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OAKLAND
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CITY OF OAKLAND

Grand Avenue Road Diet and Bike Lanes Jean St/Wildwood Ave to Elwood Ave

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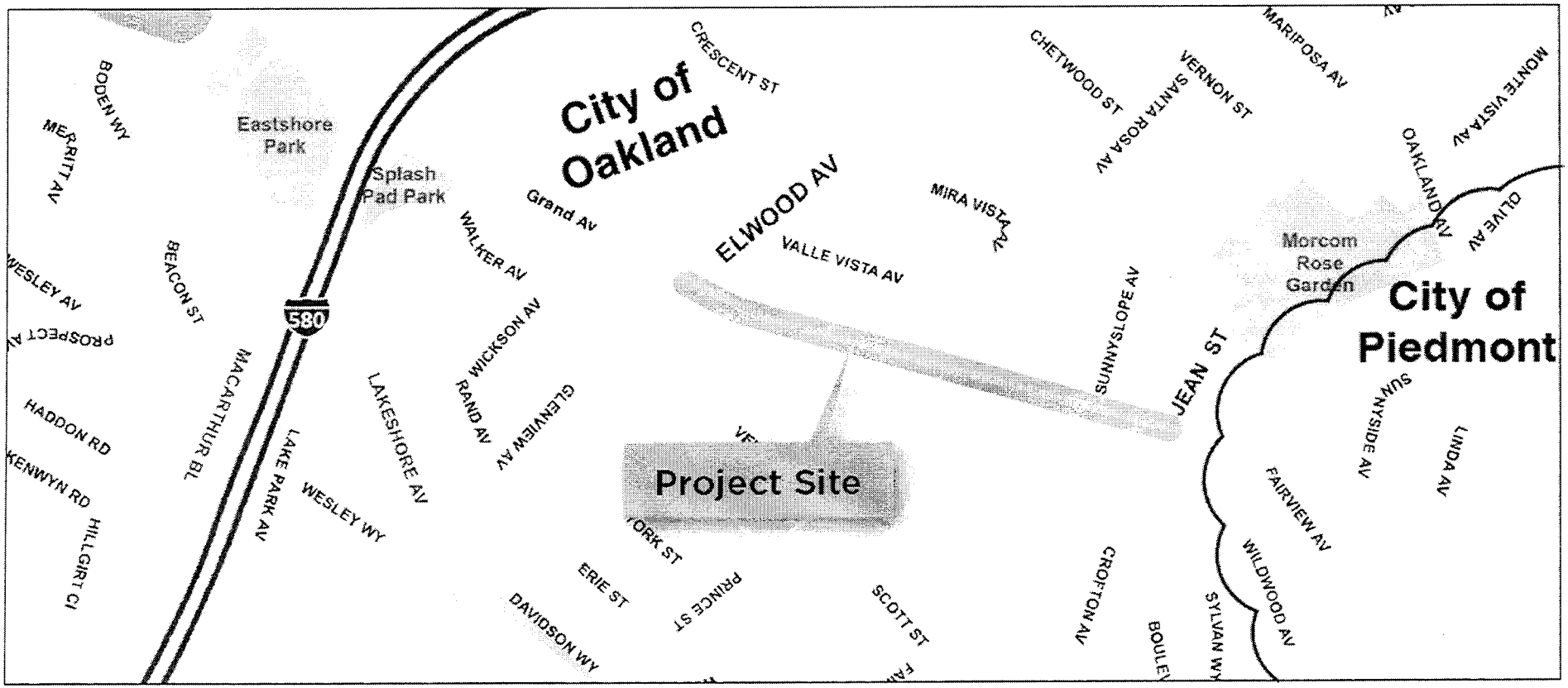
Public Works Committee Meeting October 13, 2015

Location Map



Project Purpose

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- Reduce the number of travel lanes to better match roadway vehicle demand
- Reconfigure the roadway cross-section to better meet the needs of road users
- Reduce collision rates for all roadway users
- Improve the experience for people walking along and crossing Grand Avenue
- Improve bicycle facilities

