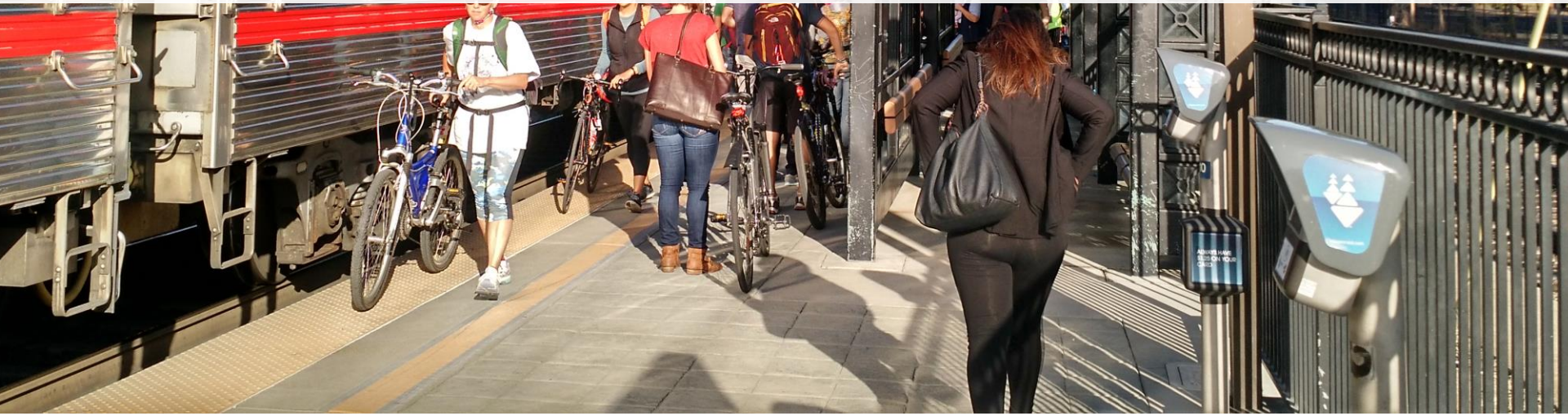
Rail Corridor Circulation Challenges

May 20, 2017



CITY OF PALO ALTO

Why Are We Here?

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CONNECTING PALO ALTO

DESIGNING OUR RAIL CORRIDOR FOR THE FUTURE

Rail Program Community Workshop #1

- Safety for all modes of transportation
- East/ west connectivity across the rail corridor
- Traffic disruptions
- Bicycle and pedestrian access
- Noise and visual impacts
- Future growth

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Regional Context – Santa Clara County

VTA Measure B

- $700 million for Grade Separation projects
- 8 projects in 3 cities in Santa Clara County:
  - Palo Alto
  - Mountain View
  - Sunnyvale
- Guidelines currently being drafted

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Regional Context – Caltrain Corridor

Grade Separation Projects Under Development

City	Project	Cost Estimate *
Mountain View	Castro/Moffet St	
Mountain View	Rengstorff Ave	$120M
Sunnyvale	Bernardo Ave	
Sunnyvale	Mary Ave	
Menlo Park	Ravenswood Ave	$140M-$380M
San Jose	Auzerais Ave	
Burlingame	Broadway	$250M
San Mateo	25th Ave	$180M

