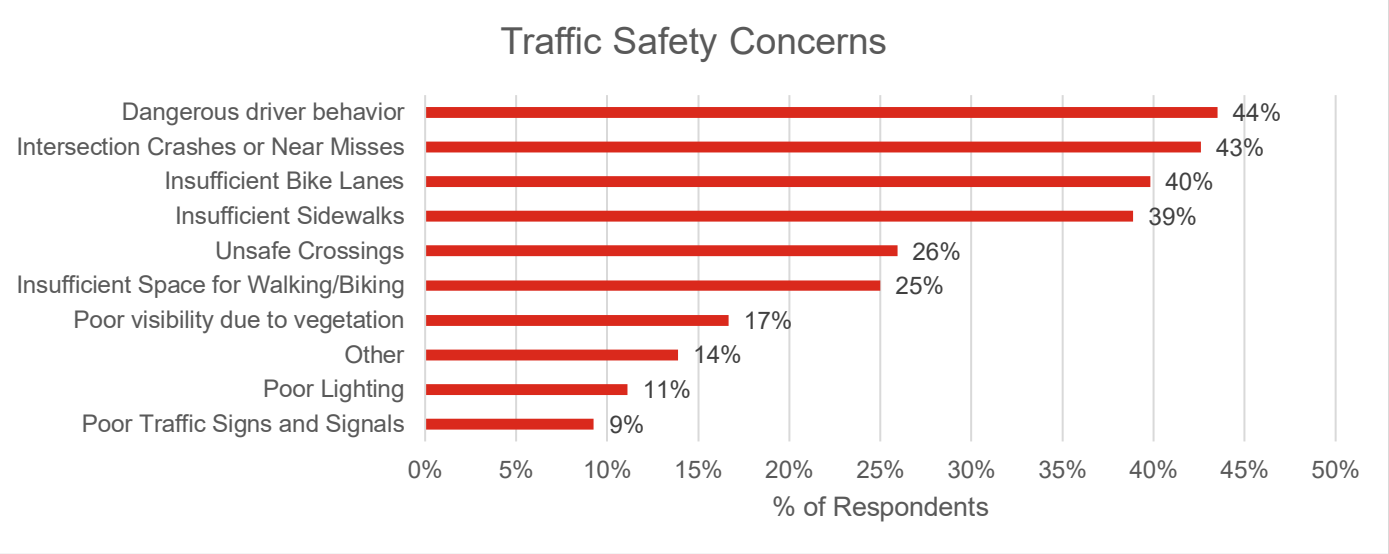
Interactive Map

The survey included an interactive map on which participants were asked to “add a point” to the Study map to give feedback on a specific location in the Study area. Participants were then able to select the kinds of traffic safety concerns and category of improvements needed at the selected location from a multiple-choice list. Results indicate key safety concerns, community priorities for improvements, as well as revealing specific problem areas to prioritize for redesign. A total of 114 unique “points” were placed on the map.

Traffic Safety Concerns

At each identified “point” participants were asked to select traffic safety concerns associated with the location from a multiple-choice list (more than one selection could be made). For clarity, safety concern data has been generated as a table (not a graphic map) due to the number of selections made at one location.

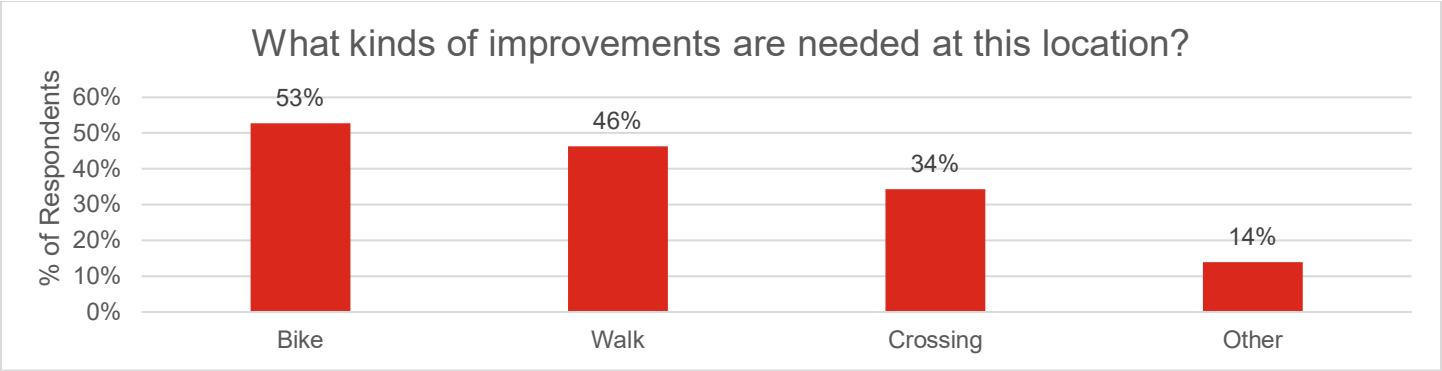
Respondents most commonly reported dangerous driving and crashes followed by insufficient bike lanes and sidewalks as their primary safety concerns at pinned locations.



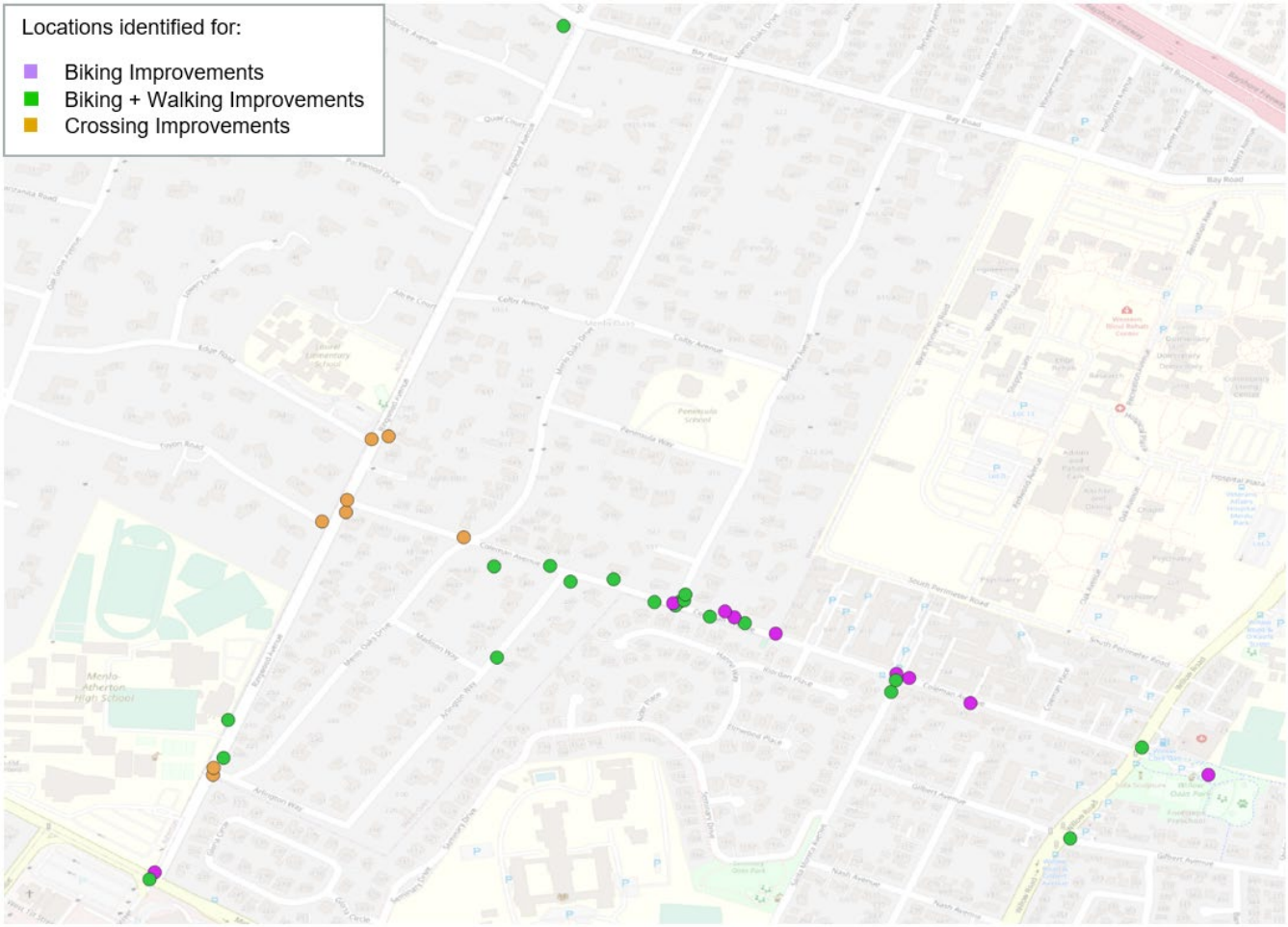
Locations for Biking, Walking, and Crossing Improvements

After selecting traffic safety concerns, participants were asked to select the category of improvements needed at the selected "point." Selections included walking improvements, biking improvements, and crossing improvements (more than one selection could be made).

Biking improvements were most frequently selected as being needed at identified locations.



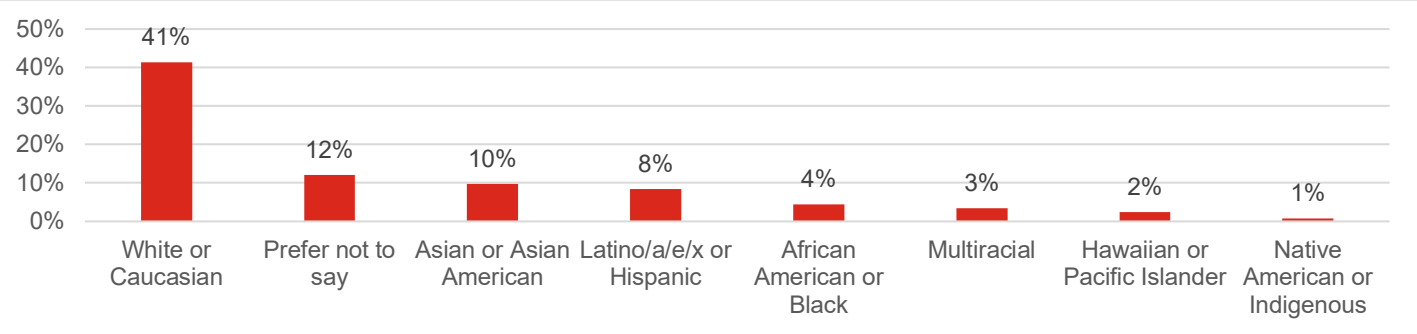
Locations identified for biking and walking improvements are primarily scattered along Coleman Avenue and clustered around the intersections of Coleman at Berkeley Avenue and Coleman at Santa Monica Avenue. Crossing improvements are identified at Arlington Way at Ringwood, Coleman at Ringwood, Edge Road at Ringwood, and Bay Road at Ringwood.



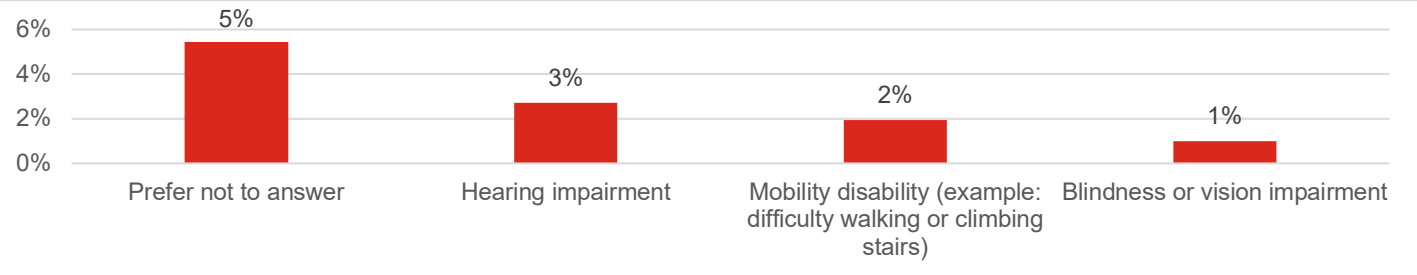
Demographic Summary

Similar to demographic data received at the pop-up events, under half of the survey respondents identified as white (41%). Survey respondents who provided racial and ethnic demographic information were overall less diverse than pop-up participants, with 10% identifying as Asian/Asian American and just over 25% identifying with any of the other race or ethnicity categories. Approximately 5% described themselves as having hearing impairment, mobility disabilities and/or blindness or vision impairment. Lastly, two survey responses were completed using the Spanish version of the survey. This again suggests that remaining Phase 1 and future Study engagement efforts target East Palo Alto and Belle Haven residents to capture more representative and diverse feedback from key stakeholders. It also suggests that in-person events may be more effective that surveys at reaching a diverse range of Study area stakeholders.

How do you identify your race and ethnicity? (Select all that apply):



Do any of the following disabilities currently affect your daily life? (Select all that apply):



OUTREACH AT COMMUNITY EVENTS

1: National Night Out with Belle Haven Action (8/2/22)

Study flyers with a QR code to the website and online survey were made available (for take-away) at the general resource table with Belle Haven Action.

2: Belle Haven Community Climate Change Team (CCCT) Meeting (8/4/22)

The CCCT is comprised of a group of community stakeholders, many of whom have an interest in active transportation. As part of the CCCT's meeting agenda, Two County staff members presented a PowerPoint overviewing the goals, timeline, and engagement efforts of the Coleman and Ringwood Avenues Study. The presentation was followed by a question-and-answer session.

WALKING TOURS

The purpose of the walking tours was to allow attendees to hear first-hand about each other's experiences, ideas, and concerns. The tours also provided an opportunity to solicit targeted feedback and share more detailed design strategies on-the-ground/in-situ while participants actively experienced what is it was like to travel along the corridors.

Two, 90-minute walking tours took place on September 13th and 20th, respectively. The tours were held during school pick-up and commute hours, times in which vehicular, pedestrian, and bike activity would be high. Each 90-minute tour was split into two groups of approximately 10-15 attendees and facilitators. One group walked along Coleman Avenue and the other on Ringwood Avenue making stops at key locations for in-depth discussion. Both tours were facilitated and led by a combination of County, City, W-Trans, Toole Design, and Live in Peace staff.

Walking Tour 1: September 13, 2022 - 3:30-5:00pm

- 4 Attendees:
  - 3 Local Residents
  - 1 County BPAC rep

Walking Tour 2: September 20, 2022 - 5:30-7:00pm

- 9 Attendees:
  - 2 Local Residents
  - 3 Menlo Park School District Parents/Safe Routes to School Representatives
  - 1 San Mateo County Office of Education Representative
  - 1 SamTrans Representative
  - 1 Menlo Park Complete Streets Commission Representative
  - 1 Menlo Park Fire Department Representative

Walking Tour 1

Activities and Materials

A route map with corresponding question and comment sheet were distributed in both English and Spanish at each walking tour and are available in Attachment E.

Key Takeaways

Key takeaways integrate the feedback received via the route map and comment cards, and individual conversations recorded between facilitators and participants. While Walking Tour participants confirmed and validated the feedback collated from the Pop-ups and Survey, more nuanced observations and specific ideas were generated as a result of the smaller group size and conversational structure of the tours. This finer-grained feedback is summarized in the table below.

Topic	Needs and Values
General (applies to both Coleman and Ringwood Avenues)	• Prioritize *children's* safety as a key value • Speeding and its impact on *perceived* safety is a key issue • Drainage issues, particularly at intersections, should be addressed • General desire for more and improved crossing areas (proposed crossing improvements included more signage and pavement markings) • Residents voiced concerns over preserving existing character of neighborhood and would like to maintain trees/greenery. Some residents see the addition of sidewalks as impacting the rural feel of the neighborhood. Attendees, however, were open to the removal of existing trees that are dead or dying and/or interfering with power lines.
Coleman Avenue	• One-way road suggested multiple times as solution for speeding and accommodating ped/bike infrastructure without sacrificing trees • Reconfigure traffic circles to function better (ideas ranged from making the traffic circles larger and adding vegetation to removing them completely) • Improve/install street lighting, particularly at Coleman and Ringwood intersection • Removing on-street parking on east end of Coleman (adjacent to Coleman apartment complexes) may not be ideal, as many residents rely on street parking • Trashcans on trash day block walking / biking area and visibility, potential to consolidate trashcans into singular location for pick-up • Several attendees suggested a two-way bike lane on the north side of Coleman • Suggestion to reconfigure Coleman as a slow or shared/woonerf street
Ringwood Avenue	• Lack of parking enforcement contributes to the number of illegally parked cars in the area • Bollards along the road were suggested to separate pedestrians and bike from the road and prevent parking in the bike lane • Crosswalks needed in the MAHS entrance/drop-off area and at Bay Road and Ringwood intersection • Speed tables (particularly in front of MAHS) frequently suggested as a tool to slow down vehicles • Suggestion to narrow travel lanes to accommodate a sidewalk and/or protected bike lane • Potential for all-way stop at Edge Road and Ringwood

RECOMMENDATIONS FOR STUDY CONCEPTS AND FUTURE ENGAGEMENT PHASES

The following is a summary of key themes, based on Phase 1 engagement and community feedback, which are suggested to be incorporated in the development of Study concepts and designs moving forward:

- Priority values:
  - Dedicated space for people to safely and comfortably walk and bike
  - Preservation of trees and greenery
- Greatest needs to address/most desired improvements:
  - Speeding issues and dangerous driving behavior along Ringwood and Coleman Avenue
  - Lack of sidewalk and bicycle facilities along the entire stretch of Coleman
  - Illegal parking and lack of crossing facilities on Ringwood Avenue
- Key locations in need of solutions:
  - Intersection of Coleman and Ringwood
  - Pick-up and drop-off areas at MAHS and LSLC
  - Coleman Avenue mid-corridor north and south of Berkeley Avenue
  - Driveways at east end of Coleman (858–690 Coleman Avenue Apartment Buildings)

It is suggested that future engagement efforts include smaller, more targeted, in-person events which may be more effective than site specific pop-ups and online surveys at reaching a diverse range of Study area constituents including:

- East Palo Alto and Belle Haven Communities
- Non-white populations
- People with different mobility limitations
- People who may not speak English as their primary language

PHASE 2 ENGAGEMENT

The summary below outlines the Phase 2 engagement activities, in rough chronological order, for the Coleman and Ringwood Avenues Transportation Study that occurred in May and June 2023. During this phase of engagement, the Study team solicited input on the preliminary design alternatives for the corridors. Activities included:

- Interactive Community Workshop
- Community Survey #2

The preliminary design alternatives aimed to address the priority values, needs/desired improvements, and key locations in need of solutions outlined in the *Phase 1 Recommendations* section above. To better reach the East Palo Alto and Belle Haven Communities, non-white populations, and people who may not speak English as their primary language, the Study's CBO partners were involved in the planning of the Phase 2 engagement activities, including the workshop and survey, and helped spread the word about these events to their communities.

INTERACTIVE COMMUNITY WORKSHOP

The interactive community workshop was held at MAHS in the Makerspace Studio on May 4, 2023 from 6-8 p.m. Workshop goals included narrowing down the list of preliminary design alternatives and reaching greater consensus for corridor designs. This workshop was designed so that the public could design their own alternatives for the Study corridors and recognize that tradeoffs were necessary within the limited road right-of-way.

Publicity

To advertise the event to as many people as possible, a comprehensive outreach strategy was taken, including:

- Postcards mailed to all residences along the Study corridor
- County of San Mateo social media posts
- City of Menlo Park social media posts
- The Study website
- Menlo-Atherton Parent-Teacher Association Facebook page
- Menlo Park City School District website
- Flyer provided in school newsletters
- Outreach via CBO partners
- Targeted outreach to the apartment complexes on Coleman Avenue

All communications developed by the Study team (postcards and social media graphics) were in English and Spanish.

Activities and Materials

A set of wood blocks were cut to scale, painted, and labeled (e.g., travel lane, bike lane, painted buffer, etc.) in advance of the event. The wood blocks were to be arranged on satellite imagery of the Study corridors so that alternatives could be built to scale. Eight different tables (two per each of the four Study focus areas) were set up so that the public could get into groups to design their alternatives.

The W-Trans consultant team discussed the Study's preliminary design alternatives with participants and posted images of the alternatives for reference; the participants were then encouraged to build their own. County, City and Toole Design staff assisted with the activities and note-taking. Results were photographed and each group filled out a comment card to discuss their final designs. Fifty to sixty people attended, and 53 comment cards (which in most cases represent a group of people) were completed. Both students and CBO partners were among the attendees. To compensate participants for their time, snacks were provided as well as a raffle with a chance to win one of two Target gift cards.

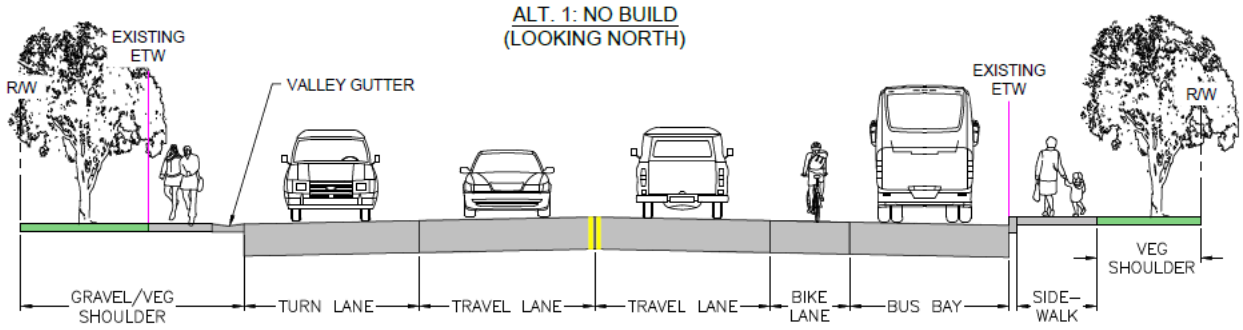
As the Study corridors were broken down into four focus areas during Phase 2 of the Study, the findings from this workshop are summarized by focus area.

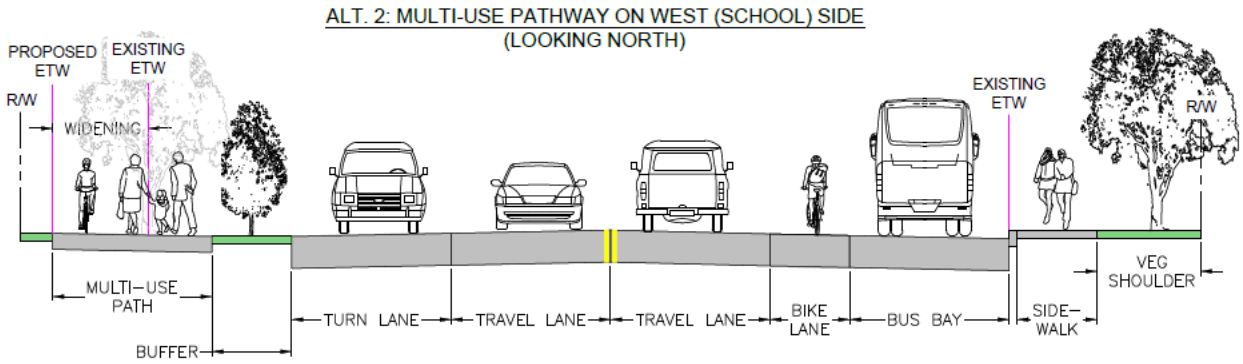
Interactive Community Workshop

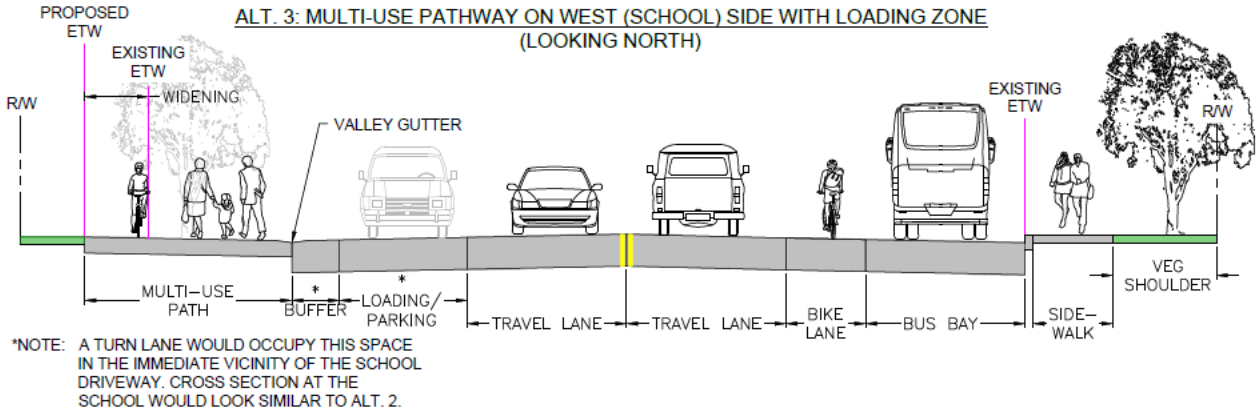
Key Themes and Takeaways

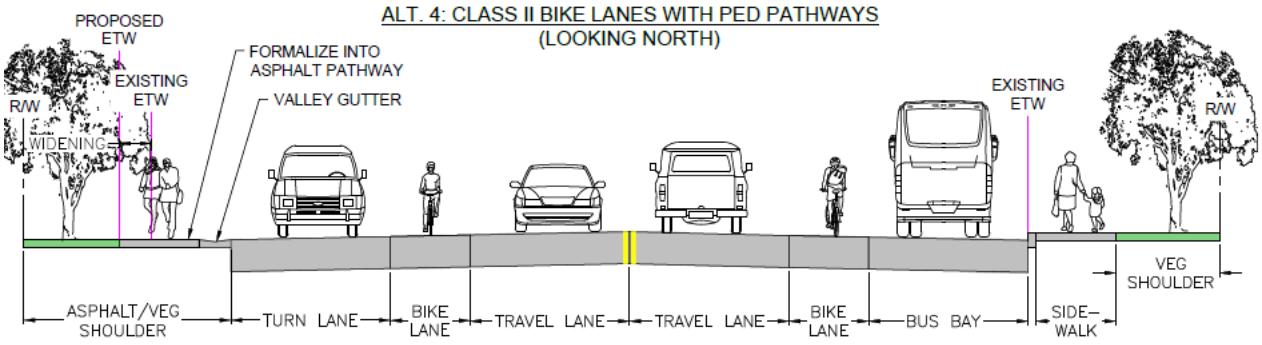
Focus Area 1: Menlo-Atherton High School (MAHS), Ringwood Ave

Preliminary design alternatives









Concepts generated by public

- Center multi-use path with traffic lane on either side, plus a turn lane
- Bike lanes (with vertical separation from traffic) and sidewalks on both sides
- Vertically separated, two-way cycle track on one side with sidewalk; turn lane on other side
- Vertically separated multi-use path in center; travel lane on either side (one travel lane shared with bus); one-way bike lane and sidewalk on one side

General comments

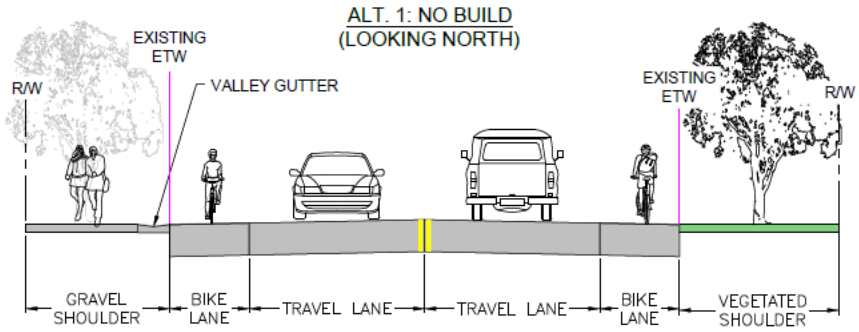
- Dedicated bike lanes are desired on both sides of street – many kids bike to school on this road
- Safer crossing desired at MAHS bus stop
- More traffic control at Ringwood/Arlington (restricted left turn, all-way stop, etc.) for safer crossing of bicyclists and pedestrians
- Vertical separation to keep cars from parking in bike lane and between cars/bikes
- Try to keep parking/drop-off on separate side of street from kids traveling by bike

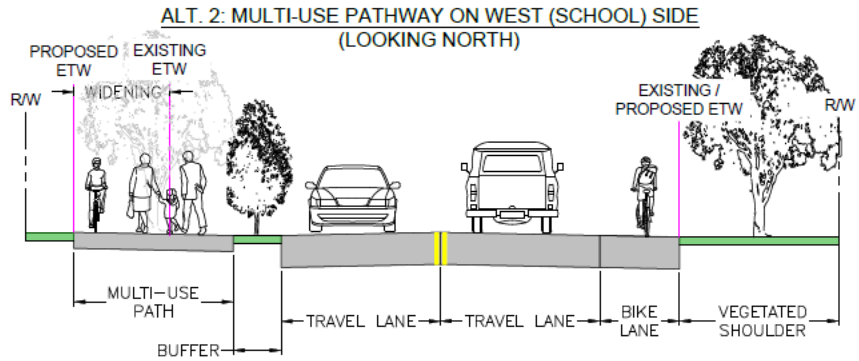
Takeaways

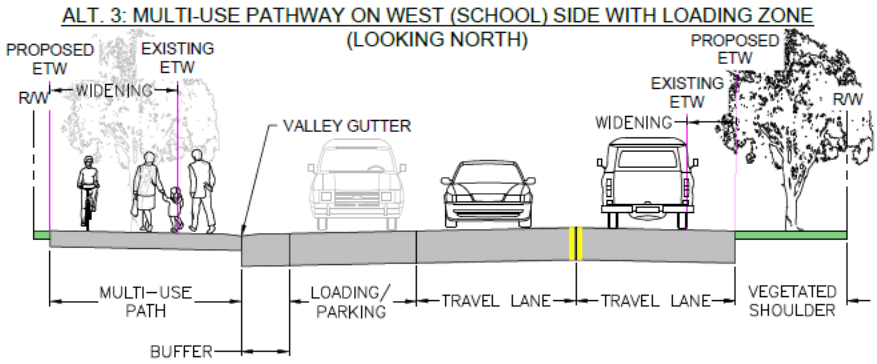
- Vertical separation is desired between traffic lanes and bike lanes
- Concepts proposed by the public did not directly align to the team's preliminary design alternatives

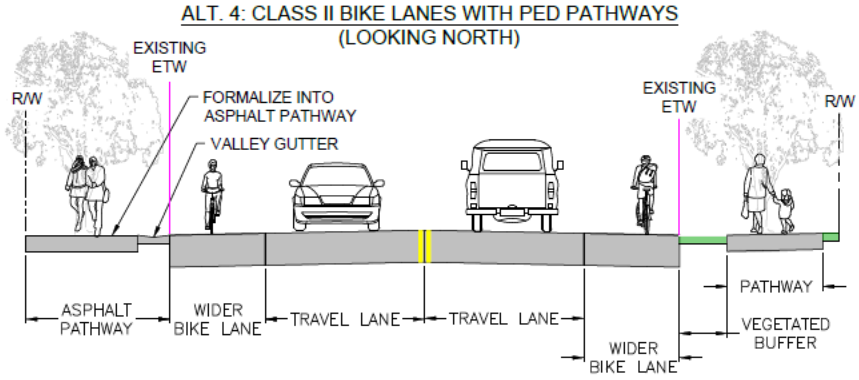
Focus Area 2: Laurel School Lower Campus, Ringwood Ave

Preliminary design alternatives









Concepts generated by public

- Vertically separated bike lanes and sidewalks on both sides of street (proposed by two groups); a third group proposed this design with the addition of a protected intersection
- Vertically separated bike lanes and sidewalks on both sides of street plus center turn lane
- Center two-way cycle track with vertical separation; parking and sidewalk on one side of street
- Bike lanes on both sides of street; sidewalk on one side (proposed by two groups)
- Bike lanes on both sides of street (one buffered); sidewalk on one side
- Vertically separated two-way cycle track on one side; parking and sidewalk on the other

A participant builds an alternative

General comments

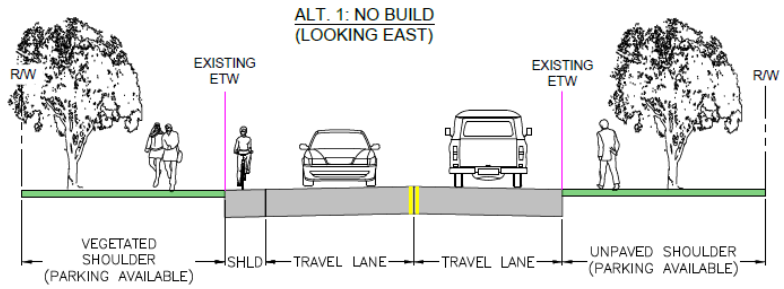
- Raised buffer to keep cars from driving/parking in bike lane and parking in pedestrian pathway
- More speed control needed
- Safer intersections needed
- Partial support for Alternative 3; also comments against Alternative 3 (concerns about losing landscaping and comments to not widen bike lane)
- Add protection to bike lanes – students use them

