

I-280 Northbound Geneva Avenue Off-Ramp Study

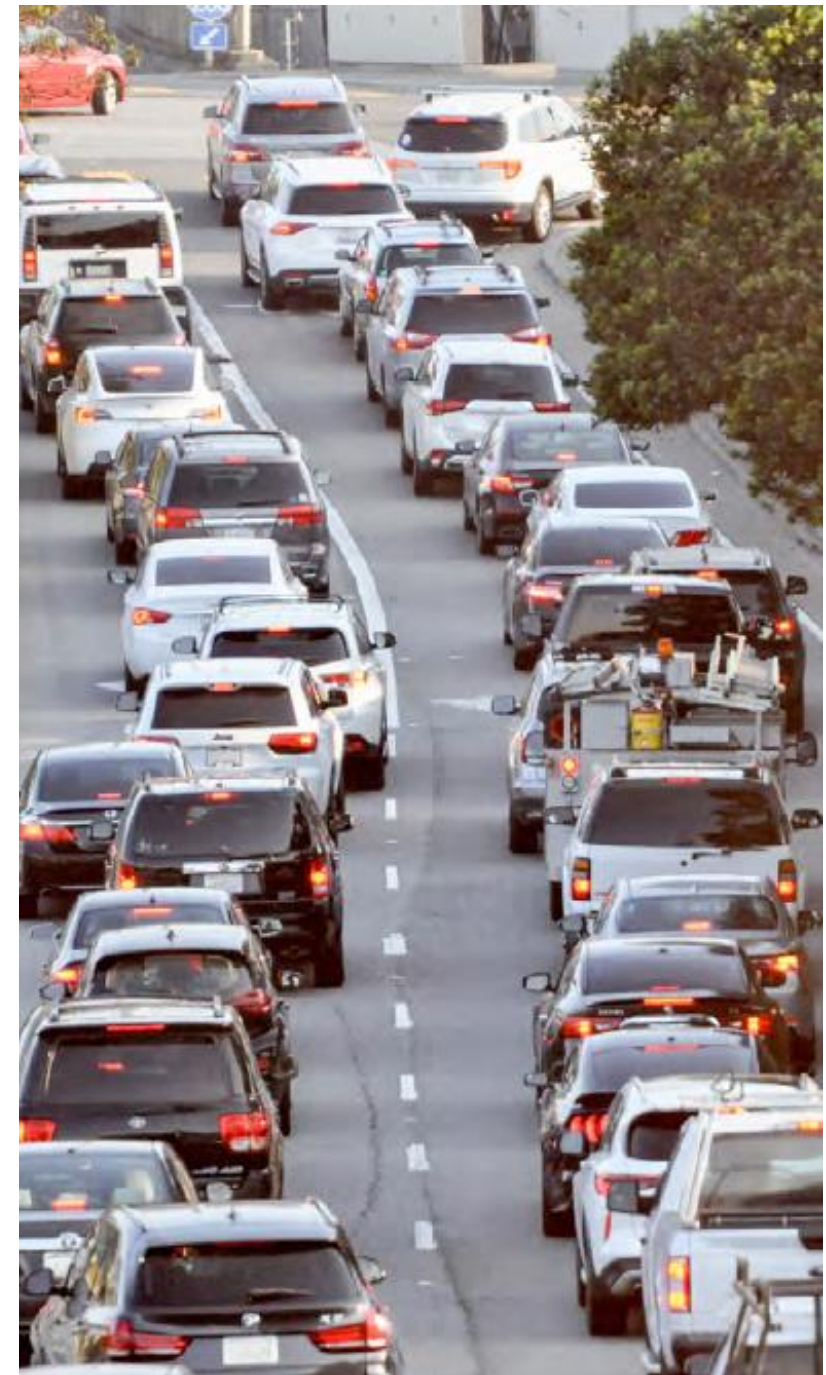


San Francisco
County Transportation
Authority

Agenda Item 9
September 10, 2024

Purpose of I-280 Northbound Geneva Ave Off-Ramp Study

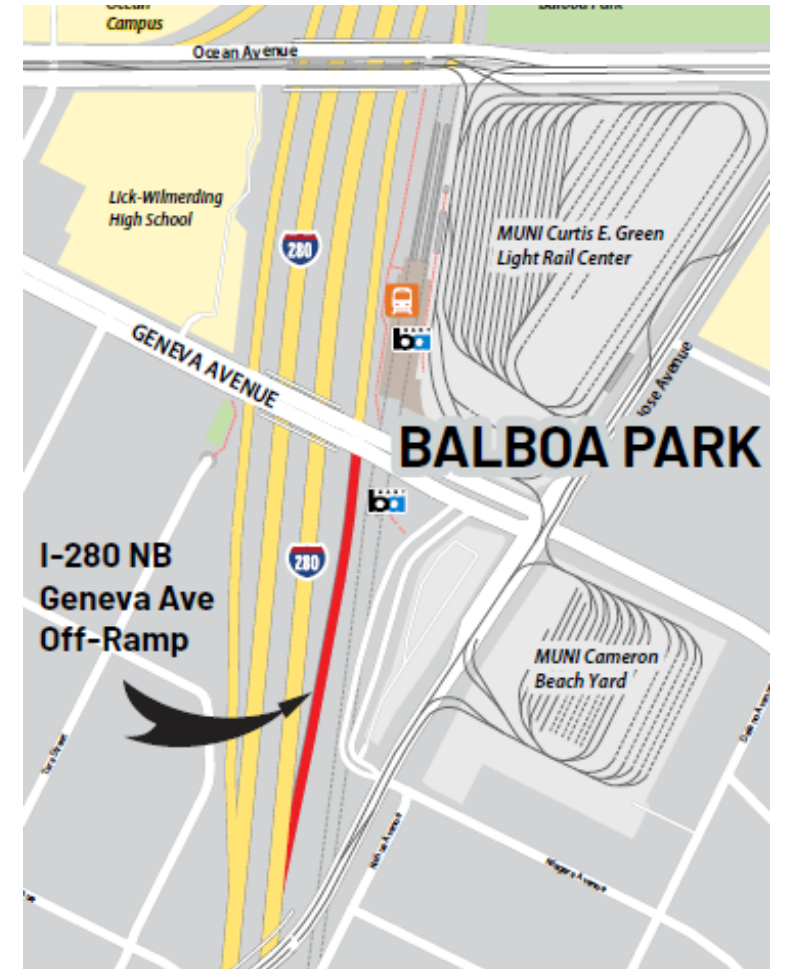
- Chronic traffic queues on ramp spill back to the I-280 mainline freeway resulting in collisions
- Safety issues including vehicle-pedestrian conflicts and use of ramp as drop-off area
- 5-year period (2016 - 2021) – 89 crashes within short distance south of Geneva bridge and 31 crashes associated with the off-ramp directly.