* Planning level cost estimates

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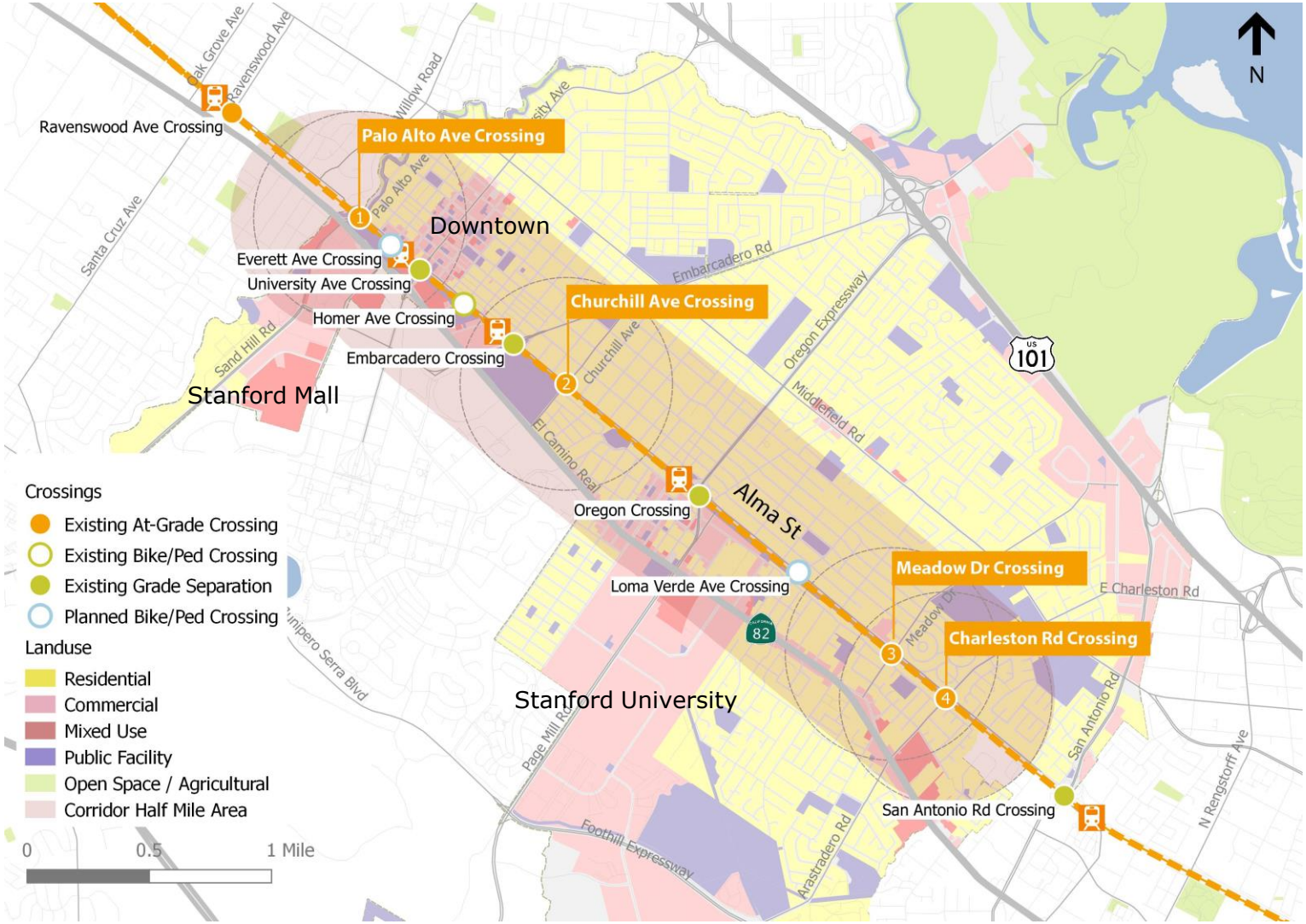
Previous Studies

- **Our Palo Alto 2030: Comprehensive Plan (2017)**
  - Currently being updated
  - Transportation Infrastructure Investments:
    - ✓ Full grade separations for automobiles, pedestrians, and bicyclists at Caltrain crossings
    - ✓ Retrofit / improvements to existing grade separated Caltrain crossings for pedestrians and bicyclists at California Ave and University Ave
    - ✓ Construction of new pedestrian and bicycle grade separated crossing of Caltrain in South Palo Alto and in North Palo Alto
- **Palo Alto Grade Separation and Trenching Study (2014)**
  - Conceptual engineering analyses for:
    - ✓ Undercrossing at Churchill Ave, Meadow Dr, and Charleston Rd
    - ✓ Rail trench under Meadow Dr and Charleston Rd

Previous Studies (continued)

- **Rail Corridor Plan in Palo Alto (2013)**
  - Recommended goals for inclusion in Comprehensive Plan Update:
    - ✓ **Goal 1**: Rail improvements should be constructed in a **below-grade trench**.
    - ✓ **Goal 2**: Ensure the **highest possible safety at all rail crossings** and mitigate rail impacts on neighborhoods, public facilities, schools and mixed-use centers.
    - ✓ **Goal 3**: **Connect the east and west portions** of the City through an improved circulation network that binds the City together in all directions.
    - ✓ **Goal 4**: **Provide improved access** to parks, recreation facilities and schools and assess future needs for these facilities.
    - ✓ **Goal 5**: Infrastructure should **keep pace with development**.

