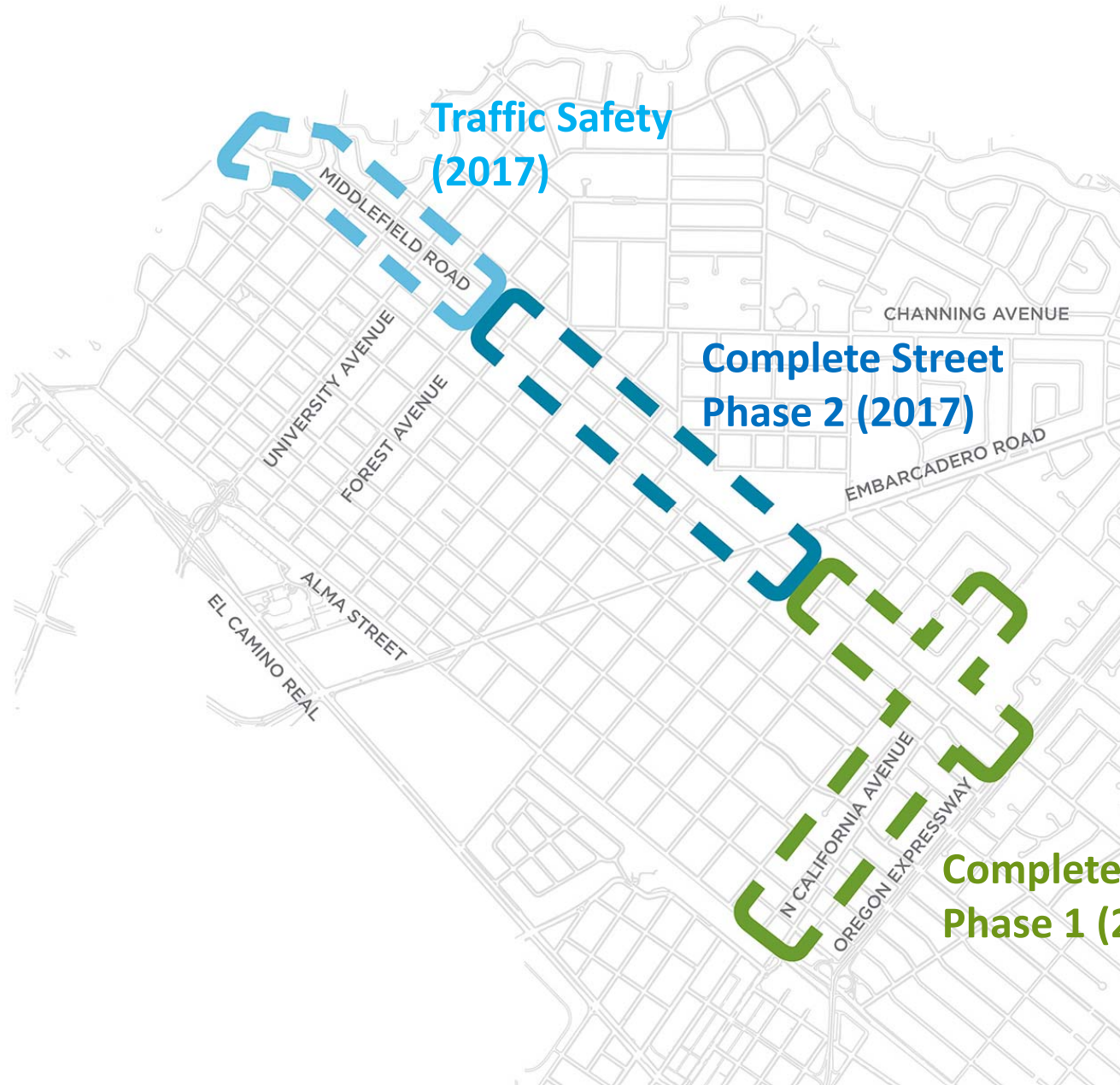


Transportation Plans and Projects along Middlefield Road



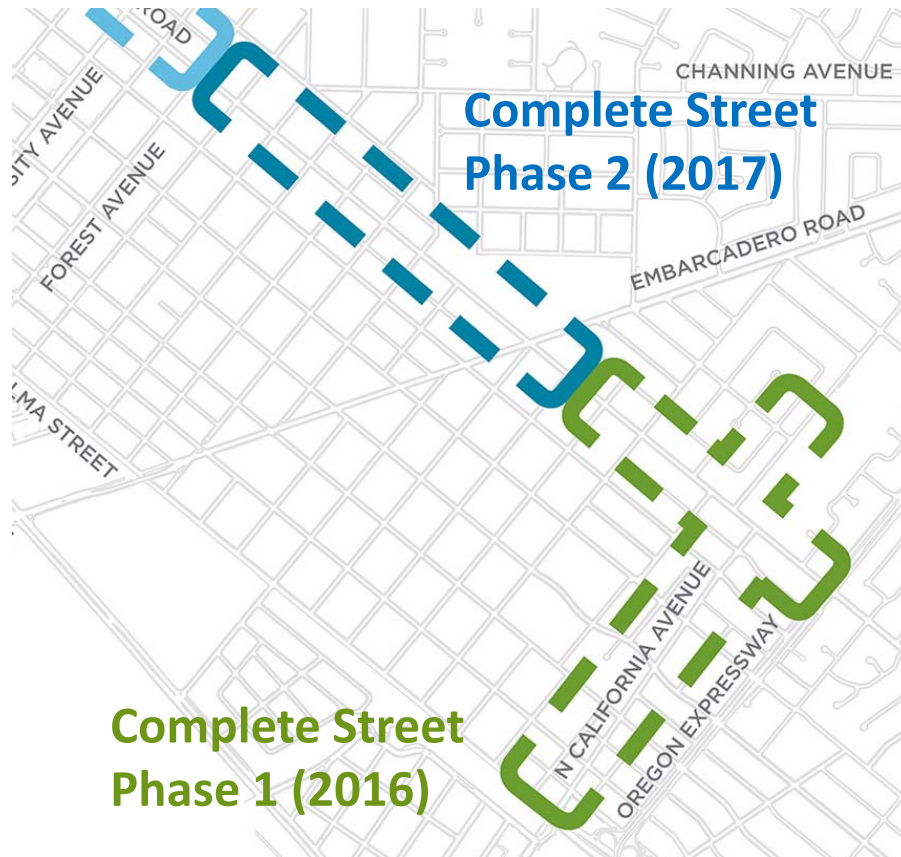
October 26, 2016

Planning and Transportation Commission



Middlefield Rd & N California Ave Complete Street Project

Project Timeline



- **Mid 2015:** Resurfacing planned by PWE in 2015
- **Late 2015:** Notice cards to residents and meeting notice posted; PCE engaged planning + design consultant
- **January 2016:** Community Open House #1
- **Jan – June 2016:** Concepts refined in response to community feedback
- **June 2016:** Community Open House #2
- **Summer 2016:** Construction on Phase 1 begins
- **Summer 2017:** Construction on Phase 2 begins

Middlefield Rd & N California Ave Complete Street Project

Policy Framework

- Comprehensive Plan
 - Residential arterials
- Complete Streets Resolution
 - All users on all projects (even maintenance)
- Bicycle + Pedestrian Transportation Plan
 - Webster St bike boulevard
 - N California Ave connection
 - Spot improvements
- Safe Routes to School Walkabout Recommendations
 - New signal at N California Ave (north leg)
 - New crossing at Seale Ave

Middlefield Rd & N California Ave Complete Street Project

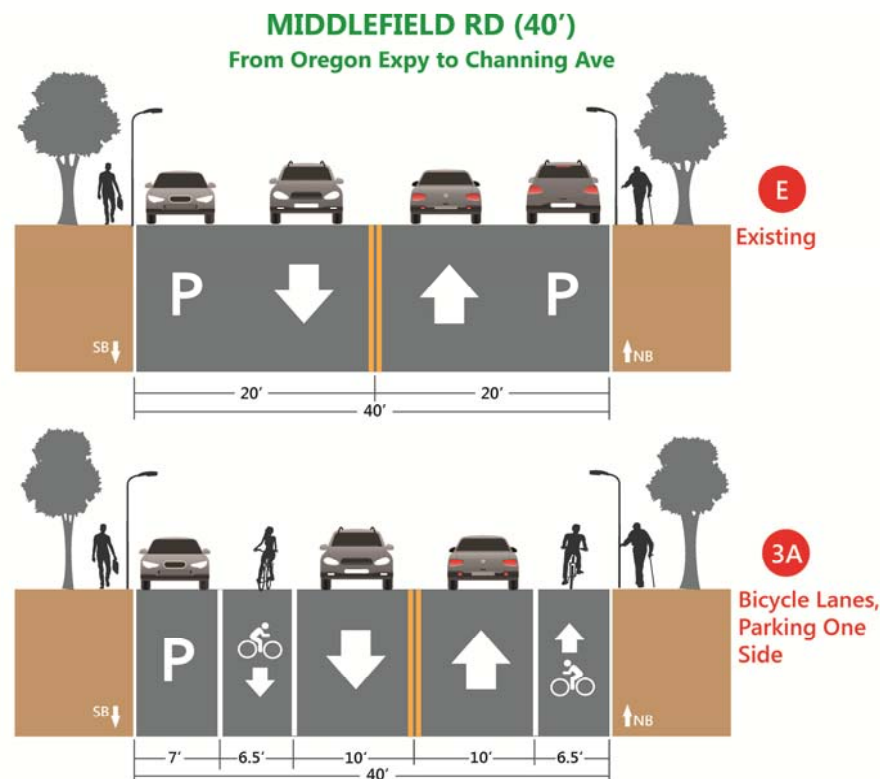
Data Collection