Background

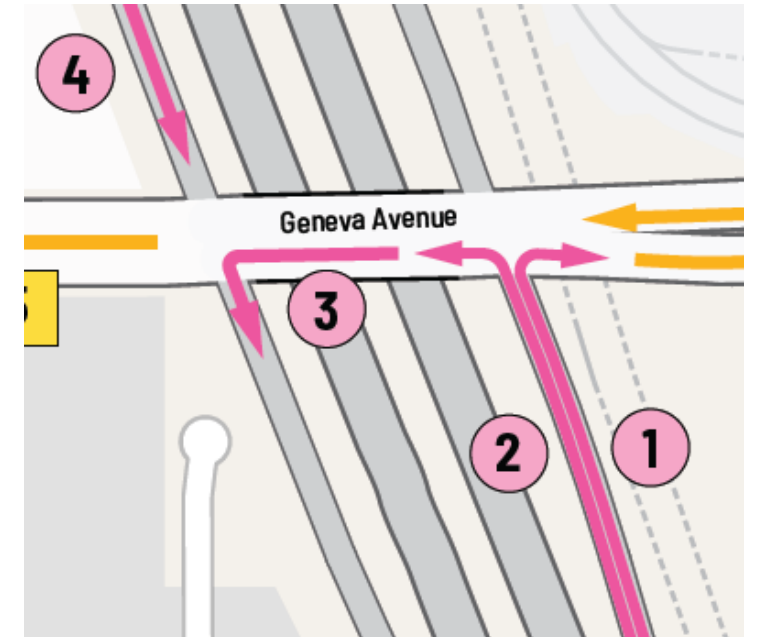
- Located next to Balboa Park BART and Muni Station. Major transfer point for rail and bus lines with a light rail train intersection nearby
- Compact diamond interchange does not meet modern safety standards such as adequate shoulder width, ramp storage capacity, and bridge storage capacity
- Close proximity to City College SF, high schools, and nearby business corridors
- Constraints from I-280 freeway mainline, San Jose Avenue bridge, BART station wall, and hilly terrain