Study Area Map



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At-Grade Crossing Comparison

	Palo Alto Ave	Churchill Ave	Meadow Dr	Charleston St
Traffic ADT	14,700	11,400	9,300	16,000
Bicycle	550	1020	900	240
Pedestrian	300	270	180	140
Road Transit/Bus	33	7	11	45
School Bus	0	64	48	20
Heavy Truck	190	127	47	20
Gate Down (Secs)	43 (25-75)	39 (30-78)	39 (20-74)	40 (22-76)
Collisions (2011-13)	0	13	13	11
Max Queue (Veh per EB/WB)	11/21	20+/1	15/0	25+/0
Emergency Vehicle	15	30	18	8

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Circulation Issues - Safety

Collisions

- 37 auto collisions in 3 years
- 14 bicycle collisions in 5 years
- 3 pedestrian collisions in 5 years
- 6 bicycle collisions at Churchill in 5 years (among City's highest)

Emergency Access

- 70+ emergency vehicle trips cross per weekday

Suicides

- Caltrain suicides mostly take place between Burlingame & Sunnyvale
- 41% happen within 0.1 mile of a grade crossing

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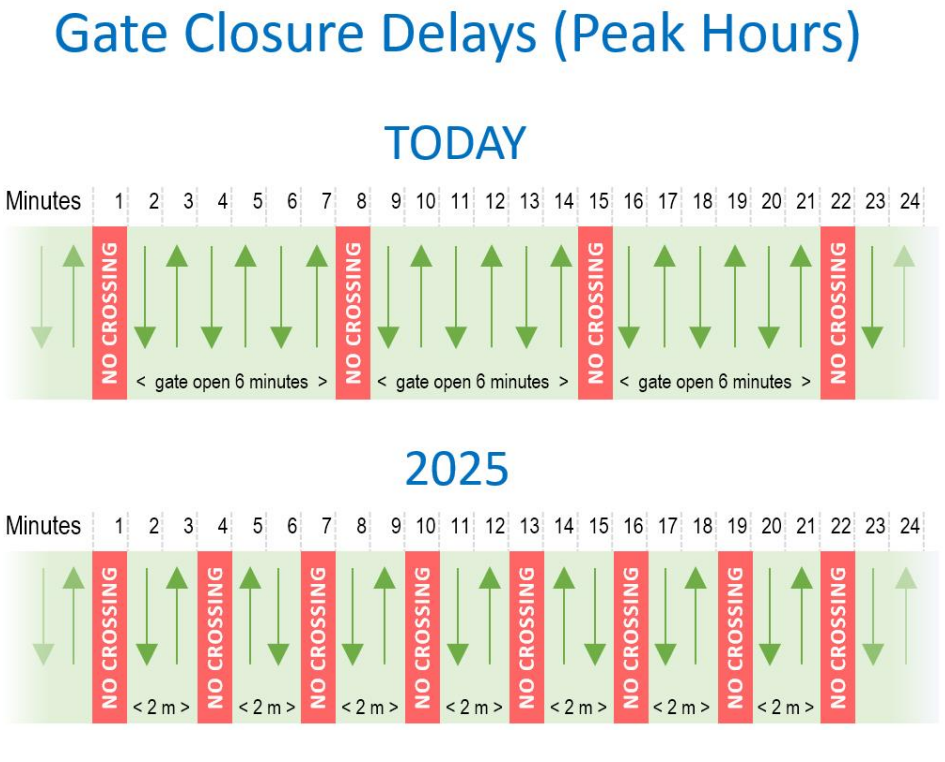
Circulation Issues – Traffic

- Today, 8-10 trains/ peak hour/ both directions
- By 2025, **20 trains/ peak hour/ both directions**
- Currently, maximum queues reach 25+ vehicles
- Traffic capacity reductions caused by gate downtime will **more than triple**
- Over 51,000 vehicles use the at-grade crossings today during average weekday
- Traffic demand is likely to **grow at 1%+ per year**



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Circulation Issues – Traffic

- There are **4 at-grade crossings** and **5 grade separations** (1 of them is bike/ped only) in Palo Alto
- Increased delays at grade crossings could **cause traffic to divert** to grade separated routes
- Newly grade separated routes could attract additional traffic
- Impact on changes to the crossing might affect more than immediate area

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Circulation Issues - Bicycle & Pedestrian Access

