Richmond-San Rafael (RSR) Bridge Updates

Transportation Authority of Marin
Board of Commissioners
September 23, 2021

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AGENDA

1. Load Rating Study/Maintenance Projects
2. RSR Access Improvement Pilot Projects
3. RSR Forward
4. Westbound 3rd Lane Study
5. Marin Water Pipeline

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ASSET MANAGEMENT STUDY

Toll Bridge Asset Management Plans (AMP)

- June 2020 RSR Specific Observations:
  - No need for immediate replacement.
  - Replacement cost controls over other costs.
  - Lowest-cost scenario using net present value is to maintain existing bridge in Desired State of Good Repair through extended service life.
  - Other considerations may render an earlier replacement more desirable.

RSR Bridge: Opened in 1956

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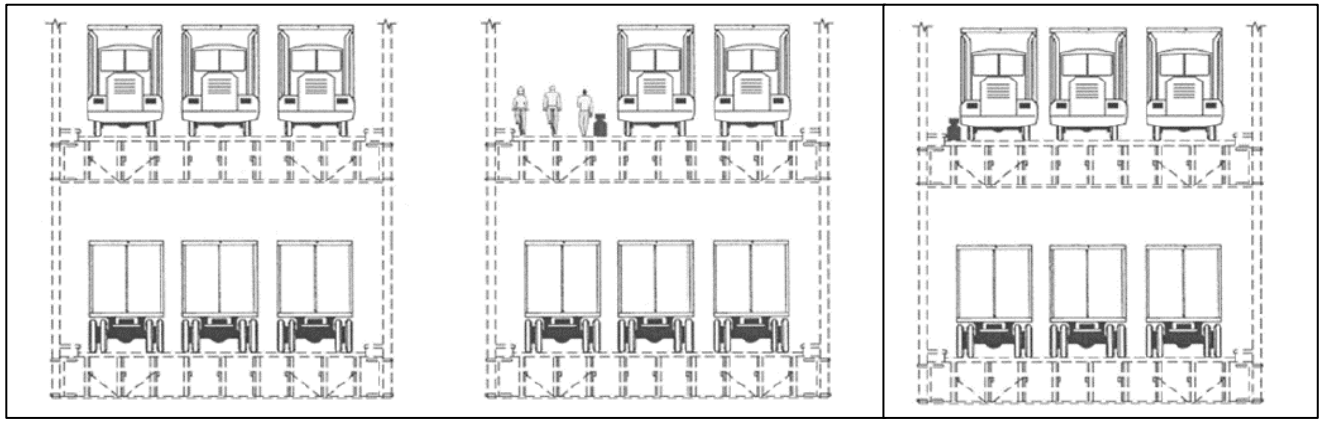
ASSET MANAGEMENT STUDY

Structural Load Rating Study Update

- Load rating study identified the need for localized strengthening of the superstructure for new Federal load and design requirements from MAP 21.
- Status: Retrofit is scheduled for completion in March 2022.



Original Configuration | **Current Configuration** | **Future Alternative Configuration**

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BRIDGE REHAB/MAINTENANCE PROJECTS

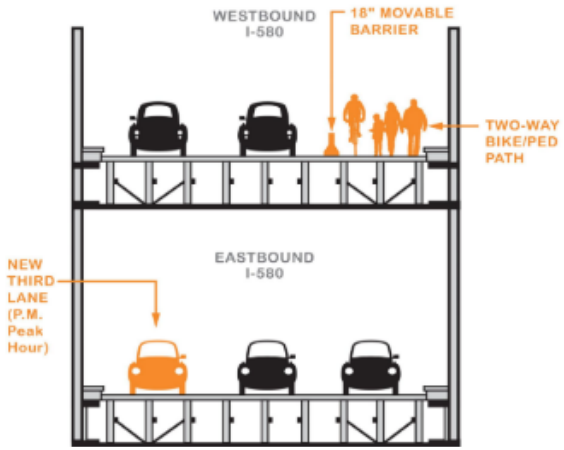
Current and Upcoming Projects

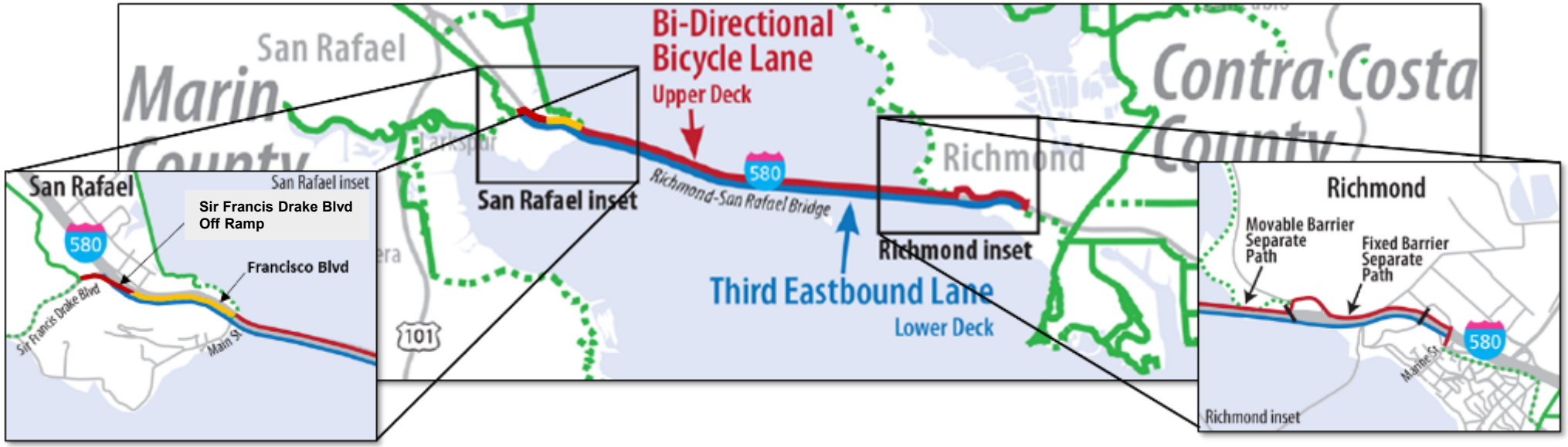
Current	Lead	Expected Completion
All Electronic Tolling	BATA	2021
Bridge Painting and Lower Deck Joint Replacement	Caltrans	2023
Gusset Retrofit	Caltrans	2022

