MEMORANDUM

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To: Nayan Amin and Ian Lin, TJKM

From: Sam Corbett and Aaron Fraint, Alta Planning + Design

Date: April 10, 2020

Re: Mountain View Bicycle Level of Traffic Stress

Introduction

This memo catalogs the process of creating a Bicycle Level of Traffic Stress (BLTS) assessment for the City of Mountain View. This includes the acquisition of source data, the methodology to classify stress levels, as well as a discussion of the results, which are also graphically displayed in the attached set of maps. The methodology described in this document is adapted from the Mineta Transportation Institute's _Low Stress Bicycling and Network Connectivity_ (2012)[1], and has been adjusted to reflect the data available within Mountain View.

Background

BLTS is a numeric value assigned to each segment and intersection of a road network, aiming to approximate the level of stress experienced by bicyclists. BLTS is calculated directly from available street network data, considering the following built environment parameters:

- Street Segments
  - Number of through travel lanes
  - Posted speed limit
  - Class of bicycle facility (if any)
- Intersections
  - BLTS of intersecting segments
  - Presence of traffic signal
  - Presence of crossing island at least 6 feet in width

The BLTS analysis is conducted twice:
- the first includes all existing and approved bicycle facilities identified in the Capital Improvement Plan
- the second also includes all planned bicycle infrastructure improvements

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[1] https://transweb.sjsu.edu/sites/default/files/1005-low-stress-bicycling-network-connectivity.pdf

Data Inputs

A line feature class named "Road_Centerlines" was used as the source of roadway feature geometry and attributes reflecting posted speed limits. A second feature class, named "Pavement_Marking_Lines" was used to identify roadways with lane lines, and a manual process was employed to interpolate the number of through travel lanes for motor vehicles to the roadway geometries. A similar process was used to interpolate bicycle facility data from "Street_Bike_Network" and "BikeNetwork2019".

A GIS layer representing intersection points within Mountain View was created by transforming each line segment into its constituent start- and end-points. Using a "Signals" feature class, all signalized intersections were flagged using spatial analysis, and all non-signalized intersections with a crossing island in the median were flagged using a manual interpolation process from the "Street_Curbs" feature class.

The final set of data attributes used as inputs into this analysis were created through Tasks 2A & 2B in the Mountain View Comprehensive Modal Plan. This consisted of tagging roadway features where projects have already been approved (as identified in the Capital Improvement Plan), and where projects have been planned in the Mountain View Bicycle Transportation Plan (2015), the Santa Clara Countywide Bicycle Plan (2018), and the Caltrans D4 Bicycle Plan (2018). Attributes from these plans were combined to identify the approved and/or planned designs (if any) for each street segment in Mountain View. Additionally, new on- and off-street roadway geometries were merged into the GIS layer where brand-new facilities are planned.

Definition of LTS Values

BLTS values have a range between 1 and 4, with lower numbers signifying lower traffic stress levels. These BLTS values are defined as follows:
- BLTS 1: roadway is comfortable for all ages and abilities
- BLTS 1.5: roadway is comfortable for people of most ages and abilities, but does not feature a bicycle facility
- BLTS 2: roadway is comfortable for interested but concerned cyclists
- BLTS 3: roadway is comfortable for enthused and confident cyclists
- BLTS 4: roadway is comfortable for strong and fearless cyclists

Methodology

Segment-Based Methodology

The process for defining segment-specific BLTS consists of assigning initial values based upon the combination of speed limit and roadway width (defined by number of travel lanes). This initial classification is adapted from the Mineta Transportation Institute report, and is shown in Table 1 below.

Table 1 - Segment BLTS

	Street Width			
	2 lanes without centerline	2 - 3 lanes with centerline	4 - 5 lanes	6 + lanes
<= 25 mph	1.5	2	3	4
30 mph	2	3	4	4
>= 35 mph	4	4	4	4

Speed Limit (vertical axis label)

Where bicycle facilities exist, the BLTS is updated as shown in Table 2 below.

Table 2 - BLTS Adjustment for Bike Facilities

Bicycle Facility Class	**BLTS**
Class 1 Trail	1
Class 2 Bike Lane	See tables below
Class 3 Bike Route on initial LTS 1.5	1
Class 3 Bike Route on initial LTS 2+	Keep base LTS
Class 4 Protected Bike Lane	1

These adjustments on Class 1 and 4 facilities account for the physical separation inherent to these designs, and the associated reduction in stress for bicyclists. The adjustment to Class 3 facilities on roads with an initial LTS of 1.5 accounts for the fact that Class 3 bicycle routes reduce stress on residential streets, but do not substantially reduce stress on wider, faster streets. Where Class 2 bicycle lanes exist, the BLTS value will be calculated as shown in Table 3 on the following page.

Table 3 - Class II Bike Lane BLTS

Street Width

Speed Limit	Less than 4 lanes	4 or more lanes
<= 25 mph	1	3
30 mph	2	3
35 mph	3	3
>= 40 mph	4	4

Intersection-Based Methodology

A bicyclist's experience of stress at an intersection is impacted both by the street they're travelling along as well as the street that they must cross. As a result, the preliminary intersection BLTS is calculated as the worst BLTS of all intersecting street segments. For example, an intersection of BLTS 4 and BLTS 2 streets will be coded as BLTS 4.

The Mineta Transportation Institute identifies unsignalized intersections as a specific factor that can increase stress, particularly where the intersecting roadways feature higher speed limits, greater numbers of travel lanes, or both. Their classification is identified in the following two tables, and will be applied to all unsignalized intersections in Mountain View.

Where unsignalized intersections feature a median refuge that is at least 6 feet wide, the values in Table 4 will be used:

Table 4 - Unsignalized Intersections with Median (6'+ wide)

Street Width

Speed Limit	2 - 3 lanes	4 - 5 lanes	6 + lanes
<= 30 mph	1.5	2	3
>= 35 mph	2	3	4

Where unsignalized intersections do not have a median refuge 6 feet or wider, the values in Table 5 on the following page will be used.

Table 5 - Unsignalized Intersections without Median

Speed Limit	Street Width		
	2 - 3 lanes	4 - 5 lanes	6 + lanes
<= 30 mph	2	3	4
>= 35 mph	3	4	4

The final intersection-level BLTS values will be identified as follows:
- Signalized intersections will use the worst BLTS of the intersecting segments
- Unsignalized intersections will take whichever value provides a worse BLTS score:
    - Unsignalized BLTS as identified in Tables 4 and 5
    - Worst BLTS of intersecting segments

BLTS: Existing and Approved Projects

The initial BLTS analysis considers the stress levels of the existing street network in Mountain View. Additionally, it also incorporated a review of all bicycle-related projects identified in the Capital Improvement Plan. Any approved projects that are expected to be completed in the near future are considered to be "existing".

The results are summarized in the graph at right, which shows that the BLTS 1.5 classification is the most common condition, representing 56% of all centerline miles in Mountain View.

These results are also visualized spatially in a series of maps. Maps 1 and 2 on the following pages provide a citywide view of the Existing/Approved and Planned BLTS results, using line color to illustrate each BLTS level. A detailed zoomed-in view by quadrant can be found at the end of the document. Map 7 identifies the extents of the four quadrants, Maps 8 – 11 identify existing, approved, and planned bicycle facilities,[2] and Maps 12 – 15 show the BLTS results for the existing/approved network.

BLTS - Existing Network

BLTS 1 — 12%
BLTS 1.5 — 56%
BLTS 2 — 13%
BLTS 3 — 12%
BLTS 4 — 7%
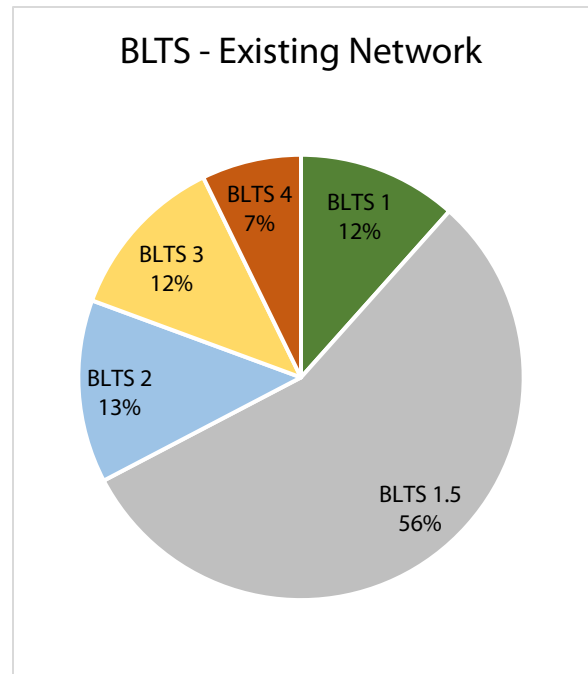
BLTS: Planned Projects

The second BLTS analysis assumes that all planned projects have been implemented, and the results are shown in Maps 16 – 19 using the same symbol styles as the Existing/Approved BLTS maps.

The graph at right summarizes the centerline mileage of the planned network, and it shows that the major change between the two scenarios is the proportion of BLTS 1 streets – it increases in the planned network to 27% of all centerline miles (from 12% in the existing/approved network).

BLTS - Planned Network

BLTS 1 — 27%
BLTS 1.5 — 50%
BLTS 2 — 14%
BLTS 3 — 6%
BLTS 4 — 3%

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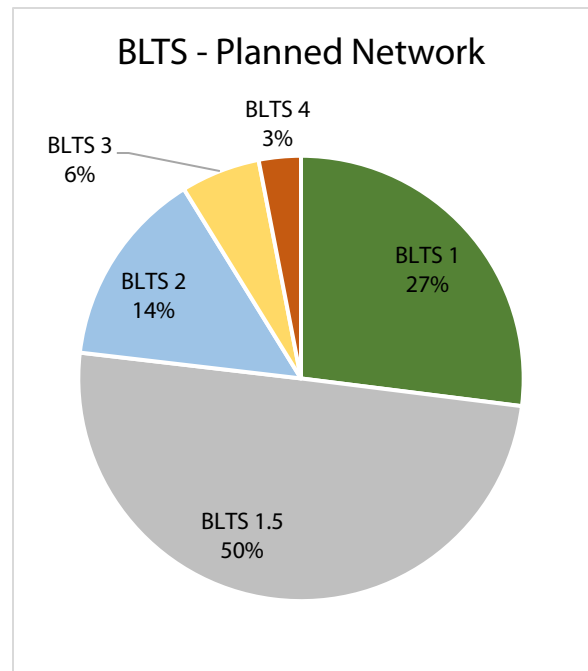
[2] Existing/approved facilities are shown with a thin line, while planned facilities are shown with a thick underline. In both cases, the facilities feature the same colors (class 1 is dark green, class 2 is blue, class 3 is purple, and class 4 is bright green), but the planned facility colors use a lighter shade than the existing/approved facilities.
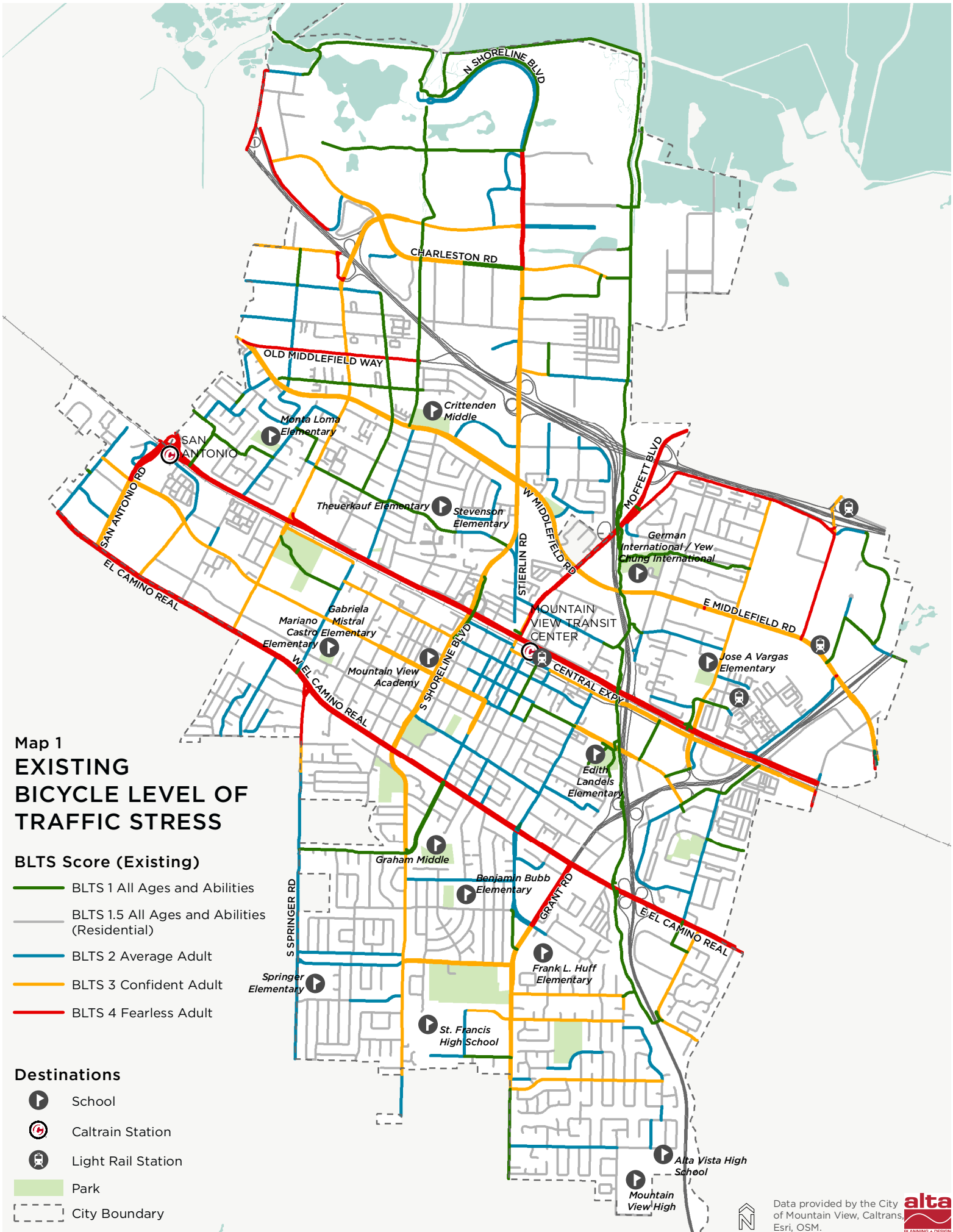
Map 1
EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

BLTS Score (Existing)

— BLTS 1 All Ages and Abilities

— BLTS 1.5 All Ages and Abilities (Residential)

— BLTS 2 Average Adult

— BLTS 3 Confident Adult

— BLTS 4 Fearless Adult

Destinations

School

Caltrain Station

Light Rail Station

Park

City Boundary

Map labels:

N SHORELINE BLVD
CHARLESTON RD
OLD MIDDLEFIELD WAY
SAN ANTONIO
SAN ANTONIO RD
EL CAMINO REAL
Monta Loma Elementary
Crittenden Middle
Theuerkauf Elementary
Stevenson Elementary
W MIDDLEFIELD RD
MOFFETT BLVD
German International / Yew Chung International
E MIDDLEFIELD RD
Mariano Castro Elementary
Gabriela Mistral Elementary
W EL CAMINO REAL
S SHORELINE BLVD
STIERLIN RD
MOUNTAIN VIEW TRANSIT CENTER
CENTRAL EXPY
Jose A Vargas Elementary
Mountain View Academy
Edith Landels Elementary
S SPRINGER RD
Graham Middle
Benjamin Bubb Elementary
GRANT RD
E EL CAMINO REAL
Frank L. Huff Elementary
Springer Elementary
St. Francis High School
Alta Vista High School
Mountain View High

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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Map 2
PLANNED BICYCLE LEVEL OF TRAFFIC STRESS

BLTS Score (Planned)

— BLTS 1 All Ages and Abilities

— BLTS 1.5 All Ages and Abilities (Residential)

— BLTS 2 Average Adult

— BLTS 3 Confident Adult
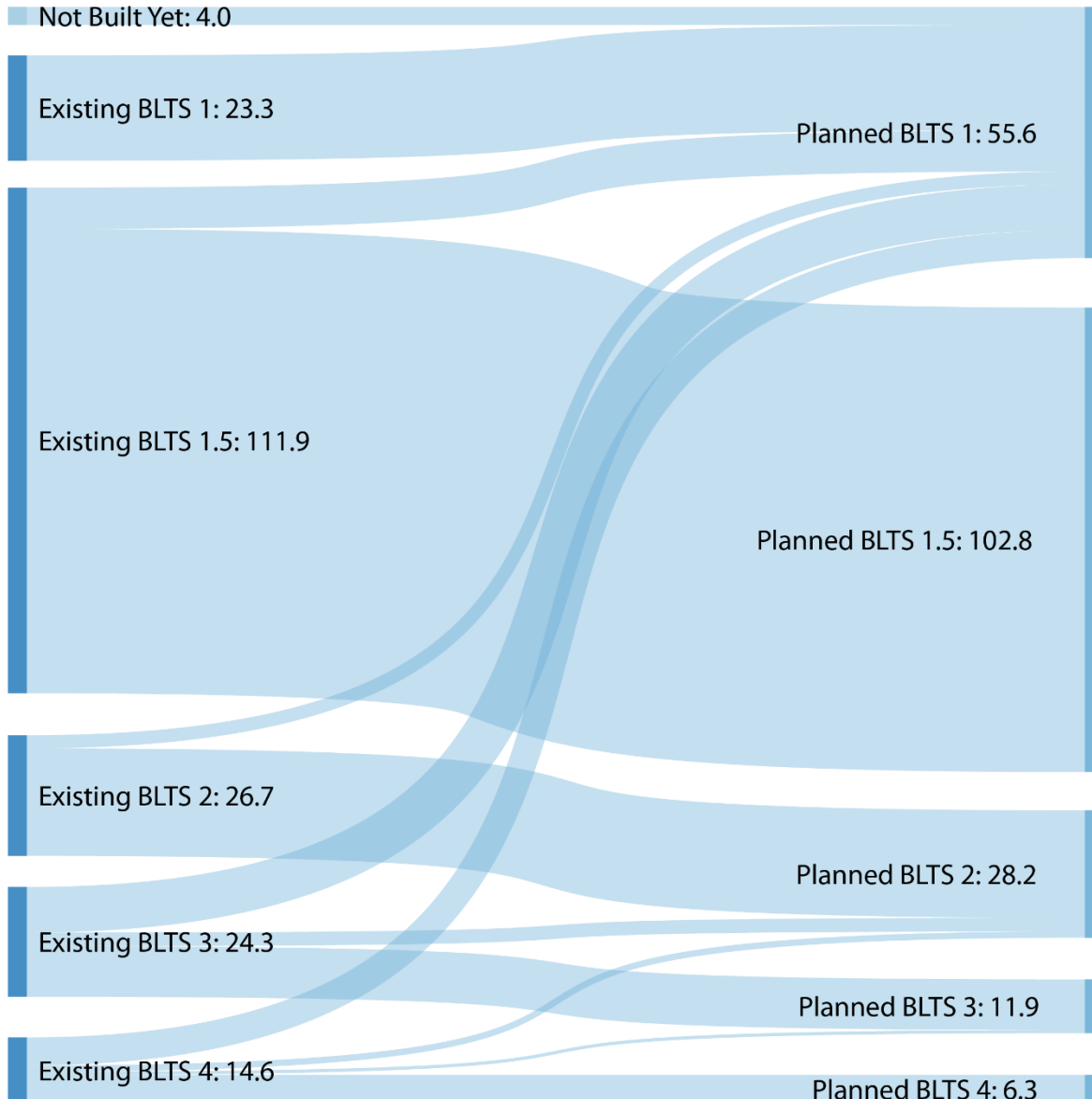
— BLTS 4 Fearless Adult