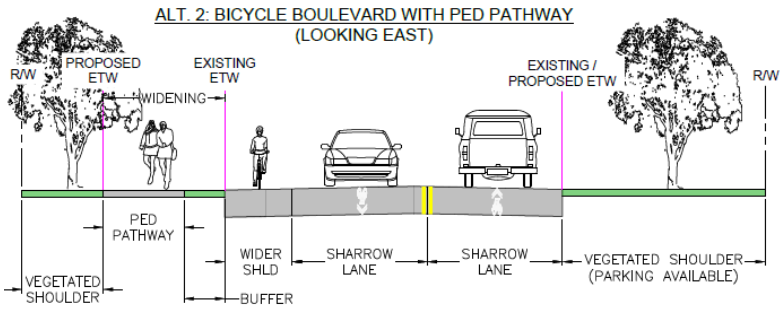
Takeaways

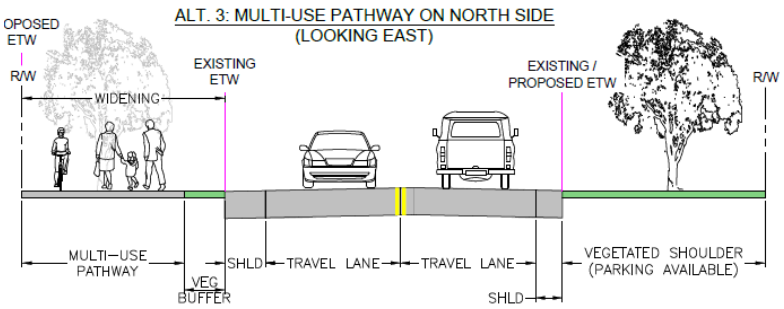
- Modifying Alternative 3 by adding vertical separation between traffic and bike lanes would support public feedback

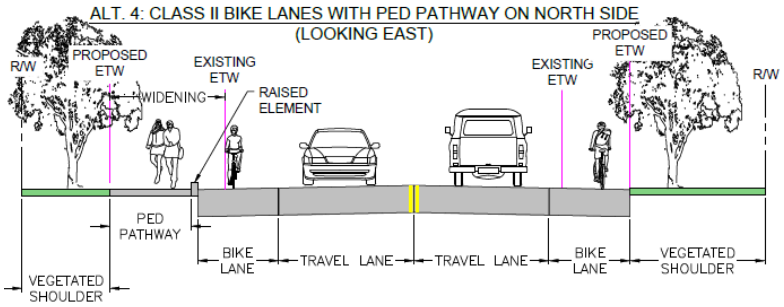
Focus Area 3: Coleman Ave, County of San Mateo

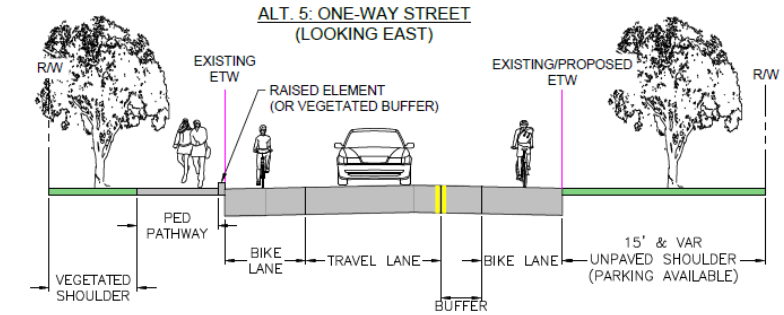
Preliminary design alternatives











Concepts generated by public (Note: Multi-use path/cycle track/pedestrian pathway is presumed to be on north side of Coleman in all cases for Focus Area 3, unless noted)

- Two-way street with vertically separated, two-way cycle track
- Two-way shared street with multi-use path protected by buffer
- Two-way street with landscaped median and multi-use path
- Two-way street with multi-use path (separated between bike/ped) on both sides
- Two-way shared street with sidewalk and landscaped buffer (sidewalk on south side)
- Two-way street with bike lane on each side protected by 2" paved buffer plus sidewalk on north side
- Alternatives 3 and 4
- Two-way shared street with speed humps and multi-use path on one side, parking on other
- One-way with speed humps from Santa Monica to Ringwood, protected bike lanes on both sides, and sidewalk on north side
- Two-way street with speed humps and vertically separated multi-use path on north side and bike lane headed east on south side
- Two-way street with bike lanes and sidewalks on both sides
- Two-way shared street with sidewalk separated by landscaped buffer on south side (south side proposed due to assumption that there are fewer trees)
- Two-way street with speed humps and sidewalk on one side; landscaping on both sides
- One-way street with bike lanes on both sides (buffered bike lane on one side) and sidewalk on other side

Other Alternatives explored (built/discussed but not chosen as final submissions)

- Two-way street with speed humps and buffered bike lanes and sidewalks on both sides
- Two-way street with speed tables and bike lanes and sidewalks on both sides
- Two-way street featuring median with tree canopy; bike lanes and sidewalks on each side
    - Concerns about turning out of driveways
- Bike lane and sidewalk on both sides with one reversible lane in center
    - Concerns about changing neighborhood character
    - SamTrans concern about rerouting buses

General comments

- Some support for changing traffic/bikeway flow at certain times of day
    - But concerns about having to redirect traffic onto side streets
- Speed mitigation is extremely important to many
- Most people would sacrifice trees for safe, dedicated bike/ped facilities
- Add stops signs at Berkeley
- Remove hedges at Berkeley/Coleman intersection to improve visibility
- Remove tree in middle of Coleman
- Considerable support for Alternatives 3 and 4

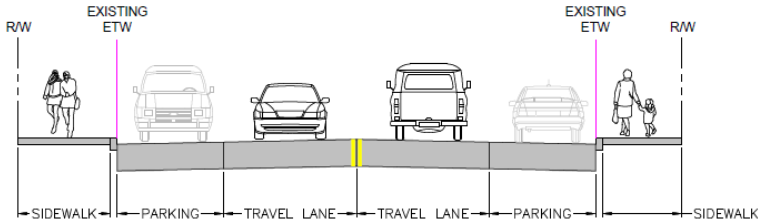
Takeaways

- Two-way street typically preferred but some public support for one-way or reversible one-way
    - However, after the impacts of the one-way street were discussed, some participants who supported the one-way better understood how a two-way street might be preferrable
- Many want more separation between bicyclists and pedestrians which could result in a multi-use path with bike/ped separation or a shared street in addition to a multi-use path
- Protect bicyclists and (especially) pedestrians from vehicles
- Speed reduction and traffic calming through stop signs, speed humps, etc.
- Alternative 3 best aligns with feedback; Alternative 4 was also popular with some

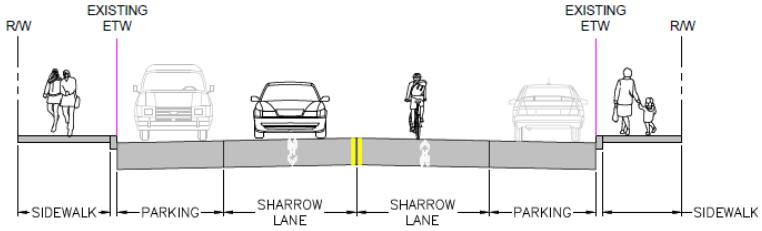
Focus Area 4: Coleman Ave, City of Menlo Park

Preliminary design alternatives

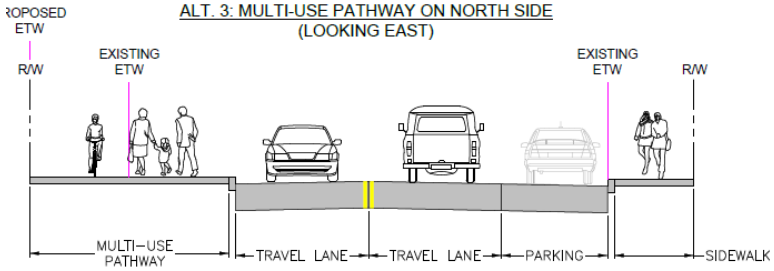
ALT. 1: NO BUILD
(LOOKING EAST)



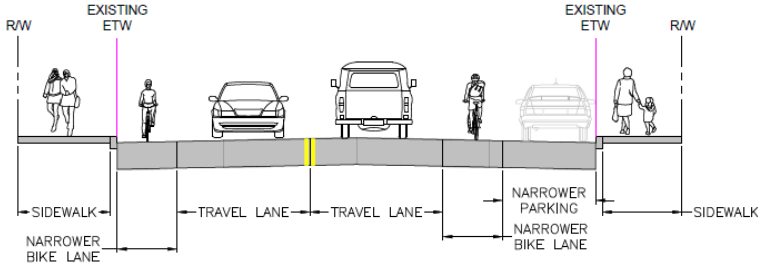
ALT. 2: BICYCLE BOULEVARD
(LOOKING EAST)



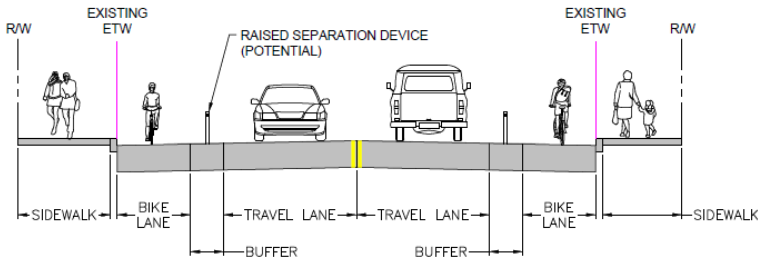
ALT. 3: MULTI-USE PATHWAY ON NORTH SIDE
(LOOKING EAST)



ALT. 4: CLASS II BIKE LANES WITH PARKING ON ONE SIDE (SIDE TBD)
(LOOKING EAST)



ALT. 5: PROTECTED OR BUFFERED BIKE LANES WITH NO PARKING
(LOOKING EAST)



Concepts generated by public

- Three groups: Multi-use pathway on north side (two proposed it with buffer and one proposed it without buffer); parking on south side
- Raised multi-use pathway with landscaped buffer on north side; parking on south side
- Two-way cycle track plus sidewalk on north side with landscaped buffer between cycle track and traffic lanes; parking on south side
- Shared street with speed humps with time-restricted parking on both sides that functions as a bike lane when parking is disallowed plus sidewalks on both sides
- Vertically separated multi-use path on north side with parking on north side; bike lane and sidewalk on south side
- Shared street with speed humps with landscaped buffer-separated multi-use pathway on north and parking/sidewalk on south

General Comments

- Retain parking on one side for apartment residents
    - But some want to keep it on both sides
- Increase visibility for people exiting parking lot of apartment building
- More lighting needed
- Consider stop sign, raised crossing, or rectangular rapid flashing beacon at Santa Monica
- Cars try to overtake cyclists; cars need to slow down
- Obstacles: trash pickup, delivery vehicles
- Add speed bumps or tables (Willow to Santa Monica)
- Support for replacing sidewalk with multi-use path
- Concerns about transition between Coleman-City and Coleman-County design
- Traffic circle is not effectively slowing down cars
- Visibility issues for those driving/biking down Coleman

Takeaways

- A lot of support for multi-use path and retaining parking on one side
- Alternative 2 best represents public feedback
- Alternative 2 as a shared street (with speed humps) might be another option

COMMUNITY SURVEY #2

Survey #2 was guided by feedback gathered throughout Phases 1 and 2 of the Study. The Interactive Community Workshop that preceded the survey helped narrow down and refine the design alternatives proposed for all focus areas. Like the workshop, the survey was advertised through:

- Postcards mailed to all residences along the Study corridor
- County of San Mateo social media posts
- City of Menlo Park social media posts
- The Study website
- Outreach via CBO partners

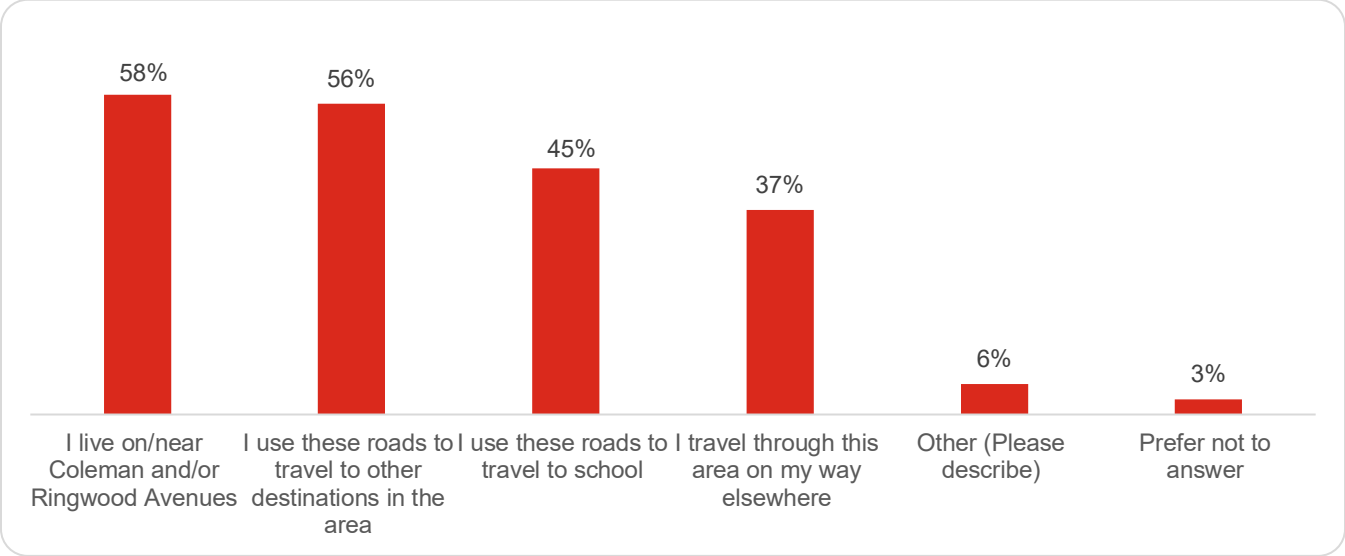
Survey #2 focused on understanding whether the public felt the proposed alternatives for the corridors addressed the needs identified by the community and if they had suggestions for ways to improve the proposed alternatives. The survey included multiple choice questions and open-ended questions. Two potential alternatives were proposed for each of the four focus areas. The survey was available in English and Spanish and open for approximately four weeks, from May 26, 2023 – June 22, 2023, during which time the Study team received 454

responses. Respondents were informed that they need not answer questions for focus areas that did not apply to them. The survey results include paper/physical surveys that were distributed and collected by the Study's CBO partners. Seven surveys were taken using the Spanish version of the digital survey and some of the paper surveys were also taken in Spanish and translated into English by bilingual staff.

Respondent Information

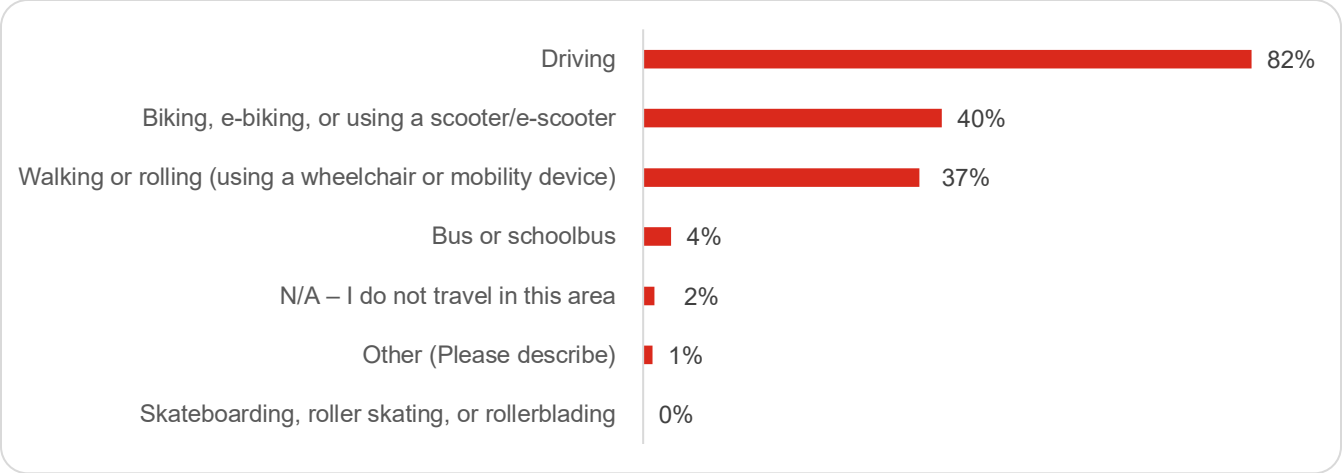
Respondents were asked about their connection to or interest in Coleman and/or Ringwood Avenues. Over half of survey respondents said they live on/near Coleman or Ringwood Avenues and over half travel on these roads to reach their destinations. Forty-five percent use these roads to travel to school. Most people who selected "Other (Please describe)" indicated that they use these roads recreationally for walking, biking, or dog walking. The sum of percentages exceeds 100 as respondents could select more than one answer.

What is your connection to/interest in Coleman and/or Ringwood Avenues? Check all that apply.



Next, respondents were asked how they usually travel in the study area; they could select up to two options. Most respondents drive (82 percent), followed by biking, e-biking or using a scooter/e-scooter (40 percent), then walking or rolling (37 percent). Most of the four people who selected "Other (Please describe)" wrote in that they drove or biked. Those who said they do not travel in the study area received a follow-up question asking if there was a reason why they didn't travel on Coleman or Ringwood (during Phase 1, some residents of East Palo Alto or Belle Haven said that they felt unwelcome in the Study area.) Five people answered this, saying that they had no reason to travel through the area or their commute did not pass through the area while one person said they were unsure.

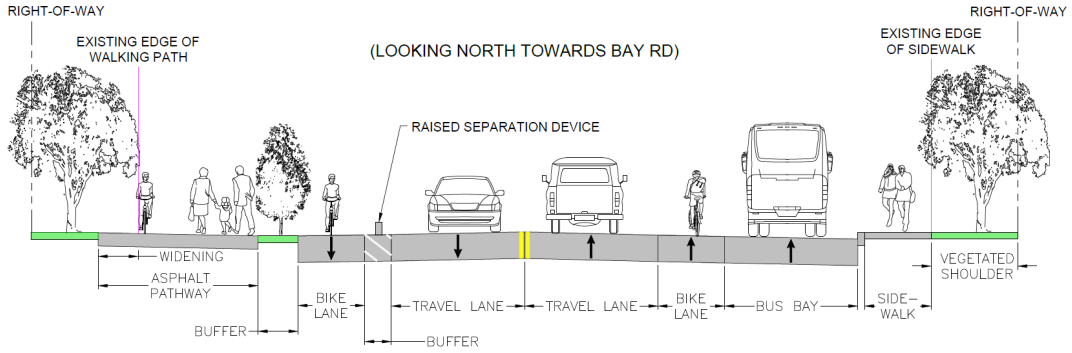
How do you usually travel on Coleman and/or Ringwood Avenues? Select up to two.



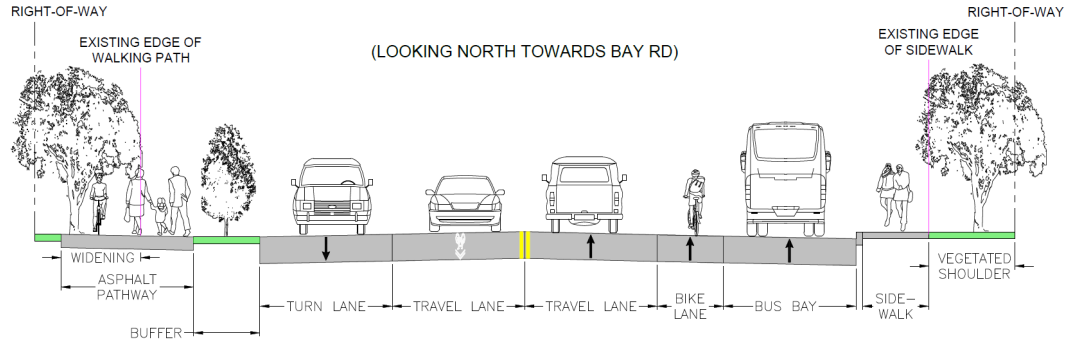
Focus Area 1: Menlo-Atherton High School (MAHS), Ringwood Ave

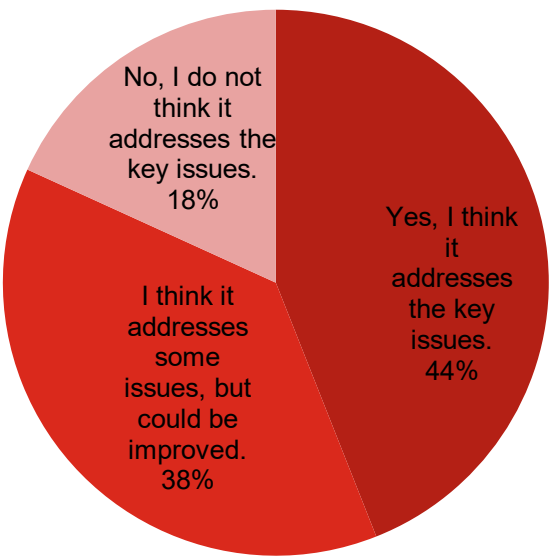
Respondents were next asked about the proposed alternatives for Focus Area 1. The alternatives presented were based on feedback received throughout Phases 1 and 2 of the Study. Respondents were presented with the key corridor issues and how the alternatives would address the key issues and impact existing conditions. Then respondents were asked whether each alternative would address the key issues. If the respondent did not select "Yes…" to either alternative, then a question asking how the alternatives might be better addressed followed. **There was no clear alternative preference, with 1-A receiving a 44 percent "Yes" response and 18 percent "No" response and 1-B receiving a 46 percent "Yes" response and 21 percent "No" response.**

Alternative 1-A: Bike Lanes with Asphalt Pathway on West (School) Side

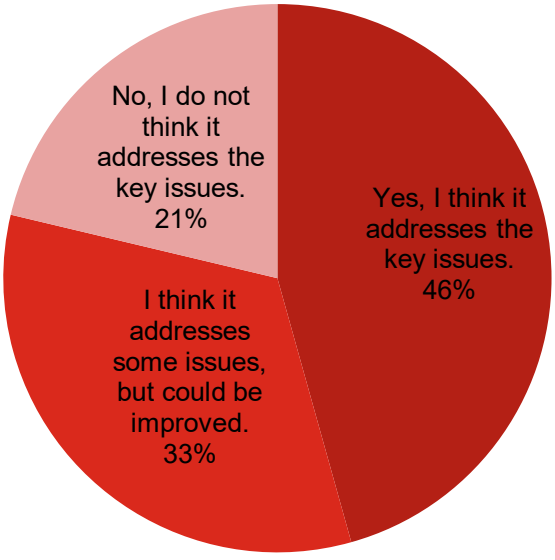


Alternative 1-B: Shared Southbound Lane with Asphalt Pathway on West (School) Side





Alternative 1-A Results (n=352)



Alternative 1-B Results (n=357)

Seventy-five respondents who did not answer “Yes” to either alternative described how the key issues could be better addressed. Top comment themes (in order of most to least common) included:

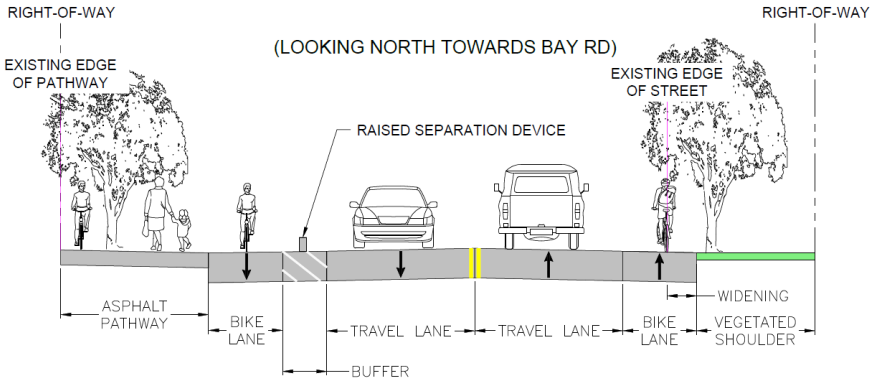
- **Keep the right turn lane into the MAHS parking lot**
  Survey respondents felt that removing the right turn lane would increase congestion/cause major bottlenecks and force people to queue up in the travel lane. Many comments indicated a preference for keeping the right turn lane and travel lane while adding a dedicated bike lane. Generally, survey respondents were torn between wanting the dedicated bike lane and keeping the turn lane.
- **Bike lanes should be physically separated from cars and pedestrians**
  Respondents generally preferred a dedicated bicycle lane, like in Alternative 1-A. Most would also like the bike lane to be fully protected by physical separation, such as concrete barriers. Many respondents would also like the walking path to be fully separate from the bicycling path with grade separation, stating that walking on the multi-use pathway would be stressful/uncomfortable with bicycle traffic.
- **There should be protected bike lanes in both directions**
  Most respondents would like to see a protected bike lane on both sides of the street, which would help address students biking to school and turning left into the high school parking lot. Bicyclists also frequently make left turns onto Middlefield Rd, which should be considered.
- **Consider moving the drop-off/pick-up area for MAHS Students**
  Congestion that builds up at the entry/exit point of the school for drop off/pick up is an issue. Vehicles sometimes stop at various points along Ringwood Ave to drop off and pick up students which presents a barrier to those walking, biking, and taking the bus to and from the area. Some people would like a different area to be used for drop-off/pick-up, which may support the proposed alternatives and alleviate congestion (suggestion for SRI parking lot to be used).
- **Address illegally parked cars**
  There are parking concerns in the neighborhood. Alternatives should address parking enforcement and restrictions. Illegally parked vehicles pose a problem for children walking or biking home.
- **Poor visibility needs to be addressed**
  Visibility in the area is a concern amongst respondents. Right now, drivers queue up in the bike lanes and along the pathway, making visibility worse for left-hand turns and increasing instances of left-hook crashes. Parked cars, vegetation, and the bus cause visibility issues for all modes currently. Some survey participants wonder if the landscaped buffers are unnecessary due to maintenance and visibility concerns.
- **Consider moving the bus stop**
  There were many concerns about the use of the bus bay. Currently people use the bus bay to drop off/pick up students. Some survey participants are concerned the alternatives proposed, with the bike lane on the outside of the bus bay, will cause more bicyclists to opt for riding in the pedestrian path. Comments suggest the bus stop be moved to Middlefield Rd or onto the school property, and for traffic flow/circulation of the area to be reassessed.
- **Address left turns onto Ringwood Ave from Arlington Way**
  Respondents were concerned about left turns onto Ringwood Ave from Arlington Way when the school traffic is backed up, citing that it is already very difficult to make that turn. Respondents wondered if the "keep clear" space on Ringwood Ave at Arlington Way would still be available.

Focus Area 2: Laurel School Lower Campus (Ringwood Ave)

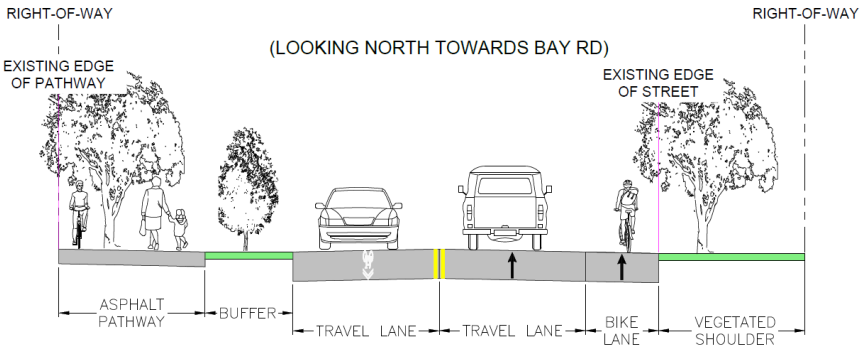
Respondents were next asked about the proposed alternatives for Focus Area 2. The alternatives presented were based on feedback received throughout Phases 1 and 2 of the Study. Respondents were presented with the key corridor issues and how the alternatives would address the key issues and impact existing conditions. Then respondents were asked whether each alternative would address the key issues. If the respondent did not select

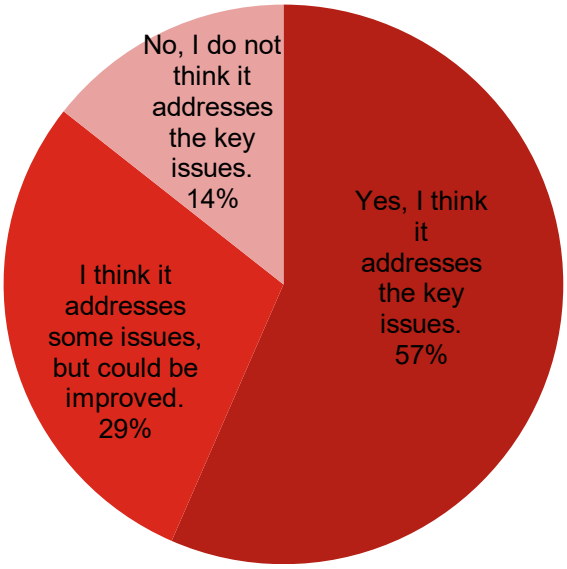
"Yes…" to either alternative, then a question asking how the alternatives might be better addressed followed. **There was a preference for Alternative 2-A, receiving a 57 percent "Yes" response and 14 percent "No" response.**

Alternative 2-A: Bike Lanes with Asphalt Pathway on West (School) Side

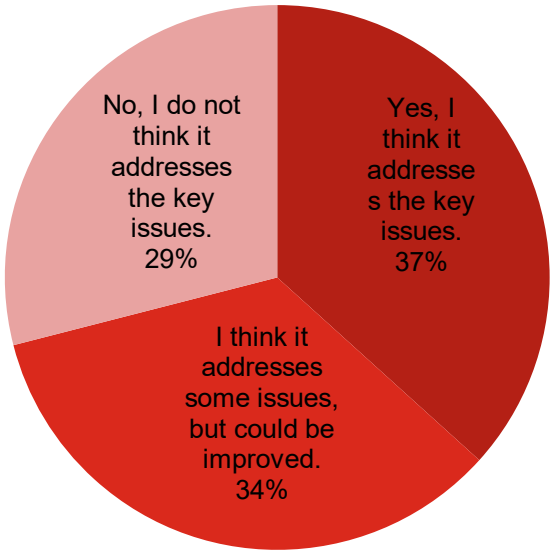


Alternative 2-B: Shared Southbound Lane with Asphalt Pathway on West (School) Side





Alternative 2-A Results (n=320)



Alternative 2-B Results (n=335)

Seventy-six respondents who did not answer "Yes" to either alternative described how the key issues could be better addressed. The top comment themes (in order of most to least common) included:

- **Drop-off/Pick-up challenges at Laurel**
  Cars queuing for drop off/pick up at Laurel on Ringwood Ave is a big issue that respondents felt alternatives didn't address or would exacerbate. Respondents were additionally concerned space would be removed for people dropping off and picking up students from school, causing a traffic backup. Respondents were concerned cars will park in the bike lane in the morning and afternoon and cyclists would need to navigate the drop off/pick up line. They suggested better crossing options, a dedicated drop-off/pick-up lane, or more parking to avoid danger for cyclists.
- **Turning movements are hazardous**
  Cyclists who need to take a left turn into Laurel or turn onto Ringwood from Edge Rd. feel the alternatives do not help make that turning movement safer. Respondents also were concerned that there are no plans for a vehicle turn lane into Laurel/onto Edge Rd.
- **Preference for protected bike lanes**
  The overwhelming consensus is that shared lanes are not desired. People would prefer separate bike lanes, ideally with vertical separation.
- **Cyclists need dedicated space**
  The second design removes a bike lane, forcing cyclists onto the pedestrian facility where small children walk to and from school.
- **Bike lane/pathway versus landscaped buffer**
  Respondents would prefer a smaller landscaped buffer in favor of a larger pathway. Also, respondents generally noted they do not want any existing trees to be removed.
- **Wider bike lane desired**
  Respondents want to widen the bike lane, and are worried that without widening, it will become too narrow when trash cans are placed out, thereby forcing cyclists into the traffic lane.
- **Speeding and parking enforcement**

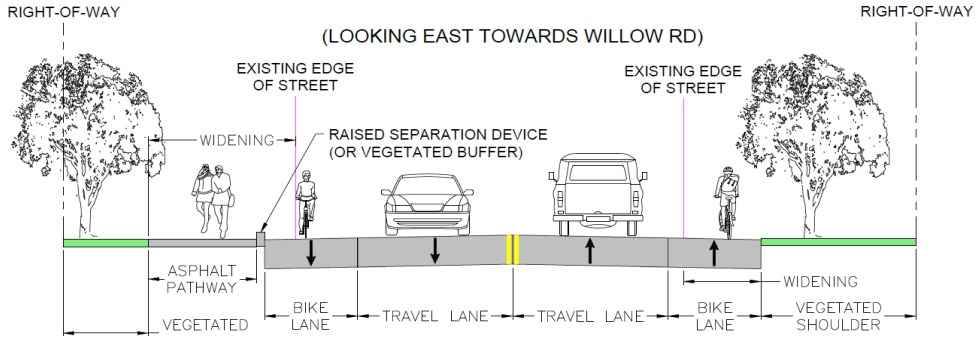
Respondents were concerned that neither of the alternatives address the problem of speeding or illegal parking/stopping on Ringwood Ave near the school. Several comments noted that they would prefer existing traffic regulations be enforced rather than implement large scale engineering changes.