- Motor vehicle counts
- Bicycle counts
- Parking occupancy
- Collision history
- Average speeds
- Travel times
- Field observations

Middlefield Rd & N California Ave Complete Street Project

Community Input: Jan 2016 Meeting



- Over 50 attendees
- Almost all opposed to the removal of on-street parking lane for bicycle lane
- General support for short separated bikeway
- Very concerned about speeding and unsafe passing on right
- Poor sightlines when exiting driveways and cross-streets
- Difficulty crossing the street as pedestrians

Middlefield Rd & N California Ave Complete Street Project

Community Input: Project Goals

- 1) Discourage Speeding
 - Visually narrow travel lanes (9 or 10 feet)
 - Modify centerlines (no centerline or dashed centerline)
- 2) Limit Aggressive + Unsafe Passing
 - Delineate parking lanes
 - Hatched “curb extensions” with raised traffic buttons
- 3) Rationalize Traffic Operations
 - Add dedicated right + left-turn lanes at Embarcadero, Channing, Homer, and Walter Hays Elementary School
- 4) Improve Pedestrian Connections
 - Add high-visibility crosswalks at Kellogg and Seale
- 5) Enhance Bicycle Connections
 - New two-way separated bikeway at N California and Middlefield
 - Standard bicycle lanes on N California