Destinations

School

Caltrain Station

Light Rail Station

Park

City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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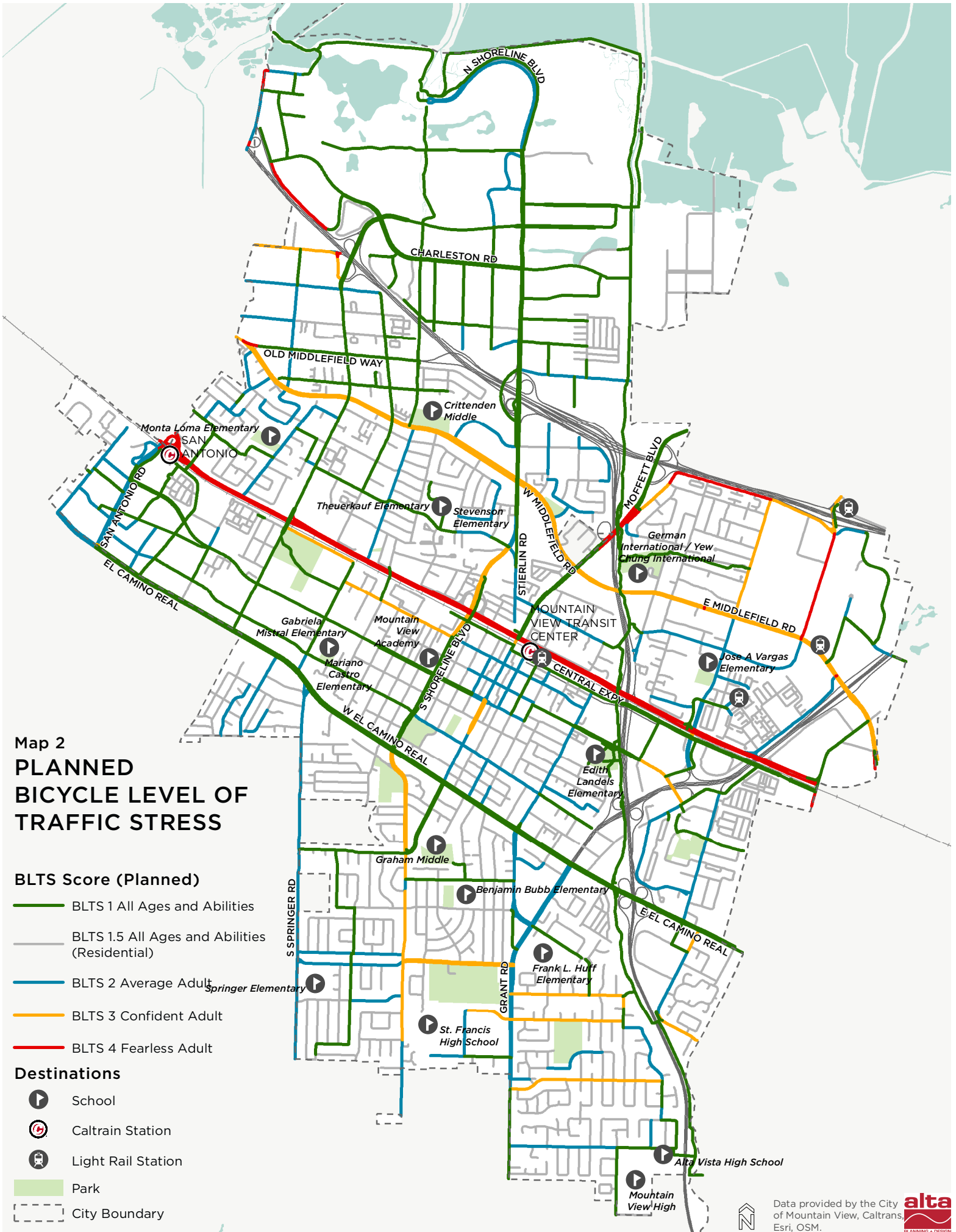
To better understand the nuance in the change between the existing/approved and the planned scenarios, the Sankey diagram on the follow page identifies the change in mileage between the BLTS classes across scenarios. It shows that BLTS 1 accounted for 23.3 centerline miles in the existing scenario, and in the planned scenario accounts for 55.6 centerline miles. In addition to 4 miles of brand-new low-stress facilities, much of the growth is attributable to improved stress levels from streets that had been classified as BLTS 4, 3, or 1.5 in the existing scenario.

Change in BLTS by Centerline Miles between Scenarios: Existing (left) and Planned (right)

Not Built Yet: 4.0

Existing BLTS 1: 23.3

Planned BLTS 1: 55.6

Existing BLTS 1.5: 111.9

Planned BLTS 1.5: 102.8

Existing BLTS 2: 26.7

Planned BLTS 2: 28.2

Existing BLTS 3: 24.3

Planned BLTS 3: 11.9

Existing BLTS 4: 14.6

Planned BLTS 4: 6.3

Low Stress Network Comparison

The existing and planned networks were analyzed to identify "islands" of low-stress connectivity. These islands are characterized as contiguous low-stress road segments (BLTS of 1, 1.5, or 2). The issue with the low-stress islands is that bicyclists traveling between them encounter higher-stress conditions which expose them to greater risks and may even preclude them from making the trip by bicycle. The process of identifying low-stress islands consisted of:

- Filtering the roadway network to only include low-stress segments (BLTS 1, 1.5, or 2)
- Removal of portions of low-stress segments within 100' of high-stress intersections (BLTS 3 or 4)
- Clustering of the remaining segments, buffering by 300', and filtering the resulting polygons to those that have an area greater than or equal to one-tenth of a square mile (0.1 sq. mi.).

A citywide summary of the existing and planned low-stress islands can be seen in Maps 3 and 4 respectively (pages 12 and 13). A detailed quadrant view of the existing network's low-stress islands can be seen in Maps 20 – 23, and the planned network's low-stress islands can be seen in Maps 24 – 27.

Key findings include:

- In the existing network, there are 26 distinct low-stress islands. The average size is 0.33 sq. mi. and the largest island is comprised of the roadways connected to Steven's Creek Trail, covering 2.63 sq. mi. However, it should be noted that some of these connections require circuitous routing around high-stress or impermeable barriers such as Middlefield Road and Caltrain tracks.
- In the planned network, the number of distinct low-stress islands decreases to 11 as many existing low-stress islands are connected into a single island in the planned network via new or improved bicycle facilities. The average size grows to 0.89 sq. mi. and the largest island will span 6.92 sq. mi., as new low-stress bicycle facilities connect to the Steven's Creek island.
- In the planned network, there are a few key streets that are preventing a citywide low-stress network from forming. These streets include Miramonte Ave / Shoreline Blvd, Rengstorff Ave, and Middlefield Rd
- Many of the smaller islands in the existing network are merged together in the planned network by the Class 4 improvement to El Camino Real

All Ages and Abilities Comparison

In 2017, the National Association of City Transportation Officials (NACTO) published *Designing For All Ages & Abilities: Contextual Guidance for High-Comfort Bicycle Facilities*.[3] This document uses motor vehicle speeds, the number of motor vehicle travel lanes, traffic volumes, and other operational considerations to identify the ideal bicycle facility design that would feel safe for users of all ages and abilities (AAA).

To better understand the existing and planned bicycle networks in Mountain View, each bicycle facility was graded with a value that reflects whether or not the combination of bicycle facility class, posted speed limit, and number of travel lanes meets NACTO's thresholds for an all ages and abilities facility. Since volume and operational data were

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[3] https://nacto.org/wp-content/uploads/2017/12/NACTO_Designing-for-All-Ages-Abilities.pdf

not provided as inputs to this analysis, the table has been adapted (as shown on the following page) to pair bicycle facilities with motor vehicle speeds and lane counts.

Thresholds for classifying a bicycle facility as "All Ages & Abilities"

Bicycle Facility	Posted Speed Limit	Motor Vehicle Lanes
Class 1	Any	Any
Class 4	Any	Any
Class 2	<= 25 MPH	1 lane in each direction (or less)
Class 3	<= 25 MPH	No centerline

In the planned network, there are two bicycle facility typologies that are not described in "Class" terminology. Both come from the Caltrans D4 Bicycle Plan, and are "Cross County Bicycle Corridors" (CCBCs) and "Bicycle Superhighways". CCBCs are described as a flexible context-sensitive design that achieves a BLTS of 2 or better. As a result, for the purposes of the AAA analysis these features were considered as Class 2 bicycle lanes. Similarly, bicycle superhighways are described as low-stress separated facilities, and as a result these features were considered to be Class 4 facilities.

Maps 5 and 6 show the existing/approved and planned bicycle networks (respectively), and each bicycle facility is classified as meeting NACTO's AAA threshold (in blue) or not meeting the threshold (in red). The graph below compares the mileage of AAA networks between the existing and planned scenarios. It clearly demonstrates the growth in mileage of the AAA network, from 22 miles in the existing network to 41 miles in the planned network.


All Ages & Abilities Network: Existing vs. Planned Mileage by Facility Class and AAA Status
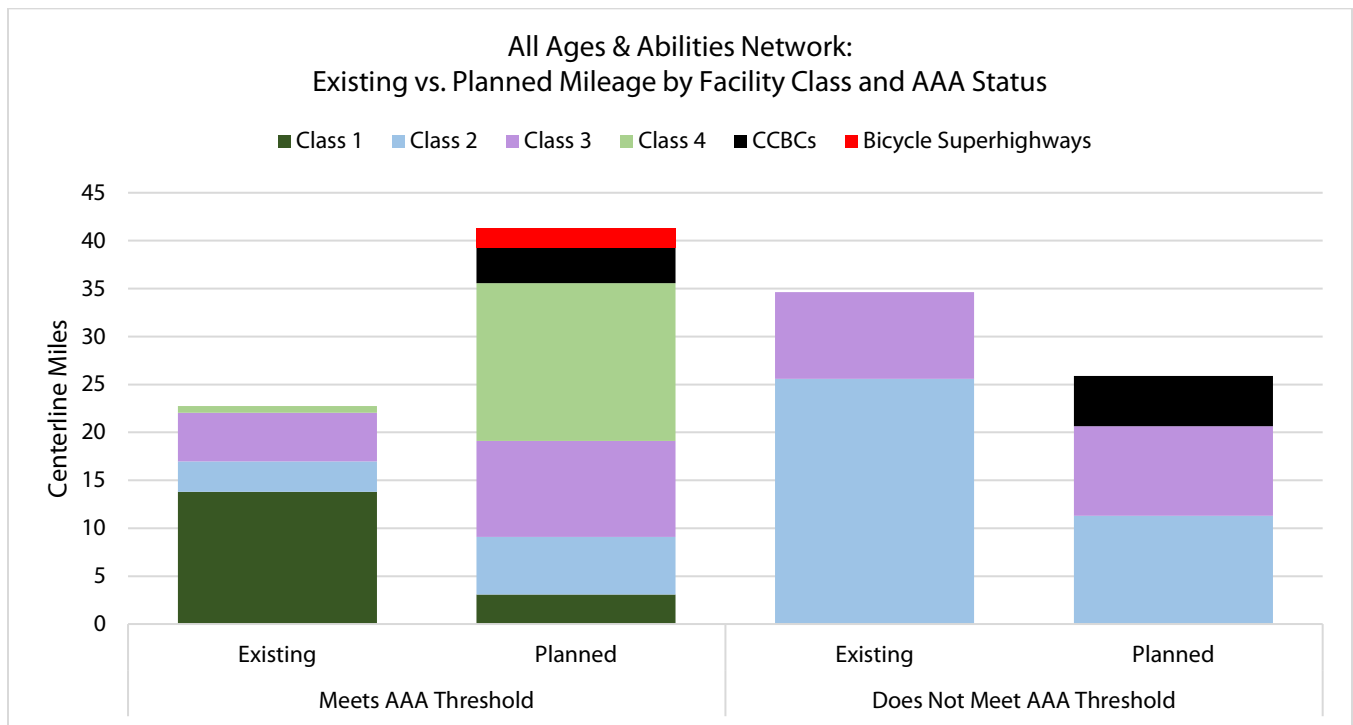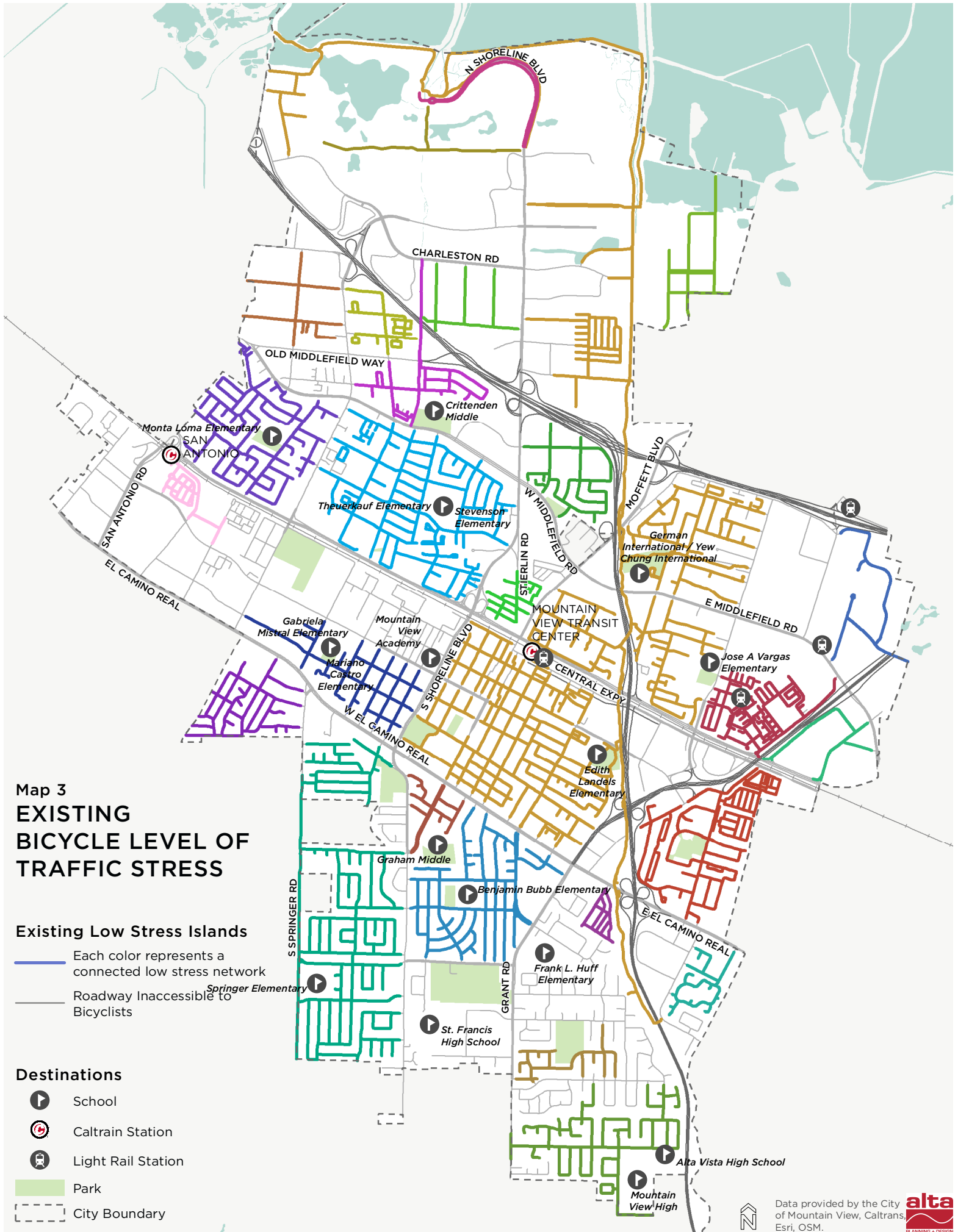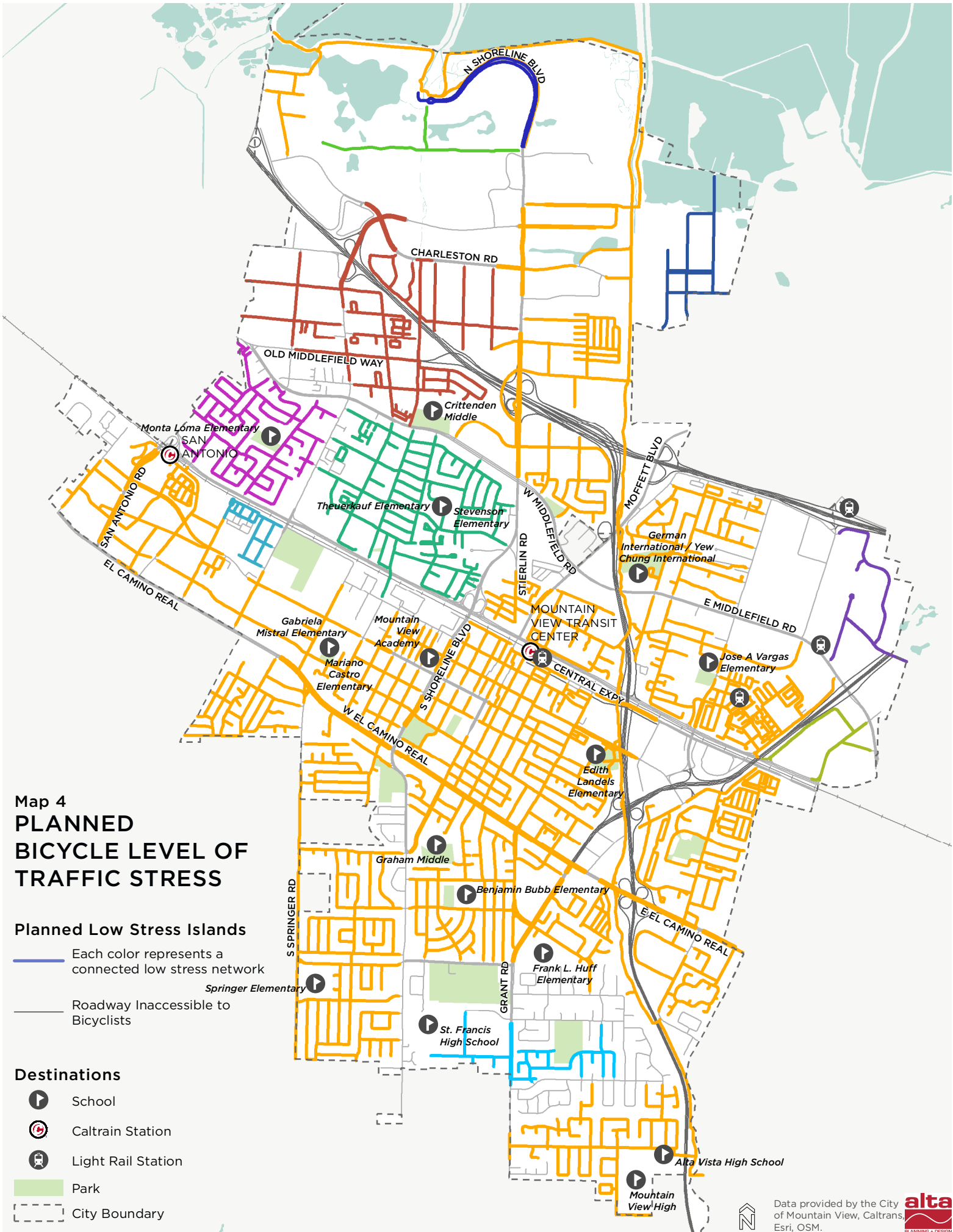
Map 3
EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