Upcoming	Lead	Expected Completion
Electrical Substation Upgrade	Caltrans	2023

RSR ACCESS IMPROVEMENT PILOT PROJECTS

PKG	DESCRIPTION	STATUS
A	I-580 Eastbound: PEAK PERIOD USE LANE	OPENED APR. 2018
B1	I-580 Westbound: 10’ BICYCLE/PEDESTRIAN PATH Sir Francis Drake Blvd Off Ramp: 8’ BICYCLE PATH	OPENED NOV. 2019 OPENED AUG. 2020
B2	Francisco Blvd East: BICYCLE/PEDESTRIAN PATH (SIDEWALK)	FINAL DESIGN & R/W





RSR ACCESS IMPROVEMENT PILOT PROJECTS

Pilot Study

- Caltrans Headquarters and UC Berkeley PATH are leading the pilot studies and reports, which started in Summer 2018 and the Final Report is expected to be completed in Summer 2024.

- Scope includes collecting bike/ped counts, traffic data, maintenance impacts, incident data, surveys, conducting quarterly meetings, and preparing a final report.

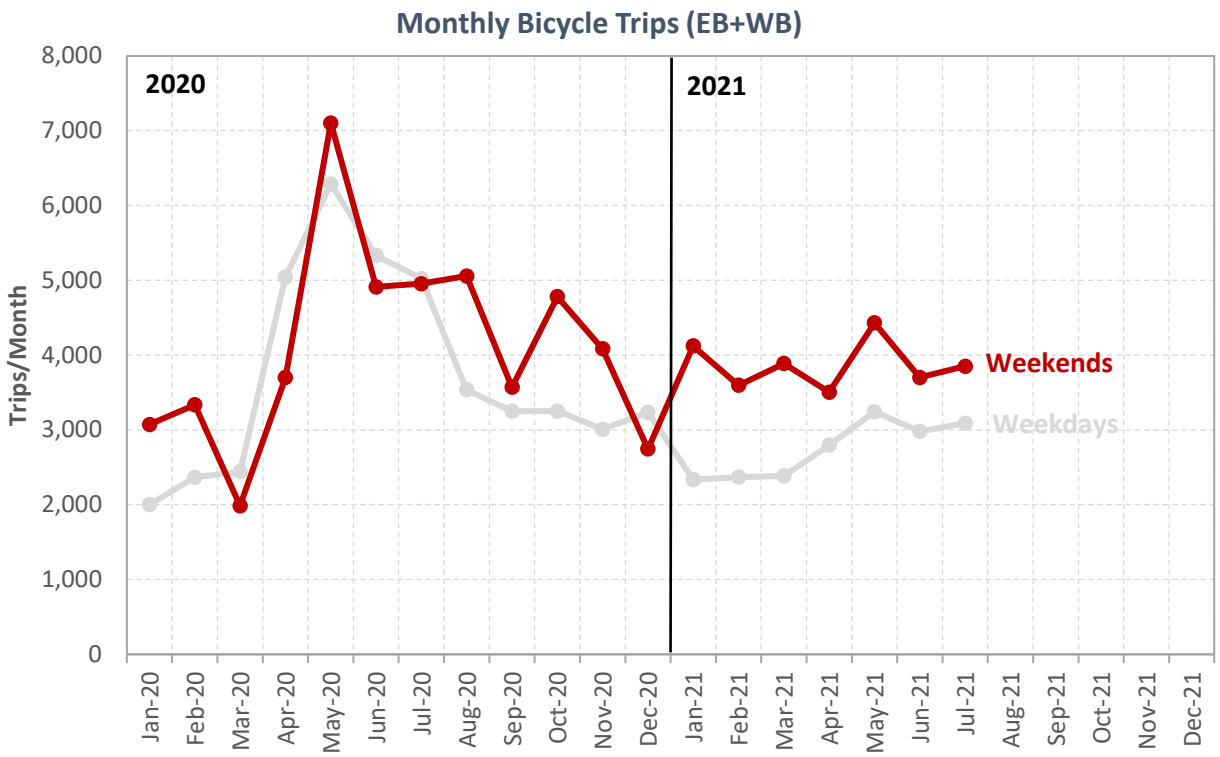
- Final decision on pilot projects is not expected until completion of pilot studies.

RSR ACCESS IMPROVEMENT PILOT PROJECTS

Bicycle Counts (up to June 2021)

- General Observations 2020:
  - Peak in May ’20, consistent through summer weather.
  - Lower in Fall/Winter ’20, likely due to poor air quality and colder weather.