Middlefield Rd & N California Ave Complete Street Project

Community Input: Jun 2016 Meeting



Photosimulation

Middlefield Road and North California Avenue Complete Streets

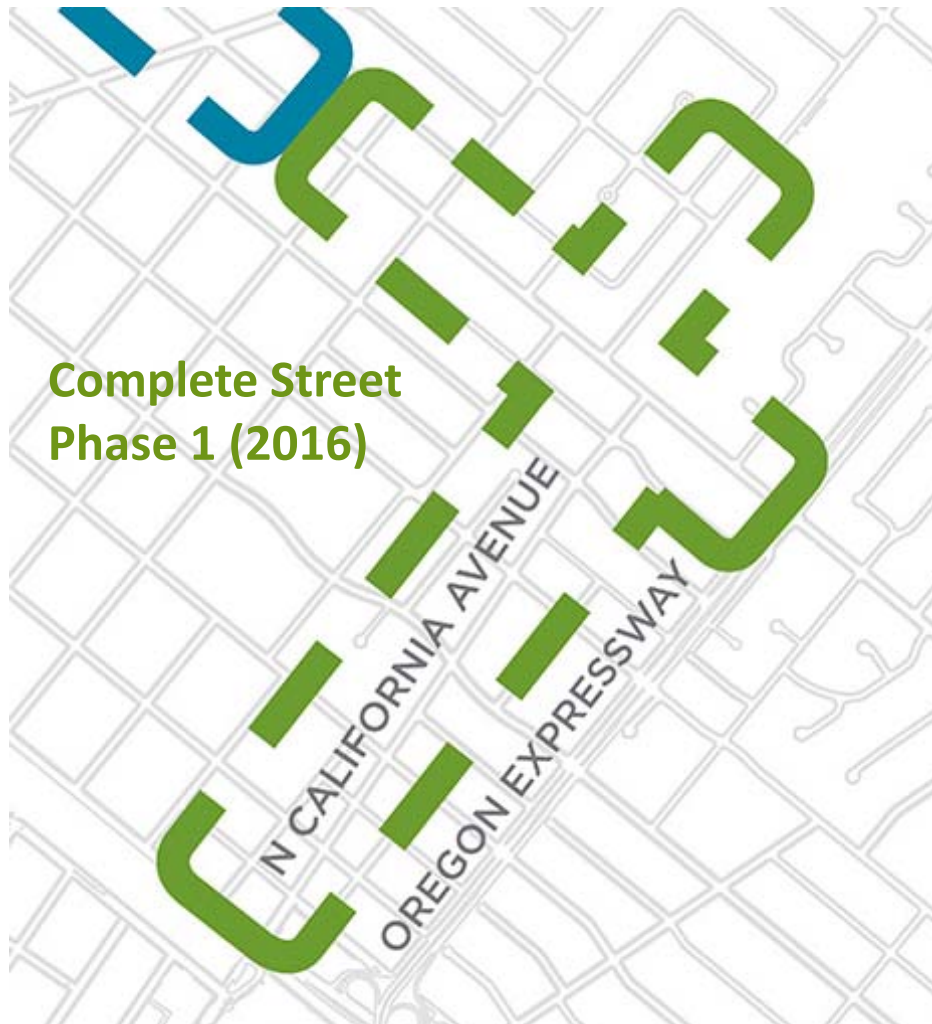
PLANNING & COMMUNITY ENVIRONMENT - TRANSPORTATION



- Over 20 attendees
- General support for project
- Offered input on specific safety and traffic operation concerns
- Concern about dashed single yellow centerline

Middlefield Rd & N California Ave Complete Street Project

Phase 1 Project Elements



- Narrower travel lanes
- Dashed single yellow centerline
- New crosswalks
- Curb extensions (hatching and traffic buttons)
- Wider sidewalk
- Short two-way Class IV separated bikeway

Middlefield Rd & N California Ave Complete Street Project Phase 1 Project Elements



Middlefield Rd & N California Ave Complete Street Project Phase 1 Project Elements



Middlefield Rd & N California Ave Complete Street Project Phase 1 Project Elements



Middlefield Rd & N California Ave Complete Street Project

Phase 1 Results To-Date



- **Middlefield NB travel time (Oregon→MP)**
 - Before 8:27-9:23 (avg speed 13-15)
 - After 8:05-8:30 (avg speed 15-16)
- **Middlefield SB travel time (MP→Oregon)**
 - Before 7:52-12:45 (avg speed 10-16)
 - After 10:14-10:51 (avg speed 12-12)
- **Middlefield 85th% speed decrease**
 - Before 33-34 MPH (April 2016)
 - After 29-32 MPH (September 2016)
- **Middlefield motor vehicles per day decrease**
 - Before 11,000 (April 2016)
 - **After 9,300 (September 2016)**
- **Shuttle → no added delay; road feels safer**

Middlefield Rd & N California Ave Complete Street Project

Phase 1 Ongoing Concerns



- Northbound left-turning motorists delaying northbound through motorists at N California
- Unsafe passing by southbound motorists still occurring at N California
- Additional delay due to exclusive pedestrian/bicycle phase at N California
- Legibility of two-way separated bikeway
- Ability to clean around bollards and raised traffic buttons
- Traffic buttons may be tripping hazard

