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Enterprise Resource Planning (ERP) Replacement

Supplemental Report 2

CITY OF CUPERTINO

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CITY COUNCIL STAFF REPORT
SUPPLEMENTAL 2
Meeting: February 4, 2025

Agenda Item #5

Subject
Tyler New World Enterprise Resource Planning (ERP) replacement
Recommended Action
A Adopt Resolution No. 2025-XXX approving Budget Modification No. 2425-380 increasing appropriations in the amount of $3,744,526 in the General Fund Applications Budget unit (100-32-308 750-237) for the Tyler New World Enterprise Resource Planning (ERP) replacement.

Background:

Q1: The answer to Q3 states:

"The exact cost of the ERP will not be determined until the RFP process is completed and a vendor is selected. Currently, we are using cost estimates from the Plante Moran needs assessment, specifically the Tier 2 High Scenario, which estimates the one-time costs to be $3,744,526. This includes:

• Vendor implementation costs

• Implementation project management costs

• Project contingency

• Salaries for two full-time employees for 18 months After the system goes live, the ongoing annual costs are estimated at $667,058."

The current budget request only covers the initial one-time cost of $3,75M.

The cost of $3.75M seems to be very high for a software system. Could you please further break down the cost? What components are included in the Tier 2 ERP system to justify the cost of $3.75M for one-time cost? **(Chao)**

See page 26 of the Needs Assessment - ERP Gap Analysis and Action Plan Report

Q2: Follow-up-Q2: From the answers, It seems "Tier 2" and "high-end Tier 2" are two different things then. So, the staff recommendation is to adopt a high-end Tier 2 system, which would be more costly than the Tire 2 system (which costs $3,744.526 One-Time Costs and $667,058 ongoing). In that case, how much is the estimated cost for the "high-end Tier 2" system? **(Chao)**

See page 33 of the Needs Assessment - ERP Gap Analysis and Action Plan Report

Q3: Follow-up-Q3: Please provide the "needs assessment" report. **(Chao)**

See Attached

Q4: Follow-up-Q4: I looked up the pricing cost for commercial ERP. From this article (https://softwareconnect.com/learn/erp-pricing/) states "As seen here, the average monthly cost of ERP software for a small business ($1-$5 million in annual revenue) is **$1,740**. For an enterprise-level company making over $100 million annually, the monthly cost increases to **$9,330**. In total, annual ERP costs range from **$20,880 to $111,960**. "

It seems the cost of $667,058 is 6 times more than the Tier 3 ERP system for a business earning over $100 million. What's included in the ERP system Cupertino is purchasing to justify the additional cost? **(Chao)**

See page 33 of the Needs Assessment - ERP Gap Analysis and Action Plan Report

Q5: From the article: "Midsize businesses earning $50-$100 million per year can expect to pay between **$4,620 and $5,160 per month** for an ERP system. ... Midsize ERP vendors are classified as Tier 2..." "For an enterprise-level company making over $100 million annually and with at least 1,000 employees, the monthly cost for an ERP averages **$9,330**...." **(Chao)**

Sunnyvale's ERP Contract Staff Report - https://sunnyvaleca.legistar.com/LegislationDetail.aspx?ID=3626454&GUID=FAB41F6B-C7B9-45A1-BC7B-1CB4F92AE4AB&FullText=1

Cupertino's cost estimates are based on expert advice from our consultants and benchmarking against neighboring cities. The RFP responses will outline both capabilities and costs, allowing for a thorough evaluation.

City Staff will recommend the ERP solution that best meets Cupertino's required capabilities at a justifiable cost, ensuring a balance between functionality and fiscal responsibility

Q6: Follow-up-Q5: What's the ongoing cost of the current Tyler New World ERP system? Attachments Provided with Original Staff Report: **(Chao)**

The Tyler New Work Annual Maintenance is approximately $110,000 per year.

Attachments Provided with Original Staff Report:

A – Draft Resolution 2025-xxx

Additional Attachments Provided with Supplemental 2:

B - RFP Needs Assessment

OCTOBER 2023

Make the mark.

CITY OF CUPERTINO, CA

ERP Gap Analysis and Action Plan Report

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Contents

1 Executive summary

1.1 Project overview

1.1.1 Project background

The City of Cupertino (City) relies on Tyler Technologies' New World ERP system, originally purchased in 2014, to support its 212 users across six departments. Now, the City looks to explore new software solution options that will meet its current and future needs. To support these efforts, the City engaged Plante Moran to conduct an ERP needs assessment that identifies opportunities for improvement and guides the City through a competitive bidding process for new ERP software. Plante Moran collected questionnaires and conducted interviews with process owners and department end users at the City. The Plante Moran team developed an understanding of the organization to better understand the City's unique requirements. This discovery effort will set the City up for success as it moves into the selection process for a software provider. Upon receiving vendor responses to the RFP, Plante Moran will support the City in evaluating its options and ultimately selecting a new system to support its current and future needs. This report provides observations identified in the questionnaires and interviews as well as provides guidance for expectations of the ERP landscape that will be evaluated next.

1.1.2 Project scope

The City engaged Plante Moran to conduct a comprehensive assessment of its ERP environment and related business processes. The scope of this project includes the following functional areas:

Finance	Human resources	Other
Accounts payable	Benefits management	General and technical
Accounts receivable and miscellaneous billing	Employee self-service	Reporting
Bank reconciliation	Learning management	Conversions
Budgeting	Performance management	Interfaces
Contract management	Personnel actions and employee profile	
Fixed assets	Position control/budgeting, classification, and compensation	
General ledger	Recruitment	
Grant and project accounting	Risk management	
Lease management	Payroll	
Project management	Time and attendance	
Purchasing		

1.1.3 Project objectives

Plante Moran and the City identified the following key objectives for the project:

- ✓ Document an ERP needs assessment including the existing observations and opportunities for improvement, an application migration table showing the plan of ERP-related technology, a marketplace overview, a cost estimate, and implementation recommendations.
- ✓ Develop technical and functional requirements to capture the City's needs for a new ERP system.
- ○ Release a request for proposal (RFP) documenting the City's needs for a new ERP system.
- ○ Procure, through a competitive process, a system that can support the City's current and future needs.

1.1.4 Project approach

The project team took the phased approach outlined below to assess the City's business processes:

- Initiate project
- Define project organizational schedule
- Develop project charter and plan
- Schedule interviews
- Request information

- Conduct educational demonstrations
- Review information
- Conduct stakeholder and departmental interviews
- Conduct executive interviews

- Develop functional and technical ERP requirements
- Finalize requirements following the City's review

- Review draft assessment report
- Finalize and present assessment report

The approach described above was highly participative and included significant input from stakeholders across the entire organization to ensure an accurate understanding of current state conditions.

The process for implementing new technology not only focuses on the technology itself but also aims to enhance existing business processes across the City. The key current state observations discovered during our interviews with City staff are discussed below.

1.2 SWOT analysis

The following SWOT analysis including strengths, weaknesses, opportunities, and threats based on provided documents and executive, department, and process owner interviews with City staff. The City has many strengths as outlined below and can improve many of their weaknesses with a new ERP system. Both opportunities and threats should be considered during the next phase of the project with the ERP selection.

Strengths

- Departments have a Citywide perspective and have a positive working relationship with others
- Resourceful staff developed creative solutions to fill gaps created by software limitations
- Staff are receptive to best practices
- Dedicated IT team creates useful tools for the City

Weaknesses

- Software does not provide modern functionality or integrations required by City staff to complete their jobs
- Staff are burdened by manual tasks that could be performed by a modern system
- Limited reporting capabilities requires staff intervention to obtain information

Opportunities

- Integration could reduce redundant data entry
- Leverage ERP workflow capabilities to increase staff time spent on value add activities
- Adopt best practices for achieving outcomes
- Develop cross-functional staff

Threats

- Dated security in New World
- Configuring a system to mirror current processes reduces return on investment
- Limited City resources to support implementation staffing
- Comfort with customized solutions

1.2.1 Strengths

Departments have a Citywide perspective and have a positive working relationship with others. During departmental and process discussions, staff often mentioned what information other departments and staff needed to complete daily functions. Not only do staff understand their own roles and responsibilities for various business processes, but they are aware of who in the organization needs to conduct the remainder of the process. This shared understanding will help support implementation discussions in configuring workflows for business processes and considering the reports that people need.

Resourceful staff developed creative solutions to fill gaps created by software limitations. Where legacy software does not provide functionality or reports, staff lean on their impressive technical skills to build tools to solve problems. For example, the current ERP does not provide the ability to run reports on performance evaluation dates resulting in most of the process occurring outside of the system. The department built a Microsoft Access (Access) database that staff use to generate a report each week for who is up for an evaluation in the next 30 or 45 days, depending on the nature of the evaluation. Additionally, staff in payroll built Microsoft Excel (Excel) tools for calculating overtime based on a variety of inputs as a check against pay in the legacy system before running payroll. Staff are resourceful in developing methods to complete their work despite system limitations.

Staff are receptive to best practices. Forward-thinking staff throughout the organization provided direct feedback about their current processes that aligned with industry best practices. This will make it easier for the organization to transition to a new system, considering the functionality and reports that could be possible in a new system. For example, staff in finance requested the ability to create versions of a budget and house them in the system. Budget versioning is common in modern systems and provides organizations the ability to see different scenarios that could impact the budget in the future. Staff across all functional areas expressed interest in the modern capabilities mentioned.

Dedicated IT team creates useful tools for the City. The IT department is supportive of the organization and dedicated to making improvements. During multiple interviews, staff mentioned that IT built custom applications for internal use that effectively solve problems. For example, IT leveraged Microsoft Power Apps (Power Apps) to build a Training Management Application. The learning management system allows users to register and receive reminders for upcoming trainings. Additionally, IT built a custom new hire transaction form through Power Apps that allows employees to sign off electronically. The creative and helpful IT department's central role in the implementation will benefit the City's users.

1.2.2 Weaknesses

Software does not provide modern functionality or integrations required by City staff to complete their jobs. Though the legacy software may have met the needs of the City in 2014, the needs have outpaced the abilities the system can provide, creating functional gaps. Modern systems will meet more of the City's requirements, such as adaptive reports, flexibility in calculations, and audit trails for approval steps—all of which were mentioned as limitations in the current system. Additionally, modern integrations do not exist with the City's legacy systems. Though the City implemented integrations where possible, software limitations push staff to record data in duplicate systems and create manual workarounds, increasing additional efforts and the risk of data entry errors or data loss. The City should implement an ERP system that can meet the needs of the entire organization.

Manual tasks burden staff and constrain resources. Staff spend valuable time responding to emails, performing manual calculations, and duplicating data entry in various systems or shadow systems (such as Excel). This culminates in pain points across the organization: supervisors may not have time to complete evaluations in a timely manner, HR staff reenter benefit information already provided somewhere else by employees, and staff may not have adequate time to train others in their department because they are so focused on their manual tasks. With modern software, the skills of the staff can be used in ways that provide more strategic value to the City.

Limited reporting capabilities requires staff intervention to obtain information. Since the current ERP system does not have user-friendly reporting capabilities, staff manually intervene to obtain the information they need. This requires running multiple reports to extract data in a usable format, which can be a time-consuming process. This is seen in instances such as multi-year reporting for budget, reconciling the bank with the general ledger, benefit deductions, and vacancies. While administrative services staff members are willing to help develop reports and dashboards, their assistance may not be fully utilized by all departments, resulting in reporting challenges.

1.2.3 Opportunities

Integration could reduce redundant data entry. Today, many systems operate independently rather than as a part of a larger framework of software. The City should choose to use this software selection as the opportunity

to purposefully choose integration points. By allowing systems to share data with one another, the need for redundant data entry is reduced, which in turn reduces the reconciliation necessary later. By building integrations where data needs to be captured across applications (e.g., connecting the timekeeping systems to the payroll module of the ERP), reports can be quickly generated in formats supportive to unique use cases.

Leverage ERP workflow capabilities to increase staff time spent on value-add activities. Much of the time currently spent on various processes is on tasks outside of the system where manual intervention is required due to system limitations. Some examples include doing calculations outside of the system, doing approvals outside of the system, and other workarounds. By moving all these activities into a single system, the workflow to move to the next step can also be done in the system, which would reduce the amount of time spent outside of the system. This would give staff more capacity to dedicate their time to value-add activities.

Adopt best practices for achieving outcomes. Throughout the selection process, staff may discover that although the outcomes that they desire may be consistent with current outcomes, the process of achieving those outcomes may change. As the City invites software vendors to demonstrate their applications, Plante Moran will help build purposeful demonstration scripts that encourage the vendors to show the attendees the way their processes will look in the future. The City should review these to ensure that they key pain points are covered so that vendors can show detailed benefits. For example, request that vendors walk finance staff through the benefits of a daily bank reconciliation and how it flows to other processes. By approaching the selection with an open mind, staff will recognize and act on potential efficiency gains.

Develop cross-functional staff. As staff lean on the new system to coordinate workflows and reduce manual efforts, train them in new areas to support personal and organizational development. Though staff may not currently have the time to pick up new skills, the City should be purposeful in having staff overlap in future skill sets. Not only will this support succession planning, but staff can support each other and pick up responsibilities when coworkers are out of office. Consider cross-training staff so that multiple people develop an understanding of how to complete various processes. This shared knowledge will reduce reliance on a single individual for a single process, create reliable backups so that staff can take time off, and ensure that processes are completed on time. This also supports succession planning for the future.

1.2.4 Threats

Dated security in New World. Staff reported that security concerns exist in the system due to system limitations/configuration. As legacy software becomes more dated, cybersecurity enhancements are more limited in nature. Eventually, the vendor stops applying security patches altogether, requiring the need for modern software.

Configuring a system to mirror current processes reduces return on investment. Redefining processes with new systems does not happen overnight, and it is often easier said than done. It can be natural to revert to existing processes in the legacy system because they are more comfortable for staff. Though challenging, make sure staff approach the transition with an open mind. As the City releases and receives vendor responses to the RFP, recognize the value in asking vendors about best practices and recommendations they offer to improve City processes. Ensure vendors consider and communicate future practices in their discussions with the City. Discussions about any necessary policy changes prior to the implementation will streamline change management opportunities down the line.

Limited City resources to support implementation staffing. Implementations vary in duration, and vendors could propose timelines between nine months and two years. Choosing an implementation approach based on

this number alone may not capture all the needs of the City. Consider the staffing requirements necessary to achieve a timeline, the support a vendor will provide throughout the implementation, and expectations for testing, building integrations, training, and other key areas. The City may opt for additional vendor support, a dedicated project manager, or some backfill for staff. The City must meet to define these plans early in order for implementation to be successful.

Comfort with customized solutions. IT provides a high level of support to staff right now, including custom-written solutions such as the learning management system. These may be difficult for the ERP marketplace to replicate. The City should be willing to consider different ways to do things in order to fully leverage an ERP.

1.3 Key current state observations

There were a number of consistent observations identified throughout many of the reviewed process areas. Plante Moran recognized the following themes as opportunities to improve the overall effectiveness of the use of ERP within the City.

Finding	Description
1. Impressive tools created internally	In-house staff create and utilize advanced tools created to bridge the gap left by legacy software. The City keep tools updated with data and find the information they need quickly, even if it is not all in one place. Staff are trained and understand their day-to-day tools well beyond what many organizations use them for. In fact, the City found that staff could utilize an easier option than implementing bank reconciliation in the legacy system.
2. Limited system functionality for major processes	The City is not able to fully leverage their current ERP system for major processes, such as budget preparation, benefits enrollment, and personnel actions, due to the lack of functionality that the current ERP system can provide. This results in shadow systems and other workarounds completed outside of the system.
3. Manual processes	Since there is limited system functionality for some major process areas, affected business processes require the use of various spreadsheets and paper forms that are passed between departments. This does not allow the City to take advantage of electronic approval workflows, controls, or efficiencies in these processes.
4. Unused system capabilities	Some system capabilities, such as contracts and bank reconciliation, are not currently being used because of limited system functionality at the time of implementation. The City created workarounds for these processes in the meantime but will be using the ERP selection as an opportunity to revisit the marketplace for these modules.
5. Reporting challenges	Some areas within the City reported difficulties with report development and obtaining key information. This necessitates running multiple reports and performing manual manipulation to extract data in a usable format. Consequently, staff hours are spent performing these tasks or performing duties with limited data.

Finding	Description
6. Decentralized, non-standardized processes	Processes are decentralized across departments, and the timing and system/application used to complete the processes can vary based on the department's preference. This makes it difficult to track the status of these processes and leads to confusion around staff expectations. Change management will include the idea that departments are consistent in processes so that the system can track activity.
7. Fragmented business processes	The City uses many supporting applications to manage many business processes. Most of these systems are disconnected, so staff must manually enter data in multiple systems or spreadsheets. For example, the City uses New World as the financial system of record but CobbleStone for contracts. This leads to extra time spent entering data in multiple places, creates the opportunity for errors, and limits opportunities for automation and electronic routing of workflows in the current system environment.
8. Adequate process flows	Given the current system limitations, several of the City's overall processes follow a well-designed process flow but may not be possible in the system, requiring manual intervention, spreadsheet calculations, and other workarounds. The staff are completing these processes well given the limited capabilities of the system. Automation will make these processes significantly easier in the future, and staff seem excited about how their business activities can leverage modern software.
9. Reliance on institutional knowledge	City staff-built tools support the ability for them to do their own jobs efficiently, and others in the organization lean on them for that knowledge. However, because of how much time and effort tasks take to complete, staff have become specialized at their role. As they leverage modern technology to streamline their business activities, the City should put an emphasis on developing cross-functional staff who can backfill responsibilities as necessary.

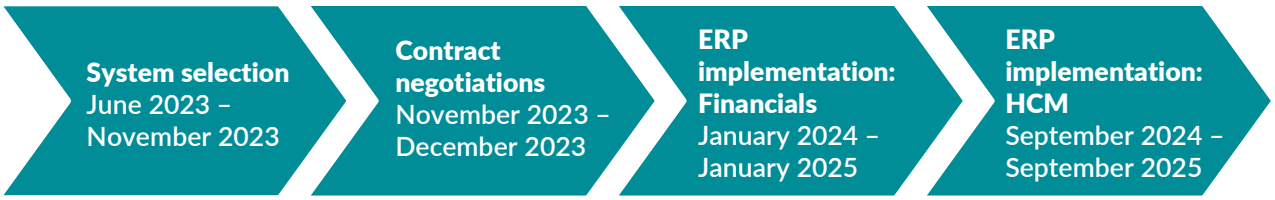
1.4 Action plan considerations

Plante Moran recommends that the City replaces New World because it does not meet the City's business needs. While the City has already decided to replace their current ERP solution, Plante Moran recommends the deployment approach of a vendor-hosted or cloud/software as a service (SaaS) ERP solution. The associated benefits are outlined in the action plan. However, the City should review and consider the plan of action considerations outlined below and detailed in the action plan, including the application migration strategy in Appendix A: Application migration plan.

- Adopt best practices for resource management to ensure a staffing plan is in place and a governance structure is established to support the process. ERP system implementations are complex, and these initiatives can only be successful at organizations with strong project governance, per section 5.2.1.
- Plan for change management early on to ensure that upcoming changes are communicated to those involved in a timely manner. Project success often comes from having a clear idea of how leadership envisions the City being run and then using new systems to facilitate turning this vision into a reality.
- Establish a communication planning process since this project will affect most, if not all staff at the City.

- Increase process standardization to leverage the use of a shared system and process for common functions across the City, which will make it easier to manage these processes from a single system.
- Build an interface between applications that are identified in this report to allow the data to flow more seamlessly between City applications and external applications to reduce manual data entry and shadow systems. Plan for City resources and costs for interface development for the City's other applications, in addition to ERP-related costs. The City should also plan for staff time to help with data extraction, conversion, and cleansing, in preparation for the ERP implementation.
- Streamline business processes based on the best practices and future state process maps to promote efficiency, save the City significant time, and reduce potential errors associated with manual processes.
- Improve reporting with robust reporting capabilities in a system that can be easily accessed by users.
- Establish training and documentation for new systems and business processes to ensure that staff are given the amount of support needed during and after the implementation, such as ongoing training.
- Enhance internal controls within business processes that will be supported by the ERP to ensure the appropriate people are doing the appropriate tasks in order to eliminate duplicate or manual entries.

1.4.1 Timeline overview



2 Gap analysis: Observations and opportunities

2.1 Overview

Through a series of interview sessions with City staff, Plante Moran identified key observations and opportunities related to existing business processes and systems. While the following listing is in-depth and covers many areas, these observations and opportunities should not be viewed as a comprehensive list of all observations defined during the assessment phase of the project, as the current environment has a range of observations related to functionality, integration, and process challenges. The observations and opportunities discussed below are those that were of a significant nature based on our conversations and experience.

For reference, Plante Moran has grouped each issue and opportunity by their process areas. Potential policy considerations or items that should be discussed prior to implementation have been marked with an * in the opportunities below. The City should consider these and have discussion to address any decisions that need to be made prior to implementation. These are all listed in Appendix C: Action items for further consideration.

2.2 Detailed observations and opportunities log

2.2.1 Issue and opportunities: Finance

Accounts receivable and miscellaneous billing

Observations:

- There is limited department accessibility in the accounts receivable module. Departments do not have access to enter or view customer invoices, so a paper form is used to send requests to finance to generate customer invoices. This process increases the chance of delay in the issuance, and the status of an invoice to be generated is not available for departments to see.
- Customer set up is limited in New World. There is no opportunity to set up customers by department or set up one customer with alternate views. Late notices and dunning letters are prepared manually and sent via U.S. mail.
- The City uses multiple systems for activity and payment management but the integration to New World is limited, if at all. ActiveNet, the payment system, does not support the fund/accounts, requiring manual and retroactive efforts to align payments to the correct path.
- Developer deposits are recorded through the miscellaneous billing module. Finance staff receive money and record it as unapplied credit. When an expense and invoice are paid, an invoice is created in miscellaneous billing to record the revenue to offset the expense.

Opportunities:

- The City can leverage workflow capabilities of future systems to create customer invoices. Ideally, the place where departments submit the invoice, including the amount and detail, is housed with the customer history so that staff in finance do not have to look at different systems. With workflow, appropriate staff would be able to see the status of the process.
- During interviews, staff mentioned the desire for recurring invoices at a certain interval. New systems can allow staff to generate these invoices with the ability to make edits such as date and description.
- Modern systems offer secure integrations that would allow ActiveNet to perform its payment functions and send data to the ERP without manual efforts by staff. The City can map the way payments hit funds/accounts during and after implementation.
- Future systems can record deposits correctly, making the ability to report on accounts easier.

Accounts payable

Observations

- The City utilizes "temporary" vendors who do not register in the legacy system because they receive a one-time payment. Searching for these one-time vendors is difficult and requires background knowledge from staff to look for a specific payment or timeframe to find the vendor.
- U.S. Bank doesn't provide the ability for users to download a report in desired formats, making it difficult for finance to easily break down the purchases by expenditure codes.

Opportunities

- Utilize a vendor portal to submit documentation so that vendors do not have to come to City Hall. Additionally, the City can configure the portal so that vendors can run their own aging reports.*
- Map an integration with the bank to create a payment transaction with purchase cards. Based on bank codes, it can map the ERP system codes for the general ledger and generate reports in a usable format.
- Modern systems can accommodate using two- or three-way matching of purchase orders, invoices, and the receipt of goods to provide for auto processing of invoices that meet the specificized requirements.

Bank reconciliation

Observations

- The bank reconciliation process is manual. There is a module in New World, but it is not used as staff reports that it is complicated, and the manual process is easier.
- As noted in the accounts receivable section above, the lack of integration between New World and ActiveNet creates manual processing of transactions and timing differences between the deposits to the bank and the recording in New World.

Opportunities

- The City currently utilizes a monthly bank reconciliation process. Consider utilizing vendor demonstrations to see how more frequent bank reconciliation runs can be drilled down to the transaction level and are easier to process. It should also be shown how payments coming in can be rolled up to their associated bank run. This will be helpful in pursuing change management policies across the organization to align a business process with best practices.*

Budget

Observations

- OpenGov is the starting point for budget preparation, but adjustments to the proposed budget are performed outside of the system in Excel spreadsheets. When departments make changes, they highlight their changes in a different color on the spreadsheet. This process is time consuming for finance to look for the highlights, and it relies on departments to remember to make the highlight before exiting. If a modification doesn't receive the highlight or finance doesn't catch it, the change is not updated in OpenGov.
- Departments struggle to input a budget request due to current system limitations in OpenGov. Although OpenGov's format is familiar and has a simple interface, the system limits staff trying to create a form to input their budget into.
- The City utilizes OpenGov for budget preparation and New World for budget control. However, the two systems do not have the same level of detail, causing staff to keep multiple windows open so that they can see discrepancies between the two, which is frustrating and a time burden.
- Carryovers are not currently tracked in a system. Instead, carryovers are performed annually in Excel. The finance team then processes the journals for New World. Ideally, this is performed on an ongoing basis, where effective dates allow adjustments to take action as configured.
- There is inconsistency between the grants budgeted for and the grants received by departments. A consistent policy across the organization should be considered for when to input a grant into the system.*

Opportunities

- The base budget process should include open and documented communication between departments and the central finance office. Instead of managing budget requests on Excel with colors, modern ERPs allow departments to submit a change to their budgets with fields for documentation/descriptions that trigger approval.
- Best practice for budget preparation includes versioning at multiple levels. Modern systems can track entire versions of the budget and mark different statuses along the way. Additionally, these systems can also track different types of transactions for adjustments, such as increases for additional funding.*
- Financial consultants hired by the City created different Excel models of sales tax, CPI, and vacancy factors so the City could leverage for budget planning. When a scenario changes, finance manually updates each model. Consider utilizing the ERP to create different scenarios that flow to each version of the budget (e.g., high, low) in place of the existing spreadsheet.*
- Consider implementing different approval processes for different types of budget adjustments. For example, a budget transfer between departments will have a different approval process than the workflow necessary for new grants in the budget.*
- Finance keeps accurate records for purposes of encumbrance carry-overs and should seek to proactively build that process within the new ERP. Right now, finance maintains a calendar to know when to ask departments if they are carrying an encumbrance forward. The City should leverage the carryover ability of modern systems for open purchase orders at year end to reduce Excel use in this area.*
- The City uses OpenGov for position budgeting, which allows salaries and benefits to be uploaded to the budget. However, because the system is separate from the ERP, staff are not able to track actual spend versus what was budgeted for a certain position. This also makes it more difficult for staff to calculate vacant positions in the budget. In the future state, information will flow from payroll to the budget to quickly show a forecasted number for a vacant position based on the actual salary and benefits for that position.
- Modern systems can set alerts at different levels of the budget. While some restrictions would be set to the program level, others could be at the project level to prevent overages. The City could decide which level(s) of the budget alerts should be at.
- Multiyear reports are difficult to run due to an antiquated system. Modern systems allow users to run reports for desired date ranges, including over multiple years.

Contract management

Observations

- Some contracts require Council approval. To comply, City staff export the draft to the Legistar, receive updates, and reincorporate them back into CobbleStone. This process can be time consuming and cause delays in contract approvals.

- Contracts in CobbleStone do not show changes over time. Often, attorneys make edits on the contracts before they are finalized, but CobbleStone does not maintain a history of those edits.
- It can be difficult for staff to understand where contracts stand in the process with updates to terms and conditions.
- While the vendor portal in CobbleStone has the capability to upload documentation, it is not fully utilized, and vendors will send their own statement of work that is different from the City's template.
- Manual effort is required to pull a purchase order from New World into CobbleStone and LaserFiche.

Opportunities

- The future ERP includes the ability to house all contracts in a central location that can tie to purchase orders. Staff should be able to see the amount spent against the contract and the balance of each in the same place where contract history is kept.
- Implementing a new system can present an opportunity to reconsider data retention policies. The City can choose to build an integration from the ERP to LaserFiche for data retention or utilize the ERP for that capability.*
- A fully leveraged vendor portal can allow City staff to maintain a history of communication with vendors across the organization. Additionally, staff can build standard forms into the system such as an agreement or statement or work that guides vendors to submit them consistently.

Fixed assets

Observations

- There is no option within the purchase order module to talk to the fixed assets module currently, even if there is a button there for users. If there is a purchase in New World, it will not flow to the fixed assets module. Without the link, it can be difficult to record the purchase on the associated financial statements. Users are not able to identify a fixed asset during the procurement stage.
- Depreciation is currently manually calculated through Excel. Best practice includes utilizing prebuilt depreciation rules and schedules in the ERP to provide real-time reports on depreciation with less manual intervention.

Opportunities

- Utilize the ERP to establish a link between purchasing and fixed assets. Purchases made should flow through the fixed assets module for actions such as capitalization and depreciation.

General ledger

Observations

- The current general ledger system is extremely easy to navigate for staff, and that ease to maneuver should be essential for a new system.
- Reports are extremely limited in the current system. The standard reports from the software do not include all the data fields desired, and the system is cumbersome in its ability to generate custom reports.

Opportunities

- Due to the more comprehensive nature of modern ERP systems, out-of-the-box reports provide a much more granular level of detail. Users can configure their own reports beyond those that come standard and customize their own dashboards with reports valuable specific to them.
- Utilize notification for vendors nearing the $600 threshold to require a 1099. The new system should be able to automatically generate 1099 forms for the appropriate vendors.
- Auditors currently ask for documentation down to the transaction detail. Modern ERPs allow these reports to be easily accessible, and the City can allow for third-party access to the system, if desired, to review the appropriate documentation. Determine if the City would like to allow for third party access to the future ERP system.*

Grant and project management

Observations

- Grants are tracked by departments outside of New World, in Excel spreadsheets include details around the amount applied for, the status, money received, and money spent against the contract. Because this is outside of the system, there is manual effort required to check all the fields from the spreadsheet with the actual details.
- Departments handle and processes their own invoices and send them to finance. Finance will invoice them against the expenditures. This process is manual, does not provide visibility into approval steps, and results in a decentralized process where departments have an inconsistent process with the City's finance office.

Opportunities

- Modern ERPs include both grant and project modules. These elements can be tied together because a project can be funded by one or more grants, and one grant can fund multiple projects. Define what the grants and projects process should look like in a future ERP system.*
- Utilize the user-defined fields in a new system to track transactions at different levels of the organization. Although money is set aside now for programs and not for projects, the future state capabilities can allow the City to see the money planned for and spent by a project. Users with the appropriate clearance will have the ability to drill down from the program level to the project and transaction levels, providing more reporting

flexibility. The City, which utilizes this capability in limited areas now, should prioritize training and vendor demonstrations to ultimately achieve the full potential of the user-defined fields.

Lease management

Observations

- Lease agreements are currently tracked using spreadsheets. Generating invoices to customers is manual, which requires duplicative efforts to ensure that information is correctly tracked in the financial system.
- DebtBook is used to check payments and record journal entries given when the City acts as the lessor, but the invoicing is done in New World, which requires a manual reconciliation process at the end of the year.

Opportunities

- Utilize the system to automatically create invoices based on information input into the preconfigured fields (with workflow approval). Invoices in modern systems will feed into the general ledger automatically.
- Leverage the ERP to accommodate reimbursement and disbursement contracts. Utilizing the ERP will allow for easier audit history on changes to contracts, including the ability to see prior versions and who made changes.
- Ensure that requirements feature the ability to set up and track both sides of a lease: the City as the lessor and the lessee in accordance with GASB87. Lease invoices would reconcile in live time with journal entries.

Purchasing

Observations

- A contract or quote is stored in CobbleStone, with copies made for Google Drive and New World. This requires duplicate effort and time to ensure that documents are properly stored and can be found later on.
- There are no notifications for approvals in New World, and any outstanding tasks are not individual to certain staff members; instead, all tasks for finance are shown together at the top of the screen.
- Purchase cards are reconciled monthly with bank statements compared to what departments enter in for transactions, with use tax paid quarterly. Sales tax is calculated manually on a spreadsheet.

Opportunities

- With a modern system, staff will have the option to upload documentation for purchases. Future process discussions should include referring to the ERP as the source of record without documents stored elsewhere.
- City staff expressed the desire to catch a payment that should not be paid due to various reasons, such as incorrect year, dates beyond a fiscal year, etc. utilizing some sort of flags or notifications in the system. Systems may have the ability to provide warnings and hard-stops for payments when dates are beyond a fiscal year to prevent paying an invoice against a purchase order in the wrong year.
- The ERP should provide the ability to apply sales tax to the merchandise and the shipping and handling when applicable. In the future, this calculation should be done in the system rather than in separate spreadsheets.
- The City should discuss the means of storing records in the future. Municipalities utilize both a modern ERP or LaserFiche for this capability, usually deciding between one of the two. Modern systems build the integration to LaserFiche often.

2.2.2 Observations and opportunities: Human capital management

Classification and compensation

Observations

- New World allows predetermined classifications and steps to be tracked in memorandums of understanding, with a corresponding grade for each class and five steps. However, all grades show as active, and the process for cleaning up grades and reflecting only those active is cumbersome to keep updated.
- Tracking budget by position number is no longer as clear as in the past for multiple reasons. Transferring of divisions is difficult to include in the number, part-time reporting is done differently, and some departments have not kept up with cleaning up their numbers. This can be confusing for staff to know which position numbers are the most up to date.
- Every job currently has its own position number. When someone leaves a position, a new position must be created, then HR staff zero out the budget for the old position. This process is manual and results in more job numbers than necessary.
- Departments are not currently aware of their budgets for recruiting because positions are not consistently tracked or understood when they become vacant. Standardization is required in terms of how to handle, convert, and fill positions. Part-time hires require a manual justification for approval to communicate that there is a vacancy.

Opportunities

- City staff mentioned that they are open to developing a new set of position codes. Consider establishing new position codes to everyone in a new ERP system following a consistent numbering schema. Confirm that setting up new position numbering would be agreeable, ensure that the approach is communicated clearly to departments in the organization, and that end users receive training on the standard.*
- Utilize vendor demonstrations to see how cost of living adjustments can be processed and tracked in a modern system using mass pay change capabilities. Include demonstration script items to pull both historical COLA amounts and forecast what they may look like in the future.
- Modern systems allow users with the appropriate security access to run reports on staff impacted by a potential mass update. These changes would be visible from the personnel file view or the history of the mass update.
- Reporting on positions and vacancies will no longer need to be in a spreadsheet. With the new ERP software, HR staff can see recruitment patterns across the organization, including metrics such as turnover, recruitment, and trends in changes. Real-time knowledge allows organizations to make proactive decisions about how to address job openings and utilize available budget. The system should be able to track the relationship between positions over time without manually creating new job numbers each time a position is filled.

Employee benefits

Observations

- The CalPERS portal for pension and health benefits requires duplicative entry. Any changes in enrollments are entered in multiple places which can be time consuming, especially during the open enrollment time frame when there are many changes.
- California passed the California Family Rights Act (CFRA) to supplement the federal Family and Medical Leave Act (FMLA), but the system does not currently differentiate between the two. FMLA hours are currently tracked in Excel spreadsheets rather than a centralized system causing pay codes to not be up to date in this area.

Opportunities

- A simplified enrollment screen for staff can be configured so that all plans that they are eligible for pop up. Staff should be able to enroll in benefits from the ERP and have their benefit elections flow to each benefit provider for enrollment.
- Include requirements for self-service capabilities that allow for staff to view and manage benefits, dependents, and contributions. The organization can use these fields as triggers for other actions. For example, by keeping track of dependents in the system, staff with the appropriate security can run a report to see how many dependents will turn 26 within a certain date range, allowing the organization to be more proactive in changing the benefit enrollment and the payroll deduction associated with it.
- By requesting an interface with CalPERS (or ensuring an easy upload is possible), staff would no longer need to enter pension and health data in duplicative places. Additionally, reconciliations between the ERP and CalPERS would be handled by the interface .

- The City will benefit from the modern capabilities of ERP systems to generate standard ACA and IRS reports. Staff mentioned the current manual process to record correctly with the dates listed, and the future solution should clear up any interpretation on codes from the IRS.

Learning management

Observations

- The City has transitioned from using Excel to the custom-built internal Power Apps Training Management Application (TMA) for learning management functions. The application allows employees to register and receive notification for upcoming trainings. IT built an impressive application that has the opportunity to grow with the organization. City staff may have comfort with this tool created just for their use which may result in limited interest in moving to a new learning management system.
- Certification completions are currently tracked on an Excel spreadsheet, and continuing education is the responsibility of the employee or the department. This can be a risk if required certifications or licensures are not renewed in a timely manner.