Existing Low Stress Islands

Each color represents a connected low stress network

Roadway Inaccessible to Bicyclists

Destinations

- School
- Caltrain Station
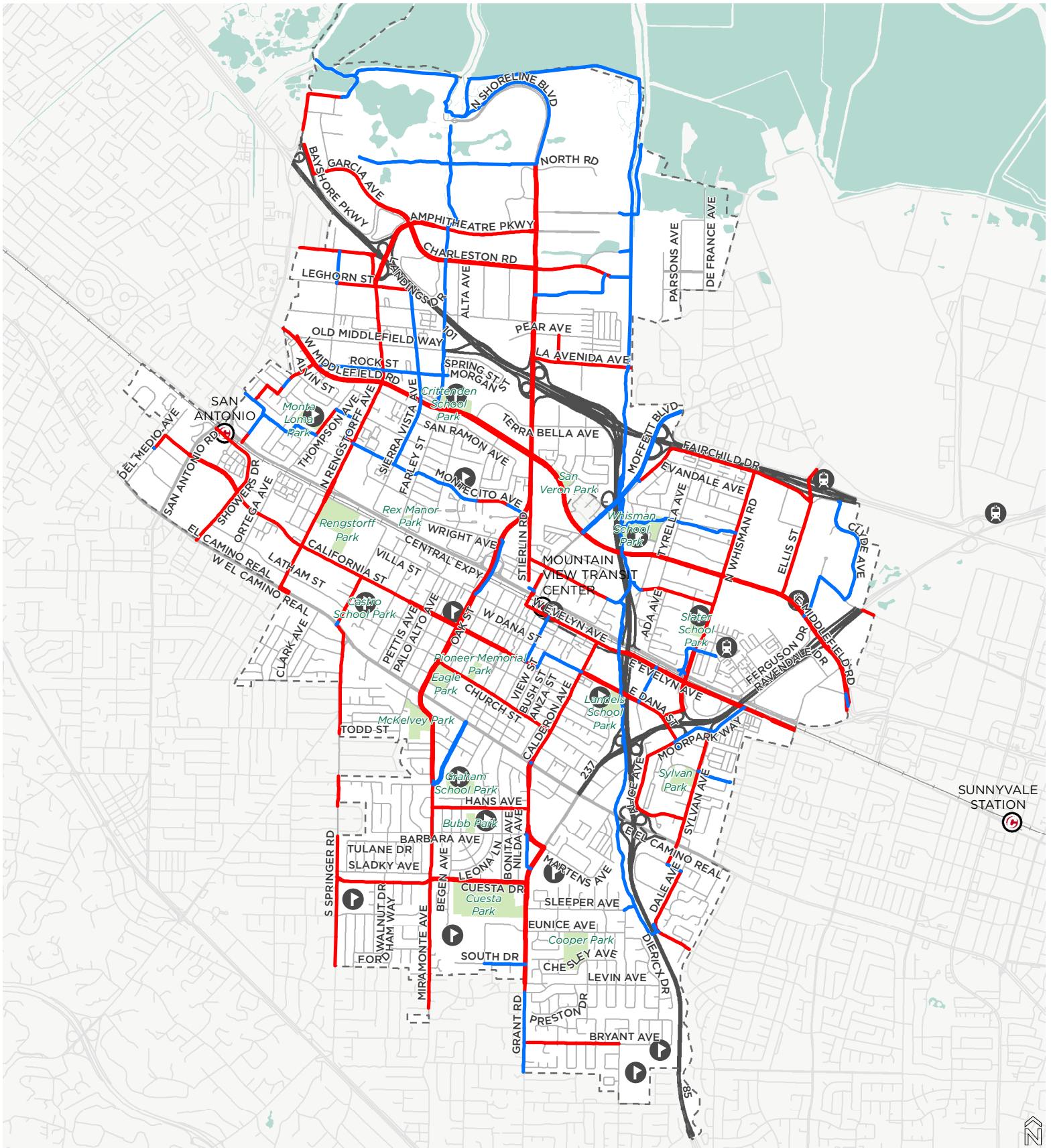- Light Rail Station
- Park
- City Boundary

N SHORELINE BLVD

CHARLESTON RD

OLD MIDDLEFIELD WAY

MOFFETT BLVD

SAN ANTONIO

Monta Loma Elementary

Crittenden Middle

Theuerkauf Elementary

Stevenson Elementary

W MIDDLEFIELD RD

STIERLIN RD

German International / Yew Chung International

E MIDDLEFIELD RD

Gabriela Mistral Elementary

Mountain View Academy

MOUNTAIN VIEW TRANSIT CENTER

CENTRAL EXPY

Jose A Vargas Elementary

Mariano Castro Elementary

SAN ANTONIO RD

EL CAMINO REAL

S SHORELINE BLVD

W EL CAMINO REAL

Edith Landels Elementary

E EL CAMINO REAL

Graham Middle

Benjamin Bubb Elementary

S SPRINGER RD

GRANT RD

Frank L. Huff Elementary

Springer Elementary

St. Francis High School

Alta Vista High School

Mountain View High

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Map 4
PLANNED
BICYCLE LEVEL OF
TRAFFIC STRESS

Planned Low Stress Islands

Each color represents a
connected low stress network

Roadway Inaccessible to
Bicyclists

Destinations

School

Caltrain Station

Light Rail Station

Park

City Boundary

N SHORELINE BLVD
CHARLESTON RD
OLD MIDDLEFIELD WAY
Crittenden Middle
Monta Loma Elementary
SAN ANTONIO
Theuerkauf Elementary
Stevenson Elementary
SAN ANTONIO RD
EL CAMINO REAL
Gabriela Mistral Elementary
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MOUNTAIN VIEW TRANSIT CENTER
STIERLIN RD
S SHORELINE BLVD
W EL CAMINO REAL
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Edith Landels Elementary
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GRANT RD
Frank L. Huff Elementary
Springer Elementary
St. Francis High School
Alta Vista High School
Mountain View High

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EXISTING NETWORK: ALL AGES & ABILITIES
Map 5

Existing Bicycle Facilities

— Meets AAA Threshold (21.9 Miles)

— Does Not Meet AAA Threshold (36.5 Miles)

Destinations

School

Caltrain Station

Light Rail Station

Park

City Boundary

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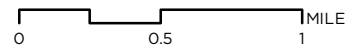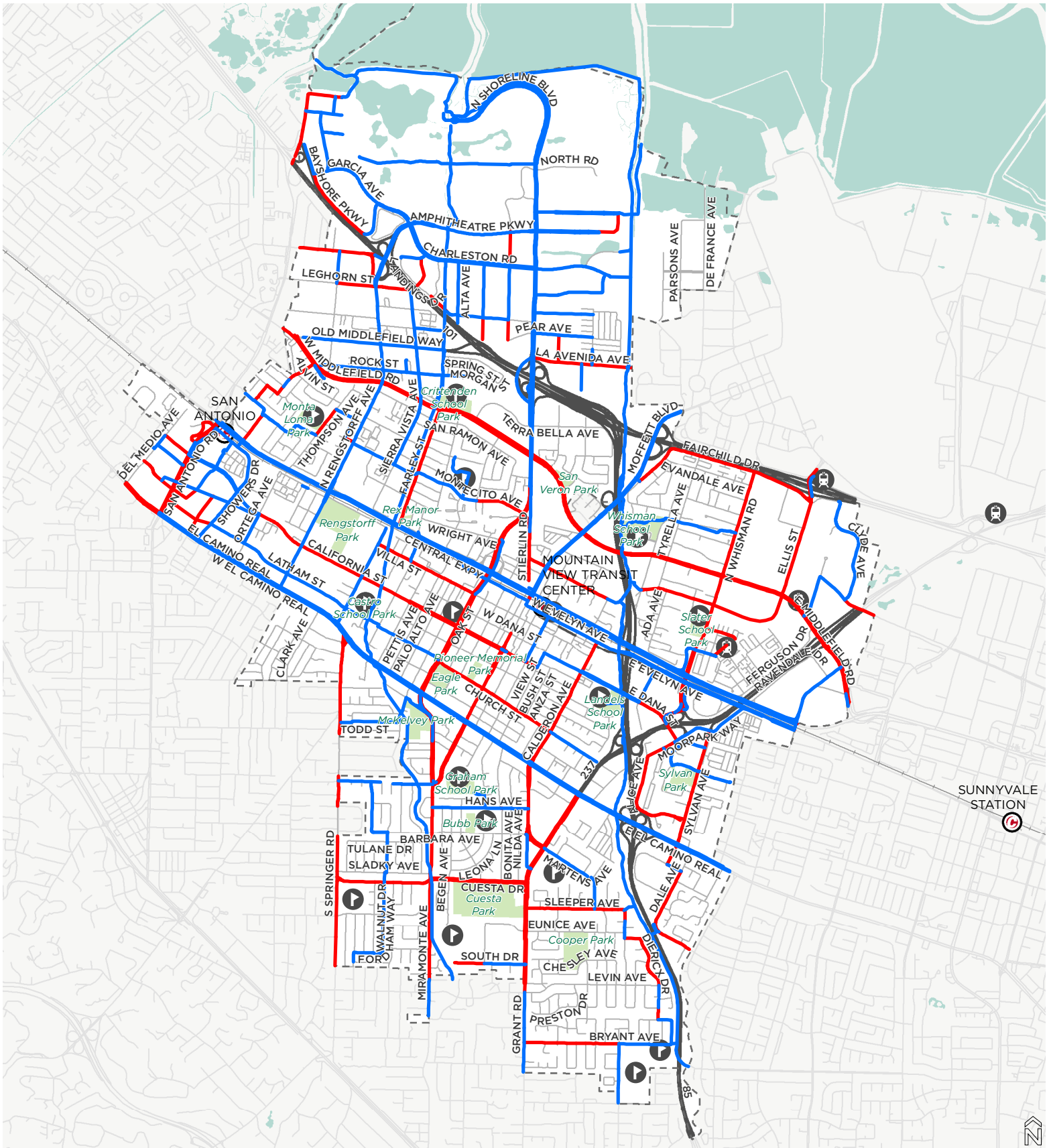
PLANNED NETWORK: ALL AGES & ABILITIES
Map 6

Planned Bicycle Facilities

— Meets AAA Threshold (60.2 Miles)

— Does Not Meet AAA Threshold (31.8 Miles)

Destinations

School

Caltrain Station

Light Rail Station

Park

City Boundary

Maps

North
Quadrant

Palo Alto

Central West
Quadrant

Central East
Quadrant

Los Altos

Sunnyvale

South
Quadrant

MILES

0   0.25   0.5

MOUNTAIN VIEW QUADRANTS

Map 7

City Boundary
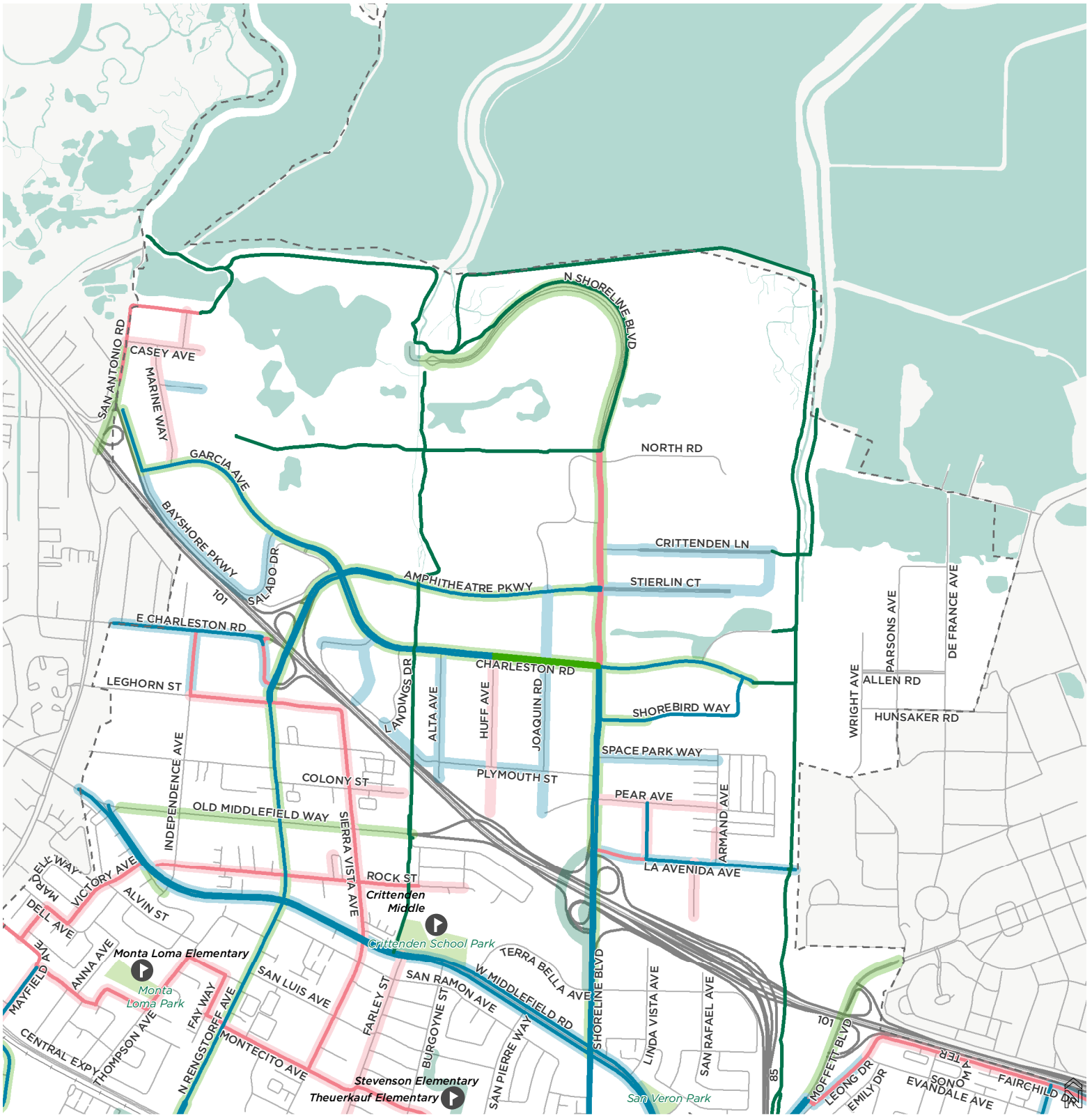
BICYCLE NETWORK

Map 8   NORTH QUADRANT

Planned
Existing

- ▬ Class I Shared-Use Path
- ▬ Class II Bicycle Lane
- ▬ Class III Bicycle Route
- ▬ Class IV Separated Bikeway