- 2021 Monthly Trip Averages:
  - Weekends: 3,500 – 4,500 trips/month
  - Weekdays: 2,300 – 3,300 trips/month



Source: UC Berkeley PATH Quarterly Update 8/2

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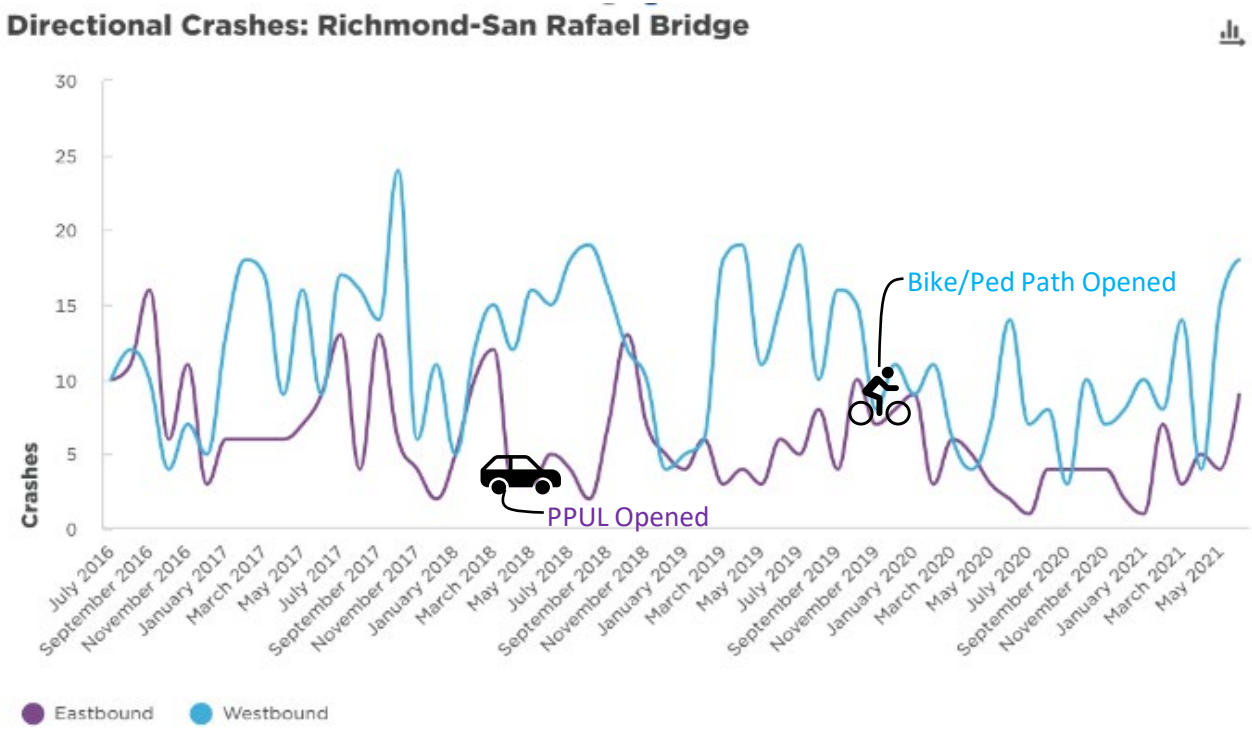
RSR ACCESS IMPROVEMENT PILOT PROJECTS

Vehicle Crashes Per Month



Source: Bay Area Incident Management Dashboard

Incident Management Plan
• Achieve incident response time of 30 minutes
• Added mileposts/markers to locate incidents, per Fire officials request
• Provide operational and maintenance training to CT, Fire Department, CHP
• Upper Deck: Implemented incident response measures due to elimination of shoulder (i.e., ATV, pusher wheels)
• Lower Deck: Coordinate with Caltrans to adjust lane arrows to assist with incident response

RSR FORWARD

(2020-2024)

E-BIKE COMMUTE PROGRAM

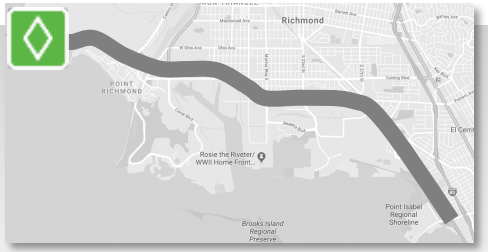
Rebates and Incentives

E-BIKE SHARE

First/Last Mile Connections

OPEN ROAD TOLLING

I-580 WB HOV LANE



RSR RIDES

Rides on Bridge led by local organizations and retailers

QUICK BUILD BIKE ACCESS IMPROVEMENTS

Signing & Striping

RICHMOND PKWY INTERCHANGE DESIGN ALTERNATIVE ASSESMENT

Improvements TBD based on Design Alternatives Assessment

INCREASE TRANSIT FREQUENCY

Increase frequency of Golden Gate Transit Transbay Route 40X

BIKE GAP CLOSURES/ IMPROVEMENTS

REWARDS

Miles App for Green Trips

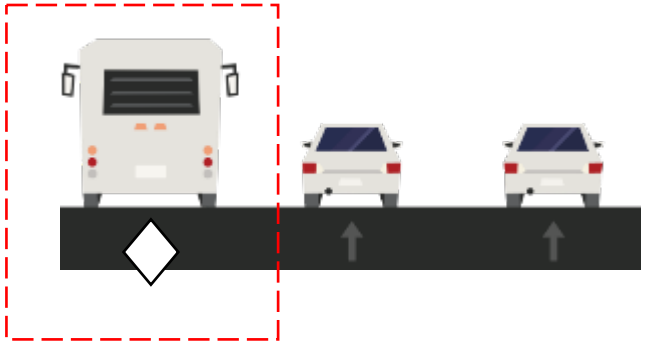
COMMUTE MANAGEMENT TECHNOLOGY PLATFORM

Inform & Support Employer TDM

RSR FORWARD

Open Road Tolling/I-580 WB HOV LANE Project (2024)