Opportunities

- The City should consider utilizing a learning management system as part of the ERP to reduce the manual efforts necessary to maintain the TMA. Modern systems can automatically generate certificates of completion, tie them to employee profiles, and record completion statistics. Consider which trainings from the TMA should be brought into the new system.*
- The City can leverage the ERP to build centralized processes for continuing education. With the ability to report on certifications and education, supervisors and department heads can be more proactive in assigning internal and external training opportunities. Keeping skills and language proficiency attached to an employee record can cut down on the effort necessary to currently build a personnel file.

Performance management

Observations

- Every week, HR staff run a report in Access to generate a list of employees due for an evaluation. The process is consistent across the organization so that reminders for annual evaluations are given 30 days in advance while evaluations that drive step increases are 45 days in advance. This Access database interacts with Microsoft Word and Excel to generate necessary information and the form for the supervisor. However, staff often must remind supervisors to complete the evaluations.
- Evaluations tied to step increases require evaluators and HR to communicate ahead of the time the step increase may come into effect. If the evaluator does not inform HR of the step increase decision in time, staff may receive pay inconsistent with their performance evaluation decision and eventually require retroactive payments which requires manual efforts from payroll.

- The City does not currently dedicate as much time as they would like to succession planning because other manual processes and components of the performance management process consume staff time.
- New World defaults one hire date per employee. The system should recognize one date as the date for evaluations between original date of hire, promotion date, or re-hire date.

Opportunities

- Consider using the implementation to move toward narrative-based performance reviews. This would look more like a coaching model than a five-point scale and would support evaluators in providing objective feedback, supporting the organization's ongoing development. If the City opts for new forms to support narrative-based reviews, ensure that staff receive training on the new approach and understand its benefits.*
- While the new system can provide periodic reminders to supervisors to get their evaluations in on time, the City may benefit from additional accountability for supervisors. Examine if the process for delayed feedback should include an alert to department heads or if supervisors should be evaluated based on their ability to evaluate others.*
- Leveraging a system to support various HR processes will allow staff the time to do succession planning. Consider discussing promotions and succession planning in performance discussions.*

Personnel actions

Observations

- The City has different forms for different types of personnel actions. PDF forms exist for promotions, new class moves, and transfers, while new hire forms work through Power Apps. While these forms may work to solve current work activities, they can cause some confusion of what to use in which instance.
- Retroactive payments happen often due to the timing and duration of processing personnel actions. This often includes email communication that may not be visible to others in the organization who would like to see an audit trail for personnel actions.

Opportunities

- Future actions and communications should be housed in the ERP to provide one source of truth with consistent processes and transparency throughout the organization. Workflows for approvals on actions including forms within the system will eliminate the use of more manual forms outside of it.

- Effective dating can be configured in the system to apply current rates to an employee until a certain date. For example, if an employee is promoted as of a date in the future, their pay would remain on the current rate until the desired date when the new pay rate is effective. This lessens the burden on HR staff to get the change done right on time and on payroll staff who should not have to complete as many retros.

Recruitment

Observations

- The City currently uses NeoGov for recruitment, a software common in the public sector to complete recruitment activities, and has chosen to continue using it in the future. NeoGov is not fully utilized currently, nor connected with the current ERP system, resulting in duplicate entry.
- While the City explored integrations, New World limited the opportunities. NeoGov has APIs available to build a modern integration, but New World's integration approach is more dated, so City staff waited for the procurement of a new ERP to build the integration. Maintaining a dated integration may have cost more time and effort than not having one at all.

Opportunities

- Building an integration between NeoGov and the future ERP will allow information to flow through the organization to cut down on the manual reentry. For example, if a candidate completes an application through NeoGov, the ERP can utilize workflow to internally provide visibility in the application process through the onboarding process. Additionally, the employee profile can prepopulate with the information already submitted on the job application portal.

Risk management

Observations

- The City utilizes a third party for risk management, which meets the needs of the City moving forward. There is no need for this functionality to be included in an ERP at this time since the City will continue using the third party.

Opportunities

- Explore ways to work closer with the third-party risk administrator, JPA, to get information and reports the organization will need moving forward. Try to use this process to mitigate duplicative record keeping between the access HR has in a portal versus the spreadsheet for internal claims.*
- The City often requests information about types of injured workers, number of injuries by department, and most frequent types of injuries, which can be time consuming. Consider building an integration to receive these reports in live time as the data is collected by the third party.

Self service

Observations

- Employees do not currently update their own information. User self-service is currently limited to the ability for employees to view their own W-2s and paystubs. To make changes, staff must submit forms to HR, who make the updates to the system.
- Current software allows negative accruals and time off, which is difficult to keep consistent across department and job role.

Opportunities

- Common self-service capabilities include ways for employees to pull their own benefits and calculate their own pay as they make their benefits. Additionally, employees should be able to initiate changes to their personnel record and request time off. For each request, employees should be able to see where the process stands in the workflow.
- The system should have rules to prevent negative accruals and time off. The City can configure whether a warning is given (that still allows the employee to submit a request that would result in a negative accrual) or a hard-stop on the request and should consider this change.*

2.2.3 Observations and opportunities: Payroll and time tracking

Payroll

Observations

- Staff often enter their time correctly, and the payroll process is quick when there are no errors. However, problems may arise when part-time or seasonal employees are getting used to the system. If an error is only caught at the file upload stage, payroll staff must reach out to HR to update the timesheets. The delay in rule application between the timesheet and payroll requires staff to be more attuned to potential errors.
- Staff members may select the wrong code when they enter their time. Because of the system limitations, payroll staff alert employees by email to modify the change and show them where the correct codes are kept.
- Payroll often tracks data in Excel spreadsheets, which require significant upkeep. Verifying FLSA, timesheets, and accruals takes time and effort to reconcile with the current software. For example, employees working fewer than 40 hours a week should not get an accrual, but the system still accrues it for them. The spreadsheets allow payroll staff to catch the errors.
- HR consults payroll staff for personnel activities that require pay calculations. For terminations, the City cuts a check to pay vacation time out which requires HR to consult with payroll; payroll pulls up the spreadsheet for the calculations necessary before validating numbers. This process requires manual effort which could result in inaccurate payments since calculations are done manually for validation purposes.

Opportunities

- In a future system, considerations should be given as to the payroll code visibility. Ideally, the position is tied to job title so that employees do not have the option to select the wrong code. This ERP selection and implementation provides the opportunity to clean up pay codes and only bring in those necessary. For example, seasonal staff should only have access to record time against pay codes within their job title.*
- Consider utilizing this selection as an opportunity for staff to leverage direct deposit or a pay card situation for those who would like their pay more easily accessible, with the goal of avoiding cutting paper checks.*
- In a new system, the City can configure workflow for certain personnel actions in the same place all the calculations are stored. For example, HR can initiate a termination workflow that includes steps for paying out remaining benefits and converting remaining vacation time into pay. Any necessary approvals would be built into the workflow and provide an audit trial in accordance with City requirements.
- Employees can leverage self-service portals in the future system to see pay stubs and W-2s as they can now with the added functionality of making changes to their deductions, changing banks, etc. from their portal, with the appropriate approvals.
- Utilize a requirement for the new system to generate a report as a .csv file in accordance with CalPERS requirements.

Timekeeping

Observations

- While scheduling is decentralized, all employees record time in the same way (through the HR portal). Payroll staff utilize reports from the HR portal; to make sure that all time is approved, they download a .csv file that gets uploaded to New World for payroll processing. This process requires a few systems and steps to ensure that scheduling is aligned with the recorded time and ultimately uploaded to New World.
- The system is not currently able to accommodate blended rates for bilingual pay. The City relies on manual workarounds for calculating time-and-a-half for the base rate of pay as well as the modifier so that all pay is considered for bilingual pay.

Opportunities

- Modern ERPs provide payroll staff greater flexibility for approving time. Consider utilizing the functionality of a soft close to run payroll before it is posted (finalized).* This allows departments to have time to check for errors and does not require payroll staff to reach out to department supervisors to remove approvals and send back to employees. Best practice for approving time is that the employee reviews their own time before sending to a supervisor. If there are errors, the supervisor should either send back to the employee to make adjustments or provide notification to the employee that their time has been changed before sending it to payroll for final approval.*

- Consider coding holidays in the new system for when a blended rate of pay is triggered for all employees. For example, if employees in Parks and Recreation work on July 4, the system should recognize that day as a holiday and automatically factor in the blended rate of pay calculation.*
- Ensure that different job classifications can be paid at different frequencies in the new systems. The system should be able to accommodate bimonthly and monthly pay for people who are paid based on attendance (e.g., council members).
- Consider integrating with CityWorks so that work order time can be reconciled with payroll time. This may improve reporting considerations across the organization to calculate spending against a project that includes details such as time, asset spend, and payments to vendors.*

3 ERP marketplace assessment

Generally, ERP solutions evolved out of a desire to provide the functionality of two or more systems, such as financials and HR, in an integrated software solution. ERP software solutions experienced their first major growth in private sector businesses in their manufacturing and supply chain operations. Over the years, these solutions were enhanced, configured, and tested in public sector organizations. With these enhancements, those solutions originally developed for private sector organizations could now be deployed in a public sector setting.

This section provides an overview of the ERP marketplace, organized as follows:

- Vendor consolidation
- Tier 1 versus tier 2 ERP
- On-premise versus cloud-based ERP
- Vendor marketplace overview
- ERP marketplace trends

3.1 Vendor consolidation

Consolidation among public sector software vendors has left a fewer number of vendors providing services to the public sector than in prior years. Organizations such as Harris, Oracle, CentralSquare, Infor, Accela, and Tyler Technologies have acquired competing software products over time and, to varying extents, marketed, licensed, implemented, and supported each of them. As such, the remaining vendors have a larger installed base per vendor. It is anticipated that, over time, these vendors will reduce, not increase, the number of ERP solutions that they will maintain and support for the public sector. This consolidation of solution offerings is typical in the software industry as a result of their desire to create a sustainable business model. Thus, it is important during the due diligence and contract negotiation process to consider any future product plans available from software providers, with the purpose of maximizing solution longevity and avoiding expensive capital outlays for upgrades and replacements.

3.2 Summary comparison: Tier 1 versus tier 2 ERP

Tier 1 vendors offer broad solutions designed specifically for the private sector. In recent years, these solutions were enhanced, configured, and tested in public sector organizations. With enhancements, these solutions originally developed for private sector organizations are now being deployed in a public sector setting.

Tier 2 ERP software providers originated and offer specific vertical solutions designed for the public sector, including fund accounting, encumbrance accounting, sophisticated budgeting, grants management, etc., and capabilities that are pervasive in this segment. These solutions are frequently deployed in medium-sized public organizations.

The table below identifies some of the key differences between tier 1 and tier 2 software providers on issues such as support requirements, cost of implementation services, cost for major version upgrades, software support channels, and other factors.

	Tier 1	Tier 2
Sample representative vendors	• Infor (CloudSuite) • Microsoft Dynamics • Oracle (Fusion Cloud and Netsuite) • SAP • Workday	• Cayenta • Harris • OpenGov • Tyler Technologies
Design considerations	• Developed product for private sector and later adapted for public sector • Many modules specific to public sector • Larger organizations with greater R&D budgets, offer more robust technology • Robust development tools • Scalable to leverage most robust development and database environments	• Primarily designed for public sector • More prescriptive functionality and less conducive to customization without altering source code • Often leverage common municipal technology standards (e.g., Microsoft SQL database); some support Oracle • Environments leverage third-party tools (database, report writer, etc.)
Ongoing technology support resource requirements	• Cloud solutions do not require significant technology FTEs • Also impacted by level of integration with other organizational systems	• Cloud solutions require similar technology resources as tier 2 • Also impacted by level of integration with other organizational systems
Software functionality	• Core modules have robust functionality • Typically have significant configuration options enabling a wide range of options to accomplish business processes • May lack public sector-specific features; however, functionality is increasing over time • License costs per user are typically more expensive than tier 2	• Incrementally less robust functionality for core components • HR/payroll solutions are frequently less robust as compared to tier 1 offerings • Many vendors offer additional public sector modules, such as fleet management, request for service, etc. • License costs per user are typically less expensive than tier 1
Implementation services for new installation	• May require multiple FTEs to implement • Requires significantly greater implementation vendor resources than tier 2 to implement, including key staff who are full-time to the project • Software implementers are typically integrators/channel partners	• Vendor "homework" approach has the organization responsible for many implementation tasks • Frequently implemented with organization resources not dedicated to the project • Rarely requires full-time vendor staff to implement • Software vendors also implement their own solutions

	Tier 1	Tier 2
Staff required for implementation	• Requires more functional staff to maintain and update configurations in order to manage the application	• Requires less functional staff to maintain and update configurations in order to manage the application
Ongoing support staff required	• Support required includes administering new system accounts and access controls, configuration changes to support continuous improvement of business processes, and preparation and testing of new updates	
Cost model for major version upgrades	• SaaS solutions include all upgrades and updates	
Software support channel	• Mixed; some direct, some through implementer or value-added reseller channel	• Primarily direct vendor support
Hosting options	• Most offer multi-tenant cloud deployments	• Combination of multi-tenant cloud and single-tenant hosted deployments

3.3 Vendor marketplace overview

Today's ERP marketplace is ever-evolving, with frequent changes in offerings, consolidations, pricing, and deployment approaches. To help the City understand the current marketplace, the following table is provided. This table is based on recent proposals analyzed by Plante Moran and other marketplace activities and, thus, is subject to changing offerings. The listing is not intended to be all inclusive, but rather to provide a better understanding of some of the major vendors active in the marketplace. This list focuses on ERP systems that contain core financials and HR functionality and expanded functionality when applicable. There are additional best of breed systems in the market that focus on individual areas including time and attendance. Following this table is a legend describing each component.

Vendor	Financial	HCM
Cayenta	✓	✓
CentralSquare	✓	✓
Ceridian		✓
Edmunds	✓	✓
GovSense	✓	✓
Infor	✓	✓
Kronos UKG		✓
Microsoft	✓	

Netsuite	✓	✓
Oracle Cloud	✓	✓
OpenGov	✓	✓
Tyler Technologies	✓	✓
SAP	✓	✓
SAP ByDesign	✓	✓
Workday	✓	✓

Legend:

Financials: Financial functionality, with modules potentially including general ledger, procurement, budget, miscellaneous billing, and accounts receivable, contract management, bank reconciliation, and fixed assets.

HCM: Human capital management functionality, with modules potentially including employee record, payroll, personnel actions, benefits management, employee self-service, performance management, learning management, position control, recruitment and application tracking, and onboarding.

3.4 ERP marketplace trends

The ERP marketplace is rapidly changing, with the available vendors, solutions, functionality, deployment methodologies, and more changing every day. Included below are key trends in the marketplace to help summarize what changes Plante Moran has observed and expects to see moving forward.

Government staffing levels. In response to the immediate and severe financial impact of COVID-19, government staffing resources have ebbed. Consequently, municipalities are relying on additional functionality and automation to allow fewer or the same number of staff to accomplish more

Movement to the cloud. A decade ago, most vendor solutions proposed were on-premise solutions, but in recent years this has shifted to almost all vendors proposing solutions in the cloud. While cloud solutions were previously thought of as a security concern and privacy issue, it is now seen as an approach that allows organizations to utilize best-in-class technical infrastructure and cybersecurity without internally developing these tools and resources.

Best-of-breed solutions. Today's ERP solutions have significant functionality within the areas of core financial and human resources functionality. However, for more specialized areas, there has been a movement toward utilizing best-of-breed solutions to satisfy one specific area of functionality. Some functional areas where this is happening include timekeeping, learning management, recruiting, debt, and investment management.

Transparency. With the increased ease of sharing information online, there has been an increased desire by both the public and public sector employees to provide more transparency around public sector operations. This includes open dashboards of financial data, making details of ongoing and planned projects available, sharing details on staff salaries, and more. Today's solutions are helping to facilitate the publishing and access of this information.

Analytics focus. As the volume of data managed within ERP solutions has increased, the need and desire for analytics around this data has increased as well. Many of today's solutions have increased functionality to

report on data, perform complex analytics and modeling, and export this data to other systems to perform even further analysis.

Use of advanced tools. Technology advances have operationalized many technologies that were not previously feasible for use in the public sector. Robotic process automation is being utilized for routine tasks such as invoice entry and document creation, where human input is limited or not necessary. In other areas, technologies such as artificial intelligence are being used to pull insights from data automatically or proactively perform customer outreach.

Increased attention to security. As the number of cyberattacks rises alongside the amount of personal information stored within ERP solutions, there has been an increased focus on cybersecurity both from vendors and public sector organizations alike. This focus has resulted in increased cybersecurity staffing, additional discussions of cybersecurity differentiators, and planning for data recovery in the case that an organization's data is compromised.

Implementers utilizing agile development. Within larger software providers, there has been a movement in recent years toward adopting agile development versus the typical waterfall methodology. This approach focuses on a more iterative process rather than the more sequential approach of the waterfall methodology. The goal of this change is to move toward a more collaborative approach to implementing ERP solutions, which involves a much higher level of interaction and review throughout a given project, rather than waiting for significant tasks to be completed.

4 Cost estimate

4.1 Cost estimate

The following document includes an updated cost estimate for the City of Cupertino over a 10-year horizon, including both external costs (software, implementation and training services, project management, integration and conversion services, etc.) along with internal costs (project management, staffing required, etc.) based on FTE cost provided by the City. This cost estimated includes the following information:

1. Cost assumptions
2. Total cost summary
   a. 10-year cost estimate, including external costs only (graph)
   b. 10-year cost estimate, including external and internal costs (graph)
   c. Total cost of ownership, including all external and internal costs (table)

4.2 Cost assumptions

The cost assumptions below outline any assumptions made to determine the cost estimates that follow.

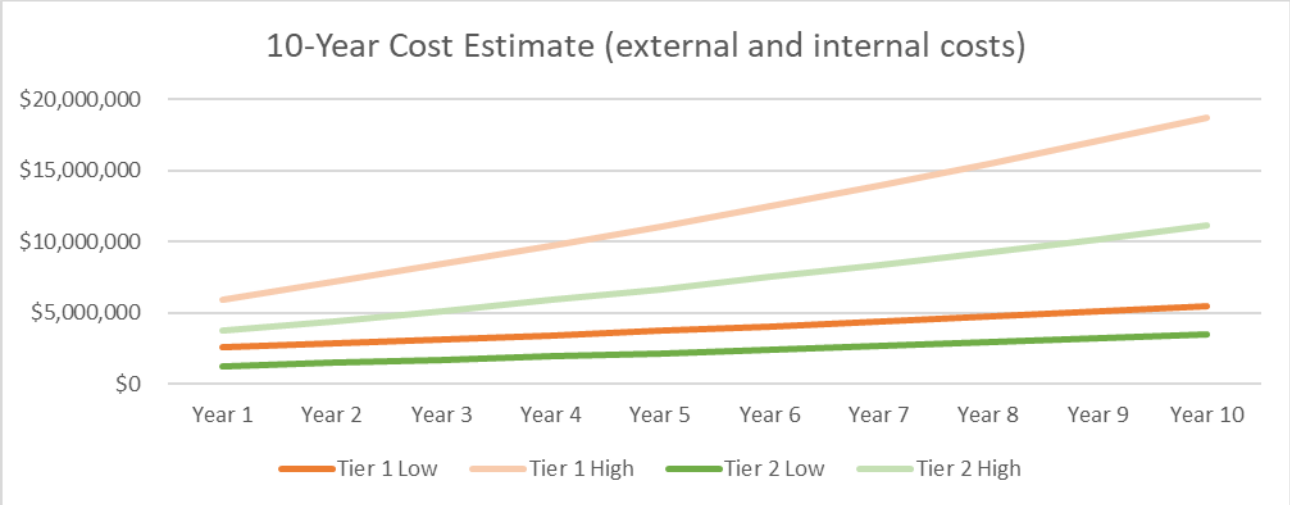
1. The cost assumptions below outline any assumptions made to determine the cost estimates that follow.
2. Plante Moran gathered the data required for this cost estimate from vendors, and Plante Moran's internal database of proposed and negotiated costs, which provides insight on hardware, applications, licensing, implementation and other related services costs for over 50 similar governmental entities.
3. The cost ranges represented above are intended to represent the typical range of vendors that we would expect the City to select from, other vendors may bid outside of these ranges.
4. This estimate assumes that the City will utilize a vendor-hosted or cloud deployment model.
5. Implementation costs are assumed to include all one-time fees paid to the vendor.
6. Hardware costs are not included in this cost estimate as this is for a vendor-hosted solution.
7. Project contingency is estimated to be 20% of the one-time vendor fees.
8. Internal implementation costs are estimated based on the FTE cost provided by the City, which is on average $70/hour. This was multiplied by 160 hours (assuming each month has 4 weeks at a 40-hour work week) resulting in a monthly FTE cost of $11,200 or an annual FTE cost of $134,400.
9. Implementation is estimated to take 18 months on the low end and 24 months on the high end based on benchmarking data and Plante Moran's prior implementation experience but could vary by vendor.
10. The project period costs below include one-time and ongoing costs for the first two years of the project, which is the estimated time period for fully implementing a replacement ERP solution.
11. Implementation project management costs are based on a .5 FTE for the low-cost estimate while the high-cost estimate is based on 1 FTE. This cost is calculated using a standard implementation hourly rate but may differ depending on inflation, duration, and selected vendor for project management.
12. 100% of the one-time costs as assumed to be incurred in year 1 of implementation.
13. Inflation is assumed to be 5 percent annually in the total 10-year cost summary.
14. Implementation costs include vendor costs for the duration of the implementation including: initial configuration, data migration, integration, training, project management fees, etc.

4.3 Total cost summary

This section summarizes the potential total cost of ownership (TCO) analysis for the City's ERP environment. These costs include various system costs, such as ongoing maintenance, software subscription fees, and implementation services, for each option. The following graph illustrates the 10-year comparison of cumulative costs for each option. The first graph only includes external costs, while the second graph also includes internal costs. Following the graphs is a table representing the detailed costs for both external and internal. ***These costs do not represent the functional benefits or time efficiencies gained with each option.***

4.3.1 10-Year cost estimate, including external costs only

4.3.2 10-Year cost estimate, including external and internal costs



4.3.3 Total cost of ownership

City of Cupertino TCO Summary - Updated January 2025					
Cost category	Cost type	Tier 1 Low scenario	Tier 1 High scenario	Tier 2 Low scenario	Tier 2 High scenario
One-Time Costs					
Hard Costs					
Vendor implementation costs	Vendor	$1,412,371	$3,133,388	$489,747	$1,738,605
Implementation project management	Consultant	$280,500	$583,000	$280,500	$583,000
Project contingency	Contingency	$282,474	$626,678	$97,949	$347,721
Total One-Time Hard Costs		**$1,975,346**	**$4,343,066**	**$868,197**	**$2,669,326**
Soft Costs					
FTE	Internal	3	6	2	4
Duration (Months)	Internal	18	24	18	24
Total One-Time Soft Costs		**$604,800**	**$1,612,800**	**$403,200**	**$1,075,200**
Grand Total One-Time Costs		**$2,580,146**	**$5,955,866**	**$1,271,397**	**$3,744,526**
Ongoing Costs					
Hard Costs					
Subscription fees	Vendor	$198,309	$892,907	$138,504	$532,658
Total Ongoing Hard Costs		**$198,309**	**$892,907**	**$138,504**	**$532,658**
Soft Costs					
Internal support FTE	Internal	0.5	2	0.5	1
Total Ongoing Soft costs		**$67,200.00**	**$268,800.00**	**$67,200.00**	**$134,400.00**
Grand Total Ongoing Costs		**$265,509**	**$1,161,707**	**$205,704**	**$667,058**

5 Action plan

5.1 Plante Moran recommendation

Plante Moran recommends that the City replace the current ERP solution that does not fully meet the City's business needs. Plante Moran recommends the deployment approach of a vendor-hosted or cloud/SaaS ERP solution. This offers the following key benefits:

- Best-in-class cybersecurity and disaster recovery expertise is included
- An upgrade pathway is more defined, reducing the risk of falling behind
- Customizations are avoided as a rule
- A cost-effective infrastructure and technical staffing solution
- Scales with City growth, without the need to purchase additional infrastructure or hire staff
- A cloud-first approach matches the mix of options in the vendor marketplace

With this option, the City should review and consider the plan of action considerations below, including the application migration strategy outlined in Appendix A: Application migration plan.

5.2 Plan of action considerations

5.2.1 Project staffing and governance structure considerations

Since an ERP replacement will impact most staff at the City, it is critical to establish a plan. This process of executing the recommendations and implementing a new system will require a well-coordinated and organized governance structure in which to operate and manage the project. ERP system implementations are complex and these initiatives can only be successful at organizations with strong project governance.

As the City moves forward with the replacement project, process and technology changes will be significant and will impact all departments. Policy changes will also need to be considered and implemented to realize the full benefits of implementing a new solution. Potential policy considerations have been marked with an * in the opportunities above and are ones that the City should consider prior to implementation.

Strong project management is also critical for deployment and becomes increasingly important with the investment in a new ERP system. Therefore, it will be essential to continue to rely on the existing project governance structure that:

- Considers the needs of a variety of stakeholders
- Enables the City to make decisions efficiently and effectively
- Ensures that project communication is flowing to the right individuals at the right time, including those who are part of the project team and those external to the project team
- Empowers the project team to enforce policies

The following recommended strategies will help the City prepare for the implementation phase of a system selection project. The strategies below are listed in the order that they should occur.

1. Confirm a formal governance structure to coordinate the selection of the new system using the current teams identified in the project charter as a basis, with the intent that structure can be leveraged and specific roles can be redefined for design, implementation, and maintenance phases of the system.
2. As part of the RFP process, request information from vendors as to the optimal City staffing structure and time commitment required for a successful system implementation, including ongoing support and maintenance of the system. This will allow the City to plan for implementation efforts with a greater understanding of vendor-specific resource needs.
3. Prior to launching the implementation phases of the project, establish expectations with the City staff as to the time commitment that will be required for a successful implementation.
4. With the assistance and advice from the selected vendor(s), institute an implementation governance structure that is well staffed and supported by executive management within the City. The governance structure from the selection phase may be used as a starting point.
5. Establish policies to sunset or retire legacy solutions, supplemental applications, and side systems in conjunction with the new system implementation so that they do not perpetuate an environment of dual information tracking. Utilize the application migration plan as a starting point.
6. Establish data retention requirements to guide and manage the scope of required data conversion. Ensure data retention requirements are properly considered and applied before, during, and following the system implementation and data conversion process.
7. Establish an appropriate backfill strategy and plan to free up staff resources who will play a significant role in the implementation (as identified in item three above). It is important to recognize that staffing circumstances during implementation can significantly affect the rollout of the implementation so start to plan for backfill now to ensure the key resources are available for implementation.
8. Review the change management support provided by the vendor. Based on this plan, establish a change management plan designed to reflect the needs of the stakeholders. It is beneficial to establish a change management process early on to evaluate/measure organizational impacts as part of the decision-making process, document decisions, and communicate the net benefits to the organization.
9. Develop a process to discuss proposed business process changes from the provided future state process maps and from the vendor, gather the necessary approval for these changes, and communicate these changes throughout the City.
10. Review and consider the level of efforts outlined in the staffing table below to plan accordingly. The City should consider these estimates when planning for the various phase of implementation and revisit this throughout the implementation to ensure people are involved to the appropriate levels.

The table below represents estimated City staffing for each implementation phase based on our experience with software implementations and our knowledge of the City. However, this may vary for the City based on the vendor selected, staff preferences, and the project plan provided by the vendor.

Time commitment by role and implementation stage					
Role/phase	**Project initiation**	**Discovery and configuration**	**Testing and training**	**Go-live**	**Post go-live**
Duration	*One month*	*Approximately five months*	*Approximately five months*	*One month*	*Three months*
Project sponsor	15%	15%	5%–10%	15%	10%–15%
Project manager	100%	50%	50%–75%	100%	50%
Subject matter experts (SMEs)	25%	50%	75%–100%	75%	50%
Training lead	0%	25%	50%	25%	10%
Technical team	10%	25%	40%–60%	50%–75%	25%

This is an estimate to assist the City with planning. Assumptions informing these numbers are listed below.

- Effort estimates for subject matter experts are for **each subject matter expert.** Each phase will have multiple SMEs based on how the City is organized. These SMEs must be knowledgeable about the City's needs.
- The table above is a sample for tier 2 system implementation. A tier 1 system implementation may require more significant resource commitments for each role.
- If there are separate testing staff, the workload for the subject matter experts could be lessened.
- If there is no training lead and end-user training is not purchased from the vendor, training tasks will need to be completed by SMEs. This will vary based on the vendor timing of their training approach. Some vendors perform an initial training, then discovery, then full-on training following. Others perform all training after discovery.
- This estimate assumes the City will utilize a vendor-hosted or cloud model, as recommended.
- This estimate assumes City IT staff will manage security, conversions, and interfaces.
- This staffing estimate is based on vendor data and Plante Moran's prior implementation experience.
- This staffing estimate is based on Plante Moran's assumption of a reasonable finalist selected vendor based on Plante Moran's experience working with the City and understanding requirements, staffing environment, etc. Based on the finalist selected vendor, the monthly hours estimated could increase or decrease by approximately 25%, as each vendor will have a staffing plan that may vary.
- The implementation duration above is based on the benchmarking data from potential vendors that would propose paired with Plante Moran's implementation experience. This duration could change by approximately three to six months based on the selected vendor and services purchased.

- Plante Moran recommends planning for the staffing in the estimate above, as well as some level of contingency (e.g., 10%) in order to mitigate project risks.

In consideration of these factors, Plante Moran provided an example listing of resources needed below based upon the likelihood of the City selecting a SaaS vendor solution. The areas listed below are a sample of functions that will need to be provided at times during the implementation. For example, the payroll expert will be needed during the phase for payroll and project hours will vary during the phase.

During implementation, the following City staff may be required:

- SMEs, in their functional area, to assist with the following functions:
  - Participate in analysis and design sessions
  - Provide expertise on current City processes
  - Create future state processes
  - Test system configurations
  - Verify data conversions related to their functional area
  - Participate in user acceptance testing
  - Participate in training (possibly as the trainer for other staff if using a train-the-trainer model)
- Technical staff to assist with the following tasks:
  - Custom report development
  - Security administration
  - Data conversion
  - Interface development
  - Forms design
  - Testing coordinator
  - Database/system administration
- Project management office, including the following roles:
  - Project sponsor
  - Project manager
  - Technical lead
  - Project administrator

For ongoing activities, the following City support staff may be required:

- SMEs' functions:
  - Update dashboards and reports as needed
  - Participate in continuous improvement efforts including updating configurations
  - Provide functional knowledge and assist with training new staff/users
- Technical staff functions:
  - Custom report development
  - Security administration
  - Database/system administration
  - Patches and updates
  - Help desk: Application support

5.2.2 Change management

Implementation projects like this one will have significant change management aspects associated with the large amount of process redesign that will likely occur on the project. It is critical to consider these potential changes and impacts early on as project success comes from having a clear idea of how leadership envisions the City being run and then using new systems to facilitate turning this vision into a reality. When software implementations do not meet expectations, it is often due to people issues, not necessarily the technology. Research indicates a correlation between the success of a change initiative and how well the people's concerns are recognized and understood. That is why applying a change management methodology is critical to the success of such an initiative. The purchase and implementation of new systems and related technology is done to assist in meeting organizational objectives and improving performance. Organizational performance is also impacted by the people of an organization and the processes used to complete work. Throughout the project, the goal is to balance the needs of the people, process, and technology.

5.2.3 Communication planning

As one of the first steps of change management planning, the City should develop a communications plan to guide the project from inception through post-implementation. By its nature, replacement projects will affect many staff across the City. For this reason, a communication and change management team is recommended, comprising key "change agents" within each City department, to nurture buy-in and get department staff committed to taking relevant actions. Such team members will be involved in educating staff about the impacts and benefits of the project and will also be "inspiration agents" by helping staff find ways to discover their potential, overcome barriers, and celebrate successes. These staff should monitor what is working, what isn't working, and what needs to be changed—and provide regular feedback on progress to department staff.

Acknowledging the diverse City audiences that will be involved and impacted by this project, a communication plan should be developed to create awareness and make the project relevant by effectively communicating the impacts to both internal and external stakeholders. Sample objectives for a communication plan may include:

1. Distributing information to employees in a timely manner about project benchmarks and progress
2. Using various media to provide information concerning the project in places that can be accessible
3. Ensuring all information available to project resources is updated and accurate
4. Reducing confusion among employees by providing a sole directive/source for all project information
5. Providing clear channels of communication within which City project staff can operate, which can expedite solutions to issues that arise during selection and implementation and after its completion
6. Encouraging ongoing feedback from employees across the City

5.3 Project risks

Staff constraints. A successful implementation is highly dependent upon staff being engaged and available throughout the process. The availability of staff may be limited given current staff resources that already have a significant level of responsibilities, and the ERP implementation will only add to this workload. Furthermore, the staff required for an implementation are typically those with the most knowledge about business rules and needs, which tend to be staff who are in high demand regardless. Backfilling these positions or temporary staff augmentation has been successfully used by other organizations to provide capacity to sustain operations while

key staff subject matter experts participate in the selection and implementation phases. However, the potential lack of an appropriate staffing plan would result in a risk to project success.

Managing staff expectations. The selection and implementation of a new ERP system will result in significant functional improvements across all areas of the City. However, it is critical that all departments are kept in mind during the decision of which solution is best for the City and the implementation of the selected solution. This may require some compromise across the organization to ensure it meets everyone's needs. This needs to be communicated to staff so they can expect that they may need to compromise on some functionality. Their expectations also need to be managed in terms of what will be asked of them in future state processes.

Implementing process improvements. Regardless of the level of planning done prior to implementation, the ERP project will be a significant effort for the City. Throughout the project, it will be easy for staff to fall back on forcing the existing manual processes into a new system, resulting in unnecessary customizations or an inability to gain the efficiencies that a new system will bring. Continuing to strive for process improvements will need to be a key area of focus throughout the project. Requesting best practice options from the selected vendor will promote process discussions and improvements.

Replacing shadow systems, including customized solutions. Spreadsheets are a popular tool across the City, and some may think that utilizing such shadow systems is a more comfortable approach than moving business processes and data storage into a new, unfamiliar system. However, doing so will leave the City with significant process inefficiencies, risk of data loss, opportunity for data entry error, and lack of data sharing. As staff evaluate the new functionality and processes within a new solution, it is critical for everyone to be open-minded to leveraging the system for more. Additionally, there are a few custom-written solutions utilized by the City currently, such as the learning management system, which should be considered with the new ERP.

Executive sponsorship. One of the biggest challenges during implementations is the lack of executive-level staff that are consistently and visibly committed to the project. Ensuring that leadership at the City is available to support the project, clear roadblocks, and review and approve major changes is vital to the project's success.

5.4 Implementation best practices

As the City prepares for implementation, it is important to ensure that several factors are considered during this period so that the future state ERP environment is as efficient as possible. Although there are many detailed tasks outlined within Section 3 of this report, some high-level strategies are outlined below as well.

Increase process standardization. Standardize the use of a shared system and process for common functions across the City. By gathering needs across City stakeholders, a new solution should be able to support most City business processes and reduce the use of shadow systems. By standardizing the system in which the processes are performed, it will be easier for the City to manage these processes from a single, accessible system.

Interface applications. Leverage the listing of all required and desired interfaces for the future state based on the interface information outlined at the end of this report. Developing interfaces between City applications and with applications external to the City allows data to flow more seamlessly across systems, increasing data integrity, minimizing manual reconciliations, eliminating shadow systems, and reducing data entry time.

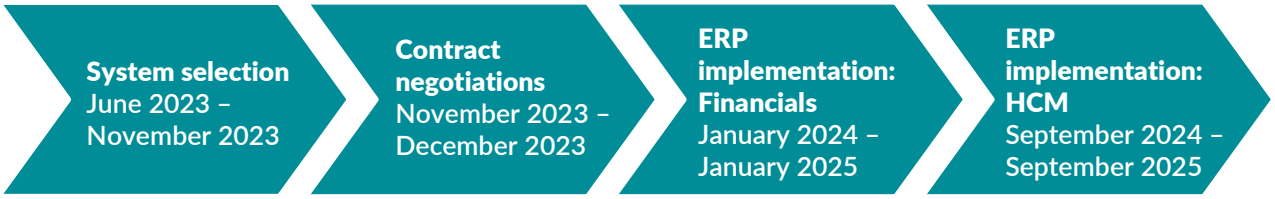
Streamline business processes. Redesign and streamline business processes based on established best practices and recommendations outlined in the future state process flows. Elimination of manual and paper-based processes and replacement with automated, electronic workflows and approvals will save the City significant time and reduce errors associated with manual processes.

Improve reporting. Enhance reporting capabilities, including user-friendly, user-driven, and flexible reporting tools with distributed, secure access to all users. Establish expectations around reporting and train all users to be able to obtain reports in a new system. Having more robust reporting capabilities would reduce the need to manually create reports on various spreadsheets to track information needed.

