

MEMORANDUM



To: Torina Wilson, Transportation Planner; City of Santa Rosa

From: Mauricio Hernández, Alta Planning + Design; Barry Bergman, W-Trans

CC: Charlie Simpson, Alta Planning + Design

Date: June 24, 2024

Re: Santa Rosa Active Transportation Plan - Recommendation Development Approach and Data

Introduction

This memo outlines the approach and methodology for developing recommendations for the City of Santa Rosa Active Transportation Plan. This methodology relies on using consistent data and a clear process to apply federal, state, and city design guidance in an objective and context sensitive manner. The outcome of this methodology will be a set of maps depicting existing, funded, and newly proposed projects, along with a project list with the project name, proposed facility type, and location for each recommended improvement. Proposed improvements will prioritize the development of a complete active transportation network that improves equitable outcomes, safety, access, and comfort for people of all ages and abilities.

Guidelines and Standards

Local¹, state, and federal guidelines and standards to follow for developing recommendations includes:

- City of Santa Rosa [Traffic Standards](#) (2008)
 - Defines standards for roadway signage, markings, and equipment in addition to those set forth in the California MUTCD.
- City of Santa Rosa [Street Design & Construction Standards](#) (2004)
 - Informs design of public infrastructure, including standards for different roadway types and includes pedestrian facilities and bike lanes
- City of Santa Rosa [Public Storm Drain Standards](#) (2005)
 - Defines minimum standards for drainage for projects in the public right-of-way and requirements of private property owners
- City of Santa Rosa [Park and Landscape Construction Standards](#) (1997)
 - Provides standards and requirements for landscaping on public property including parks, roadways, and parkways
- City of Santa Rosa [Construction Specifications for Public Improvements](#) (1979)

¹ All City Standards listed here are in the process of being updated. The Santa Rosa Active Transportation Plan process and recommendations will inform the City Standards update.

- Provides direction regarding construction materials and procedures for facilities including streets, sidewalks, curbs, pedestrian ramps, and street trees
- Caltrans 7th Edition Highway Design Manual (HDM) – [Chapter 1000 Bicycle Transportation Design](#) (2015)
 - Informs the design and implementation of bicycle facilities. References FHWA Bikeway Selection Guide
- Caltrans [Design Information Bulletin Number 94 – Complete Streets Contextual Design Guidance](#) (2024)
 - Informs decision to maximize the use of the public right of way to achieve sustainable and equitable mobility
- Caltrans [Design Information Bulletin Number 89-02 – Class IV Bikeway Guidance](#) (2022)
 - Informs the design and implementation of Class IV bicycle facilities
- Caltrans [Traffic Calming Guide](#) (2023)
 - Informs design and implementation of different traffic calming treatments
- FHWA [Bikeway Selection Guide](#) (2019)
 - Informs facility type recommendation based on roadway speed, volume, and urban/rural context.
- FHWA [Small Town and Rural Multimodal Networks](#) (2016)
 - Informs rural bicycle and pedestrian recommendations
- FHWA [Safe Transportation for Every Pedestrian \(STEP\)](#)
 - Informs pedestrian improvements
- FHWA STEP: [Improving Visibility at Trail Crossings](#) (2021)
 - Informs pedestrian and bicycle improvements at trail crossings
- FHWA [Proven Safety Countermeasures](#)
 - Supplements pedestrian and bicycle recommendations as needed based on location
- FHWA [Road Diet Informational Guide](#)
 - Informs road diet feasibility determination

Recommendations Development Phases

Infrastructure recommendations will be developed in two main phases. The first phase will build directly on the Existing Conditions memo, using key data to build out an initial “backbone” network of bicycle and pedestrian improvements. This will include a desktop review of existing facilities (ex. sidewalk, marked crosswalks, and bike infrastructure) to identify clear network deficiencies. Additionally, the first phase will focus on streets and intersections identified as collision hotspots, streets with transit routes and high-ridership bus stops, and areas near schools, commercial corridors, large employment sites, senior facilities, recreation sites, government buildings, and medical facilities.

The second round will be focused on identifying additional improvements across the rest of the city, based on the considerations and criteria listed below. This round will also incorporate feedback received during public engagement activities, as appropriate, such as specific locations or infrastructure types requested using the online mapping tool and during in-person outreach events. Community input will be evaluated by the project team to identify feasible, cost-effective solutions to community concerns and ideas.