- **Where will water go after it rains?**
  Respondents were concerned that the alternatives do not address flooding or stormwater runoff and want to understand if the pathway and landscaped buffer will be able to handle that without flooding. One comment suggested incorporating a narrow trench on the east side in the buffer.
- **Conflicts with e-bikes**
  Some respondents noted the challenges of sharing a lane or path with electric bicycles and wonder how conflicts could be mitigated.

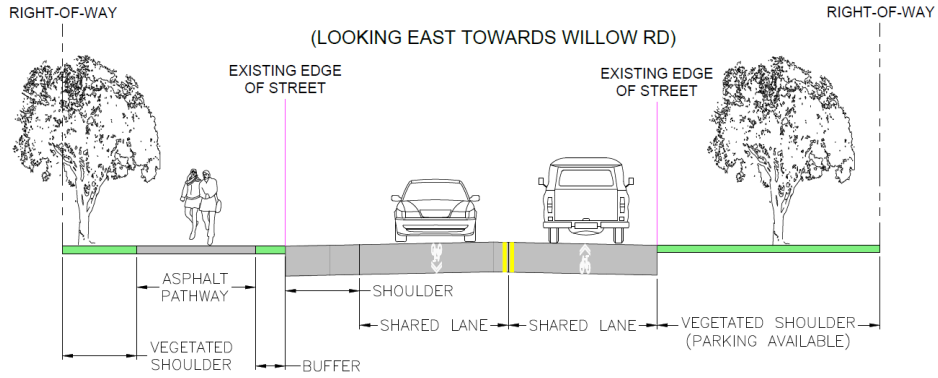
Focus Area 3: Coleman Ave (County Side)

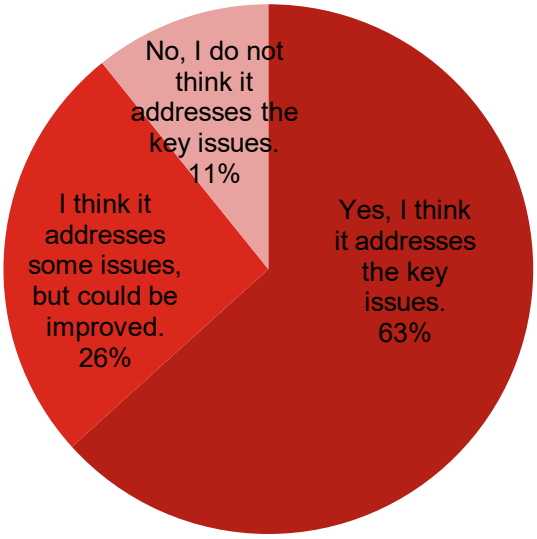
Respondents were next asked about the proposed alternatives for Focus Area 3. The alternatives presented were based on feedback received throughout Phases 1 and 2 of the Study. Respondents were presented with the key corridor issues and how the alternatives would address the key issues and impact existing conditions. Then respondents were asked whether each alternative would address the key issues. If the respondent did not select "Yes…" to either alternative, then a question asking how the alternatives might be better addressed followed. **There was a preference for Alternative 3-A, receiving a 63 percent "Yes" response and an 11 percent "No" response.**

Alternative 3-A: Bike Lanes with Asphalt Pathway on North Side

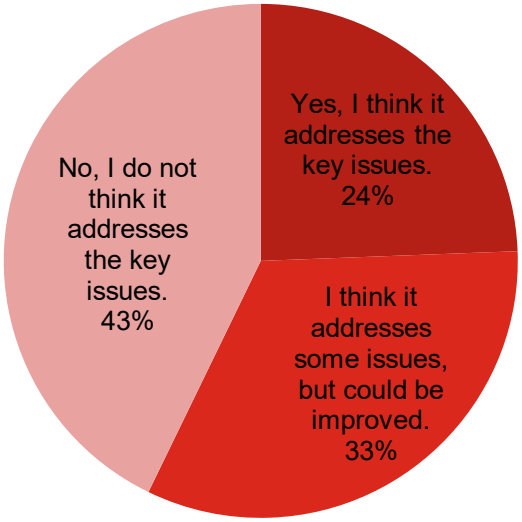


Alternative 3-B: Bicycle Boulevard with Asphalt Pathway on North Side





Alternative 3-A Results (n=316)



Alternative 3-B Results (n=320)

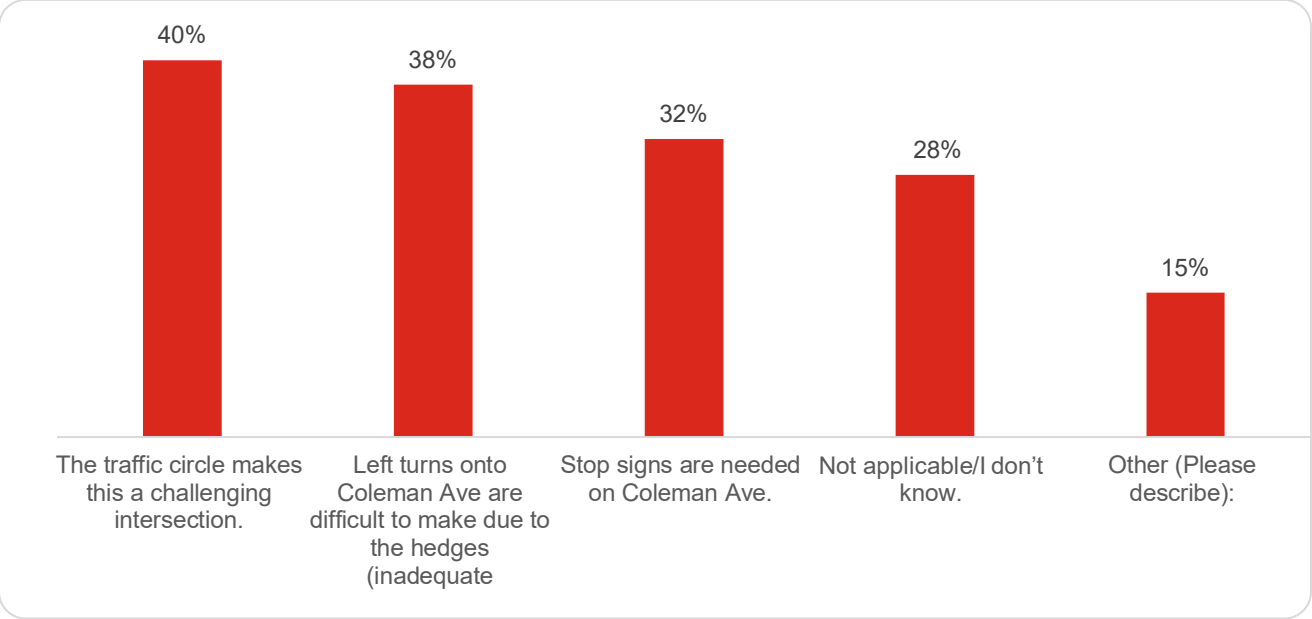
Sixty-six respondents who did not answer "Yes" to either alternative described how the key issues could be better addressed. Aside from calls to ensure dedicated bike lanes (which is proposed in 3-A), top comment themes (in order of most to least common) included:

- **Make Coleman Ave one-way**
  Make Coleman Ave a one-way street (permanently or at certain times of the day) to discourage motorists from using it as a "cut-through" street. Alternatively, restrict turns on Coleman during peak congestion hours was suggested.
- **Address speeding**
  Respondents thought alternatives should better address speeding and include more measures to slow down traffic, such as speed humps and stop signs. Santa Monica Ave and Berkeley Ave were both called out as intersections along Coleman Ave where more traffic calming is needed.
- **Split opinions on parking**
  There was no consensus on parking, with half of the respondents feeling strongly about banning parking on Coleman, and the other half feeling strongly about preserving parking.
- **Include lighting**
  Respondents want to incorporate more lighting into the design to improve visibility.
- **Too much asphalt**
  Respondents were concerned that increasing asphalt will reduce the amount of permeable surface to absorb stormwater run-off. Respondents hope the design can avoid using asphalt outside of the bike lanes.

Respondents were also asked about what kind of challenges, if any, they experience at the intersection of Berkeley Ave and Coleman Ave. **Of the 454 total survey responses, 367 indicated they encounter at least one issue at the intersection of Berkeley and Coleman**, with the traffic circle and hedges obstructing sightlines when making a left turn onto Coleman cited as the top issues. Of the respondents who encounter issues, 45 selected "Other" and provided a description. The most common responses included:

- Right turns from Coleman onto Berkeley are difficult due to the hedges and service/commercial vehicles parking on the Willow side of Berkeley at that intersection.
- The tree in the center of the traffic circle blocks visibility, especially for vehicles being able to see pedestrians and bicyclists.
- Speeding and dangerous driving are major issues on Coleman with little speed limit enforcement.
- People like the traffic circle and do not want to see it replaced with a stop sign.

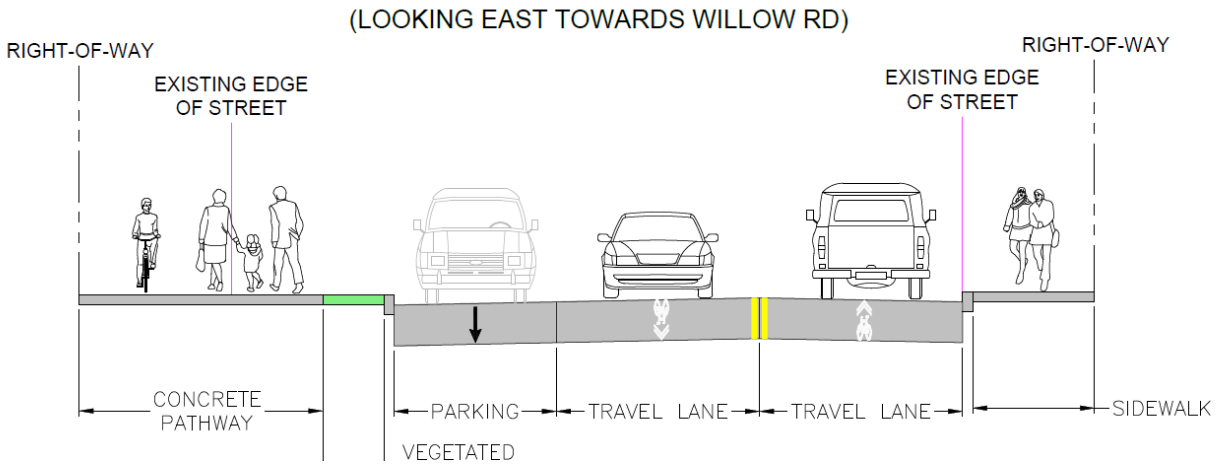
Do you encounter any of the following issues at the intersection of Berkeley Ave and Coleman Ave? Check all that apply.



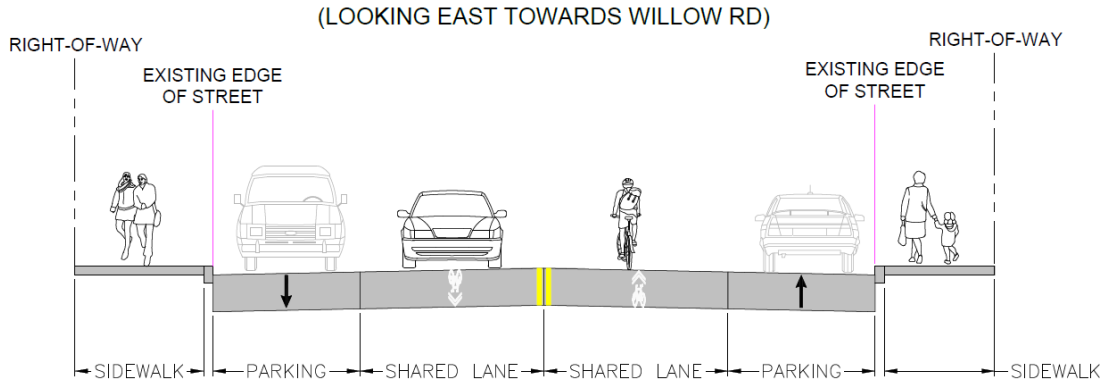
Focus Area 4: Coleman Ave (City Side)

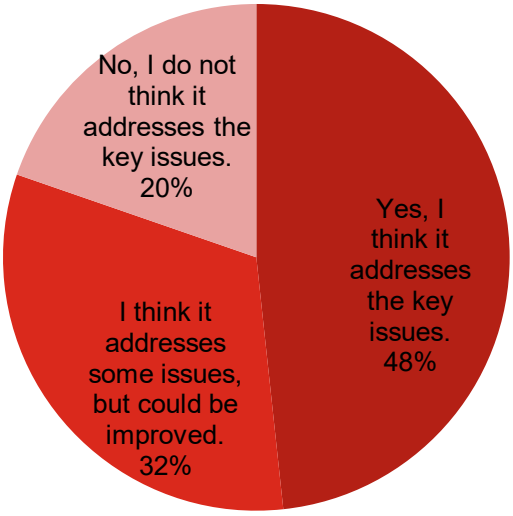
Respondents were next asked about the proposed alternatives for Focus Area 4. The alternatives presented were based on feedback received throughout Phases 1 and 2 of the Study. Respondents were presented with the key corridor issues and how the alternatives would address the key issues and impact existing conditions. Then respondents were asked whether each alternative would address the key issues. If the respondent did not select "Yes…" to either alternative, then a question asking how the alternatives might be better addressed followed. **There was a preference for Alternative 4-A, receiving a 48 percent "Yes" response and 20 percent "No" response.**

Alternative 4-A: Bicycle Boulevard with Shared Use Pathway and Parking on North Side

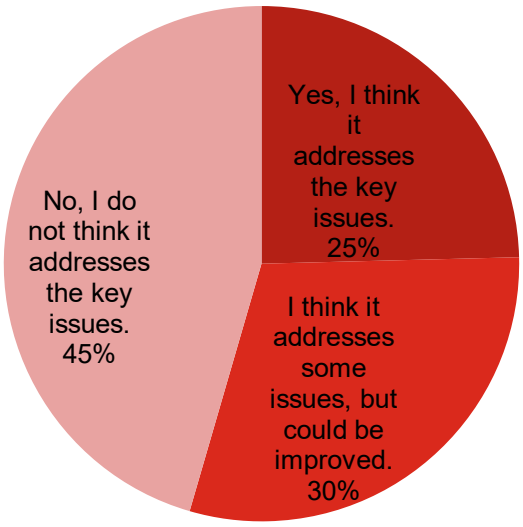


Alternative 4-B: Bicycle Boulevard with Parking on Both Sides





Alternative 4-A Results (n=300)



Alternative 4-B Results (n=301)

Ninety-eight respondents who did not answer “Yes” to either alternative described how the key issues could be better addressed. The most common responses (in order of most to least common) were:

- **Split opinions on dedicated bike lanes over parking**
  Most write-in comments for this focus area were about parking, with many respondents noting that they would like parking to be removed on at least one side of the street to incorporate a dedicated bicycle lane. However, some residents on Coleman, especially those who live at the apartment building, are concerned that limiting parking on Coleman would remove parking options, as parking would be consumed by overnight and long-term parking. Apartment residents also noted there is not currently enough parking provided to them. Additionally, respondents felt that short-term parking during peak hours is necessary for drop-off/pick-up at the daycare/preschool.
- **Dedicated bike lane**
  Respondents would like to see at least one dedicated, protected bike lane that is separate from pedestrian traffic. Sharrows were largely opposed and a bike lane in both directions was suggested. Additionally, safer bicycle and pedestrian crossing opportunities are desired.
- **Address speeding**
  Respondents would like alternatives to include more traffic calming measures such as stop signs, speed humps and other speed controls for slowing traffic and making Coleman Ave less attractive to cut-through traffic.
- **Make Coleman one-way**
  Making Coleman a one-way street was reiterated by those who mentioned this in the open-ended response for Focus Area 3.

Focus Area 4 Spotlight: Respondents concerned about parking loss on Coleman Avenue

Of 300 people who responded to this section of the survey about Focus Area 4 (Coleman - City), 11 respondents (3.6 percent) expressed concerns about **losing** parking. Of these 11, 54 percent felt that Alternative 4-A, which removes one lane of parking to accommodate a shared-use path, "addresses some issues but could be improved", while 46 percent felt it did not address key issues. When asked about Alternative 4-B, which retains parking on both sides but does not provide off-road space for cycling, the same breakdown resulted: 54 percent felt that the proposed alternative that retains parking "addresses some issues but could be improved", while 46 percent felt it did not address key issues. This underscores that those concerned about parking loss on Coleman Ave are undecided about the right approach to addressing focus area issues. Also, considering the small number of respondents who showed concern about parking loss, this may suggest limited survey participation from residents of multi-family dwellings on Coleman Avenue.

Breakout Group: MAHS Students

On June 2, County staff visited MAHS to talk to students about the Study and administer the survey (for students to take on their phones). Students were compensated with free lunch. While it is difficult to draw conclusions from this 27-response data set as it appears many students may have rushed through the survey (selecting the first choice for all focus area questions or selecting choices at random) and very few students provided write-in responses, there were some commonalities to the open-ended responses that those few students took the time to provide. For Focus Area 1, students who were not satisfied with the alternatives wrote in that they were unsure how to better address key corridor issues. For Focus Areas 2, 3 and 4, students wrote in that dedicated space to ride a bike was necessary, and for Focus Areas 3 and 4, safer crossings were suggested.

Final Thoughts

The final question of the survey asked participants, "Would you like to share anything else related to this survey?" Of the 454 total survey responses, 195 (43 percent) provided a short answer to the question. The most common responses included:

- Dedicated, protected, and marked lanes for pedestrians, bicycles, and cars in both directions are important. The main priority should be safety for school-aged youth.
- More street lighting is greatly desired.
- No shared lanes.
- Focus on mode conflicts at intersections or where people need to turn into school parking lots during peak congestion hours.
- More solutions are needed for vehicles queuing to drop off/pick up at schools, especially cars turning onto Edge Rd from Ringwood Ave.
- Trees should be preserved as much as possible, but vegetation that blocks visibility needs to be maintained and possibly removed.
- Consider changing the traffic and parking patterns on Coleman Ave by working with the schools, apartment complexes, etc. for a coordinated effort that considers peak hours (before and after school).
- Cut-through traffic should be mitigated by reducing or restricting access in order to encourage bikes or pedestrians.
- Disappointment that making Coleman a one-way street and restricting traffic on Coleman during peak congestion hours was not reflected in the alternative options.

Key Takeaways

The results of this survey reinforced the feedback themes heard throughout the Study. Balancing the various needs and issues in Focus Area 1 is a challenge, underscored by a lack of consensus in this survey. Figuring out how to address vehicle traffic while providing safe, dedicated space for walking and bicycling is paramount. The alternative preferences indicated for the other Focus Areas, along with the concerns raised for each area, such as the issue of removing parking from one side of Coleman Ave to make room for a shared-use path, also aligns with the feedback heard to date. Ensuring that all communities impacted by this Study are involved and able to share their opinions will continue to be essential as the Study moves forward.

PHASE 3 ENGAGEMENT

The summary below outlines the Phase 3 engagement activities that occurred in September and October 2023. During this phase of engagement, the Study team solicited input on slightly revised draft alternatives for the corridors. Additionally, this phase fulfilled a community request for more time to review the full concept plans rather than individual cross sections and provided the community with an opportunity to discuss the plans with City, County, and consultant team staff. Activities included:

- Coleman Avenue Pop-Up Demonstration
- Community Open House

In this phase of the Study, the draft alternatives (plus existing conditions) were presented for **three** Study areas:

- Ringwood Avenue;
- Coleman Avenue (County); and
- Coleman Avenue (City).

One of the main goals of this phase of engagement was to address questions and concerns surrounding the draft alternatives.

In addition to these engagement events, emails with concerns about this Study were sent to the San Mateo County Office of Sustainability. The emails received can generally be separated into two themes:

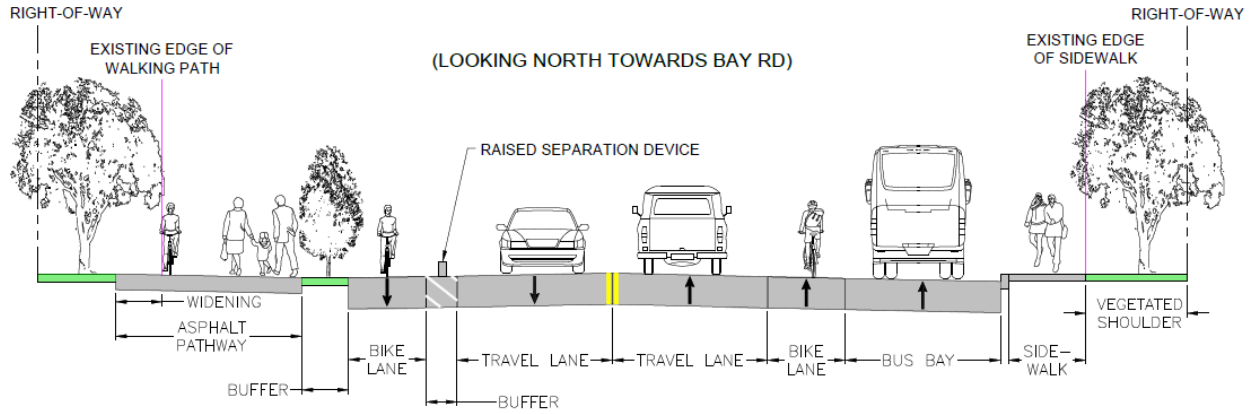
1. Some community members feel that their input is not being considered, and that there is support for one-way and/or turn restriction options that have been previously discussed and would like for these options to be considered as official alternatives. At a minimum, they want to be provided concrete data showing why these options were removed from the proposed alternatives.
2. Coleman Avenue is unique and its character should be preserved in the alternatives. Some community members feel a "cookie cutter" approach is being taken through the two draft alternatives proposed for the County section that would negatively impact the neighborhood character. They feel that the roadway should not be widened, and that the Study team should propose dedicated bicycle facilities rather than bicycle boulevards to address bicyclists' needs.

Overview of Phase Three Alternatives for the Three Study Areas

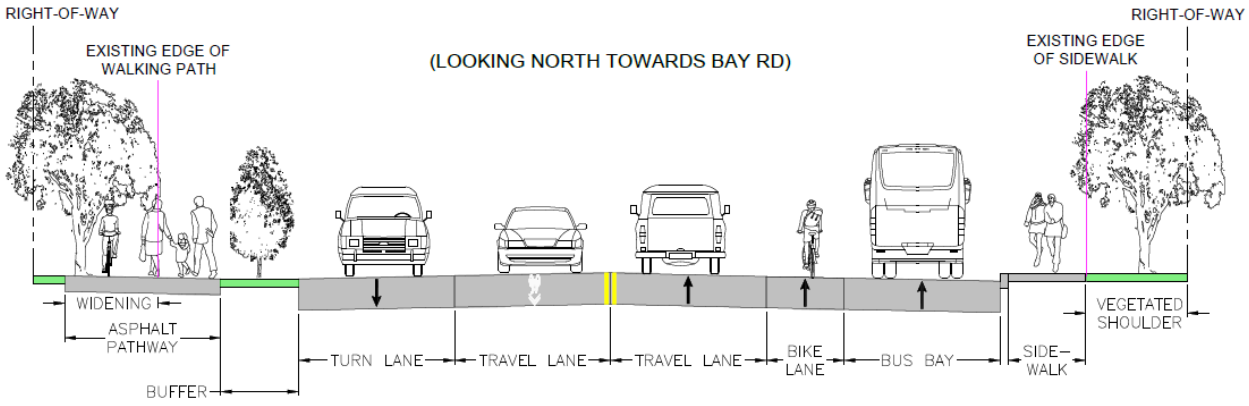
Each set of alternatives for the three Study areas are shown below, followed by a summary of key features of each alternative. These alternatives were updated slightly based on input from Phase 2 engagement. In addition, the two Ringwood focus areas were consolidated into one. **All alternatives proposed traffic calming measures, such as speed tables, throughout the corridors.**

Ringwood Avenue

Alternative 1: Bike Lanes with Raised Separation Device and Asphalt Pathway



Alternative 2: Bike Lanes (Shared Near Middlefield) with Asphalt Pathway



Alternative 1 Key Features

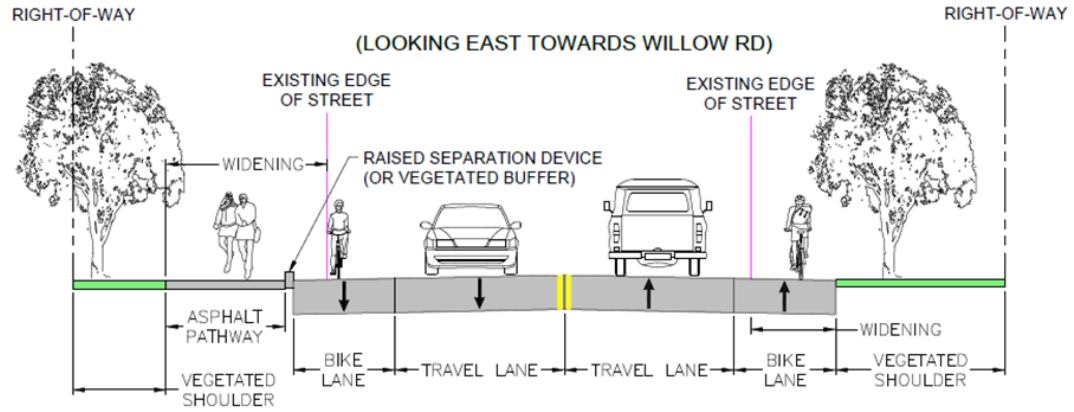
- Continuous dedicated southbound bike lane
- Striped buffer with raised element
- Wider asphalt pathway

Alternative 2 Key Features

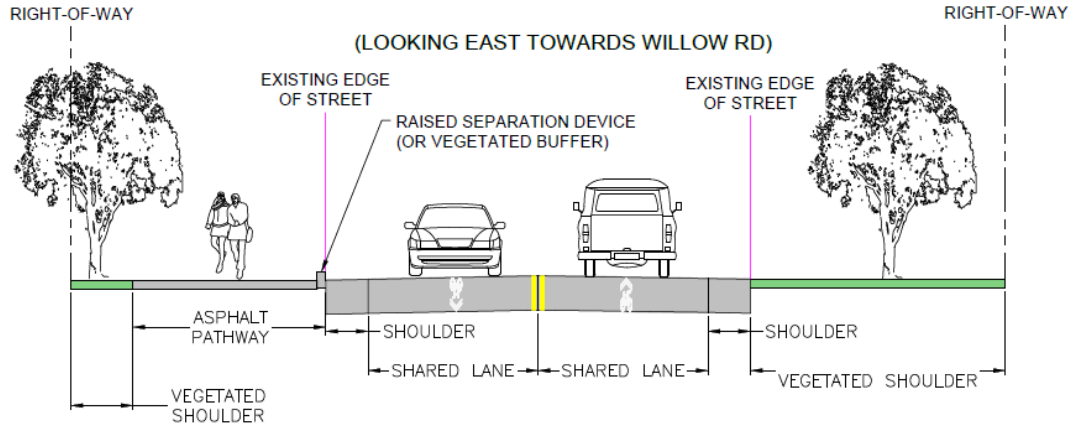
- Retains right turn lane into MAHS
- Shared southbound bike/travel lane near Middlefield
- Narrower asphalt pathway

Coleman Avenue – County

Alternative 1: Bike Lanes with Narrower Asphalt Pathway



Alternative 2: Bicycle Boulevard with Wider Asphalt Pathway



Alternative 1 Key Features

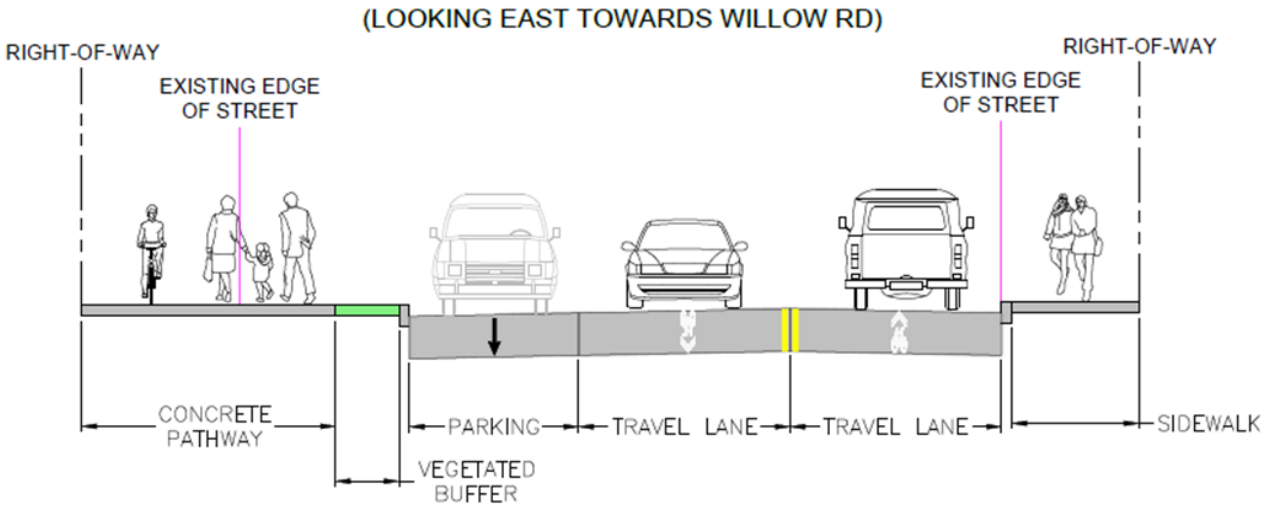
- Dedicated bike lanes
- Narrower asphalt pathway
- An estimated 3-13 trees would be impacted out of 130 total existing trees on the corridor.
- Parking removal on both sides

Alternative 2 Key Features

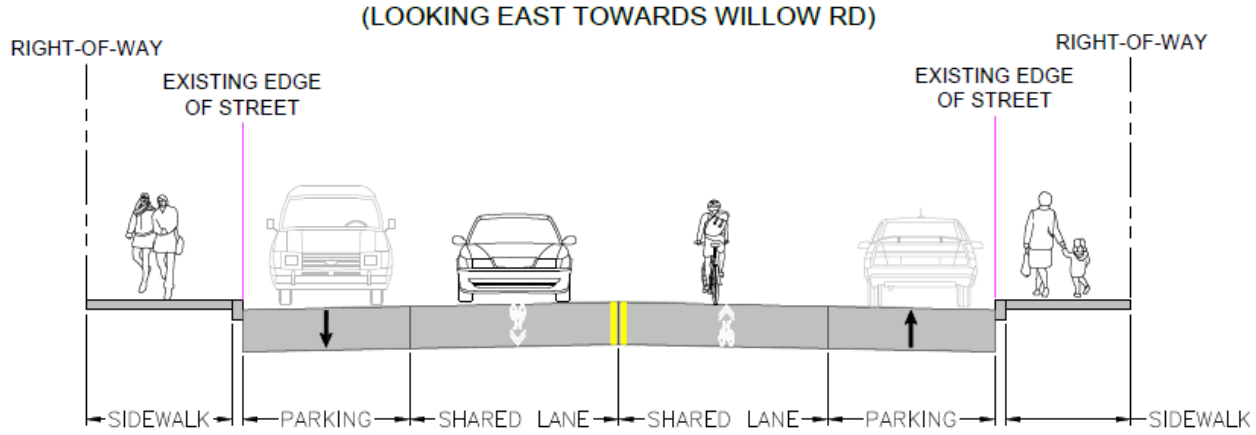
- Bike boulevard (shared bike/travel lanes)
- Wider asphalt pathway
- An estimated 19-37 trees would be impacted out of 130 total trees.
- Parking removal on pathway side only

Coleman Avenue – City

Alternative 1: Bicycle Boulevard with Concrete Pathway and Parking on One Side



Alternative 2: Bicycle Boulevard with Parking on Both Sides



Alternative 1 Key Features

- Parking removal on south side
- Shared use raised concrete pathway on north (apartments) side

Alternative 2 Key Features

- Parking retained on both sides
- Sidewalks remain as is

COLEMAN AVE POP-UP DEMONSTRATION

On Saturday, September 30th, 2023 the Study team traveled to Coleman Avenue to conduct a Pop-Up demonstration on the County side of the street. The goal of the Pop-Up was to physically showcase the concept designs for the entire Ringwood and Coleman Avenue corridors and to show how the two draft alternatives compare to existing conditions. Temporary materials, such as white gorilla tape, cones, and flags were used to demonstrate where the centerlines and curb lines would shift to accommodate the bicycle and pedestrian infrastructure proposed in each alternative. Pink ribbon was tied around any trees that might need to be removed to accommodate facility installation. Additionally, some members of the Study team went door to door to spread the word about the Pop-Up and upcoming Open House.