1 Open Road Tolling



3 Convert GP Lane to HOV

2 Richmond Pkwy Interchange

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WB THIRD LANE STUDY

Traffic Study

- Show benefits/drawbacks of a third WB traffic lane between 5:00AM and 11:00AM on weekdays
  - Lane would be created by moving the barrier on the bridge daily
- Identify improvements in Marin County, if needed
- Previously collected traffic data was used to generate the results
  - Richmond side data: 2016
  - San Rafael side data: 2018-2019
  - Combined data set converted using Year 2019 INRIX data.

WB THIRD LANE STUDY

Scenarios Evaluated

Existing Conditions (2019)

Baseline (2025)

- Assume RSR Forward project is implemented
- Shoulder stays as a multi-use path
- No other improvements in Marin County

Build Alternative 1 (2025)

- Assume RSR Forward project is implemented
- Assume capital improvements on the Marin side are implemented (see next slide)

Build Alternative 2 (2025)

- New Connector from WB I-580 to SB US 101 is added
- Same as Alternative 1 except Third Lane ends at New Connector (instead of SFD)

WB THIRD LANE STUDY

Capital Improvements Summary

Costs Escalated to 2025

Build Alternative 1

- Improvements on RSR Bridge (signage): up to $20 M
- Widening of portion of RSR bridge: $30 M
- Relocate Francisco Blvd. on-ramp and widen I-580: $35 M
- Barrier Operating Costs ($1M per year for 5-Year Pilot): $5 M
- **Total: Approximately $70-$90 M**

Build Alternative 2

- Build Alternative 1: $90 M
- Direct Connector near Bellam: $220 M
- **Total: Approximately $310 M**

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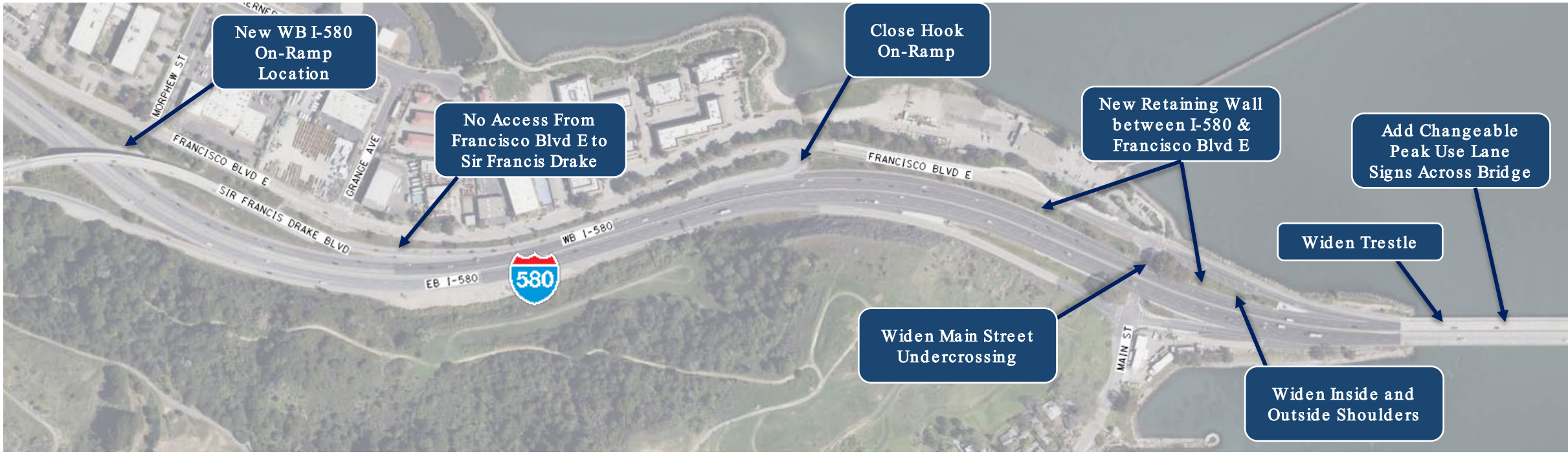
Capital Projects to Support Third Lane (Marin side)