Other Roadway Features

- ▬ Roadway Inaccessible to Bicyclists

Destinations

- ▶ School
- ⊙ Caltrain Station
- 🚆 Light Rail Station
- ▮ Park
- ⬚ City Boundary

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Map Labels

SAN ANTONIO RD
CASEY AVE
MARINE WAY
GARCIA AVE
BAYSHORE PKWY
101
SALADO DR
E CHARLESTON RD
LEGHORN ST
INDEPENDENCE AVE
COLONY ST
OLD MIDDLEFIELD WAY
VICTORY AVE
ALVIN ST
SIERRA VISTA AVE
ROCK ST
Crittenden Middle
Crittenden School Park
Monta Loma Elementary
Monta Loma Park
MARICH WAY
DELL AVE
MAYFIELD AVE
ANNA AVE
IFAY WAY
FAY WAY
THOMPSON AVE
N RENGSTORFF AVE
MONTECITO AVE
SAN LUIS AVE
FARLEY ST
BURGOYNE ST
SAN RAMON AVE
Stevenson Elementary
Theuerkauf Elementary
CENTRAL EXPY
SAN PIERRE WAY
W MIDDLEFIELD RD
TERRA BELLA AVE
SHORELINE BLVD
San Veron Park
LINDA VISTA AVE
SAN RAFAEL AVE
85
MOFFETT BLVD
LEONG DR
EMILY DR
SONO A TER
EVANDALE AVE
FAIRCHILD
101
AMPHITHEATRE PKWY
LANDINGS DR
ALTA AVE
HUFF AVE
JOAQUIN RD
CHARLESTON RD
PLYMOUTH ST
SHOREBIRD WAY
SPACE PARK WAY
PEAR AVE
ARMAND AVE
LA AVENIDA AVE
N SHORELINE BLVD
NORTH RD
CRITTENDEN LN
STIERLIN CT
WRIGHT AVE
PARSONS AVE
DE FRANCE AVE
ALLEN RD
HUNSAKER RD

0   0.25   0.5   MILES

BICYCLE NETWORK

Map 9 CENTRAL WEST QUADRANT

Planned
Existing

- Class I Shared-Use Path
- Class II Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Other Roadway Features

- Roadway Inaccessible to Bicyclists

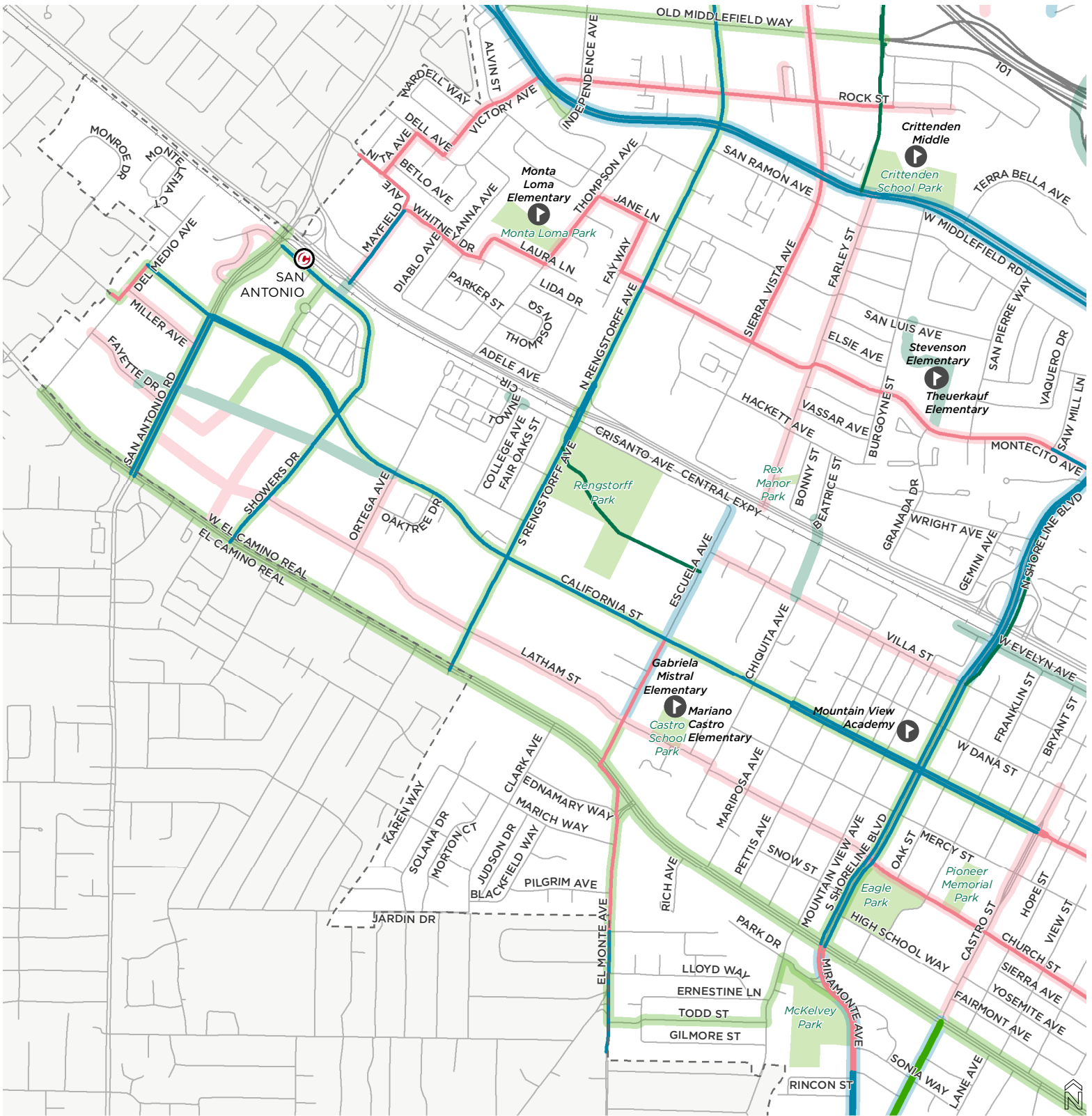**Destinations**

- School
- Caltrain Station
- Light Rail Station
- Park
- City Boundary

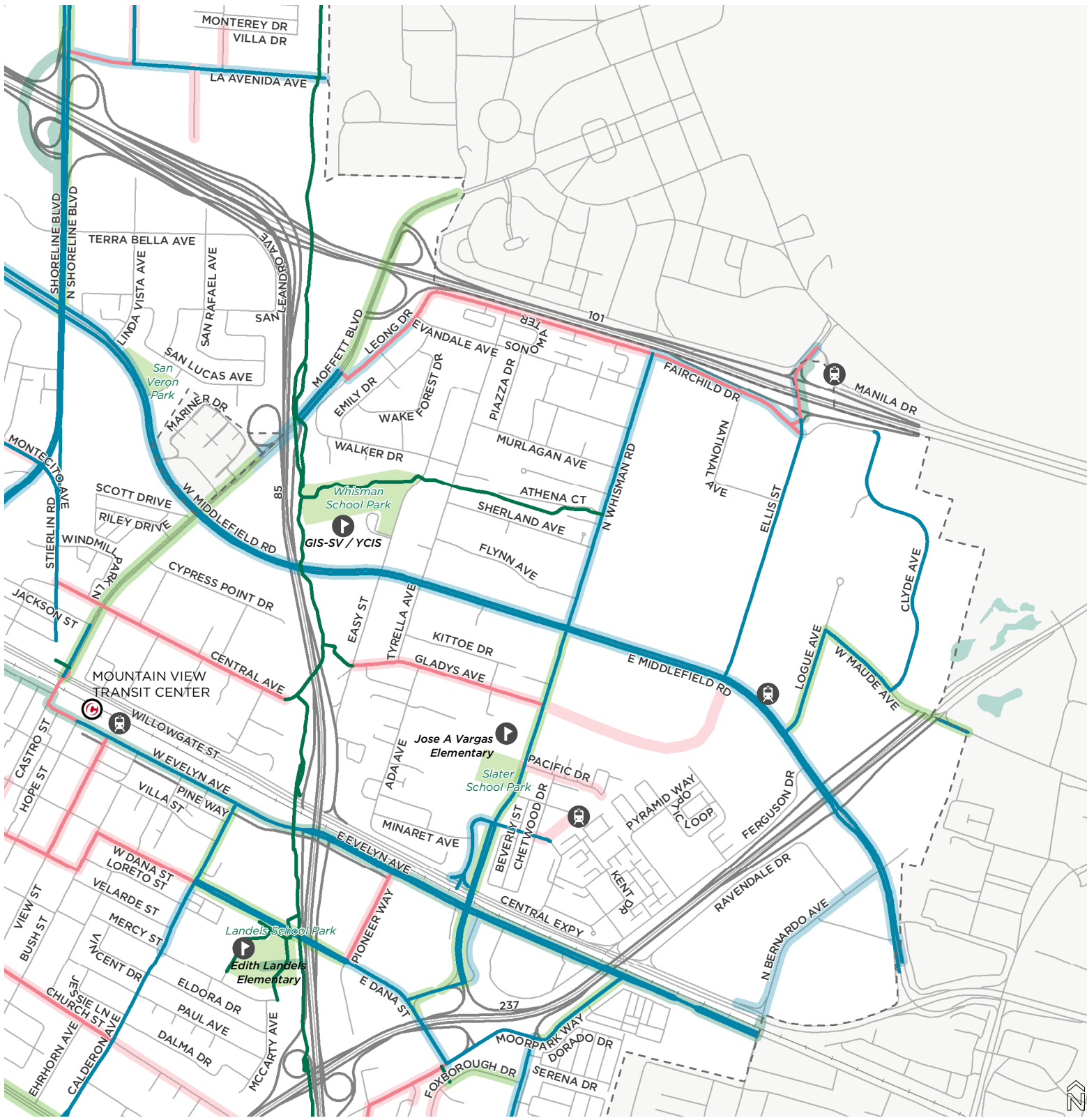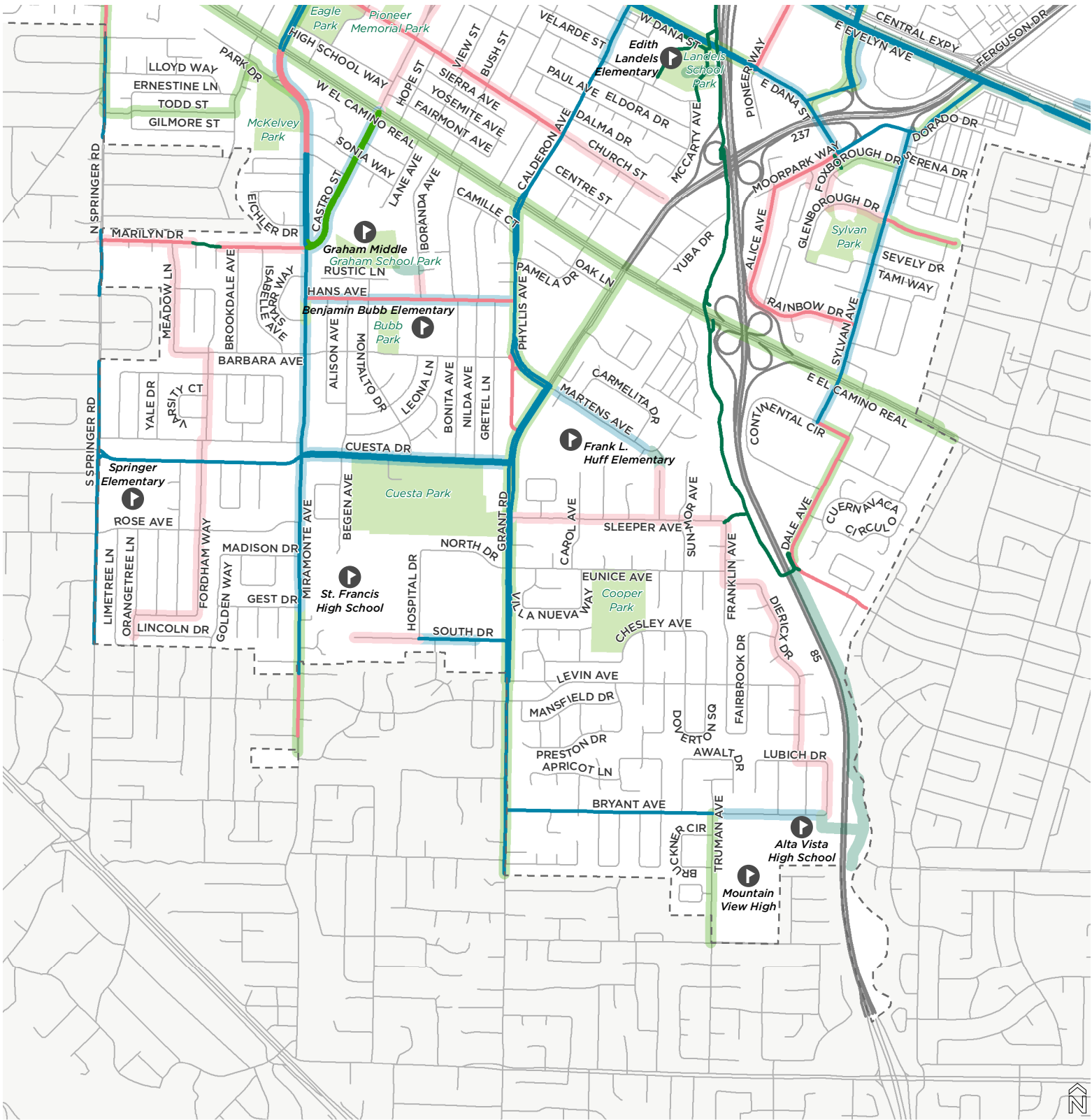Data provided by the City of Mountain View, Caltrans, Esri, OSM.

# BICYCLE NETWORK

Map 10 CENTRAL EAST QUADRANT

Planned / Existing

- Class I Shared-Use Path
- Class II Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Other Roadway Features

- Roadway Inaccessible to Bicyclists

Destinations

- School
- Caltrain Station
- Light Rail Station
- Park
- City Boundary

MILES
0   0.25   0.5

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BICYCLE NETWORK

Map 11   SOUTH QUADRANT

MILES

0   0.25   0.5

Planned

Existing

- Class I Shared-Use Path
- Class II Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Other Roadway Features

——— Roadway Inaccessible to Bicyclists

Destinations

- 🅿 School
- Ⓒ Caltrain Station
- 🚈 Light Rail Station
- Park
- City Boundary
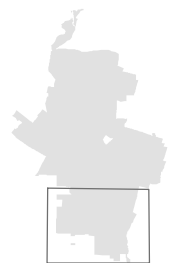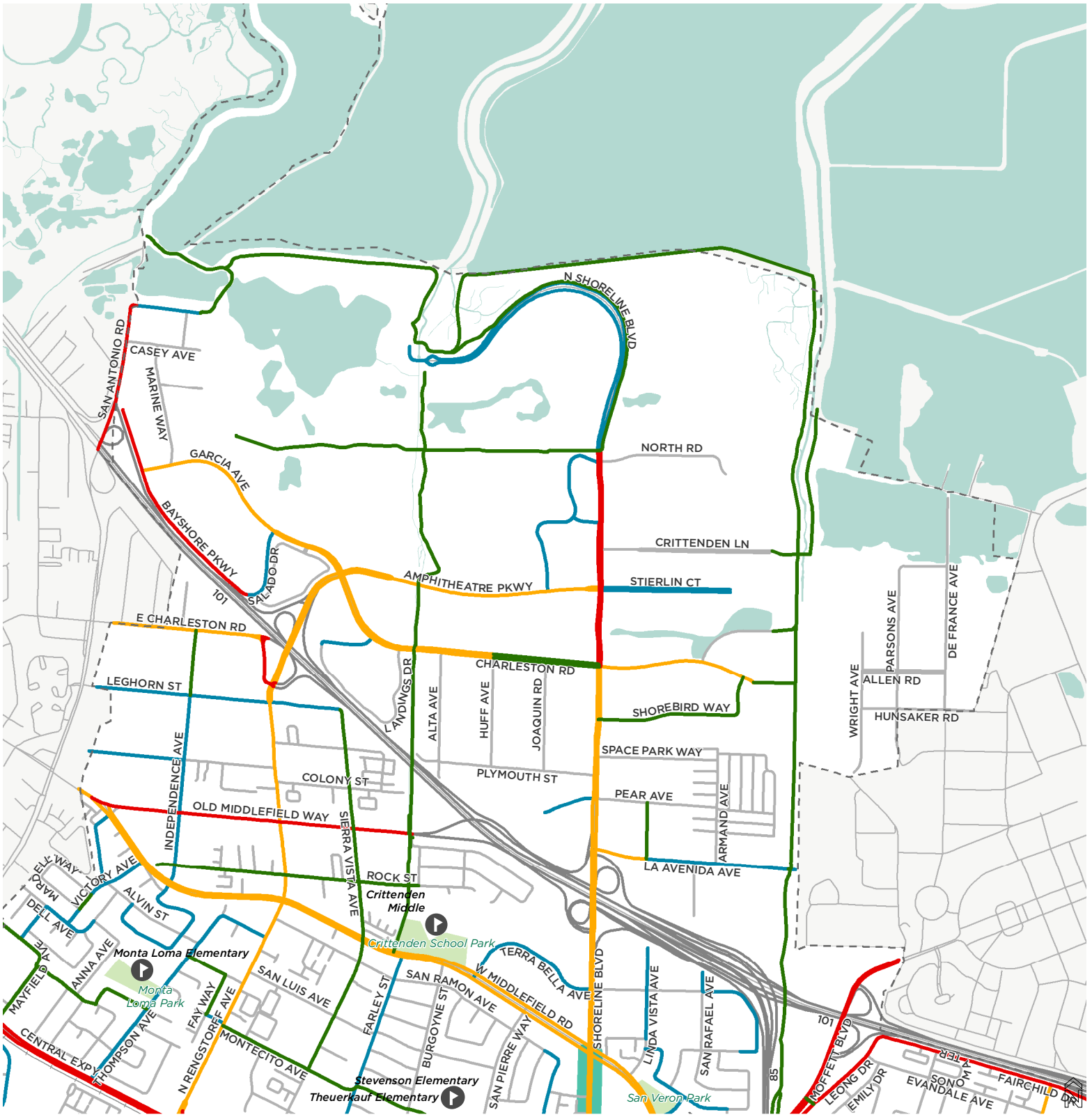
EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