Existing Cross Section

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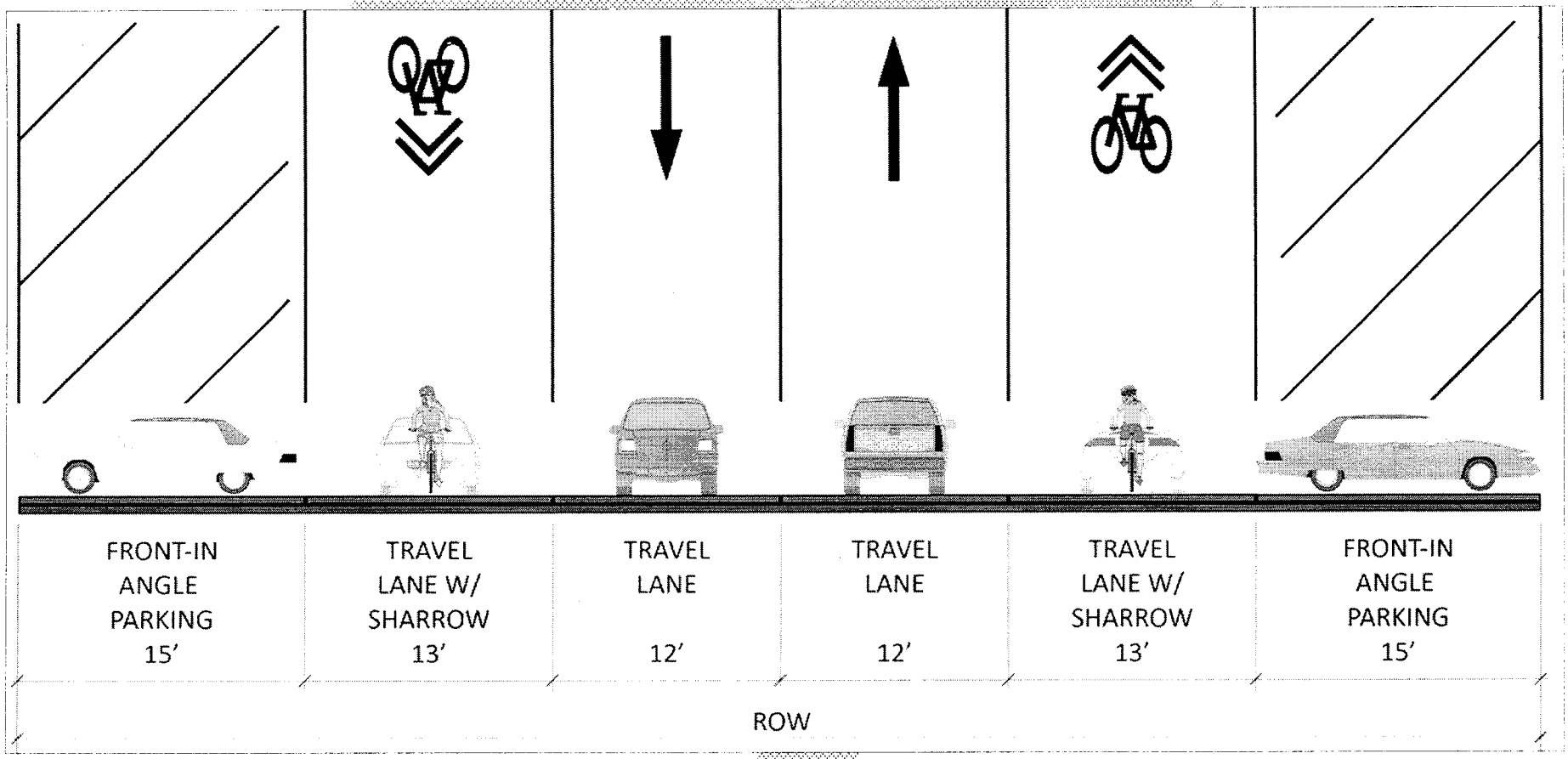

ADT: 16,125 vehicles
Posted Speed: 25 mph
Prevailing Speed: 32 mph

81% of vehicles travel between 24 and 33 mph

Challenges Posed by 4-lane Roads

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People walking

- Double threat
- Several lanes to cross

People on bikes

- Shared lane with motorists
- Proximity to parked cars

People in vehicles

- Obstructions in lanes (e.g. parking)
- Lane changes to avoid obstructions

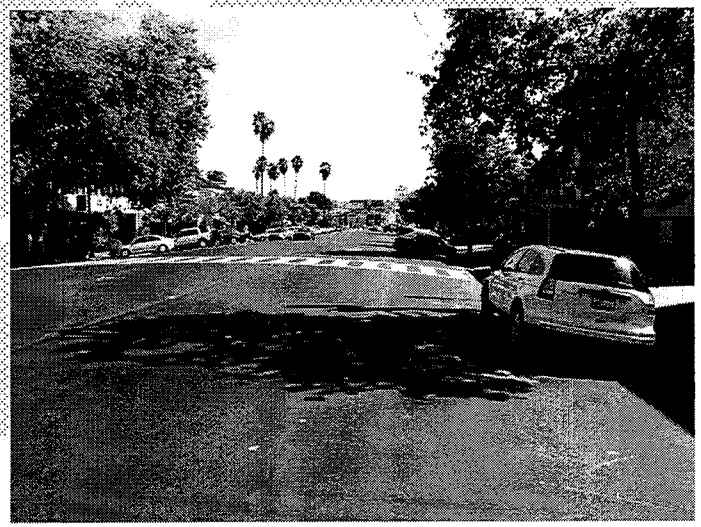

Photo source: Kittelson & Associates

What is a Road Diet?

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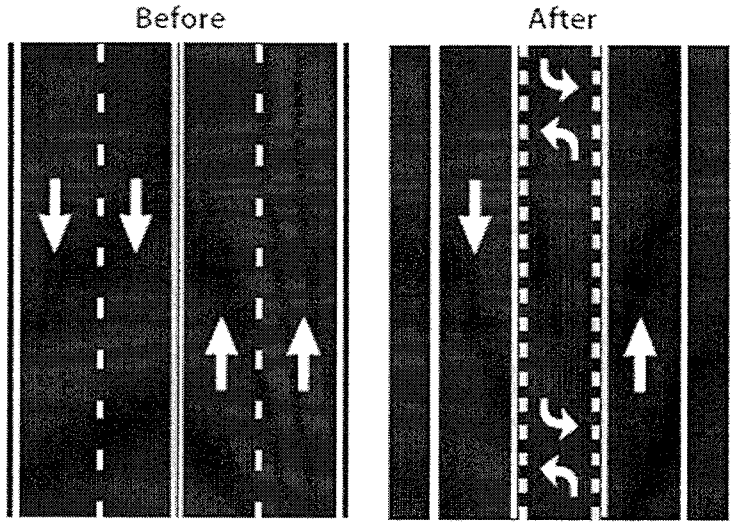
- Removes vehicle travel lanes to reallocate space for other modes
- Generally successful for facilities with less the 20,000 daily vehicles.