Project Area Map



Existing Traffic Circulation

- Northbound (NB) off-ramp right lane queue (1) due to train crossing at San Jose Avenue and limited storage capacity along this block
- NB right lane queue (1) also affected by pedestrian crossing at off-ramp intersection
- NB off-ramp left lane queue (2) occasionally blocked at intersection by westbound Geneva traffic, particularly to southbound on-ramp
- Scope added to study during observations: Westbound Geneva left turn to southbound on-ramp traffic queue (3) causes pedestrian conflict



Vehicle/pedestrian conflict at SB on-ramp

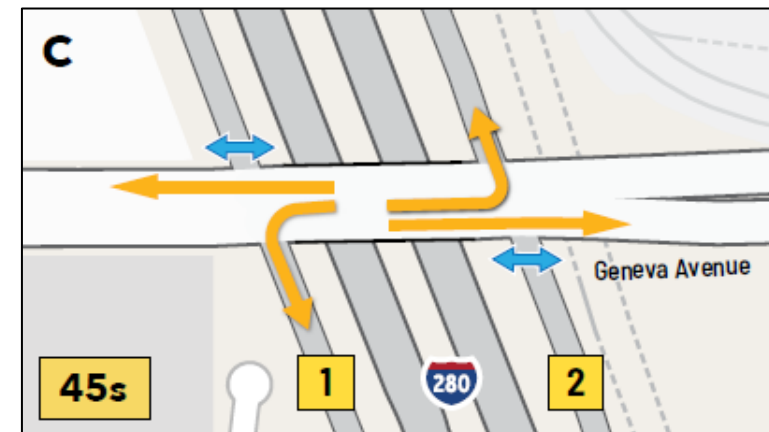
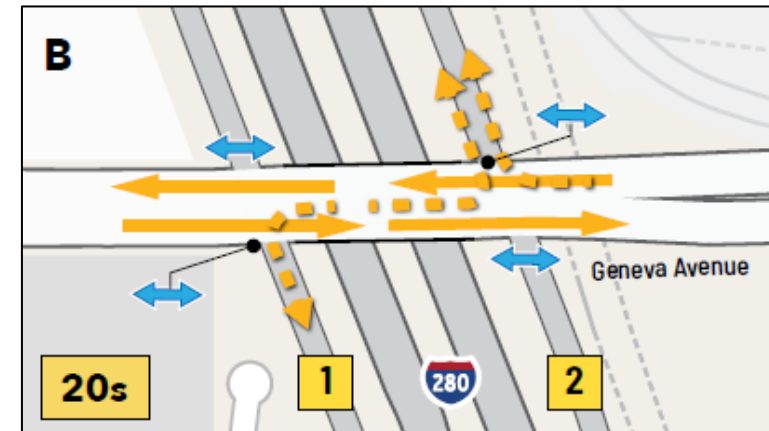
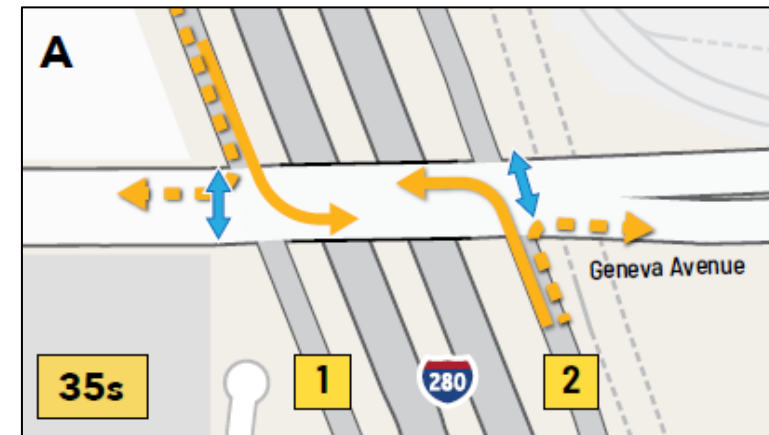
Proposed Recommendations