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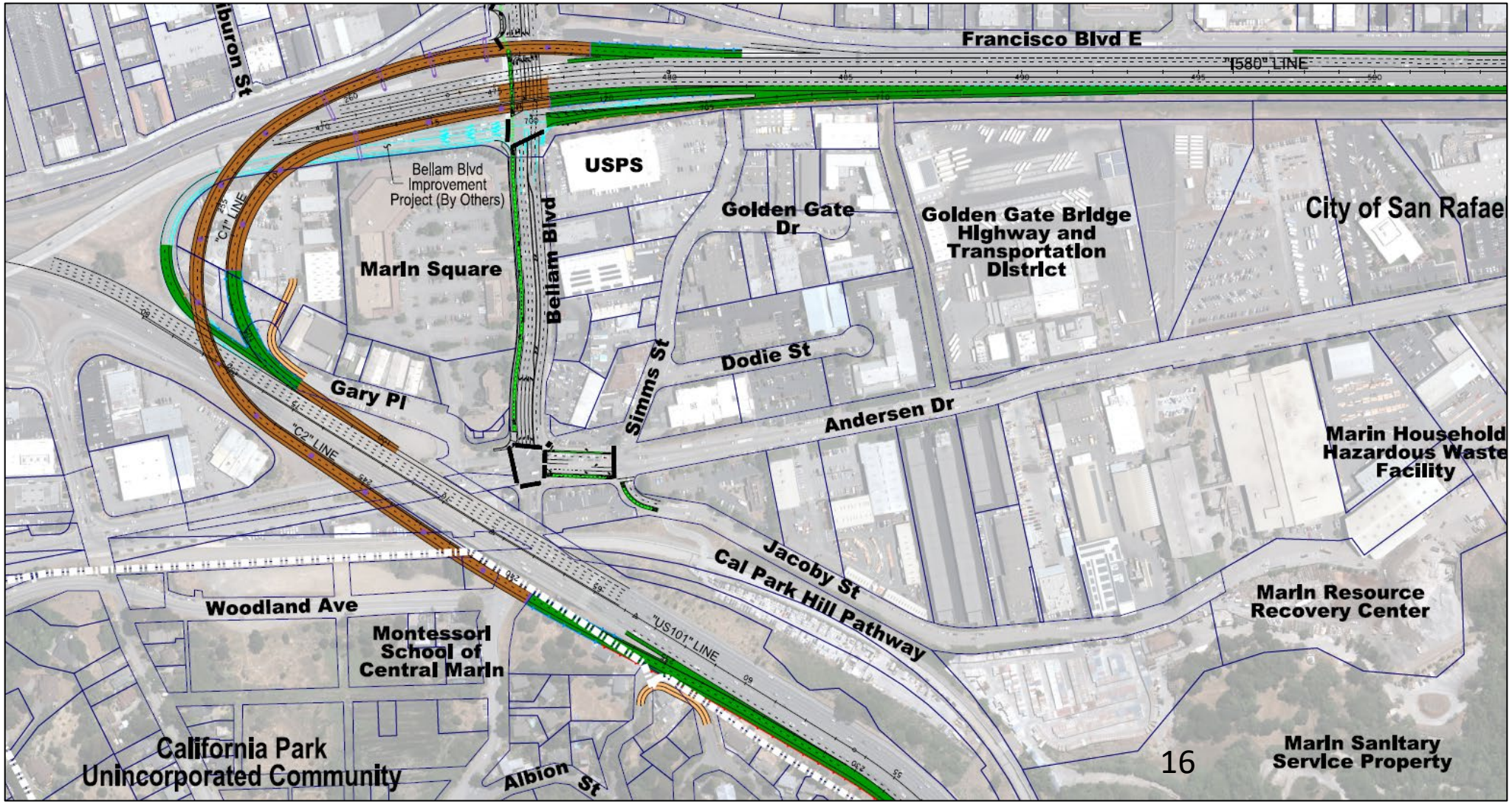
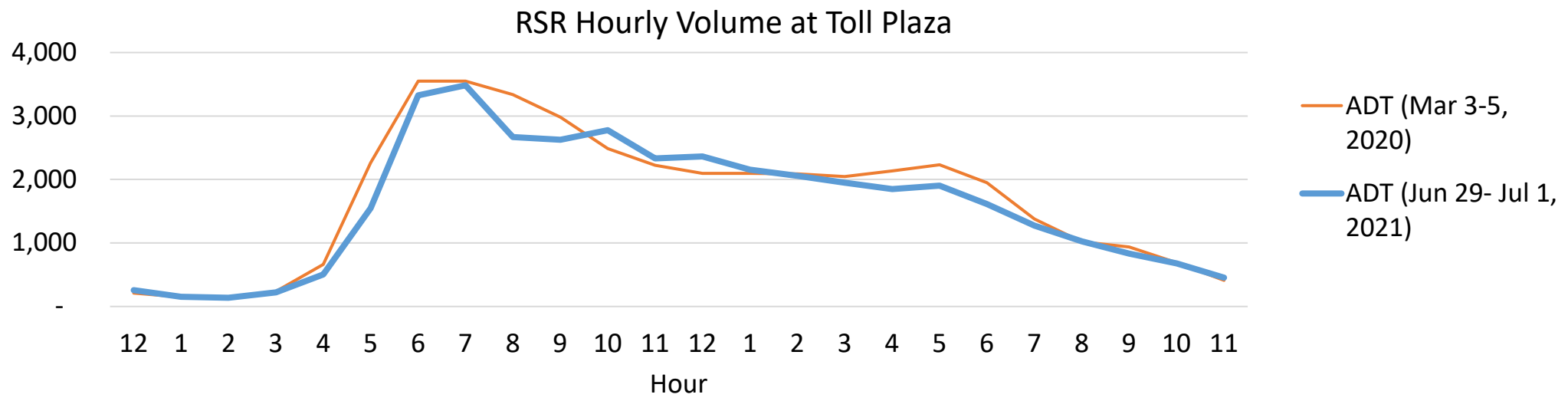
WB THIRD LANE STUDY