Source: FHWA

Lakeshore Avenue Before/After

Source: City of Oakland

Pedestrian Benefits

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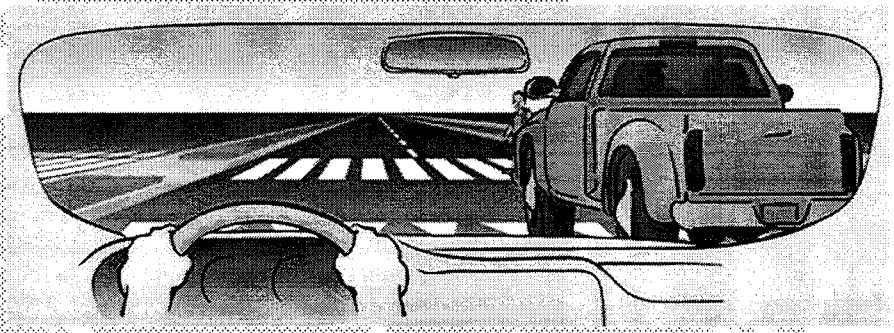
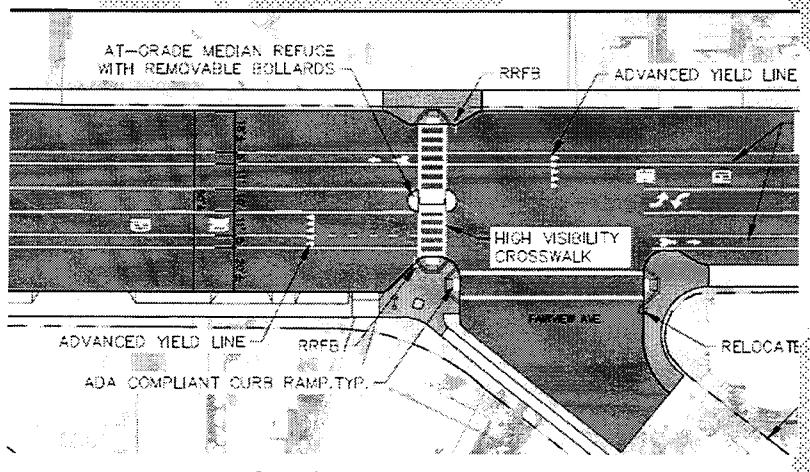
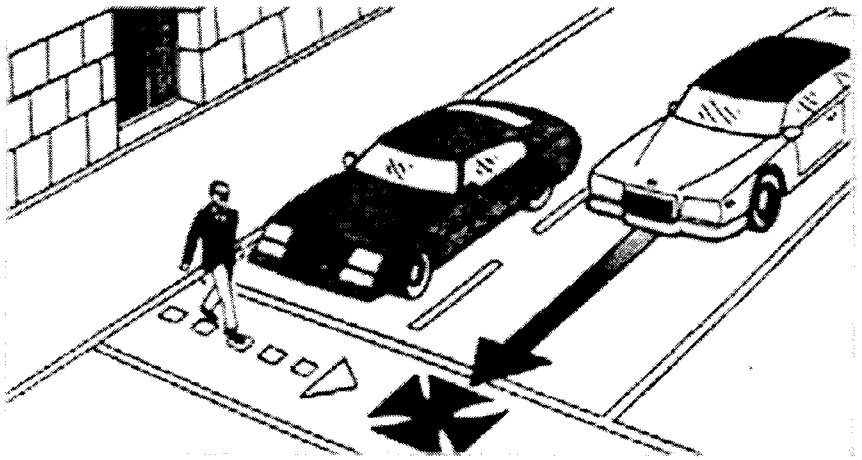
- Elimination of multiple threat
- Roadway can be crossed in two stages
- Reduced vehicle speeds



Source: Portland Bureau of Transportation



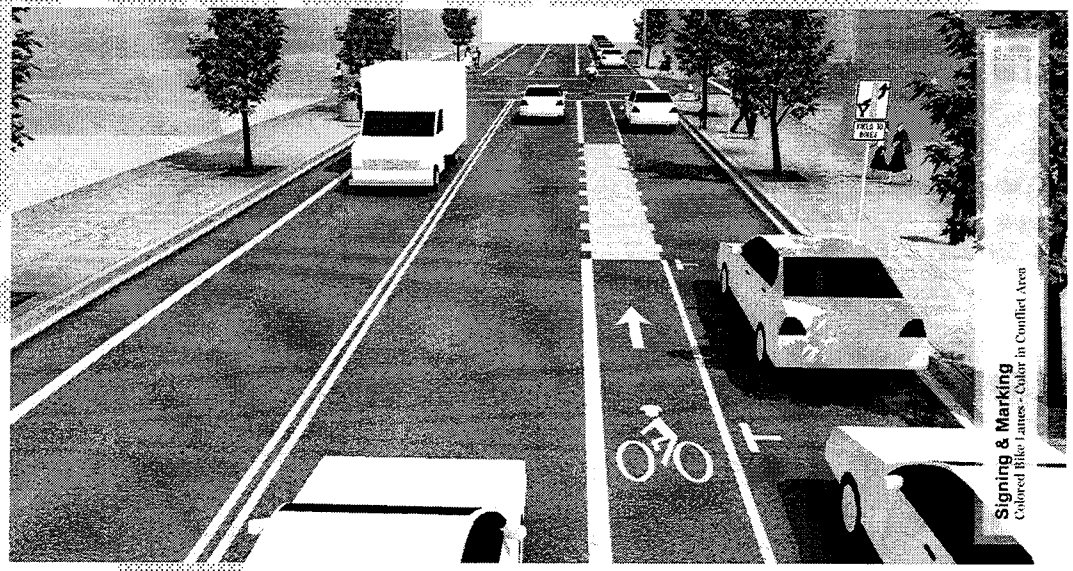
Source: City of Piedmont, Coastland Civil Engineering