Study team members talk with attendees; guerilla tape and flags indicate how the alternatives would shift the roadway

The Pop-Up was advertised on the Study website, through the CBO partners, and via an email blast (using email addresses from people who had signed up throughout the Study to receive updates.) More than 35 residents of the area attended this event and provided input verbally and in written form on the plan sheets. Themes echoed throughout the event included:

Common Infrastructure Concerns/Comments

- No removal of trees; if anything, shift facilities around trees
- General support for traffic calming to reduce vehicle speeds and volumes
- Consider turn restrictions during peak hours or partial closure of Coleman (County section) instead of either alternative
- Consider turning Coleman (County section) into a one-way street
- Support for dedicated bicycle and pedestrian facilities
- Ask residents at Coleman Avenue/Berkeley Avenue to cut back their hedges to improve visibility
- Concerns about traffic being diverted to other streets
- Requests for permeable (such as decomposed granite) pedestrian walkways due to drainage concerns
- No additional pavement
    - Concerns were expressed that widening the road will encourage drivers to speed

- Make all intersections on Coleman Avenue all-way stop-controlled

Common Behavior Concerns/Comments

- Unsafe driving behaviors/speeding on Coleman Avenue
- Unsafe bicyclist behavior (bicyclists riding the wrong way and through stop signs)
- Use enforcement as a strategy instead

Concept plan sheets were available at the Pop-Up for the public to markup, such as places where additional crossings should be considered due to bus stops or places where additional speed tables should go. The Study team will refer to these sheets as the Study progresses. Attachment H provides the plan sets marked up with public comments.

The Study team discusses the concept plans with attendees

COMMUNITY OPEN HOUSE

On Monday, October 2nd, the Study team hosted an open house at Menlo-Atherton High School from 6-8 PM. It was advertised on the Study website, through the CBO partners, at the Coleman Avenue Pop-Up Demonstration, and via an email blast (using email addresses from people who had signed up throughout the Study to receive updates.) This was an additional opportunity for the public to review the full corridor concept plan sets, with existing conditions and two alternatives fully laid out. The Study team began the event with a presentation to explain where in the process the Study is and how to read the concept plans. Two full sets of concept plans were laid out on tables for the public to provide direct feedback, and staff were on hand to answer questions and receive comments. The meeting concluded with a brief interactive poll (using the Slido platform) to assess preferences for alternatives to the corridors.

More than 45 people attended the open house and provided input verbally and in written form on the plan sheets. Participants were encouraged to mark what they liked (with green dot stickers) and disliked (with red dot stickers) about the proposed alternatives directly on the plan sheets. The public also wrote comments directly on the plans and on sticky notes, which the consultant team will refer to as the Study progresses.

The same concerns and comments expressed during the Coleman Avenue Pop-Up were reiterated, with more voices expressing the need for safe bicycle and pedestrian facilities above all else. Common concerns/comments that were not already expressed at the Pop-Up are listed below. Attachment I provides images of the plan sets with public comments.


Staff and participants discuss concept plans at the Open House

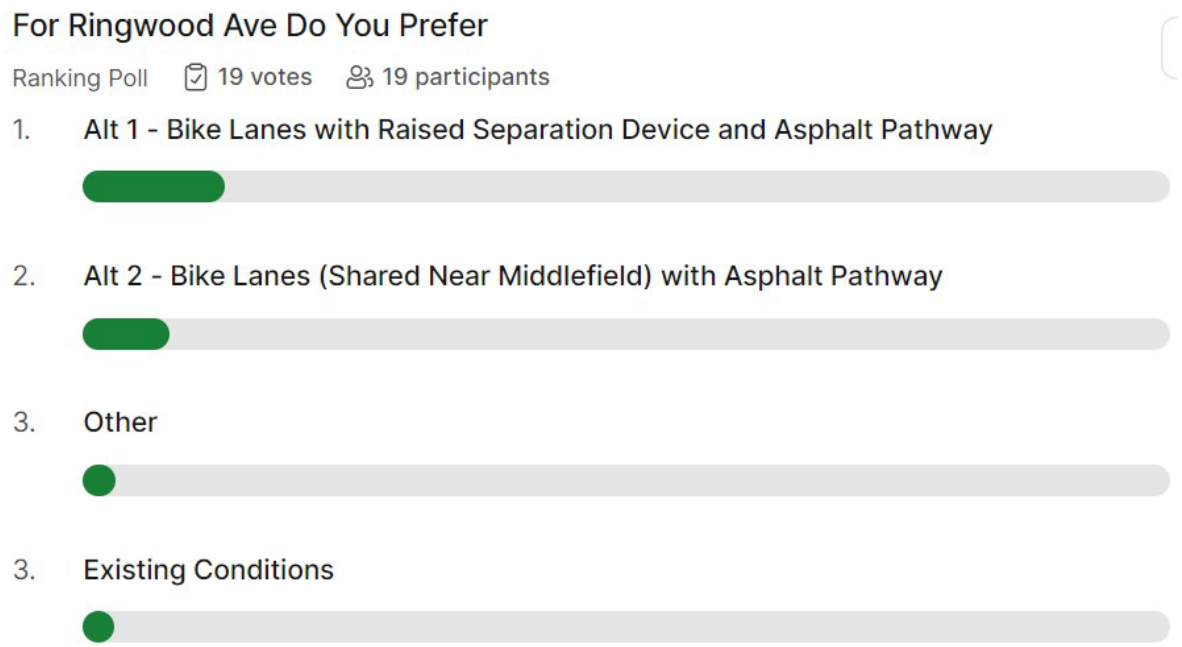
Common Concerns/Comments

- Safety of bicyclists and pedestrians should be prioritized above all else, including tree preservation
    - Concern that not enough parents with children were able to come to the event
- Suggestion for hiring crossing guards during peak travel hours in lieu of infrastructure changes
- Dislike of bulb-outs
- Frustration over these corridors being studied in the past and no changes made
- Community consensus will not be reached and nothing will be done

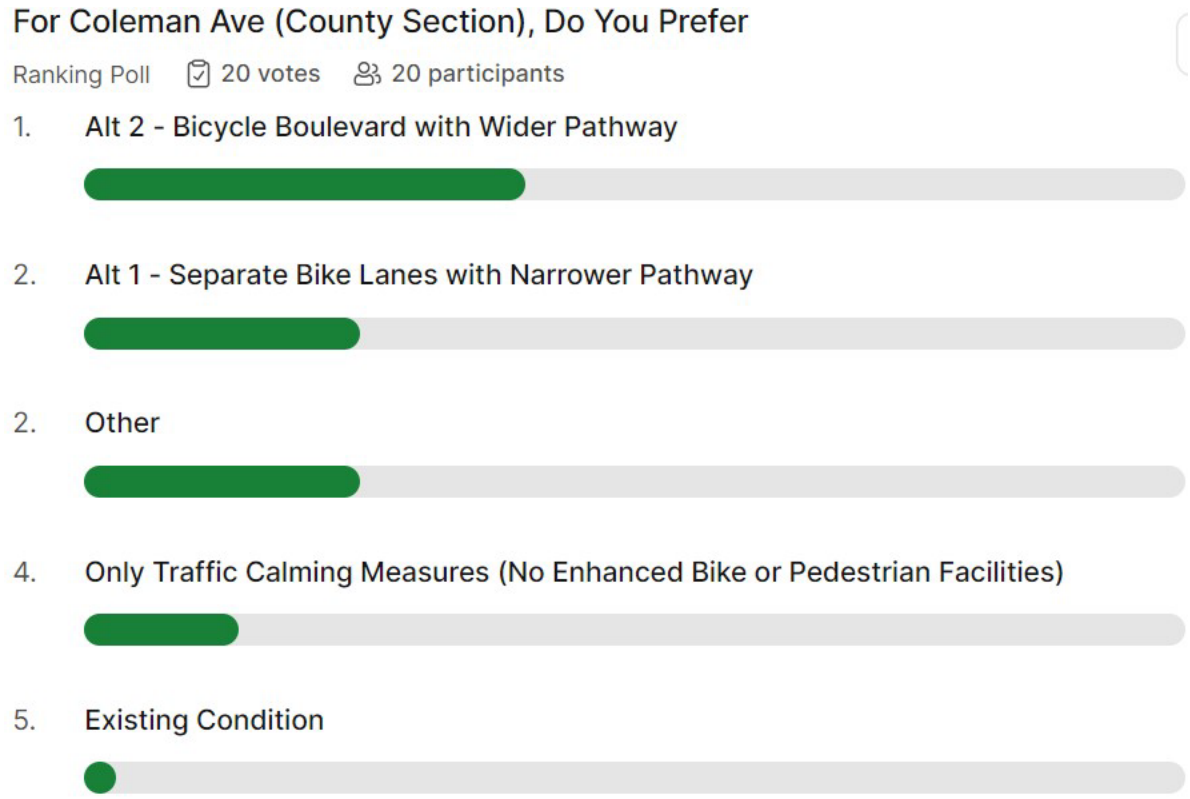
- Bike boulevards are not safe enough; need barriers between bicyclists and vehicles
- Install all-way stop control at Coleman Avenue and Berkeley Avenue
- Present this Study to school leaders/school board
- General support for Ringwood Avenue alternatives, particularly Alternative 1, which features vertical separation to protect bicyclists from vehicles and prevent parking in the bike lanes
- Support for new crossings with high-visibility crosswalks along both Ringwood and Coleman Avenues
    - Make sure crosswalks exist at all bus stops
- Provide a plan to replace each tree being removed

Slido Poll Results

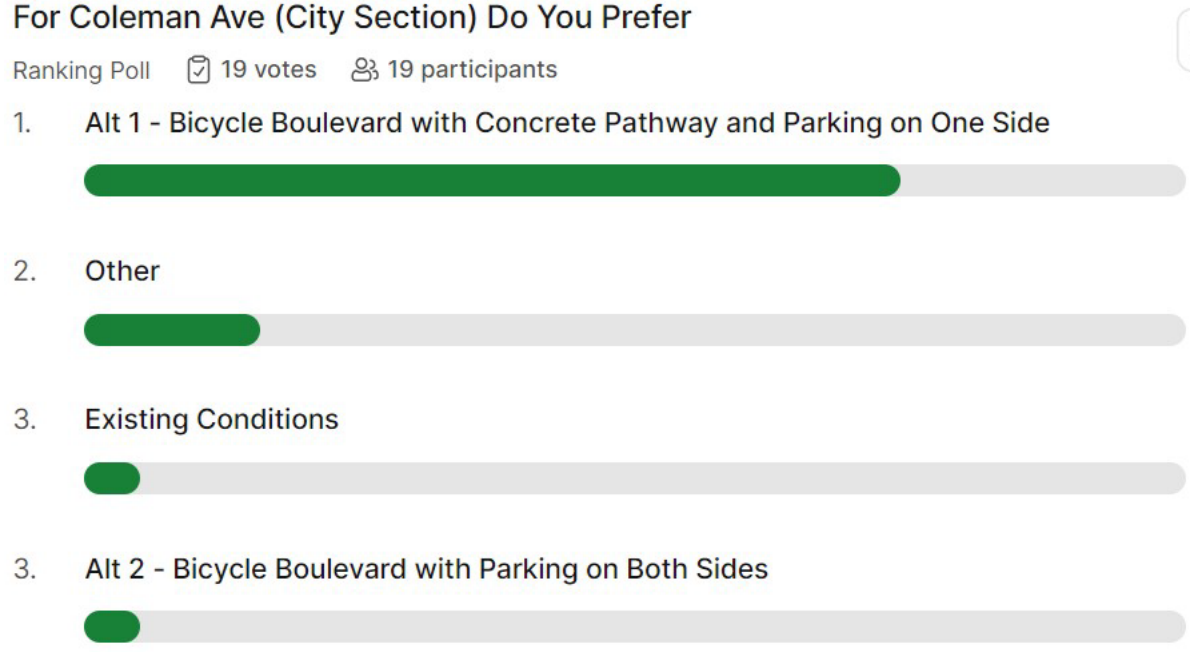
A closing poll using Slido was conducted at the end of the Open House. However, only 19-20 people (slightly less than half of the total open house participants) participated, so it is difficult to draw any significant conclusions from the poll results.



A slight preference for Ringwood Avenue Alternative 1 was shown.



A slight preference for Coleman Avenue (County) Alternative 2 was shown.



A strong preference for Coleman Avenue (City) – Alternative 1 was shown.

Key Takeaways of Phase Three Engagement and Next Steps

Coleman Avenue

Both the Coleman Avenue Pop-Up and the Community Open House underscored that there are mixed opinions on how to best address the County section of Coleman Avenue. There is agreement on the need for traffic calming to reduce vehicle speed and volume. Moving forward, measuring interest in other approaches to the county section of Coleman Avenue, aside from the two Alternatives, would be a likely final phase of public engagement for this study.

The approach to the city section of Coleman Avenue will be influenced by the option pursued for the County section. There was general support for removing parking from one side of Coleman Avenue in the city section, but also questions and concerns about whether residents of apartment buildings on Coleman Avenue would support this. While many efforts were made to engage apartment building residents, only two were in attendance for Phase Three engagement events.

Ringwood Avenue

There is general support to advance Alternative 1 for Ringwood Avenue.

PHASE 4 ENGAGEMENT

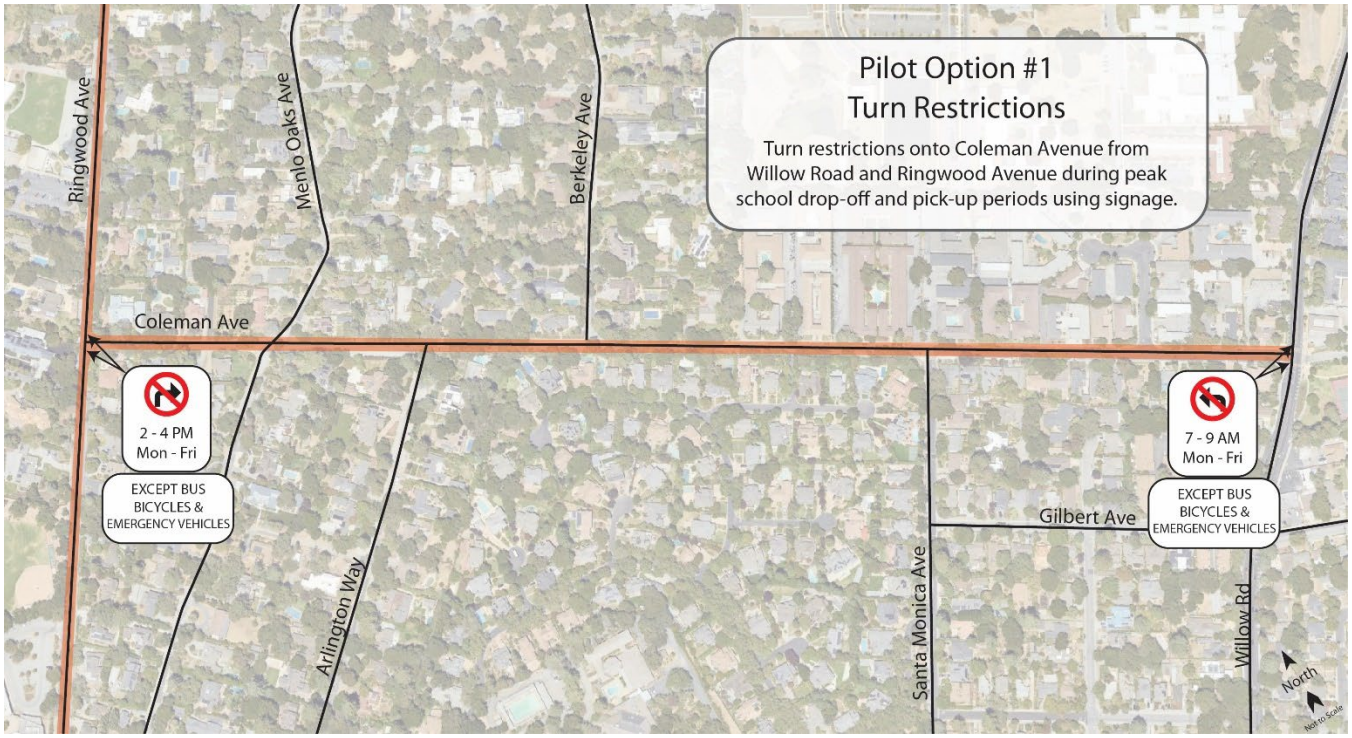
The summary below outlines the final phase of engagement activities that occurred in November and December 2023. Phase 4 engagement activities were a direct response to the feedback received during Phase 3. During this phase of engagement, the Study team gauged public interest for potential Coleman Avenue Pilot Programs in additional to longer-term alternative options. Activities included:

- Coleman Avenue Community Meeting
- Coleman Avenue Survey

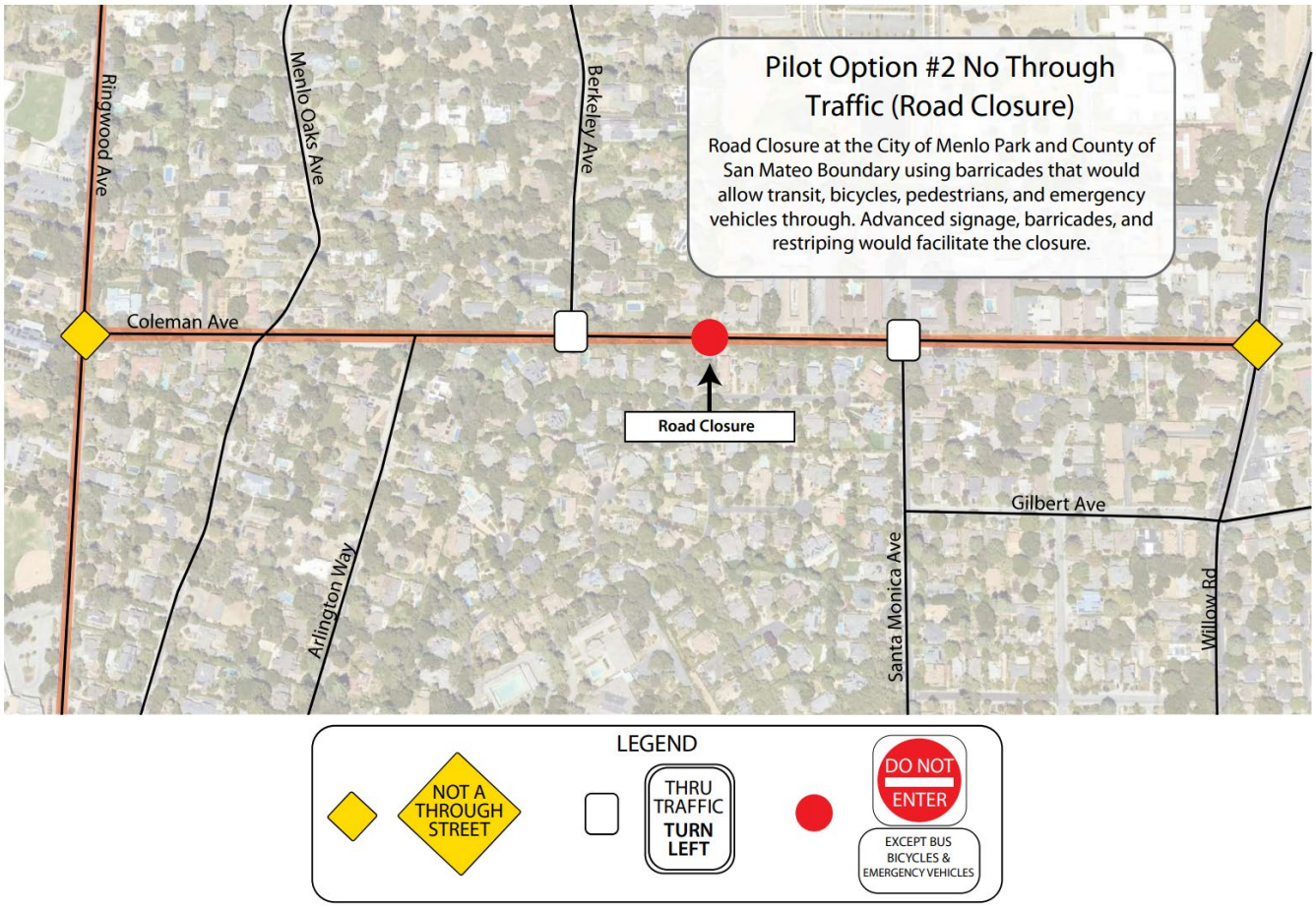
Pilot Programs

During Phase 3 of engagement, the Study team heard that stakeholders would like to see slower vehicular speeds on Coleman Avenue with fewer cars overall. The San Mateo County Office of Sustainability received a petition from residents (the majority of whom live on Coleman Avenue) encouraging the consideration of additional concept designs that could reduce traffic volume on Coleman Avenue and not require the removal of any trees. In response, the County and City identified four potential **pilot programs** to be considered alongside the alternatives presented during Phase 3. A pilot program would implement low-cost features on a short-term basis to allow the County, City, and community to experience changes and see if they meet the Study objectives. If Study objectives are met by the pilot, then the program may be considered as a longer-term solution. (Alternatively, a pilot program may be recommended as a temporary solution before an alternative is pursued.) The four pilot programs are described and illustrated below.

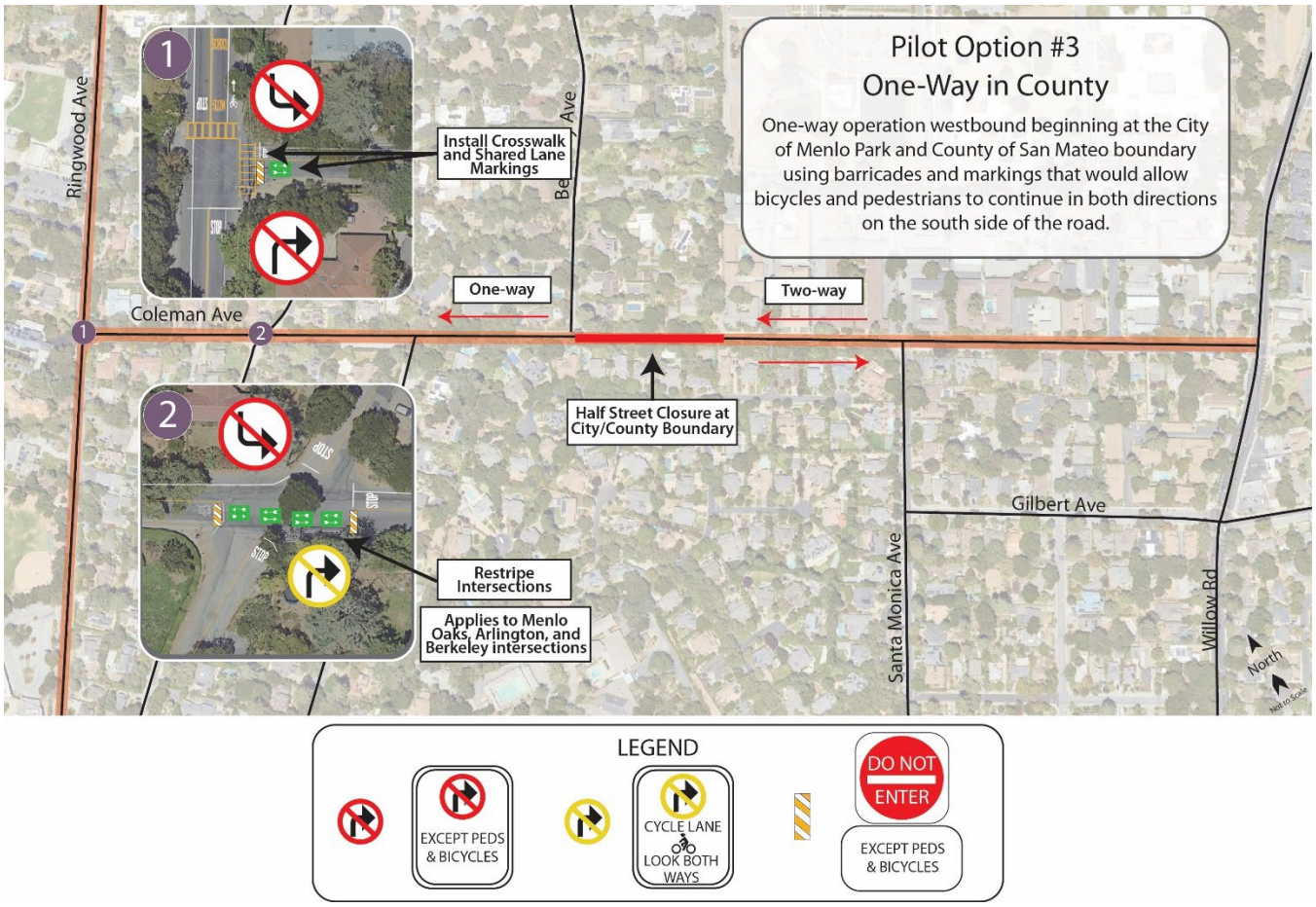
» **Turn Restrictions:** This temporary pilot program would implement new signage to restrict turns onto Coleman Avenue during school hours.



» **No Through Traffic on Coleman (Road Closure):** Coleman Avenue would be closed at the City/County boundary to all traffic except for buses, bicycles, pedestrians, and emergency vehicles. Advanced signage, barricades, and striping would facilitate the closure.



» **One-way in County:** Coleman Avenue would be one-way for vehicles traveling towards Ringwood Ave on the County side of Coleman Ave only (roughly northwest of the Coleman Arms Apartments to Ringwood Ave, indicated on the map below.) Vehicle traffic would remain two-way on the city side of Coleman Avenue. Barricades would restrict access to the southbound side of Coleman Avenue, and signs would communicate access restrictions and two-way bike use. Since only one lane for vehicle travel will be needed in the one-way portion of the street, the lane on the south side of the road would be dedicated space for bikes and pedestrians, noted with pavement markings. In the two-way portion of the street, bikes will share lanes with vehicles.



» **Traffic Calming ONLY:** Rubber speed humps would be installed at several locations on Coleman Avenue to reduce vehicle speeds.

COLEMAN AVENUE COMMUNITY MEETING

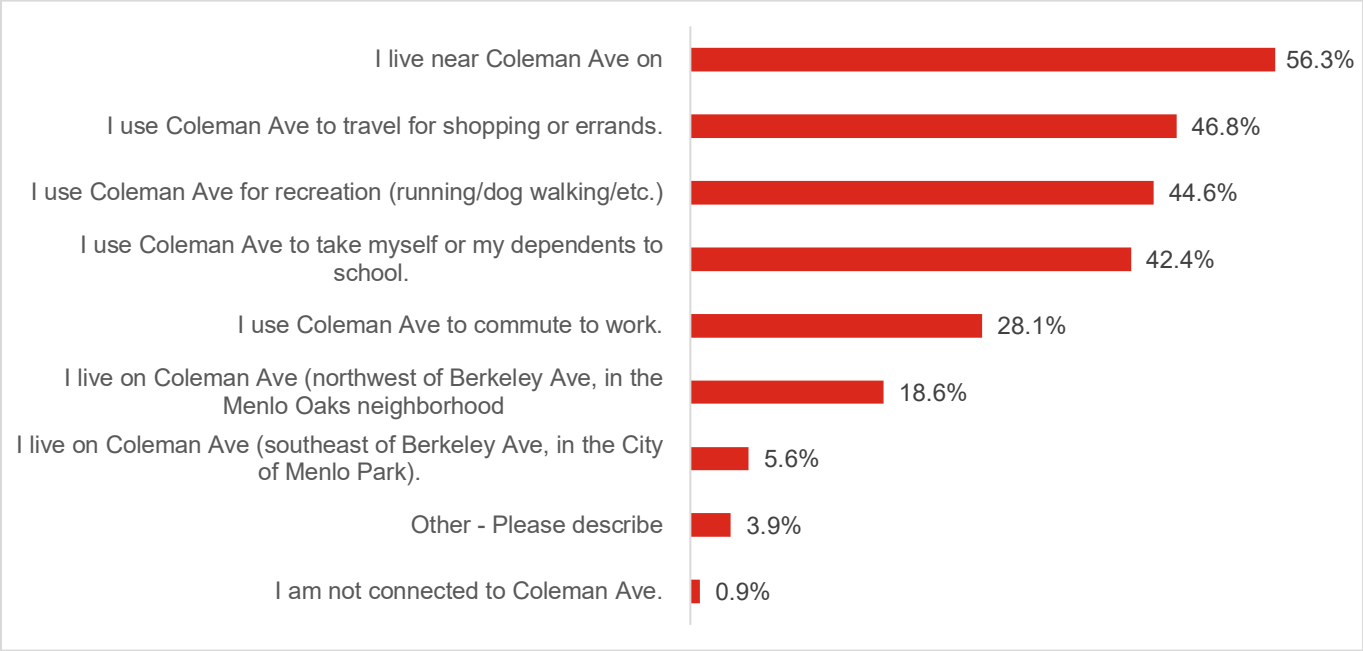
The Coleman Avenue Community Meeting took place virtually on Thursday, December 7th, 2023, from 6-8 PM using the Zoom platform. It was advertised on the Study website, through the CBO partners, and via an email blast (using email addresses from people who had signed up throughout the Study to receive updates.) Approximately 45 people participated. The meeting began with an overview of the four potential pilot programs, followed by a breakout room session featuring a small group activity that asked participants to weigh the impacts of the various pilot programs on different potential outcomes of the study (e.g., improved bicyclist/pedestrian safety and reduced traffic volumes). After this breakout session, everyone came back together to report out what was discussed in each group as well as discuss the pilot programs overall. Closing out the meeting was a brief poll and a Q&A session. The poll showed a preference for *Pilot Option #2: No Through Traffic on Coleman*.

COLEMAN AVENUE SURVEY

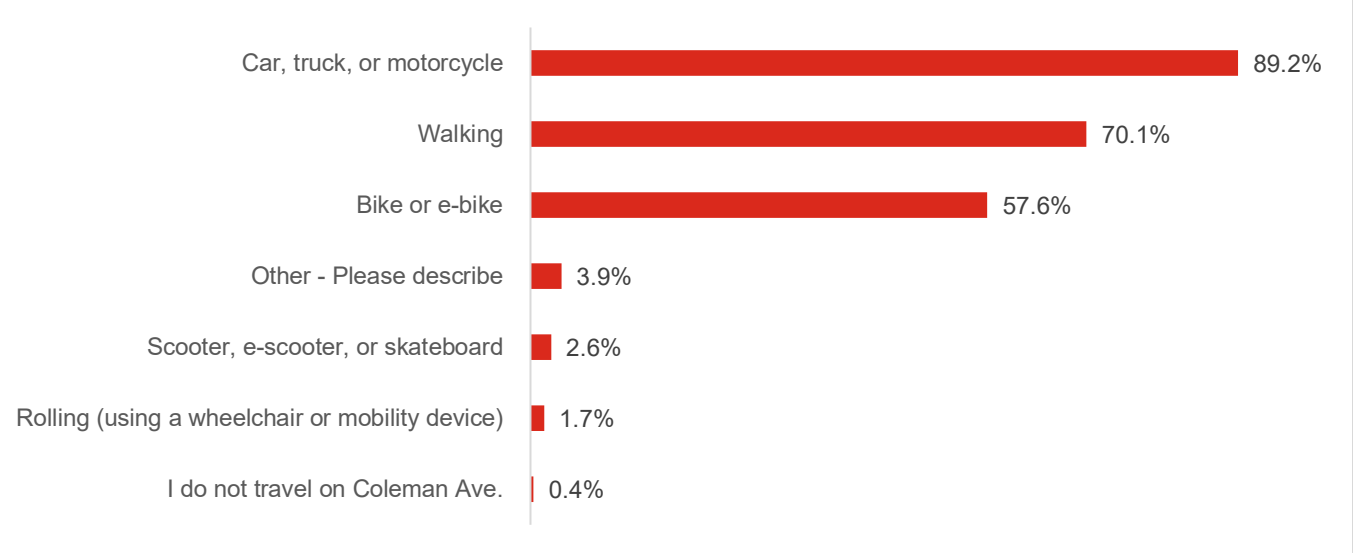
The Coleman Avenue Survey was open from December 7, 2023 through December 25, 2023. It was advertised at the Coleman Avenue Community Meeting, on the Study website, through the CBO partners, and via an email blast (using email addresses from people who had signed up throughout the Study to receive updates). The survey was designed to get a sense of how respondents were connected to Coleman Avenue, how well they thought each pilot project would address Study goals, overall pilot project preference, and how a potential pilot project might tcompare to the Study alternatives. One-hundred ninety-five (195) fully completed surveys and 70 partially completed surveys were received, for a total of 265 survey responses.