Map 12   NORTH QUADRANT

BLTS Score (Existing)

- —— BLTS 1 All Ages and Abilities
- —— BLTS 1.5 All Ages and Abilities (Residential)
- —— BLTS 2 Average Adult
- —— BLTS 3 Confident Adult
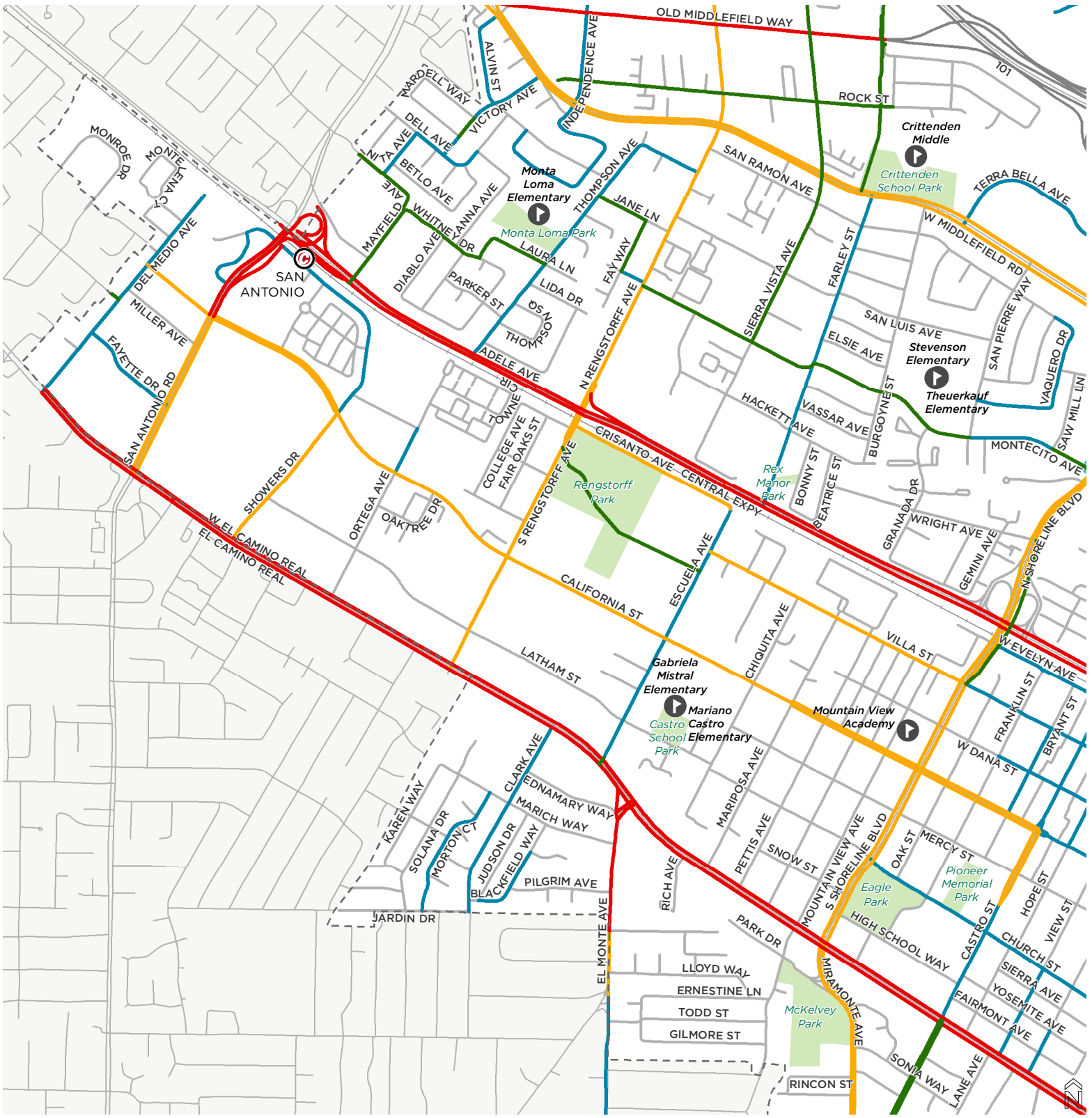- —— BLTS 4 Fearless Adult

Other Roadway Features

- —— Teal Highlight Indicates Approved CIP Project
- —— Roadway Inaccessible to Bicyclists

Destinations

- School
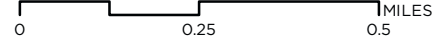- Caltrain Station
- Light Rail Station
- Park
- City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

Map 13   CENTRAL WEST QUADRANT

BLTS Score (Existing)

— BLTS 1 All Ages and Abilities

— BLTS 1.5 All Ages and Abilities (Residential)

— BLTS 2 Average Adult

— BLTS 3 Confident Adult
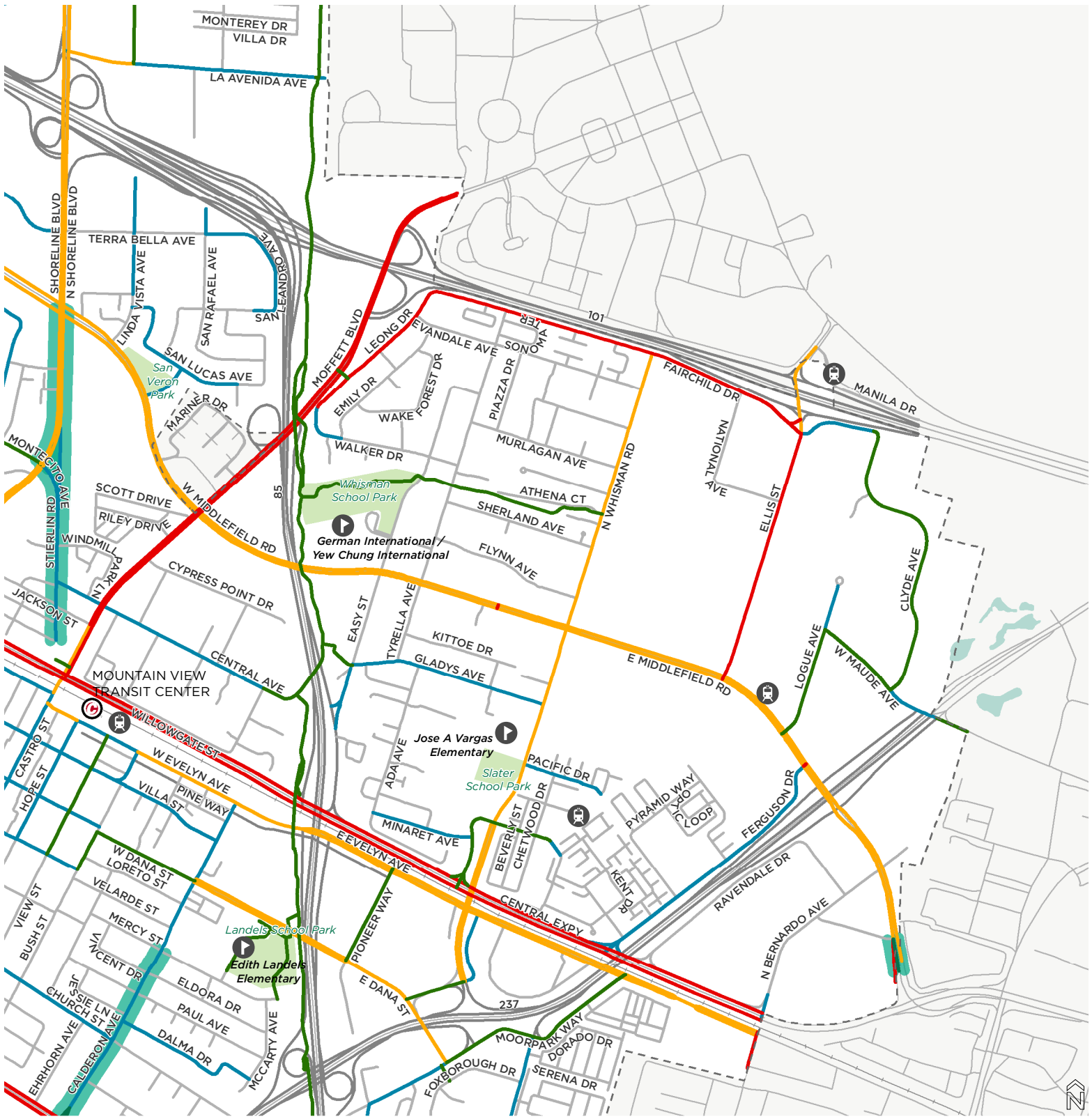
— BLTS 4 Fearless Adult

Other Roadway Features

— Teal Highlight Indicates Approved CIP Project

— Roadway Inaccessible to Bicyclists

Destinations

🚩 School

🚉 Caltrain Station

🚊 Light Rail Station

🟩 Park

⬜ City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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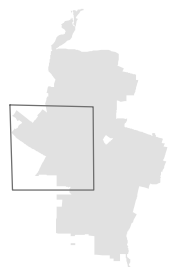
EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

Map 14 CENTRAL EAST QUADRANT

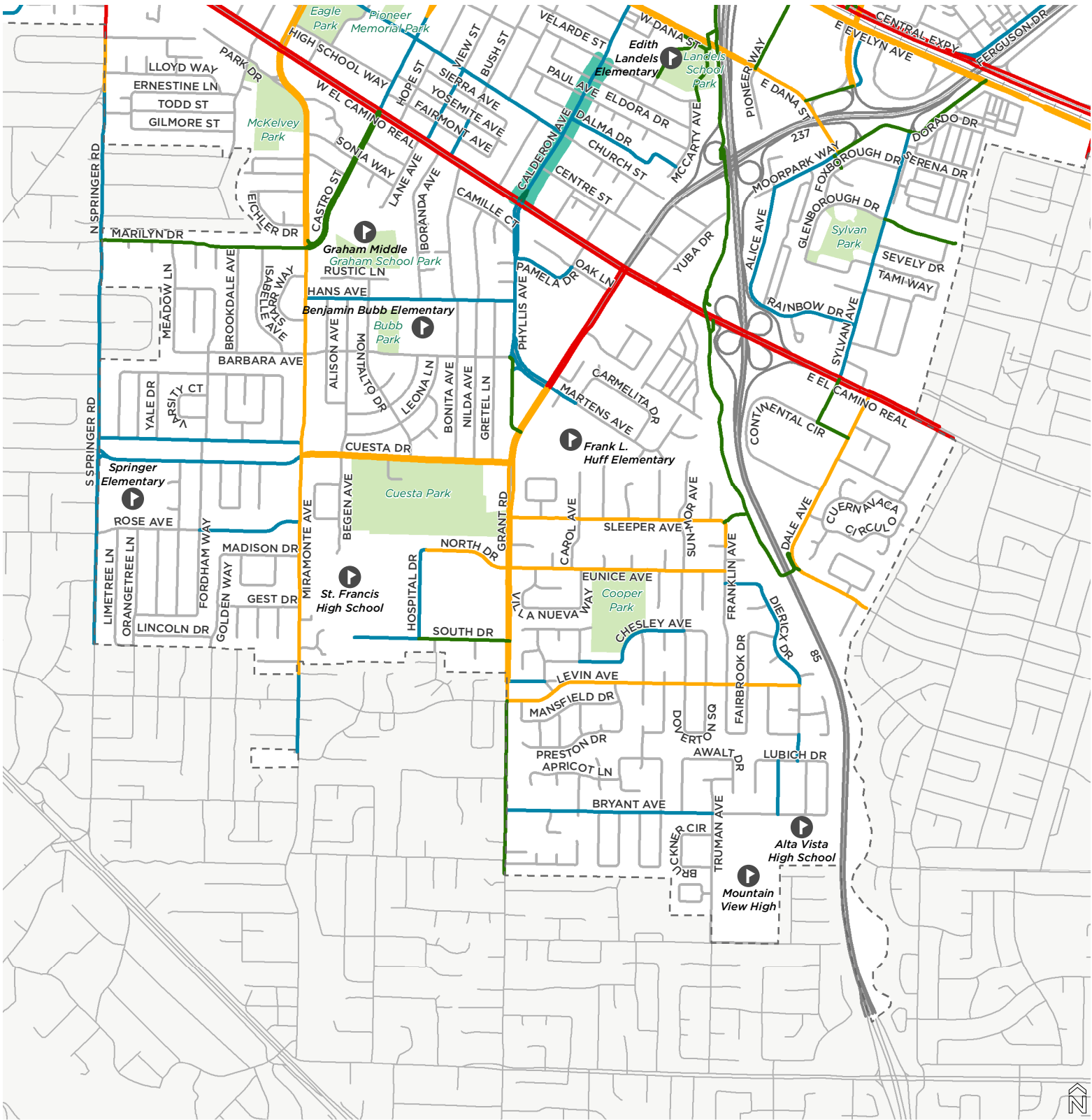0   0.25   0.5 MILES

BLTS Score (Existing)

—— BLTS 1 All Ages and Abilities

—— BLTS 1.5 All Ages and Abilities (Residential)

—— BLTS 2 Average Adult

—— BLTS 3 Confident Adult

—— BLTS 4 Fearless Adult

Other Roadway Features

—— Teal Highlight Indicates Approved CIP Project
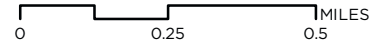
—— Roadway Inaccessible to Bicyclists

Destinations

▶ School

⊙ Caltrain Station

▦ Light Rail Station

▨ Park

⬚ City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

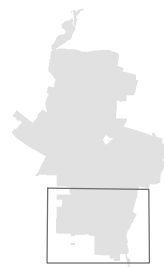**Map 15**   SOUTH QUADRANT

BLTS Score (Existing)

— BLTS 1 All Ages and Abilities

— BLTS 1.5 All Ages and Abilities (Residential)

— BLTS 2 Average Adult
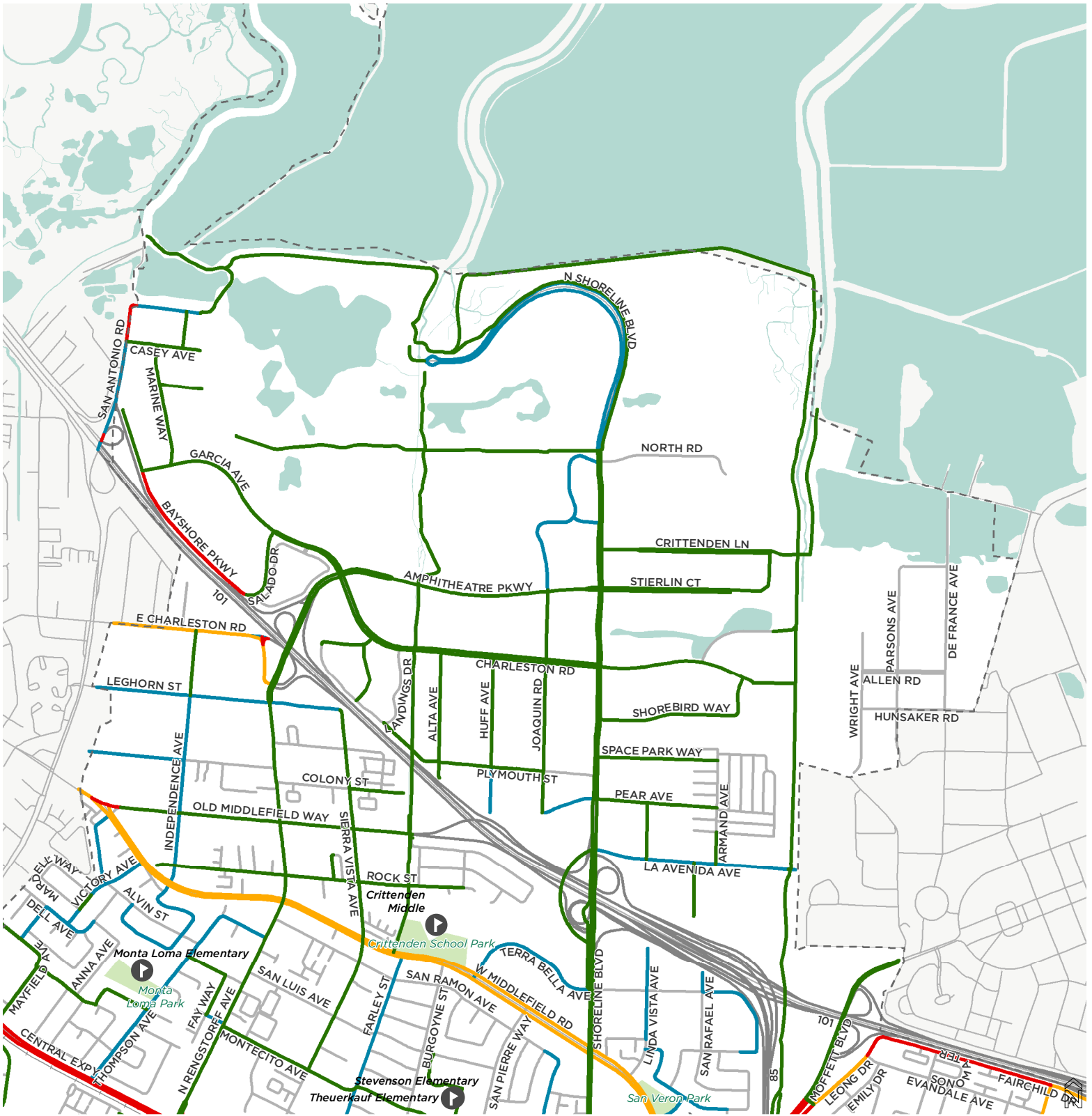
— BLTS 3 Confident Adult