Source: Center for Advanced Infrastructure and Transportation

Bicyclist Benefits

- Exclusive bicycle lane
- Reduced vehicle speeds
- Improved Safety



Source: NACTO

Motorist Benefits

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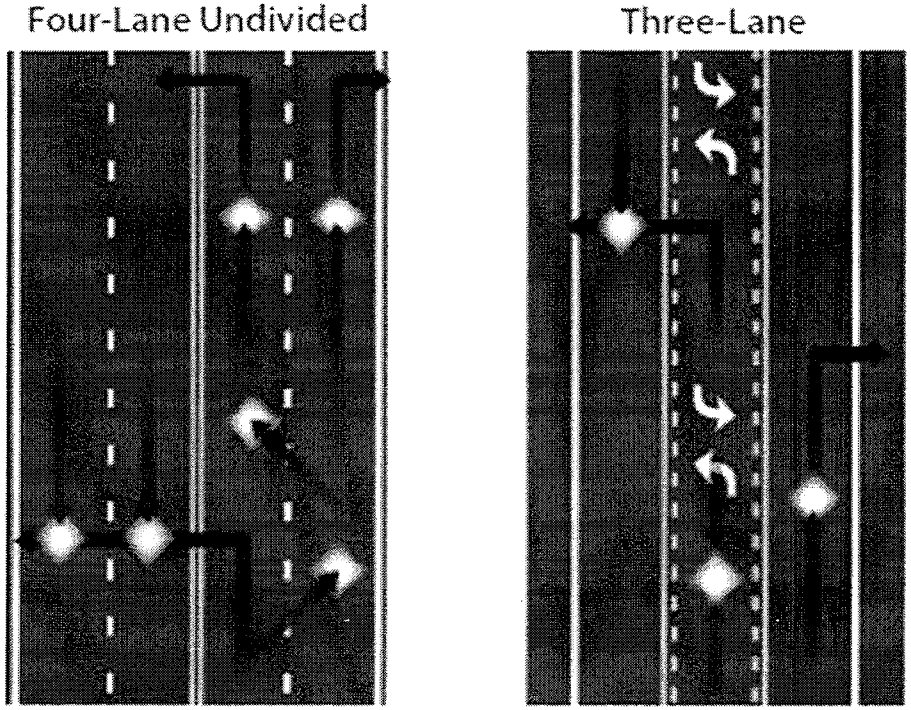
- Improved safety for left-turning vehicles
- Reduced collision rates



Source: FHWA

Potential Safety Improvements

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- Reduce risk of side-swipe collisions
  - 15 occurred between 2009 and 2013.
- Reduce risk of collisions involving pedestrians crossing Grand Ave.
  - 5 occurred between 2009 and 2013.
- Reduce bicycle collision rate
  - 6 occurred between 2009 and 2013.

Design Elements Considered

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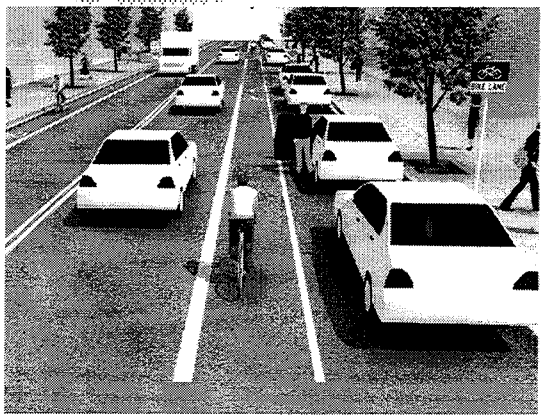
- The following design elements were considered for the road diet on Grand Avenue
  - Traditional bicycle lanes with back-in angle parking
  - Traditional bicycle lanes with front-in angle parking
  - Separated bicycle lanes with front-in angle parking

Source: City of Burnaby

Source: Biking Cupertino



Source: NACTO

Traditional Bike Lanes

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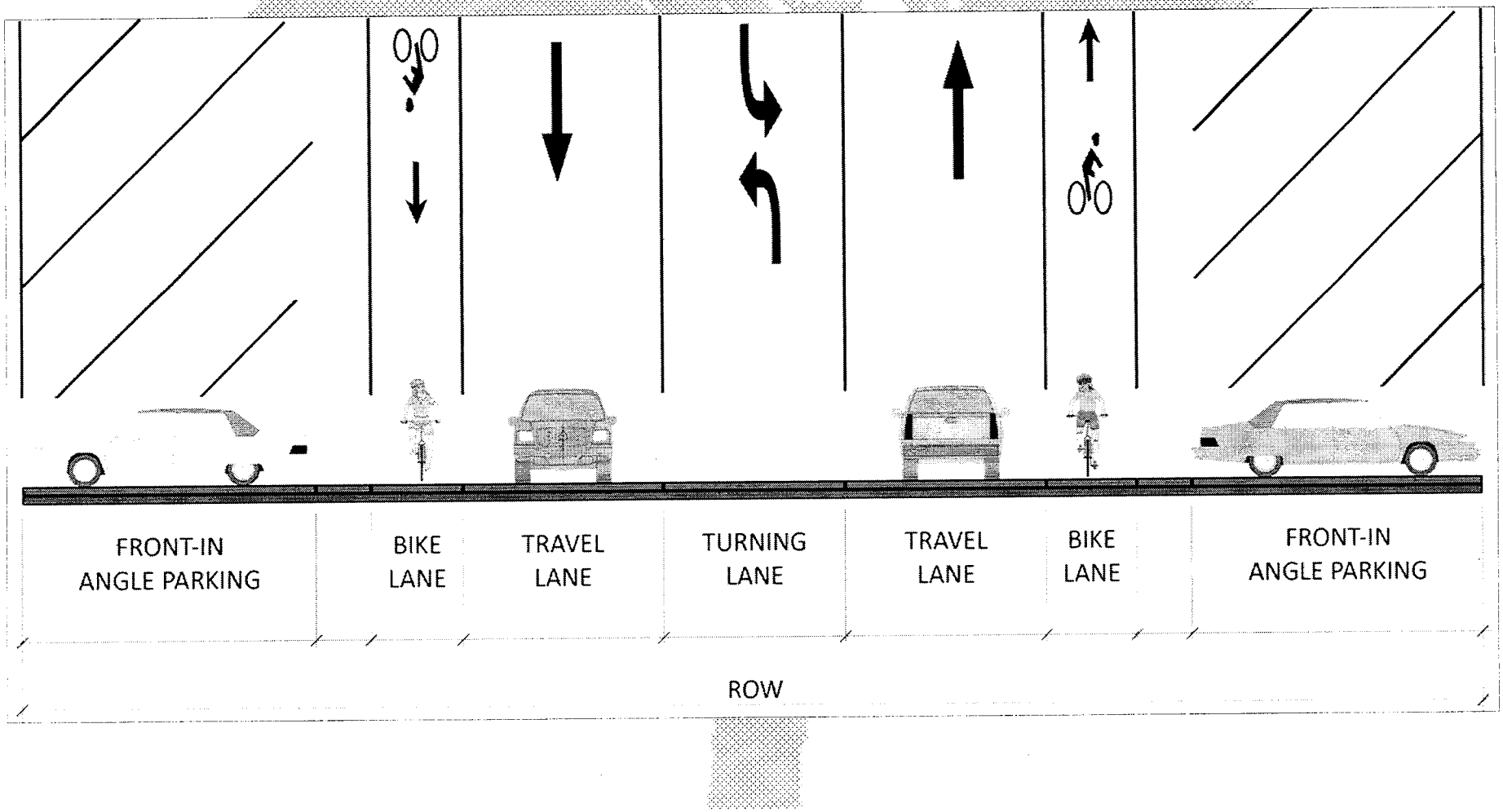