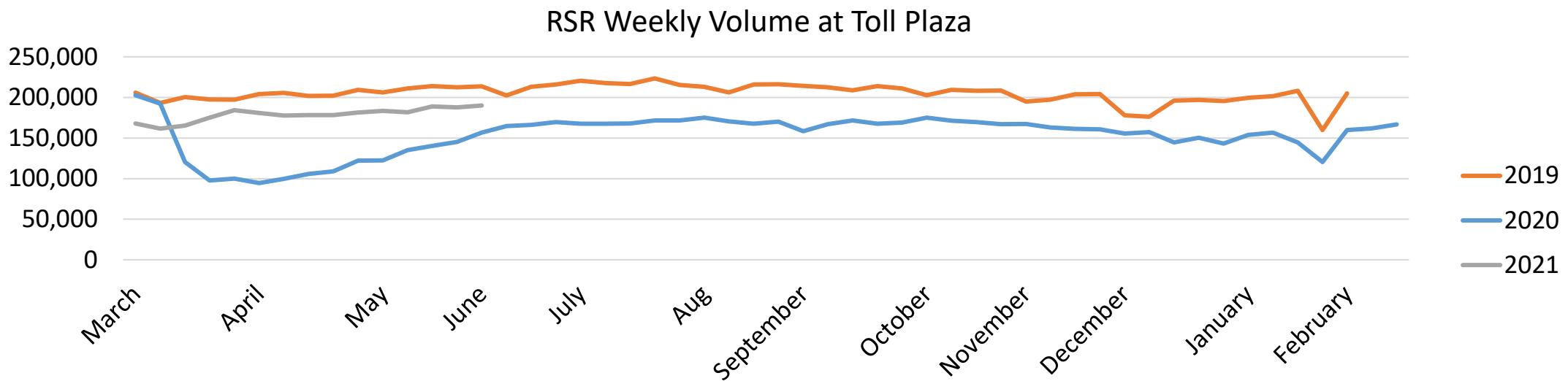
Conceptual WB 580 to SB US 101 Connector



WB THIRD LANE STUDY

WB I-580 Bridge Vehicle Travel (2019 to 2021)