— BLTS 4 Fearless Adult

Other Roadway Features

Teal Highlight Indicates Approved CIP Project

Roadway Inaccessible to Bicyclists

Destinations

School

Caltrain Station

Light Rail Station

Park

City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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PLANNED BICYCLE LEVEL OF TRAFFIC STRESS
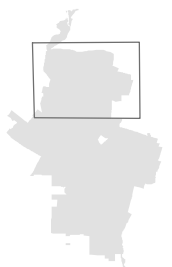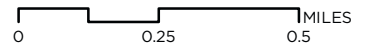
Map 16 NORTH QUADRANT

BLTS Score (Planned)

— BLTS 1 All Ages and Abilities

— BLTS 1.5 All Ages and Abilities (Residential)

— BLTS 2 Average Adult

— BLTS 3 Confident Adult

— BLTS 4 Fearless Adult

Other Roadway

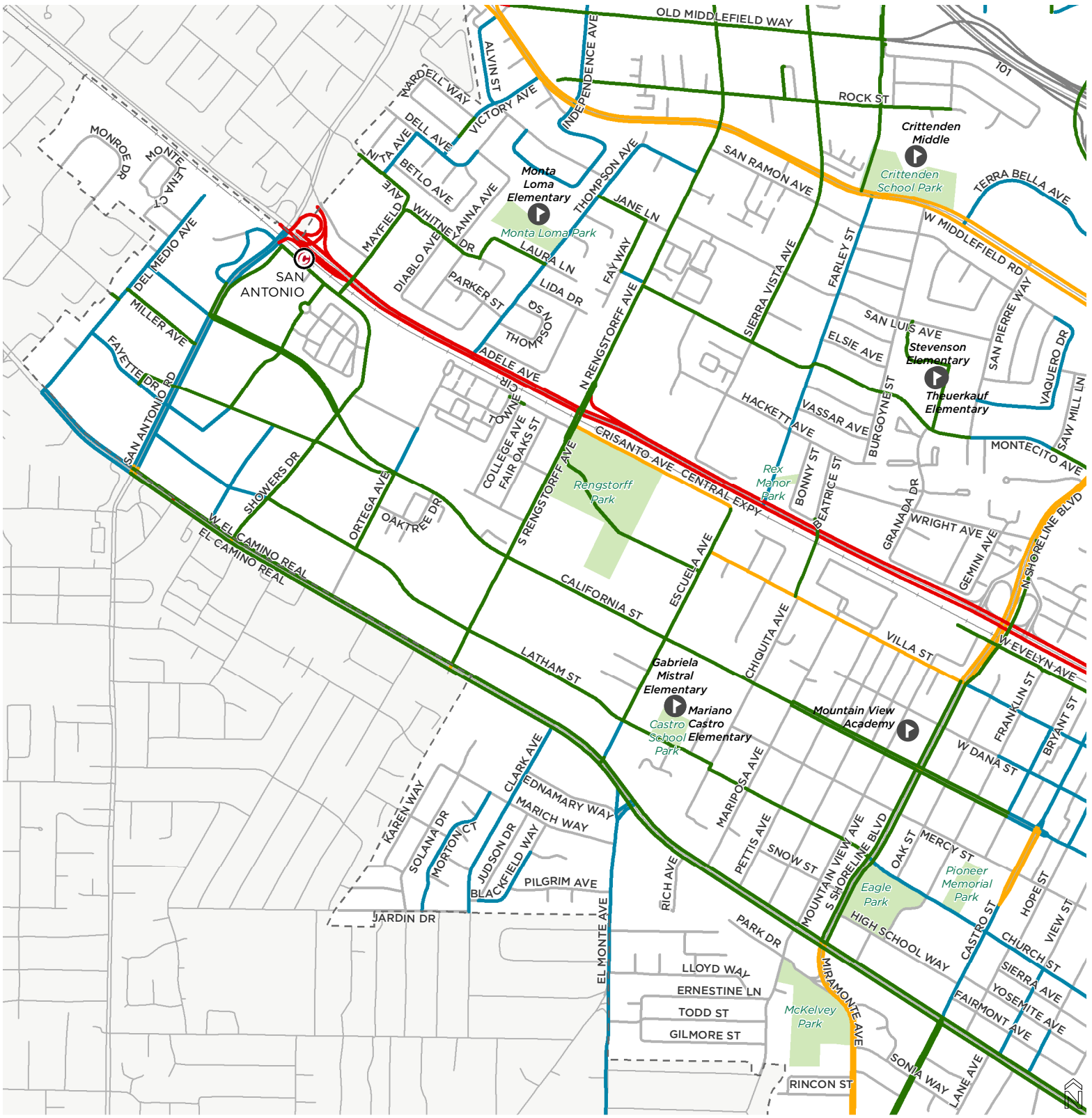— Roadway Inaccessible to Bicyclists

Destinations

- School
- Caltrain Station
- Light Rail Station
- Park
- City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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PLANNED BICYCLE LEVEL OF TRAFFIC STRESS

Map 17 CENTRAL WEST QUADRANT

BLTS Score (Planned)

— BLTS 1 All Ages and Abilities

— BLTS 1.5 All Ages and Abilities (Residential)

— BLTS 2 Average Adult

— BLTS 3 Confident Adult

— BLTS 4 Fearless Adult

Other Roadway

— Roadway Inaccessible to Bicyclists

Destinations

- School
- Caltrain Station
- Light Rail Station
- Park
- City Boundary

PLANNED BICYCLE LEVEL OF TRAFFIC STRESS

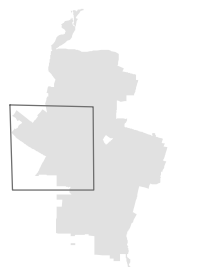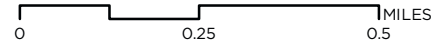**Map 18** CENTRAL EAST QUADRANT

BLTS Score (Planned)

— BLTS 1 All Ages and Abilities
— BLTS 1.5 All Ages and Abilities (Residential)
— BLTS 2 Average Adult
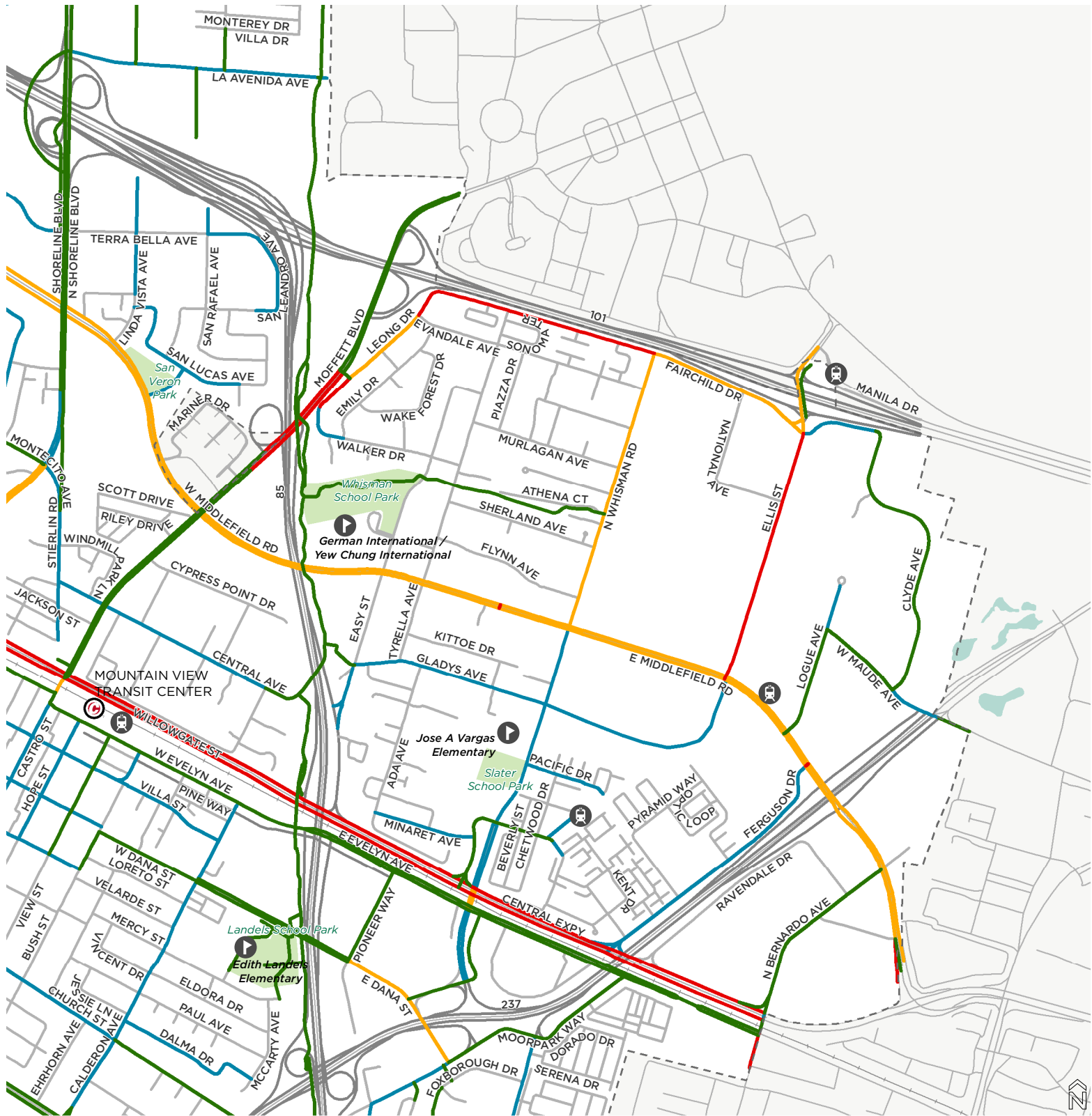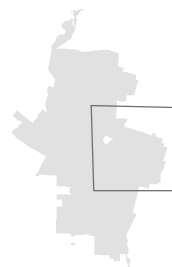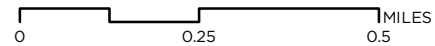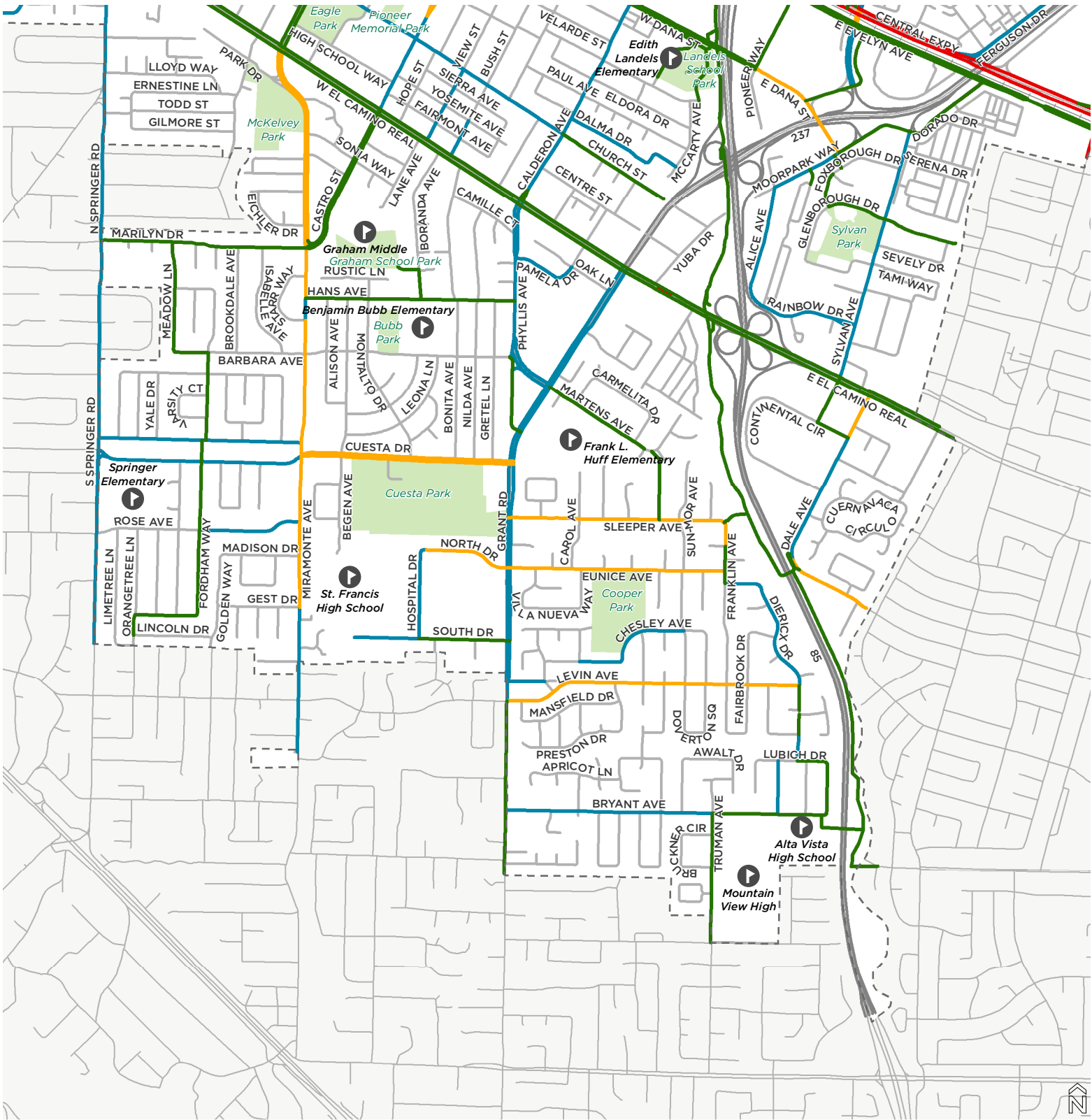— BLTS 3 Confident Adult
— BLTS 4 Fearless Adult

Other Roadway

— Roadway Inaccessible to Bicyclists

Destinations

School
Caltrain Station
Light Rail Station
Park
City Boundary

0   0.25   0.5 MILES

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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Map labels

MONTEREY DR
VILLA DR
LA AVENIDA AVE
SHORELINE BLVD
N SHORELINE BLVD
TERRA BELLA AVE
SAN LEANDRO AVE
LINDA VISTA AVE
SAN RAFAEL AVE
SAN
San Veron Park
SAN LUCAS AVE
MARINER DR
MONTECITO AVE
STIERLIN RD
SCOTT DRIVE
RILEY DRIVE
WINDMILL PARK LN
W MIDDLEFIELD RD
MOFFETT BLVD
LEONG DR
EVANDALE AVE
SONO
EMILY DR
WAKE FOREST DR
PIAZZA DR
MURLAGAN AVE
WALKER DR
Whisman School Park
German International / Yew Chung International
SHERLAND AVE
ATHENA CT
FLYNN AVE
N WHISMAN RD
FAIRCHILD DR
NATIONAL AVE
ELLIS ST
CLYDE AVE
MANILA DR
JACKSON ST
CYPRESS POINT DR
CENTRAL AVE
EASY ST
TYRELLA AVE
KITTOE DR
GLADYS AVE
E MIDDLEFIELD RD
LOGUE AVE
W MAUDE AVE
MOUNTAIN VIEW TRANSIT CENTER
WILLOWGATE ST
CASTRO ST
HOPE ST
W EVELYN AVE
VILLA ST
PINE WAY
ADA AVE
Jose A Vargas Elementary
Slater School Park
PACIFIC DR
MINARET AVE
BEVERLY ST
CHETWOOD DR
PYRAMID WAY
CIVIC LOOP
KENT DR
FERGUSON DR
RAVENDALE DR
N BERNARDO AVE
VIEW ST
BUSH ST
W DANA ST
LORETO ST
VELARDE ST
MERCY ST
VINCENT DR
JESSIE LN
CHURCH ST
CALDERON AVE
ELHORN AVE
ELDORA DR
PAUL AVE
DALMA DR
MCCARTY AVE
Landels School Park
Edith Landels Elementary
PIONEER WAY
E DANA ST
E EVELYN AVE
CENTRAL EXPY
MOORPARK WAY
DORADO DR
FOXBOROUGH DR
SERENA DR
237
101
85

PLANNED BICYCLE LEVEL OF TRAFFIC STRESS

Map 19 SOUTH QUADRANT

BLTS Score (Planned)

— BLTS 1 All Ages and Abilities

— BLTS 1.5 All Ages and Abilities (Residential)

— BLTS 2 Average Adult

— BLTS 3 Confident Adult

— BLTS 4 Fearless Adult

Other Roadway
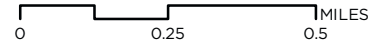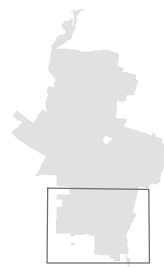
— Roadway Inaccessible to Bicyclists