Training and documentation. Train staff on new systems and business processes early on. This can start with a one-time outreach to determine what the current training needs are so that staff are given the current support needed. However, this will not provide ongoing support for the City. An ongoing training plan needs to be developed to ensure that new staff are trained, there is training available on infrequent tasks (e.g., budget development), and documentation continues to exist to assist staff with performing tasks.

Enhance internal controls. Improve internal controls within business processes that are supported by the ERP system, either currently or as part of a new system's implementation, depending on the project timeline and urgency of the controls needed. Modern systems can handle many controls that can be configured during implementation to help protect against unintended transactions, duplicates, and similar concerns. These should be configured, then monitored on a regular basis to help support a reduction in the need to review transactions manually. There is a need for process and policy-related conversations to occur prior to this stage to ensure the correct people are doing the correct tasks.

5.5 Proposed timeline



Appendix A: Application migration plan

Overview

A list of the City's key existing applications identified through the assessment process has been assembled and presented below.

*Legend: (Preliminary system migration plan)

Replace (R):	The City is intending on replacing this application.
Consider (C):	The City is considering replacing this application with an integrated ERP solution, based on the strength of the finalist vendor offering and cost/benefit of the replacement module.
Maintain (M):	The City is intending on retaining the application, not replacing it.
Interface (I):	The City is intending on keeping the application and interfacing/integrating it with the selected ERP solution.

Application migration plan

Current ERP application	Application notes/description	Migration plan
Accela	Business license system with daily import to the current financial system	I
Microsoft Access (Multiple)	Schedules and reminders for employee evaluations, merit increases	R
ActiveNet	Accounts receivable, bank reconciliation, and Parks and Recreation revenue	I
CalPERS	State reporting for pension and health benefits	I
CityWorks	Asset tracking for Public Works	I
CobbleStone	Stores contract and quote details with routing and approval	C/I
DebtBook	GASB 87 details are stored here to support journal entries	M
E-Suite/HR Portal	Portal for employees to enter time and see timesheets	C
Microsoft Excel (Multiple)	Lease agreements, asset details, budgeting/forecasting, tuition reimbursement, recruitments, and outstanding check determination	R
GovDeal	Third-party company utilized for asset disposals	C
GovInvest	Pension costing and OPEB cost/liabilities, labor costing through negotiations	R
LaserFiche	Document storage, FOIA requests	I
NeoGov	Job postings and recruitment	I

Current ERP application	Application notes/description	Migration plan
New World Systems – Tyler Technologies	Financials, purchase orders, contracts, vendor information	R
NextNight	Homegrown application for CIP management in DPW	M
OpenGov	Budget preparation and budget approvals	R
PayPal report	Cash receipts reconciled against bank deposit	I
Power Apps - TMA (Training Management Application)	Learning and training system built internally	C
RFP Application	In-house system created for RFPs, bids, contracts, etc.	C
Sedgwick	Tracks information for risk management, including the claim and associated investigation	C
Square	Point of sale system for Parks and Recreation integrated with the financial system	I
US Bank	Manages purchasing cards, bank statements, and bank entries	I
Wells Fargo Portal	Houses bank accounts and generates a monthly bank statement	I

Appendix B: Application interfaces

Application 1	Direction	Application 2	Data flow description
Accela	→	ERP	Payment/revenue data
ActiveNet	→	ERP	Revenue collected in Parks and Revenue
CalPERS	↔	ERP	Benefit elections
CityWorks	→	ERP	Asset information and time spent on workorders
ERP	→	GovDeal	Asset disposal information sent to a third party
NeoGov	↔	ERP	Job classifications, applicant information, and recruitment data
ERP	→	PayPal	Cash receipts reconciliation with bank deposits
Square	→	ERP	Revenue collected in Parks and Recreation
US Bank	↔	ERP	Purchasing cards, bank statements, and bank entries
Wells Fargo	↔	ERP	Bank statements and bank entries

Appendix C: Action Items

All items including an * in this report are potential policy considerations or items that should be discussed prior to implementation. The City should consider the following items and have any required discussions to address potential decisions that need to be made prior to implementation. They are categorized by three different types of potential changes that may be required:

1. Policy – Changes that may require reviewing or updating the policy currently in place.
2. Process – Changes that may require revisiting and revamping the process in a new ERP.
3. System of Record – Changes that may require considerations about which system to use.

Beyond reviewing the action items listed below and in the supplementary spreadsheet, it is suggested to assign a responsible owner and due date for each item below to ensure that any required actions are completed.

Process area	Action item	Category
Accounts payable	Utilize a vendor portal to submit documentation so that vendors do not have to come to City Hall. Additionally, the City can configure the portal so that vendors can run their own aging reports.*	Policy
Bank reconciliation	The City currently utilizes a monthly bank reconciliation process. Consider utilizing vendor demonstrations to see how more frequent bank reconciliation runs can be drilled down to the transaction level and are easier to process. It should also be shown how payments coming in can be rolled up to their associated bank run. This will be helpful in pursuing change management policies across the organization to align a business process with best practices.*	Process
Budget	There is inconsistency between the grants budgeted for and the grants received by departments. A consistent policy across the organization should be considered for when to input a grant into the system.*	Policy
Budget	Best practice for budget preparation includes versioning at multiple levels. Modern systems can track entire versions of the budget and mark different statuses along the way. Additionally, these systems can also track different types of transactions for adjustments, such as increases for additional funding.*	Process
Budget	Financial consultants hired by the City created different Excel models of sales tax, CPI, and vacancy factors so the City could leverage for budget planning. When a scenario changes, finance manually updates each model. Consider utilizing the ERP to create different scenarios that flow to each version of the budget (e.g., high, low) in place of the existing spreadsheet.*	System of Record
Budget	Finance keeps accurate records for purposes of encumbrance carry-overs and should seek to proactively build that process within the new ERP. Right now, finance maintains a calendar to know when to ask departments if they	System of Record

	are carrying an encumbrance forward. Modern systems include a process to allow carryforward of open purchase orders at year end.*	
Contract management	Implementing a new system can present an opportunity to reconsider data retention policies. The City can choose to build an integration from the ERP to LaserFiche for data retention or utilize the ERP for that capability.*	System of Record
General ledger	Auditors currently ask for documentation down to the transaction detail. Modern ERPs allow these reports to be easily accessible, and the City can allow for third-party access to the system, if desired, to review the appropriate documentation. Determine if the City would like to allow for third party access to the future ERP system.*	Policy
Grant and project management	Modern ERPs include both grant and project modules. These elements can be tied together because a project can be funded by one or more grants, and one grant can fund multiple projects. Define what the grants and projects process should look like in a future ERP system.*	Process
Classification and compensation	City staff mentioned that they are open to developing a new set of position codes. Consider establishing new position codes to everyone in a new ERP system following a consistent numbering schema. Confirm that setting up new position numbering would be agreeable, ensure that the approach is communicated clearly to departments in the organization, and that end users receive training on the standard.*	Process
Learning management	The City should consider utilizing a learning management system as part of the ERP to reduce the manual efforts necessary to maintain the TMA. Modern systems can automatically generate certificates of completion, tie them to employee profiles, and record completion statistics. Consider which trainings from the TMA should be brought into the new system.*	System of Record
Performance management	Consider using the implementation to move toward narrative-based performance reviews. This would look more like a coaching model than a five-point scale and would support evaluators in providing objective feedback, supporting the organization's ongoing development. If the City opts for new forms to support narrative-based reviews, ensure that staff receive training on the new approach and understand its benefits.*	Process
Performance management	While the new system can provide periodic reminders to supervisors to get their evaluations in on time, the City may benefit from additional accountability for supervisors. Examine if the process for delayed feedback should include an alert to department heads or if supervisors should be evaluated based on their ability to evaluate others.*	Process
Performance management	Leveraging a system to support various HR processes will allow staff the time to do succession planning. Consider discussing promotions and succession planning in performance discussions.*	Process

Recruitment	Revisit the capabilities used in NeoGov to review unused functionality, including onboarding capabilities, generation of an offer letter, and sending a confirmation within the application. Performing these functions in NeoGov would lessen the integration burden with the ERP. Since many organizations utilize NeoGov for their recruitment activities, it may be worth discussing with others on how they best utilize the system capabilities.*	Process
Risk management	Explore ways to work closer with the third-party risk administrator, JPA, to get information and reports the organization will need moving forward. Try to use this process to mitigate duplicative record keeping between the access HR has in a portal versus the spreadsheet for internal claims.*	System of Record
Self service	The system should have rules to prevent negative accruals and time off. The City can configure whether a warning is given (that still allows the employee to submit a request that would result in a negative accrual) or a hard-stop on the request and should consider this change.*	Policy
Payroll	In a future system, considerations should be given as to the payroll code visibility. Ideally, the position is tied to job title so that employees do not have the option to select the wrong code. This ERP selection and implementation provides the opportunity to clean up pay codes and only bring in those necessary. For example, seasonal staff should only have access to record time against pay codes within their job title.*	Process
Payroll	Consider utilizing this selection as an opportunity for staff to leverage direct deposit or a pay card situation for those who would like their pay more easily accessible, with the goal of avoiding cutting paper checks.*	Policy
Timekeeping	Modern ERPs provide payroll staff greater flexibility for approving time. Consider utilizing the functionality of a soft close to run payroll before it is posted (finalized).*	Process
Timekeeping	Best practice for approving time is that the employee reviews their own time before sending to a supervisor. If there are errors, the supervisor should either send back to the employee to make adjustments or provide notification to the employee that their time has been changed before sending it to payroll for final approval.*	Process
Timekeeping	Consider coding holidays in the new system for when a blended rate of pay is triggered for all employees. For example, if employees in Parks and Recreation work on July 4, the system should recognize that day as a holiday and automatically factor in the blended rate of pay calculation.*	Policy
Timekeeping	Consider integrating with CityWorks so that work order time can be reconciled with payroll time. This may improve reporting considerations across the organization to calculate spending against a project that includes details such as time, asset spend, and payments to vendors.*	System of Record

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#5

Enterprise Resource Planning (ERP) Replacement

Supplemental Report

CITY OF CUPERTINO

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CITY COUNCIL STAFF REPORT
SUPPLEMENTAL
Meeting: February 4, 2025

Agenda Item #5

Subject
Tyler New World Enterprise Resource Planning (ERP) replacement
Recommended Action
A Adopt Resolution No. 2025-XXX approving Budget Modification No. 2425-380 increasing appropriations in the amount of $3,744,526 in the General Fund Applications Budget unit (100-32-308 750-237) for the Tyler New World Enterprise Resource Planning (ERP) replacement.

Background:

Q1: The staff report states "initial needs assessment .... determines that the appropriate ERP solution falls wthin the Tier 1 or Tier 2 range. We are proceeding with the high-end Tier 2 scenario...". Does this mean we are choosing "Tier 2"? There is no such thing as a "hier-end Tier 2", right? **(Chao)**

The ERP assessment identified that Cupertino's needs align with a Tier 1 or Tier 2 system. We are budgeting for a high-end Tier 2 scenario to ensure sufficient funding for the appropriate solution.

Q2: What's the cost difference between Tier 1, and Tier 2? **(Chao)**

Tier 1 $5,955,866 One-Time Costs and $1,161707 ongoing
Tier 2 $3,744.526 One-Time Costs and $667,058 ongoing

Q3: What's the functionality difference between Tier 1, and Tier 2? **(Chao)**

Tier 1 ERP vendors were originally designed for the private sector but have been adapted for public sector use over time. These solutions offer robust functionality, greater scalability, and extensive customization options but often come with higher costs, complex implementation requirements, and a need for more dedicated staff resources. Common Tier 1 vendors include Oracle, SAP, Workday, and Microsoft Dynamics.
Tier 2 ERP vendors, on the other hand, are purpose-built for public sector needs such as fund accounting, budgeting, and grants management. They are typically more cost-effective, easier to

implement, and require fewer IT and functional staff but offer less customization and scalability compared to Tier 1. Common Tier 2 vendors include Tyler Technologies, OpenGov, and Harris.

Q4: What is the total cost of the entire system? Is that a one-time cost? Or is that the cost to expand multiple years? **(Chao)**

The exact cost of the ERP will not be determined until the RFP process is completed and a vendor is selected. Currently, we are using cost estimates from the Plante Moran needs assessment, specifically the ***Tier 2 High Scenario****, which estimates the* ***one-time costs to be $3,744,526****. This includes:*

- *Vendor implementation costs*
- *Implementation project management costs*
- *Project contingency*
- *Salaries for two full-time employees for 18 months*

After the system goes live, the ***ongoing annual costs*** *are estimated at* ***$667,058****.*

Q5: What other ERP systems have been evaluated? What's their cost for comparison? **(Chao)**

The cost estimates are not derived from a single ERP system but are based on a sample of multiple ERP solutions within the ***Tier 1 and Tier 2 categories*** *available in the market. These estimates also account for key factors involved in implementing a new ERP solution, including:*

- *Vendor implementation costs*
- *Implementation project management costs*
- *Project contingency*
- *Salaries for temporary staff needed to implement a new ERP*
- *Ongoing Subscription costs*

Q6: Where can I find the cost break down of the total cost. **(Chao)**

See answer #4

Q7: (Question from Peggy) What were the ERP needs that were found to be needed? **(Chao)**

The City's current Tyler New World ERP no longer meets operational needs, leading to inefficiencies, high maintenance costs, and limited integration with modern technology. The system relies on manual workarounds, frequent repairs, and third-party add-ons, which slow workflows and increase expenses. Additionally, its lack of API support restricts automation and seamless data exchange, creating data silos, inaccuracies, and delays in financial and payroll management.

Beyond inefficiencies, the outdated ERP lacks scalability, cloud access, and emerging technology support, making it difficult to adopt AI, automation, and mobile-friendly tools. Low system adoption and frustration further impact productivity. Municipalities that continue using legacy systems risk falling behind industry standards, while a modern ERP would enhance security, efficiency, and long-term adaptability to evolving business needs. Upgrading is a strategic investment to improve operations and futureproof City services.

Q8: (Question from Peggy) By "sufficient savings" is the Staff referring to using a portion of the $64.5M in 1-time funds that have not been allocated yet? **(Chao)**

Sufficient savings in this case references to the contract with Plante Moran for consulting services for the needs assessment, RFP development and selection assistance, as well as project management services during the project implementation of an Enterprise Resource Planning software in January 2022. This contract and corresponding allocated funds were put on hold, but the contract and encumbrance remained in place and were carried over as part of the year-end process.

Q9: (Question from Peggy) If not, where are the "sufficient savings" coming from? **(Chao)**

The funds are coming from a carryover encumbrance associated with this contract.

Attachments Provided with Original Staff Report:

A – Draft Resolution 2025-xxx

CC 02-04-2025

#6

City Bridge Preventive Maintenance Project Grant acceptance

Supplemental Report

CITY OF CUPERTINO

PUBLIC WORKS DEPARTMENT

CITY HALL
10300 TORRE AVENUE • CUPERTINO, CA 95014-3255
TELEPHONE: (408) 777-3354 • FAX: (408) 777-3333
CUPERTINO.ORG

CITY COUNCIL STAFF REPORT
SUPPLEMENTAL 1
Meeting: February 4, 2025

Agenda Item #6

Subject
City Bridge Preventive Maintenance Project grant acceptance and budget adjustment.

Recommended Action
1. Adopt Resolution No. 25-XXX accepting $1,893,195 in Federal grants from the Federal Highway Administration's Bridge Preventive Maintenance Program for the City Bridge Preventive Maintenance Repairs Project.
2. Adopt Resolution No. 25-XXX approving budget modification #2425-373 approving an increase of Federal grant revenue estimates of $1,893,195 and an appropriation of $1,176,105 in the Transportation Fund (270-90-960).

Staff's responses to questions received from council members are shown in italics.

Q1: From the Staff Report for this item, it appears that there are 6 bridges that will be repaired and they are:
Maintenance on 6 bridges - no description of what is to be done
1. Stevens Creek at Homestead Road
2. Stevens Creek at Stevens Creek Blvd
3. Stevens Creek at McClellan Road
4. Calabazas Creek at Stevens Creek Blvd
5. Calabazas Creek at Miller Avenue
6. Calabazas Creek at Tantau

Is the list above correct? (**Chao)**
Staff response: There are a total of 5 bridges for this project, see list below. Two of the bridges were removed (Stevens Creek at Stevens Creek Blvd and Stevens Creek at McClellan Road) and one was added (Calabazas Creek at Vallco Parkway). The list of bridges includes the following:

1. *Stevens Creek at Homestead Road*
2. *Calabazas Creek at Stevens Creek Blvd*
3. *Calabazas Creek at Vallco Parkway*
4. *Calabazas Creek at Tantau Ave*
5. *Calabazas Creek at Miller Ave*

Q2: Can you provide a short description of what will be done to each bridge? (**Chao**)
Staff response: As recommended by Caltrans:

1. *Stevens Creek at Homestead Road – Treat bridge deck by sealing cracks, install new asphalt concrete, repair spalled areas, inject epoxy into cracked areas, and spot clean and paint rusted areas.*
2. *Calabazas Creek at Stevens Creek Blvd – Inject epoxy into cracked areas and repair spalled areas.*
3. *Calabazas Creek at Vallco Parkway – Inject epoxy into cracked areas and repair spalled areas.*
4. *Calabazas Creek at Tantau Ave – Inject epoxy into cracked areas and repair spalled areas.*
5. *Calabazas Creek at Miller Ave – Treat bridge deck methacrylate and place 1" thick polyester concrete overlay, clean and replace joint seals, and repair spalled areas.*

Q3: The Staff Report indicates that work would be completed by July 2025, 6 months from now.
Is this correct? (**Chao**)
Staff response: Yes.

Q4: The Staff Report indicates that work would be completed by July 2025, 6 months from now. Will the road be closed completely at any time during repairs? (**Chao**)
Staff response: No, traffic control measures will be implemented to allow two-way traffic.

Q5: You are requesting to increase expenditure appropriations in the budget by $1.176,105. Where will this money come from before it is reimbursed? (**Chao**)
Staff response: Transportation Fund (270) balance has adequate funding to temporarily cover the project's costs as the City awaits the Caltrans reimbursement grant.

Attachments Provided with Original Staff Report:

A. *Draft Resolution Grant Acceptance*
B. *Draft Resolution Budget Modification*

CC 02-04-2025

#9

Stevens Creek Boulevard Class IV Bikeway Ph 2A Project

Desk Item

CITY OF CUPERTINO

PUBLIC WORKS DEPARTMENT

CITY HALL
10300 TORRE AVENUE • CUPERTINO, CA 95014-3255
TELEPHONE: (408) 777-3354 • FAX: (408) 777-3333
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CITY COUNCIL STAFF REPORT
DESK ITEM
Meeting: February 4, 2025

Agenda Item #9

Subject
Award a construction contract to Golden Bay Construction in the amount of $1,569,798, approve a first amendment to the design services contract with Pakpour Consulting Group to increase the contract by $96,620 for a total not-to-exceed contract amount of $310,483 and approve a budget modification in the amount of $1,500,000 for the Stevens Creek Boulevard Class IV Bike Lane Project.

Recommended Action
1. Award a construction contract for the Stevens Creek Boulevard Class IV Bike Lane Phase 2A Project (budget unit 420-99-036, project number 2022-15) in the amount of $1,569,798 to Golden Bay Construction, Inc.;
2. Authorize the City Manager to execute the construction contract with Golden Bay Construction, Inc. when all conditions have been met;
3. Authorize the Director of Public Works to execute any necessary construction change orders up to a construction contingency amount of $156,980 (10%) for a total contract amount of $1,726,778;
4. Authorize the City Manager to amend the Design Services Contract with Pakpour Consulting Group to increase the amount by $96,620 for a total not-to-exceed contract amount of $310,483 for the 2022-11 Stevens Creek Boulevard Class IV Bike Lane Phase 2B Design Project; and
5. Adopt Resolution No. 25-XXX approving budget modification #2425-377, approving an increase of grant revenue estimates of $1,500,000 and a transfer out of $693,000. This includes an increase of $807,000 in Federal grant funds and a transfer of $693,000 in SB1 Grant Funds from the Transportation Fund (270-85-821) into the Capital Improvement Program Capital Project Fund (420-99-036).

Background:
Q1: The staff report states "The 2016 Cupertino Bicycle Transportation Plan identified Stevens Creek Boulevard Class IV Bike Lane Project (Project) as the highest priority project. This Project includes upgrading the existing Class II

buffered bike lane to a physically separated Class IV bike lane along Stevens Creek Boulevard from Tantau Avenue to Foothill Boulevard and related traffic signal upgrades." As I remember, the bike paths and intersections are ranked separately in the 2016 Bicycle Transportation Plan. So, I looked it up and found that bike paths and intersections are indeed considered separate projects in the plan. And the recommendation for intersections are:

- The "Intersection Configure" for Stevens Creek and De Anza is ranked #62 and the recommendation was "Bike lane striping through Intersection".
- The "intersection Configure" for Stevens Creek and Stelling is ranked #2 and the recommendation was "Study protected intersection in coordination with proposed Class IV".
    - The plan suggests to study first and then decide what type of "intersection configure" to implement.

Thus, from the 2016 Bicycle Master Plan and the project description of the CIP project, the scope of the Stevens Creek Blvd Class IV Bike Path should not include intersections. I like have missed some other documents? (**Chao**)
Staff response: The 2016 Bicycle Transportation Plan discusses various improvements for the bicycle network, including Class IV bike lanes on Stevens Creek Blvd, as well intersection improvement along stevens Creek to enhance bicycle safety. A conceptual design was prepared for the bikeway which incorporated the various recommendations of the 2016 Bicycle Transportation Plan. The design was presented to the public at various Bicycle Pedestrian Commission meetings. The Commission and the public were supportive of the concepts, and staff proceeded to design the project.

Q1-1: What city documents have changed the scope of the Stevens Creek Blvd Class IV Bike Path to also include intersections? (**Chao**)
Staff response: The scope of the project hasn't changed. Following adoption of the bike plan, a conceptual design was created for the project. This design included recommendations for signalization improvements.

Q1-2: And what city documents have provided study for different options for intersection configuration? (**Chao**)
Staff response: The project conceptual design.

Q1-3: What city documents have provided traffic impact analysis? (**Chao**)
Staff response: The project conceptual design.

Q2: The staff report mentioned that the project would utilize "Senate Bill 1 (SB1)" of $693,000. My understanding is that this portion of the SB 1 grant can be reallocated to other bike path project, is that right? (**Chao**)
Staff response: Yes

Q2-1: If the Cty submitted a proposal for SB 1, what is the project description? Please include the application to provide clarity. (**Chao**)
Staff response: This request was made via Resolution 24-047, approved by City Council at the May 21, 2024 City Council meeting. The resolution simply states: Improve bicycle and pedestrian safety along Stevens Creek Blvd by installing physical barrier between bicycles and motorists. The description was intentionally kept broad to provide the City with maximum flexibility in executing the project.

Q3: The staff report mentioned that the project would utilize "One Bay Area Grant (OBAG)" of $807,000. The staff report states "In 2022, MTC informed staff that due to other agencies being unable to commit to obligating the OBAG funds for their projects, funding was now available for the City of Cupertino in support of this Project. On April 19, 2022, the City Council accepted the recommendation to adopt a resolution of local support, which is required to complete the application process and for the City to receive the $807,000 of OBAG funding (with a required local match of $93,000.)" What is the project description for the OBAG funding? (**Chao**)
Staff response: See Attachment G – OBAG2 Application - Competitive

Q3-1: Please provide the application for the OBAG grant to provide clarify. (**Chao**)
Staff response: See Attachment G – OBAG2 Application - Competitive

Q4: If we refocus the Stevens Creek Blvd Class IV Bikeway project to only include Class IV Bikeway without any intersection (or only include "striping through Intersection," as recommended by the 2016 Bicycle Master Plan, can we utilize both the OBAG and the SB1 grants to complete the entire Stevens Creek Blvd Class IV Bikeway project, including Phase 2 and Phase 3? (**Chao**)
Staff response: Again, the bike plan did not specifically recommend implementing the Class IV project without intersection improvements. The City may be able to use the OBAG funding, but this would require MTC and Caltrans approval.

Q5: The supplemental report from 2/3 states "Staff Response: A traffic analysis was performed in 2017. This analysis envisioned a more restrictive design (reducing travel lanes through the intersection from 3 to 2)." Where do I find this traffic analysis? (**Chao**)
Staff response: See Attachment H – Final Class IV Design – SCB

Q6: The supplemental report from 2/3 states "The traffic signal upgrade at Wolfe Road is $207,020, and the traffic signal upgrade at De Anza Blvd is $370,480." This is the first that I heard that this project also includes signal upgrades for the Stevens Creek and Wolfe intersection, due to the lack of information in the staff report. Isn't that intersection already reconfigured with protected bike lanes? Why does it still need an upgrade for $207,020? (**Chao**)
Staff response: Only the westbound direction is currently configured with protected bike phasing. The 2A project will provide protected bike phasing for the eastbound direction, consistent with the conceptual plan recommendations.

Q7: From the 2016 Bicycle Master Plan, the "Intersection Configure" for Stevens Creek and De Anza recommended was "Bike lane striping through Intersection". Could we implement this project with this lower-cost change to the intersection? (**Chao**)
Staff response: Yes, the traffic signal modifications could be removed. This would require that the project design be revised, and the project be re-advertised for bids, which would cause a 4 to 6 month delay in starting the project. The redesign and delay would put the OBAG grant funds at risk.

Q7-1: Can we include the bike path portion of the Phase 2B and Phase 3 without only bike lane striping through intersection in the same project to utilize those two grants, OBAG and SB1? (**Chao**)
Staff response: No. The OBAG grant specifically requires Class IV (physically separated) bike lanes.

Attachments Provided with Original Staff Report:

A. *Draft Construction Contract*
B. *Draft Resolution*
C. *Contract Documents*
D. *01-22-2025 Supplemental Report*
E. *01-22-2025 Desk Item*

Additional Attachments Provided with Desk Item:

F. *OBAG2 Application - Competitive*
G. *Final Class IV Design - SCB*

SANTA CLARA
Valley Transportation Authority

ATTACHMENT D
ONE BAY AREA GRANT CYCLE 2 (OBAG2)
APPLICATION

CITY OF CUPERTINO
STEVENS CREEK CLASS IV BIKEWAY PROJECT
COMPETETIVE COMPLETE STREETS

INCLUDES:
Section One Project Overview
Section Two Project Details
Section Three Project Narrative (Only Competitive Complete Streets applications)

SECTION ONE
PROJECT OVERVIEW

PROJECT TITLE	Stevens Creek Blvd Class IV Bikeway Project
PROJECT SUMMARY	Location: Stevens Creek Blvd
	Limits: Bubb Road to Tantau Avenue
	Detailed Description: The project will install Class IV bikeway facilities along Stevens Creek Blvd between Bubb Road and Tantau Avenue. Currently, bike lanes exist along both directions of Stevens Creek Blvd, with 2-3' painted buffer zones along most of the length separating the bike lanes from the vehicle lanes. This project will install physical elements within the existing painted buffer areas, consistent with recently-adopted Caltrans Class IV bikeway standards. Transit stop enhancements, to ensure the continued accessibility of existing bus stops, would likely be included.
GRANT CATEGORY and AMOUNT REQUESTED Minimum Discretionary Grant Requested ≥ $500,000	☐ GUARANTEE LOCAL STREETS & ROAD PRESERVATION Amount Requested _____ ☒ COMPETITIVE COMPLETE STREETS Amount Requested $807,000
GRANT FUNDS FISCAL YEAR	FY2017/18
*LOCAL MATCH (11.47% MIN)	11.52%
TOTAL PROJECT COST	$900,000
MEMBER AGENCY NAME	City of Cupertino
CONTACT PERSON	David Stillman
ADDRESS	10300 Torre Avenue, Cupertino, CA, 95014
EMAIL ADDRESS	davids@cupertino.org
PHONE	(408) 777-3249
OTHER PROJECT PARTNERS	

* Local funds used in the environment/design phases may qualify for toll credits during the construction phase.

SECTION TWO
PROJECT DETAILS

PROJECT TITLE: Stevens Creek Blvd Class IV Bikeway Project

AGENCY NAME: City of Cupertino

PROJECT MANAGER: (Person who can answer questions about the PROJECT)

Name: David Stillman
Title: Senior Civil Engineer
Phone: (408) 777-3249
Email: davids@cupertino.org

ROADWAY CLASSIFICATION AND SITED SOURCE:
Stevens Creek Blvd is classified as a Principal Arterial according to the FHWA Functional Classification Map 5M35.

PROJECT SCHEDULE:

Project Phase:	ENVIRON	DESIGN	ROW	CON
*Start Date (MM/YY):	6/17	6/17	10/17	06/18

*Any schedule change requires VTA prior approval.

PROJECT COST BY PHASE: (Dollars rounded to nearest thousands)

Total Cost:				$900,000
Funds Requested:	0	0	0	$807,000
Local Match:				$93,000
Match % (xx.xx%):				11.53%

CRITICAL EXPECTED/ACTUAL SUBMITTAL DATES: (if applicable)

Field Review:	10/17
PES Form:	10/17
ROW/Permits:	10/17
CON E-76 Packet[1]	11/17

PES: Exhibit 6-A Preliminary Environmental Study

[1] Deadline: November 1 of programmed year

■ **PROJECT IS A STAND-ALONE PROJECT.**

☐ **PROJECT IS PART OF A LARGER PROJECT**. (Describe larger project: Provide project title, identifying ID numbers, total project cost, larger project schedule and impact on THIS project schedule.)

SECTION THREE
PROJECT NARRATIVE (ONLY COMPETITIVE COMPLETE STREETS APPLICATIONS)

Section Three corresponds to the Criteria categories found in Attachment A
The narrative responses should follow the sequence as shown below.

1. Safety: Class IV bike lanes have recently been approved by Caltrans and included in the MUTCD because of their potential to significantly enhance safety for bicyclists. Stevens Creek Blvd is a major east-west arterial across Cupertino, a designated truck route along most of its length, and has a posted speed limit of 35 mph. Painted buffer zones have recently been added to separate the bike lanes from the vehicle lanes, but physical separation is necessary to significantly enhance safety for bicyclists. There have been approximately 25 reported bicycle-related accidents along Stevens Creek Blvd during the five-year period between 2009 and 2014, including one fatality. A physically-separated Class IV facility would have prevented many of these accidents.

2. Project Benefits: The project clearly incorporates complete streets design practices, as it would provide a significant safety benefit to bicyclists as well as encouraging cycling among people who would otherwise be hesitant about riding along a major arterial corridor. Class IV bikeways are a recognized complete streets element. Also, as part of this project, accommodation and improvements would be made to bus stops which would encourage use of the local public transit facilities. Livability and economic vitality would also be enhanced, as a result of a potential reduction in vehicle trips, increase in bicycling and transit ridership, and aesthetic elements which may be incorporated into the physical protective buffers which will be installed as a result of this project.

3. Gap Closure/Connectivity: Although bike lanes currently exist along the entire length of Stevens Creek Blvd, the safety enhancements afforded by the physical separation of the Class IV facility will encourage cycling and enhance connectivity across Cupertino.

4. Air Quality Improvements and/or Vehicle Miles Traveled (VMT) Reduced: The project will encourage bicycling, providing direct bicycle access to commercial, office and residential land uses. While a quantitative VMT reduction analysis has not been performed, the potential to reduce vehicle trips and vehicle congestion certainly there.

5. Documented Public Involvement/Support: The City recently adopted a new Bicycle Transportation Plan. Public outreach during the development of the Plan included two public workshops, a half dozen Bicycle Pedestrian Commission meetings, ongoing discussion and collaboration with Walk Bike Cupertino (a local bicycle advocacy group) and the two school districts, and a public hearing in front of the City Council. As a result of this public process, the installation of Class IV bike lanes along Stevens Creek Blvd was identified as the **highest priority project** within the Plan.

6. Local Match: Improving the bicycling infrastructure within Cupertino is a very high Council priority. The City will commit to a 21% match.

7. Project Readiness: The City completed a CEQA Initial Study for the Bicycle Transportation Plan and adopted a Mitigated Negative Declaration for the Plan, which includes the installation of Class IV facilities along Stevens Creek Blvd. The City is currently in the process of hiring a consultant to assist with the design of the facility, which would be completed by the time the funding requested under this grant becomes available.

8. Jobs Density: Job density varies substantially along the length of the corridor. The highest job density occurs at the western end of the corridor and is 32 jobs/acre.

9. Housing Density: Housing density is consistently under 10 units per acre along the corridor.

10. Community of Concern and/or Community Air Risk Evaluation: The Project is not located within a COC or CARE area.

11. Affordable Housing &/or Senior/Disabled-Serving Facility: The Project is not within ¼ mile of an affordable housing or senior/disable facility.

12. Proximity to High Ridership Transit Stop: Project is along Stevens Creek Blvd, which coincides with the high-ridership VTA bus route 23, 323, and future 523 line. Major bus stops are located along the entire corridor, most notably at De Anza College.

13. BEP Plan: The project is a recent addition to Cupertino's Bicycle Transportation Plan, and is not yet included in the Bicycle Expenditure Program.

ATTACHMENT H
Application Review Checklists

These checklists are provided to a project sponsor to confirm completeness of the application. Project managers will sign and date this attachment and include one with each application.

Every application must include Checklist A documents.
Each agency must forward one set of Checklist B documents.

CHECKLIST A - Individual Project Application Packet

- ☒ Complete application form Attachment D;
- ☒ Copy of the project's completed MTC Complete Streets Checklist (aka Routine Accommodations);
- ☒ VTP 2040 Consistency (reference the section);
- ☒ For the Complete Streets Competitive program, a map that clearly identifies the project's location within a Priority Development Area or proximate access to a PDA. VTA staff has provided an interactive map application for this purpose at: http://arcg.is/1WDOfef

CHECKLIST B - Each Agency will submit only one copy

- ☒ Completed OBAG2 Checklist for Local Compliance with MTC Resolution 4202;
- ☒ Proof of compliance with the General Plan Housing Element critical criteria;
- ☒ Proof of compliance with the Complete Streets Act of 2008 critical criteria;
- ☒ Proof that project selections are in compliance with Title VI of the Civil Rights Act of 1964

By applying for and accepting OBAG 2 funding, the project sponsor is acknowledging that it has and will maintain the expertise and staff resources necessary to deliver the federal-aid project within the project-funding timeframe.