Recommendations Development Approach

Bicycle Recommendations Considerations

Alta will identify context-sensitive bike facility recommendations using a multi-step approach that allows us to evaluate feasibility while meeting the needs of people bicycling in Santa Rosa. Following the guidelines and standards described above, such as the Caltrans DIB 94, Alta will use the following high-level process for determining proposed bicycle projects:

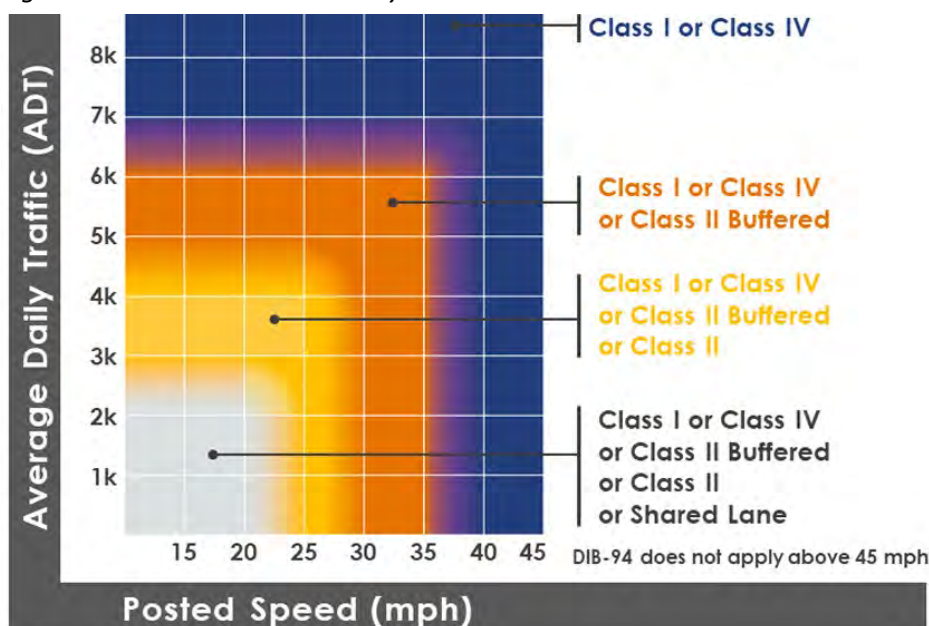
1. Identify potential improvements (i.e., corridors and intersections)
2. Identify desired bike facility type (class)
3. Evaluate desired bike facility type (class) for feasibility using various criteria (described below)
4. Recommend preferred bike facility based upon feasibility evaluation (step 3 above)
5. If necessary, explore feasible alternatives or the “next best” facility if the preferred bike facility is not determined to be feasible.

The three main criteria that Alta will use to vet bicycle network recommendations for feasibility are:

Criterion 1. Roadway Context

First, Alta will consider what facility is most appropriate for different roadways based on their motor vehicle *speeds*, using the City’s radar enforceable speed limit data, and *traffic volumes*, using Replica average daily traffic (ADT) data. State and Federal guidance indicate that, in general, the higher the speed and volume of a roadway, the more separated and protective the recommended bike facility should be. Class III bicycle routes and boulevards are most appropriate for lower speeds and volumes, such as along local, residential streets; Class II bike lanes or buffered bike lines are best for streets with lower speeds and low- to moderate volumes; and Class IV separated bike lanes or Class I shared use paths are best for moderate to high speeds and high volumes. The graphic below shows general guidance for how vehicle volumes and speeds can be taken into consideration to determine a preferred bike facility type.

Figure 1: Caltrans DIB-94 Bikeway Selection Chart



It is important to note that the suggested parameters in this graphic assume that actual speeds are close to posted speed limits. If, however, there is data indicating that actual speeds are higher than posted speed limits (e.g., from consistent community input or police data), then we consider the actual speed rather than the posted speed.

Criterion 2. Planned/Funded Projects

This criterion builds on planned/funded and already under-design projects that the City has in the pipeline over the next five years. This information will help us:

- Avoid redundant or conflicting projects between the Active Transportation Plan recommendations and previous or concurrent efforts, and
- Identify potential connections to planned/funded projects to avoid bicycle network deficiencies.

Please note that this criterion is dependent on City data to advance the analysis and we hope to obtain the most up to date data related to the next 5 years of project implementation.

Criterion 3. Roadway Reconfiguration Feasibility Index & Usable Space

Using ADT data from Criterion 1, Alta will also identify roadways which may be candidates for a roadway reconfiguration (“road diet”) based on current traffic volumes, number of lanes, and identified need for greater accommodation for active transportation modes (i.e., people walking, biking, or rolling). The most common application of a road diet consists of converting four lanes to three lanes – two traffic lanes, one for each direction, and one two-way left-turn lane – but there are other configurations that can work for different contexts. Per FHWA and Caltrans guidelines, ADT provides a good first determination of whether to consider a road diet. Typically, roadways with an ADT of 20,000 or less are good candidates for road diets, though this can vary for different jurisdictions, and can be further evaluated for feasibility using other considerations listed in the next section. We will work with City staff to determine what thresholds are most appropriate for Santa Rosa. When removing a travel lane is not feasible, lane narrowing (e.g., down to 10 feet) may be an appropriate alternative for creating more space for dedicated bicycle facilities.