- Palo Alto is among the **most bike-friendly cities** in the U.S.
- **9% of commute trips** are by bicycle today; 15% by 2020
- **2,700+ bicycle trips** are made at the crossings every weekday; 4,500 by 2020
- 3 out of 4 at-grade crossings are within walking distance of a school
- **50% and 40% of students** (middle and high school) walk or bike to school
- **900 pedestrians** use at-grade crossings every weekday

BICYCLE FRIENDLY COMMUNITY
GOLD
THE LEAGUE OF AMERICAN BICYCLISTS

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Circulation Issues – Noise & Visual Impacts

Noise

- Per Caltrain Modernization EIR process:
  - Palo Alto Mitigation Measure — not more than 36 dBA
  - Menlo Park & Mountain View Mitigation Measures— not more than 60 dBA
- Quiet Zones

Physical Barrier Effect & Visual Impacts

- East-west accessibility is restricted by Caltrain right of way
- All 4 at-grade crossings have vehicle gates & pedestrian guardrails

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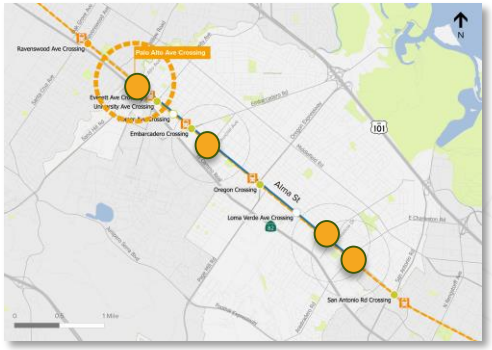
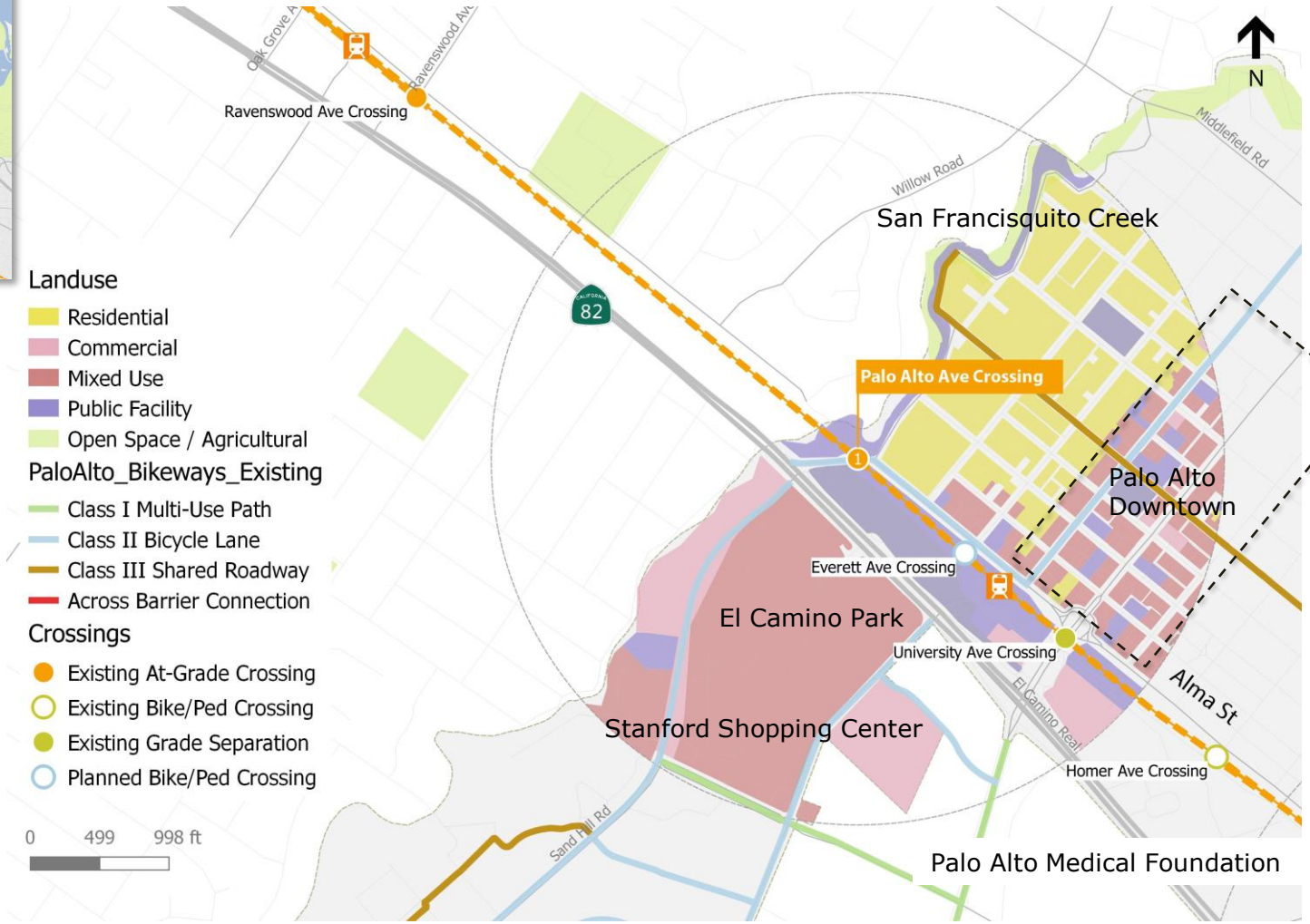
1. Palo Alto Ave (Alma St) Crossing