- Recommendation #1 – Evaluate/monitor and modify traffic signal timing and phasing with Caltrans and SFMTA
- Recommendation #2 – Pursue traffic signal upgrade and pedestrian and lighting improvements
- Recommendation #3 – Pursue further study of freeway queue spillback solutions with Caltrans

Recommendation #1 (Near-Term): Traffic Signal Modification

Objectives:

- Project team, including Caltrans and SFMTA, implemented near-term signal timing and phasing improvements in August 2023 with good results, and further refinements planned
- Increased NB off-ramp traffic flow
- Improved overall ramp intersection circulation with less vehicles blocking intersections
- Fixed vehicle/pedestrian conflict at SB I-280 on-ramp crosswalk



Preliminary Results of Implementing Recommendation #1

- Reduce off-ramp queue and collisions at I-280 mainline. Off ramp left lane flow rate improved 29% average during peak hour and right lane flow rate improved 16% average.
- Reduce traffic blocking intersections
- Improve pedestrian safety and reduced pedestrian crossing conflict at SB I-280 on-ramp crosswalk



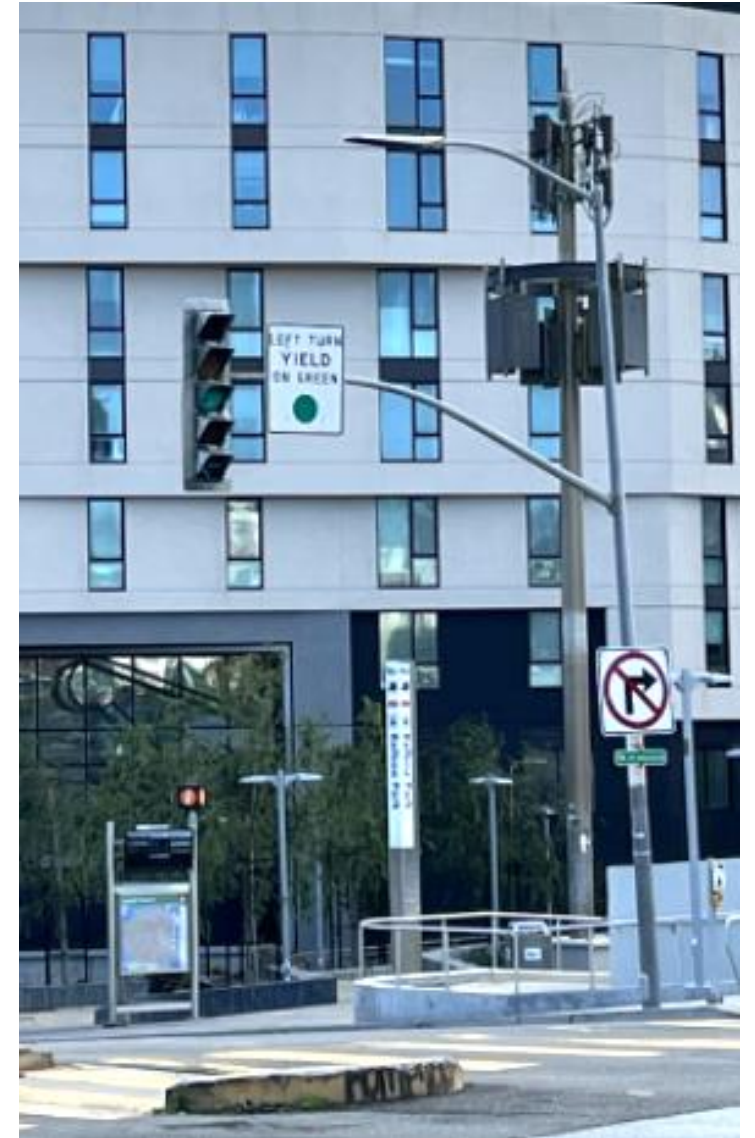
Start of Geneva Ave NB off-ramp traffic Before implementation (blocked intersection)



Start of Geneva Ave NB off-ramp traffic After implementation (cleared intersection)

Recommendation #2 (mid-term): Traffic Signal Upgrades

- Upgrade overhead signal heads to modern equipment and mounted on longer mast arms
- Vehicle detection equipment for road user demand response (adaptive signaling)
- New traffic controller
- Requires funding and Caltrans coordination