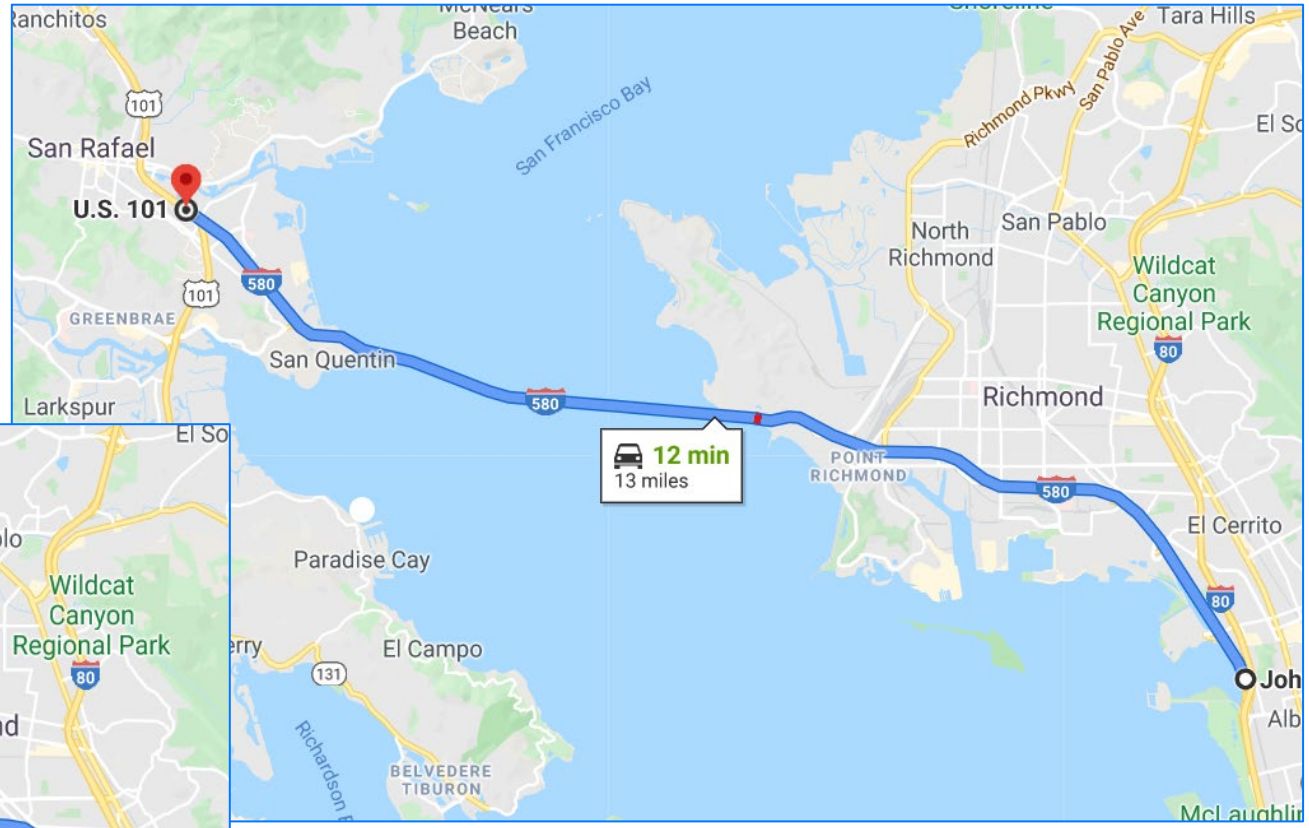


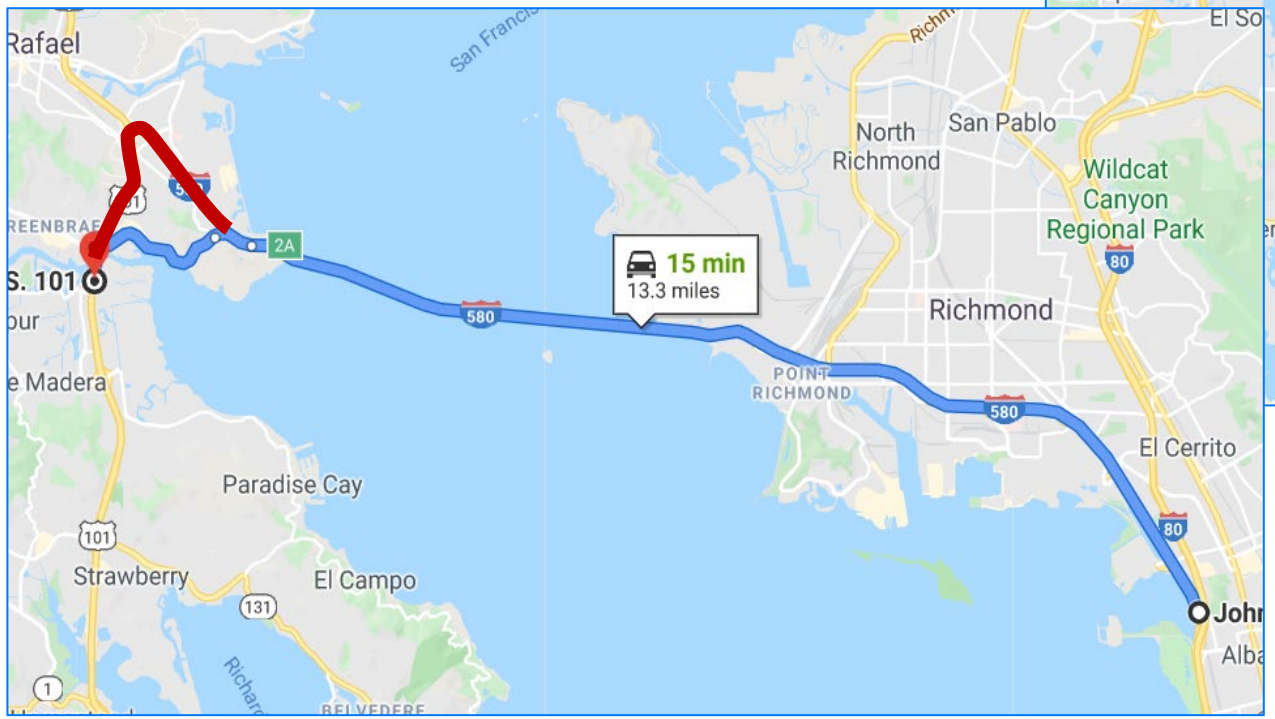
WB THIRD LANE STUDY

Origin-Destination Pairs

Study results are reported by OD Pair

- I-80/I-580 Split to NB US 101
- I-80/I-580 Split to SB US 101





WB THIRD LANE STUDY

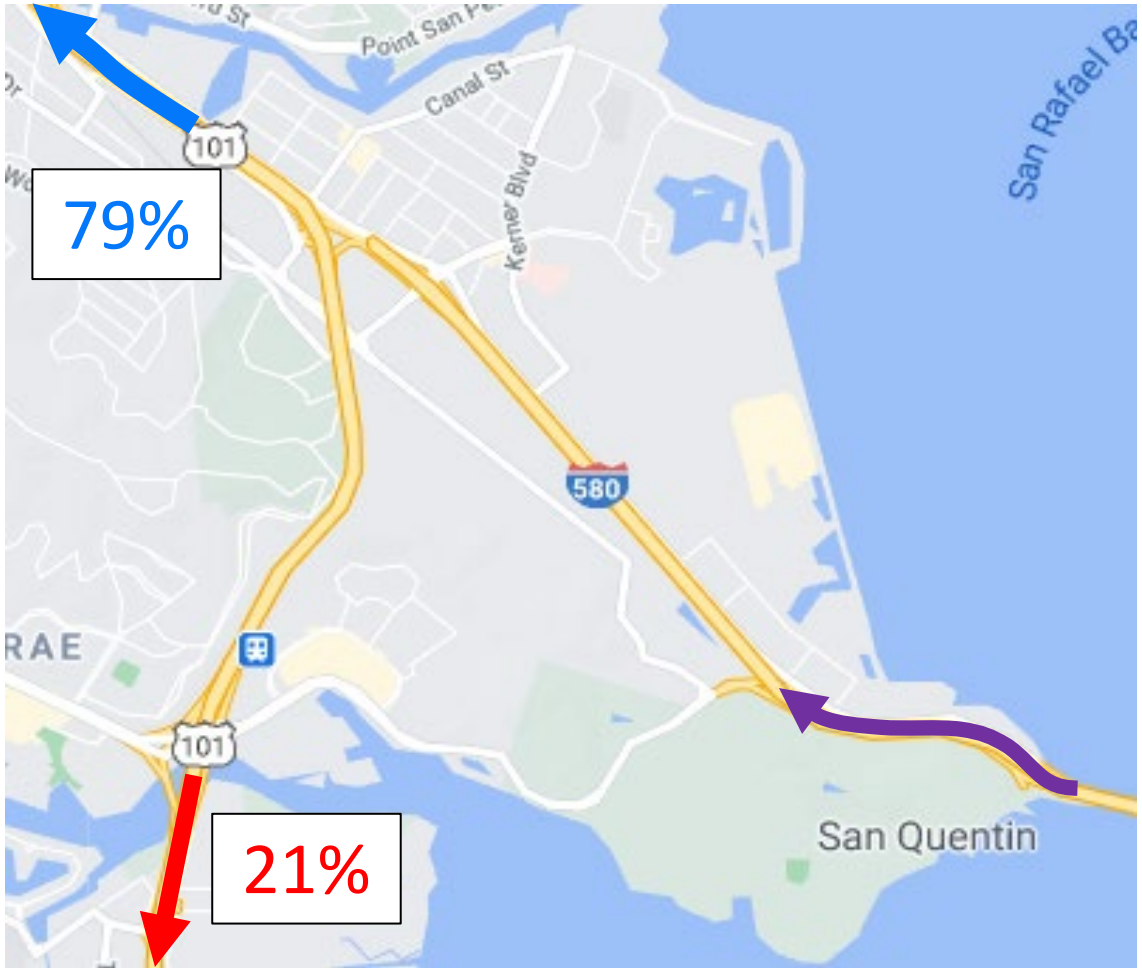
WB I-580 to US 101 Traffic Split