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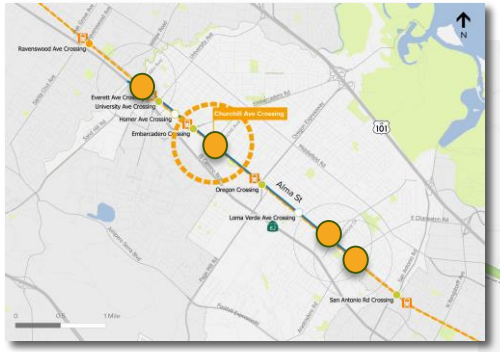
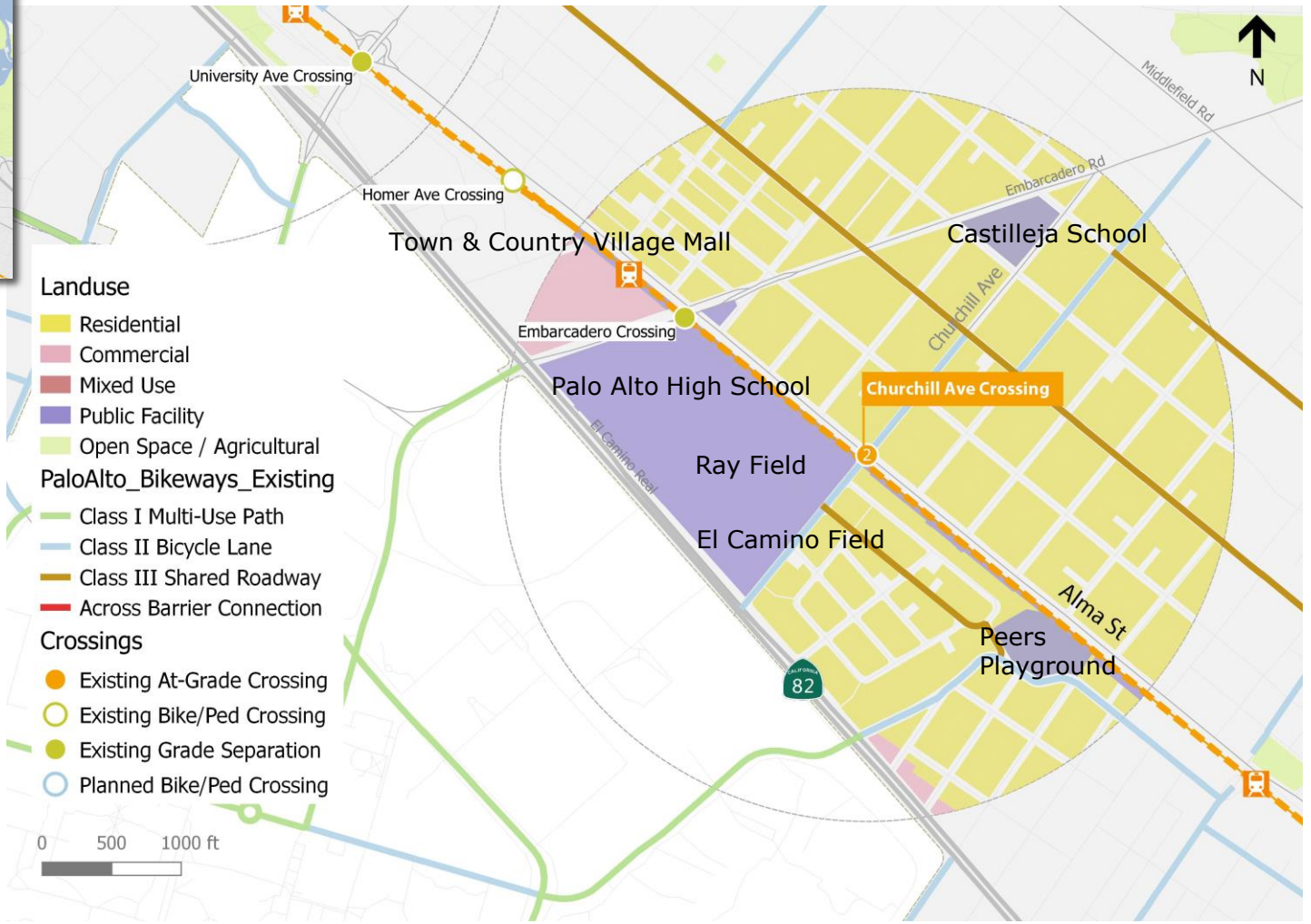
2. Churchill Ave & Alma St Crossing