Respondent Information

Respondents were first asked about their connection to Coleman Avenue and could check all that apply (therefore the sum of percentages exceeds 100). Over half of survey respondents said they live near Coleman Avenue and were encouraged to fill in the blank to indicate which street they live on. The top responses were Menlo Oaks Drive (27 respondents) and Berkeley Avenue (24 respondents). Further review of the streets respondents live on revealed that about half of all survey respondents live in the Menlo Oaks neighborhood; this should be kept in mind as survey results are brought to decision-makers.

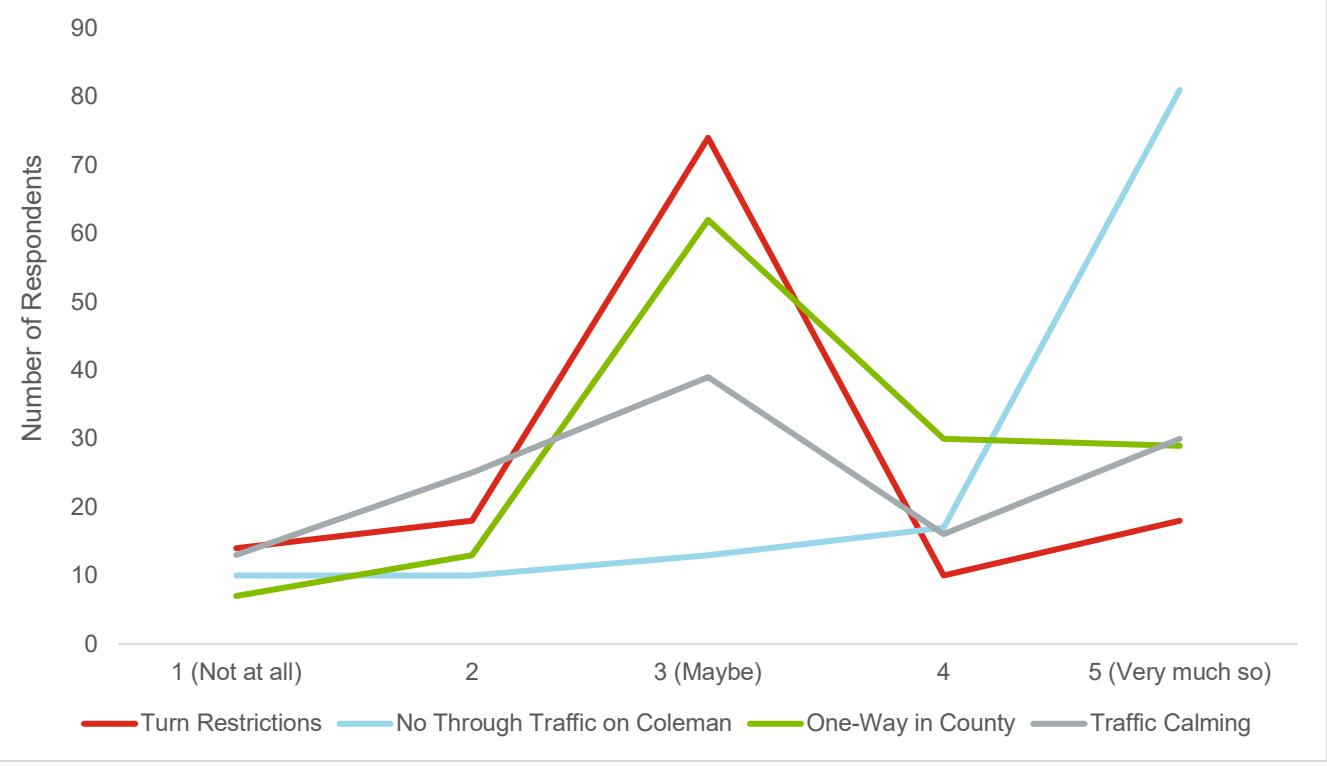


Next, respondents were asked about how they usually travel on Coleman Ave and could check all that apply (therefore the sum of percentages exceeds 100). Most (89.2%) of the respondents indicated that they get around in a vehicle, yet 70 percent said they walk, and nearly 58 percent bike or e-bike.

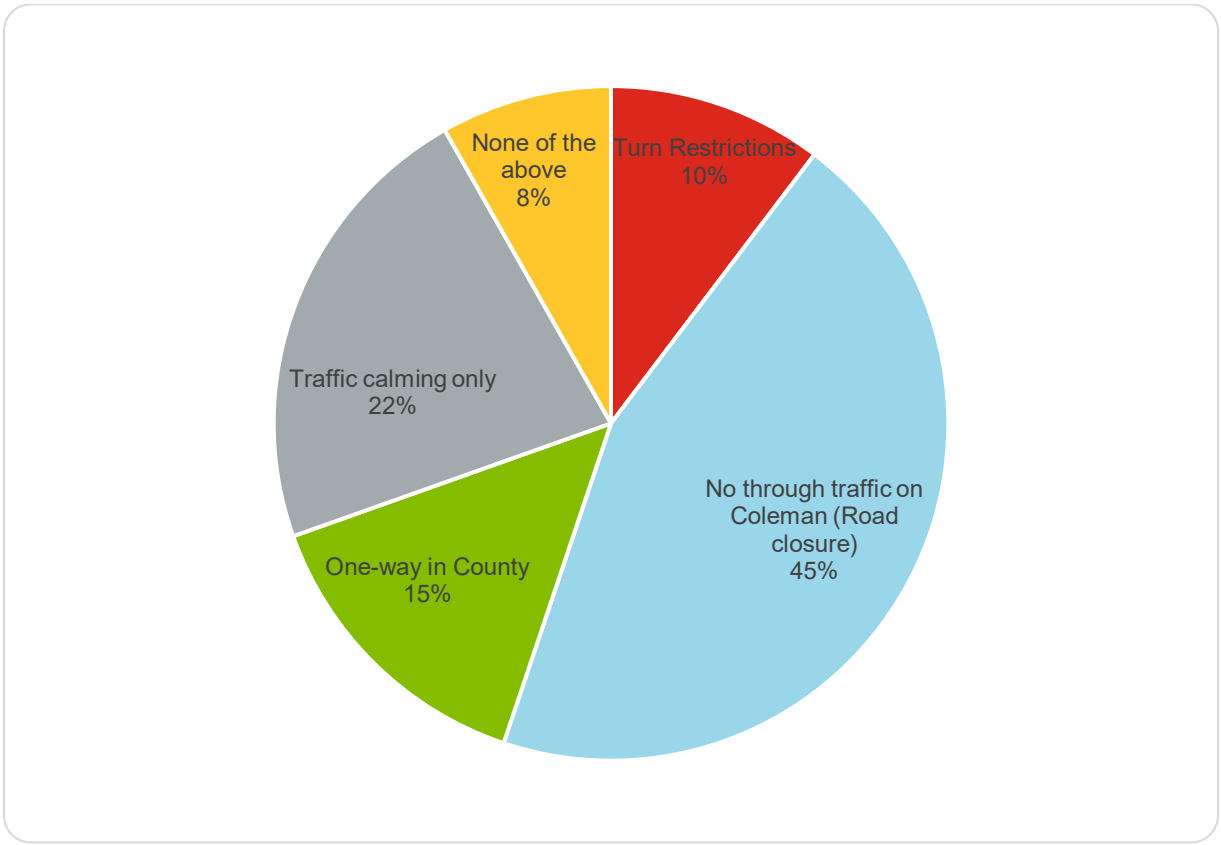


Pilot Options

The next set of questions reviewed the potential pilot programs then asked respondents to rate on a scale of 1 (Not at all) to 5 (Very much so) how well they felt each pilot would meet the Study objectives to improve mobility for active modes of transportation and safety for all users. Three of the four pilot options' top response was "Maybe" except for *Option #2: No Through Traffic on Coleman (Road Closure)*, for which the majority of respondents voted "Very much so".



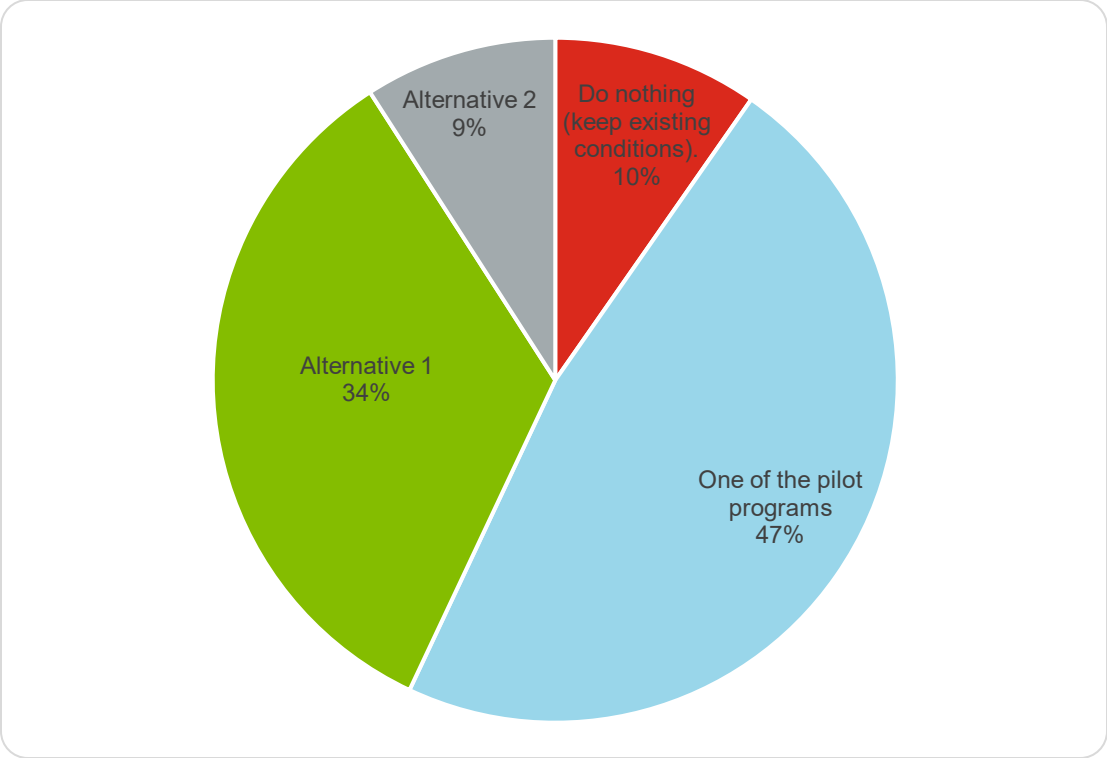
Following this, respondents were asked which, if any, of the pilot options would best achieve the objectives of the study. Consistent with the ranking question that preceded it, *Option #2: No Through Traffic on Coleman (Road Closure)* received the most support (45% of respondents). Overall, 92 percent of respondents were open to the idea of a pilot in general.



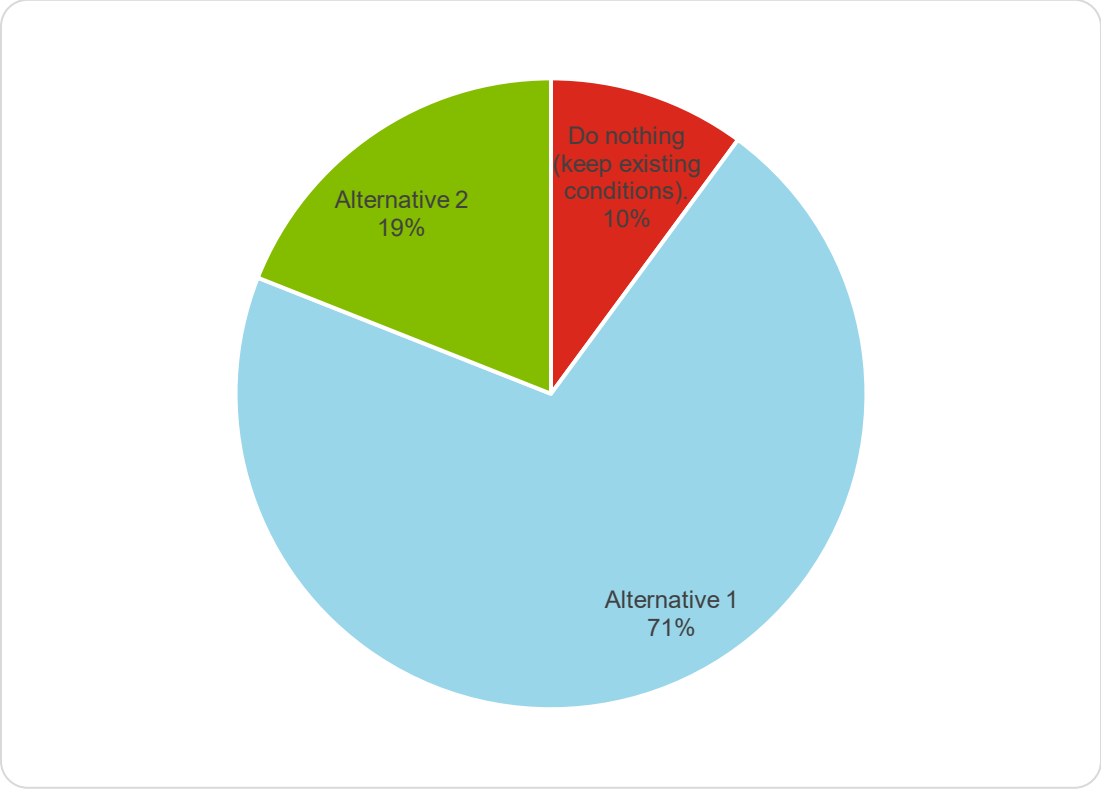
For those who selected “Turn Restrictions”, a follow-up question assessed what time of day respondents thought turn restrictions should be in place; 95 percent of respondents selected “school commute hours only” (while 5% selected “rush hour commutes”).

Pilots Versus Alternatives

Next, respondents were presented with a review of the two alternatives for the County portion of Coleman Avenue then asked for their preferred approach between the two alternatives, a pilot program, and existing conditions. Nearly half of respondents (47%) selected “one of the pilot programs”, followed by Alternative 1 at 34 percent.



Those who selected one of the alternatives were presented with a follow-up question asking their preferred alternative for the city section of Coleman Ave. Seventy-one (71) percent selected Alternative 1.



Preferences based on Residence

Additional analysis was done to determine if preferences might be associated with where people live. However, limited conclusions can be drawn as there were vastly different numbers of respondents across the three residential areas that could be selected on the survey: 116 responded that they live near Coleman Avenue, 33 live on Coleman Avenue in the Menlo Oaks neighborhood of San Mateo County, and 12 live on Coleman Avenue in the City of Menlo Park. Furthermore, Coleman Avenue (City) residents are underrepresented in the survey responses, considering that land use density is greater there than in the County.

Pilot Options

Regardless of residence (near Coleman Ave, on Coleman Ave in City, or on Coleman Ave in County), *Pilot Option #2: No through traffic on Coleman (Road Closure)* was the most popular pilot program. Additionally, relative support for each pilot program was similar across residential groups. Some respondents who live *near* Coleman Avenue, however, indicated that none of the pilots would meet Study objectives, perhaps indicating a preference for one of the alternatives. Both groups who live on Coleman Avenue felt that one of the pilots would meet Study objectives.

Pilot versus Alternatives

When asked for a preference between existing conditions, one of the alternatives, or a pilot program, residential group made a difference. The table below shows the number of respondents who selected each option by residential group. Both groups who live on Coleman Avenue showed a preference for one of the pilots, but the group who lives near Coleman Avenue had nearly equal numbers of respondents who selected “One of the pilots” as “Alternative 1”.

	Existing Conditions	One of the Pilots	Alternative 1	Alternative 2
Lives near Coleman Ave	11	49	48	7
Lives on Coleman Ave (County)	4	21	2	1
Lives on Coleman Ave (City)	0	8	3	0

Therefore, preference for pursuing a pilot option versus an alternative appears to depend on whether someone lives directly on the corridor affected by the pilot project; those who live on Coleman Avenue within the County showed the greatest preference for pursuing a pilot option.

ATTACHMENTS

- Attachment A – Demographic Slips and Comments Cards Received
- Attachment B – Activity Board Results
- Attachment C – Pop-Up Materials Provided
- Attachment D – Survey Results
- Attachment E – Walking Tour Materials
- Attachment F – Walking Tour Results
- Attachment G – Survey 2 Results
- Attachment H – Coleman Avenue Pop-Up Demonstration Plan Sets with Comments
- Attachment I – October 2023 Open House Plan Sets with Comments
- Attachment J – Coleman Avenue Survey Results

Appendix C

Suggested Draft Alternatives

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Memorandum

Date: December 8, 2022

Project: SMX900-2

To: Vanessa Castro, County of San Mateo
Hugh Louch, City of Menlo Park

From: Mark Spencer
mspencer@w-trans.com
Cameron Nye
cnye@w-trans.com

Subject: Coleman and Ringwood Avenues Transportation Study – Suggested Draft Design Alternatives

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The following memorandum summarizes the suggested initial draft alternatives for the Coleman and Ringwood Avenues Transportation Study developed for presentation to the community for input. These initial concepts were developed considering priorities identified to date through several stakeholder and community engagement events, a community survey, feedback from the project's Community Advisory Committee (CAC) and Technical Advisory Committee (TAC), and conditions and constraints present on each corridor, including available public-right-of way.

Study Goal

The overarching goal of the study, established at the beginning of the study effort and confirmed through the first phase of community engagement, is to improve mobility for active modes of transportation and improve safety for all users of Coleman and Ringwood Avenues. This goal was confirmed during the first phase of engagement which consisted of multiple "pop-up" and "pop-in" events, the first of two online surveys, and two walking tours. These engagement activities identified that there is overwhelming support from residents and stakeholders for improved bicycle and pedestrian infrastructure. The provision of comfortable and dedicated places to walk and bike was the most important priority for the community on both corridors followed to a lesser extent by the preservation of trees and vegetation. The provision of streetlighting and on-street parking were consistently ranked as lower priorities. The number one safety concern identified by the community for Coleman Avenue is not having enough space in the street to walk or bike, while dangerous driving behavior, especially related to school circulation, was identified as the number one safety concern for Ringwood Avenue. Speeding was identified as a concern on both corridors, though to a lesser extent for Coleman Avenue, and many residents requested improvements to calm traffic. Additionally, the need for numerous localized enhancements such as new pedestrian crossings and intersection improvements were also identified. As a result, the provision of new dedicated places to walk and bike was a key component of the suggested design alternatives.

Key Objectives

Based on the existing conditions assessment, feedback from the community, and discussions with the advisory committees, a series of key objectives were identified to guide the development of the design alternatives and evaluation criteria. These objectives reflect the key takeaways from the community engagement efforts and are smaller, more specific goals that outline the framework for achieving the overarching goal to improve mobility for active modes of transportation and safety for all roadway users.

- Improve safety by reducing the frequency and severity of collisions.
- Reduce vehicle travel speeds, especially where different user groups interact or share space.
- Create greater separation of physical space for pedestrians and bicyclists from motor vehicles.

- Improve the level of perceived comfort for pedestrians and bicyclists.
- Provide continuity for pedestrians and bicyclists from one side of the corridors to the other.
- Preserve the character of the neighborhood, including trees, greenery, neighborhood circulation patterns, as well as parking only within the City of Menlo Park segment of Coleman Avenue.

Traffic Calming Measures and Spot Improvements

A general desire for reduced travel speeds was expressed by the community for both corridors. As a result, it is suggested that traffic-calming improvements such as those listed below be incorporated into each design alternative. While many of these measures are not yet depicted in the cross-section graphics, they will be evaluated further for feasibility during the 10-percent conceptual design stage for the alternatives that receive the most community support.

- Narrower travel lanes
- Speed tables
- Chicanes (City only)
- Curb Extensions (City only)
- Formalizing the traffic circles protecting trees
- Centerline and edge line striping
- Speed feedback signs
- Speed reduction markings
- Tighter turning radii
- Explore possibility of lowering the posted speed limit
- Enhanced crossings (flashing beacons or raised crossings)
- New pedestrian crossings
- Vegetation clearing and trimming
- New stop controls

Coleman Avenue (Menlo Oaks)

The following initial design concepts were developed for the County segment of Coleman Avenue.

Alternative 1 – No Build, Retain Existing Conditions

Alternative 1 would maintain the existing roadway conditions along Coleman Avenue. The existing cross-section is illustrated in Plate 1 and summarized below.

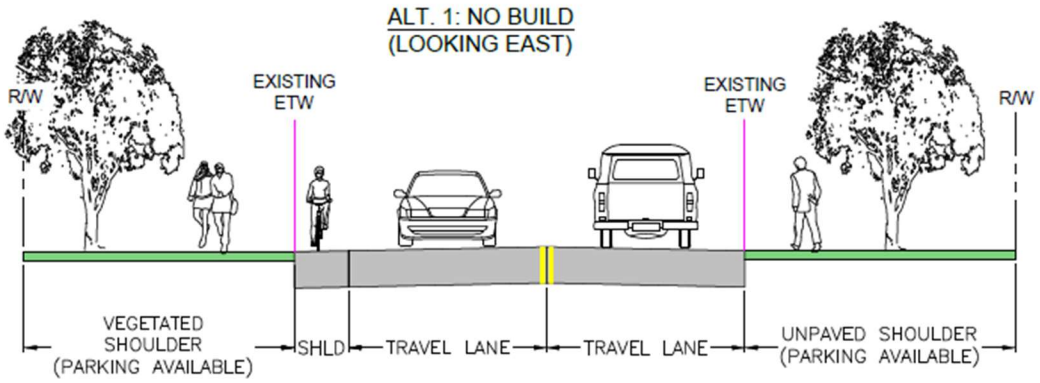

Plate 1 Coleman Avenue (Menlo Oaks) Alternative 1

- Public right-of-way of 50 to 63 feet
- Two 11-foot travel lanes
- Striped shoulder on the north side of the street that varies in width between two and four feet
- Roadside gravel, dirt, and vegetation with numerous large mature oak trees and utility poles located within the public right-of-way
- Roadway alignment includes a series of slight horizontal curves
- Traffic circles inscribing trees in the center of intersections
- Parking provided on both sides of the street in select locations with time-of-day restrictions

Alternative 2 – Bicycle Boulevard with Pedestrian Pathway (San Mateo County ATP)

Under Alternative 2, the existing roadway width along Coleman Avenue would be retained and traffic calming elements introduced to slow speeds and discourage cut-through traffic. Signage and sharrow pavement markings signifying the roadway as a Class III bicycle facility would also be installed. To accommodate pedestrians, an off-street pathway would be constructed on the north side of the corridor, resulting in elimination of parking on this side of the street. The pathway would likely result in some tree and utility pole impacts, though it would be designed to meander around those obstacles as much as possible. The southern side of the street would be left undisturbed. This was the preferred alternative identified in the County's Active Transportation Plan and is illustrated conceptually in Plate 2.

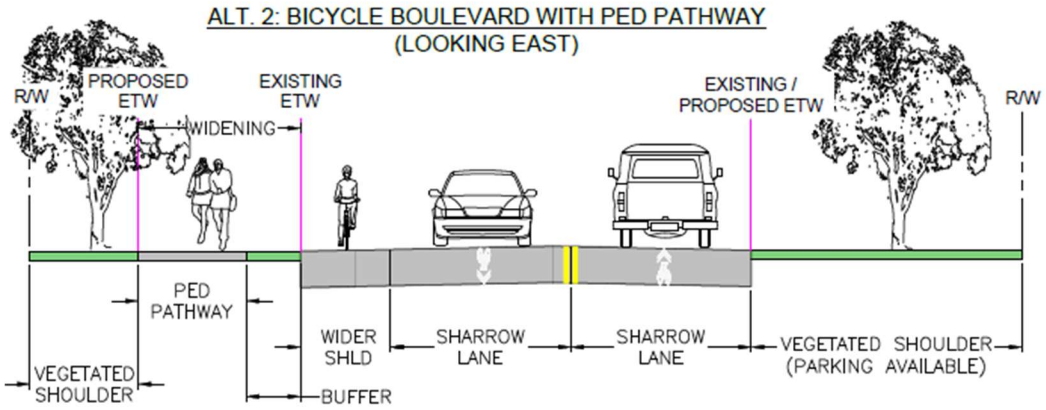

Plate 2 Coleman Avenue (Menlo Oaks) Alternative 2

Alternative 3 – Multi-Use Pathway on North Side

Alternative 3 includes the construction of a multi-use pathway on the north side of Coleman Avenue. The existing roadway alignment would be retained, though the addition of the multi-use pathway on the north side would result in elimination of parking on this side of the street. The multi-use pathway would meander around trees and other objects as much as possible, though some tree and utility impacts would be expected. Sharrow pavement markings and traffic calming measures would be installed within the roadway to allow cyclists the option of riding on-street if they prefer. The southern side of Coleman Avenue would be left undisturbed. These potential improvements are denoted conceptually in Plate 3.

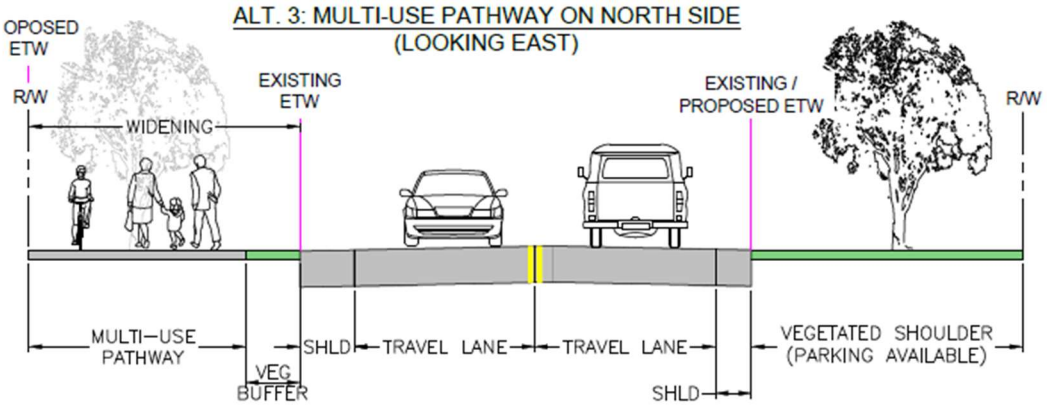

Plate 3 Coleman Avenue (Menlo Oaks) Alternative 3

Alternative 4 – Class II Bike Lanes with Pedestrian Pathway on North Side

Alternative 4 is illustrated in Plate 4 and includes the construction of a Class II bicycle lane in each direction of Coleman Avenue. Roadway widening would be required for the bike lanes. A pathway would be constructed on the north side of the street to accommodate pedestrians, resulting in the removal of parking on the north side. The pathway would meander around trees and other objects as much as possible to limit the tree and utility impacts along the corridor. To separate the pathway from the adjacent bicycle lane, vegetated buffers or a vertical element, such as an asphalt dike, would be constructed. Traffic calming measures would also be installed within the roadway to slow speeds and discourage cut-through traffic.

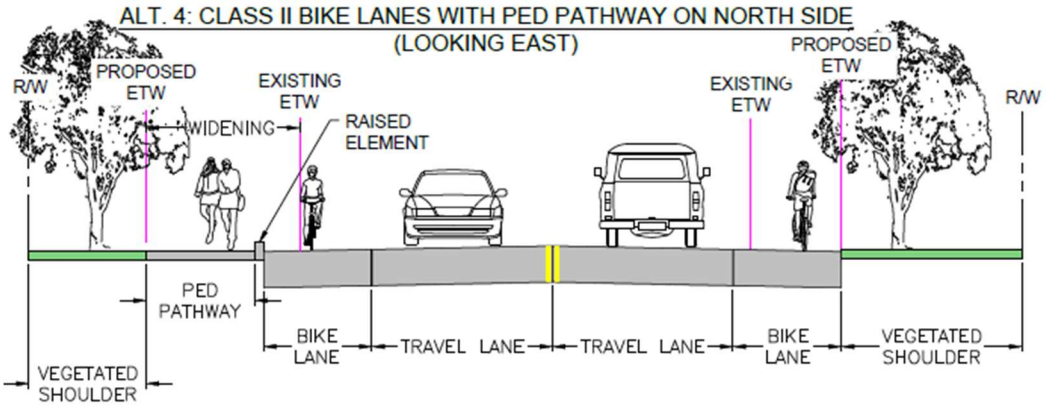

Plate 4 Coleman Avenue (Menlo Oaks) Alternative 4

Alternative 5 – One-way Street

Alternative 5 is illustrated in Plate 5 and would reconfigure the circulation pattern in the area by converting Coleman Avenue to one-way operation westbound toward Ringwood Avenue. The street would be closed to eastbound motorists at the Ringwood Avenue/Coleman Avenue intersection. The existing pavement space would be retained and reconfigured to provide one westbound travel lane and two on-street bicycle lanes. A buffer would be included between the eastbound bicycle lane and the adjacent westbound travel lane. To accommodate pedestrians, an off-street pathway would be constructed on the north side of the street, resulting in parking removal on this side of the corridor. The pathway is anticipated to result in some tree and utility pole impacts, though it would be designed to meander around those obstacles as much as possible. To separate the pathway from the adjacent bicycle lane, vegetated buffers or a vertical element, such as an asphalt dike, would be constructed. Traffic calming measures would also be installed within the roadway to slow vehicle speeds.

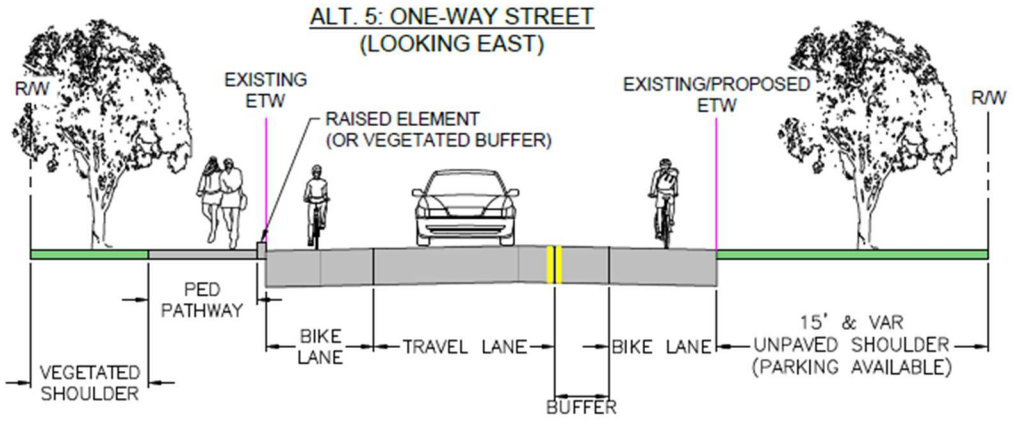

Plate 5 Coleman Avenue (Menlo Oaks) Alternative 5

Alternative 5b – Diverter with Pedestrian, Bicycle, and Emergency Vehicle Pass Through

Alternative 5b builds on one of the other alternatives by reconfiguring circulation in the area but would be unlikely to stand on its own as no new facilities for pedestrians and cyclists would be provided. Coleman Avenue would be closed near the County/City boundary to all except for pedestrians, cyclists, emergency vehicles, and potentially transit vehicles. Diverters would be constructed such that passenger vehicles would be forced to divert to surrounding streets. The diverters would be mountable for emergency vehicles to pass through. Coordination with SamTrans and the Fire Department would be critical for the advancement of this alternative.

Coleman Avenue (City of Menlo Park)

The following initial design concepts were developed for the City segment of Coleman Avenue.

Alternative 1 – No Build, Retain Existing Conditions

Alternative 1 would maintain the existing roadway conditions along Coleman Avenue in the City of Menlo Park. These are illustrated in Plate 6 and summarized below.

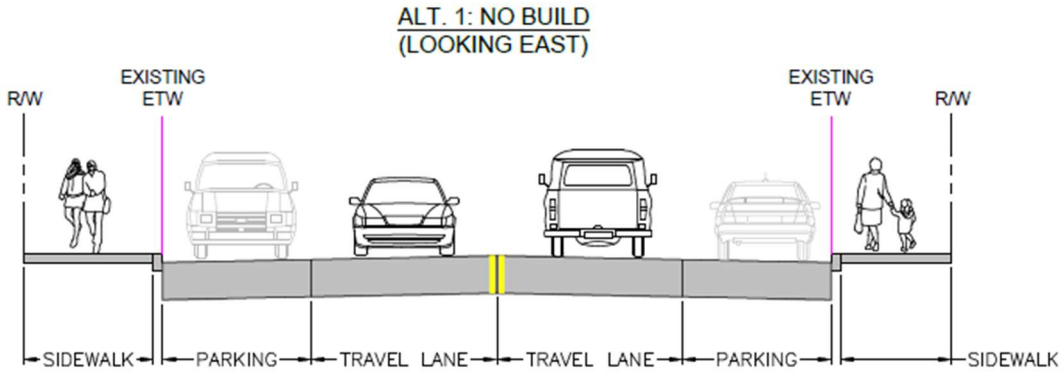

Plate 6 Coleman Avenue (City of Menlo Park) Alternative 1

- Public right-of-way of 50 feet
- Two 10-foot travel lanes and two 8-foot parking lanes
- Curb-to-curb width of 36 feet

- Sidewalks on both sides of the street

Alternative 2 – Bicycle Boulevard

Alternative 2 includes the installation of bicycle boulevard signage and pavement legends to formalize Coleman Avenue into a Class III bicycle boulevard. Speed reduction measures, such as speed humps, would be installed to slow vehicular speeds and discourage cut-through traffic. Under this alternative, the existing curb lines and sidewalk along both sides of Coleman Avenue would be retained. These improvements are illustrated in Plate 7.