Traditional Bike Lanes: Benefits

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- Provides exclusive space in street for bicyclists
- Compared to existing conditions, bicyclists will be equally or more visible to motorists backing out of parking spaces
- Facilitates predictable behavior and movements between bicyclists and motorists
- Bicyclists can move into vehicle travel lanes as desired and needed
- Consistent with current striping on Grand Avenue

Traditional Bike Lanes: Drawbacks

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- Does not protect bicyclists from moving or parked vehicles

Back-In Angle Parking

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Photo source: Payton Chung via flickr

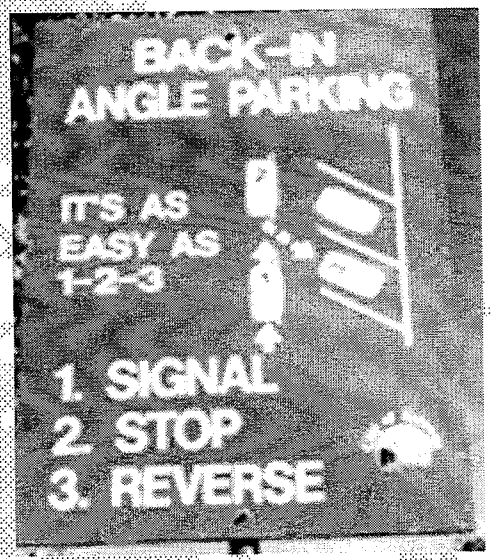

Photo source: BikeWalkKC

Example in Philadelphia

Back-In Angle Parking: Benefits

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- Improves visibility and field of vision when leaving parking space
- May decrease collisions between bicyclists and motorists
- Improves safety for motorists
- Access to rear storage in vehicles is away from moving vehicles

Source: Denver Post

Back-In Angle Parking: Drawbacks

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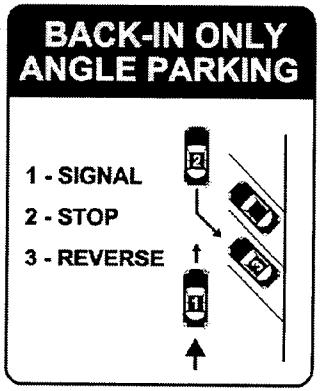
- Motorists are unfamiliar with maneuver
- Vehicles may overhang the sidewalk
- Vehicle exhaust expelled toward sidewalk
- Vehicles enter head-in from opposite side of street
- May result in loss of parking
- Inconsistent with the rest of Grand Avenue



Source: Topeka Bikeways

Source: Payton Chung via flickr

Source: New York Times

Front-In Angle Parking

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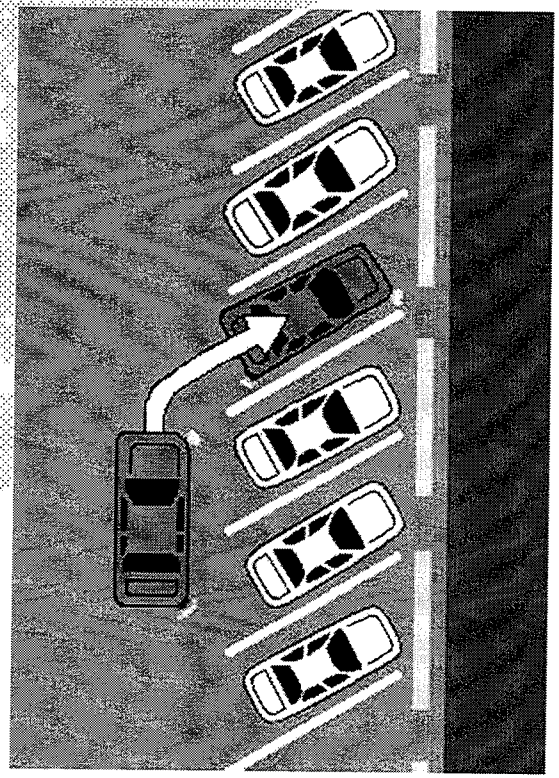
Photo source: www.city-data.com