Middlefield Rd & N California Ave Complete Street Project

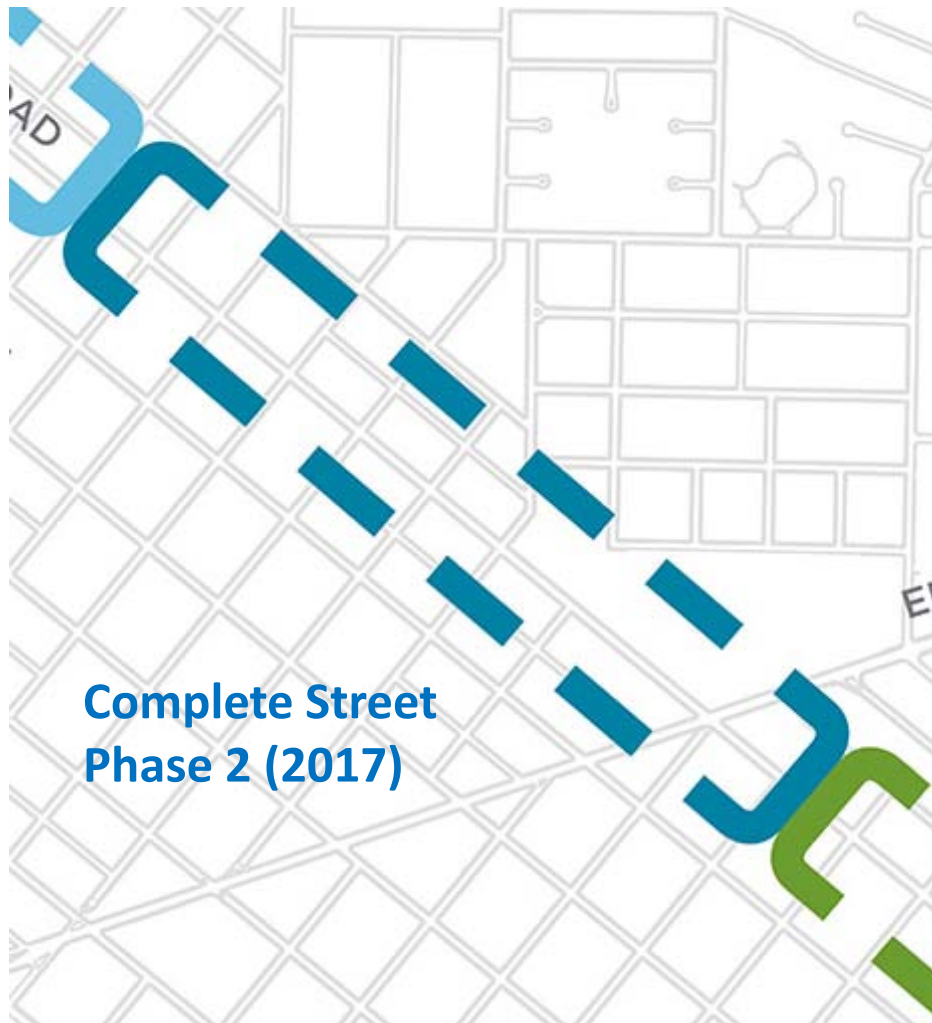
Recent Observations/Modifications



- Though northbound delay at N California due to left-turners is sporadic and intermittent, options to remedy include:
 - Prohibit left-turns during peak hour
 - Implement separate phase for northbound Middlefield
 - Remove parking on west side of Middlefield to create left-turn lane
- Bollards and traffic buttons are being adjusted to allow for sweeping and reduce tripping hazard (other materials to be considered for Phase 2)
- Continuing education on separated bikeway through SRTS program

Middlefield Rd & N California Ave Complete Street Project

Phase 2 Project Elements



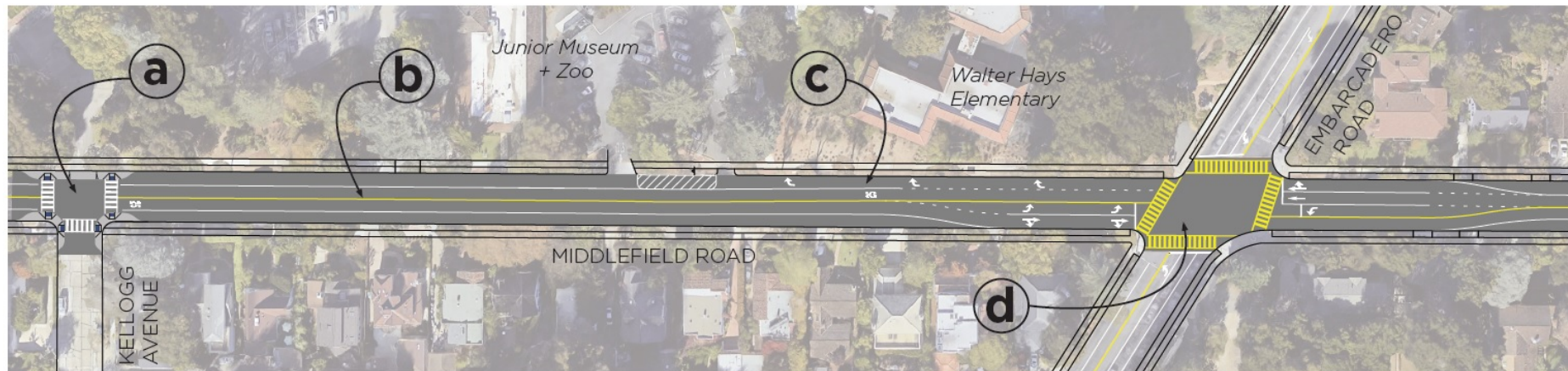
- Narrower travel lanes
- Dashed single yellow centerline
- New crosswalks
- Curb extensions (concrete)
- New traffic signal and turn lanes at Embarcadero Rd
- Revised SB lane drop at Homer Ave