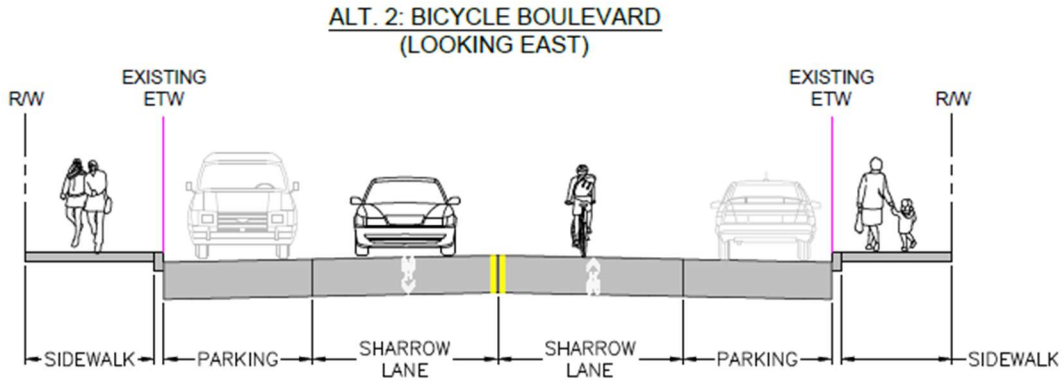

Plate 7 Coleman Avenue (City of Menlo Park) Alternative 2

Alternative 3 – Multi-use Pathway with Parking on One Side

Alternative 3 includes the removal of parking on one side of the street to make room for a multi-use pathway on the north side of Coleman Avenue. The existing roadway alignment of Coleman Avenue would be shifted to accommodate the pathway. The curb, gutter, and sidewalk on the pathway side of Coleman Avenue would be reconstructed while the side opposite the path would remain undisturbed. Shared-lane pavement markings could be installed within the roadway to provide cyclists the option of riding in-street or on the pathway. While parking is currently shown as being retained on the south side of the street, parking could instead be retained on the north side to act as a buffer between the pathway and travel lanes. These improvements are depicted conceptually in Plate 8.

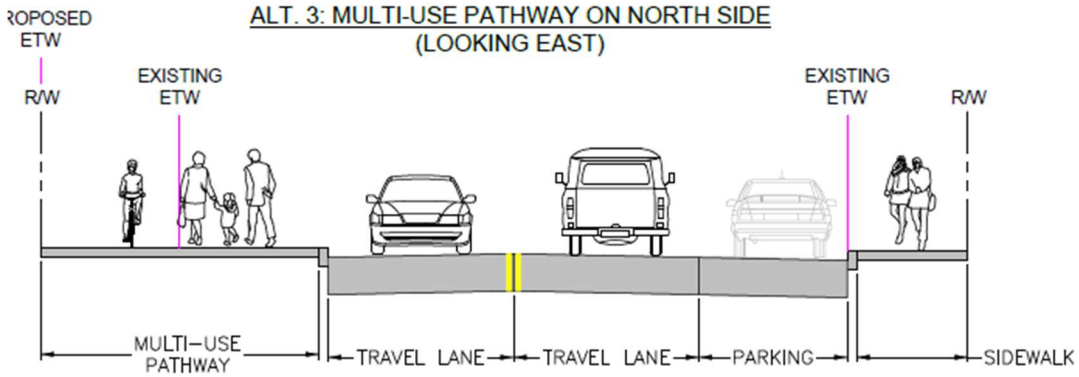

Plate 8 Coleman Avenue (City of Menlo Park) Alternative 3

Alternative 4 – Class II Bicycle Lanes with Parking on One Side (Menlo Park TMP)

Alternative 4 includes a narrow (four and one-half-feet wide) Class II bicycle lane in each direction of Coleman Avenue. To fit the bicycle lanes within the existing curb lines, parking would be removed on one side of the street and the opposite parking lane reduced to seven feet. Traffic calming measures would also be installed within the roadway to slow speeds and discourage cut-through traffic. The existing curbs, gutters, and sidewalks would be retained. These improvements are depicted conceptually in Plate 9 and were identified as the preferred alternative in the City's *Transportation Master Plan*.

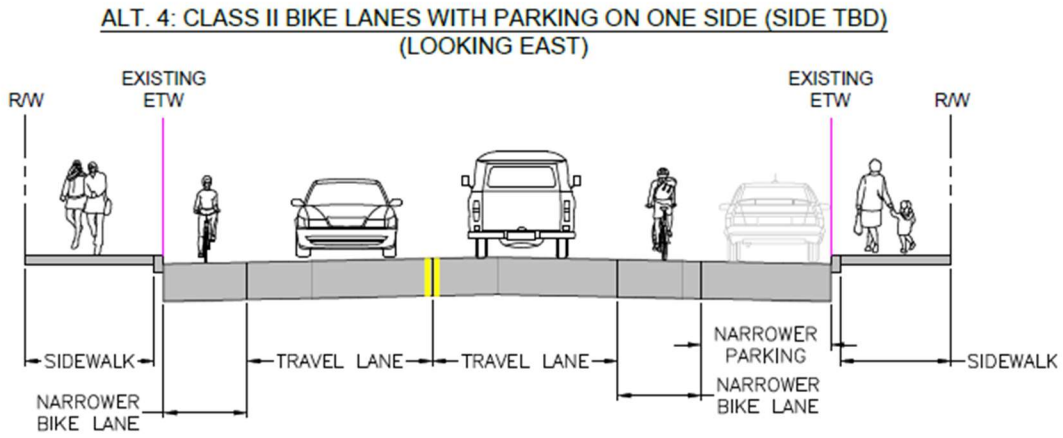

Plate 9 Coleman Avenue (City of Menlo Park) Alternative 4

Alternative 5 – Protected or Buffered Bicycle Lanes with No Parking

Under Alternative 5, parking would be removed on both sides of Coleman Avenue to accommodate a five and one-half-foot bike lane in each direction separated from the travel lanes by striped buffers. Raised separation devices such as flexible bollards could be placed within the buffers to further separate cyclists from vehicle traffic. The existing curbs, gutters, and sidewalks would be retained. These improvements are depicted conceptually in Plate 10.

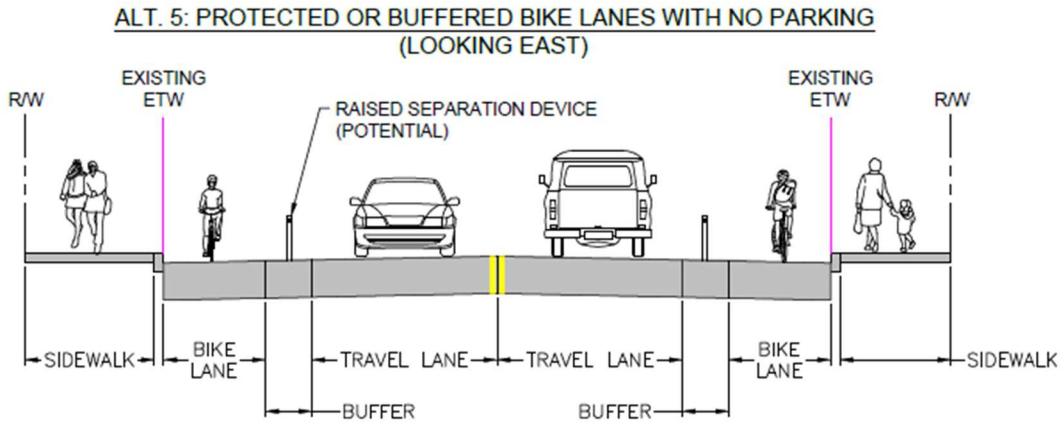

Plate 10 Coleman Avenue (City of Menlo Park) Alternative 5

Alternative 5b – Diverter with Pedestrian, Bicycle, and Emergency Vehicle Pass Through

Alternative 5b would build on one of the other alternatives by reconfiguring circulation in the area but would be unlikely to stand on its own as no new facilities for pedestrians and cyclists would be provided. Coleman Avenue would be closed near the County/City boundary to all except for pedestrians, cyclists, emergency vehicles, and

potentially transit vehicles. Diverters would be constructed such that passenger vehicles would be forced to divert to surrounding streets. The diverters would be mountable for emergency vehicles to pass through. Coordination with SamTrans and the Fire Department would be critical for the advancement of this alternative.

Ringwood Avenue

The following initial design concepts were developed for Ringwood Avenue. Given the substantial differences in roadway configuration along the corridor, typical cross section designs were prepared for two locations for each alternative to illustrate how the improvements would look near Menlo Atherton High School (MAHS) and near Laurel School Lower Campus (LSLC).

Alternative 1 – No Build, Retain Existing Conditions

Alternative 1 would maintain the existing roadway conditions on Ringwood Avenue. These are illustrated in Plates 11 and 12.

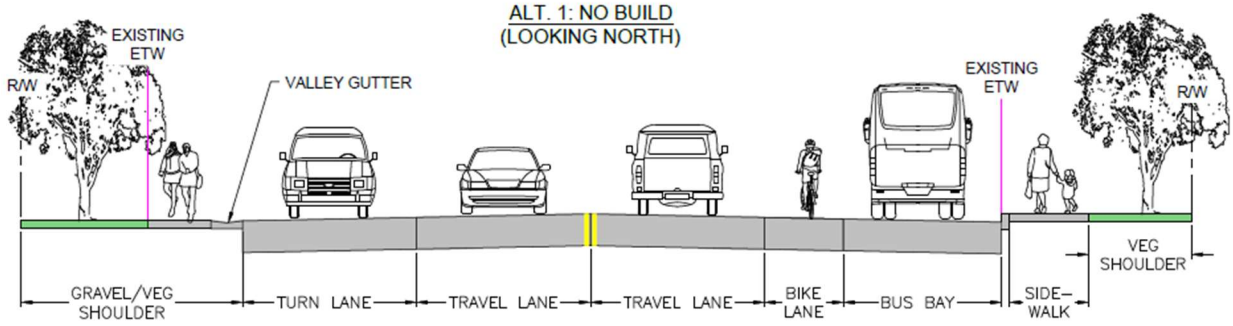

Plate 11 Ringwood Avenue Alternative 1 Near MAHS

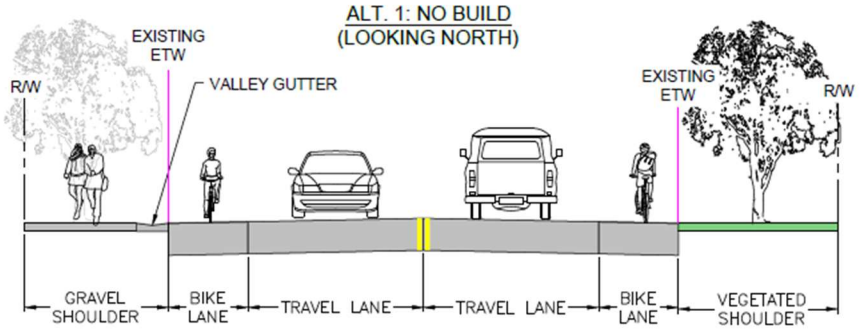

Plate 12 Ringwood Avenue Alternative 1 Near LSLC

Alternative 2 – Multi-Use Pathway on West (School) Side (San Mateo County ATP)

Under Alternative 2, the existing bicycle lane, valley gutter, and paved shoulder on the west side of Ringwood Avenue would be removed and replaced with a multi-use pathway. Vertical separation devices, such as asphalt dikes or vegetated buffers would separate the pathway from the adjacent vehicle travel lanes. While the pathway would meander to avoid as many trees and utilities as possible, it would be expected that some trees and utilities would be impacted. Some widening on the east side of the street would be required if the northbound bicycle lane is retained. Traffic calming measures would be installed within the roadway to slow speeds and discourage cut-through traffic. These improvements are illustrated in Plates 13 and 14.

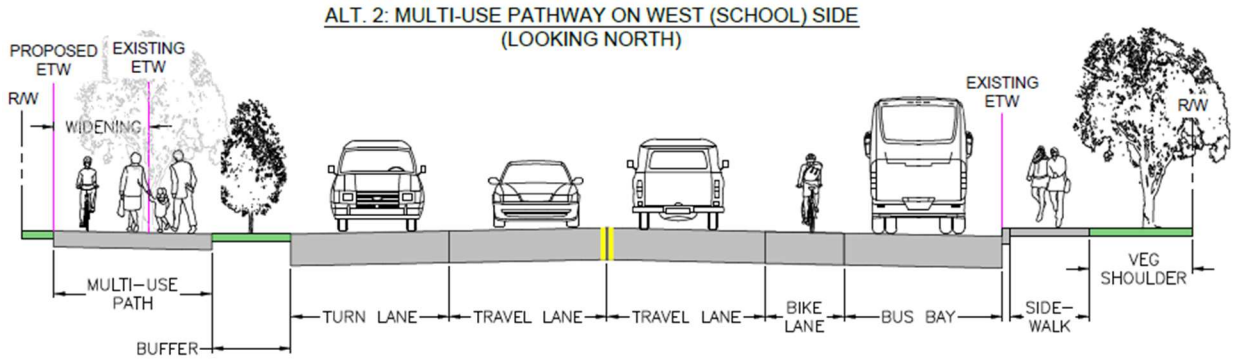

Plate 13 Ringwood Avenue Alternative 2 Near MAHS

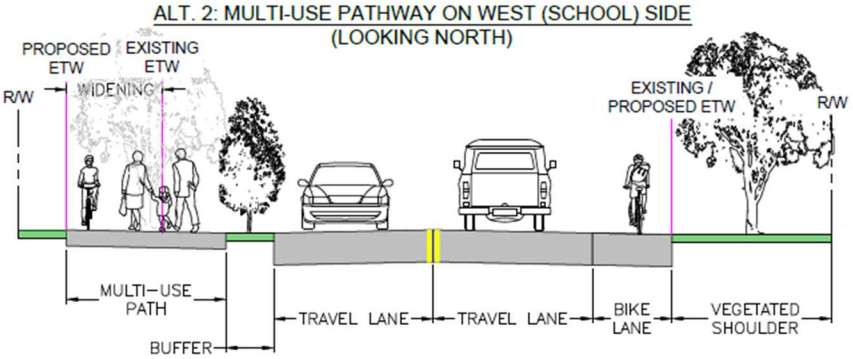

Plate 14 Ringwood Avenue Alternative 2 Near LSLC

Alternative 3 – Multi-Use Pathway on West (School) Side with Loading Zone

Alternative 3 includes the construction of a multi-use pathway and loading zone in place of the existing bicycle lane, valley gutter, and paved shoulder on the west side of Ringwood Avenue. A buffer zone would separate the loading zone from the adjacent multi-use pathway to provide space for car doors to open without infringing on the pathway. While the pathway would meander to avoid as many trees and utilities as possible, it would be expected that some trees and utilities would be impacted. The northbound bicycle lane would also be removed near LSLC to make room for the loading zone, though sharrow markings could be included within the roadway to accommodate experienced cyclists. Widening would be required on the east side of the street to accommodate the eastern shift of the roadway alignment. Traffic calming measures would be installed within the roadway to slow speeds and discourage cut-through traffic. These improvements are illustrated in Plates 15 and 16.

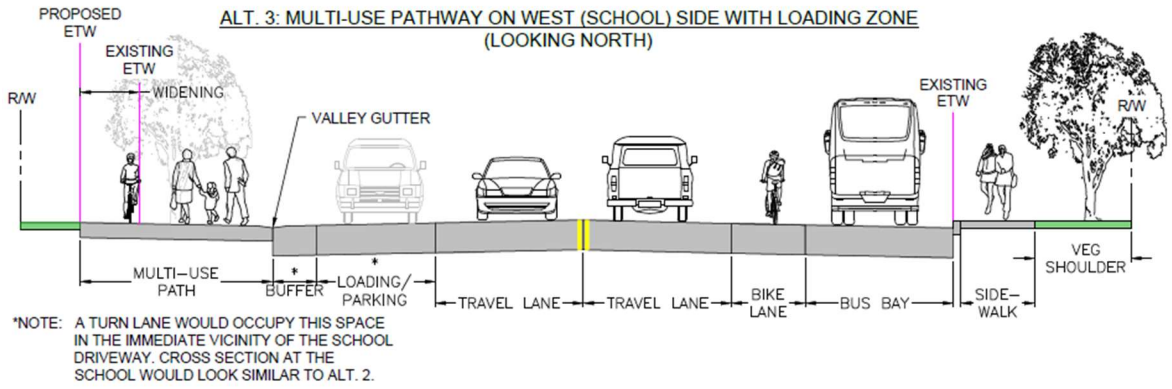

Plate 15 Ringwood Avenue Alternative 3 Near MAHS

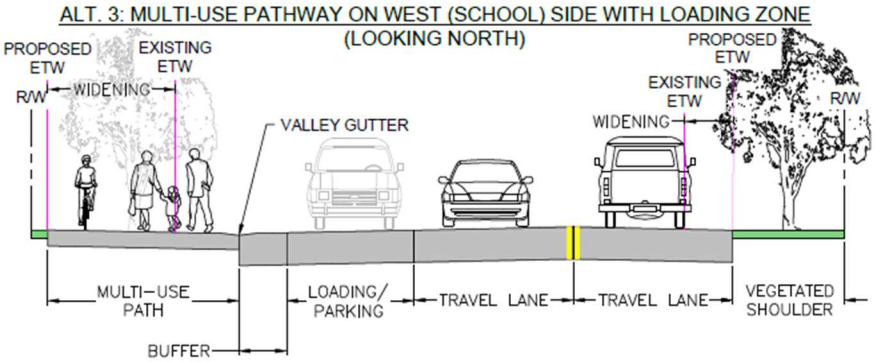

Plate 16 Ringwood Avenue Alternative 3 Near LSLC

Alternative 4 – Class II Bicycle Lanes with Pedestrian Pathways

Alternative 4 includes formalizing the existing paved shoulder on the west side of the street into a pedestrian pathway and constructing a continuous pedestrian pathway on the east side of the street. Both pathways would be designed to meander around adjacent trees and utilities as much as possible. The existing Class II bicycle lanes would be retained in both directions and traffic calming measures would be installed within the roadway to slow speeds and discourage cut-through traffic. These improvements are illustrated in Plates 17 and 18.

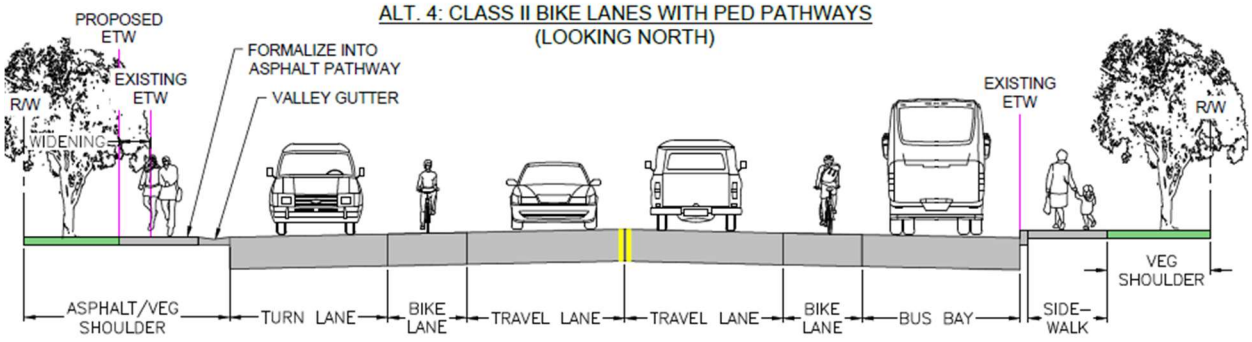

Plate 17 Ringwood Avenue Alternative 4 Near MAHS

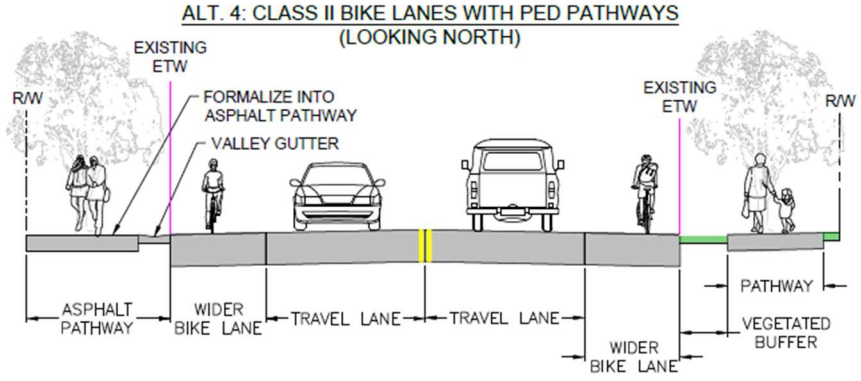

Plate 18 Ringwood Avenue Alternative 4 Near LSLC

Appendix D

Evaluation Criteria Summary and Results

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Memorandum

Date: November 9, 2023

Project: SMX900-2

To: Vanessa Castro, County of San Mateo
Hugh Louch, City of Menlo Park

From: Mark Spencer
mspencer@w-trans.com
Cameron Nye
cnye@w-trans.com

Subject: Coleman and Ringwood Avenues Transportation Study – Evaluation Criteria Summary and Findings

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This memorandum summarizes the prioritization criteria and performance metrics used to evaluate the top street design alternatives for Coleman and Ringwood Avenues. The evaluation criteria were developed in the first phase of the study considering priorities and feedback from the community, stakeholders, and the project's advisory committees. Performance measures for the criteria were developed using industry standard operational and safety metrics.

Evaluation Criteria Description

A series of key objectives were identified at the beginning of the Study that were used to guide development of the design alternatives. These objectives reflect the key takeaways from the community engagement efforts that provide a framework for achieving the overarching goal, which is to improve mobility for active modes of transportation and improve safety for all roadway users. The purpose of the evaluation criteria is to measure how well an alternative meets the key objectives and to provide an opportunity to compare the benefits and drawbacks of each of the alternatives. The key objectives that were developed are as follows.

- Improve safety by reducing the frequency and severity of collisions.
- Reduce vehicle travel speeds, especially where different user groups interact or share space.
- Create greater separation of physical space for pedestrians and bicyclists from motor vehicles.
- Improve the level of perceived comfort for pedestrians and bicyclists.
- Provide continuity for pedestrians and bicyclists from one side of the corridors to the other.
- Preserve the character of the neighborhood, including trees, greenery, neighborhood circulation patterns, as well as parking (City segment of Coleman Avenue only).

Based on the key objectives, the following list of evaluation criteria were developed. Descriptions and additional information related to the application of each criterion are summarized in Table 1.

Table 1 – Evaluation Criteria Description

Criterion	Description and Metric
Collision Reduction	The safety benefit of an alternative will be assessed based on the corridor collision history and anticipated effectiveness of countermeasures identified by the Federal Highway Administration (FHWA) and outlined in the Caltrans Local Roadway Safety Manual (LRSM). Alternatives that are better expected to reduce collisions will receive more credit.
Speed Reduction	The effectiveness of traffic calming measures will be estimated using available guidance published by the Institute of transportation Engineers (ITE). Alternatives that are expected to have a greater impact on speed reduction will receive more credit.
Bicycle Comfort	The Bicycle Level of Traffic Stress (BLTS) methodology, as defined by the Mineta Transportation Institute, will be used to quantify the comfort level for cyclists on-street and off-street under each alternative considering factors such as travel speed, traffic volume, number of travel lanes, parking turnover, etc. Alternatives with lower BLTS scores will receive more credit.
Pedestrian Comfort	A Pedestrian Level of Traffic Stress (PLTS) methodology will be used to quantify the comfort level for pedestrians under each alternative. Alternatives with lower PLTS scores will receive more credit.
Tree Preservation	The number of trees that may be impacted for construction of the improvements will be estimated. Alternatives that result in the preservation of more trees will score higher.
Parking Retention (City Only)	The number of existing on-street parking spaces that would need to be removed under each alternative within the City segment of Coleman Avenue will be identified. The alternatives that retain more existing parking spaces will score higher.

Sources and links to additional information:

Caltrans Local Roadway Safety Manual	https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2022/lrsm2022.pdf
ITE Traffic Calming Fact Sheets	https://www.ite.org/technical-resources/traffic-calming/traffic-calming-measures/
Bicycle Level of Traffic Stress	https://transweb.sjsu.edu/sites/default/files/1005-low-stress-bicycling-network-connectivity.pdf

Each alternative will be evaluated based on how well it supports or meets the evaluation criteria using "Consumer Reports" style ratings, as indicated below. The intent of this exercise is not to simply tally results to identify a preferred alternative, but rather to use the evaluation criteria to help recognize the strengths and weaknesses of each alternative to better inform discussion of potential tradeoffs within the community.

● = Alternative fully meets criterion

◕ = Alternative mostly meets criterion

◑ = Alternative partially meets criterion

◔ = Alternative minimally meets criterion

○ = Alternative does not meet criterion

Evaluation Criteria Results

This section summarizes the results of evaluation criteria that were applied to the two alternatives for each corridor that received the most support within the community. These results were reviewed and refined based on input from the community and the project's advisory committees.

Coleman Avenue (Menlo Oaks)

The evaluation criteria findings for the County segment of Coleman Avenue are summarized in Table 2 and further discussed below.

Table 2 – Evaluation Criteria Results for Coleman Avenue (Menlo Oaks)

Design Alternative	Collision Reduction	Speed Reduction	Bicycle Comfort (On -Street)	Bicycle Comfort (Off-Street)	Pedestrian Comfort	Tree Preservation
Retain Existing Conditions	○	◔	◔	○	○	●
Alternative 1 Bike Lanes with Narrower Off-Street Pathway	●	◕	◕	◕	●	◑
Alternative 2 Bike Boulevard with Wider Off-Street Pathway	◕	●	◑	●	◕	◔

Collision Reduction

Crash Reduction Factors (CRFs) were the metric used to assess this criterion. CRFs are values associated with countermeasures (i.e., new bike lanes, enhanced pedestrian crossing, streetlighting, etc.) that estimate the percentage reduction in crashes that a given facility would experience after implementation of a countermeasure. For the purposes of this assessment, CRFs developed by the Federal Highway Administration (FHWA) as outlined in the *Local Roadway Safety Manual* (LRSM), Caltrans, 2022, were applied. It's important to note that CRFs are specific to collisions that would be corrected by an individual improvement measure so the total percentages are not cumulative.

The existing condition on this segment of Coleman Avenue has limited safety features; therefore, an empty circle was used as the baseline. Both of the top alternatives include numerous improvement measures with associated CRFs as indicated below; the percentage reduction in crashes relevant to each measure is shown in parenthesis.

- Install new intersection lighting (40%)
- Install/upgrade intersection warning signs (15%)
- Upgrade intersection pavement markings (25%)
- Upgrade existing pedestrian crossings (35%)
- Install new uncontrolled pedestrian crossing (25%)
- Improve sight distance to intersection (20%)
- Install new sidewalk/pathway (80%)
- Install bike lanes (35%) – Alternative 1 Only

Both of the top design alternatives would be expected to result in a substantial safety benefit to the corridor over existing conditions. As Alternative 1 includes the installation of Class II bike lanes and Alternative 2 requires cyclists to share the travel lanes with motorists Alternative 1 was given a full circle and Alternative 2 three-quarters of a circle.

Speed Reduction

The average speed reduction for various traffic calming measures, as published by the Institute of Transportation Engineers (ITE) in their traffic calming fact sheets, was used as the metric to assess this criterion. Traffic calming measures are highly context-specific and as a result their benefits are difficult to quantify. The effectiveness of a given measure depends on a variety of factors so is typically expressed as a range of expected percentage reduction in average travel speed.

The existing condition on the County segment of Coleman Avenue has limited speed reduction measures, including roadside parking in several locations and mini traffic circles, so a quarter circle was used as the baseline condition. However, both of the top alternatives include numerous traffic calming measures including the following: the expected reduction in average travel speed is shown in parenthesis for those measures that have published data.

- Narrower travel lanes
- Speed tables (20 to 25%)
- Enhancing the traffic circles protecting trees
- Centerline and edge line striping
- Speed feedback signs
- Speed reduction markings
- Tighter turning radii

Both of the top design alternatives include a package of traffic calming improvements that would be expected to result in reduced travel speeds, though Alternative 1 would result in the widening of the existing paved area for the installation of bike lanes whereas Alternative 2 retains the existing street width so Alternative 1 was given three-quarters of a circle and Alternative 2 a full circle.

Bicycle Comfort (On-Street)

The Bicycle Level of Traffic Stress (BLTS) methodology, as defined by the Mineta Transportation Institute, was used to quantify the comfort level for cyclists within the street under each alternative considering factors such as travel speed, traffic volume, number of travel lanes, parking turnover, etc. This methodology scores facilities as having stress levels ranging from 1 to 4, with higher-stress facilities translating to a higher score. Definitions of the stress levels are provided in Plate 1. The breakpoints for the scoring are summarized in Table 3 and Table 4.

Plate 1 Bicycle Level of Traffic Stress

Table 3 – Bicycle Level of Traffic Stress - Mixed Traffic Criteria

Number of Lanes	Average Daily Traffic (ADT)	85th Percentile Speed (mph)						
		0-23.5	23.5-28.5	28.5-33.5	33.5-38.5	38.5-43.5	43.5-48.5	48.5+
2-way street with no centerline	0-750	1	1	2	2	3	3	3
	751-1,500	1	1	2	3	3	3	3
	1,501-3,000	2	2	2	3	3	4	4
	3,001+	2	2	3	3	4	4	4
2-way with 1 lane per direction and centerline, or wide* 1-way, 1-lane	0-1,000	1	1	2	2	3	3	3
	1,000-1,500	2	2	2	3	3	4	4
	1,501+	2	3	3	3	4	4	4
2 thru lanes per direction	0-8,000	3	3	3	3	4	4	4
	8,001+	3	3	4	4	4	4	4
3 thru lanes per direction	Any ADT	3	3	4	4	4	4	4

Notes * A one-way street is "narrow" if its width is less than 30 ft with parking on both sides, less than 22 ft with parking on one side, or less than 15 ft with no parking. Otherwise, it is "wide." 85th percentile speed is used to set speed limits and is the speed at which 85 percent of the users drive at or below.

Table 4 – Bicycle Level of Traffic Stress - Bicycle Lanes not Adjacent to Parking Lane Criteria

Number of Lanes	Bike Lane Width (ft)	85th Percentile Speed (mph)					
		0-28.5	28.5-33.5	33.5-38.5	38.5-43.5	43.5-48.5	48.5+
1 thru lane per direction or contraflow lane	6+ ft	1	1	2	3	3	3
	< 6ft	2	2	2	3	3	4
2 thru lanes per direction	6+ ft	2	2	2	3	3	3
	< 6ft	2	2	2	3	4	4
3+ thru lanes per direction	Any Width	3	3	3	4	4	4

Based on the existing roadway characteristics, travel speeds, and traffic volumes on Coleman Avenue, the segment within the County has a BLTS score of 3. The installation of bike lanes associated with Alternative 1 would result in a BLTS score of 2. While Alternative 2 would also result in a BLTS score of 3 using this methodology, because the alternative includes numerous traffic calming measures not reflected in the methodology, in actuality the alternative would score somewhere in between the existing condition and Alternative 1. As a result, a quarter circle was given for existing conditions, three-quarters of a circle for Alternative 1, and a half circle for Alternative 2.

The BLTS scores for each alternative and street segment are summarized in Table 5.

Table 5 – Bicycle Level of Traffic Stress Assessment

	Existing	Alternative 1	Alternative 2
Coleman Ave (Menlo Oaks)	3	2	3
Coleman Ave (City)	3	3	3
Ringwood Ave	3	1	3

Bicycle Comfort (Off-Street)

The BLTS methodology is mostly applicable to on-street bicycle facilities, but since both design alternatives include an off-street pathway that could be used by cyclists, consideration was also given to the off-street comfort level for cyclists including pathway width, separation from the travel way, and use of the facility by pedestrians. There is no existing off-street bicycle facility on Coleman Avenue so an empty circle was used as the baseline. While both alternatives include a pathway that would largely satisfy this criterion, because the pathway in Alternative 2 would be wider than Alternative 1 it would provide a more comfortable facility for cyclists, especially considering that the space would be shared with pedestrians. A wider pathway would translate to easier passing maneuvers. Therefore, Alternative 1 was given three-quarters of a circle and Alternative 2 was given a full circle.