Signature

DAVID STILLMAN — Printed Name

7/28/16 — Date

SENIOR CIVIL ENGINEER — Title

Project:

Stevens Creek Blvd Class IV Bikeway Project (/projects/816)

Checklist:

Stevens Creek Blvd Class IV Bikeway

Name	Stevens Creek Blvd Class IV Bikeway
Description	The project will install Class IV bikeway facilities along Stevens Creek Blvd. Currently, bike lanes exist along both directions of Stevens Creek Blvd, with 2-3' painted buffer zones along most of the length separating the bike lanes from the vehicle lanes. This project will install physical elements within the existing painted buffer areas, consistent with recently-adopted Caltrans Class IV bikeway standards. Transit stop enhancements, to ensure the continued accessibility of existing bus stops, would likely be included.
Status	Approved
Project	Stevens Creek Blvd Class IV Bikeway Project (/projects/816)
Location	Cupertino
Contact Name	David Stillman
Contact Email	davids@cupertino.org
Contact Phone	4087773249
Contact Address	10300 Torre Avenue Cupertino, CA 95014
1a **What bicycle and pedestrian accommodations are currently included on the facility or on facilities it intersects or crosses? Please check all that apply.**	Class I bicycle paths **Class II bicycle lanes** **Class III bicycle routes** Class IV bikeways Bicycle boxes Raised separated bikeways Bicycle Boulevards Bicycle parking **Sidewalks on one side or both sides of street** **Marked crosswalks** Protected intersection Painted conflict zones Narrow unpaved path **Pedestrian-actuated traffic signals or routine pedestrian cycle** Bulb-outs **Bicycle actuated traffic signals or routine bicyclist cycle** **High visibility crosswalks** Pedestrian-level lighting **ADA-compliant ramps** **Traffic signal push buttons** **Refuge islands on roadways** **Transit shelter** Wide curb lanes **Right turn only lanes** **Transit vehicle stops** **Pedestrian countdown signals** Way-finding or directional signage None
Other	

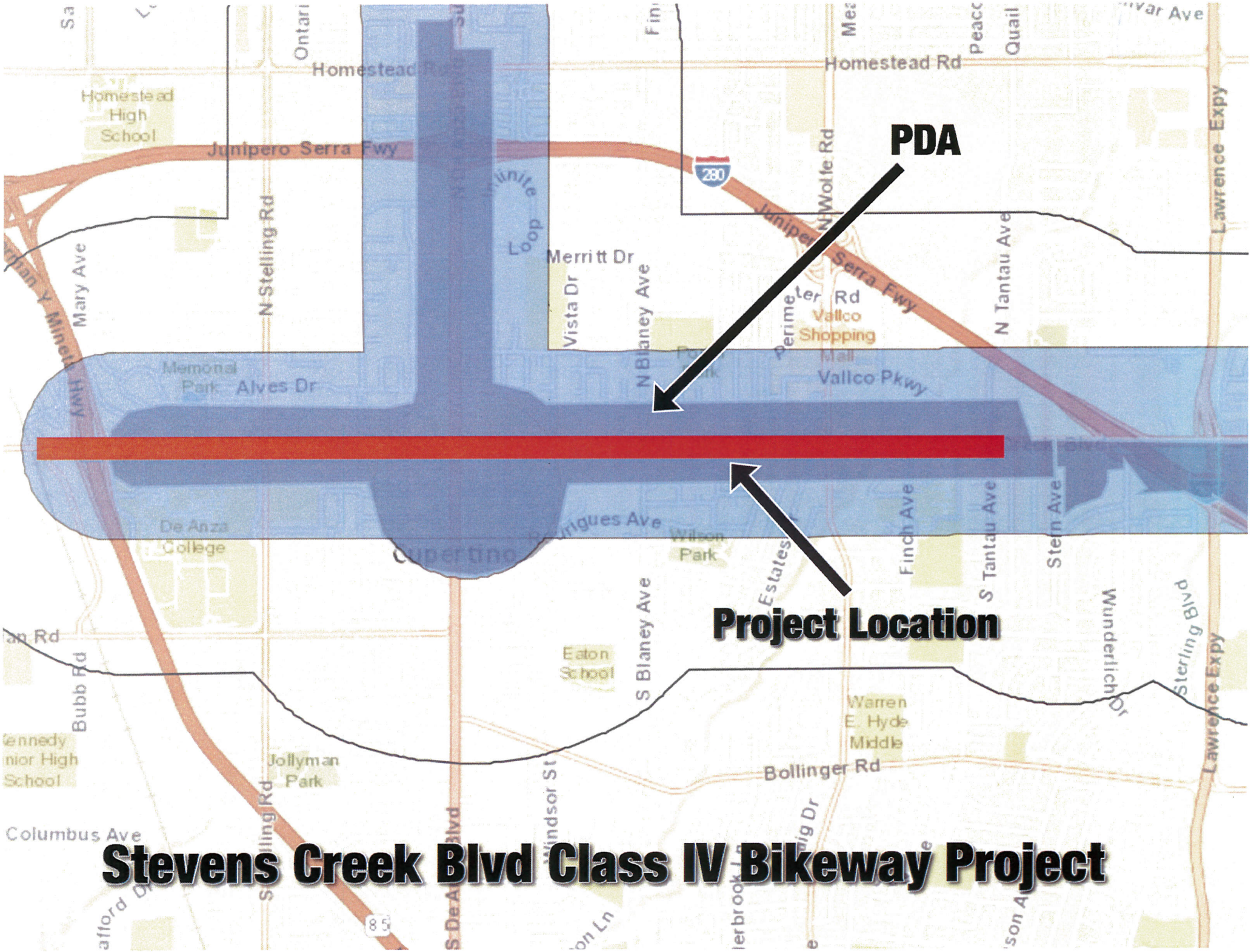
	Please provide specifics of any items checked above.	
1b	**If there are no existing pedestrian or bicycle facilities, how far from the proposed project are the closest parallel bikeways and walkways?**	0-1/4 mile 1/4 mile to 1/2 mile 1/2 mile to 1 mile 1+ mile
1c	**Please indicate needed pedestrian, bicycle, or transit improvements in the project area that staff or the public have identified**	Improved lighting sidewalks **Improve intersections** Mid-block crossings Accommodations for the elderly or disabled or school age children School age children **Transit shelters** **ADA facilities** Widened curb lanes **Bicycle parking** Traffic signals responsive to bicycles Shorter vehicular traffic signal cycles Addressing choke points or gaps in pedestrian or bicycle **RR crossings** Bike racks on busses Widened or better-lit under crossings Removed slip lanes **Right turn only lanes** None
	Other	
1d	**Please describe the overall context of the project area:**	**Stevens Creek Blvd is a major arterial and transit corridor. Adjacent land uses include commercial and office.**
1e	**What existing challenges could the proposed project improve for bicycle, pedestrian, or transit travel in the vicinity of the proposed project?**	Unresponsive signals to bicycles **Lack of bicycle parking** **Freeway on-off ramps** Narrow curb lanes Choke points **RR crossings** No bike racks on buses Wide roadway crossings Long signal cycles which require pedestrians to wait long periods of time Short signal crossing times Narrow undercrossings, overcrossings Slip lanes Sidewalk obstruction or missing sidewalk Pedestrian-level lighting **Lack of ADA compliant facilities** Lack of Transit vehicle stops
	Other	

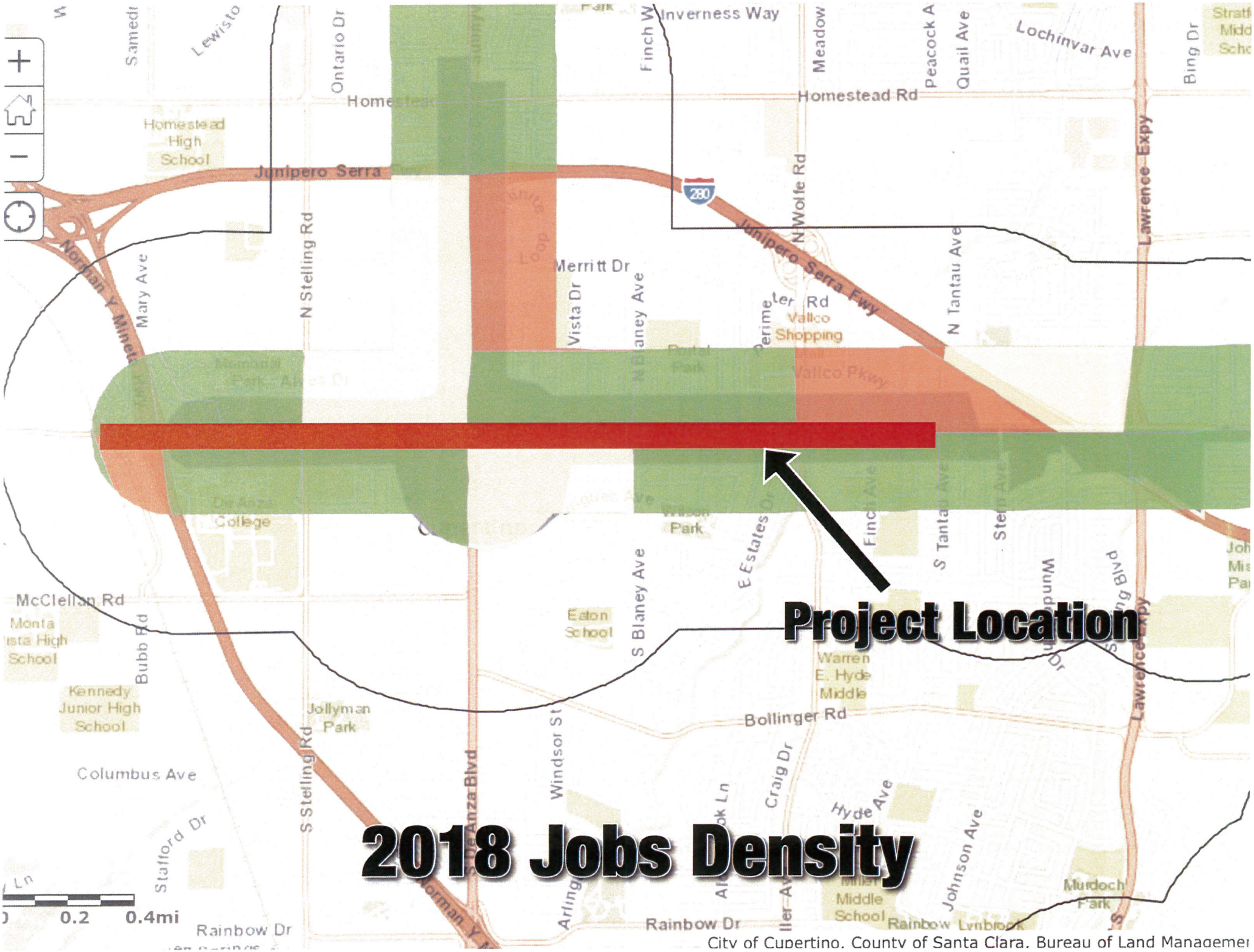
2a	What trip generators (existing and future) are in the vicinity of the proposed project that might attract walking or bicycling customers, employees, students, visitors or others?	**Educational institutions** **Transit stations** **Senior centers** **High-density land uses** **Downtowns** **Shopping areas** Medical centers Major public venues **Government buildings** **Parks**
	Other	
3a	Have you considered collisions involving bicyclists and pedestrians along the route of the facility?	No
	If so, please provide the number of collisions and describe the outcomes of each:	
	If so, what resources have you consulted?	
4a	Do any adopted plans call for the development of bicycle or pedestrian facilities on, crossing or adjacent to the proposed facility/project?	**City or town bicycle plan** Countywide bicycle plan City or town pedestrian plan Countywide pedestrian plan Combined bicycle and pedestrian plan **ADA transition plan** **General plan** **Specific plan** Regional transportation Plan Sales tax expenditure plan Station area access plan No plans
	Other	
	Is the proposed project consistent with these plans?	Yes
5a	Do any local, statewide or federal policies call for incorporating bicycle and/or pedestrian facilities into this project?	Caltrans Deputy Directive 64 Caltrans Highway Design Manual (Chapter 1000) ACR 211 MUTCD 2003 MUTCD California supplement **Americans with Disabilities Act Accessibility Guidelines (ADAAG)** MTC Pedestrian Districts Study None more
	Other	
	If so, have the policies been followed?	Yes
5b	N/A	No

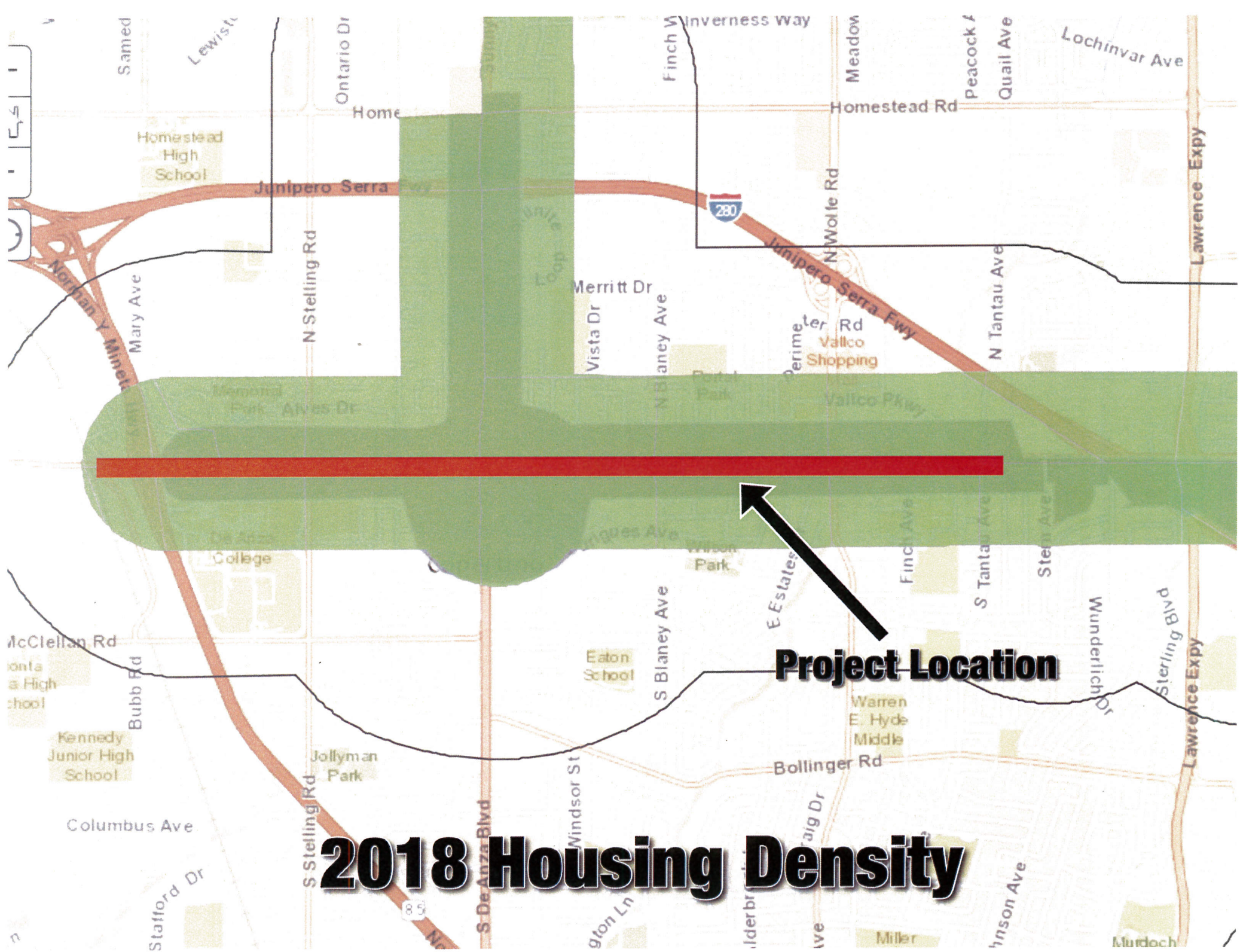
5c	**If this project includes a bicycle and/or pedestrian facility, which applicable design standards or guidelines have been followed?**	AASHTO bicycle and pedestrian design guides Americans with Disabilities Act Accessibility Guidelines Caltrans Design Information Bulletin 89 Caltrans Highway Design Manual **Caltrans California MUTCD** Caltrans Pedestrian and Bicycle Facilities in California FHWA MUTCD ITE Designing Urban Walkable Thoroughfares **NACTO Urban Bikeway Design Guide** N/A - no bicycle or pedestrian facilities included None
6a	**What comments have been made regarding bicycle and pedestrian accommodations at BPAC, stakeholder, or public meetings at which the proposed project has been discussed?**	**BPAC, general public and City Council are supportive of the improvements**
	How have you responded to comments received?	**Yes**
7a	**What accommodations, if any, are included for bicyclists and pedestrians in the proposed project design?**	Class I bicycle paths Class II bicycle lanes Class III bicycle routes **Class IV bikeways** Bicycle boxes Raised separated bikeways Bicycle Boulevards Bicycle parking Sidewalks on one side or both sides of street Widened sidewalks Marked crosswalks Protected intersection Painted conflict zones Narrow unpaved path Pedestrian-actuated traffic signals or routine pedestrian cycle Bulb-out Bicycle actuated traffic signals or routine bicyclist cycle High visibility crosswalks Pedestrian-level lighting ADA-compliant ramps Traffic signal push buttons Refuge islands on roadways Transit shelters Wide curb lanes Right turn only lanes Transit vehicle stops Pedestrian countdown signals Way-finding or directional signage None
	Other	
8a	**Will the proposed project remove an existing bicycle or pedestrian facility or block or hinder bicycle or pedestrian movement?**	**No**
	If yes, please describe situation in detail.	

8b	If the proposed project incorporates neither bicycle nor pedestrian facilities, or if the proposed project would hinder bicycle or pedestrian travel, list reasons why the project cannot be re-designed to accommodate these facilities.	N/A
	Was a road diet or car parking removal considered?	On-street parking is already prohibited. Road diet not feasible, Stevens Creek is a major arterial corridor.
	What would be the cost of the added bicycle and/or pedestrian facility?	
	If the proposed project incorporates bicycle or pedestrian improvements, what proportion is the bicycle and/or pedestrian facility of the total project cost?	100
	If right-of-way challenges are the reason for the hindrance, please explain the analysis that led to this conclusion.	
9a	How will access for bicyclists and pedestrians be maintained during project construction?	**Alternative signed bicycle route** Alternative signed pedestrian route Separated pedestrian pathway Other
	Other	
10a	What agency will be responsible for ongoing maintenance of the facility?	Cupertino
10b	How will ongoing maintenance be budgeted?	Within annual City operations and maintenance budget

Metropolitan Transportation Commission
101 Eighth Street Oakland, CA 94607
Phone: 510.817.5700 **Fax:** 510.817.5848
info@mtc.ca.gov (mailto:info@mtc.ca.gov)


PDA
Project Location
Homestead Rd
Homestead High School
Junipero Serra Fwy
280
N Wolfe Rd
Lawrence Expy
N Stelling Rd
Mary Ave
Merritt Dr
Vista Dr
N Blaney Ave
Perimeter Rd
Vallco Shopping Mall
Vallco Pkwy
N Tantau Ave
Memorial Park
Alves Dr
De Anza College
Wilson Park
Finch Ave
S Tantau Ave
Stern Ave
Wunderlich Dr
Sterling Blvd
S Blaney Ave
Eaton School
Warren E. Hyde Middle
Bollinger Rd
Bubb Rd
Jollyman Park
Columbus Ave
Stevens Creek Blvd Class IV Bikeway Project


Project Location
2018 Jobs Density
Homestead Rd
Junipero Serra
Junipero Serra Fwy
Lawrence Expy
Merritt Dr
Vallco Shopping
Vallco Pkwy
McClellan Rd
Bollinger Rd
Rainbow Dr
Columbus Ave
Hyde Ave
Inverness Way
Lochinvar Ave
Homestead High School
De Anza College
Eaton School
Kennedy Junior High School
Jollyman Park
Warren E. Hyde Middle
Murdoch Park
0.2
0.4mi
City of Cupertino, County of Santa Clara, Bureau of Land Manageme


Project Location
2018 Housing Density
Homestead High School
Junipero Serra Fwy
Homestead Rd
Lochinvar Ave
Lawrence Expy
N Wolfe Rd
N Stelling Rd
Mary Ave
Merritt Dr
Vista Dr
S Blaney Ave
Perimeter Rd
Vallco Shopping
Vallco Pkwy
N Tantau Ave
Memorial Park
Alves Dr
De Anza College
Wilson Park
E Estates Dr
S Tantau Ave
Wunderlich Dr
Sterling Blvd
McClellan Rd
Bubb Rd
Eaton School
Warren E. Hyde Middle
Bollinger Rd
Kennedy Junior High School
Jollyman Park
S Stelling Rd
Columbus Ave
S De Anza Blvd
Windsor St
Stafford Dr
Miller
Murdoch
Inverness Way
Ontario Dr
Peacock
Quail Ave
Norman Y Mineta
Loop
280
89

Final List of Plan Bay Area Transportation Projects/Programs by County

July 17, 2013

**Amounts shown in millions of year of expenditure (YOE) dollars*

County	RTPID	Project	Total Cost	Committed Funding	Discretionary Funding
Santa Clara	240508	Implement the Community Design and Transportation (CDT) Program in Santa Clara County (includes streetscape improvements, bicycle and pedestrian access improvements, place-making improvements, and roadway and transit facility improvements)	$ 566	$ -	$ 566
Santa Clara	240509	Develop projects and programs contained within VTA's Countywide Bicycle Plan, VTA's Bicycle Expenditure Program, and Local Bike Plans and programs.	$ 362	$ -	$ 362
Santa Clara	240512	Implement Guadelupe Express light rail improvements	$ 30	$ 30	$ -
Santa Clara	240513	Implement express lanes on I-280 between Leland Avenue and Magdalena Avenue (included under VTA Express Lane Network RTPID #240742)	$ 60	$ -	$ -
Santa Clara	240514	Implement express lanes on I-280 between US 101 and Leland Avenue (included under VTA Express Lane Network RTPID #240742)	$ 25	$ -	$ -
Santa Clara	240515	Implement express lanes on I-280 between southbound El Monte Road and Magdelena Avenue (included under VTA Express Lane Network RTPID #240742)	$ 14	$ -	$ -
Santa Clara	240516	Implement express lanes on I-680 between Montague Expressway and US 101 (included under VTA Express Lane Network RTPID #240742)	$ 36	$ -	$ -
Santa Clara	240517	Implement express lanes on I-880 between U.S. 101 and I-280 (included under VTA Express Lane Network RTPID #240742)	$ 192	$ -	$ -
Santa Clara	240518	Implement Tasman Express Long T (includes double-tracking of a single-tracked light rail segment on the Mountain View line to facilitate the extra line of service)	$ 68	$ 68	$ -
Santa Clara	240519	Implement North First Street light rail speed Improvements	$ 12	$ 12	$ -
Santa Clara	240532	Improve interchanges on Route 152 at Frazier Lake Road, Bloomfield Road, Watsonville Road, and Ferguson Road	$ 10	$ -	$ 10
Santa Clara	240554	Improve interchanges at Route 237/Mathilda Avenue and U.S. 101/Mathilda Avenue	$ 18	$ -	$ 18
Santa Clara	240570	Widen offramp at Trimble Road on Route 87	$ 1	$ -	$ 1
Santa Clara	240591	Implement Capitol Expressway Light Rail Extension - Phase I (includes sidewalk, landscape and street lights on both sides of the expressway from Capitol Avenue to Tully Road)	$ 53	$ 53	$ -
Santa Clara	240603	Implement North San Jose Transit Improvements	$ 61	$ 61	$ -
Santa Clara	240611	Improve interchange at Route 85/El Camino Real	$ 24	$ -	$ 24
Santa Clara	240636	Construct 2-lane or 4-lane connection between Almaden Expressway and Winfield Boulevard (Chynoweth Ave. or Thornwood bridge will include construction of a new connector, bike lanes and sidewalks)	$ 17	$ -	$ 17
Santa Clara	240671	Improve interchange at I-280/Senter Road	$ 52	$ -	$ 52
Santa Clara	240710	Implement Lawrence Expressway/I-280 interchange project	$ 3	$ -	$ 3
Santa Clara	240740	Local streets and roads operations and maintenance	$ 6,757	$ 6,757	$ -
Santa Clara	240742	VTA Express Lane Network	$ 791	$ 791	$ -

July 22, 2016

David Stillman
Senior Civil Engineer
City of Cupertino, Department of Public Works
10300 Torre Avenue
Cupertino, CA 95014

Subject: Cupertino One Bay Area Grant Cycle 2 Application Letter of Support

Dear Mr. Stillman:

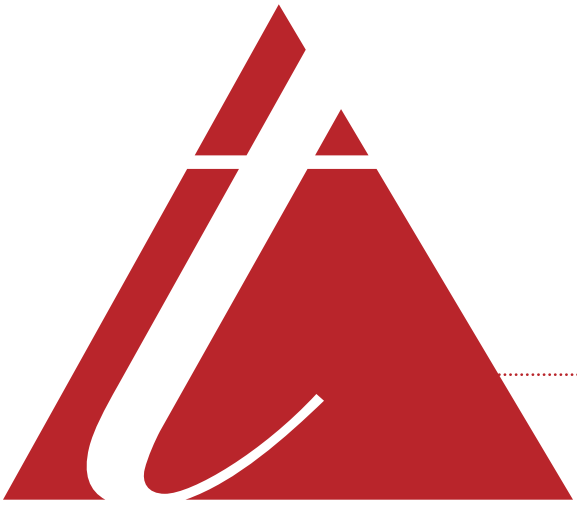
The City of Cupertino Bicycle Pedestrian Commission is pleased to submit this letter of support for Cupertino's One Bay Area Grant Cycle 2 application for the Stevens Creek Blvd Class IV Bikeway Project.

The Stevens Creek Blvd Class IV Bikeway Project was identified as the highest priority project in the City's recently adopted 2016 Bicycle Transportation Plan. The Plan has been the result of a rigorous public process which engaged stakeholders across the full spectrum of the Cupertino community. Completion of a Class IV bikeway along this important east-west corridor would provide a safe and attractive route for bicyclists accessing Cupertino's vibrant commercial areas, help to alleviate traffic congestion and air pollution, and enhance a critical cross-county bicycle link.

Thank you for your consideration.

Sincerely,

Vidula Aiyer
Chairperson, Cupertino Bicycle Pedestrian Commission



Traffic Operations Memorandum

TooleDesignGroup

2120 University Avenue
Berkeley, CA 94704
415.308.5058
301.927.2800 fax
www.tooledesign.com

MEMORANDUM

Date: May 24th, 2017

To: David Stillman, Project Manager, City of Cupertino

From: Brooke DuBose, Project Manager
Robert Burchfield, PE
Craig Schoenberg, PE

Re: Stevens Creek Blvd and McClellan Road Class IV Bikeway Design: Traffic Operations Analysis

This memorandum documents the traffic operations analysis performed to support the Concept Design for the Stevens Creek Boulevard and McClellan Class IV Bikeway Design.

DESIGN APPROACH

The Stevens Creek Boulevard Protected Bike Lane project will provide barrier-separated bike lanes on Stevens Creek Boulevard from Foothill Boulevard to Tantau Avenue. Similarly, the McClellan Road Protected Bike Lane project will provide barrier-separated bike lanes between Byrne Avenue and De Anza Boulevard. The enhanced separation between motor vehicles and people riding bicycles will improve the comfort and safety for all users. A well-designed protected bike lane also needs to include intersection treatments that minimize the number of conflicts between bicycles and turning vehicles. Best practice for the design of intersections that include separated bike lanes is evolving rapidly and most state and municipal departments of transportation have not adopted standards or practices that address separated bike lanes at intersections. The design treatments recommended in this memorandum rely primarily on design guidance provided by the NACTO Urban Bikeway Design Guide[1], the FHWA Separated Bike Lane Planning and Design Guide[2], and the MassDOT Separated Bike Lane Planning & Design Guide[3].

[1] National Association of City Transportation Officials. *Urban Bikeway Design Guide.* 2011. Hereafter referred to as NACTO Guide.

[2] Federal Highway Administration. *Separated Bike Lane Planning and Design Guide.* Department of Transportation. 2015. Hereafter referred to as FHWA Guide.

[3] Massachusetts Department of Transportation. *Separated Bike Lane Planning and Design Guide.* 2015. Hereafter referred to as MassDOT Guide.

INTERSECTION TREATMENTS

Several types of signalization treatments for separated bike lanes are included in the NACTO and FHWA Guides. However, little guidance is provided to suggest which treatment should be selected for a particular context. The MassDOT Guide provides the most objective guidance available, and this is the resource that was applied to the intersections along the Stevens Creek and McClellan Boulevard corridors to define the recommended treatment type. Figure 1 (from that MassDOT Guide) defines turning vehicle volume thresholds above which a separate bike phase is recommended to address turning vehicle conflicts.

STEVENS CREEK BOULEVARD

Currently, all the intersections along Stevens Creek Boulevard have protected left-turn phases so no conflict occurs with through bicyclists and left-turning vehicles. However, there are potential conflicts between bicyclists and right-turning vehicles. The proposed design configuration of a separate bike phase, including one-way bike lanes on either side of Stevens Creek Boulevard, is recommended when there are 150 or more vehicle right turn movements per hour (during the peak hour).

Separated Bike Lane Operation	Motor Vehicles per Hour Turning across Separated Bike Lane			
	Two-way Street			One-way Street
	Right Turn	Left Turn across One Lane	Left Turn across Two Lanes	Right or Left Turn
One-way	150	100	50	150
Two-way	100	50	0	100

EXHIBIT 6A: Considerations for Time-separated Bicycle Movements

Figure 1. Considerations for Time-separated Bicycle Movements[4]

Turning movement counts for both the AM and PM peak hours at all 14 signalized intersections along the corridor were reviewed to identify where this threshold was exceeded. Ten intersections were identified where peak hour right-turn volumes from Stevens Creek Boulevard exceeded 150 vehicles per hour (vph). These intersections are shown in the table below.

Table 1. Peak Hour Right-Turn Volumes from Stevens Creek Boulevard Exceeding 150 vph

	AM vph		PM vph	
Intersection	**EB**	**WB**	**EB**	**WB**
Bubb	*	*	210	*
SR-85 SB	163	*	165	*

[4] Reprinted from MassDOT Guide, p 107.

SR-85 NB	*	603	*	793
Mary	232	*	181	180
Stelling	198	*	296	159
Bandley	*	179	*	*
De Anza	171	214	307	*
Wolfe/Miller	*	226	235	185
Finch	249	*	168	*
Tantau	*	319	*	*

*Right turn volume less than 150 vph

Based on these findings, these ten signalized intersections were identified as candidate locations where a signal phasing scheme that includes separate bike phases may be needed. At other signalized intersections along the corridor, a separate bike phase is not required, but may be considered as a treatment that will improve comfort for bicyclists.

MCCLELLAN ROAD

Currently, all the signalized intersections along McClellan Road have protected left-turn phases so no conflict occurs with through bicyclists and left-turning vehicles. The McClellan Road design options considered include both one-way and two-way separated bike lane alternatives. Peak hour turning movement counts at signalized intersections along McClellan Road were reviewed to identify where right-turning movements exceeded either a 150 vph threshold for one-way separated bike lanes, or a 100 vph threshold for right turns across a two-way separated bike lane. Turning movements that exceeded these thresholds are shown in the table below.

Table 2. Peak Hour Right-Turn Volumes from McClellan Road Exceeding 100 vph

	AM vph		Mid-Day vph		PM vph	
Intersection	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**
Bubb	*	173	*	*	*	*
Stelling	*	*	*	140	*	*
De Anza	215	*	*	*	330	*

* Right turn volumes less than 100 vph

SIGNAL PHASING -- SEPARATE BIKE PHASE

The MassDOT Guide provides helpful examples of how signal phasing can be designed to provide separate bike phases. Example phasing schemes from the guide were adapted to the Stevens Creek Boulevard and McClellan Road context and then analyzed for traffic operations performance using Synchro.

STEVENS CREEK BOULEVARD

The signal phasing shown in Figure 2 from the MassDOT Guide demonstrates the fundamental phasing scheme that was adapted for use at Stevens Creek Boulevard intersections that have a high level of right-turn conflicts.

The SR85 NB intersection was treated as a special case given the unique intersection configuration. Alternative options for both geometry and signal phasing were evaluated at SR85 NB. The results of this analysis are summarized in the Traffic Operations section that follows.

CONCURRENT PROTECTED BIKE PHASING PLAN

1. Through vehicle movements on Steven Creek Boulevard are served along with the through bicycle movements and the east/west pedestrian movements.
2. Side-street left-turn movements are served as well as the right turn movements from Stevens Creek Boulevard where separate right-turn lanes are provided.
3. Side-street through/right turn movements and north/south pedestrian movements are served.
4. Left-turn movements from Stevens Creek Boulevard are served as well as side-street right-turn movements where separate right-turn lanes are provided.

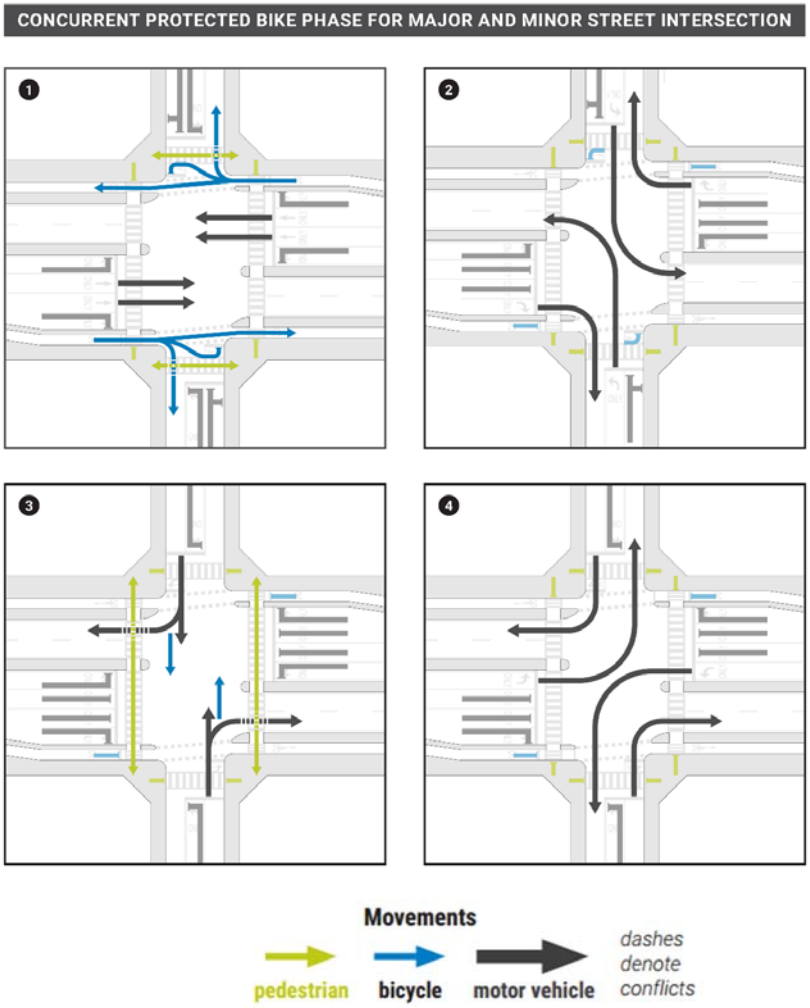


Figure 2. Concurrent Protected Bike Phase for Major and Minor Street Intersection[5]

[5] Adapted from MassDOT Guide, p 120.

An essential design feature of this phasing scheme is the provision of dedicated right-turn lanes on the major street (i.e. Stevens Creek Boulevard). In the proposed design, the existing shared through/right-turn approach lanes on Stevens Creek Boulevard are converted to dedicated right-turn lanes at intersections where a separate bike phase is desired. For example, the proposed lane configuration for the Stevens Creek Boulevard intersection with Stelling Road is shown in Figure 3. One challenge that this signal phasing presents is a potential conflict between U-turn movements made during the side street left-turn phase and concurrent Stevens Creek Boulevard right-turns. This situation occurs at the intersections with Stelling Road, De Anza Boulevard and Wolfe/Miller Road. To address this potential conflict the concurrent right-turn movement should be controlled with a flashing yellow arrow rather than a green arrow. We also recommend placing a regulatory sign with the message 'RIGHT TURNS YIELD TO U-TURNS' to supplement the flashing yellow right-turn arrow.

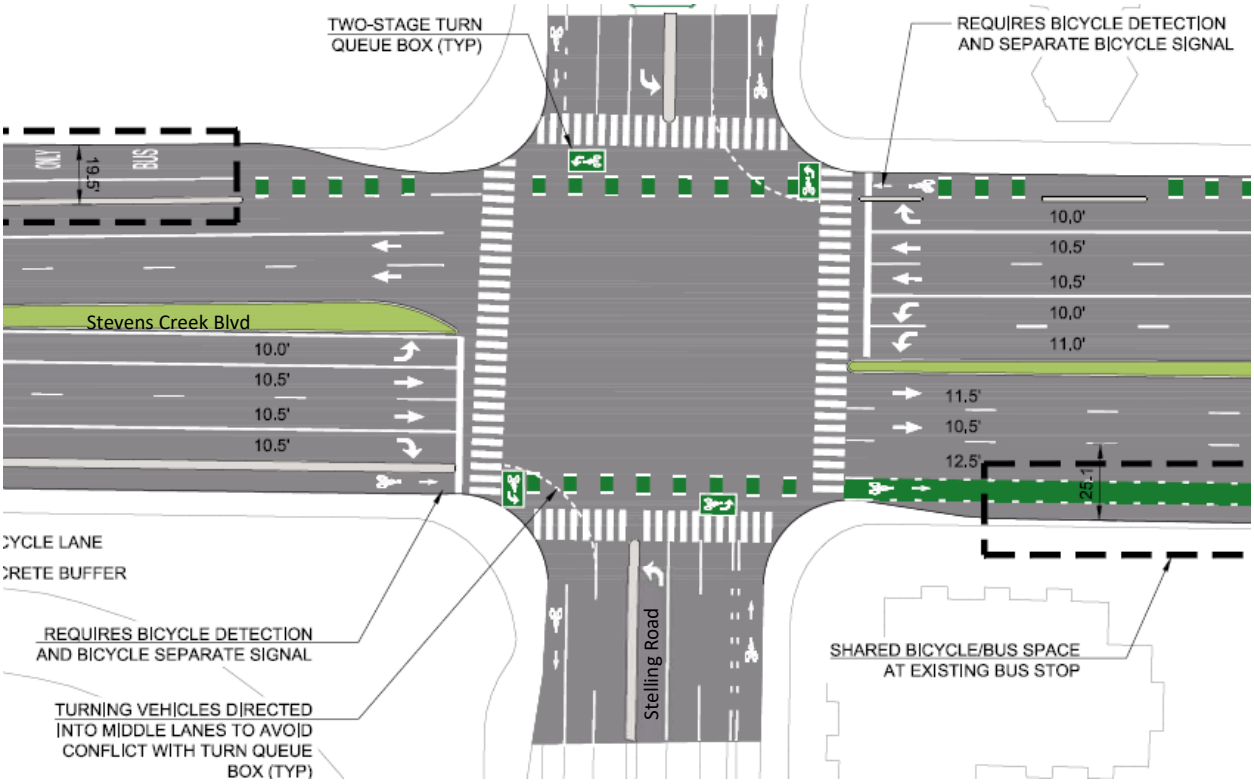


Figure 3. Proposed Stelling Road Intersection Design

MCCLELLAN ROAD

On McClellan Road, intersections of potential concern are Bubb Road, Stelling Road, and De Anza Boulevard. Right-turn volumes exceed the recommended thresholds at Bubb Road in the WB direction during the AM peak hour, Stelling Road WB during midday, and at De Anza Boulevard during the AM and PM peak hours for the EB direction.