Middlefield Rd & N California Ave Complete Street Project

Phase 2 Project Elements

a) New marked crosswalk, landscaping, and curb extension at Kellogg Av + Middlefield Rd.

b) Simplified centerline striping + visually narrow lines with white edge line



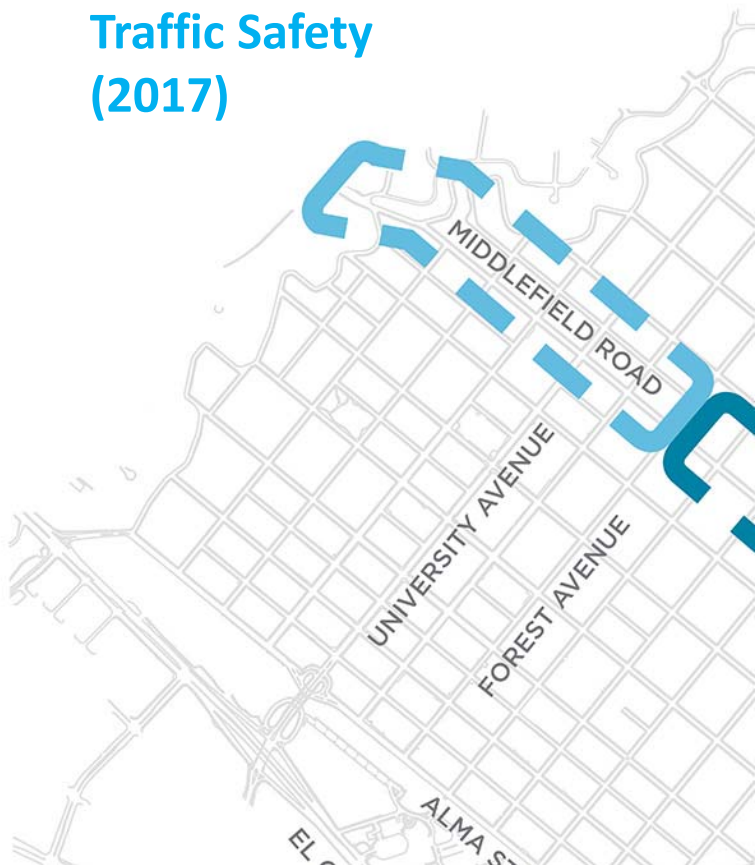
c) New formalized right turn lane for Walter Hays Elementary School

d) Rationalized intersection at Middlefield Rd + Embarcadero Rd Intersection. New turn lanes + Improved Traffic Signal

Middlefield Rd North Traffic Safety Project

Project Timeline

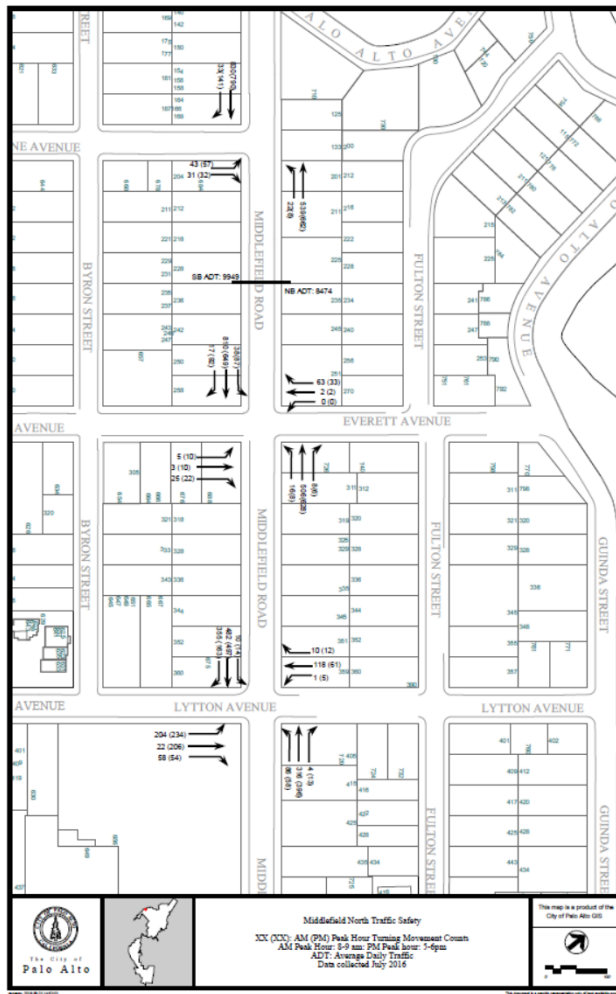
Traffic Safety (2017)



- **June 2015:** Time-of-day Turn restrictions at Hawthorne and Everett implemented
- **July 2016:** Traffic safety project initiated
- **July-August 2016:** Data collection
- **August-October 2016:** Alternatives development
- **October 2016:** Community Open House #1
- **December 2016:** Present preferred alternative to City Council