Source: www.motorera.com

Separated Bike Lanes

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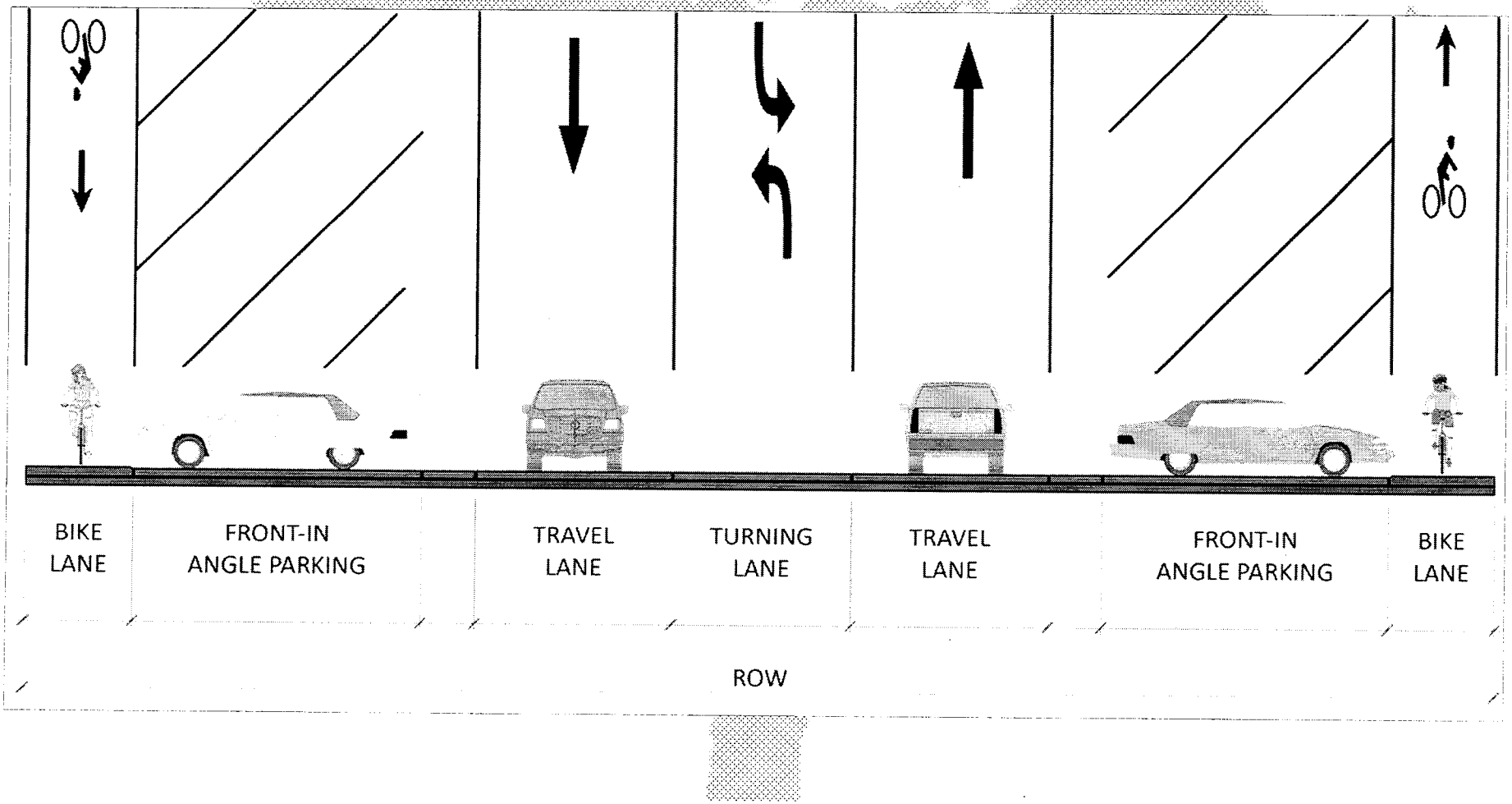

Separated Bike Lanes: Benefits

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- Dedicates and protects space on street for bicyclists
- Reduces conflicts between motorists and bicyclists
- Reduces risk of motorists dooring bicyclists

Separated Bike Lanes: Drawbacks

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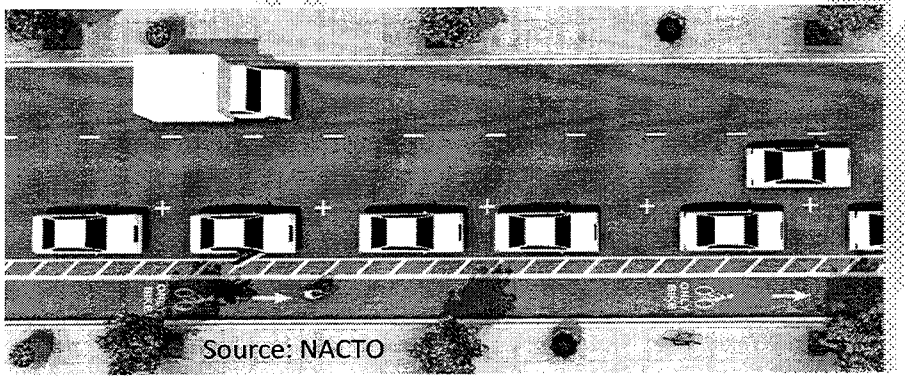
- Street width constraint
  - Puts bicyclists in the gutter with drainage inlets
  - Overhanging vehicles may encroach into bike lanes
- May require removing parking spaces near intersections
- May require substantial redesign of street
  - To transition through existing curb extensions
  - To accommodate left-turning bicyclists at intersections
  - To manage conflict between motorists and bicyclists at intersections