Pedestrian Comfort

Pedestrian Level of Traffic Stress (PLTS) is less widely used than BLTS, and there is not a methodology that has currently gained widespread acceptance. Part of the challenge in developing a PLTS method is the amount of data that would need to be collected to accurately assess the level of comfort pedestrians experience, particularly at intersections. For the purposes of this study, the PLTS method was generally based on the approach used to evaluate the BLTS and methodologies used by other jurisdictions, focusing on conditions along each segment of roadway that was analyzed.

PLTS was calculated using the following variables:

a) Sidewalks and Pathways – Segments were evaluated based on the presence of:
    1. Complete sidewalks or pathways on at least one side of the street;
    2. At least 50 percent of completed sidewalk or pathway on one side of the street; and
    3. Less than 50 percent of sidewalk or pathway on one side of the street completed.
b) Buffer – Segments were evaluated based on the separation pedestrians have from traffic due to the presence of a planting strip, bike lanes, or a parking lane.
c) Traffic volumes
d) Prevailing vehicle speeds

The application of these variables to generate the PLTS scores is summarized in Table 6.

Table 6 – Roadway Segment Pedestrian Level of Traffic Stress Methodology

Sidewalks	Buffer	ADT	85th Percentile Speed (mph)					
			≤ 25	30	35	40	45	50+
Complete	Yes	<3,000	1	1	1	2	3	3
		3,001-8,000	1	1	2	3	3	4
		>8,000	1	2	3	3	4	4
	No	<3,000	2	2	3	3	4	4
		3,001-8,000	2	2	3	4	4	4
		>8,000	3	3	4	4	4	4
Gaps up to 50%	Yes	<3,000	2	2	3	3	4	4
		3,001-8,000	3	3	3	4	4	4
		>8,000	3	3	4	4	4	4
	No	<3,000	3	4	4	4	4	4
		3,001-8,000	4	4	4	4	4	4
		>8,000	4	4	4	4	4	4

Table 6 – Roadway Segment Pedestrian Level of Traffic Stress Methodology

Sidewalks	Buffer	ADT	85th Percentile Speed (mph)					
			≤ 25	30	35	40	45	50+
<50% Complete	Yes	<3,000	3	3	3	4	4	4
		3,001-8,000	3	3	4	4	4	4
		>8,000	3	4	4	4	4	4
	No	<3,000	4	4	4	4	4	4
		3,001-8,000	4	4	4	4	4	4
		>8,000	4	4	4	4	4	4

The Menlo Oaks segment of Coleman Avenue contains no existing sidewalks or formal pathways, though unpaved shoulders are present in some locations. These facilities are inadequate in terms of providing pedestrian access as the shoulders are of inconsistent width, with trees at several locations approaching the edge of the roadway. There are also notable drainage issues along the street, and when it rains, shoulders can become inaccessible for pedestrians. The shoulders also do not meet the needs of people with mobility impairments. Together, these factors result in many pedestrians being forced to share the roadway with vehicles. As a result, this segment was evaluated as a sidewalk gap for the existing condition. Based on an 85th percentile speed of 29 miles per hour (mph) and a traffic volume of 3,500 vehicles per day, the PLTS score is 3. The provision of an off-street pathway identified in both alternatives would improve the score to 1 under Alternative 1 due to the buffer of the bike lane between the pathway and the travel lanes and to PLTS 2 under Alternative 2. Further, because Alternative 2 does not include dedicated on-street bike facilities, pedestrians would have to share the pathway with cyclists so a full circle was given to Alternative 1 and three-quarters of a circle to Alternative 2.

The PLTS scoring for all three corridors is summarized in Table 7.

Table 7 – Pedestrian Level of Traffic Stress Assessment

	Existing	Alternative 1	Alternative 2
Coleman Ave (Menlo Oaks)	3	1	2
Coleman Ave (City)	1	1	1
Ringwood Ave	2	1	1

Tree Preservation

It is estimated that up to 19 of the approximately 130 existing trees within the public right-of-way would be impacted under Alternative 1, while up to 27 trees would potentially be impacted under Alternative 2. The actual number of trees that would be impacted would be subject to final design details and the expertise of an arborist. No trees would need to be removed under the no build alternative. As a result, a full circle was used as the baseline, a half circle was assigned to Alternative 1 and a quarter circle was assigned to Alternative 2 since it would result in the removal of roughly twice as many trees as Alternative 1.

Coleman Avenue (City of Menlo Park)

The evaluation criteria findings for the City segment of Coleman Avenue are summarized in Table 8 and further discussed below.

Table 8 – Evaluation Criteria Results for Coleman Avenue (City)

Design Alternative	Collision Reduction	Speed Reduction	Bicycle Comfort (On - Street)	Bicycle Comfort (Off-Street)	Pedestrian Comfort	Tree Preservation	Parking Retention
Retain Existing Conditions	○	○	◔	○	●	●	●
Alternative 1 Bike Boulevard with Raised Concrete Pathway (Parking on one Side)	●	●	◑	●	●	●	◑
Alternative 2 Bike Boulevard (Parking on both Sides)	◕	◕	◑	○	●	●	●

Collision Reduction

The existing condition on the City segment of Coleman Avenue has limited safety features; therefore, an empty circle was used as the baseline. However, both of the top alternatives include numerous improvement measures with associated CRFs as indicated below; the percentage reduction in crashes relevant to each measure is shown in parenthesis.

- Install/upgrade intersection warning signs (15%)
- Upgrade intersection pavement markings (25%)
- Upgrade/new enhanced pedestrian crossings (35%)
- Install new uncontrolled pedestrian crossing (25%)
- Install edge lines and centerline (25%)
- Convert intersection to AWSC (40%)
- Install new sidewalk/pathway (80%) – Alternative 1 only

Both of the top design alternatives would be expected to result in a substantial safety benefit to the corridor over existing conditions, though Alternative 1 also includes the installation of an expanded sidewalk area that would function as a shared use pathway and Alternative 2 would require cyclists to share the travel lanes with motorists so Alternative 1 was given a full circle and Alternative 2 three-quarters of a circle.

Speed Reduction

The existing condition on the City segment of Coleman Avenue has limited to no speed reduction measures so an empty circle was used as the baseline condition. However, both of the top alternatives include numerous traffic calming features including the following: the expected reduction in average travel speed is shown in parenthesis for those measures that have published data.

- Narrower travel lanes
- Speed tables (20 to 25%)
- Curb extensions/bulb-outs
- Centerline and edge line striping

Both of the top design alternatives include a package of traffic calming improvements that would be expected to result in reduced travel speeds, though Alternative 1 would result in the narrowing of the existing paved curb-to-curb width whereas Alternative 2 would retain the existing street width so Alternative 1 was given a full circle and Alternative 2 three-quarters of a circle.

Bicycle Comfort (On-Street)

Based on the existing roadway characteristics, travel speeds, and traffic volumes on Coleman Avenue, the segment within the City has a BLTS score of 3. Due to limitations in the methodology that do not account for the presence of traffic calming measures, both alternatives would continue to result in a BLTS of 3; however, the reduction in vehicle travel speeds would result in a more comfortable on-street cycling experience. As a result, a quarter circle was used as the baseline score and both alternatives were given a half circle.

Bicycle Comfort (Off-Street)

There are currently no off-street cycling facilities on Coleman Avenue, nor would any be provided under Alternative 2. However, Alternative 1 includes a new shared use facility on the north side of the corridor that could be used by cyclists who do not want to ride in the street. As a result, an empty circle was applied as the baseline and to Alternative 2, while Alternative 1 was given a full circle.

Pedestrian Comfort

Sidewalks are currently provided on both sides of the street and complete sidewalk or pathway coverage would be provided with both design alternatives. Based on an 85th percentile speed of 29 mph and an ADT of 3,200, the existing condition and both design alternatives would have a PLTS score of 1, therefore, all were given full circles.

Tree Preservation

No trees would need to be removed within the City; therefore, all alternatives were given full circles for tree preservation.

Parking Retention

The no-build alternative and Alternative 2 would retain all existing parking spaces on Coleman Avenue in the City while Alternative 1 includes removal of parking on one side of the street, representing approximately half of the existing parking supply. Therefore, full circles were given to existing conditions and to Alternative 2 and a half circle was given to Alternative 1.

Ringwood Avenue (near Menlo Atherton High School)

The evaluation criteria findings for Ringwood Avenue are summarized in Table 9 and discussed further below. For the purposes of this exercise, the segment near Menlo Atherton High School was evaluated since the design alternatives vary the most near the high school but are largely the same for the rest of the corridor.

Table 9 – Evaluation Criteria Summary for Ringwood Avenue

Design Alternative	Collision Reduction	Speed Reduction	Bicycle Comfort (On-Street)	Bicycle Comfort (Off-Street)	Pedestrian Comfort	Tree Preservation
Retain Existing Conditions	◔	○	◑	○	◑	●
Alternative 1 Bike Lanes with Raised Separation Device and Asphalt Pathway	●	●	●	●	●	◑
Alternative 2 Combination Bike and Shared Lanes with Asphalt Pathway	◕	●	◕	●	◕	◑

Collision Reduction

The existing condition on Ringwood Avenue has limited safety features, though a Class II bike lane is provided on one side of the street near the high school; therefore, a quarter-circle was used as the baseline. However, both of the top alternatives include numerous improvement measures with associated CRFs as noted below; the percentage reduction in crashes relevant to each measure is shown in parenthesis.

- Install new intersection lighting (40%)
- Install/upgrade intersection warning signs (15%)
- Upgrade intersection pavement markings (25%)
- Upgrade/new enhanced pedestrian crossings (35%)
- Install new uncontrolled pedestrian crossing (25%)
- Install new sidewalk/pathway (80%)
- Install separated bike lanes (45%) – Alternative 1 only

Both of the top design alternatives would be expected to result in a substantial safety benefit to the corridor over existing conditions, though Alternative 1 also includes the installation of protected bike lanes in front of the schools with a raised separation device between the bike lane and travel lanes. Additionally, Alternative 1 would provide a continuous dedicated bike lane all the way to the intersection with Middlefield Road while Alternative 2 would retain the existing right-turn lane at the high school, requiring cyclists to share the travel lane with motorists, so Alternative 1 was given a full circle and Alternative 2 three-quarters of a circle.

Speed Reduction

Ringwood Avenue has either limited or no existing speed reduction measures, so an empty circle was used as the baseline condition. Both of the top alternatives include the following traffic calming measures; the expected reduction in average travel speed is shown in parenthesis for those measures that have published data.

- Narrower travel lanes
- Speed tables (20 to 25%)
- Tighter turning radii
- Speed feedback signs
- Speed reduction markings

Both of the top design alternatives include a package of traffic calming improvements that would be expected to result in reduced travel speeds so both alternatives were given a full circle.

Bicycle Comfort (On-Street)

Based on existing roadway characteristics on Ringwood Avenue, including a Class II bike lane only in the northbound direction, and current travel speeds and traffic volumes, the roadway has a BLTS score of 3 in the southbound direction since there is not currently a bike lane and BLTS 2 northbound. Alternative 1 includes installation of a new protected bike lane southbound and would maintain the existing bike lane northbound so would improve conditions to BLTS 1. Under Alternative 2, cyclists would have to share the travel lanes with motorists near the high school, translating to BLTS 3, though the additional signing and striping would be considered an improvement over the existing condition. As a result, a half circle was used as the baseline score, Alternative 1 was given a full circle and Alternative 2 was given three-quarters of a circle.

Bicycle Comfort (Off-Street)

There are currently no off-street cycling facilities on Ringwood Avenue, though both design alternatives would include a shared use pathway on the west side of the corridor that could be used by cyclists that do not want to ride in the street. As a result, an empty circle was applied as the baseline and both alternatives were given a full circle.

Pedestrian Comfort

The high school frontage was the focus of this assessment. The informal nature of the existing pathway and inconsistency of facility type combined with the fact that a buffer is not provided between the pathway and the street translates to a PLTS of 2. Both of the design alternatives include an off-street pathway with a buffer from the street translating to a PLTS of 1. However, because Alternative 2 does not include a continuous bike lane, more cyclists would be expected to use the pathway translating to a slightly less comfortable experience compared to Alternative 1. As a result, a half circle was given to the existing condition, a full circle to Alternative 1 and three-quarters of a circle to Alternative 2.

Tree Preservation

It is estimated that up to 25 of the approximately 425 existing trees within the public right of way would be impacted under each of the design alternatives, which would have similar tree impacts. As a result, a full circle was used as the baseline and a half circle was assigned to each of the alternatives.

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Appendix E

10% Concept Design Plans

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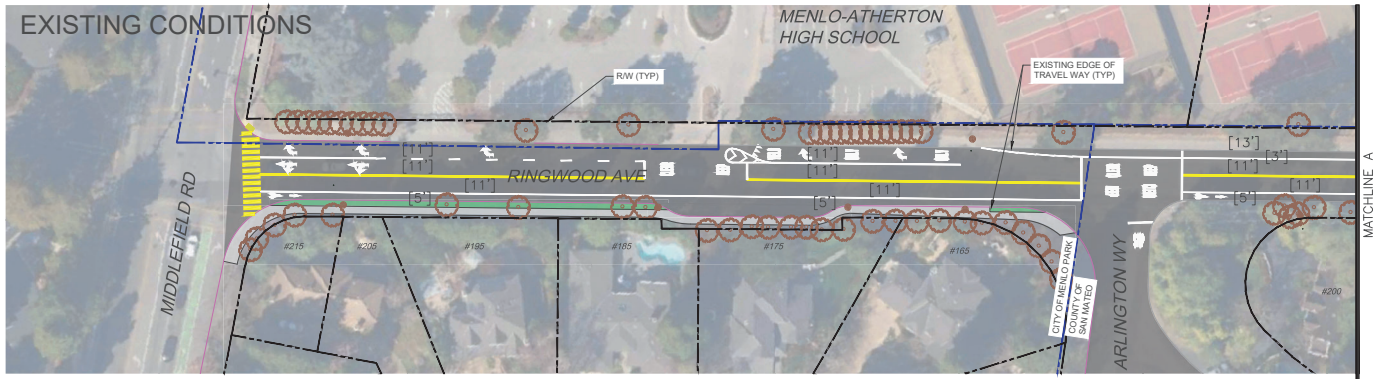

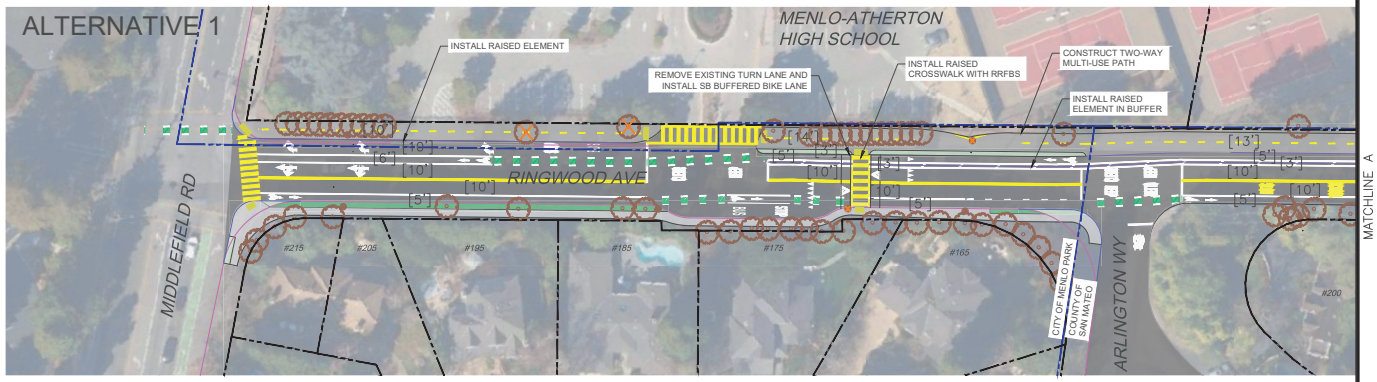

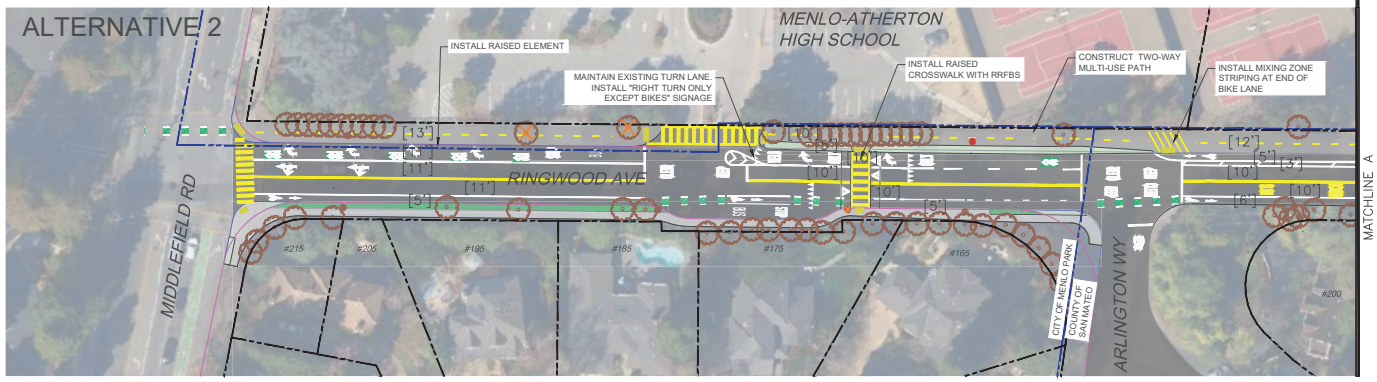

LEGEND:

- ASPHALT ROADWAY
- ASPHALT PATHWAY
- CONCRETE PATHWAY
- EXISTING VEGETATION
- PROPOSED VEGETATION
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- EXISTING EDGE OF TRAVEL WAY
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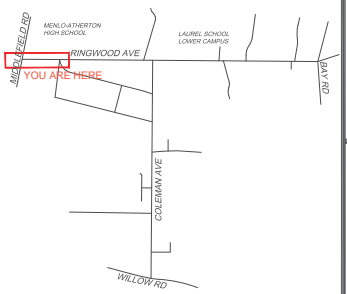

INSET MAP

PRELIMINARY
NOT FOR CONSTRUCTION

N

0 40' 80'

SCALE: 1"=40'

Whitlock & Weinberger Transportation, Inc.
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Santa Rosa, CA 95401
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DRAWN BY NGB
DESIGNED BY SJW, CN
CHECKED BY SMF
DATE

COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

RINGWOOD AVENUE SHEET 1
10% CONCEPT ALTERNATIVES

SCALE 1"=40'
DATE 1/31/24
JOB NO. SMX900-2
DRAWING NUMBER 1 OF 10

Jan 31, 2024 - 12:33pm

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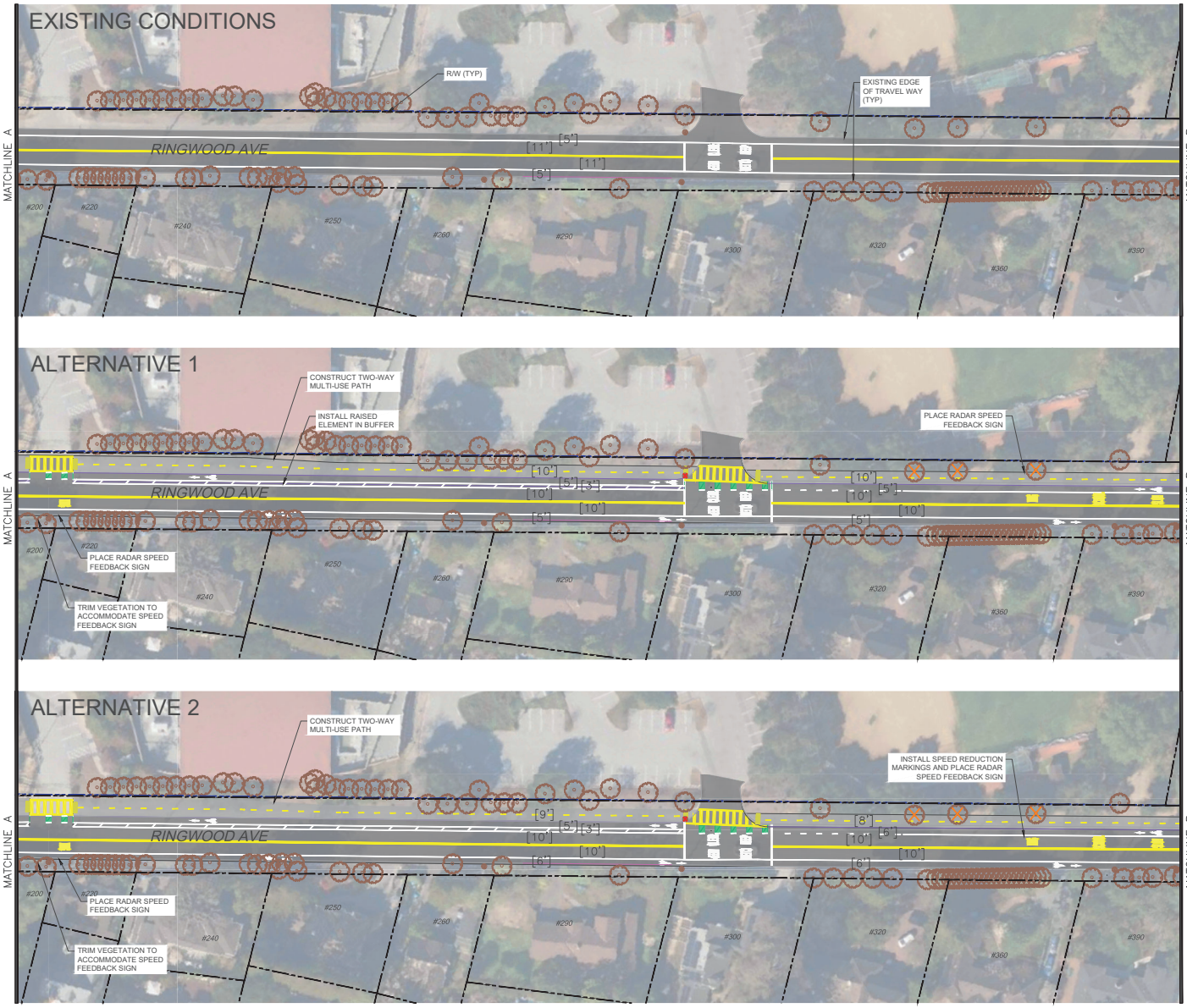
FOR REDUCED PLANS, THE ORIGINAL SCALE IS IN INCHES 0 1 2 3



LEGEND:

- ASPHALT ROADWAY
- ASPHALT PATHWAY
- CONCRETE PATHWAY
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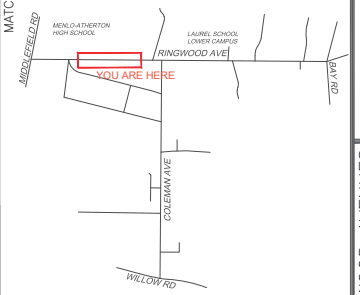

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COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

RINGWOOD AVENUE SHEET 2
10% CONCEPT ALTERNATIVES

SCALE 1"=40'
DATE 1/31/24
JOB NO. SMX900-2
DRAWING NUMBER 2 OF 10

Jan 31, 2024 - 12:34pm

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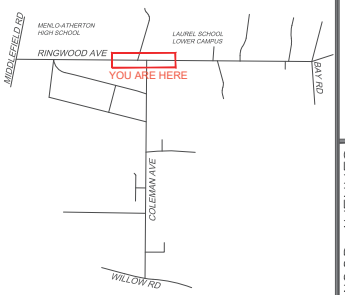

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COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

RINGWOOD AVENUE SHEET 3
10% CONCEPT ALTERNATIVES

SCALE 1"=40'
DATE 1/31/24
JOB NO. SMX900-2
DRAWING NUMBER 3 OF 10

Jan 31, 2024 - 12:34pm

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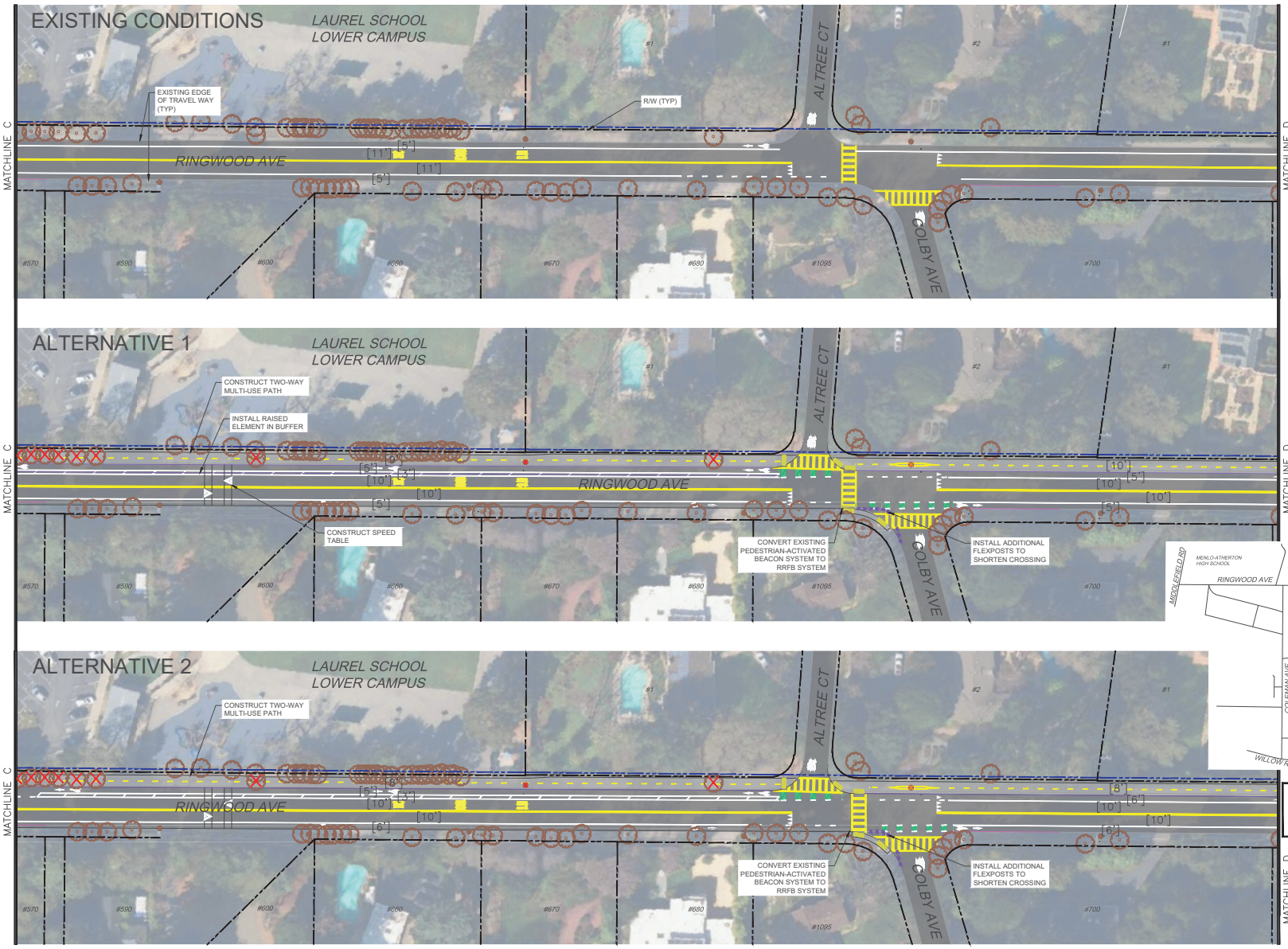

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COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

RINGWOOD AVENUE SHEET 4
10% CONCEPT ALTERNATIVES

SCALE 1"=40'
DATE 1/31/24
JOB NO. SMX900-2
DRAWING NUMBER 4 OF 10

Jan 31, 2024 - 12:34pm

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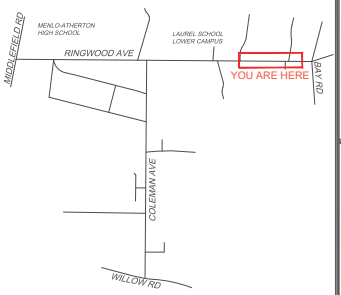

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COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

RINGWOOD AVENUE SHEET 5
10% CONCEPT ALTERNATIVES

SCALE 1"=40'
DATE 1/31/24
JOB NO. SMX900-2
DRAWING NUMBER 5 OF 10

Jan 31, 2024 - 12:35pm

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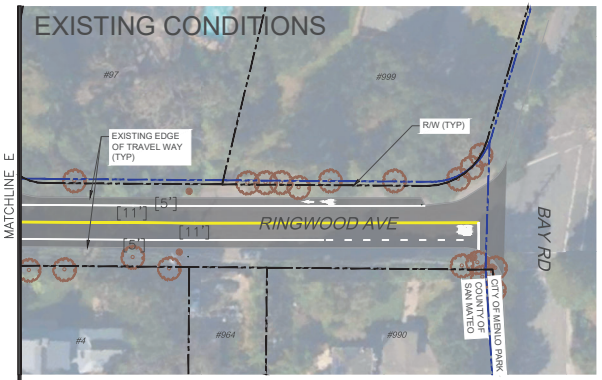

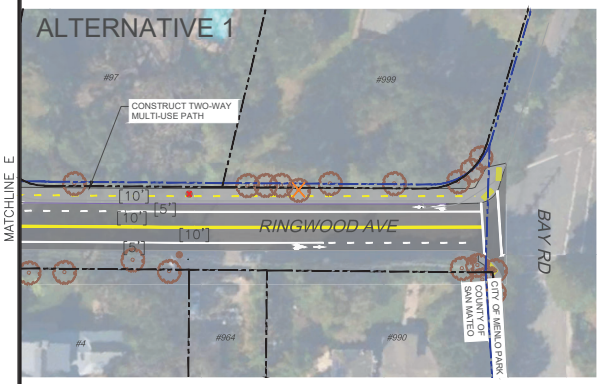

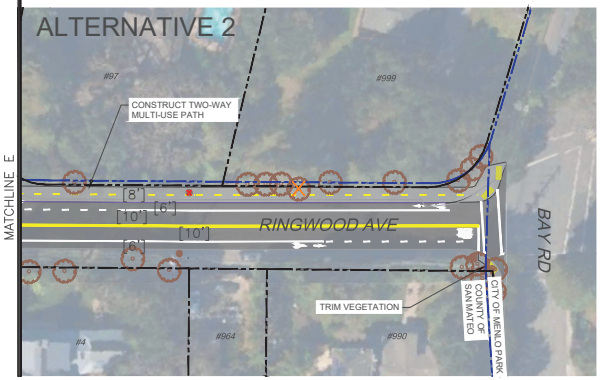

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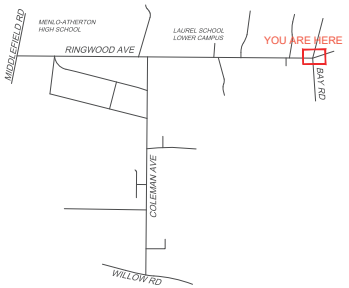

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COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

RINGWOOD AVENUE SHEET 6
10% CONCEPT ALTERNATIVES

SCALE 1"=40'
DATE 1/31/24
JOB NO. SMX900-2
DRAWING NUMBER 6 OF 10

Jan 31, 2024 - 12:35pm

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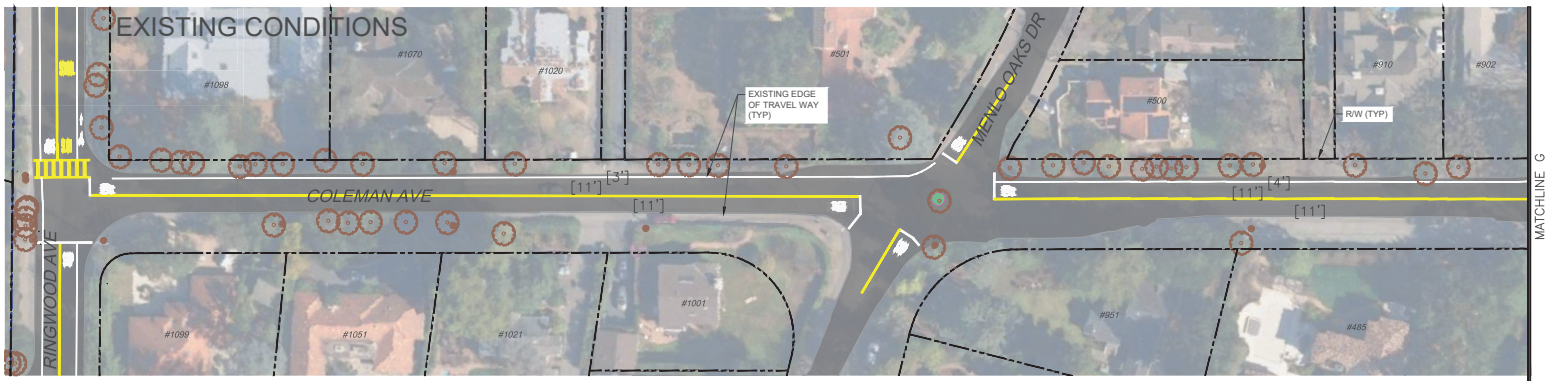