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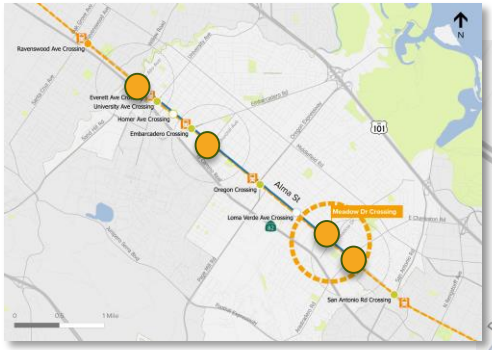
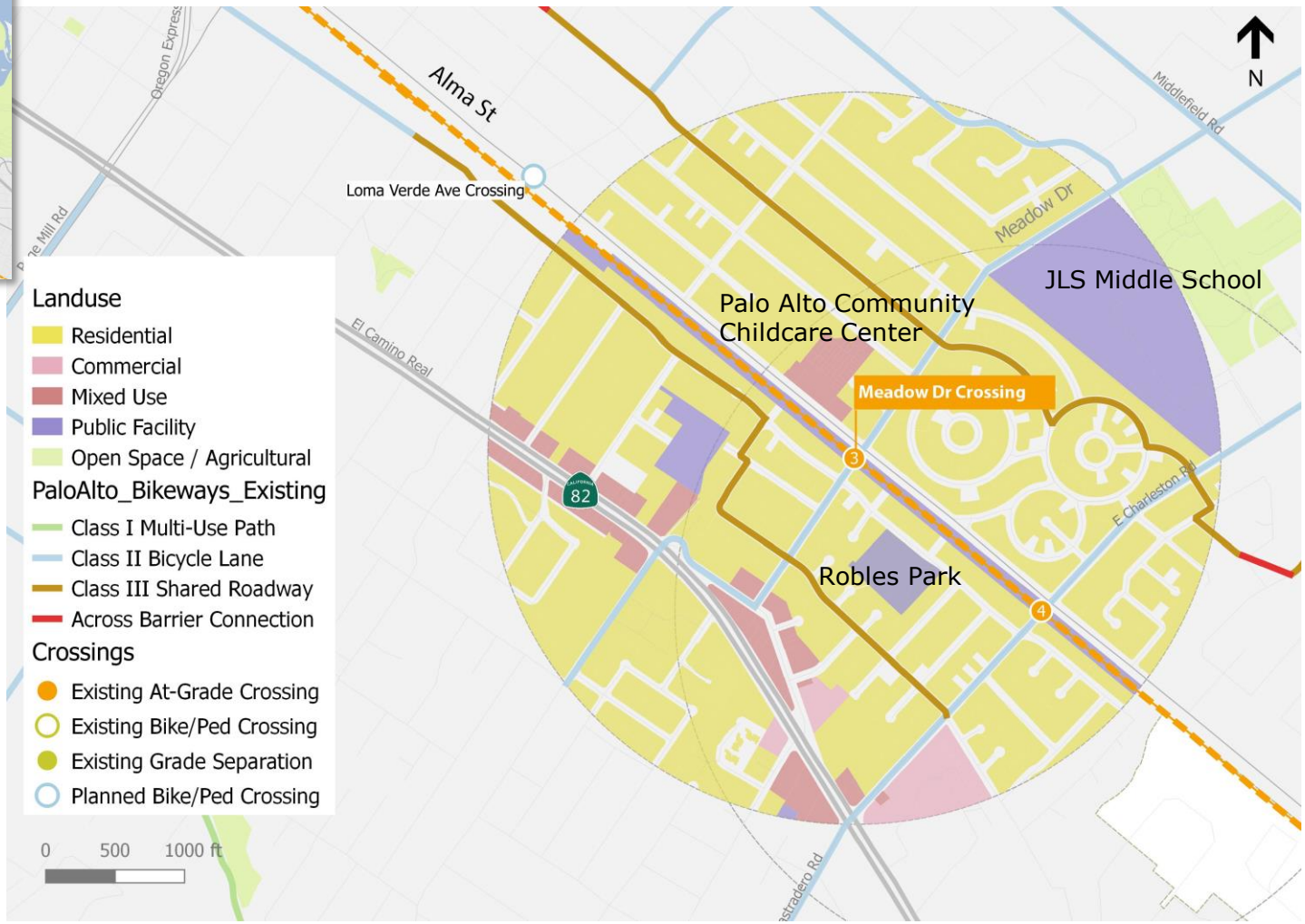
3. Meadow Dr & Alma St Crossing