Source: NACTO

Source: KAI

Decision Matrix

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	Separated Bicycle Lanes	Traditional Bicycle Lane	
		Back-In Angled Parking	Front-In Angled Parking
Primary Benefit	Dedicated protected space	Improved visibility of bicyclists	Consistent with the rest of Grand Ave.
Primary Drawback	Street width constraint	Inconsistent with remaining Grand Ave.	Bicycle visibility is not as good as back-in
Conclusion	***Street width inadequate to implement this option***	***Consider at a later date with other segments of Grand Ave.***	***Best option for now given street width and consistency constraints***

Proposed Plan

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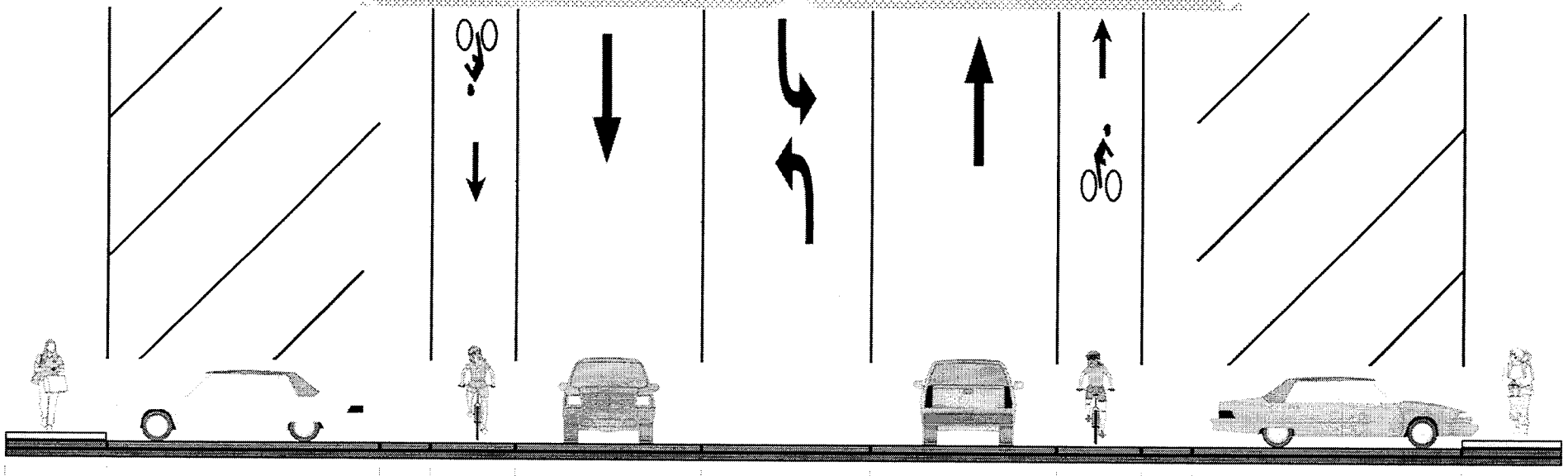

Margene's Bridal Crosswalk

Before Road Diet

After Road Diet

Safeway Crosswalk

Before Road Diet

After Road Diet

Effects on Bicyclists

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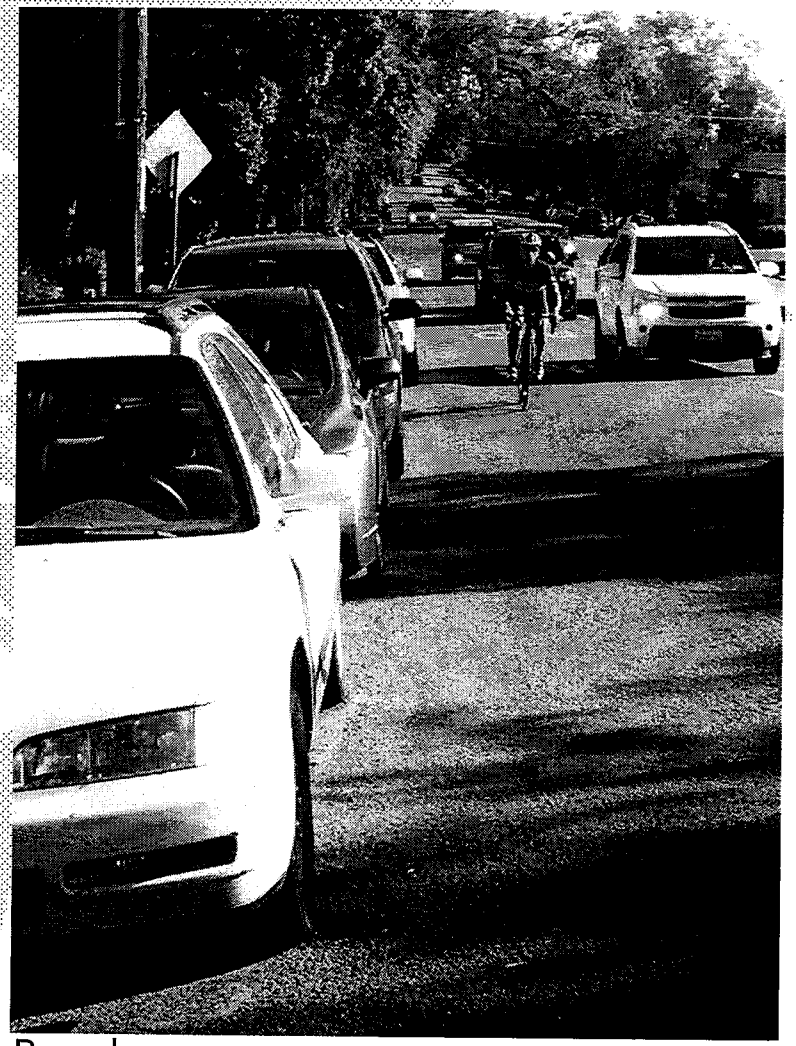
Mineta Transportation Institute Bicycle Level of Traffic Stress: Suitable for whom?