Middlefield Rd North Traffic Safety Project

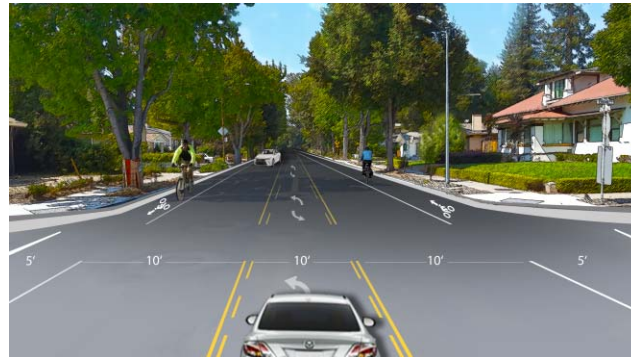
Data Collection



- Existing time-of-day turn restrictions ineffective
- 85th percentile speed → 34 MPH
- More collisions at Everett intersection than Hawthorne despite lower volumes
- Everett intersection → 19 collisions (2010-2014) with 13 related to right-of-way violations
- Broadside most common type of collision; few severe injuries

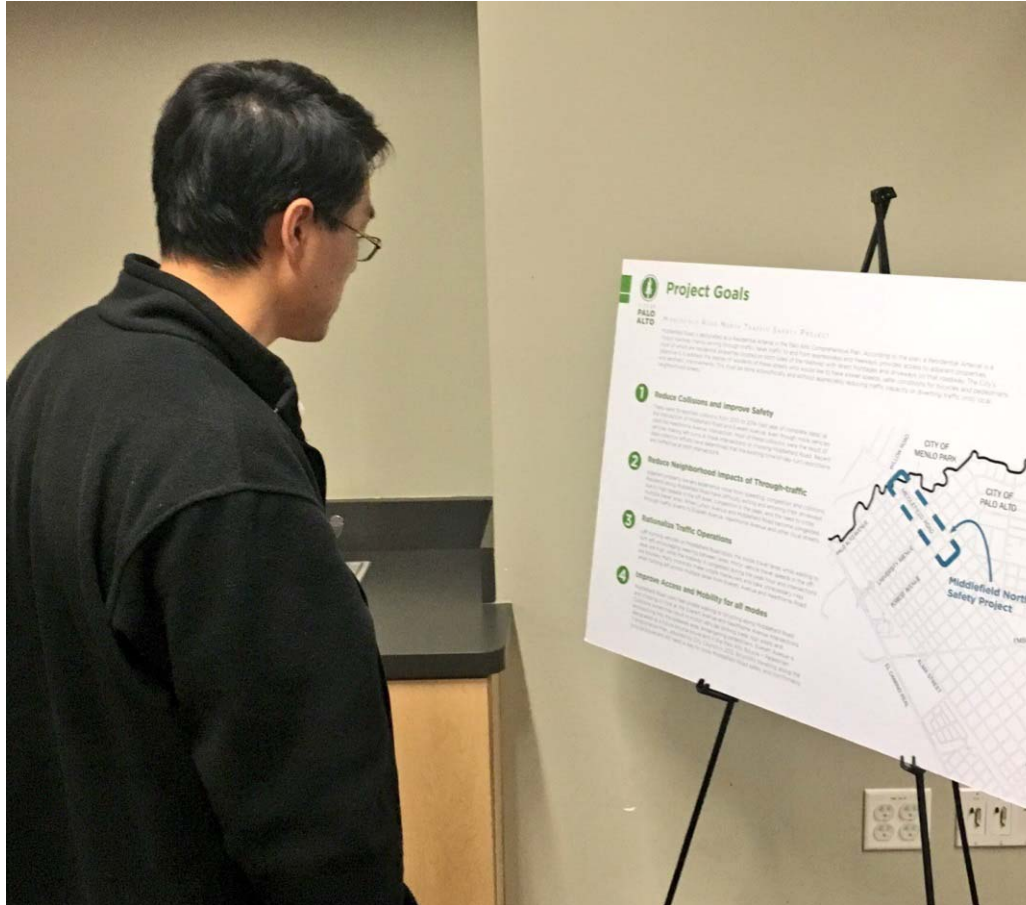
Middlefield Rd North Traffic Safety Project

Initial Project Alternatives



Middlefield Rd North Traffic Safety Project

Community Input: Oct 2016 Meeting



- Over 20 attendees; few non-residents
- Majority support the addition of bicycle lanes
- Little support for the addition of parking
- Significant concern about continuous median and access to driveways