Potential Added Scope for Recommendation #2

The Transportation Authority CAC provided input on additional safety improvements such as 'no right-turn on red' signs

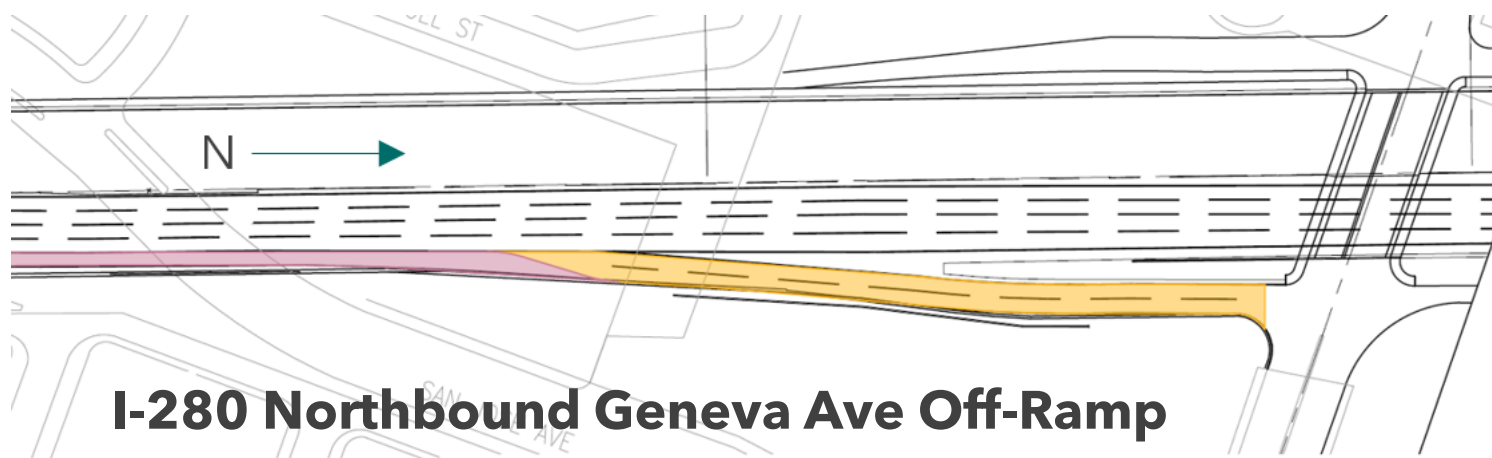
Project team responded to feedback and proposed additional mid-term improvements:

- Extending curb to slow vehicles turning right to I-280 on-ramps
- Reflective back plate for traffic signals
- PUC to perform photometric study as part of street light upgrade
- Leading Pedestrian Indicators (LPIs) and white "yield to pedestrians" signs at off-ramp crosswalks
- Improve vehicle sightlines to curb corners where pedestrians and bicyclists are waiting

SFCTA study teams will explore these ideas with SFMTA/Caltrans and in our upcoming Vision Zero Ramps Phase 3 Study.

Recommendation #3 (mid-term): Off-Ramp Queue Spillback Study

- Lengthen/straighten existing two-lane exit ramp to increase storage capacity, reduce rear-end and sideswipe collision, and improve freeway traffic and study ITS vehicle information systems to notify motorists of queues ahead
- Potential Right-of-Way issues such as BART station and tunnel
- Requires funding and Caltrans coordination/approval including Preliminary Engineering, Design, and Construction. Requires Caltrans design exceptions



I-280 Northbound Geneva Ave Off-Ramp

Next Steps

- Recommendation #1 – Evaluate/monitor and modify traffic signal timing and phasing with Caltrans and SFMTA (recently completed)
- Recommendation #2 – Pursue traffic signal upgrade and pedestrian and lighting improvements. Coordinate with SFCTA Vision Zero Ramps Study, SFMTA, SPUC, and Caltrans. Funding sources may include: SHOPP, Prop L, and SB 1 LPP
- Recommendation #3 – Pursue further study of freeway queue spillback solutions with Caltrans. Funding sources may include: SHOPP, Prop L, and SB 1 LPP

Thank you.

Mike Tan
Senior Engineer



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