At the Bubb Road intersection a phasing scheme similar to Figure 4, which is taken from the MassDOT Guide, is recommended for Design Option A, which provides a two-way protected bike lane on the north side of McClellan Road. This phasing concept includes an exclusive phase for east/west bicycle and pedestrian movements.

The other design option (Design Option B) would have unidirectional protected bike lanes on either side of the street. Signal phasing for this option at Bubb Road uses an exclusive bicycle phase to manage the right turn conflicts (as per the phasing plan shown in Figure 2).

At Stelling Road an exclusive bicycle phase is needed for Design Option A (two-way PBL), but is not required for Design Option B (Directional PBL).

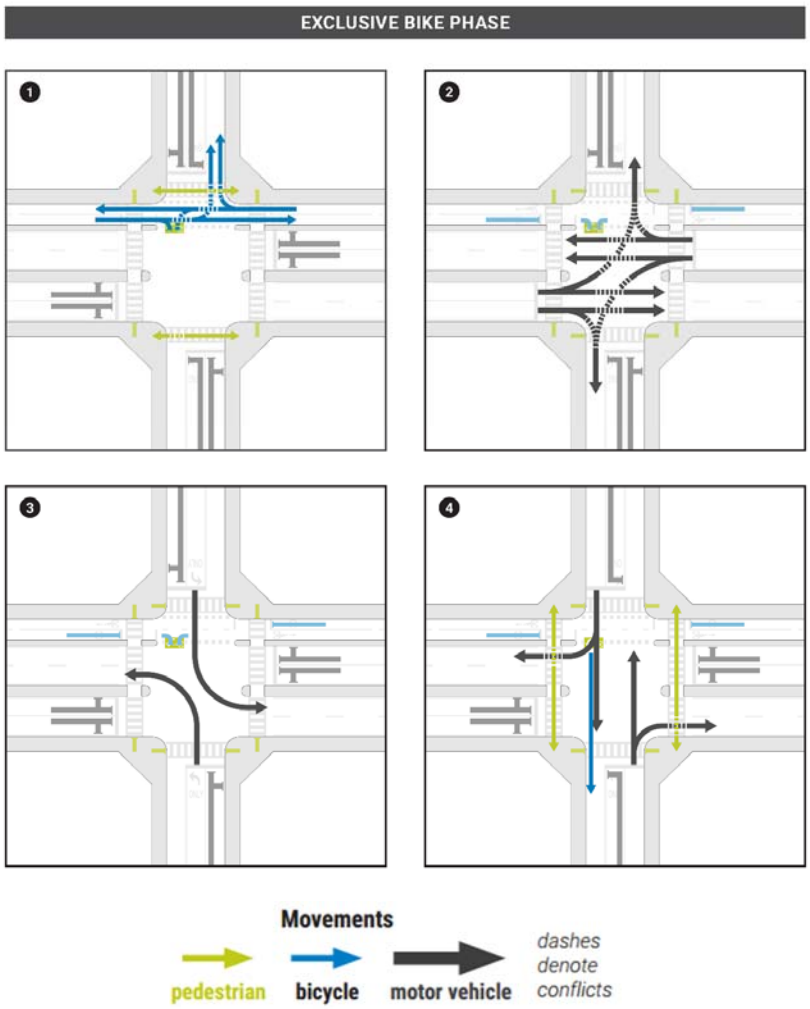


Figure 4. Exclusive Bike Phase for Two-way Protected Bike Lane[6]

[6] Adapted from MassDOT Guide, p 121.

TRAFFIC OPERATIONS ANALYSIS

STEVENS CREEK BOULEVARD

The feasibility of the proposed lane configuration and phasing scheme was tested at the Stelling Road, De Anza Boulevard, and Wolfe/Miller Road intersections using the Synchro software. These intersections were selected to demonstrate feasibility because of their relatively high existing volume-to-capacity operating condition. Existing operating conditions were compared with the proposed design. Existing traffic flows and signal timing parameters were based on data from the 2012 Existing Conditions Report for the Program for Arterial System Synchronization Project. The results of this analysis are summarized in Tables 3 and 4. Detailed reports for the analyses are included in Appendix A.

Table 3. Comparison of Intersection LOS With and Without a Separated Bike Phase, Based on Synchro Analysis Software

Stevens Creek Boulevard	**Existing LOS**		**Proposed LOS**	
Intersection	**AM**	**PM**	**AM**	**PM**
Stelling Road	D	D	D	E
De Anza Boulevard	D	E	D	E
Wolfe/Miller	E	D	E	D

Table 4. Comparison of Intersection V/C With and Without a Separate Bike Phase, Based on Synchro Analysis Software

Stevens Creek Boulevard	**Existing V/C**		**Proposed V/C**	
Intersection	**AM**	**PM**	**AM**	**PM**
Stelling Road	0.91	0.94	0.93	0.96
De Anza Boulevard	0.84	0.97	0.84	1.00
Wolfe/Miller	1.02	0.88	0.97	0.92

The results of the traffic operations analysis indicate minimal changes to intersection LOS and V/C with the proposed configuration. The only change in HCM 2000 Level of Service was found at the Stelling Road intersection where the LOS is projected to change from D to LOS E under the proposed condition. However, this change in LOS correlates with a very small change in expected volume-to-capacity (V/C) ratio. A change from 0.94 V/C in the existing condition to 0.96 V/C in the proposed configuration. At the Wolfe/Miller intersection the V/C is projected to improve with the proposed configuration from 1.02 V/C to 0.97 V/C.

Based on these findings, it is anticipated that the proposed intersection improvements will maximize safety and not meaningfully impact traffic conditions. However, additional traffic analysis for other intersections where a separate bike phase may be needed (Bubb, SR-85 interchange, Mary, Bandley, Finch, and Tantau) should be performed to support final design. Analysis of signal progression through the corridor may also be needed to integrate the proposed signal phasing at individual intersections within the overall corridor signal progression plan.

SR85 NB

A number of geometric options were considered for the SR85 NB intersection. Based on input from the City, as well as the results of the Synchro analysis, Option 3 is recommended. The geometric design for this option is shown in Figure 5.

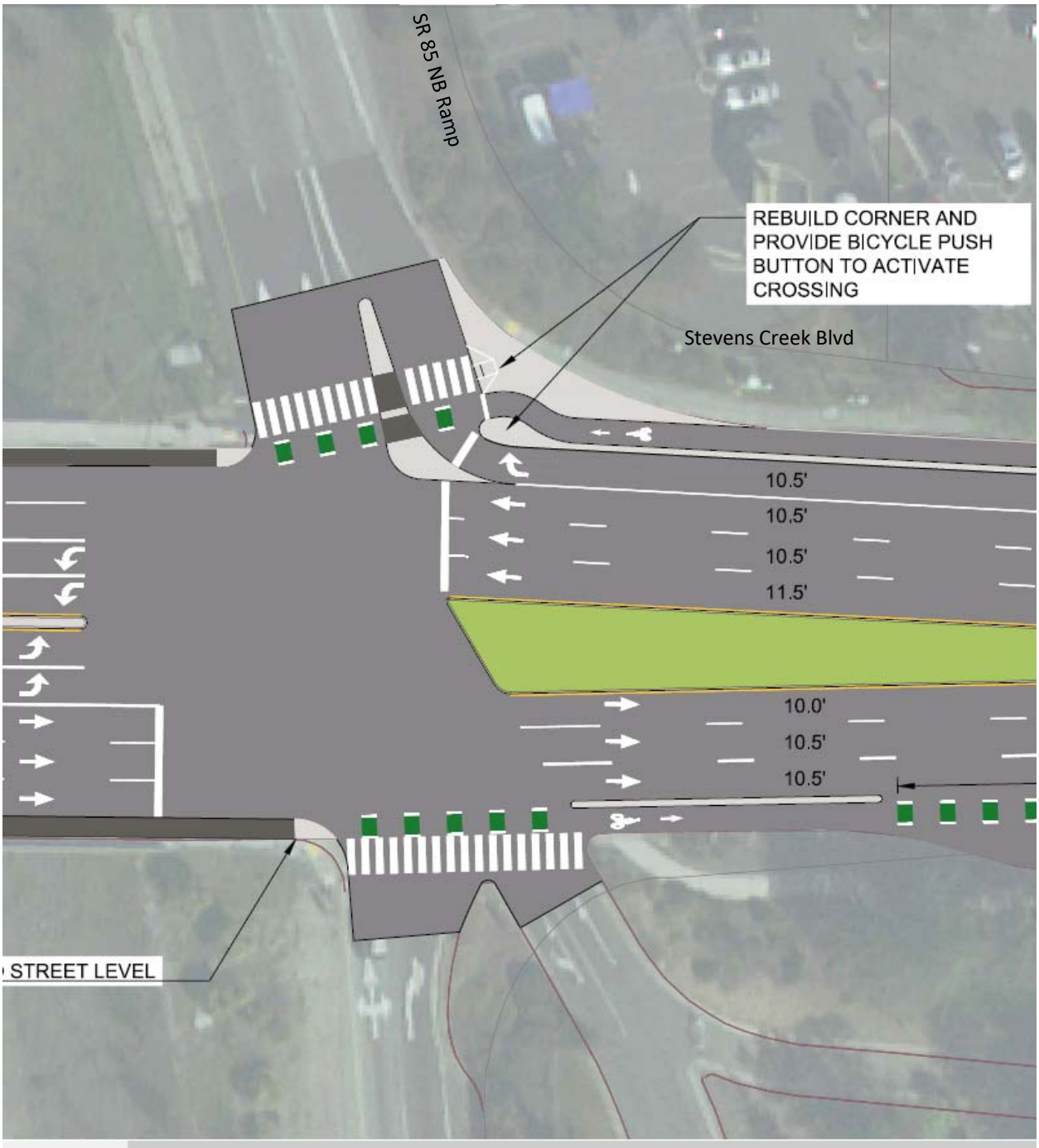


Figure 5. Proposed Geometric Design; Steven Creek Boulevard & SR 85 NB—Option 3

The key geometric feature of Option 3 is the significantly reduced corner radius for the WB to NB right-turn movement. This results in a shorter crossing distance for bicycle and pedestrians and will reduce the speed of the right turn movement. A signal display is added for the westbound channelized right-turn and an exclusive bicycle phase is provided after the eastbound left-turn phase. The receiving lane is maintained for the westbound channelized right-turn so this movement is permitted during all phases except the bicycle phase. The minimum recommended bicycle phase is 10 seconds long and eastbound/westbound through vehicles will move concurrently, as will eastbound/westbound pedestrians if there is a pedestrian actuation. We recommend that this phase be implemented with an Interim Approval-compliant bike signal so bikes will **not** be permitted to cross during the concurrent westbound right-turn movement.

All existing vehicle movements are maintained. The westbound right-turns are prohibited for the 10 second bicycle phase but are permitted during all other times. They must yield to pedestrians crossing during the westbound through phase. These operations allow for adequate capacity for the westbound right movement.

Table 5. Intersection LOS—Stevens Creek Boulevard & R85 NB

Option	AM	PM
Existing Condition	C (32.5)	C (34.4)
Option 3 (Exclusive Bike Phase)	C (34.1)	D (35.3)

MCCLELLAN ROAD

As noted previously the intersection operations for McClellan Road at the Bubb Road and Stelling Road intersections included consideration of two design options for protected bike lanes: Design Option A – Two-way PBL, and Design Option B – Unidirectional PBLs on either side of the street. The cross-sections for Options A and B are shown in Figures 6 and 7. Traffic operations for these alternatives, as well as existing conditions, were analyzed using traffic data provided by the City of Cupertino. The results of the analyses are summarized in Tables 6 and 7. The intersection of McClellan Road and De Anza Boulevard presents unique operational and geometric challenges. The analysis of this intersection is summarized in a separate section that follows.

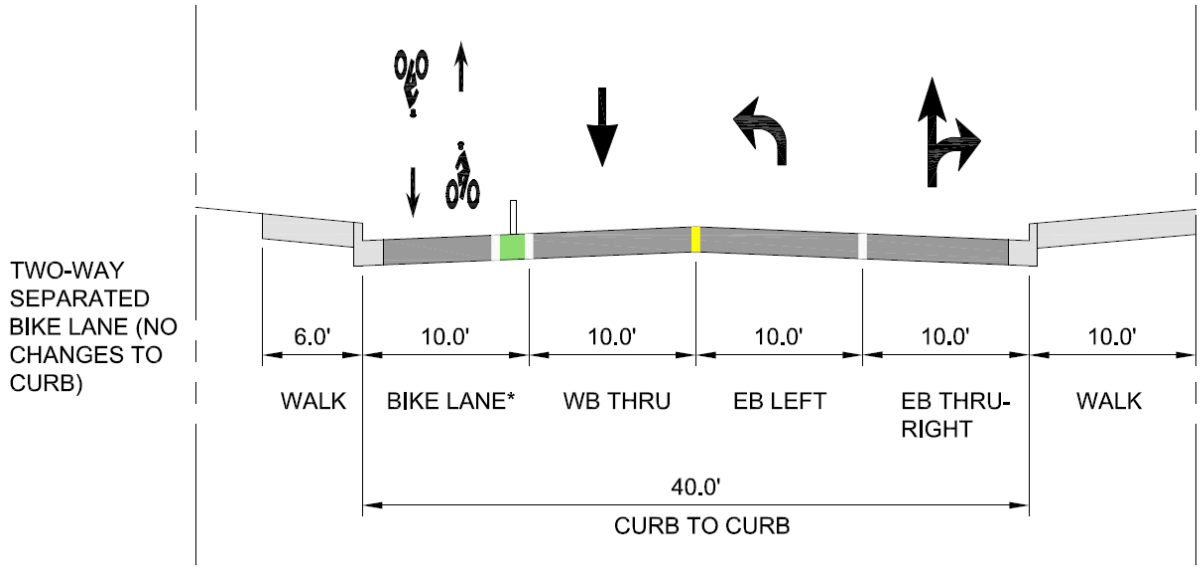


Figure 6. Proposed Cross-Section Option A; McClellan Road West of Bubb Road

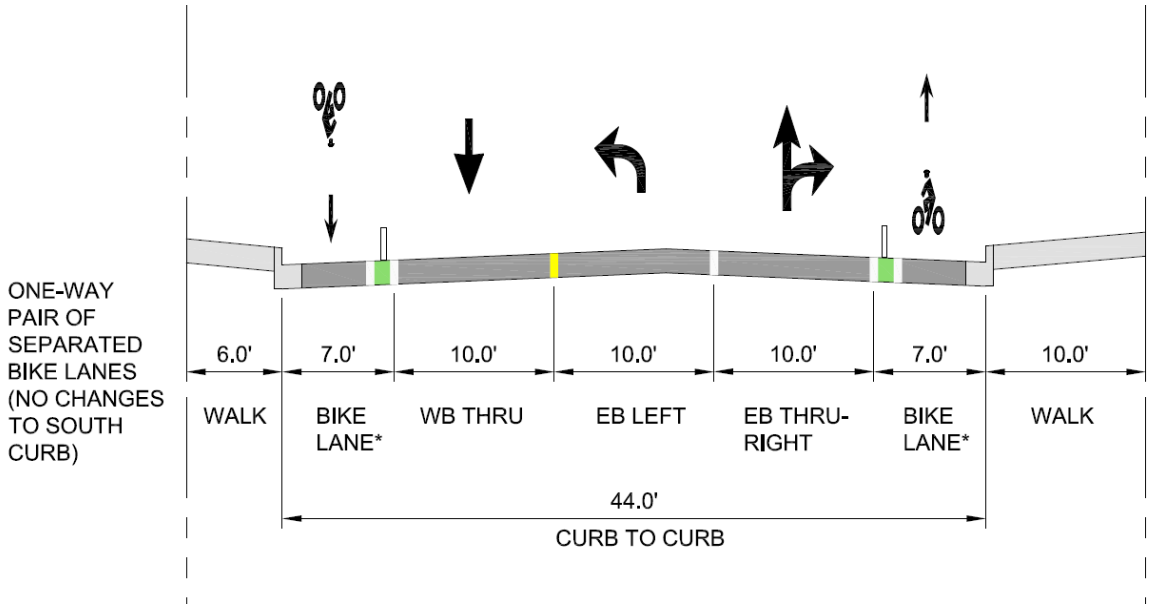


Figure 7. Proposed Cross-Section Option B; McClellan Road West of Bubb Road

Table 6. McClellan Road & Bubb Road Intersection Operations; Intersection LOS and Delay based on Synchro Analysis Software

Alternative	Bike Lane Option	Bike Phasing	Right Turn on Red	AM Intersection LOS and Delay (seconds)	PM Intersection LOS and Delay (seconds)
Existing	**-**	-	All Permitted	D (35.4)	D (36.7)
Existing Optimized	**-**	-	All Permitted	C (26.9)	C (30.8)
Option A	**Two-way PBL**	Exclusive Bike Phase	Eastbound Right / Northbound Right Permitted	D (47.5)	D (41.8)
Option B	**Unidirectional PBLs**	Exclusive Bike Phase	Prohibited	D (48.0)	D (45.1)

Table 7. McClellan Road & Stelling Road Intersection Operations; Intersection LOS and Delay based on Synchro Analysis Model

Alternative	Bike Lane Option	Bike Phasing	Right Turn on Red	AM Intersection LOS and Delay (seconds)	PM Intersection LOS and Delay (seconds)
Existing	**-**	-	All Permitted	C (27.4)	C (28.0)
Existing Optimized	**-**	-	All Permitted	C (23.3)	C (24.1)
Option A	**Two-way PBL**	Concurrent Separated Bike Phase	Eastbound Right / Northbound Right Permitted	C (23.8)	C (24.8)
Option B	**Directional PBL**	No Bike Phase	Prohibited	C (23.5)	C (24.4)

Assumptions and operating parameters for the Alternatives are summarized below:

EXISTING

The existing signals are running actuated uncoordinated with long maximum green times for a maximum cycle length of 170 seconds at Bubb Road and 200 seconds at Stelling Road. Given the existing traffic volumes, the signals serve each movement/phase until there is a sufficient gap in traffic (or it hits its maximum time) and then switches to the next phase. This causes long delays as the signals waits for these gaps.

EXISTING OPTIMIZED

The maximum green times were decreased to force the signal to change prior to it gapping out, which has the effect of reducing the overall intersection delay. The maximum cycle length was reduced to 80 seconds at Bubb Road and 90 seconds at Stelling Road.

OPTION A: TWO-WAY PBL

Bubb Road--Exclusive Bike Phase

- A 15-second exclusive bike phase is provided before the EB/WB left turn movements. WB and SB Right Turns on Red (RTOR) are prohibited since they cross the PBL.
- The 15-second exclusive bike phase causes an additional 20.6 (AM Peak) and 10.0 (PM Peak) seconds of overall intersection delay compared to the Existing Optimized conditions.

Stelling Road-- Concurrent Separated Bike Phase

- Bikes are served with the EB/WB through movements. WB rights are prohibited during this phase and are served with the SB left turn phase. WB and SB RTORs are prohibited since they cross the PBL.
- Overall intersection operations are maintained in Option A compared to the Existing Optimized conditions. The WB right-turn movement, which is most affected by the changes in Option A, changes from LOS B in Existing Optimized to LOS C in Option A which is considered acceptable for traffic operations.

OPTION B: DIRECTIONAL PBL

BUBB ROAD

- A 15-second exclusive bike phase is provided before the EB/WB left turning movements. RTOR are prohibited for all movements since they cross the PBL.
- Option B operates the same as Option A at Bubb Road with the exception of no RTOR. Adding the no RTORs causes an additional 0.5 (AM Peak) and 3.3 (PM Peak) seconds of overall intersection delay in Option B compared to Option A.

STELLING ROAD

- No separate bike phase is needed because the right turn volumes are below the threshold of 150 vehicles per hour as specified in Figure 1. Bikes are served with the EB/WB through movements.
- Option B operates the same as the Existing Optimized conditions at Stelling Road with the exception of no RTOR. Adding the no RTOR causes an additional 0.2 (AM Peak) and 0.3 (PM Peak) seconds of overall intersection delay in Option B compared to Existing Optimized Conditions.

MCCLELLAN ROAD & DE ANZA BOULEVARD

The McClellan Road & De Anza Boulevard intersection was analyzed for a proposed revised geometry that re-establishes the historic off-set geometry. Intersection signal phasing with no specific accommodations for bicycles was tested as well as two options that provide a time separated phases for the eastbound bicycle and eastbound

right turning vehicles. A time separated phase was not tested for the westbound bicycle/right turn movement because the right turning volume does not meet the threshold of 150 vehicles per hour. The proposed geometry is shown in Figure 8.

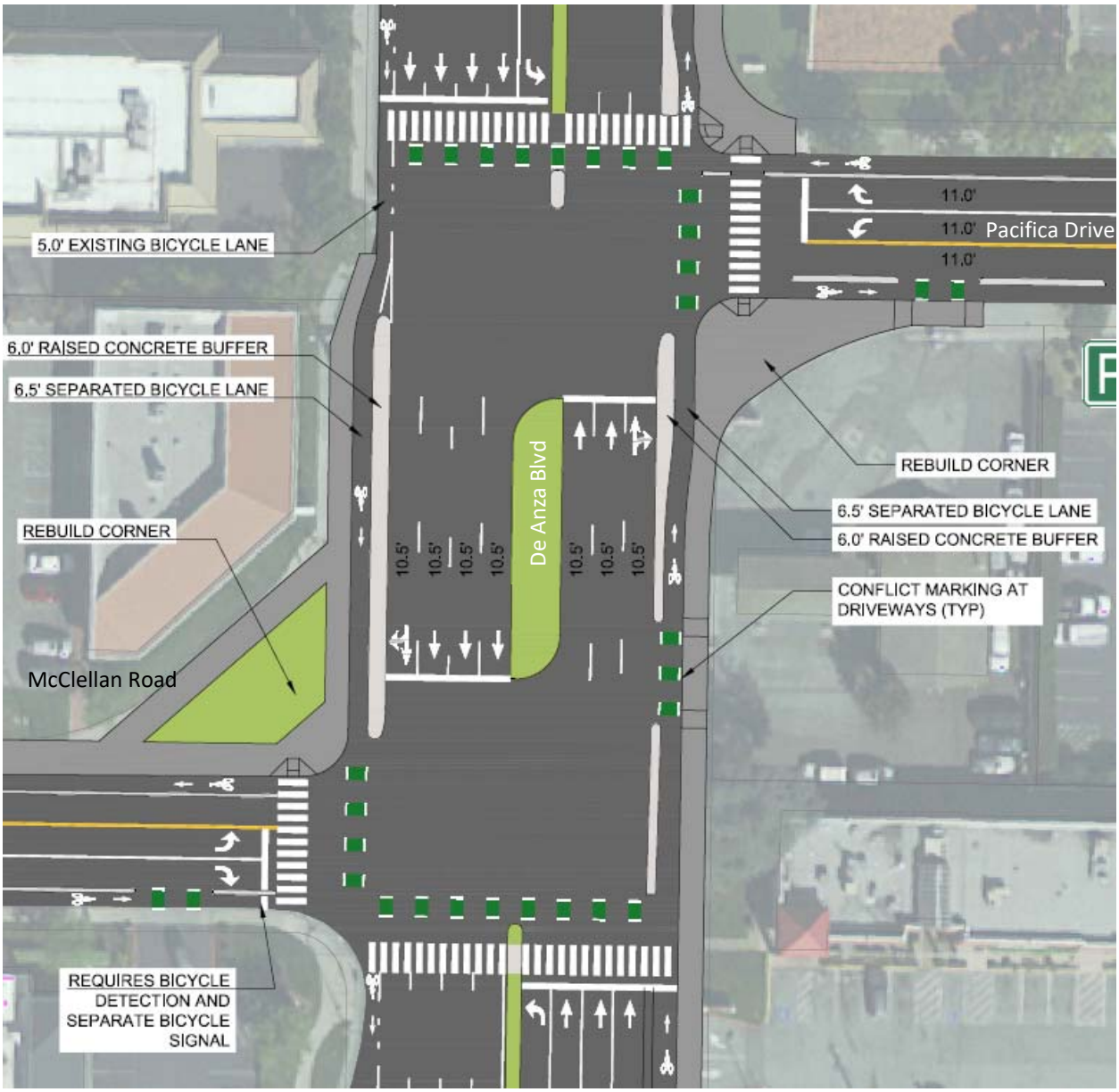


Figure 8. Proposed Geometric Design; McClellan Boulevard/Pacifica Drive/De Anza Boulevard

The proposed intersection geometry with revised signal phasing was analyzed for LOS as well as queue lengths. The results are summarized in Tables 8 and 9.

For the base option (No Bike Option) the Synchro analysis used was developed by a previous study and was provided by the City of Cupertino. Several options for signal phasing were developed and tested for LOS and queue length. The goal was to find an option that would provide an overall intersection LOS of D or better and result in 95% queue lengths that don't exceed the storage length available. Option 1 and Option 2 both provide a

separate phase for EB bikes on McClellan Road during the EB left-turn movement while right-turns from McClellan Road overlap with the NB to WB left-turn movement. In Option 1, the EB right-turns are prohibited from turning right on red at all times. To reduce delay for the EB right-turns in Option 2 we assumed that EB right-turns would be allowed to make a right-turn on red arrow during the N/S phase. This will require use of a special blank-out regulatory sign to permit right-turns on red arrow that would activate during the N-S phase. For the PM peak hour, we evaluated a 140 second cycle length (Option 2A) and a 120 second cycle length (Option 2B). Figure 9 illustrates the proposed phasing for Options 1 and 2. The analysis concluded that signal phasing Option 2B with a 120 second cycle length performed best within these parameters.

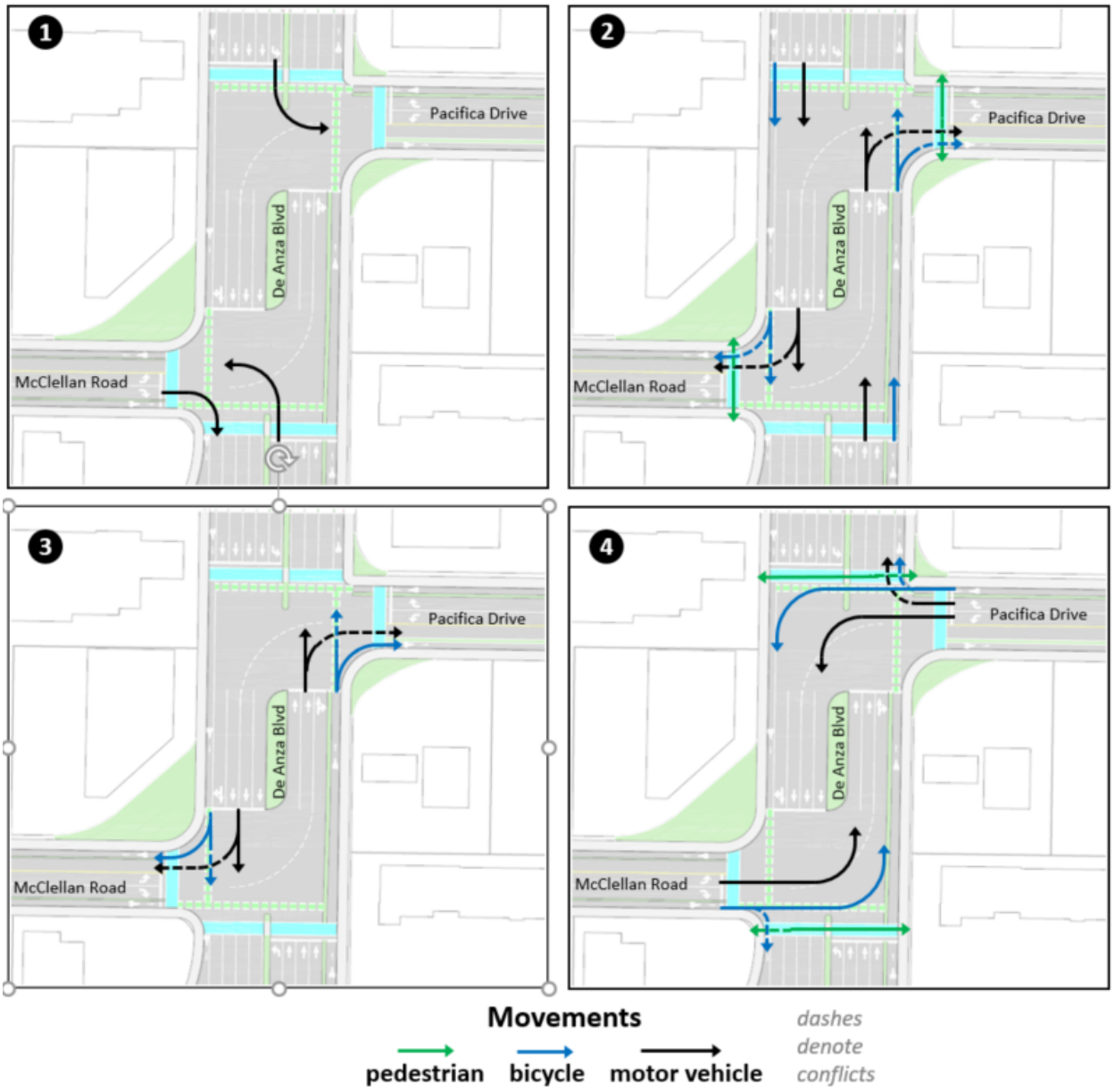


Figure 9. Proposed Time Separated eastbound bicycle phase; McClellan Boulevard/Pacifica Drive/De Anza Boulevard

The results of the queue length analysis indicate that the expected queues for Option 2 will be acceptable at all times during the AM peak hour with a few locations where the 95% queue exceeds the available storage length during the PM peak hour. The locations of concern are NB lefts where the available storage length is 370 feet and the 95% queue is 467 feet, and EB where the available queue space to Felton Way is 400 feet and the 95% queue for EB right-turns is 448 feet. The traffic impact of a queue exceeding the storage length at either of these locations would be relatively minor. For EB McClellan the queue could extend back to Felton Way and create difficulty for drivers turning left in to, or out of, Felton Way. However, this event would likely occur only once on average during the PM peak hour, and the duration would be short. Similarly, the queue for NB left turns on De Anza is expected to exceed the available left turn storage once or twice per hour during the PM peak. The impact of the left-turn queue extending to the through lane at this location would be minor since there are three through lanes on De Anza and ample room for through vehicles to maneuver past the left-turn queue. Reestablishing the offset geometry would result in an internal storage length of approximately 200 feet along De Anza Blvd to be used by the eastbound and westbound left-turning vehicles and northbound and southbound vehicles. Given the amount of green time for these movements with the 120 second cycle length, the 200 feet provides adequate room for these vehicles to store.

These findings suggest that the off-set intersection design is operationally feasible and provides opportunities for improving safety and access for both pedestrians and bicyclists with only minor trade-offs in performance for motor vehicles. We recommend carrying this design option forward for further refinement in the design process.

Table 8. Overall Intersection LOS (delay) and Queue Length Summary

Option	AM Peak					PM Peak				
	Cycle Length (sec)	Intersection LOS and Delay (seconds)		95th Percentile Queue (feet)		Cycle Length (sec)	Intersection LOS and Delay (seconds)		95th Percentile Queue (feet)	
		De Anza & Pacifica	De Anza & McClellan	EBL	EBR		De Anza & Pacifica	De Anza & McClellan	EBL	EBR
No Bikes Option	120	C (23.1)	D (36.1)	117	57	140	C (32.6)	C (25.5)	173	372
Option 1	120	B (15.0)	C (28.9)	254	161	140	E (69.3)	E (56.5)	411	740
Option 2A	120-	B (15.0) -	C (28.8) -	254 -	106 -	140	D (43.1)	C (34.1)	264	513
Option 2B						120	D (54.3)	D (40.6)	320	448

Table 9. Available Storage Length versus PM Queue Length

Movement	Storage Length (feet)	95th Percentile Queue (feet)	
		Option 2 (120 sec.)	No Bikes Option
Northbound Left	370	467	532
Southbound Left	230	182	209
Eastbound	400 (to Felton Way)	320 (EB left) / 448 (EB right)	173 (EB left) / 372 (EB right)
Westbound	780 (to Torre Ave)	423 (WB left)	202 (WB left)
Northbound Internal	200	85	73
Southbound Internal	200	73	65

BICYCLE SIGNAL INFRASTRUCTURE REQUIREMENTS

In order to comply with national and California MUTCD guidelines, implementing separate bike phases at recommended intersections along the Stevens Creek and McClellan Boulevard corridors will require some modifications to signal hardware that are essential elements of the design. These changes include:

- Right-turn signal displays
- Bike signal displays
- 'No Turn on Red' blank out signs
- Detection for right-turn lanes and bike lanes
- Pole and mast arm modifications as needed to support new signal displays

Figure 10 depicts the general requirements for traffic and bicycle signals displays on Stevens Creek Boulevard at the WB approach to Stelling Road that would be needed to support the implementation of a Protected Bike Lane.

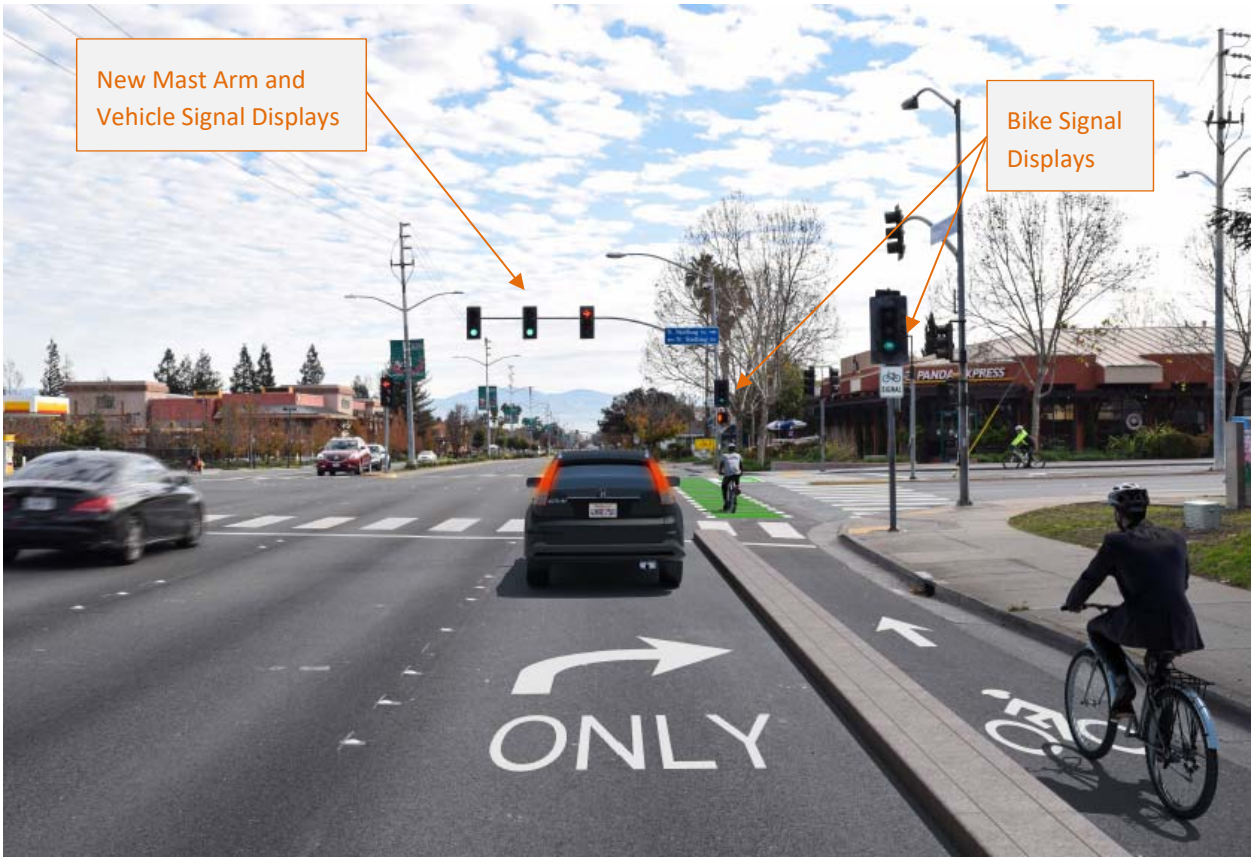
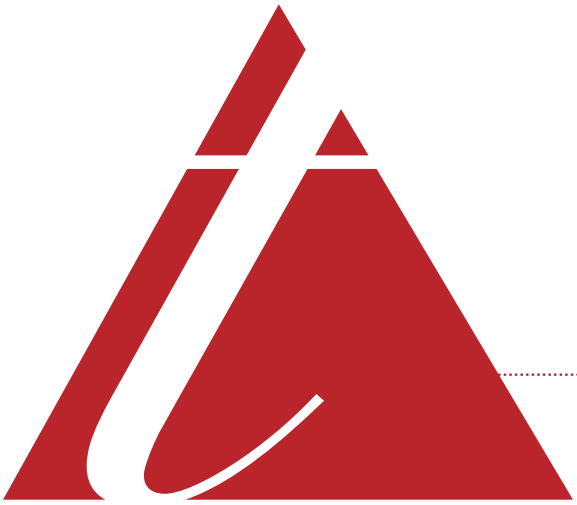


Figure 10. Rendering of a Protected Bike Lane with Bike Signal; WB Stevens Creek Boulevard at Stelling Road



Implementation Plan Memorandum

TooleDesignGroup

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To: David Stillman

From: Brooke DuBose, Robert Burchfield, and Craig Schoenberg

Date: May 23, 2017

Subject: Cupertino Class IV Bikeway Design – Recommendations for Implementation Phasing

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Implementation Plan Recommendations for the Stevens Creek Boulevard and McClellan Road Bikeway Designs – DRAFT

Toole Design Group offers the following recommendations for the phased implementation of the Stevens Creek Boulevard and McClellan Road Class IV Bikeway Designs. It is understood that funding and resource constraints require that the project is constructed in separate phases. The length and complexity of the proposed segment phases were sized with cost feasibility as a primary consideration.