Destinations
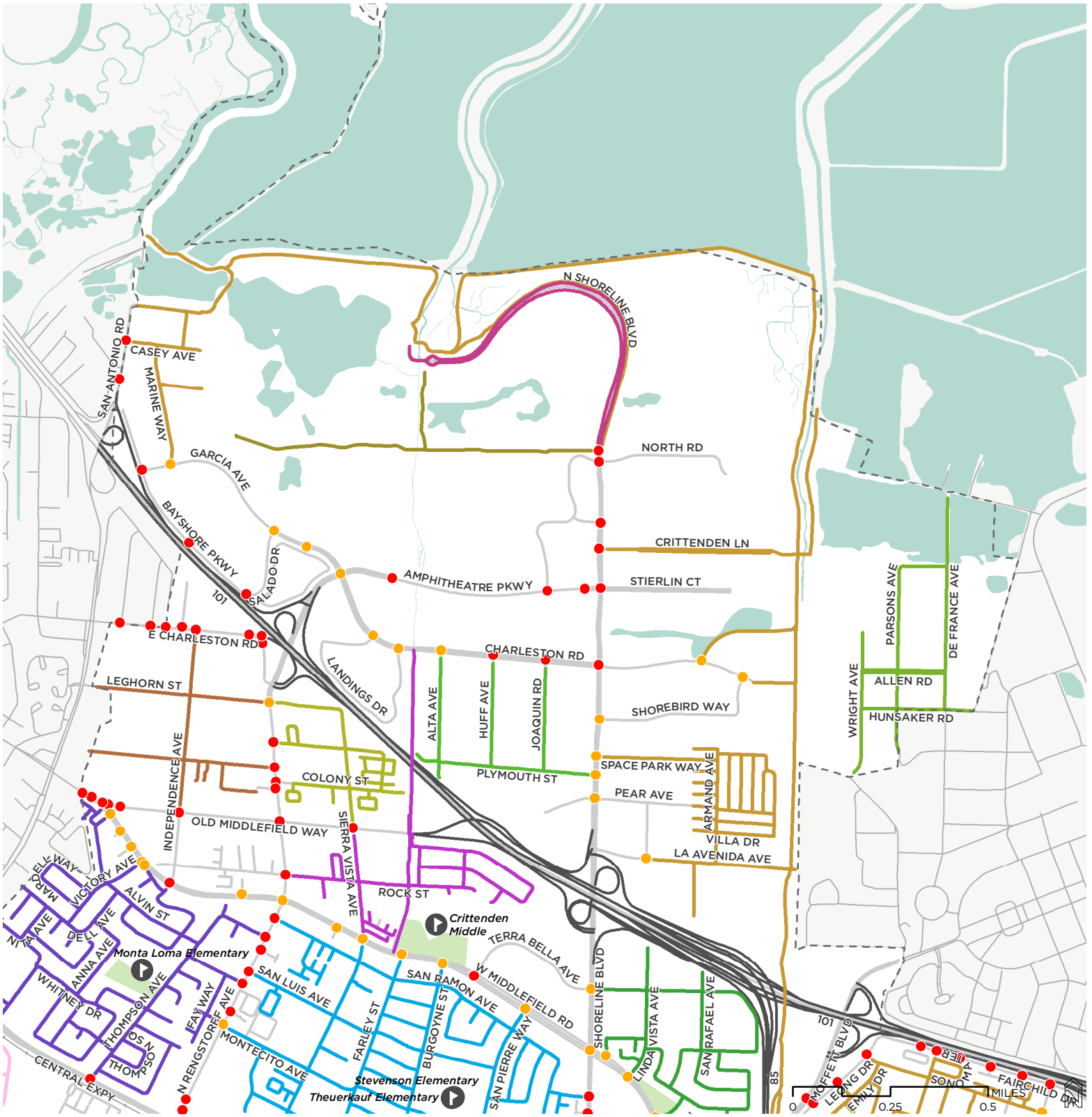
School

Caltrain Station

Light Rail Station

Park

City Boundary

EXISTING BICYCLE LEVEL OF TRAFFIC STRESS ISLANDS

Map 20 NORTH QUADRANT

Existing Low Stress Islands

—— Each color represents a connected low stress network

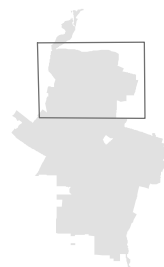### High Stress Intersections

● LTS 3

● LTS 4

Roadways

—— Roadway Inaccessible to Bicyclists

Destinations

▶ School

◉ Caltrain Station

🚉 Light Rail Station

Park

City Boundary

EXISTING BICYCLE LEVEL OF TRAFFIC STRESS ISLANDS

Map 21 CENTRAL WEST QUADRANT

Existing Low Stress Islands

⎯⎯ Each color represents a connected low stress network

High Stress Intersections

● LTS 3
● LTS 4

Roadways

⎯⎯ Roadway Inaccessible to Bicyclists

Destinations

ⓟ School

Ⓒ Caltrain Station

Ⓛ Light Rail Station

▢ Park

⬚ City Boundary

EXISTING BICYCLE LEVEL OF TRAFFIC STRESS ISLANDS

Map 22 CENTRAL EAST QUADRANT

Existing Low Stress Islands

— Each color represents a connected low stress network

High Stress Intersections

- 🟠 LTS 3
- 🔴 LTS 4
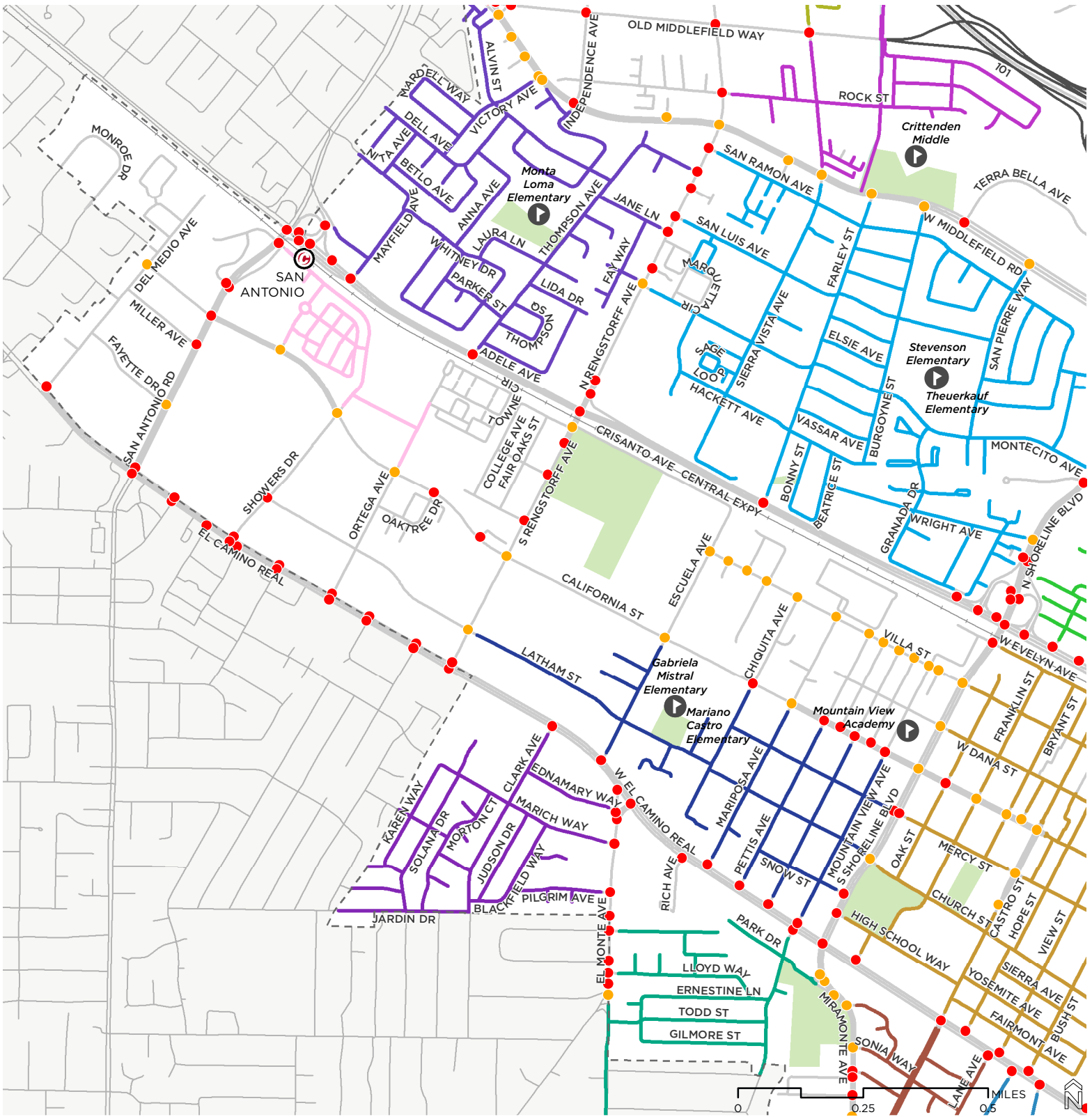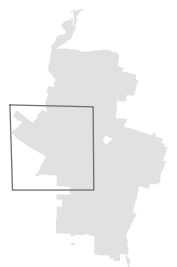
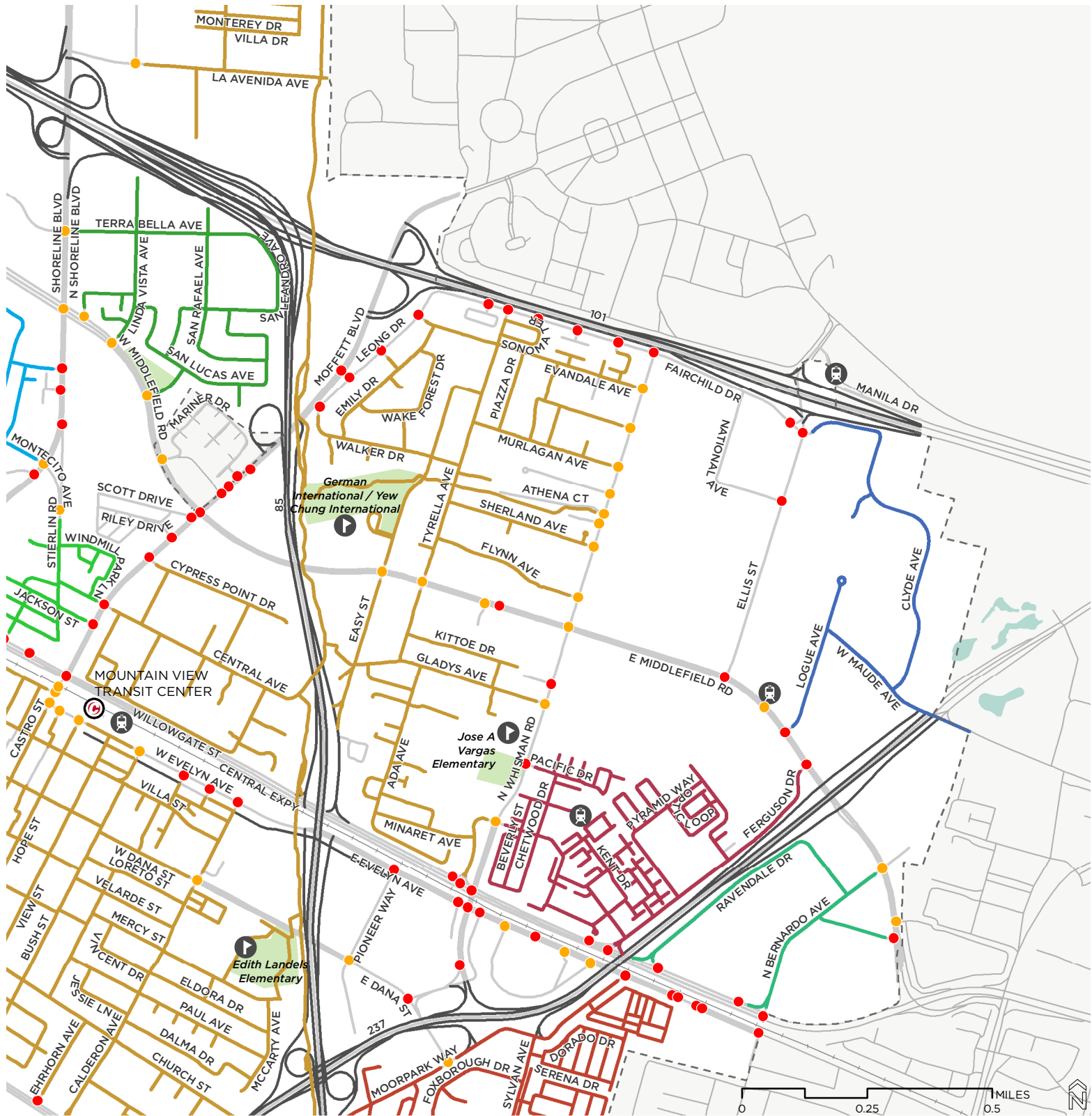## Roadways

— Roadway Inaccessible to Bicyclists

Destinations

- ▶ School
- Caltrain Station
- Light Rail Station
- Park
- City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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EXISTING BICYCLE LEVEL OF TRAFFIC STRESS ISLANDS

Map 23 SOUTH QUADRANT

Existing Low Stress Islands

—— Each color represents a connected low stress network

High Stress Intersections

● LTS 3

● LTS 4

Roadways

—— Roadway Inaccessible to Bicyclists

Destinations

▶ School

◉ Caltrain Station

🚃 Light Rail Station

▨ Park

⬚ City Boundary

Data provided by the City
of Mountain View, Caltrans,
Esri, OSM.

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PLANNED BICYCLE LEVEL OF TRAFFIC STRESS ISLANDS

Map 24 NORTH QUADRANT

Planned Low Stress Islands

— Each color represents a connected low stress network
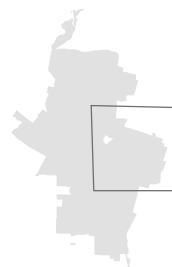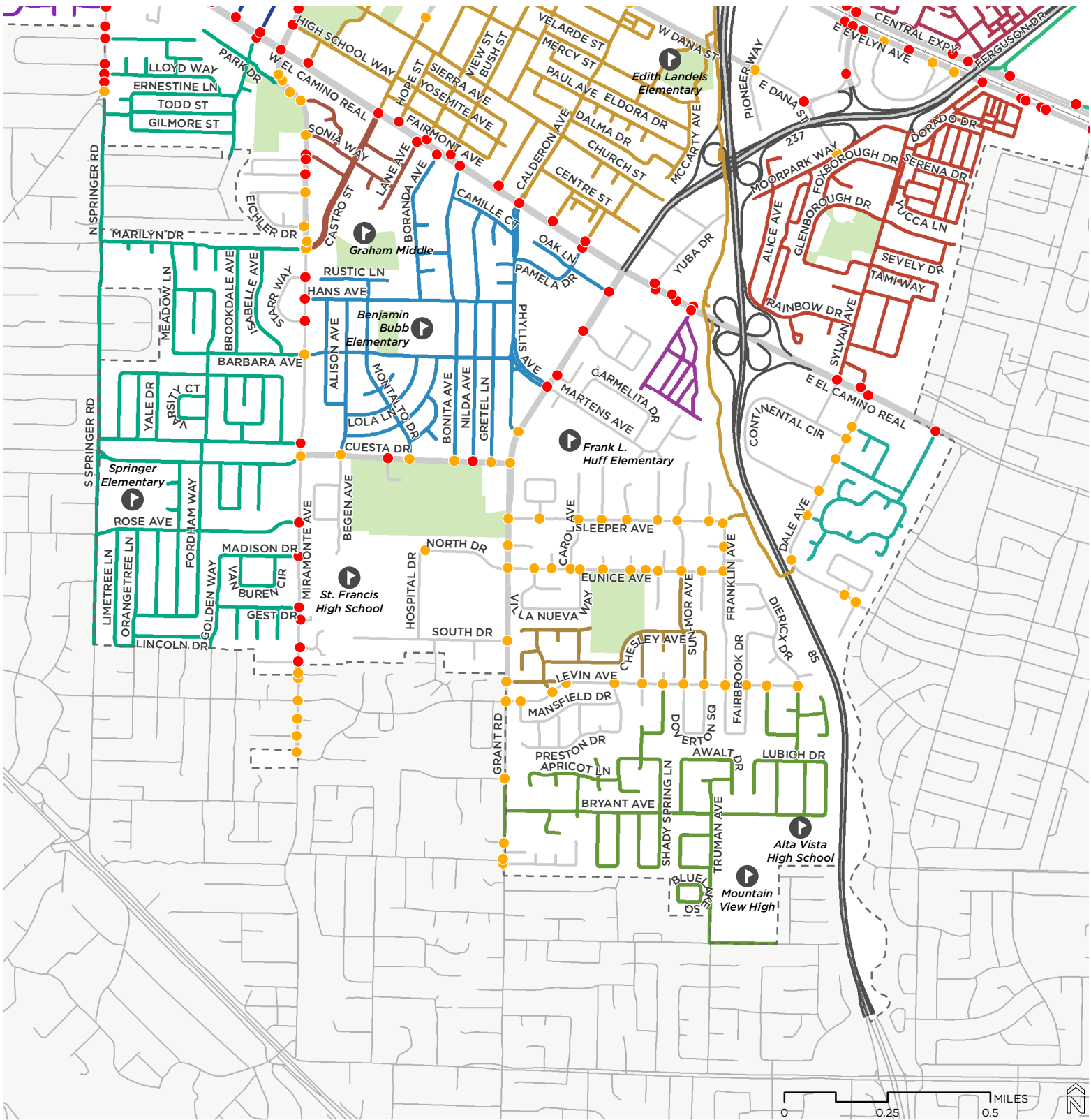
High Stress Intersections

- ● BLTS 3
- ● BLTS 4

Roadways

— Roadway Inaccessible to Bicyclists

Destinations

- ▶ School
- ⊙ Caltrain Station
- 🚈 Light Rail Station
- ▨ Park
- ⬚ City Boundary

PLANNED BICYCLE LEVEL OF TRAFFIC STRESS ISLANDS

Map 25 CENTRAL WEST QUADRANT

Planned Low Stress Islands

—— Each color represents a connected low stress network
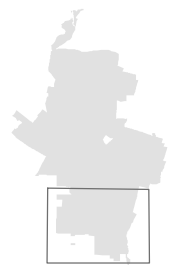
High Stress Intersections