Middlefield Rd North Traffic Safety Project

Refined Project Alternative 6A

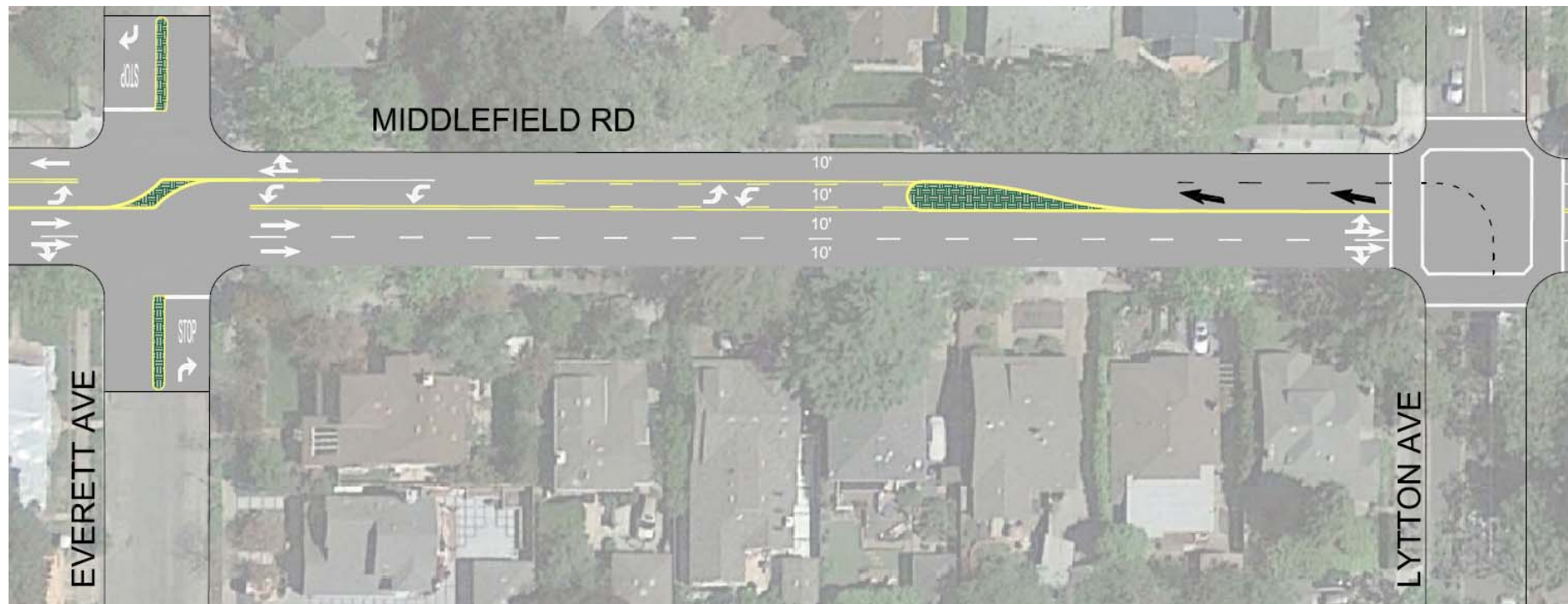
- Two-travel lanes, two bicycle lanes, two-way left-turn lane
- Left-over treatments at Hawthorne Ave and Everett Ave
- Preserves dual left-turn capacity from Lytton Ave
- Reduces southbound capacity



Middlefield Rd North Traffic Safety Project

Refined Project Alternative 6B

- Two SB travel lanes, one NB travel lane, two-way left-turn lane
- Left-over treatments at Hawthorne Ave and Everett Ave
- Preserves dual left-turn capacity from Lytton Ave
- Does not reduce southbound capacity



Middlefield Rd North Traffic Safety Project

Next Steps



- **October-November 2016:** Analyze refined project alternatives
- **December 2016:** Present preferred alternative to City Council
- **January-February 2017:** Install preferred alternative as one-year pilot*
- **March 2017-March 2018:** Evaluate one-year pilot*
- **April-May 2018:** Return to PTC and Council with results*

*assuming no CEQA review required

Transportation Plans and Projects along Middlefield Road

More Information

City of Palo Alto → Planning and Community Environment → Transportation → Projects

<http://www.cityofpaloalto.org/gov/depts/pln/transit/projects.asp>

Transportation Plans and Projects along Middlefield Road



October 26, 2016

Planning and Transportation Commission

Middlefield Rd & N California Ave Complete Street Project

Policy Framework: Comprehensive Plan

POLICY T-30: Reduce the impacts of through-traffic on residential areas by designating certain streets as **residential arterials**.



Illustration by Canan Tolon

- Slower speeds
- Safer conditions for bicycles and pedestrians
- Aesthetic improvements
- Without reducing capacity or diverting traffic onto local neighborhood streets

Middlefield Rd & N California Ave Complete Street Project

Policy Framework: Complete Streets

4. **All Projects and Phases.** Complete Streets infrastructure sufficient to enable reasonably safe travel along and across the right of way for each category of users shall be incorporated into all planning, funding, design, approval, and implementation processes for any construction, reconstruction, retrofit, maintenance, operations, alteration, or repair of streets (including streets, roads, highways, bridges, and other portions of the transportation system), except that