Stevens Creek Boulevard

TDG recommends implementing the Steven Creek Class IV Bikeway in the following three phases:

- Phase 1: Tantau Avenue to Torre Avenue (1.2 miles)
- Phase 2: Torre Avenue to Mary Avenue (1.0 miles)
- Phase 3: Mary Avenue to Foothill Boulevard (1.3 miles)

Each proposed phase is described below, and includes a recommended construction sequence.

Phase 1: Tantau Avenue to Torre Avenue

The recommended first phase of construction of the Class IV Bikeway on Stevens Creek Boulevard should include the segment between Tantau Avenue and Torre Avenue. Minor modifications to existing signal infrastructure will be required at five approaches on three separate intersections (Tantau Avenue, Finch Avenue, and Wolfe Road).

It is expected that only minimal restriping will be necessary west of Perimeter Road, where the existing lanes have already been narrowed to accommodate the buffered bike lane. To the east of Perimeter Road, more extensive restriping will be required to provide sufficient space for the new buffer.

There are existing slip lanes (and pedestrian pork chop islands) on the north side of the corridor at the Wolfe Road intersection. The concept design removes these islands and rebuilds the corner. It may be possible to defer this civil work until a later phase of the project, by simply installing the bike lane buffer and disallowing right turning vehicles from entering the slip lane. Further evaluation is necessary to ensure large vehicles can make the turn around the existing islands.

The proposed floating bus stop configuration for the westbound stop, located just west of the Wolfe Road intersection, is the other major civil construction item in this phase.

It is recommended that the improvements are carried through (to the west of) the Torre Ave intersection, and that the transition to the existing buffered bike lanes occurs at this point.

Proposed Phase 1 Construction Sequence

1. Civil construction of floating bus stop island west of Wolfe Road, and optional reconstruction of north side corners at Wolfe Road.
2. Signal modifications; cover new right-turn signals and bicycle signals until turn-on.
3. Remove conflicting pavement markings and install new markings.
   3.1. Place temporary flex posts on intersection approaches with new right turn lanes.
   3.2. Uncover and turn on new signal displays and implement new signal phasing.
4. Install precast concrete barrier.

Phase 2: Torre Avenue to Mary Avenue

The proposed Phase 2 segment includes the segment from Torre Avenue to Mary Avenue. This segment includes major modifications to existing signal infrastructure at the Mary Avenue, Stelling Road, and westbound Bandley Drive intersections. Minor signal improvements are needed at the De Anza Boulevard intersection.

Minimal restriping of lane lines will be needed in this segment because the existing lanes have already been narrowed to accommodate the buffered bike lane.

Civil construction will be required to modify bus stops at the following four locations:

- Westbound, east of Saich Way;
- Westbound, west of De Anaza Boulevard;
- Westbound, west of Torre Avenue; and
- Eastbound, east of Mary Avenue.

Proposed Phase 2 Construction Sequence

1. Construct bus stop modifications at four locations.
2. Signal modifications; cover new right-turn signals and bicycle signals until turn-on.
3. Remove conflicting pavement markings and install new markings.
   3.1. Place temporary flex posts in the buffer area on intersection approaches where new right-turn lanes are installed.
   3.2. Uncover and turn on new signal displays and implement new signal phasing.
4. Install precast concrete barrier.

Phase 3: Mary Avenue to Foothill Boulevard

The final phase is 1.3 miles in length and includes the segment from Mary Avenue to Foothill Boulevard. Major civil work will be required at the SR 85 interchange northbound on-ramp to reconstruct the northeast corner and island, and to construct a shared sidewalk level path. Major signal modifications will also be needed at this intersection. This work will require additional coordination and permitting from Caltrans. Civil work will be required for modifications to medians and installation of buffer medians that exceed the width of precast dimensions in some locations.

Major signal modifications are needed at the eastbound approach to Bubb Road.

Major pavement marking removal and installation are needed in the segment from Peninsula Avenue to Orange Avenue and east of Foothill Boulevard.

Proposed Phase 3 Construction Sequence

1. Civil construction of SR 85 improvements.

1.1. Temporary traffic control for SR 85 NB on-ramp.
1.2. Signal modifications for SR 85 northbound on-ramp; cover new right-turn signals and bicycle signal until turn-on.

2. Remove conflicting pavement markings and install new markings.
   2.1. Place temporary flex posts on intersection approaches with new right-turn lanes.
   2.2. Uncover and turn on new signal displays and implement new signal phasing.
3. Civil construction to modify medians and install wide buffer medians for protected bike lanes.
   3.1. Install precast concrete barrier.

Stevens Creek Boulevard Summary

Phase 1: Tantau Avenue to Torre Avenue (1.2 miles)

- Install precast concrete buffer
- Minor signal modifications required at five intersection approaches
- Civil work required on north side of corridor at Wolfe Road
- Install pavement markings (Perimeter Road to Tantau Avenue has existing bike lanes; travel lanes have not been narrowed to provide a bike lane buffer)
- Provide construction traffic control (plan for high level of effort at Tantau Avenue and Wolfe Road)

Phase 2: Torre Avenue to Mary Avenue (1.0 miles)

- Install precast concrete buffer
- Minor signal modifications required at two intersection approaches
- Major signal modifications required at five intersection approaches
- Install pavement markings
- Civil work required at floating bus stops
- Provide construction traffic control (plan for high level of effort at De Anza Boulevard and Stelling Road)

Phase 3: Mary Avenue to Foothill Boulevard (1.3 miles)

- Install precast concrete buffer
- Major signal modifications required at SR 85 interchange and eastbound approach to Bubb Road
- Civil work required at SR 85 interchange and median/buffer locations
- SR 85 interchange requires additional permitting with Caltrans
- Install pavement markings
- Provide construction traffic control (plan for high level of effort at SR 85 interchange)

McClellan Road

TDG recommends implementing the McClellan Road Class IV Bikeway in the following three phases:

- Phase 1: Stelling Road to Byrne Avenue (0.9 miles)
- Phase 2: Torre Avenue to Stelling Road (0.7 miles)
- Phase 3: McClellan Road & De Anza Boulevard Intersection Modification

Each proposed phase is described below, and includes a recommended construction sequence.

Phase 1: Stelling Road to Byrne Avenue

Phase 1 includes improvements to the segment from Stelling Road to Byrne Avenue. The primary improvements include a precast concrete barrier, a reconstructed or new sidewalk and curb along most of the north side the Phase 1

segment, reconstructed corners with neck-downs (four corners total), new bicycle signal displays for westbound Bubb Road, and pavement markings.

Proposed Phase 1 Construction Sequence

1. Construct new curb, gutter, and sidewalk on the north side.
2. Reconstruct, or construct new, sidewalk on the north side.
3. Reconstruct corners with proposed neck-downs.
4. Install new bike signal displays for westbound Bubb Road; cover displays until turn-on.
5. Remove conflicting markings and install new pavement markings.
6. Turn on new bike signals and implement new traffic signal phasing.
7. Install precast concrete barrier.

Phase 2: Torre Avenue to Stelling Road

Phase 2 includes improvements to the segment from Torre Avenue to Stelling Road. The primary improvements consist of a precast concrete barrier, a reconstructed sidewalk on the north side between Bonny Drive and Stelling Road, reconstructed corners with neck-downs (12 corners total), and pavement markings.

Proposed Phase 2 Construction Sequence

8. Reconstruct north side sidewalk.
9. Reconstruct corners with proposed neck-downs.
10. Remove conflicting markings and install new pavement markings.
11. Install precast concrete barrier.

Phase 3: McClellan Road & De Anza Boulevard Intersection Modification

The final phase of the McClellan Road Class IV Bikeway includes modification to the McClellan Road and De Anza Boulevard intersection to recreate the historic off-set intersection spacing between McClellan Boulevard and Pacifica Drive. These modifications consist primarily of civil work to reconstruct the SE and SW corners, and installing new traffic signal poles, mast arms, and signal displays - including bike signals - for the realigned eastbound and westbound approaches.

Proposed Phase 3 Construction Sequence

1. Install new traffic signal poles, mast arms, and displays for eastbound and westbound approaches along with new foundations and concrete work as necessary. Cover signal displays until turn-on.
2. Place temporary traffic barriers to create new curb lines and traffic close pattern, between Pacifica Drive and McClellan Road.
3. Install temporary walk signal displays for north-south pedestrian movements. Demolish the median nose on the south leg and establish a new crosswalk location.
4. Turn on new signals for eastbound and westbound approaches.
5. Remove existing signal hardware for eastbound and westbound approaches.
6. Remove conflicting markings and install new pavement markings.
7. Reconstruct SE and SW corners and adjacent curb. Construct or place bike barrier.
8. Install new pedestrian signal poles and displays.

McClellan Road Summary

Phase 1: Stelling Road to Byrne Avenue (0.9 miles)

- Install precast concrete buffer
- Construct new curb, gutter, and sidewalk (approx. 4,000 feet)
- Corner reconstruction with neckdowns (4 total)

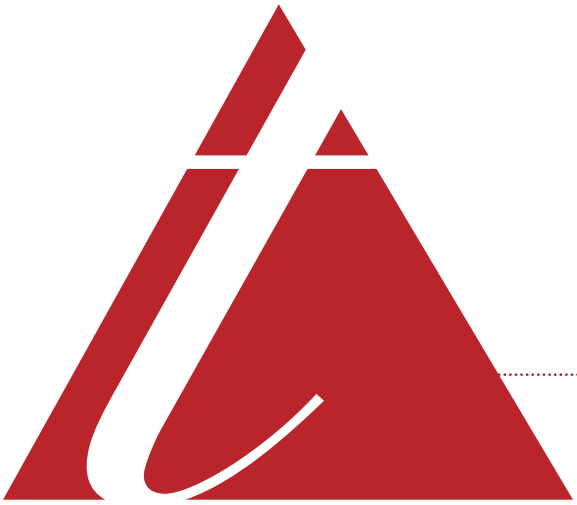
- Install new bicycle signal displays for the westbound approach to Bubb Road
- Install pavement markings
- Provide construction traffic control

Phase 2: Torre Avenue to Stelling Road (0.7 miles)

- Install precast concrete buffer
- Construct new, or reconstruct, concrete sidewalk (approx. 800 feet)
- Provide construction traffic control
- Reconstruct corners with neckdowns (12 total)
- Install pavement markings

Phase 3: McClellan Road & De Anza Boulevard Intersection Modification

- Reconstruct corners and adjacent curb lines in the SE and SW corners
- Install new signal poles, mast arms, and signal displays for the eastbound and westbound approaches
- Install pavement markings
- Provide construction traffic control



Design Memorandum

Toole Design Group

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Date: May 23, 2017

To: Julie Chiu, Associate Civil Engineer, City of Cupertino
David Stillman, Project Manager, City of Cupertino

From: Brooke DuBose, AICP
Robert Burchfield, PE
Craig Schoenberg, PE

Re: Stevens Creek Blvd and McClellan Road Class IV Bikeway Design: Concept Design Memorandum

MEMORANDUM

This memorandum describes the information contained within the Concept Design plan view drawings for both the Stevens Creek Boulevard and McClellan Road Class IV Bikeway Design projects for the City of Cupertino. Assumptions and items not included in the design are also detailed.

Figure 1 Class IV Bikeway Corridors (highlighted in yellow)

General Assumptions

The Concept Design is drawn on GIS information provided by the City of Cupertino. In some cases, the actual curb-to-curb width of the roadway may not match what is provided from GIS information. Spot measurements in the field were taken at locations where the roadway appeared to pinch. It is expected that the next project phase will conduct a detailed corridor survey to determine curb-to-curb widths.

Pavement markings are schematic in nature. Pavement markings denote the function of each lane of traffic, but do not represent actual location or frequency that they may be required.

Locations where separate signal phasing is required for the Class IV bicycle lane are identified on the plan sheets. However, signing, pavement marking and signal detection locations are not identified. The traffic analysis memorandum details the signal analysis conducted for this project, including recommended signal phasing and other requirements.

Stevens Creek Boulevard Corridor

At either end of the corridor (Foothill Boulevard and Tantau Avenue), the extents of the concept design encompasses the entire intersection. In general, bicycle facility treatments that provide for safe and visible connections to existing bicycle lanes on all intersection streets are shown on the concept plans (e.g. two stage turn queue boxes).

Motor vehicle lane widths are 10.5 feet minimum for a through-lane, and 10 feet minimum for a turn-lane. The preferred width of the separated bicycle lanes is 7 feet (includes existing gutter pan, but does not include proposed buffer). There are several locations where the preferred width cannot be met. A minimum width of 6 feet should be used in these instances. The buffer is identified as a pre-cast concrete curb median, and varies in width depending on the location (1.5-2 feet). There are several locations where more width is available. In these instances a cast-in-place concrete curb median may be more appropriate.

In general, the existing outside curbs along the corridor are not changed. Some curb will need to be replaced in the vicinity of sidewalk level bicycle lanes, including floating bus stop locations. Throughout the corridor, it is anticipated that only the outside vehicular lane requires restriping, but this should be confirmed in future design phases, when more detailed survey information is available; however, there are several known pinch points (e.g. between Portal Ave and Wolfe Road). Additional restriping may be required at pinch points.

The bus stop treatments reflect design coordination with Valley Transportation Authority. For more detail on specific bus stop designs, see the Bus Stop Technical Memorandum, also provided with this submittal.

McClellan Road Corridor

Motor vehicle lane widths are 10 feet minimum for all lanes. The preferred width of the separated bicycle lane is 7 feet (includes existing gutter pan, but does not include proposed buffer). There are numerous locations where the preferred width cannot be met due to the constrained right-of-way. A minimum width of 5.5 feet should be used. The buffer is identified as a precast concrete curb median, and varies in width depending on the location (1.5-2 feet). There are several locations with more width available, where a cast-in-place concrete curb median may be more appropriate.

Between Byrne and Imperial Road, on the west end of the project limits, the westbound bicycle lane is shown at sidewalk level. This is to increase visibility of cyclists along this section that has many residential driveways. The proposed roadway section assumes the City of Cupertino will acquire

additional right-of-way on the Northside of the road to allow for a consistent 60-foot section. In other constrained right-of-way locations, it is anticipated that sidewalk will need to be reconstructed (locations identified on the concept plans)

Existing bicycle facilities on intersecting roadways are shown on the concept plans, and bicycle facility treatments, including two-stage queue boxes, that allow for safe connections are identified.

The plans show a concept at the intersection of McClellan Road, Pacifica Drive and De Anza Boulevard that creates an offset intersection, allowing for a bicycle and pedestrian crossing on the Southside of De Anza. This substantially improves walking and bicycling connections through this intersection, but requires major modifications of the corner radii of the intersection and traffic signal hardware.

At Torre Avenue, the Class IV Bikeway transitions to a Class III Bike Route (to the east) and Class III Bike Boulevard (to the north). The concept design for the Class III facilities are contained in a separate plan view document, and identifies general wayfinding locations, pavement markings, speed and volume management treatments, and intersection crossing improvements.

Bus Stop Technical Memorandum and Appendix A

TooleDesignGroup

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Date: May 4, 2017

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David Stillman, Project Manager, City of Cupertino

From: Brooke DuBose, AICP
Craig Schoenberg, PE

Re: Stevens Creek Blvd and McClellan Road Class IV Bikeway Design: Bus Stops

MEMORANDUM

This memorandum summarizes the coordination between Toole Design Group (TDG), the City of Cupertino and Valley Transportation Authority (VTA), regarding the proposed Class IV Bikeway Concept Designs on Stevens Creek Boulevard and McClellan Road, and the existing bus stops along these corridors.

Data Collection

TDG identified existing bus stops along each of the design corridors, and obtained information from VTA describing the existing average daily passenger boardings and alightings, bus routes and peak hour frequency at each bus stop. The majority of the bus stops are located along Stevens Creek Boulevard, with only three stops identified on McClellan Road. An inventory of the stops is included in Appendix A. The stop location and weekday activity along Stevens Creek Boulevard is shown in Figure 1. The three stops on McClellan Road are located at Felton Way (east and westbound) and Stelling Road (eastbound).

In coordination with VTA, TDG revised the existing bus stop inventory to show the bus network restructuring anticipated through the Next Network project (Table 1). Implementation of the Next Network project will result in a higher frequency of buses at specific stops along Stevens Creek Boulevard, but no changes to stops along McClellan Road. The Next Network project will eliminate some stops along the west end of Stevens Creek Boulevard.

Design Recommendations

Based on bus stop frequency, weekday activity, and bus stop location, recommendations were made for bus stop designs that accommodate Class IV Bikeways. At locations where the expected frequency of buses is less than six per hour, the recommended bus stop design is a **shared bus/bicycle space** (Figure 2). This is the existing configuration in many locations along the corridor. At locations where the frequency exceeds six buses per hour, two different design treatments are recommended, depending on

the existing geometry at that location: a **floating, in-lane bus stop** (Figure 3); or a **full bus pullout** (Figure 4).

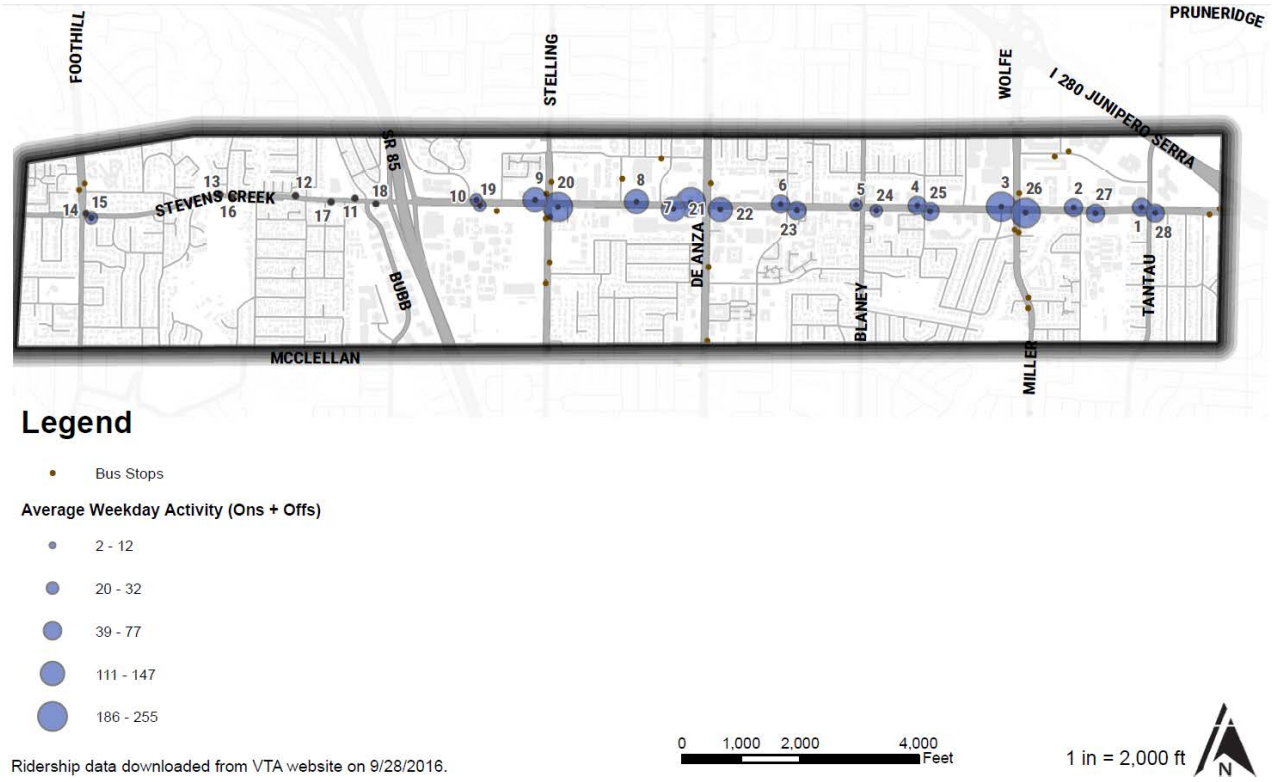


Figure 1 - Average Existing Weekday Bus Activity on Stevens Creek Boulevard

Table 1 - VTA Frequency on Stevens Creek Boulevard & McClellan Road

Route	Existing Bus Frequency (per peak hour)	Next Network Bus Frequency (per peak hour)
23	5	4
25	3	5
51		2
53	2	2
55	2	2
81	3	
323	4	
523		5

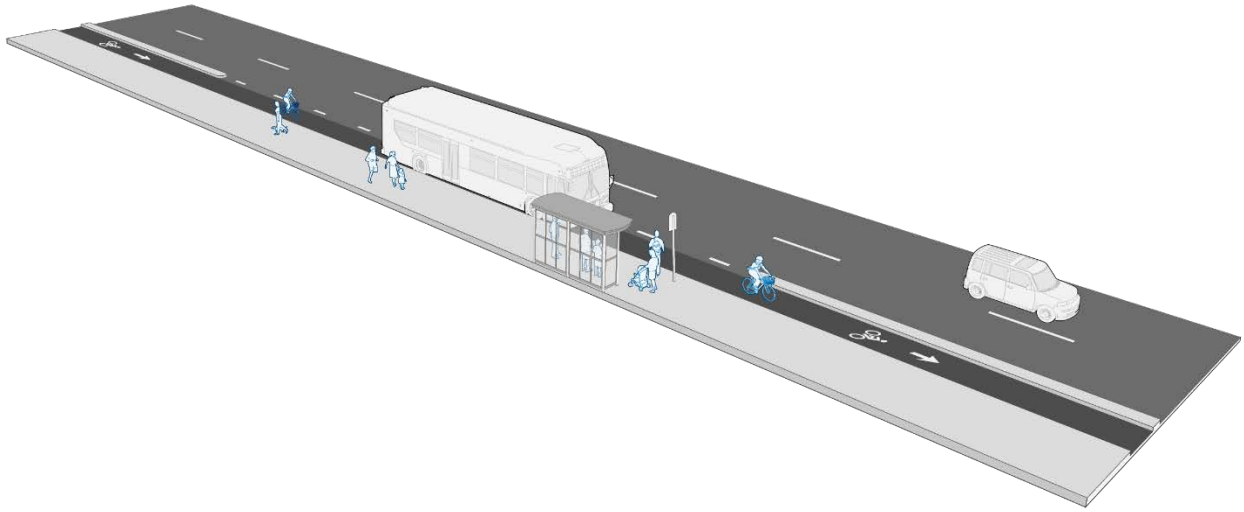


Figure 2 - Shared Bus/Bicycle Space at Existing Bus Stop

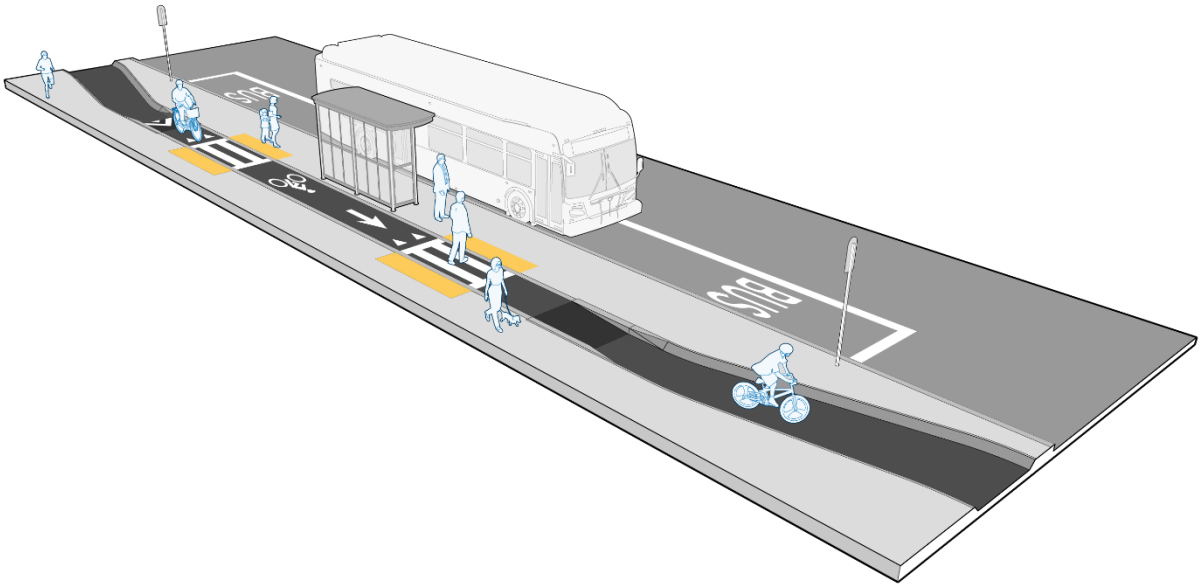


Figure 3 - Floating, In-lane Bus Stop

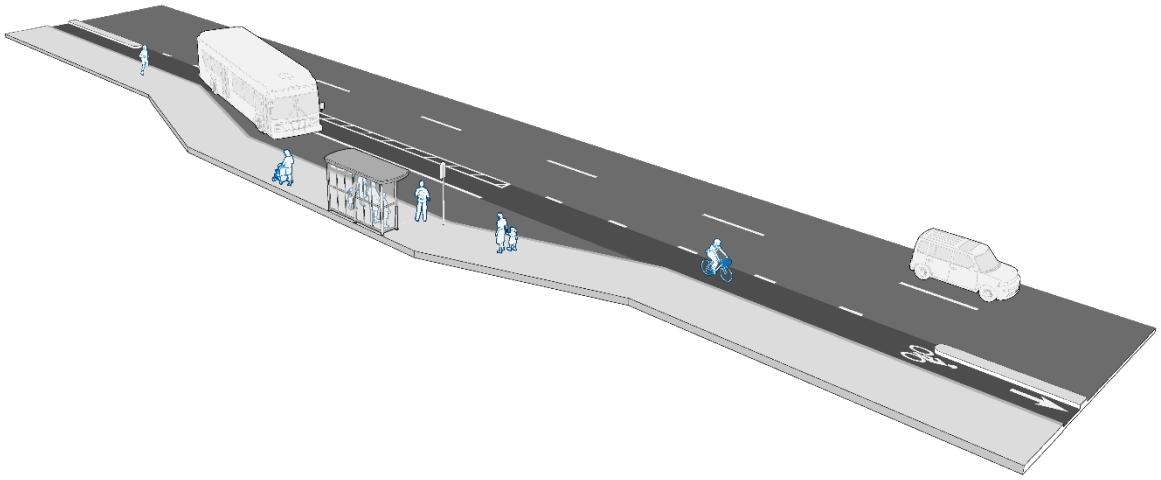


Figure 4 - Full Bus Pullout (Bicycle/Bus Weave)

Table 2 - Bus Stop Recommendation Summary

Bus Stop Type	Location
Floating, In-lane Bus stop	Mary Ave (EB), Saich Way (WB), De Anza Blvd (EB & WB), Wolfe Road (WB)
Full Bus Pullout	Phar Lap Dr (WB), Stelling Road (WB), Torre Ave (EB)
Shared Bus/Bicycle Space	All other locations (21) including 3 stops on McClellan Road

In addition to VTA bus service, private buses and shuttles use existing bus stops along Stevens Creek Boulevard. The data collection and design recommendations above do not include any private buses or shuttles. While observing the corridor, it was noted that private buses and shuttles may have a longer dwell time at bus stops than VTA coaches. Where the dwell time is anticipated to be long, a shared bus/bicycle space (Figure 2) is not recommended. The shared space recommendation assumes that the conflict between buses and bicyclists will occur infrequently, resulting in few occasions when a bicyclist would need to merge into the adjacent motor vehicle travel lane.

The final concept design for Stevens Creek Boulevard and McClellan Road reflects VTA's final comments submitted on February 27, 2017. It is anticipated that future design efforts will continue to coordinate with VTA once more detailed design of each stop location is conducted.

APPENDIX A

Stevens Creek Blvd
VTA Bus Stops

No.	Location	Direction	Routes	Frequency (buses per hour)	Avg Wkday Boarding + Alighting (persons per hour)	Pullout?	Ex Width (incl. BL, Gutter) (feet)	Concept Design Treatment	VTA Comments	TDG Response	Additional Notes
1	just west of Tantau	westbound	23, 53	6	53	Y*	10.1	maintain shared bus/bike lane			
2	just west of Finch	westbound	23, 53	6	46	Y*	11.8	maintain shared bus/bike lane			
3	just west of Wolfe	westbound	23, 523	9	254	N	6	create in-lane bus stop island	Future 523 stop (60' buses). Will need 135' tangent. See VTA Passenger Facilities Standards Coordinate with VTA ETID	The proposed design is an in-lane stop, which would not require tapers.	Appears to be sufficient ROW
4	just west of Portal	westbound	23	4	41	N	7	maintain shared bus/bike lane			
5	just west of Blaney	westbound	23	4	31	N	7.2	maintain shared bus/bike lane			
6	just west of Torre	westbound	23	4	44	Y	8.5	create full bus pullout, bikes at sidewalk level	VTA Line 23 will operate 60' buses in near future (TBD). 60' tangent needed for duckout. See VTA Passenger Facilities Standards	The proposed design is adjusted to provide a 60' taper for the duckout.	Constrained bus stop design suggested with bikes at sidewalk in front of station; shared bike/bus space is alternative design
7	just west of De Anza	westbound	23, 55, 523	11	208	N	8	create in-lane bus stop island	Future 523 stop (60' buses). Coordinate with VTA ETID	The proposed platform length appears to be sufficient for 60' buses.	Appears to be sufficient ROW
8	btw Bandley/Saich	westbound	23, 51, 55	8	116	Y	12.4	create in-lane bus stop island	VTA Line 23 will operate 60' buses in near future (TBD). 60' tangent needed for duckout. See VTA Passenger Facilities Standards	The proposed design is an in-lane stop, which would not require tapers.	Appears to be sufficient ROW
9	just west of Stelling	westbound	51, 55	4	146	Y	18.1	maintain bike/bus weave (add barrier for bike comfort?)			
10	just east of Mary	westbound	51	2	20	N	7.4	relocate stop to far side (shared bus/bike lane)	No service expected in 2018		No ROW impacts anticipated because no changes to curb line needed
11	just west of Peninsula	westbound	51	2	6	N	7.6	maintain shared bus/bike lane			
12	just west of Orange	westbound	51	2	6	Y	13.6	maintain shared bus/bike lane			
13	just west of Phar Lap	westbound	51	2	2	Y	14.9	create full bus pullout (bike/bus weave)	No service expected in 2018		No ROW impacts anticipated because no changes to curb line needed; this stop may be removed in the future, per conversation with VTA
14	just east of Foothill	westbound	51	2	26	N	in right-turn pocket	maintain shared bus/bike lane			
15	just east of Foothill	eastbound	51	2	186	N	8	maintain shared bus/bike lane			
16	just east of Phar Lap	eastbound	51	2	111	Y	14.5	maintain shared bus/bike lane			
17	just east of Pasedena	eastbound	51	2	144	Y	15.9	maintain shared bus/bike lane			
18	just east of Bubb	eastbound	51	2	39	N	7.4	maintain shared bus/bike lane			
19	just east of Mary	eastbound	51, 55	4	31	N	7.7	create in-lane bus stop island	No service expected in 2018		Constrained bus stop design suggested with bikes at sidewalk in front of station; shared bike/bus space is alternative design
20	just east of Stelling	eastbound	25, 51, 55	9	55	Y	13.3	maintain shared bus/bike lane			**This stop is very constrained with existing civil work (ramp) at back of curb and narrow ROW, likely making a full pullout infeasible; an in-lane bus stop island is possible if the driveway within the bus stop zone is closed.**
21	just east of Bandley	eastbound	25, 51, 55	9	249	Y	16.7	maintain shared bus/bike lane			**The ROW appears to be sufficient to upgrade to an in-lane bus island; however, a dedicated right-turn lane is not required upstream, which removes flexibility of de-facto bus lane design (impacts ability to layover in lane); suggest adding a dedicated right-turn lane upstream, or creating a full bus pullout by moving curb**
22	just east of De Anza	eastbound	23, 523	9	77	Y	17.9	create in-lane bus stop island	VTA Line 23 will operate 60' buses in near future (TBD). See VTA Passenger Facilities Standards	The proposed platform length appears to be sufficient for 60' buses.	Appears to be sufficient ROW
23	just east of Torre	eastbound	23	4	39	Y	17.8	maintain bike/bus weave (add barrier for bike comfort?)			No ROW impacts anticipated because no changes to curb line needed
24	just east of Blaney	eastbound	23	4	31	N	7.7	maintain shared bus/bike lane			
25	just east of Portal	eastbound	23	4	55	N	6.5	maintain shared bus/bike lane			
26	just east of Miller	eastbound	23, 53, 523	11	250	Y	11	create full bus pullout (bike/bus weave)	VTA Line 523 will operate 60' buses. 135' tangent needed for duckout. See VTA Passenger Facilities Standards. Coordinate construction with VTA ETID	The proposed design does not recommend changes to the existing bus stop duckout, or curb line.	**Likely not sufficient ROW to create a full pullout here; an in-lane bus island is a challenge due to existing driveways within the stop length**
27	just east of Finch	eastbound	23, 53	6	77	N	7.1	maintain shared bus/bike lane			
28	just east of Tantau	eastbound	23	4	39	N	7.2	maintain shared bus/bike lane			

McClellan Road
VTA Bus Stops

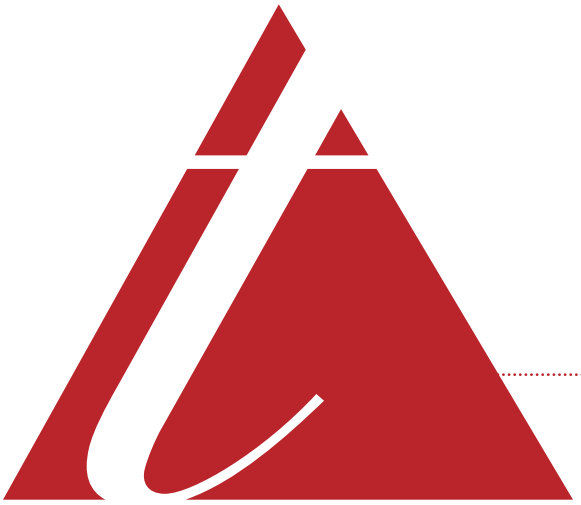
No.	Location	Direction	Routes	Frequency (buses per hour)	Avg Wkday Boarding + Alighting (persons per hour)	Pullout?	Ex Width (incl. BL, Gutter) (feet)	Concept Design Treatment	VTA Comments	TDG Response	Additional Notes
1	just west of Felton	westbound	25, 53, 55	6	unknown	N		maintain shared bus/bike lane			
2	just east of Felton	eastbound	25, 53, 55	6	unknown	N		maintain shared bus/bike lane			
3	just east of Stelling	eastbound	25, 53, 55	6	unknown	N		maintain shared bus/bike lane			