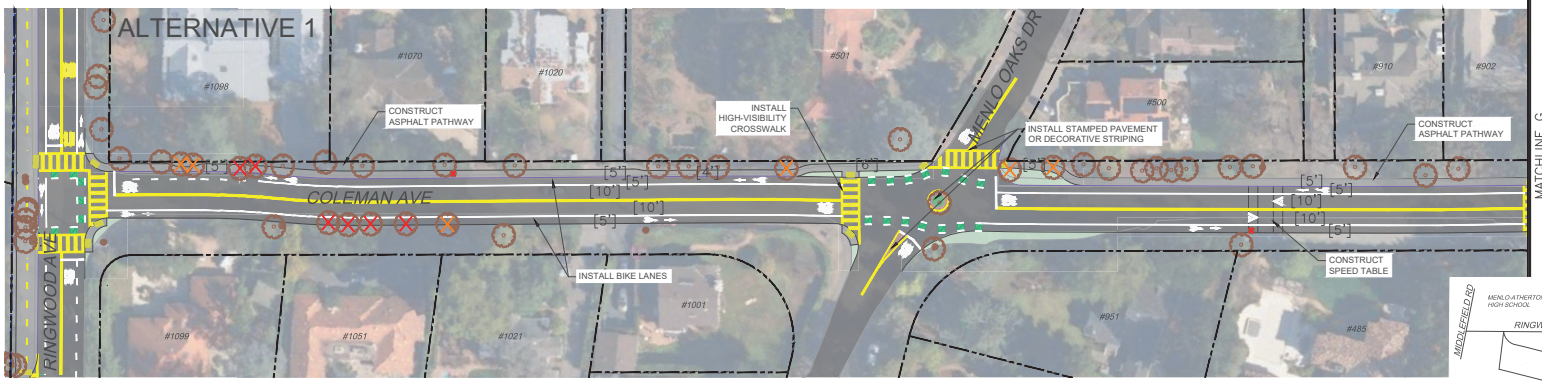

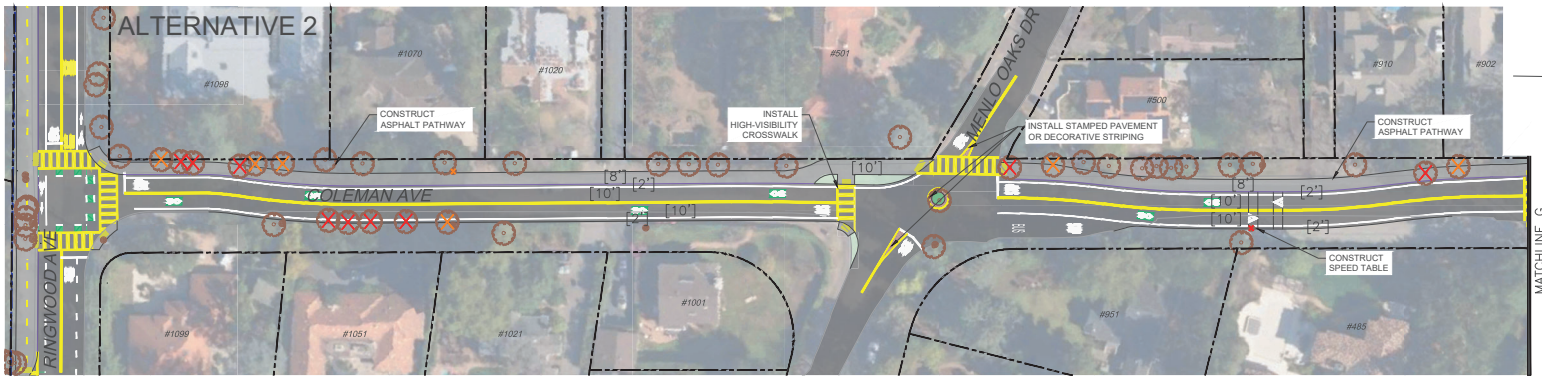

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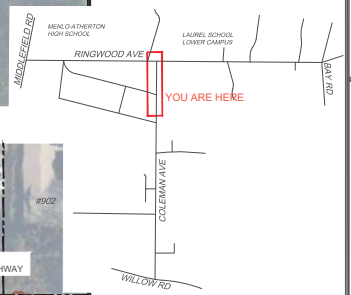

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COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

COLEMAN AVENUE SHEET 1
10% CONCEPT ALTERNATIVES

SCALE 1"=40'
DATE 1/31/24
JOB NO. SMX900-2
DRAWING NUMBER 7 OF 10

Jan 31, 2024 - 12:35pm

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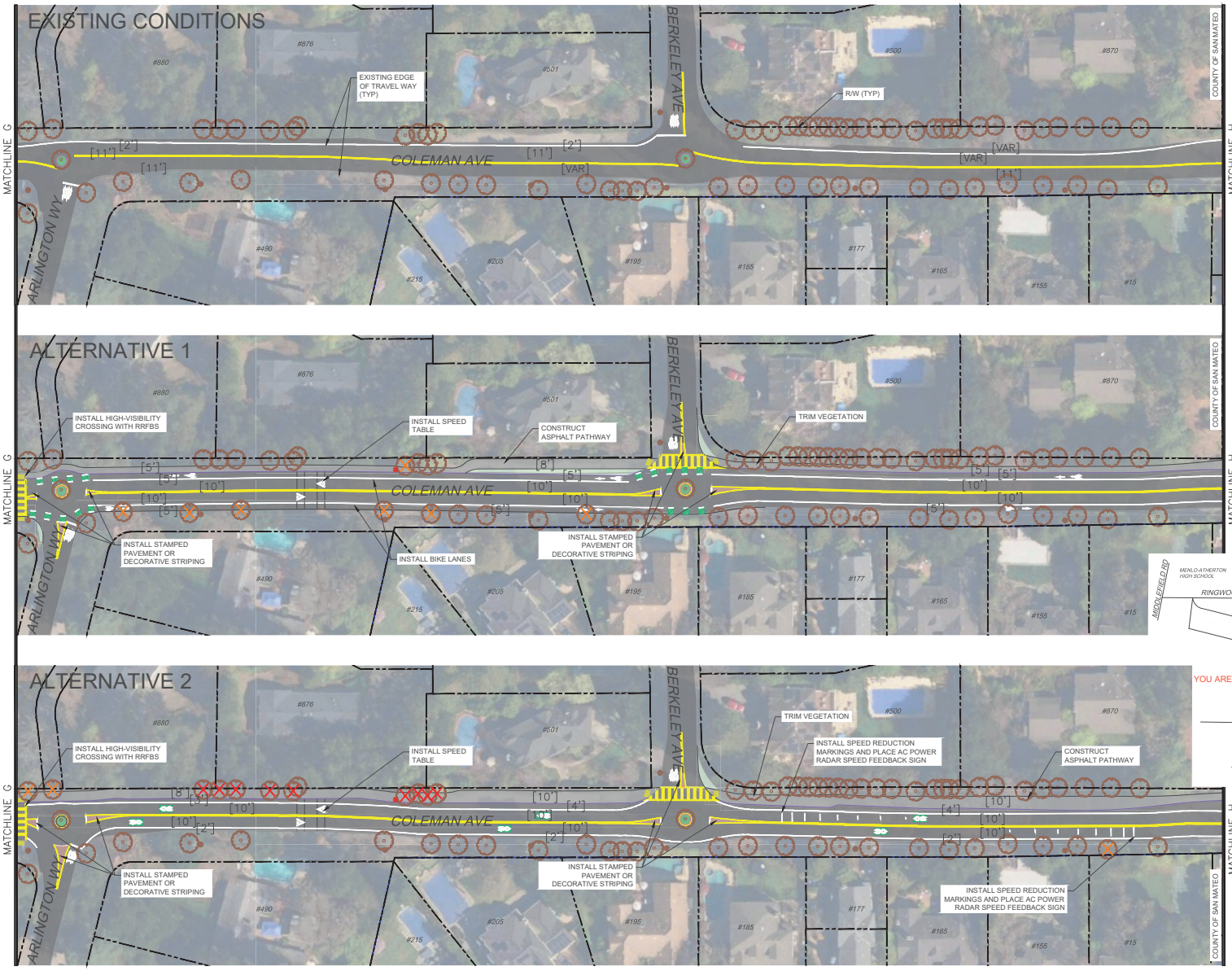

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COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

COLEMAN AVENUE SHEET 2
10% CONCEPT ALTERNATIVES

SCALE 1"=40'
DATE 1/31/24
JOB NO. SMX900-2
DRAWING NUMBER 8 OF 10

Jan 31, 2024 - 12:35pm

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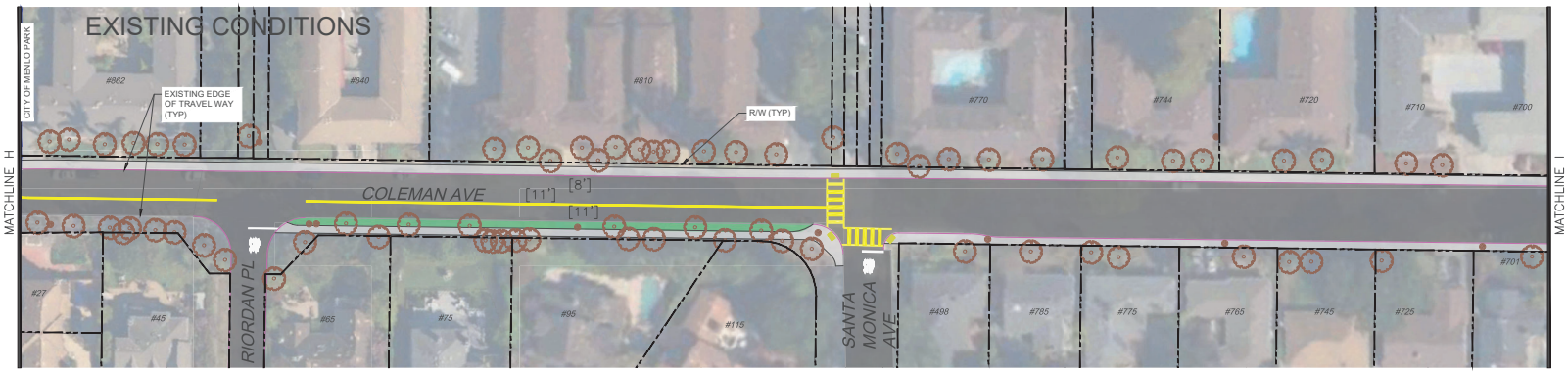

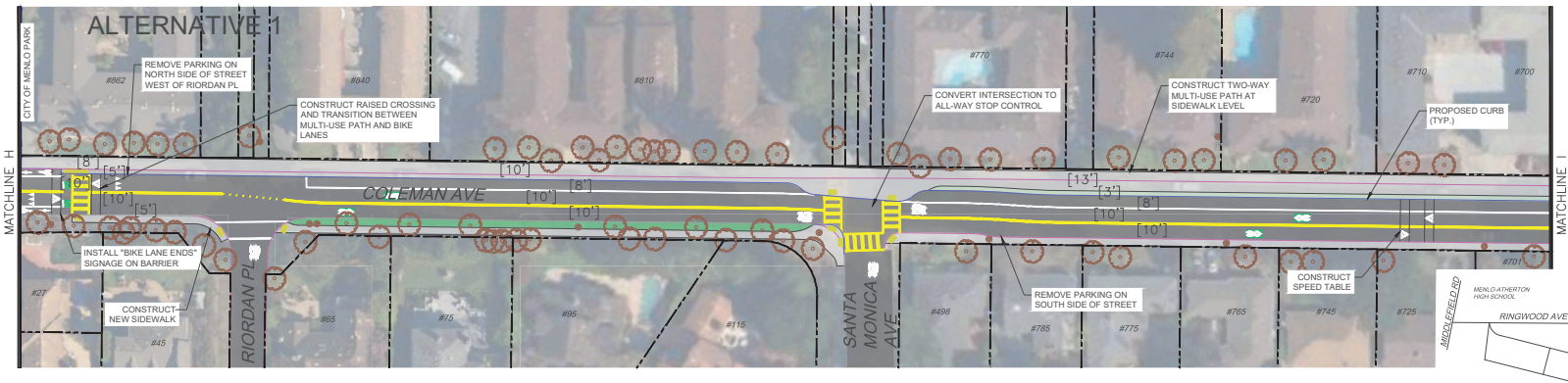

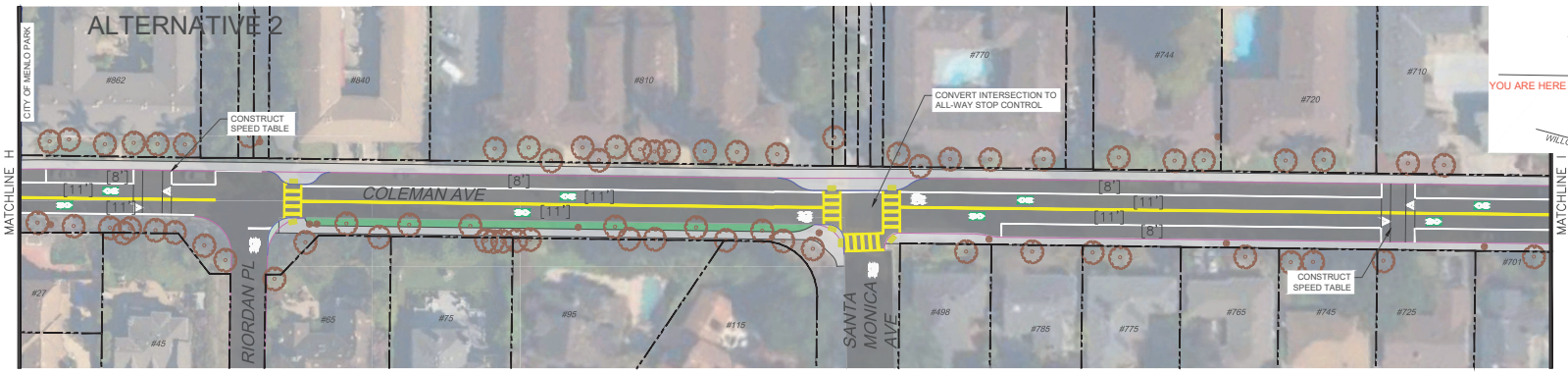

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COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

COLEMAN AVENUE SHEET 3
10% CONCEPT ALTERNATIVES

SCALE 1"=40'
DATE 1/31/24
JOB NO. SMX900-2
DRAWING NUMBER 9 OF 10

Jan 31, 2024 - 12:36pm

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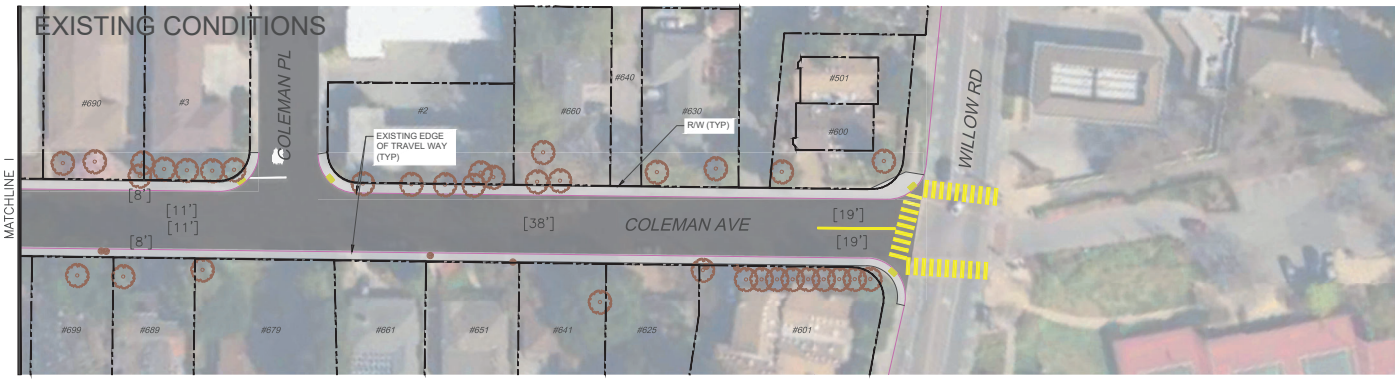

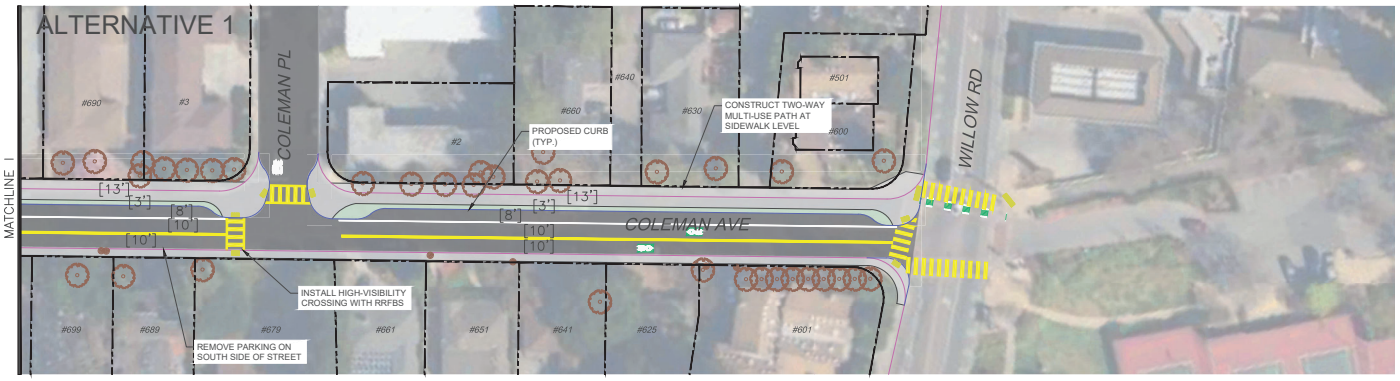

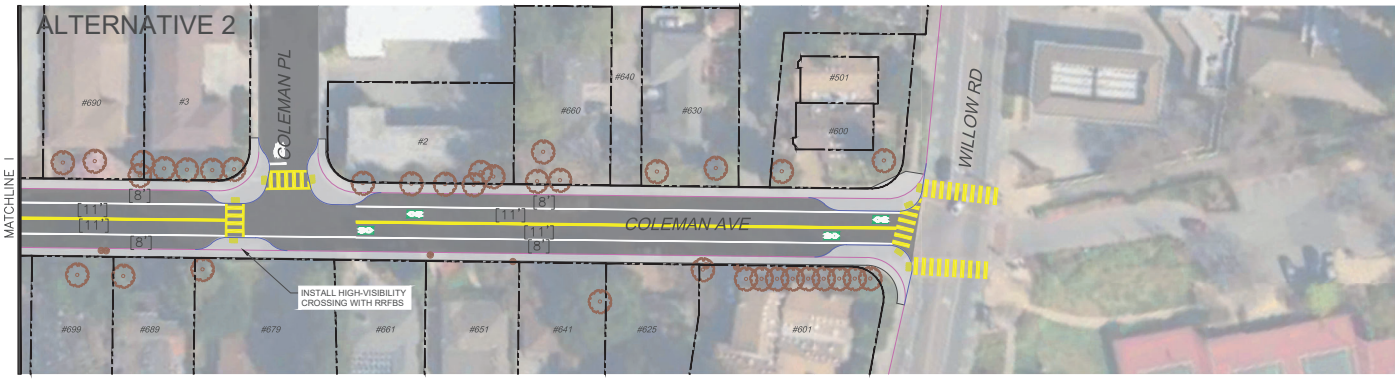

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COLEMAN & RINGWOOD AVENUES TRANSPORTATION STUDY

COLEMAN AVENUE SHEET 4

10% CONCEPT ALTERNATIVES

SCALE 1"=40'

DATE 1/31/24

JOB NO. SMX900-2

DRAWING NUMBER 10 OF 10

Jan 31, 2024 - 12:36pm

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FOR REDUCED PLANS, THE ORIGINAL SCALE IS IN INCHES 0 1 2 3

Appendix F

Cost Estimates

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Coleman and Ringwood Avenues Transportation Study
County of San Mateo and City of Menlo Park
Plannng Level Estimate
Long-term Design Alternative 1

DATE: 2/9/24

		Ringwood Avenue (City Segment)	Ringwood Avenue (County Segment)	Coleman Avenue (County Segment)	Coleman Avenue (City Segment)			
CONSTRUCTION ITEM	**Units**	Quantity	Quantity	Quantity	Quantity	**Totals**	**Unit Cost**	**Total Cost**
PAVEMENT MARKINGS								
White Stripe	LF	1,882	12,454	3,636	1,337	19309	$ 5.00	$ 96,545.00
Yellow Stripe	LF	1,824	12,830	5,692	3,641	23,987	$ 5.00	$ 119,935.00
Pavement Legend	SF	335	1,269	338	276	2,218	$ 10.00	$ 22,178.00
Green Markings	SF	500	1,200	620	420	2,740	$ 20.00	$ 54,800.00
Raised Separation Device	LF	435	4,915	1,696		7,046	$ 20.00	$ 140,920.00
Remove Existing Striping/Markings	LS	1	4	2	1	8	$ 5,000.00	$ 40,000.00
SIGNS								
New Signage	LS	1	2	1	1	5	$ 8,000.00	$ 40,000.00
Flexposts	EA		9			9	$ 50.00	$ 450.00
CIVIL								
Roadway Excavation	LS	1	2	1	1	5	$ 47,500.00	$ 237,500.00
Roadway Widening	SF	505	2,208	6,870		9,583	$ 100.00	$ 958,300.00
Asphalt Pathway	SF	5,741	40,605	9,586		55,932	$ 35.00	$ 1,957,620.00
Concrete Pathway	SF	500			20,711	21,211	$ 50.00	$ 1,060,550.00
Curb and Gutter	LF	222			1,942	2,164	$ 100.00	$ 216,400.00
Curb Ramp with DWS	EA	6	28	8	18	60	$ 7,500.00	$ 450,000.00
Speed Table/Raised Crossing	EA	1	2	2	2	7	$ 25,000.00	$ 175,000.00
Utility Pole Relocation	EA	2	6	3		11	$ 10,000.00	$ 110,000.00
Clearing and Grubbing	LS	1	2	1		4	$ 28,500.00	$ 114,000.00
Drainage Improvements	LS	1	2	1		4	$ 20,000.00	$ 80,000.00
ELECTRICAL								
Solar RRFB (per Pole)	EA	2	4	2	2	10	$ 25,000.00	$ 250,000.00
Streetlights	EA		4	2	3	9	$ 15,000.00	$ 135,000.00
Speed Feedback Sign	EA		3			3	$ 15,000.00	$ 45,000.00
LANDSCAPING								
Tree Removal	EA	2	23	19		44	$ 2,500.00	$ 110,000.00
Landscaping	SF	782	116	2,060	2,609	5,567	$ 20.00	$ 111,340.00
TRAFFIC CONTROL & MOBILIZATION								
Traffic Control System	LS	1	1	1	1	1	$ 652,600.00	$ 652,600.00
Mobilization	LS	1	1	1	1	1	$ 652,600.00	$ 652,600.00
Cost per Location		*$ 730,653.00*	*$ 3,259,955.00*	*$ 1,849,850.00*	*$ 1,990,180.00*			

Sub-Total:	$	7,830,738
Contigency (30%):	$	2,349,221
2024 Total Construction Cost:	**$**	**10,180,000**
Environmental (2%)	$	203,600
Plans, Specifications, and Estimate (20%)	$	2,036,000
Temporary Construction Easements (1%)	$	101,800
Construction Management (12%)	$	1,221,600
Agency Administration (20%)	$	2,036,000
2024 TOTAL PROJECT COST:	**$**	**15,779,000**

Coleman and Ringwood Avenues Transportation Study
County of San Mateo and City of Menlo Park
Plannng Level Estimate
Long-term Design Alternative 2

DATE: 2/7/24

CONSTRUCTION ITEM	Units	Ringwood Avenue (City Segment) Quantity	Ringwood Avenue (County Segment) Quantity	Coleman Avenue (County Segment) Quantity	Coleman Avenue (City Segment) Quantity	Totals	Unit Cost	Total Cost
PAVEMENT MARKINGS								
White Stripe	LF	1,147	10,650	3,737	2,365	17899	$ 5.00	$ 89,495.00
Yellow Stripe	LF	1,950	12,813	4,689	3,383	22,835	$ 5.00	$ 114,175.00
Pavement Legend	SF	525	1,326	392	306	2,549	$ 10.00	$ 25,490.00
Green Markings	SF	540	1,180	600	600	2,920	$ 20.00	$ 58,400.00
Raised Separation Device	LF	240	3,563	1,700		5,503	$ 20.00	$ 110,060.00
Remove Existing Striping/Markings	LS	1	4	2	1	8	$ 5,000.00	$ 40,000.00
SIGNS								
New Signage	LS	1	2	1	1	5	$ 8,000.00	$ 40,000.00
Flexposts	EA		7			7	$ 50.00	$ 350.00
CIVIL								
Roadway Excavation	LS	1	2	1	1	5	$ 37,325.00	$ 186,625.00
Roadway Widening	SF		2,208	3,547		5,755	$ 100.00	$ 575,500.00
Asphalt Pathway	SF	5,704	40,605	15,456		61,765	$ 35.00	$ 2,161,775.00
Curb and Gutter	LF	229			655	884	$ 100.00	$ 88,400.00
Curb Ramp with DWS	EA	6	29	8	15	58	$ 7,500.00	$ 435,000.00
Speed Table/Raised Crossing	EA	1	2	2	2	7	$ 25,000.00	$ 175,000.00
Utility Pole Relocation	EA	2	6	3		11	$ 10,000.00	$ 110,000.00
Clearing and Grubbing	LS	1	2	1		4	$ 22,395.00	$ 89,580.00
Drainage Improvements	LS	1	2	1		4	$ 10,000.00	$ 40,000.00
ELECTRICAL								
Solar RRFB (per Pole)	EA	2	4	2	2	10	$ 25,000.00	$ 250,000.00
Speed Feedback Sign	EA		3	2		5	$ 15,000.00	$ 75,000.00
Streetlights	EA		4	2	3	9	$ 15,000.00	$ 135,000.00
LANDSCAPING								
Tree Removal	EA	2	23	27		52	$ 2,500.00	$ 130,000.00
Landscaping	SF	1,180	121	476	50	1,827	$ 20.00	$ 36,540.00
TRAFFIC CONTROL & MOBILIZATION								
Traffic Control System	LS	1	1	1	1	1	$ 496,600.00	$ 496,600.00
Mobilization	LS	1	1	1	1	1	$ 496,600.00	$ 496,600.00
Cost per Location		*$ 612,195.00*	*$ 3,162,720.00*	*$ 1,682,950.00*	*$ 501,725.00*			

Sub-Total:	$	5,959,590
Contigency (30%):	$	1,787,877
2024 Total Construction Cost:	**$**	**7,748,000**
Environmental (2%)	$	154,960
Plans, Specifications, and Estimate (20%)	$	1,549,600
Temporary Construction Easements (1%)	$	77,480
Construction Management (12%)	$	929,760
Agency Administration (20%)	$	1,549,600
2024 TOTAL PROJECT COST:	**$**	**12,009,400**

Coleman and Ringwood Avenues Transportation Study
County of San Mateo and City of Menlo Park
Preliminary Engineer's Estimate
Pilot Option 1 - Turn Restrictions

DATE: 2/6/2024

CONSTRUCTION ITEM	Units	Coleman Avenue (County Segment) Quantity	Coleman Avenue (City Segment) Quantity	Totals	Unit Cost	Total Cost
SIGNS						
Sign Post	EA	2	2	4	$ 300.00	$ 1,200.00
Sign Panel	EA	4	4	8	$ 500.00	$ 4,000.00

Construction:	$	5,200
Design:	$	7,500
Data Collection:	$	5,000
Evaluation:	$	20,000
Community Engagement:	$	25,000
Contingency (30%):	$	18,810
2024 Total Project Cost:	**$**	**82,000**

Coleman and Ringwood Avenues Transportation Study
County of San Mateo and City of Menlo Park
Preliminary Engineer's Estimate
Pilot Option 2 - No Through Traffic

DATE: 2/6/2024

CONSTRUCTION ITEM	Units	Coleman Avenue (County Segment) Quantity	Coleman Avenue (City Segment) Quantity	Totals	Unit Cost	Total Cost
PAVEMENT MARKINGS						
White Stripe	LF	545		545	$ 10.00	$ 5,450.00
Remove Existing Striping/Markings	LS	1		1	$ 2,500.00	$ 2,500.00
SIGNS						
Sign Post	EA	2	2	4	$ 300.00	$ 1,200.00
Sign Panel	EA	8	4	12	$ 500.00	$ 6,000.00
BARRICADES						
Type III Barricade	EA	4		4	$ 500.00	$ 2,000.00

Construction:	$	17,150
Design:	$	10,000
Data Collection:	$	5,000
Evaluation:	$	20,000
Community Engagement:	$	25,000
Contingency (30%):	$	23,145
2024 Total Project Cost:	**$**	**101,000**

Coleman and Ringwood Avenues Transportation Study
County of San Mateo and City of Menlo Park
Preliminary Engineer's Estimate
Pilot Option 3 - One-Way in County

DATE: 2/6/2024

CONSTRUCTION ITEM	Units	Coleman Avenue (County Segment) Quantity	Coleman Avenue (City Segment) Quantity	Totals	Unit Cost	Total Cost
PAVEMENT MARKINGS						
White Stripe	LF	545		545	$ 10.00	$ 5,450.00
Yellow Stripe	LF	310		310	$ 10.00	$ 3,100.00
Pavement Legend	SF	207		207	$ 12.00	$ 2,484.00
Green Markings	SF	900		900	$ 20.00	$ 18,000.00
SIGNS						
Sign Post	EA	6		6	$ 300.00	$ 1,800.00
Sign Panel	EA	26		26	$ 500.00	$ 13,000.00
BARRICADES						
Type III Barricade	EA	14		14	$ 500.00	$ 7,000.00
Flexposts	EA	10		10	$ 100.00	$ 1,000.00

Construction:	$	51,834
Design:	$	20,000
Data Collection:	$	5,000
Evaluation:	$	20,000
Community Engagement:	$	25,000
Contingency (30%):	$	36,550
2024 Total Project Cost:	**$**	**159,000**

Coleman and Ringwood Avenues Transportation Study
County of San Mateo and City of Menlo Park
Preliminary Engineer's Estimate
Pilot Option 4 - Traffic Calming

DATE: 2/6/2024

CONSTRUCTION ITEM	Units	Coleman Avenue (County Segment) Quantity	Coleman Avenue (City Segment) Quantity	Totals	Unit Cost	Total Cost
TRAFFIC CALMING ELEMENTS						
Rubber Speed Hump	EA	3	3	6	$ 6,000.00	$ 36,000.00

Construction:	$	36,000
Design:	$	10,000
Data Collection:	$	5,000
Evaluation:	$	20,000
Community Engagement:	$	25,000
Contingency (30%):	$	28,800
2024 Total Project Cost:	**$**	**125,000**

Coleman and Ringwood Avenues Transportation Study
County of San Mateo and City of Menlo Park
Preliminary Engineer's Estimate
Pilot Option 5 (City Only) - Bike Lane Westbound and Shared Lane Eastbound

DATE: 2/6/2024

CONSTRUCTION ITEM	Units	Coleman Avenue (County Segment) Quantity	Coleman Avenue (City Segment) Quantity	Totals	Unit Cost	Total Cost
Striping and Signage	LS		1	1	$ 30,000.00	$ 30,000.00
Flexible Posts	LS		1	1	$ 15,000.00	$ 15,000.00

Construction:	$	45,000
Design:	$	10,000
Data Collection:	$	5,000
Evaluation:	$	20,000
Community Engagement:	$	25,000
Contingency (30%):	$	31,500
2024 Total Project Cost:	**$**	**137,000**

Coleman and Ringwood Avenues Transportation Study
County of San Mateo and City of Menlo Park
Preliminary Engineer's Estimate
Pilot Option 6 (City Only) - Narrow Bike Lanes

DATE: 2/6/2024

CONSTRUCTION ITEM	Units	Coleman Avenue (County Segment) Quantity	Coleman Avenue (City Segment) Quantity	Totals	Unit Cost	Total Cost
Striping and Signage	LS		1	1	$ 30,000.00	$ 30,000.00

Construction:	$	30,000
Design:	$	10,000
Data Collection:	$	5,000
Evaluation:	$	20,000
Community Engagement:	$	25,000
Contingency (30%):	$	27,000
2024 Total Project Cost:	**$**	**117,000**