- 🟠 BLTS 3
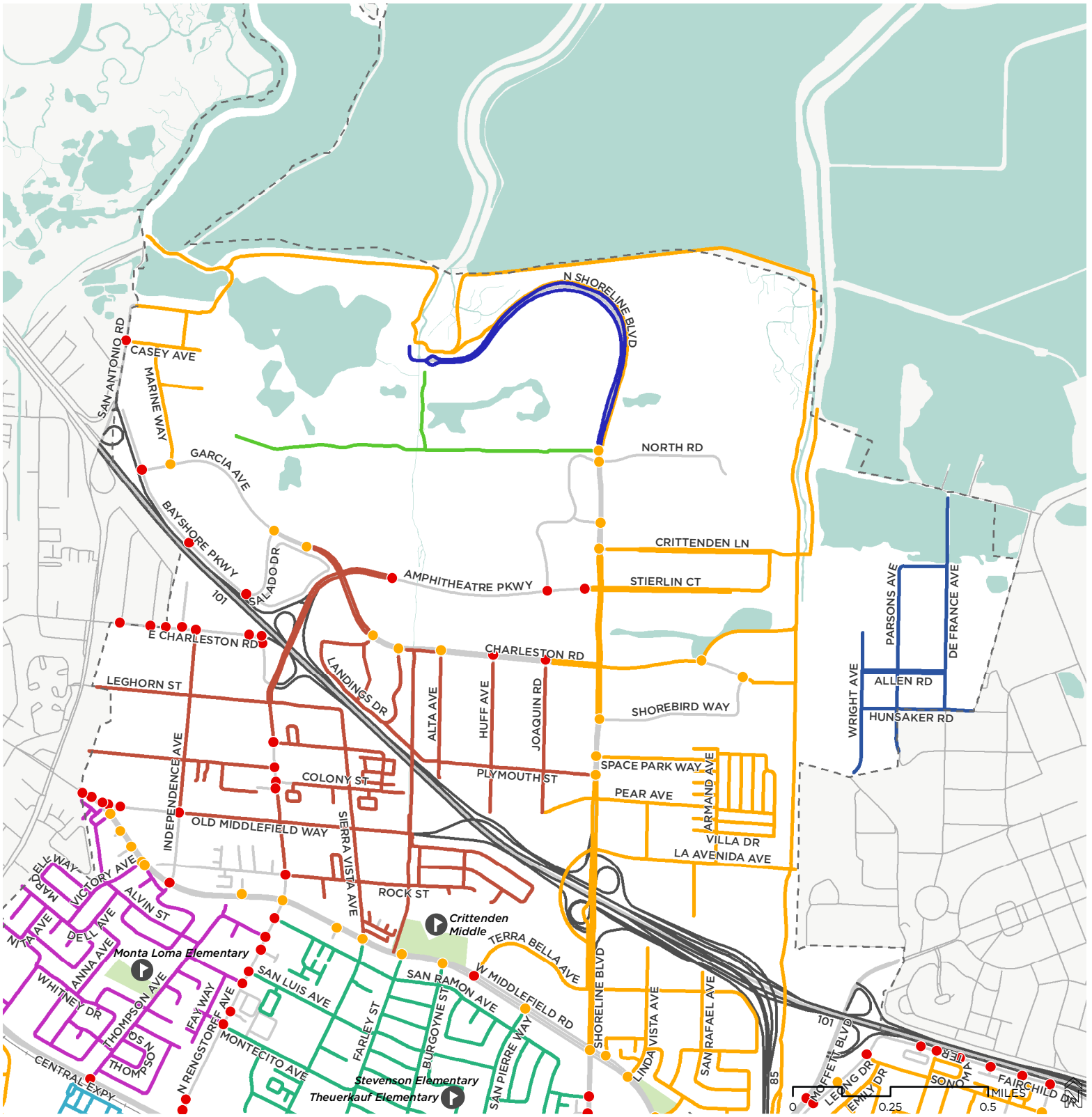- 🔴 BLTS 4

Roadways

—— Roadway Inaccessible to Bicyclists

Destinations

- School
- Caltrain Station
- Light Rail Station
- Park
- City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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PLANNED BICYCLE LEVEL OF TRAFFIC STRESS ISLANDS

Map 26 CENTRAL EAST QUADRANT

Planned Low Stress Islands

——— Each color represents a connected low stress network
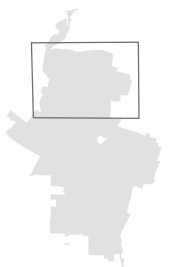
High Stress Intersections

- ● BLTS 3
- ● BLTS 4

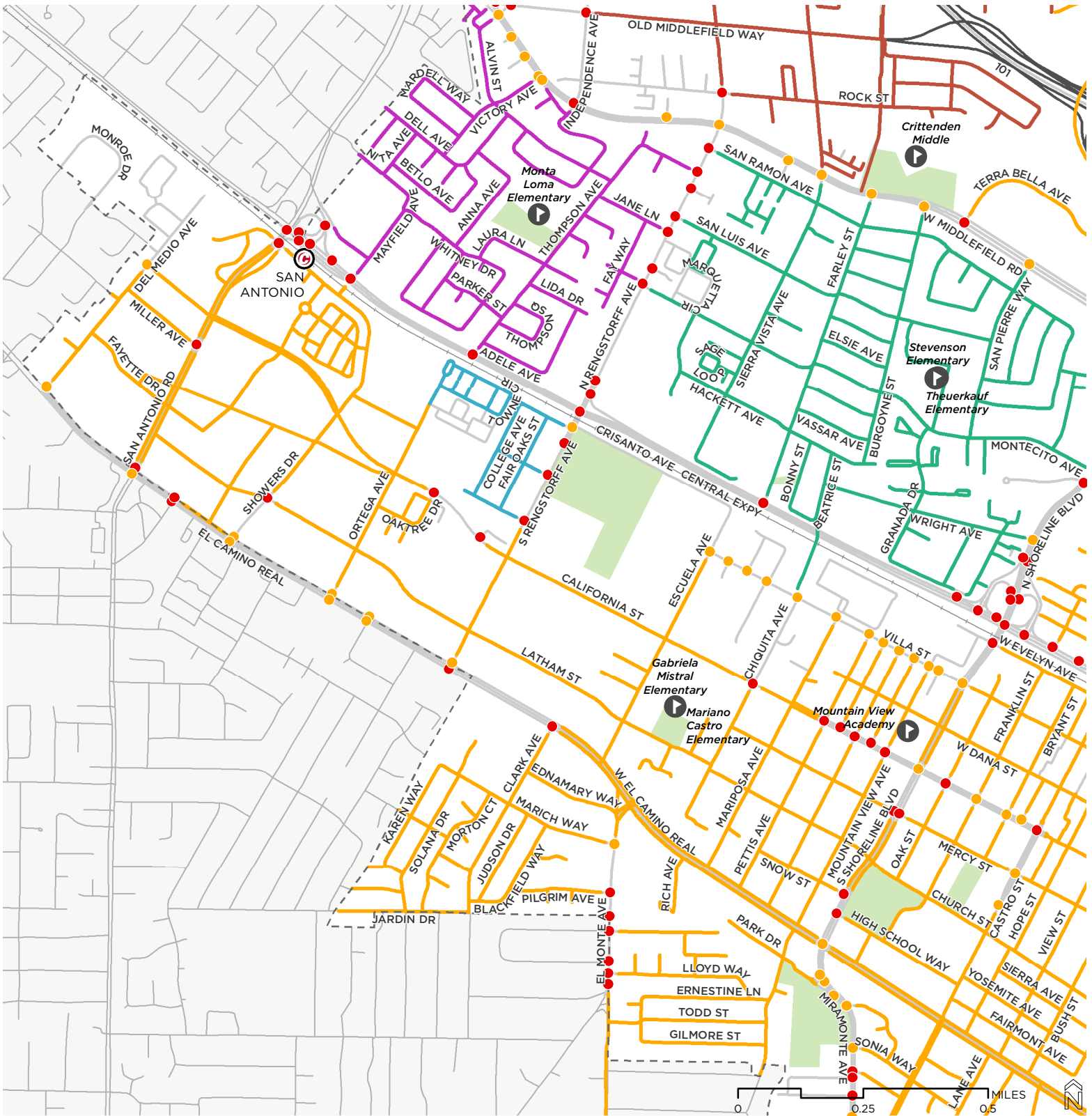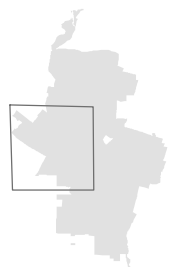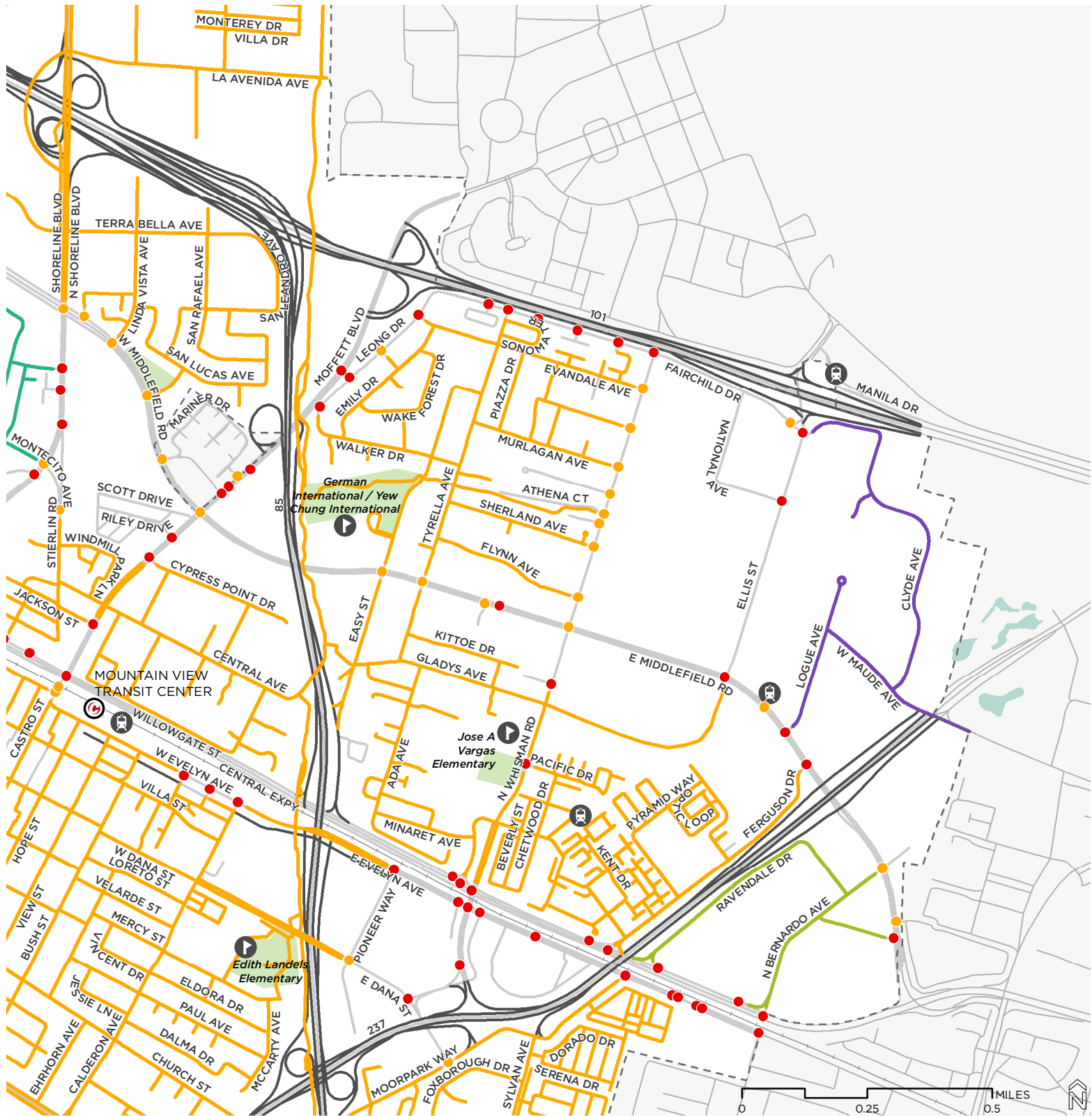## Roadways

——— Roadway Inaccessible to Bicyclists

Destinations

- ▶ School
- Caltrain Station
- Light Rail Station
- Park
- City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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Map labels include: Monterey Dr, Villa Dr, La Avenida Ave, Shoreline Blvd, N Shoreline Blvd, Terra Bella Ave, Linda Vista Ave, San Rafael Ave, San Lucas Ave, San Leandro Ave, Mariner Dr, W Middlefield Rd, Montecito Ave, Stierlin Rd, Scott Drive, Riley Drive, Windmill Park Ln, Moffett Blvd, Leong Dr, Emily Dr, Wake, Walker Dr, Forest Dr, German International / Yew Chung International, Sonoma, Piazza Dr, Evandale Ave, Murlagan Ave, Athena Ct, Sherland Ave, Flynn Ave, Fairchild Dr, Manila Dr, National Ave, Ellis St, Clyde Ave, Logue Ave, W Maude Ave, Tyrella Ave, Easy St, Kittoe Dr, Gladys Ave, E Middlefield Rd, Cypress Point Dr, Jackson St, Central Ave, Mountain View Transit Center, Willowgate St, W Evelyn Ave, Villa St, Castro St, Hope St, View St, Bush St, W Dana St, Loreto St, Velarde St, Mercy St, Vincent Dr, Ehrhorn Ave, Jessie Ln, Calderon Ave, Dalma Dr, Church St, Paul Ave, Eldora Dr, McCarty Ave, Edith Landels Elementary, Pioneer Way, E Evelyn Ave, E Dana St, Minaret Ave, Ada Ave, Jose A Vargas Elementary, N Whisman Rd, Pacific Dr, Beverly St, Chetwood Dr, Kent Dr, Pyramid Way, Epic Loop, Ferguson Dr, Ravendale Dr, N Bernardo Ave, Moorpark Way, Foxborough Dr, Sylvan Ave, Dorado Dr, Serena Dr, 101, 85, 237

PLANNED BICYCLE LEVEL OF TRAFFIC STRESS ISLANDS

Map 27 SOUTH QUADRANT

Planned Low Stress Islands

———— Each color represents a connected low stress network
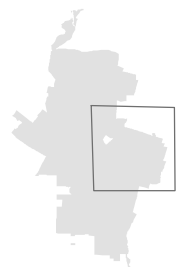
High Stress Intersections

- ● BLTS 3
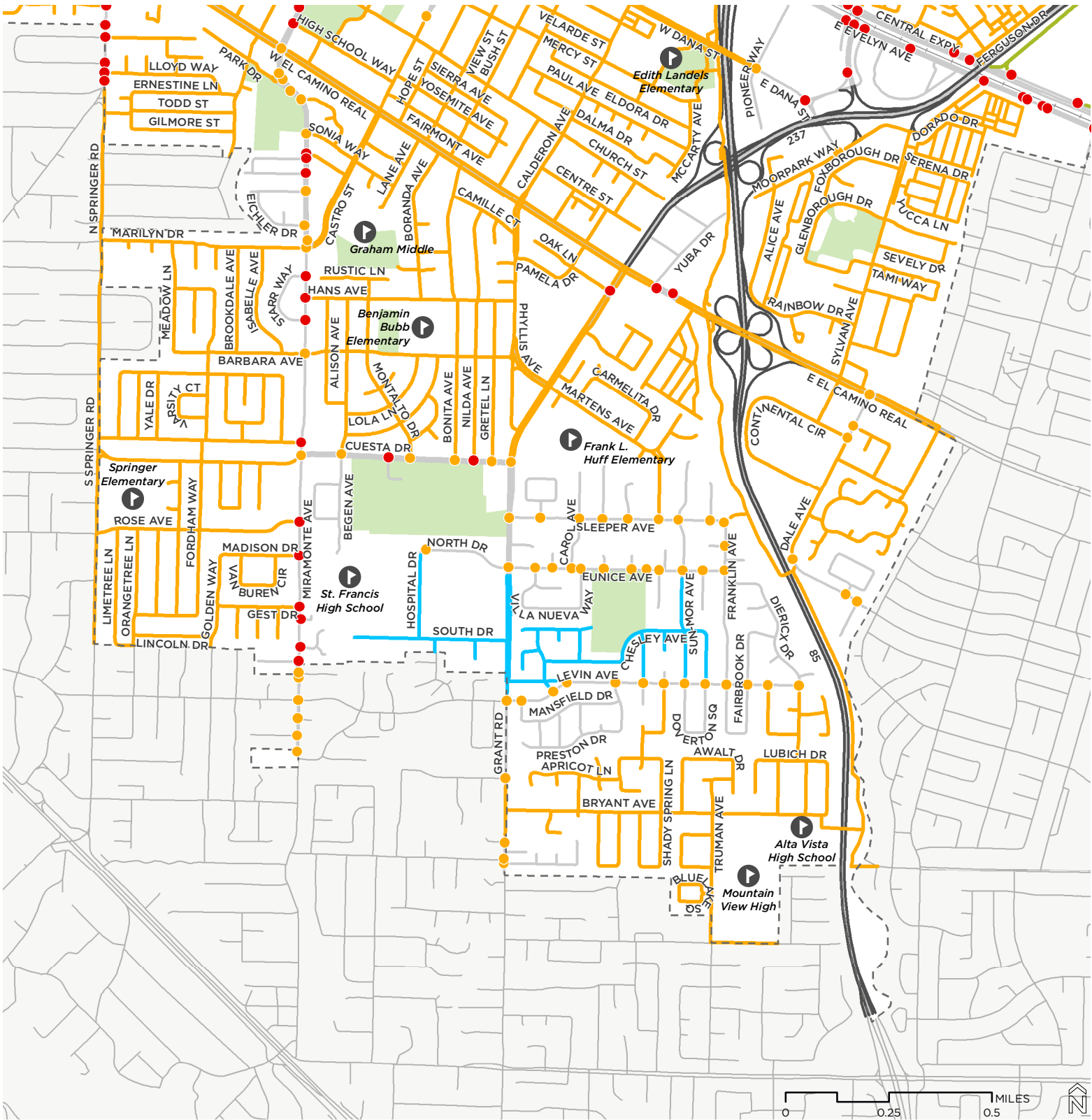- ● BLTS 4

Roadways

———— Roadway Inaccessible to Bicyclists

Destinations

- School
- Caltrain Station
- Light Rail Station
- Park
- City Boundary

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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