VTA Next Network

Route	Frequency (per hour)	
23	4	
25	5	peak hour
51	2	peak hour
53	2	
55	2	
523	5	

Assumptions
Route 523 uses the same stops currently used by Route 323.
Route 25 and 55 serve both eastbound stops on Stevens Creek Blvd, when turning back.
Route 51 turns back at Stelling, serving all stops between Hwy 85 and Stelling

*Cupertino Main Street redeveloped this stop; no buffer on existing bike lane
ETID Engineering and Transportation Infrastructure Development division of VTA



Stevens Creek Boulevard Class IV Bikeway Concept Design

CITY OF CUPERTINO
CLASS IV BIKEWAY - STEVENS CREEK BOULEVARD CORRIDOR
PREFERRED CONCEPT DESIGN

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LOCATION MAP
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STEVENS CREEK BLVD
CLASS IV BIKEWAY DESIGN
CITY OF CUPERTINO, CA

0 20 40 80

PREPARED: CS
CHECKED: RB
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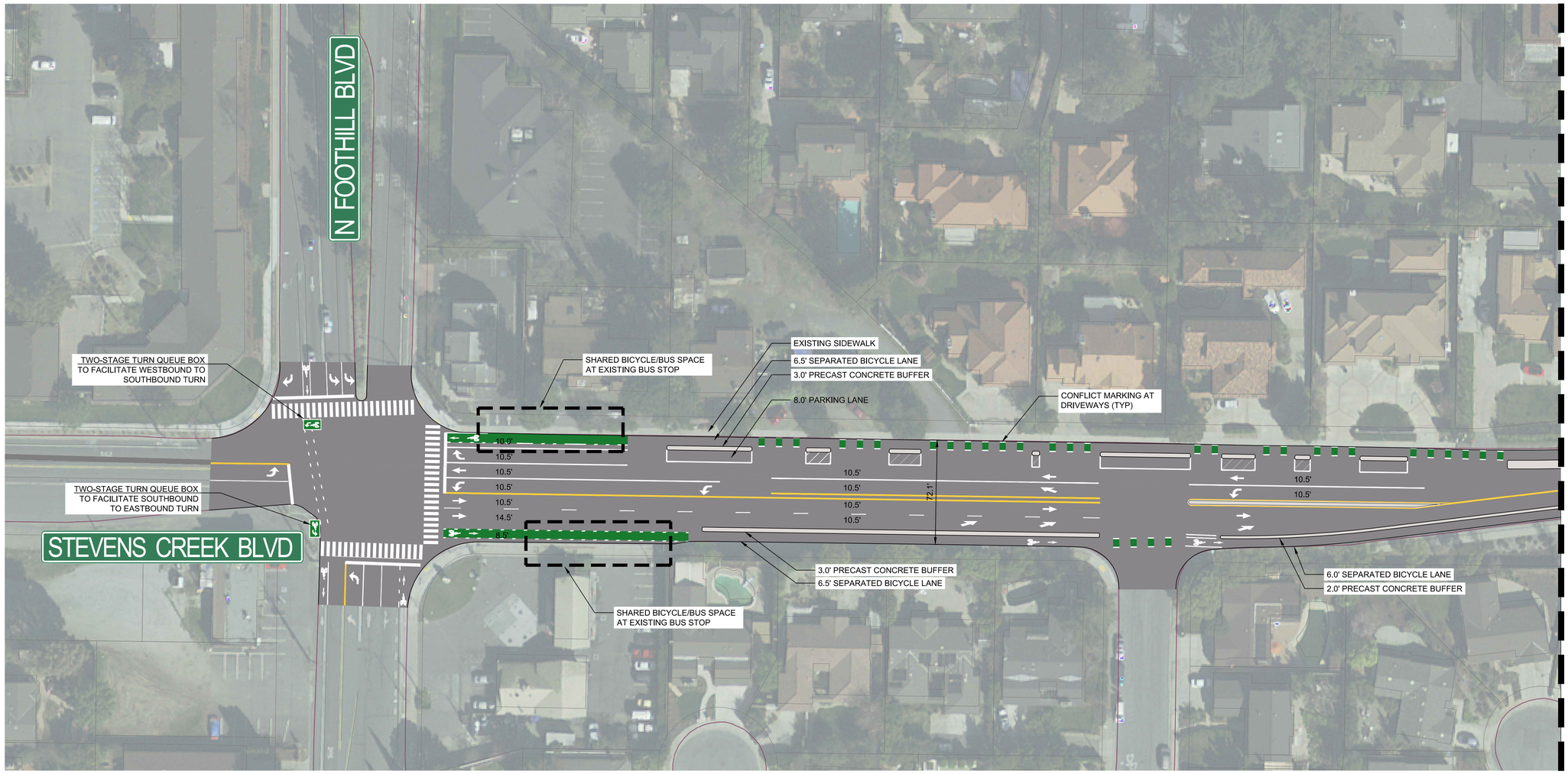

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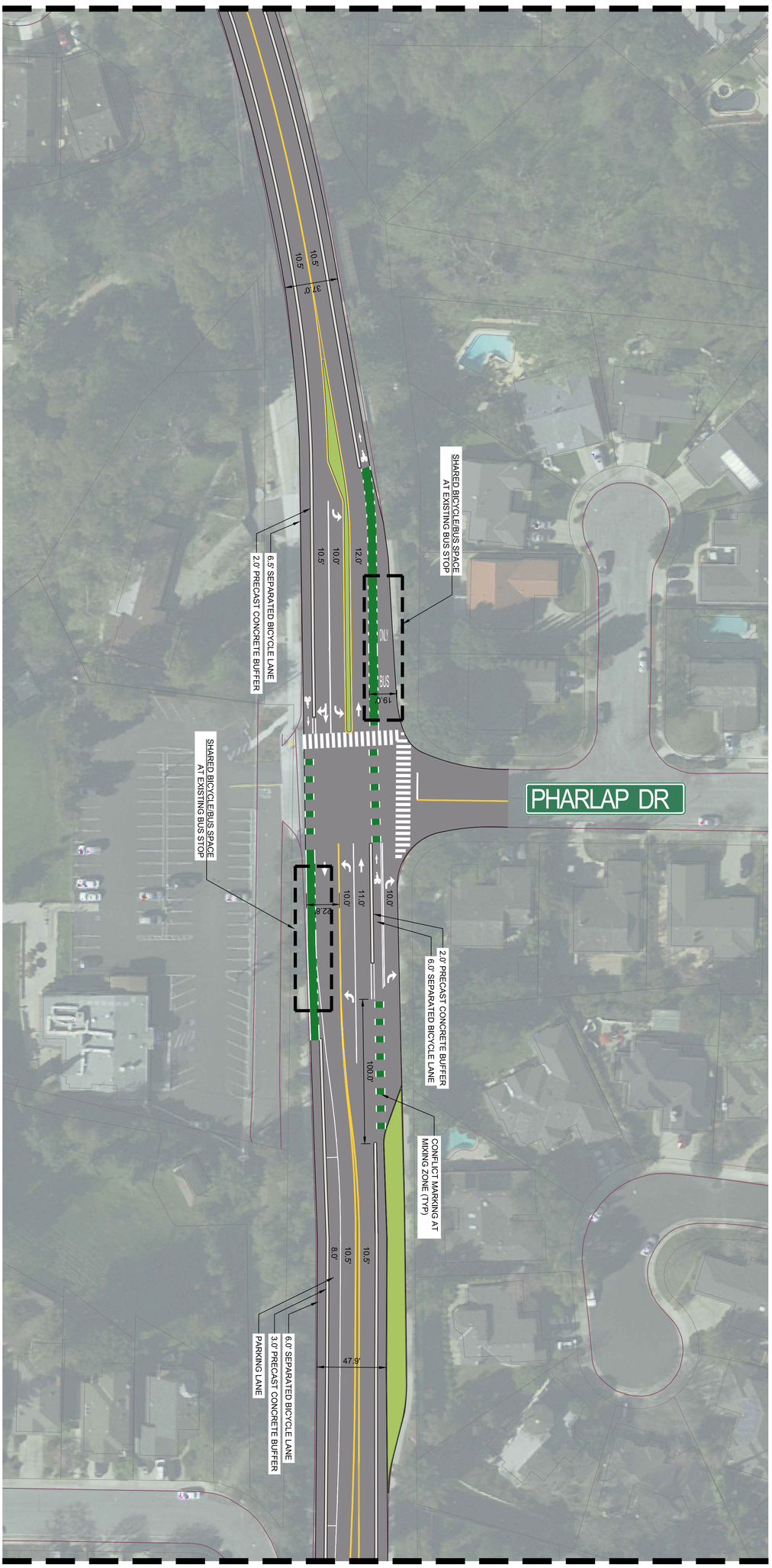

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CLASS IV BIKEWAY DESIGN
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SHARED BICYCLE/BUS SPACE
AT EXISTING BUS STOP

7.0' SEPARATED BICYCLE LANE
2.0' PRECAST CONCRETE BUFFER

50.0'
11.0'
11.0'
11.0'
11.0'
11.0'
11.0'
20.0'
13.0'
11.0'
10.5'
61.5'
11.0'
11.0'
10.5'

6.0' SEPARATED BICYCLE LANE
VARIABLE WIDTH BUFFER (OPPORTUNITY FOR PLANTINGS)

VARIABLE WIDTH CEMENT CONCRETE BUFFER

VARIABLE WIDTH CONCRETE BUFFER
7.0' SEPARATED BICYCLE LANE

10.5'
11.0'
VARIES
8.0'

3.0' PRECAST CONCRETE BUFFER
7.0' SEPARATED BICYCLE LANE
VARIABLE WIDTH BUFFER
(OPPORTUNITY FOR PLANTINGS)

ORANGE AVE

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PENNINSULA AVE

PASADENA AVE

IMPERIAL AVE

BUBB RD

VARIABLE WIDTH CONCRETE BUFFER

7.0' SEPARATED BICYCLE LANE

EXISTING BICYCLE LANE TO REMAIN

SHARED BICYCLE/BUS SPACE AT EXISTING BUS STOP

TWO-STAGE TURN QUEUE BOX TO FACILITATE WESTBOUND TO SOUTHBOUND TURN

6.5' SEPARATED BICYCLE LANE

2.0' PRECAST CONCRETE BUFFER

11.0'

11.5'

27.1'

11.5'

11.5'

8.0'

29.6'

10.0'

10.5'

10.5'

10.5'

18.0'

10.5'

10.5'

10.0'

10.5'

10.5'

10.5'

10.5'

10.5'

10.5'

10.5'

10.5'

10.5'

10.5'

16.5'

7.0' SEPARATED BICYCLE LANE

3.0' PRECAST CONCRETE BUFFER

PARKING LANE

SHARED BICYCLE/BUS SPACE AT EXISTING BUS STOP

2.0' PRECAST CONCRETE BUFFER

6.0' SEPARATED BICYCLE LANE

NARROW EXISTING MEDIAN TO ACCOMMODATE SEPARATED BICYCLE LANE

INTERSECTION REQUIRES SEPARATE BICYCLE SIGNAL PHASE IN EASTBOUND DIRECTION ONLY

SHARED BICYCLE/BUS SPACE AT EXISTING BUS STOP

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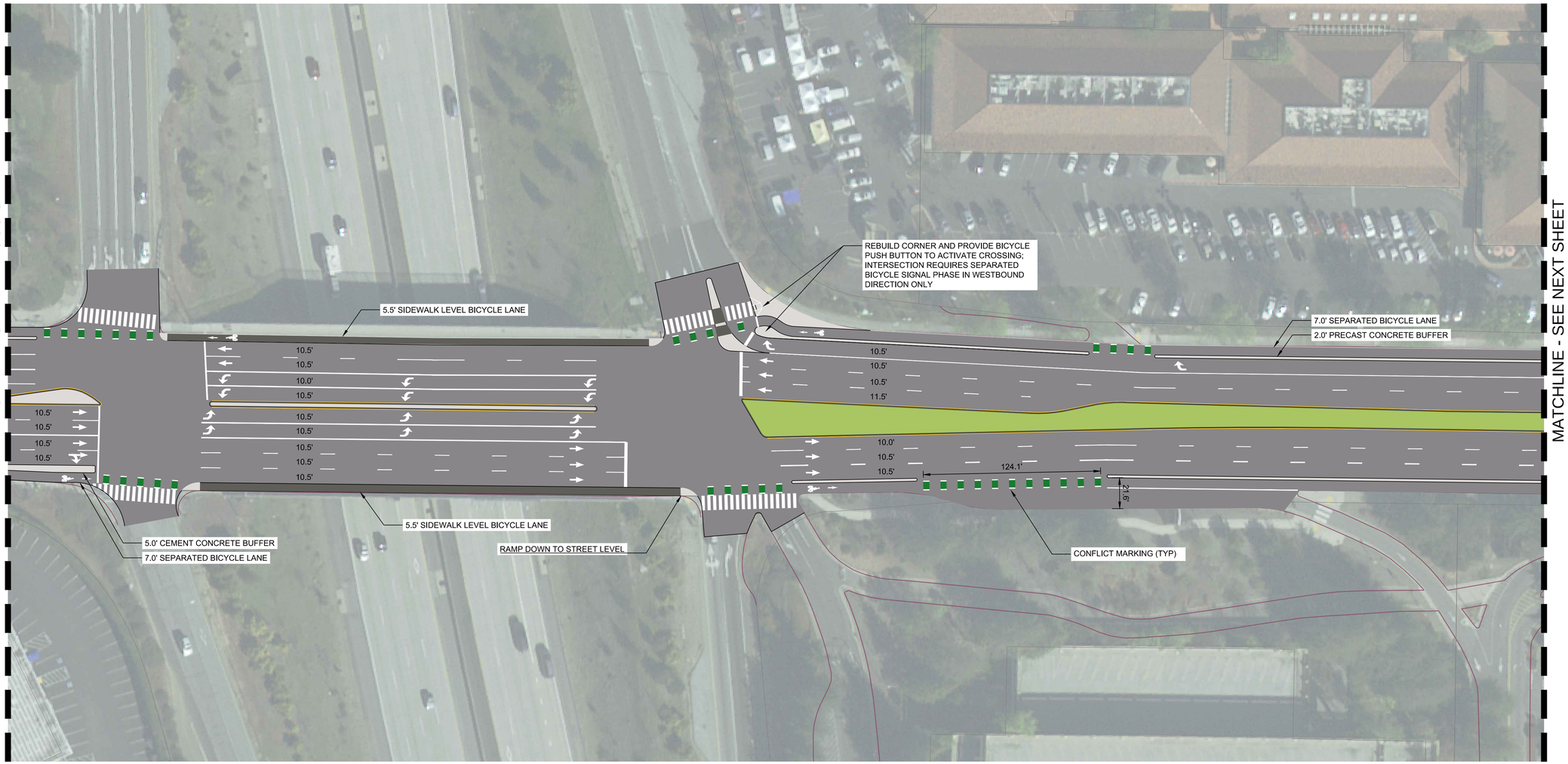

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MARY AVE

SHARED BICYCLE/BUS SPACE
AT EXISTING BUS STOP

INTERSECTION REQUIRES
SEPARATE BICYCLE SIGNAL
PHASE IN EASTBOUND AND
WESTBOUND DIRECTION

7.0' SEPARATED BICYCLE LANE
2.0' PRECAST CONCRETE BUFFER

10.5'
10.5'
13.0'
12.0'
10.5'
10.5'
10.5'
10.5'
10.5'
10.5'
11.0'
10.5'
10.5'
11.5'
11.5'
10.5'
10.5'

7.0' SEPARATED BICYCLE LANE
2.0' PRECAST CONCRETE BUFFER

TWO-STAGE TURN
QUEUE BOX (TYP)

SHARED BICYCLE/BUS SPACE
AT EXISTING BUS STOP

7.0' SEPARATED BICYCLE LANE
3.0' PRECAST CONCRETE BUFFER

NO RIGHT-TURN-ON-RED
REQUIRED DUE TO LOCATION OF
TWO-STAGE TURN QUEUE BOX

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CLASS IV BIKEWAY DESIGN
CITY OF CUPERTINO, CA

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N STELLING RD

EXISTING BUS PULLOUT

TWO-STAGE TURN QUEUE BOX (TYP)

INTERSECTION REQUIRES SEPARATE BICYCLE SIGNAL PHASE IN EASTBOUND AND WESTBOUND DIRECTION

7.0' SEPARATED BICYCLE LANE

2.0' PRECAST CONCRETE BUFFER

6.5' SEPARATED BICYCLE LANE

1.5' PRECAST CONCRETE BUFFER

10.5'
10.5'
11.5'
10.0'
10.5'
10.5'
10.5'
52.0'
36.5'
10.0'
10.5'
10.5'
10.0'
11.0'
11.5'
10.5'
12.5'

REMOVE EXISTING RIGHT TURN POCKET

7.0' SEPARATED BICYCLE LANE

3.0' PRECAST CONCRETE BUFFER

TURNING VEHICLES DIRECTED INTO MIDDLE LANES TO AVOID CONFLICT WITH TURN QUEUE BOX (TYP)

SHARED BICYCLE/BUS SPACE AT EXISTING BUS STOP

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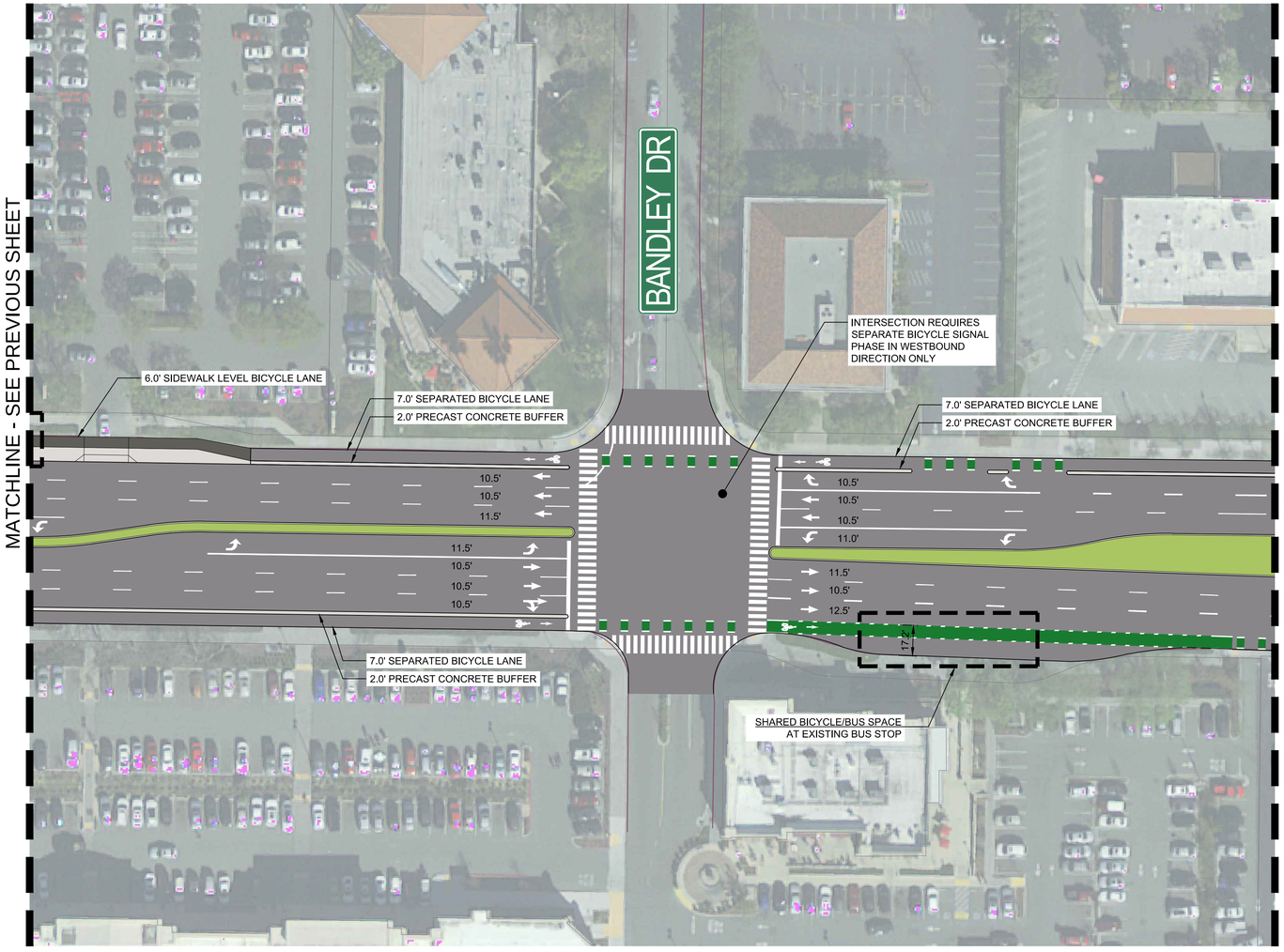

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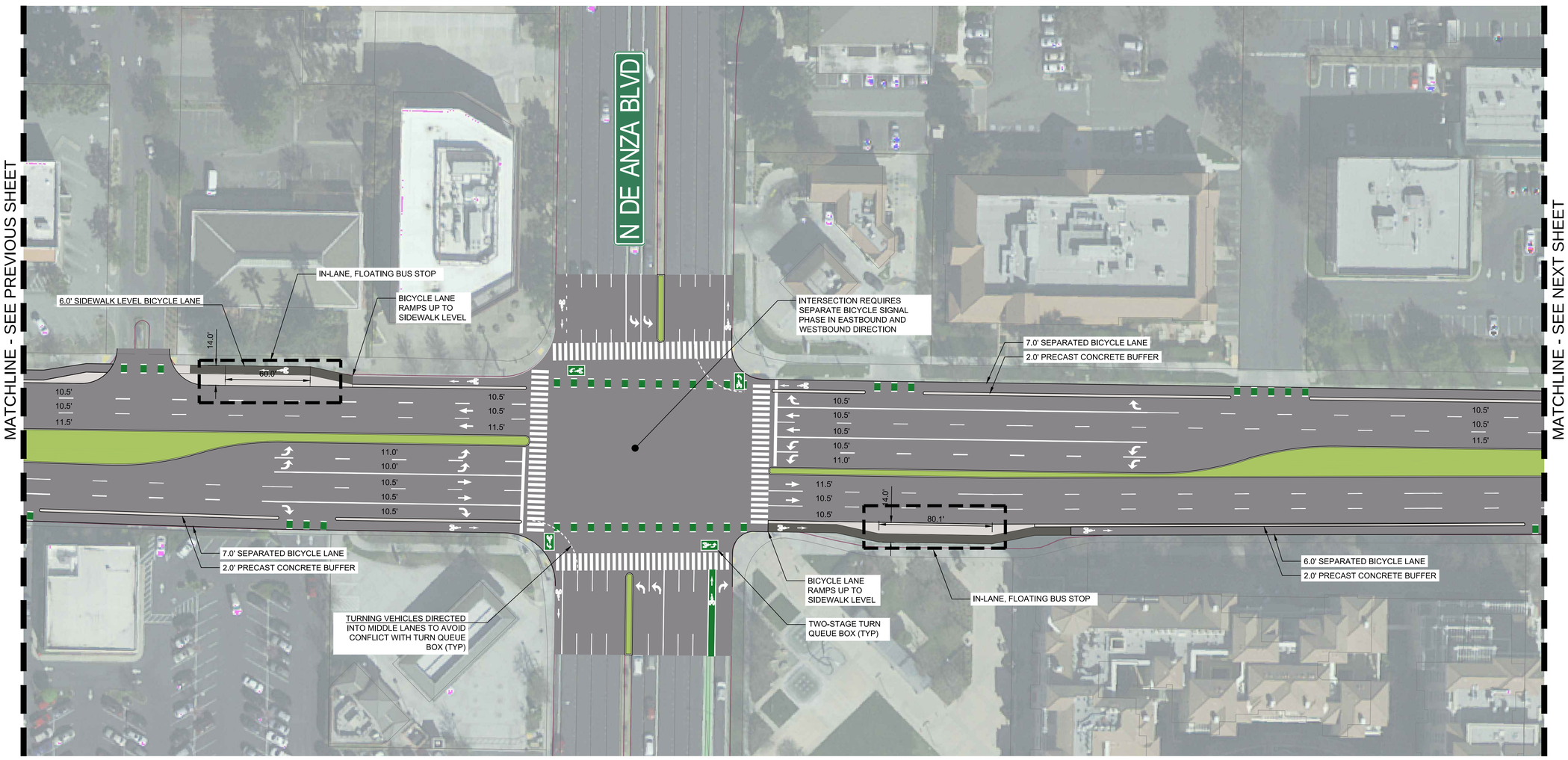

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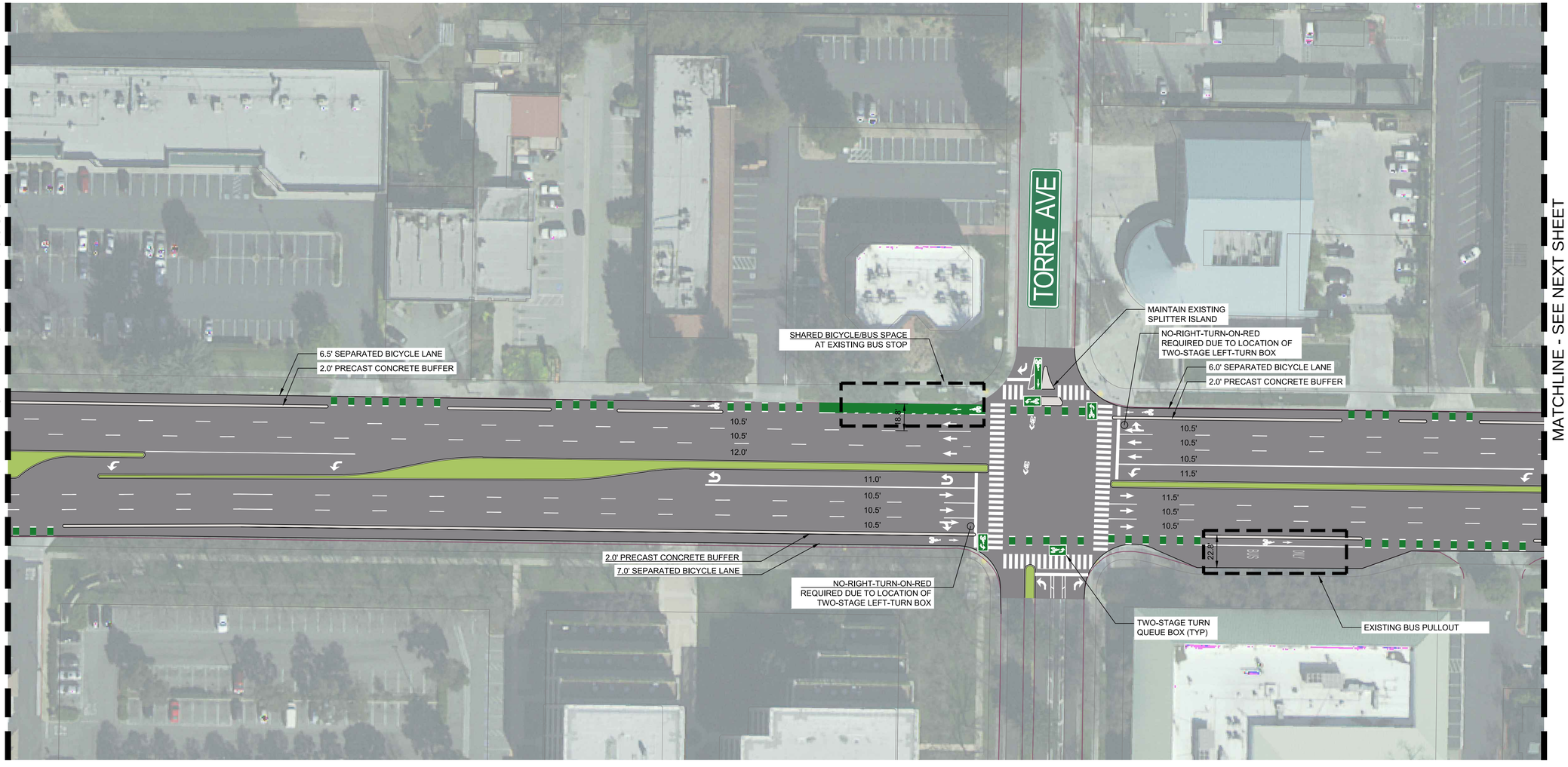

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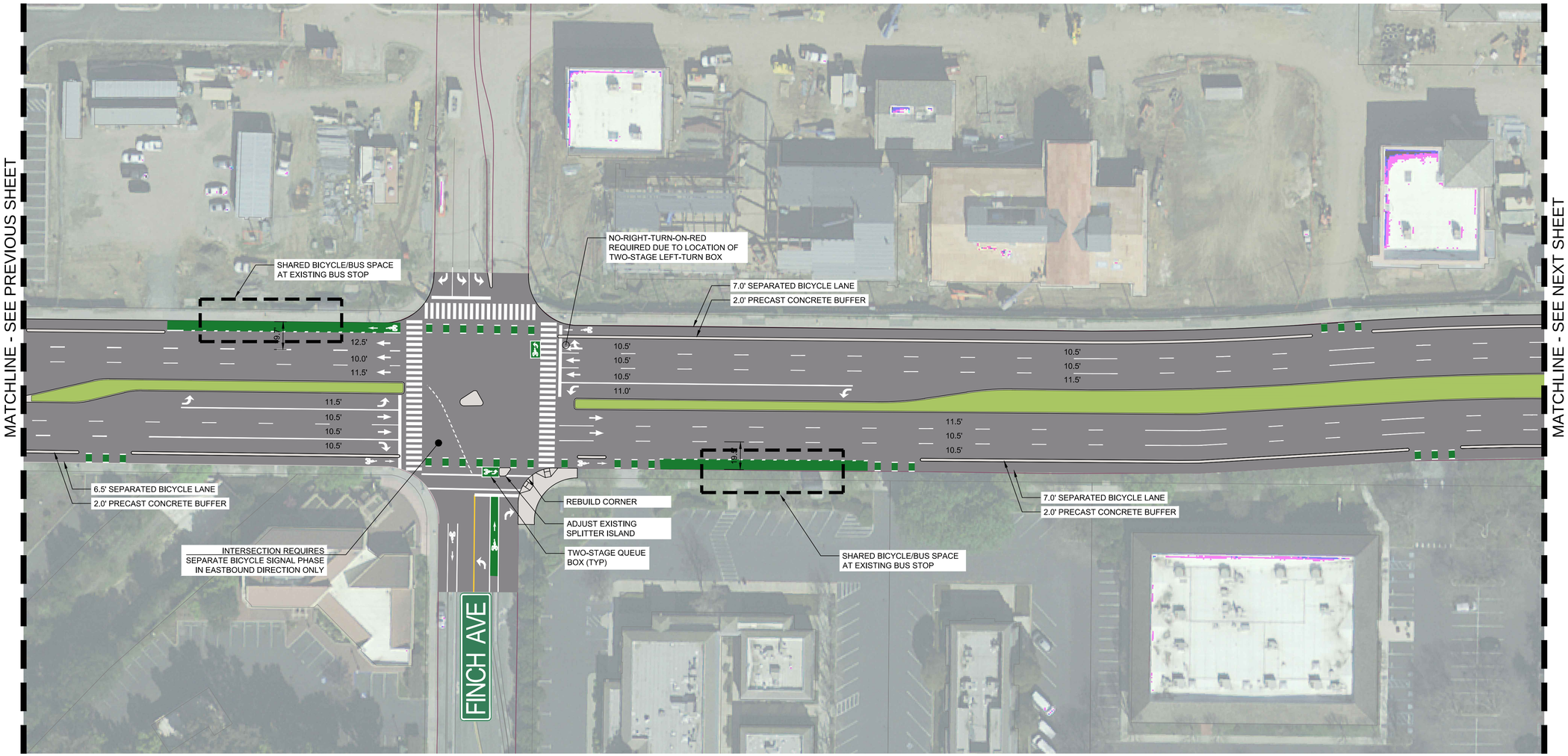

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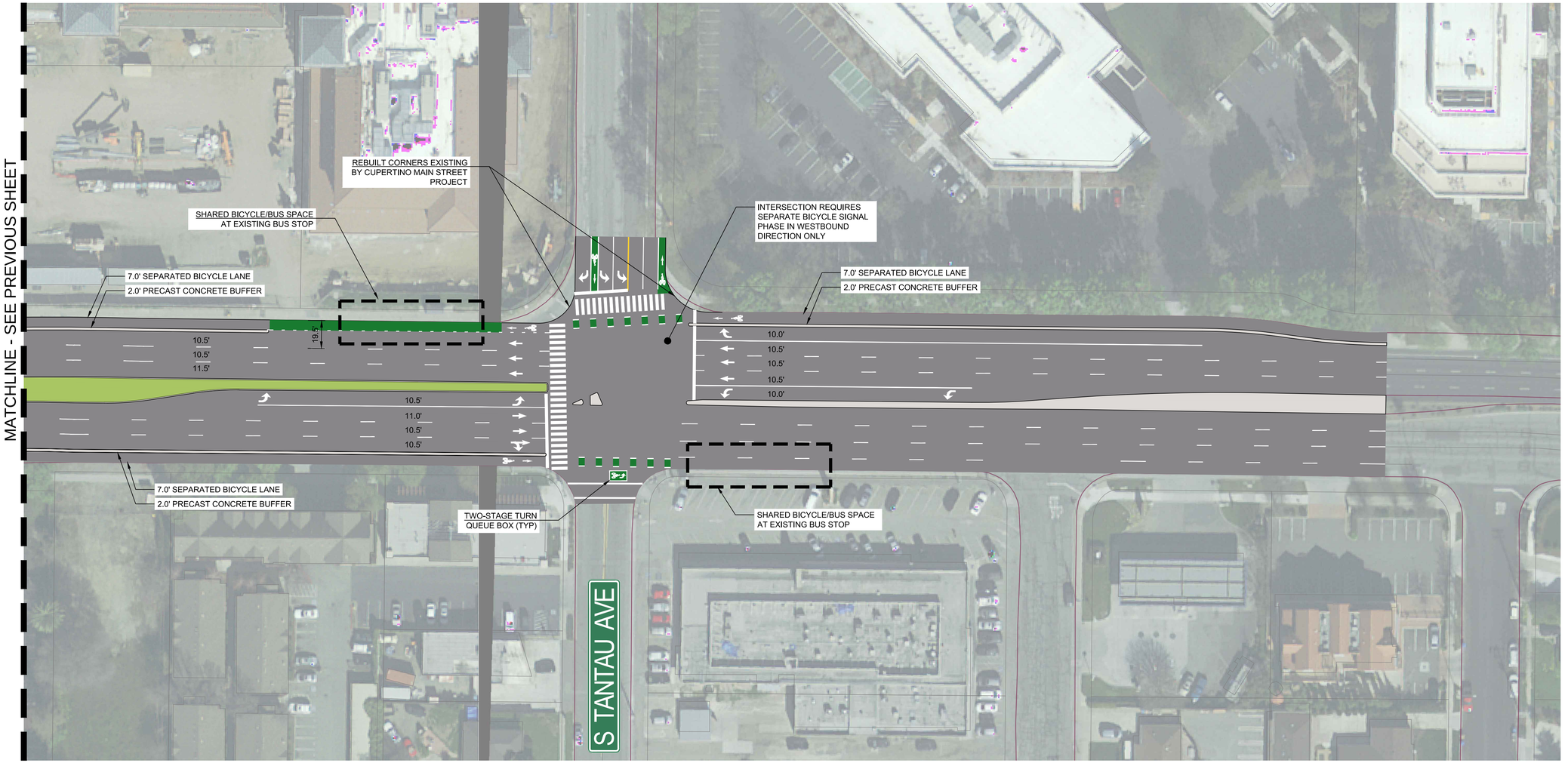