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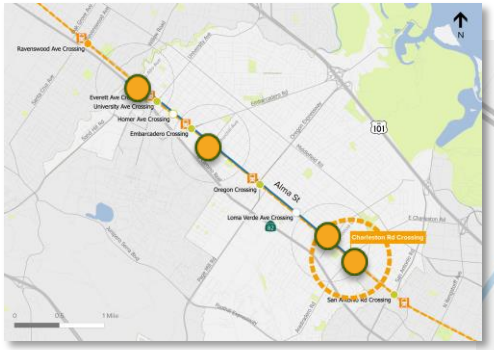
4. Charleston St & Alma St Crossing



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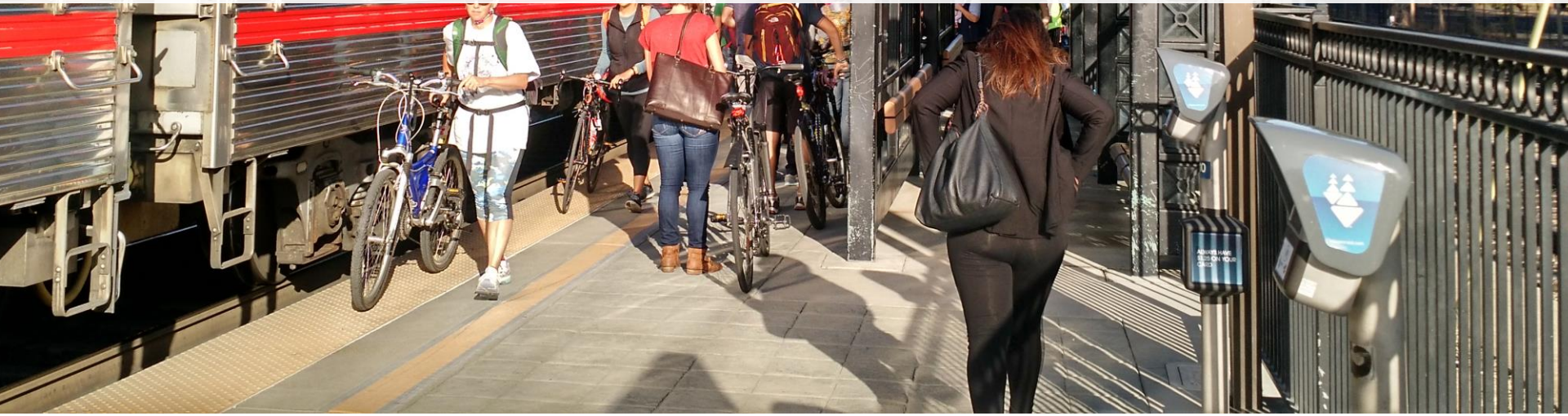

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