LTS 1: Everyone
LTS 2: All adults
LTS 3: Most adults
LTS 4: The "strong and fearless"

Factors that determine LTS

1. Number of vehicle lanes
2. Speed of motorists
3. Presence of parking
4. Bike lane presence/width
5. Separation between bike lane and motor vehicle lanes



Broadway

Effects on Bicyclists

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- Dedicated street space for bicyclists
- 3' clearance between bike lane and angled parking
- May modestly reduce vehicle speeds
- Bike lane obstruction by parking maneuvers
- Bicycle level of traffic stress (Mineta Transportation Institute)
  - Current conditions: Level 4
  - With road diet: Level 3

Effects on Pedestrians

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- Two mid-block crosswalks:
  - 3612 Grand Ave (near Margene's Bridal)
    - Existing crossing delay: > 2 minutes (peak period)
    - Expected crossing delay: 25 seconds (peak period)
  - 3758 Grand Ave (near Safeway)
    - Existing crossing delay: > 2 minutes (peak period)
    - Expected crossing delay: 20 seconds (peak period)

Effects on Motorists: Morning

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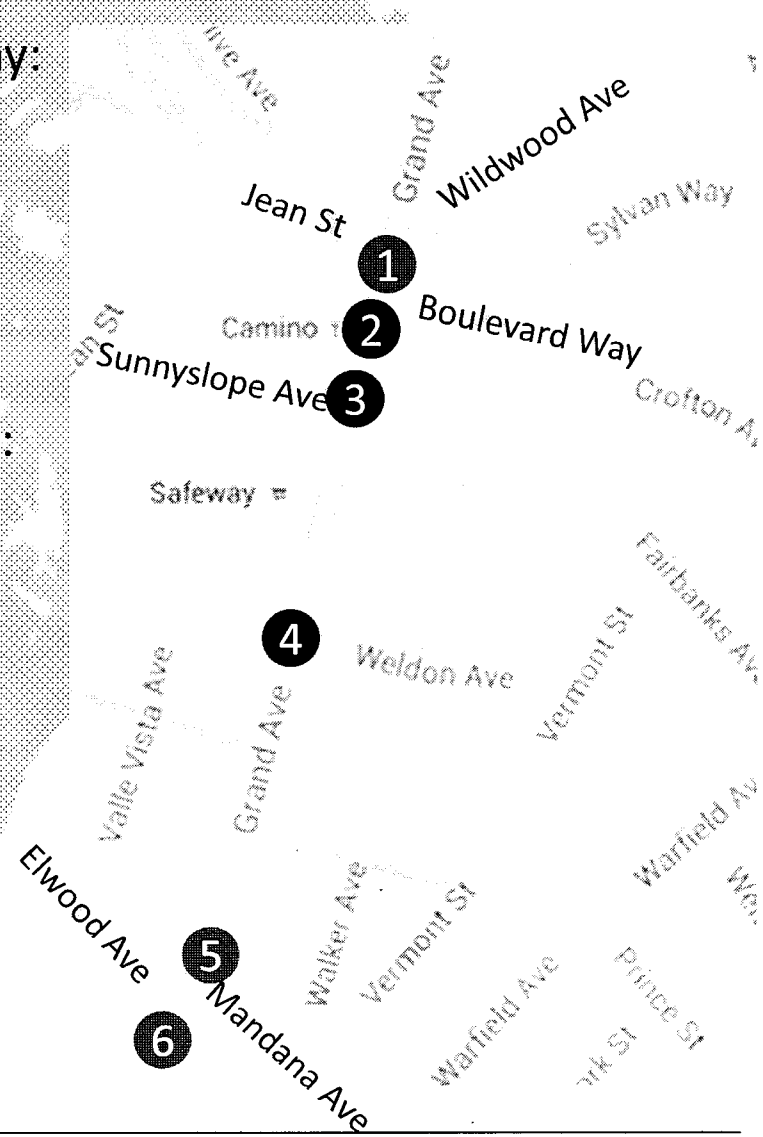
- Up to 3 second reduction in average delay:
  - 2 - Boulevard Way
  - 3 - Sunnyslope Ave
  - 4 - Weldon Ave
- Up to 3 second increase in average delay:
  - 1 - Jean St/Wildwood Ave
  - 5 - Mandana Ave
  - 6 - Elwood Ave
- Travel time **increase** of 31 seconds going north
- Travel time **increase** of 10 seconds going south



Effects on Motorists: Afternoon

- Up to 5 second reduction in average delay:
  - 2 - Boulevard Way
  - 4 - Weldon Ave
- Up to 4 second increase in average delay:
  - 1 - Jean St/Wildwood Ave
  - 3 - Sunnyslope Ave
  - 6 - Elwood Ave
- 15 second increase in average delay:
  - 5 - Mandana Ave

- Travel time **increase** of 44 seconds going north
- Travel time **increase** of 2 seconds going south

Public Outreach Process

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Bicycle and Pedestrian Advisory Commission (BPAC): June 18, 2015

Public Meeting: July 8, 2015

Walking Tour: Saturday, July 25, 2015

Public Hearing: August 12, 2015

Comments/Project Support:

138 support proposed project (**68 percent**)
57 oppose proposed project (**28 percent**)
9 respondents would support proposed project with modifications (**4 percent**)

Questions and Comments

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http://www2.oaklandnet.com/Government/o/PWA/s/Projects/GrandAve/index.htm