-Complete Streets Policy of the City of Palo Alto, Adopted November 30, 2015

Middlefield Rd & N California Ave Complete Street Project

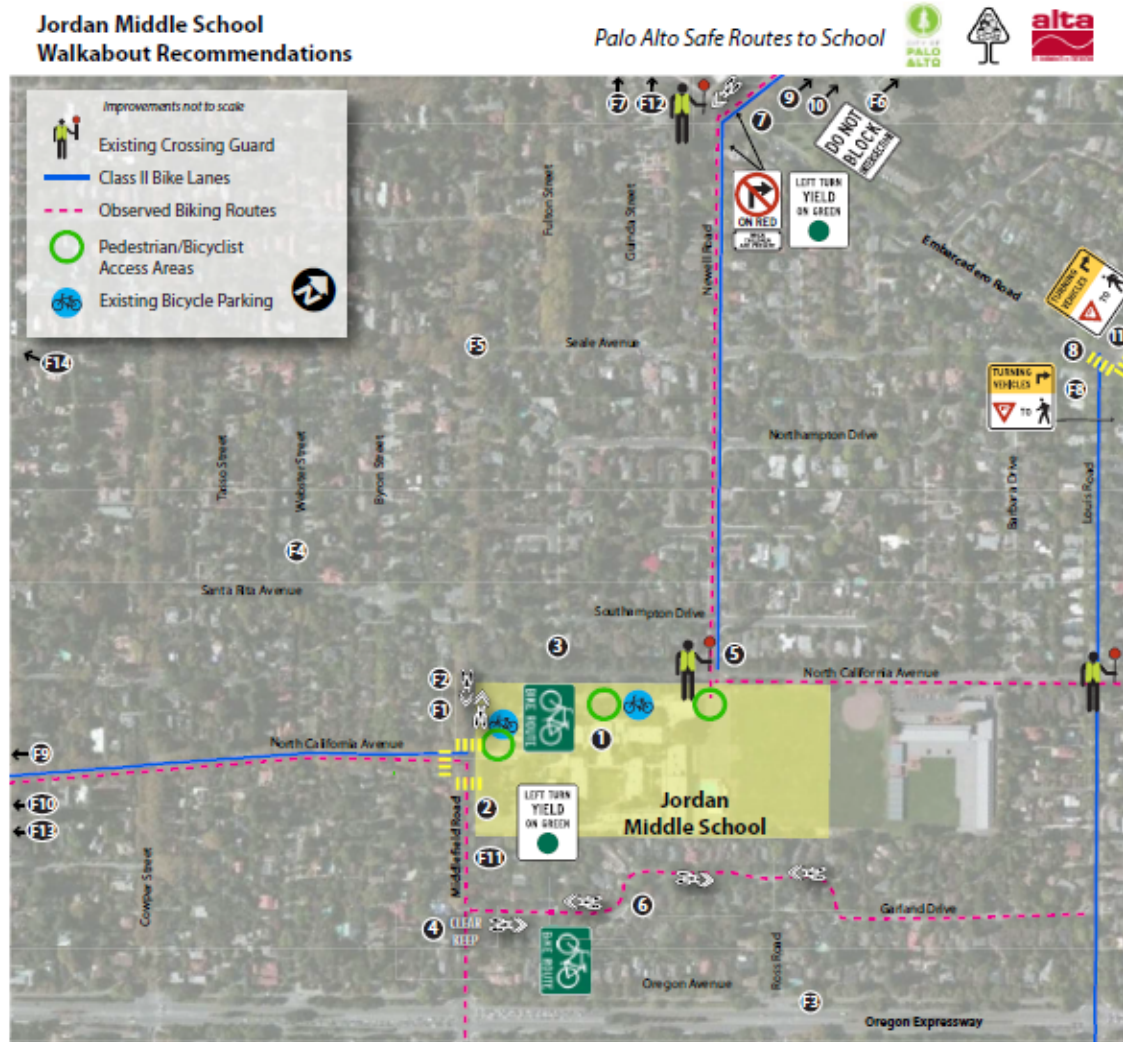
Policy Framework: Bike + Ped Plan



- Middlefield Rd - Class III Shared Roadway
- N California Ave - Enhanced Bikeway with Class II Bicycle Lanes (also Bay to Ridge Trail)
- Webster St Bike Boulevard

Middlefield Rd & N California Ave Complete Street Project

Policy Framework: Safe Routes to School



- Design and implement Seale bicycle boulevard, including improvements at Middlefield
- Add signal at the north leg of N California at Middlefield
- Design and implement Webster bicycle boulevard

Middlefield Rd & N California Ave Complete Street Project

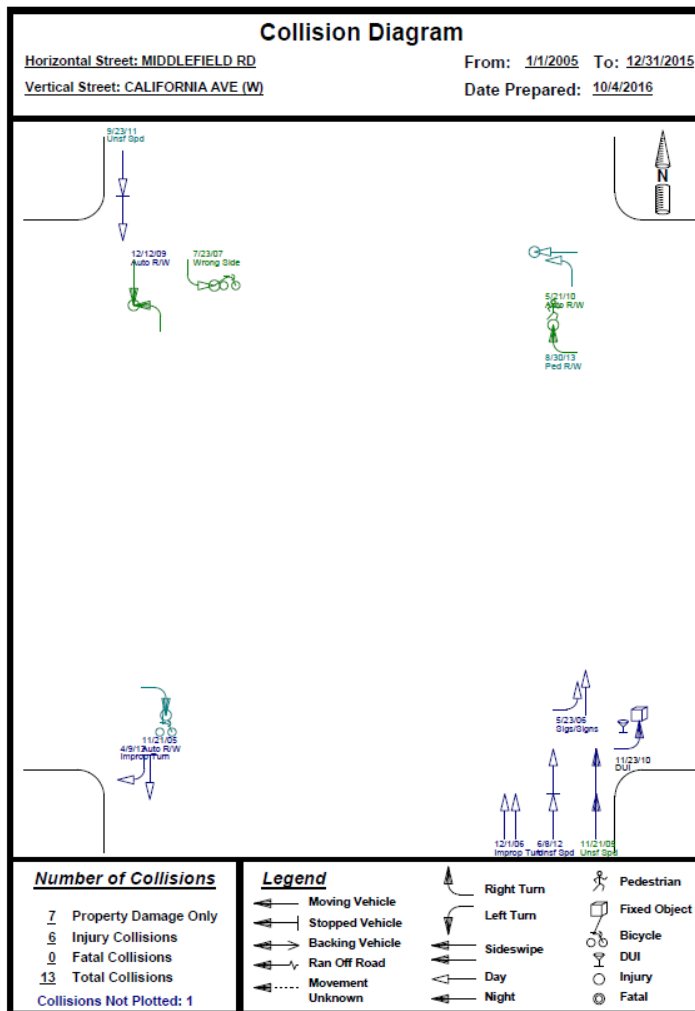
Data Collection



- Middlefield → 11,000 motor vehicles per day
- N California → 2,500 motor vehicles per day
- N California → 600 bicycles per day
- Middlefield parking occupancy
 - west side 0-67%
 - east side 0-50%

Middlefield Rd & N California Ave Complete Street Project

Data Collection



- Total of 17 collisions at Middlefield at N California intersection 2005-2015
- Eight (8) related to unsafe travel speed
- Six (6) caused by improper turning or right-of-way violations
- Six (6) injury collisions with three (3) involving a bicyclist