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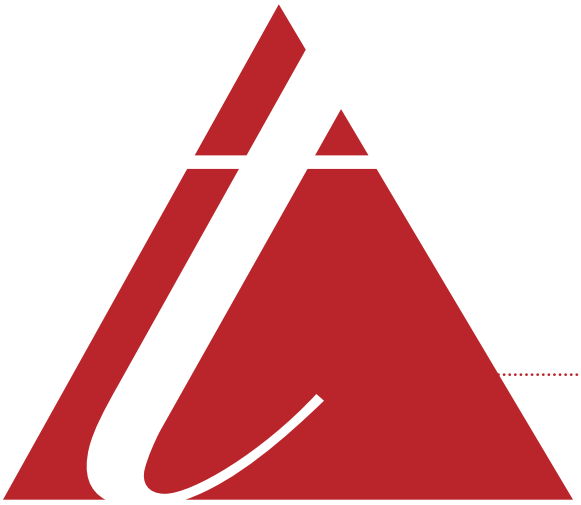

McClellan Road Class IV Bikeway Concept Design

CITY OF CUPERTINO
CLASS IV BIKEWAY - MCCLELLAN ROAD CORRIDOR
PREFERRED CONCEPT DESIGN

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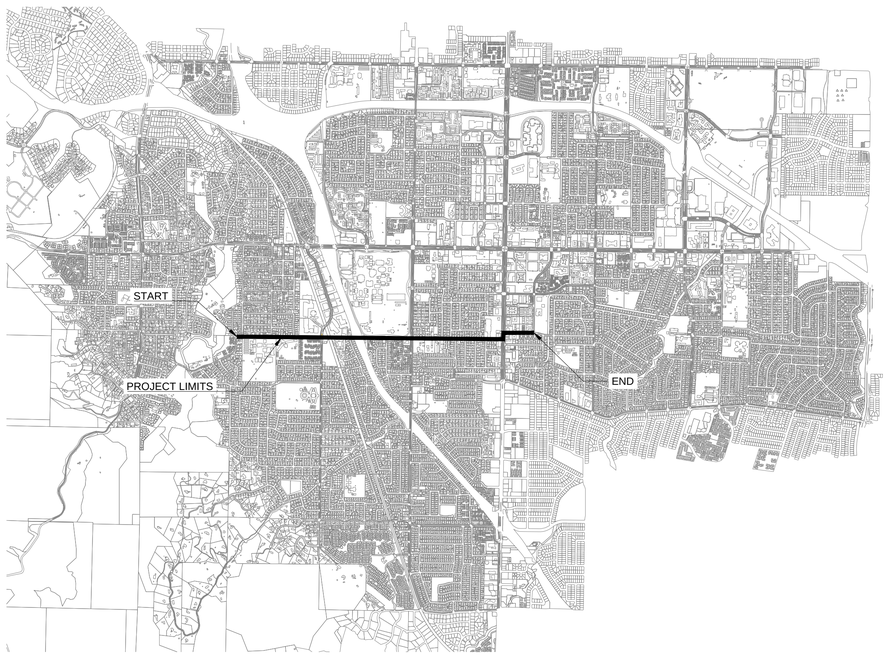

LOCATION MAP
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MCCLELLAN ROAD
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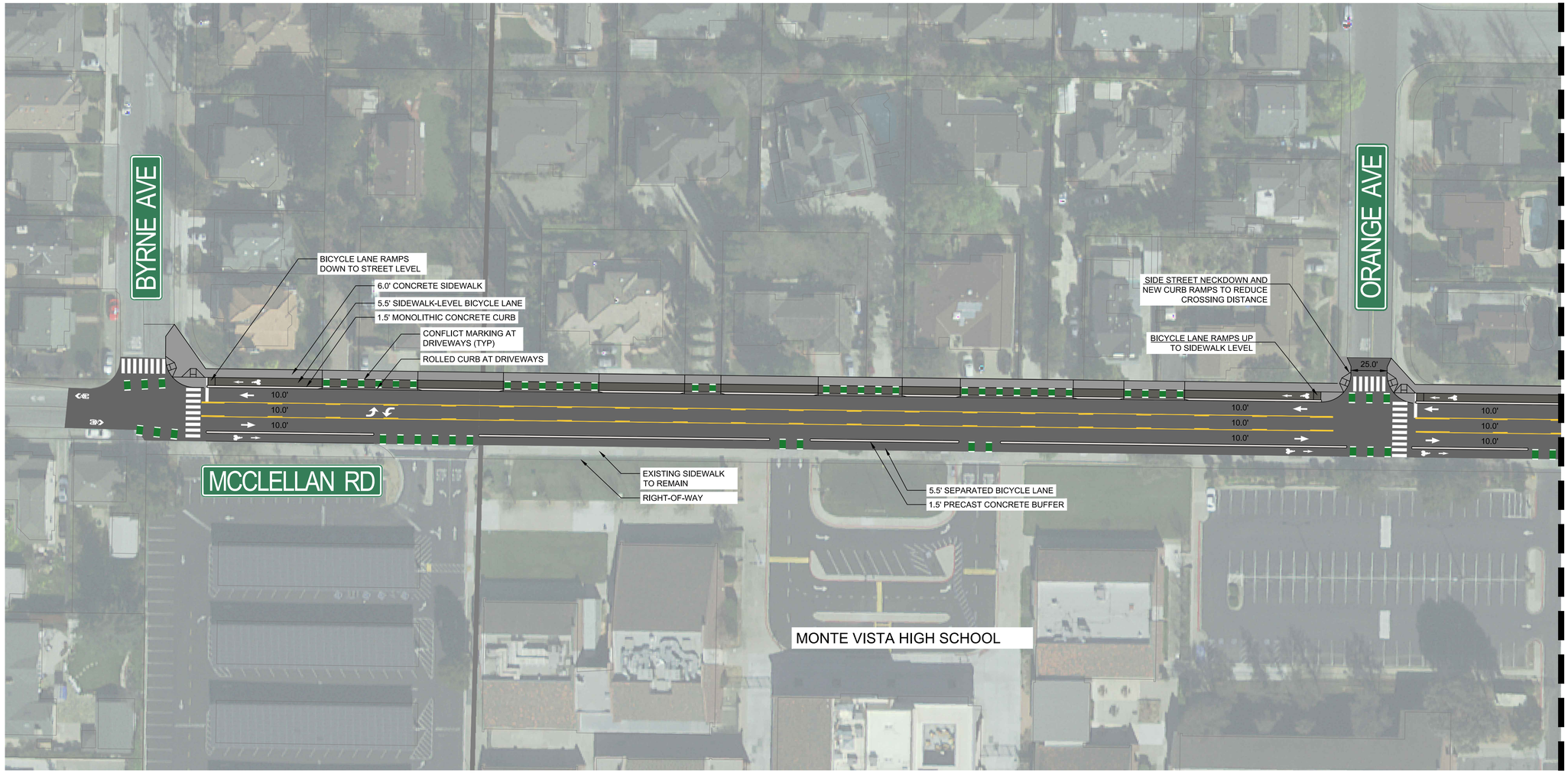

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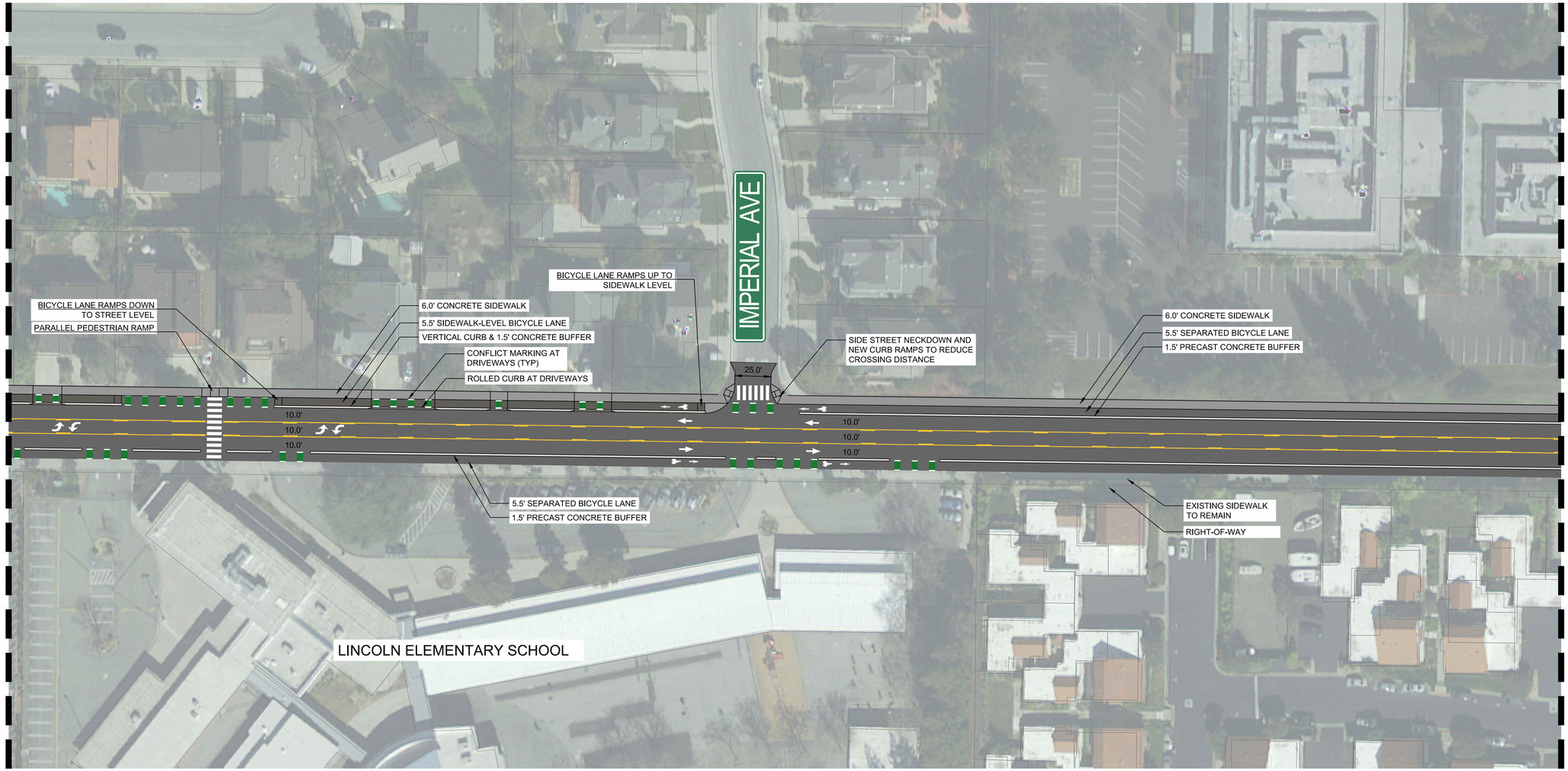

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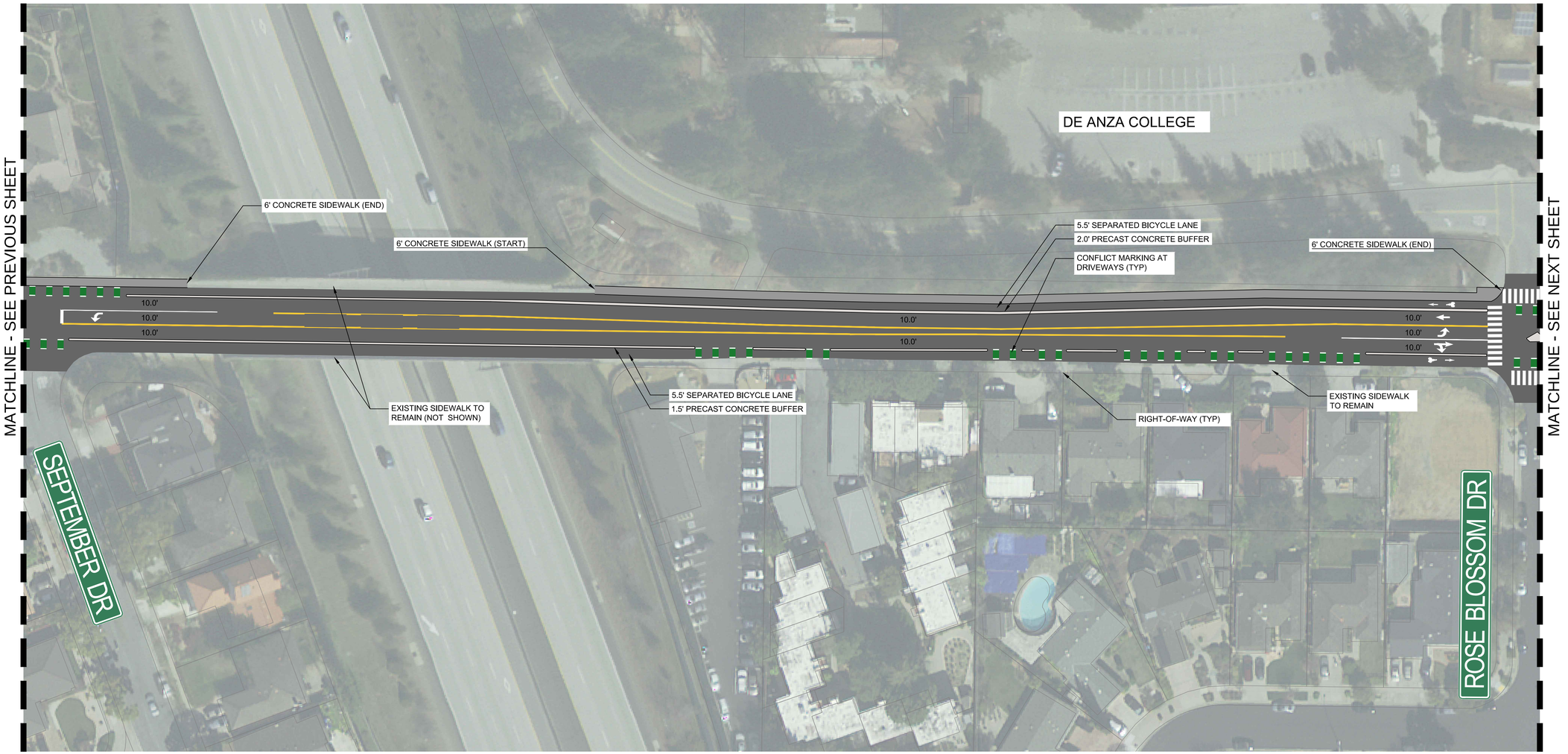

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DE ANZA COLLEGE

EXISTING CONCRETE SIDEWALK TO REMAIN

6' CONCRETE SIDEWALK (START)

5.5' SEPARATED BICYCLE LANE

1.5' PRECAST CONCRETE BUFFER

MATCH EXISTING CONCRETE SIDEWALK

TWO-STAGE TURN QUEUE BOX (TYP)

NO RIGHT TURN ON RED REQUIRED DUE TO LOCATION OF TURN QUEUE BOX

6.0' CONCRETE SIDEWALK

6.5' SEPARATED BICYCLE LANE

1.5' PRECAST CONCRETE BUFFER

10.0'

10.0'

10.0'

10.0'

10.0'

10.0'

10.0'

10.5'

10.0'

10.5'

RIGHT-OF-WAY (TYP)

5.5' SEPARATED BICYCLE LANE

1.5' PRECAST CONCRETE BUFFER

CONFLICT MARKING AT DRIVEWAYS (TYP)

EXISTING SIDEWALK TO REMAIN

NO RIGHT TURN ON RED REQUIRED DUE TO LOCATION OF TURN QUEUE BOX

6.0' SEPARATED BICYCLE LANE

1.5' PRECAST CONCRETE BUFFER

EXISTING BICYCLE BOX FACILITATES TWO-STAGE TURN

EXISTING SIDEWALK TO REMAIN

CONFLICT MARKING AT DRIVEWAYS (TYP)

ROSE BLOSSOM DR

S STELLING RD

NOT FOR CONSTRUCTION

Toole Design Group
2120 UNIVERSITY AVE BERKELEY, CA 94704
PHONE: (510) 298-0740
www.tooledesign.com

MCCLELLAN ROAD
CLASS IV BIKEWAY DESIGN
CITY OF CUPERTINO, CA

0 20 40 80

PREPARED: CS

CHECKED: RB

DATE
03/24/2017

REV 1 05/04/2017

REV. 2 -

REV. 3 -

SHEET NAME
CONCEPT DESIGN

DRAWING NUMBER
C1.5

SHEET NUMBER
6 OF 9

NOT FOR CONSTRUCTION

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MCCLELLAN ROAD
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0 20 40 80

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DATE
03/24/2017

REV 1 05/04/2017
REV. 2 -
REV. 3 -

SHEET NAME
CONCEPT DESIGN

DRAWING NUMBER
C1.6

SHEET NUMBER
7 OF 9

NORTH

MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET

7.0' SEPARATED BICYCLE LANE

2.0' RAISED CONCRETE BUFFER

CONFLICT MARKING AT DRIVEWAYS (TYP)

EXISTING SIDEWALK TO REMAIN

SHARED BICYCLE/BUS SPACE AT EXISTING BUS STOP

1.5' PRECAST CONCRETE BUFFER

5.0' SEPARATED BICYCLE LANE

MCCLELLAN RD

10.0'

10.0'

10.0'

10.0'

15.6'

17.0'

10.5'

10.5'

10.5'

7.0' SEPARATED BICYCLE LANE

2.0' PRECAST CONCRETE BUFFER

25.0'

SIDE STREET NECKDOWN TO REDUCE CROSSING DISTANCE

RIGHT-OF-WAY (TYP)

25.0'

EXISTING SIDEWALK TO REMAIN

25.0'

5.0' SEPARATED BICYCLE LANE

1.5' PRECAST CONCRETE BUFFER

SHARED BICYCLE/BUS SPACE AT EXISTING BUS STOP

LONNA LN

JOHN WAY

FELTON WAY

NOT FOR CONSTRUCTION

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REV 1 05/04/2017

REV. 2 -

REV. 3 -

SHEET NAME
CONCEPT DESIGN

DRAWING NUMBER
C1.7

SHEET NUMBER
8 OF 9

NOT FOR CONSTRUCTION

TooleDesignGroup
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0 20 40 80

PREPARED: CS
CHECKED: RB

DATE
03/24/2017

REV 1 05/04/2017
REV. 2 -
REV. 3 -

SHEET NAME
CONCEPT DESIGN

DRAWING NUMBER
C1.8

SHEET NUMBER
9 OF 9

CC 02-04-2025

#9

Stevens Creek Boulevard Class IV Bikeway Ph 2A Project

Supplemental Report

CITY OF CUPERTINO

PUBLIC WORKS DEPARTMENT

CITY HALL
10300 TORRE AVENUE • CUPERTINO, CA 95014-3255
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CITY COUNCIL STAFF REPORT
SUPPLEMENTAL 1
Meeting: February 4, 2025

Agenda Item #9

Subject
Award a construction contract to Golden Bay Construction in the amount of $1,569,798, approve a first amendment to the design services contract with Pakpour Consulting Group to increase the contract by $96,620 for a total not-to-exceed contract amount of $310,483 and approve a budget modification in the amount of $1,500,000 for the Stevens Creek Boulevard Class IV Bike Lane Project.

Recommended Action
1. Award a construction contract for the Stevens Creek Boulevard Class IV Bike Lane Phase 2A Project (budget unit 420-99-036, project number 2022-15) in the amount of $1,569,798 to Golden Bay Construction, Inc.;
2. Authorize the City Manager to execute the construction contract with Golden Bay Construction, Inc. when all conditions have been met;
3. Authorize the Director of Public Works to execute any necessary construction change orders up to a construction contingency amount of $156,980 (10%) for a total contract amount of $1,726,778;
4. Authorize the City Manager to amend the Design Services Contract with Pakpour Consulting Group to increase the amount by $96,620 for a total not-to-exceed contract amount of $310,483 for the 2022-11 Stevens Creek Boulevard Class IV Bike Lane Phase 2B Design Project; and
5. Adopt Resolution No. 25-XXX approving budget modification #2425-377, approving an increase of grant revenue estimates of $1,500,000 and a transfer out of $693,000. This includes an increase of $807,000 in Federal grant funds and a transfer of $693,000 in SB1 Grant Funds from the Transportation Fund (270-85-821) into the Capital Improvement Program Capital Project Fund (420-99-036).

Background:
Q1: (Follow-up on Q7 for 1/22 council meeting): The staff responses was "Concrete separators are significantly more expensive than plastic bollards but do provide a higher level of protection", which did not answer the question

"What would be the difference in costs between the different options for separators? Concrete, bollards, or other options?"
I heard from the 1/27 prep session that the cost is about $220,000 for concrete and $85,000 for bollards, but I am not sure if my note is correct. Resident Peggy wrote: "The concrete bike lane separator is estimated to cost $336,000. The bollards are estimated to cost 6 times less, at a cost of $56,000." Please provide the exact cost for each option. (**Chao**)
Staff Response: The cost of concrete blocks is $336,220. The cost of bollards is approximately $70,000 (spaced at every 20ft).

Q2: Please provide the cost break down between the bike path itself and the work on the intersection upgrade. For the intersection upgrades, please provide the cost break down of each item. (**Chao**)
Staff Response: The cost for the bike path is $992,298, which includes but is not limited to the costs for the installation of the concrete barriers, bus stop modifications, striping and pavements markings, as well as project mobilization and traffic control. The traffic signal upgrade at Wolfe Road is $207,020, and the traffic signal upgrade at De Anza Blvd is $370,480.

Q2-1: Is the intersection modification for Stevens Creek and De Anza included in this project? How about other intersections, such as Stevens Creek and Stelling? (**Chao**)

Staff Response: Yes, traffic signal upgrades are only included at De Anza Blvd and Wolfe Road. No traffic signal upgrades are proposed at other intersections along Phase 2A. The intersection at Stelling Road in not within the scope of Phase 2A.

Q3: The staff report only mentioned the intersection upgrade at Bandley Drive and Stevens Creek Boulevard, which was listed as a separate project in the CIP list. The staff report did not mention at all the Stevens Creek Bike Lane project includes any chance to the intersection of Stevens Creek and De Anza Blvd. Where was such a change mentioned? (**Chao**)
Staff Response: The staff report makes reference to external funding available for the Bandley Drive intersection only as it relates to funding for Phase 2 as a whole (Phase 2A and 2B).
The original project description that was provided when City Council approved the budget for construction of the project mentions the need for traffic signal upgrades at the intersections of De Anza Blvd and Wolfe Rd:

Stevens Creek Boulevard Class IV Bikeway Phase 2 - Construction

Total Budget	$ 2,000,000
City Funding	$ 2,000,000
External Funding	
Origin of Request	Public Works
Project Type	Bike
Location	Stevens Creek Blvd.

Project Description

Construction of the separated bikeway along Stevens Creek Blvd from Wolfe Road to De Anza Blvd. Improvements include traffic signal modifications at Wolfe Road and De Anza Blvd to provide separate bicycle phasing.

Project Justification

The 2016 Bicycle Transportation Plan identifies improvement needed and priorities to enhance and promote safer bicycle transportation in the City. The number one priority of the Plan was to provide a separated Class IV bicycle lane on Stevens Creek Blvd. This project is the second phase to address that priority.

In 2017, at a Bicycle Pedestrian Commission meeting, the public was presented with a design option that included the implementation of separated bicycle phasing at the intersections of Stelling Rd, De Anza Blvd, and Wolfe Rd. The commission was supportive of the concepts, and staff proceeded to design the project with this improvement.

Q4: I learned from the 1/27 prep session that the cost for the bike path along, even using the more expensive concrete is $220,000. The main expense comes

from the changes made to the intersection, which was a surprise to me. The project description from the CIP list when the city council approved the funding for the project was "Design and Construction of the separated bikeway along Stevens Creek Blvd from Wolfe Road to DeAnza Blvd (2A) and De Anza Blvd to US-85 (2B). This includes signal upgrades at Bandley Drive. (Externally Funded, in part)," which did not mention that the intersection of De Anza and Stevens Creek would be changed at all. Thus, I am confused. Please clarify.

2024/ 2025	Design and Construction of the separated bikeway along Stevens Creek Blvd from Wolfe Road to DeAnza Blvd (2A) and De Anza Blvd to US-85 (2B). This includes signal upgrades at Bandley Drive. (Externally Funded, in part)	Design 2B, Bid 2A Phase 2A design is complete and will be put out for public Bid once we secure addition external funding for the project. **Funding**: project budget includes design and construction. Design is complete.	A portion of the project cost has been funded through a grant. Project currently on hold while additional grant funds are being sought to cover remaining construction costs. Design is Complete. This bikeway is identified as a top priority in both the 2016 Bicycle Pedestrian Plan and the 2018 Pedestrian Transportation Plan.

(**Chao**)

Staff Response: The original project description that was provided when City Council approved the budget for construction of the project mentions the need for traffic signal upgrades at the intersections of De Anza Blvd and Wolfe Rd to provide separate bicycle phasing:

Stevens Creek Boulevard Class IV Bikeway Phase 2 - Construction

Total Budget	$ 2,000,000
City Funding	$ 2,000,000
External Funding	
Origin of Request	Public Works
Project Type	Bike
Location	Stevens Creek Blvd.

Project Description

Construction of the separated bikeway along Stevens Creek Blvd from Wolfe Road to De Anza Blvd. Improvements include traffic signal modifications at Wolfe Road and De Anza Blvd to provide separate bicycle phasing.

Project Justification

The 2016 Bicycle Transportation Plan identifies improvement needed and priorities to enhance and promote safer bicycle transportation in the City. The number one priority of the Plan was to provide a separated Class IV bicycle lane on Stevens Creek Blvd. This project is the second phase to address that priority.

Q5: In case this project does include changes to the De Anza/Stevens Creek Blvd intersection, where can I find any analysis on the traffic impact analysis? For example, something like this "**About 4,000 motor vehicles and 20 bicycles travel through this intersection during the one-hour morning peak on a**

typical weekday. **This intersection currently operates at a motor vehicle Level of Service C during the morning peak-hour and Level of Service D during the evening peak-hour** but will sometimes exceed its practical capacity when surges of traffic from multiple directions occur simultaneously. Level of Service D can be described as approaching unstable flow of traffic and occasionally waiting through more than one signal cycle before proceeding," which is from a Palo Alto staff report for an intersection change at San Antonio and Charleston. (**Chao**)

Staff Response: A traffic analysis was performed in 2017. This analysis envisioned a more restrictive design (reducing travel lanes through the intersection from 3 to 2). The more restrictive analysis showed a negligible reduction in vehicle capacity, and no change in the overall intersection LOS.

As this project does not eliminate motor vehicle through lanes, the conclusions in the 2017 analysis remain relevant.

While no motor vehicle lanes are being removed with the project, the project does restrict vehicles from entering the existing bike lanes to make right turns at the intersections of Stevens Creek Blvd and De Anza Blvd., as well as the bicycle lane in the east-bound direction at the intersection of Wolfe Road. Right-turning vehicles from Stevens Creek Blvd onto De Anza Blvd may be temporarily restricted as a bicycle crosses; however, this protected phasing is relatively brief and right-turning vehicles would be delayed even in the absence of protected signal phasing as a result of the need to yield to the crossing bicyclists. Right turns on red will continue to be allowed.

Q6: The intersection chances are often complex. For the Palo Alto project to improve the San Antonio and Charleston they considered 4 options and conducted 4 community meetings as in their project page. What options have the city considered for the change for De Anza and Stevens Creek intersection? What meetings have been conducted to receive public input for these options? (**Chao**)

Staff Response: As stated in the previous Supplemental Report for the 1/22/2025, City Council meeting, the project design was publicly presented and reviewed in detail by the Bike and Pedestrian Commission on January 22, 2022, and July 20, 2022. No motions were made at these meetings, but staff did collect input. A status update on the project was publicly provided at the February 22, 2023, Bike and Pedestrian Commission meeting. There was no separate dedicated community meeting for this project.

In addition to these meetings, staff publicly presented a conceptual design and the conclusions of the 2017 traffic analysis at the bicycle pedestrian commission meeting. The commission was supportive of continuing bicycle separation to the intersection, and staff proceeded to design the project accordingly.

Q7: What is the accident history at this intersection for bicycle and pedestrians? (**Moore**)
Staff response: There have been 15 reported accidents over the last 10 years involving cars vs. bicycles/peds at the Stevens Creek Blvd/De Anza intersection. Of those 15 accidents, 6 of them (40% of the accidents) were from cars turning right (either from the east or west-bound direction) into a bicyclist or pedestrian. The intersection improvements proposed for the project are designed to minimize these types of accidents.

Q8: What are the impacts to the project if the improvements at the intersection of Stevens Creek Blvd and De Anza Blvd were removed from the project scope? (**Moore**)
Staff response: If the intersection improvements at Stevens Creek Blvd/De Anza Blvd were removed from the project, it could reduce the cost of the project by approximately $390,000. However, since this work is a significant portion of the project, the project construction documents would need to be revised and the project would need to be rebid.

The removal of the intersection improvements could also affect the City's ability to receive OBAG funding. As part of the grant application, staff was required to submit a Complete Streets checklist to MTC that had been reviewed and approved by the Cupertino Bicycle Pedestrian Commission. If key active transportation project elements are removed from the project, MTC requires that the Complete Streets checklist be revised, presented again to the Bicycle Pedestrian Commission, and resubmitted to MTC for review and approval.

The intersection improvements are a key component of the project which provides enhanced safety for bicyclists and encourages active transportation. Because removing the intersection improvements will reduce the proposed safety benefits for bicyclists at the intersection, there is a risk that MTC would not approve the reduced scope and deny OBAG funding if these improvements were eliminated. Similarly, if the concrete barriers are removed and replaced with flexible bollards, there is also a risk that MTC would not approve the change. However, although flexible bollards do not provide the same level of physical barrier as concrete barriers, they are still considered adequate to classify the bikeway as a Class IV facility, so staff believes that the risk of losing funding is minimal if the concrete were replaced with flexible bollards.

Finally, Caltrans recommends that the construction contract be awarded within six months of the Caltrans Authorization to Proceed, which the City received on August 29, 2024. Although not a hard deadline, failure to award the contract within this six-month window will likely require justification by the City for the delay.

Any significant changes to the project would also result in the need to re-advertise for bids for the work, which would result in a 4 to 6 month delay in initiating the project.

Attachments Provided with Original Staff Report:

A. *Draft Construction Contract*
B. *Draft Resolution*
C. *Contract Documents*
D. *01-22-2025 Supplemental Report*
E. *01-22-2025 Desk Item*

CC 02-04-2025

#10

Photovoltaic Systems Design & Installation Project

Desk Item

CITY OF CUPERTINO

PUBLIC WORKS DEPARTMENT

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CITY COUNCIL STAFF REPORT
DESK ITEM
Meeting: February 4, 2025

Agenda Item #10

Subject
Award of a design-build contract to Syserco Energy Solutions for $4,339,881 and award a project management and construction management agreement to 4Leaf, Inc. for $225,000 for the Photovoltaic Systems Design and Installation Capital Improvement Programs Project.

Recommended Action
1. Award a design-build contract for the Photovoltaic Systems Design and Installation Project (budget unit 420-99-274) in the amount of $3,939,881 with Syserco Energy Solutions, Inc., as the Design-Build Entity.
2. Authorize the City Manager to execute the design-build contract with Syserco Energy Solutions, Inc. with substantially similar terms as those in the draft contract in Attachment A, when all conditions have been met.
3. Authorize the Director of Public Works to execute any necessary change orders up to a contingency amount of $400,000 (approximately 10%) for a total contract amount of $4,339,881.
4. Authorize the City Manager to execute a professional services agreement with 4Leaf, Inc. for project and construction management services, for a total not-to-exceed contract amount of $225,000.

Background:
The NEM 2.0 interconnection applications were successfully submitted to PG&E for five City of Cupertino facilities. This Project aims to design and build PV systems at three of the five locations. The NEM 2.0 projects must be completed by April 15, 2026, to receive the incentive, otherwise the NEM 3.0 program would be applied to these properties. The NEM 2.0 rates provide 75 - 80% greater compensation than NEM 3 rates for electricity that is generated and fed back into the electrical system. The savings in utility costs for the three proposed sites are projected to be approximately $276,000 annually, and $13 million over a 30-year lifespan.

Q1: For Memorial Park area, please provide your assessment on installation on the roof or the front parking lot of Quinlan or the other areas you have considered. (**Chao**)

Staff response:

Roof installation at Quinlan Community Center: The rooftop at Quinlan community center is not ideal for solar on this project for several reasons.

a. *The NEM2 application that was filed for the site allows for up to a 20% reduction of the original submitted system size, so, reductions beyond this point would move the project to NEM3, which would result in far lower energy savings for the city. For solar systems to function optimally (in the northern hemisphere,) the modules ideally face east, west, or south to maximize captured sunlight – looking at the roof planes ranging from east to west (clockwise,) there is room for just over 100 kW of system size in the unshaded areas, far below the threshold needed to maintain the NEM2 application on site (325kW).*
b. *Since we cannot put the entire array on the roof, it is worth noting that a rooftop installation in addition to carport installation is more expensive than the carport only.*

Quinlan Community Center (QCC) Front Parking Lot: A layout of carport PV arrays in the front parking lot of QCC could meet the system size requirements of the NEM2 application by covering most of the parking area. However, such an installation would be comprised of many thin, unoptimized carports and major shading concerns. The increased number of carports also significantly increases the project cost due to (a) the increased number of foundations and steel structures, (b) the increased number of electrical connections, and (c) the increased number of EVCS and accessible parking spaces.

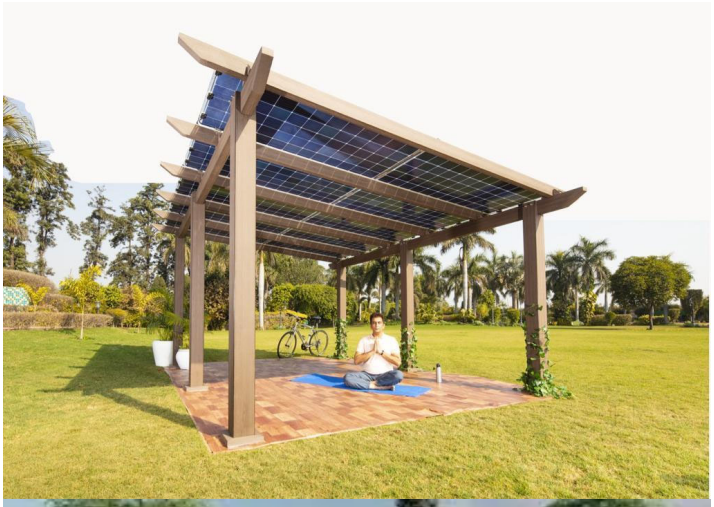
Shading at Quinlan Community Center (QCC) Rear Parking Lot: While shading is a concern at this installation location, it does not unduly impact the arrays' ability to produce energy. The direct anticipated shading losses from the trees on site at Quinlan community center are roughly 6% – these losses are predominantly concentrated in the winter months when the sun angle is low, though during the spring, fall, and summer months when the majority of array production is generated, shading does not significantly impact the arrays.

This project does not include removing the redwood trees from the site. The small trees located along the northerly edge of the back parking lot are currently intended for relocation.

Q2: Could we possibly use wooden support such as the following for the Memorial Park picnic area and the parking lot area?

For picnic area?

For the picnic area, would there be outline for 120V and USB ports for laptops and phones? That might make the solar panels at the picnic area quite popular. 🙂



(**Chao**)

Staff response:

These images portray a few options for wood or timber structures:

a. *Custom Glulam wood structure (images 1 and 3): Due to the lead times and cost implications, the City would not be able to utilize custom glulam materials for this project.*
b. *'Standard' wood structure (images 2, 4 and 5): potentially possible. As we enter into the schematic design phase of the project, we will investigate if such a structure is economically feasible and if we can still make the April 15, 2026 project deadline. We recommend a 15% increase on the DBE contract for the QCC project cost (approximately $300K additional contingency) to allow for this possibility.*
c. *Wood sheathing over steel structure: this could be possible and has the benefit of allowing completion of these architectural features to occur after the April 15, 2026 deadline. We recommend a 15% increase on the DBE contract for QCC project cost (approximately $300K additional contingency) to allow for this possibility.*

d. *Other aesthetic finishes: We can install the carport and picnic area PV arrays with a painted steel finish, and at a later date, apply a number of finishing options without impacting the April 15, 2026 deadline. Some options to consider: specialty paint finishes, wood sheathing (as mentioned above), wood screens or partitions, metal perforated screens, etc.*

Adding USB and 120v ports/outlets at some locations will be considered.

Attachments Provided with Original Staff Report:

A. *Draft Design-Build Contract*
B. *Draft Professional Services Agreement*
C. *FY 24-25 CIP Project Narratives Excerpt*
D. *RFP for Design-Build Entity*