Other Considerations

In addition to the three primary criteria described above, Alta will consider other factors when determining bicycle recommendations, including but not limited to:

- Equity
- Community input
- Collision hotspots
- Previously proposed but not yet planned/funded bicycle facilities
- High Stress (Level of Traffic Stress 4) roadway segments according to the Bicycle Level of Traffic Stress (BLTS) analysis
- Unique environment conditions like topography and landscape
- Physical constraints including available right of way
- Barriers such as railroads, highways, and waterways
- Traffic vehicle mix (e.g., whether roadways have a lot of bus or freight/truck traffic)
- Frequency of driveways and intersections

Pedestrian Recommendations Considerations

The intent of the proposed evaluation is to update the network developed for the 2018 *Santa Rosa Bicycle and Pedestrian Master Plan (BPMP) Update* and support the land use vision as currently presented in the Draft *Santa Rosa General Plan 2050*.

Pedestrian Crossings Typologies

- **Develop Intersection Typologies:** W-Trans will work with the City to develop pedestrian crossing treatment typologies for intersections based on the City's street functional classifications – for example, arterial/arterial, arterial/collector, and other combinations, as well as facilities such as highway on/off ramps and mid-block crossings. The typologies will include recommended crossing enhancement strategies, for which multiple options could potentially be used in tandem, depending on the context. Examples of treatments to be incorporated into the typologies for unsignalized crossings include, but may not be limited to, high visibility striping, curb extensions, Rectangular Rapid Flashing Beacons (RRFB), High Intensity Activated Crosswalks (HAWK), median refuge islands, high visibility pedestrian crossing signs, and advance yield markings ("shark's teeth"). Typologies will also be developed for signalized intersections, including design features such as leading pedestrian intervals (LPIs), striping recommendations, and signal phasing recommendations to avoid vehicle-pedestrian conflicts.

The specific mix of recommended treatments will be developed based on demonstrated effectiveness from guidance including FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, FHWA, 2017, Caltrans' Traffic Calming Guide, Caltrans DIB 94, and FHWA's STEP: Improving Visibility at Trail Crossings. Draft typologies will be prepared and presented to staff for refinement to reflect local conditions and needs. Typologies are not intended to be "one size fits all", but to provide a starting point for further analysis and to develop a systematic, consistent approach for use of these treatments throughout the City.

- **Compile Previous Project Recommendations:** This component of the analysis will be based on the City's previous planning efforts and project recommendations as a starting point for identifying intersections for potential enhancements. Key documents include the BPMP, Santa Rosa General Plan 2050, City of Santa Rosa Local Road Safety Plan, Sonoma County Vision Zero Action Plan, and more focused efforts such as the Downtown Station Area Specific Plan and Stony Point Road Corridor Study for Active Transportation Modes. Plans completed prior to 2018 are assumed to have been incorporated into the BPMP. The consultant team will meet with City staff to help identify and confirm previously proposed pedestrian infrastructure projects that have been completed or have been funded.
- **Identify Additional Candidate Intersections:** To develop a list of candidate project locations, intersections of arterials and/or collector streets will be identified within a one-quarter mile buffer around public schools, SMART rail stations, major bus stops, and selected large employers. Other locations will include the on- and off-ramps at the SR 12 and US 101 interchanges as well as intersections in the High Injury Network. This step will also incorporate feedback received during public engagement activities, as appropriate, such as specific locations or infrastructure types requested using the online mapping tool and during in-person outreach events.

- **Assign Typologies to Candidate Intersections and Integrate with Previous Data Collection:** The locations identified in the previous two steps will be classified according to the pedestrian crossing typologies. The information in the GIS database will be used to identify the known features of these intersections, such as traffic controls and presence of crosswalks.

Sidewalks Gaps and Connectivity

- **Assess Sidewalk Network:** Major sidewalk gaps will be identified from the GIS map prepared for the existing conditions analysis, focusing on arterials and collectors. Sidewalks should be on both sides of the roadway if located within one-quarter mile of the following: large-scale commercial/residential land use; SMART station; schools; or high-ridership bus stop as identified in the existing conditions analysis. Consideration will also be given to barriers that require a circuitous path of travel between key origins and destinations, including railroad tracks, creeks, and highways; this could be quantified by establishing a minimum diversion threshold such as the degree to which trip lengths are increased due to the presence of the barrier. Consideration will also be given to gaps near the boundary between the City and unincorporated Sonoma County to identify interjurisdictional connectivity issues.

Data Needs

Alta will use the following data files to support recommendation development under this task:

Data	Recommended Source
Posted Speed Limit	Open Street Map (OSM)
Average Daily Traffic Volumes	Replica
Existing/Available Right-of-Way	Parcel Based Analysis (Alta)
Existing Bike Facilities	City data, Alta analysis
Collisions	SWITRS
Public Input	Input map (Alta), notes from outreach events (Alta)