2018 Origin/Destination Data Shows:

Of the traffic that comes across the bridge and continues to US 101

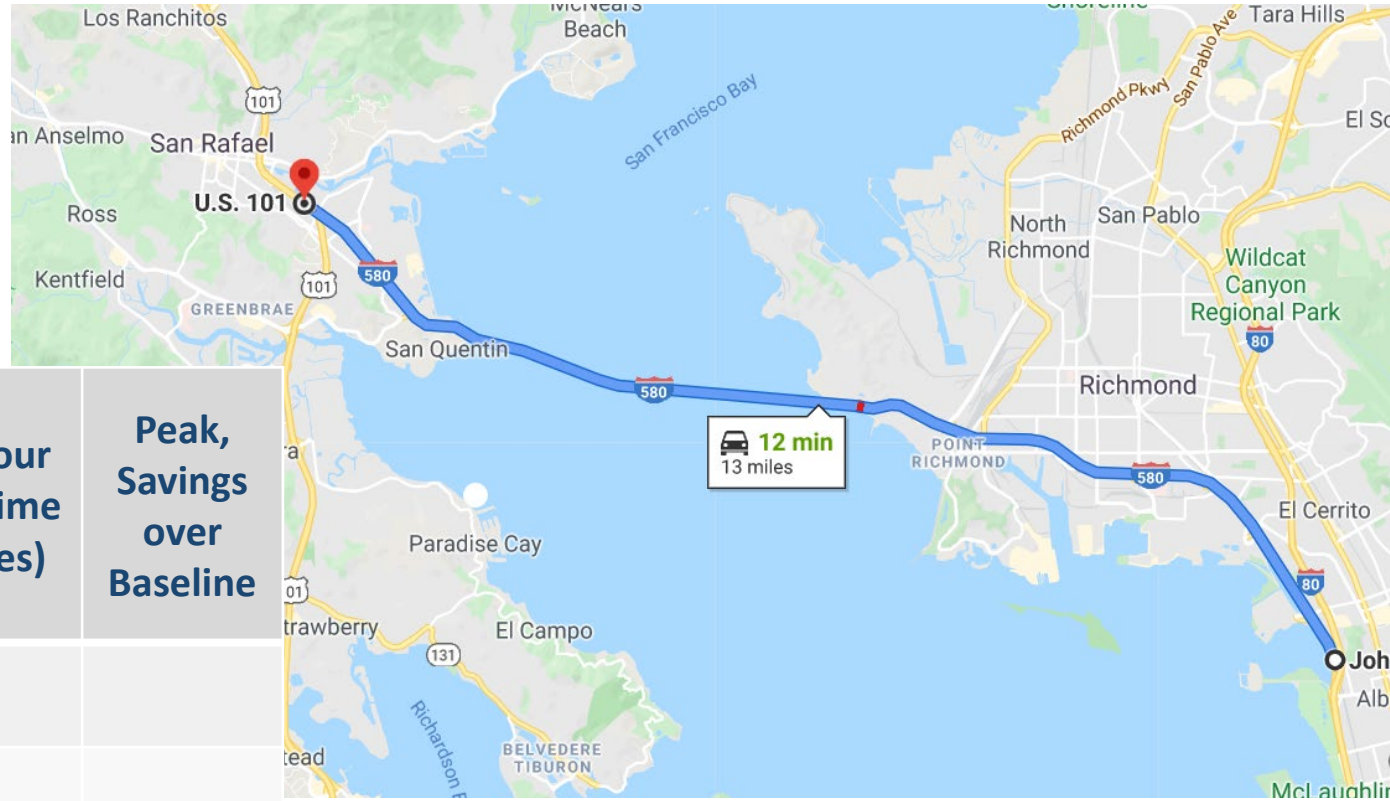
- **79%** of AM traffic continues north onto NB US 101
- **21%** of AM traffic continues south onto SB US 101

- *These numbers do not include traffic that exits to local roads*



WB THIRD LANE STUDY

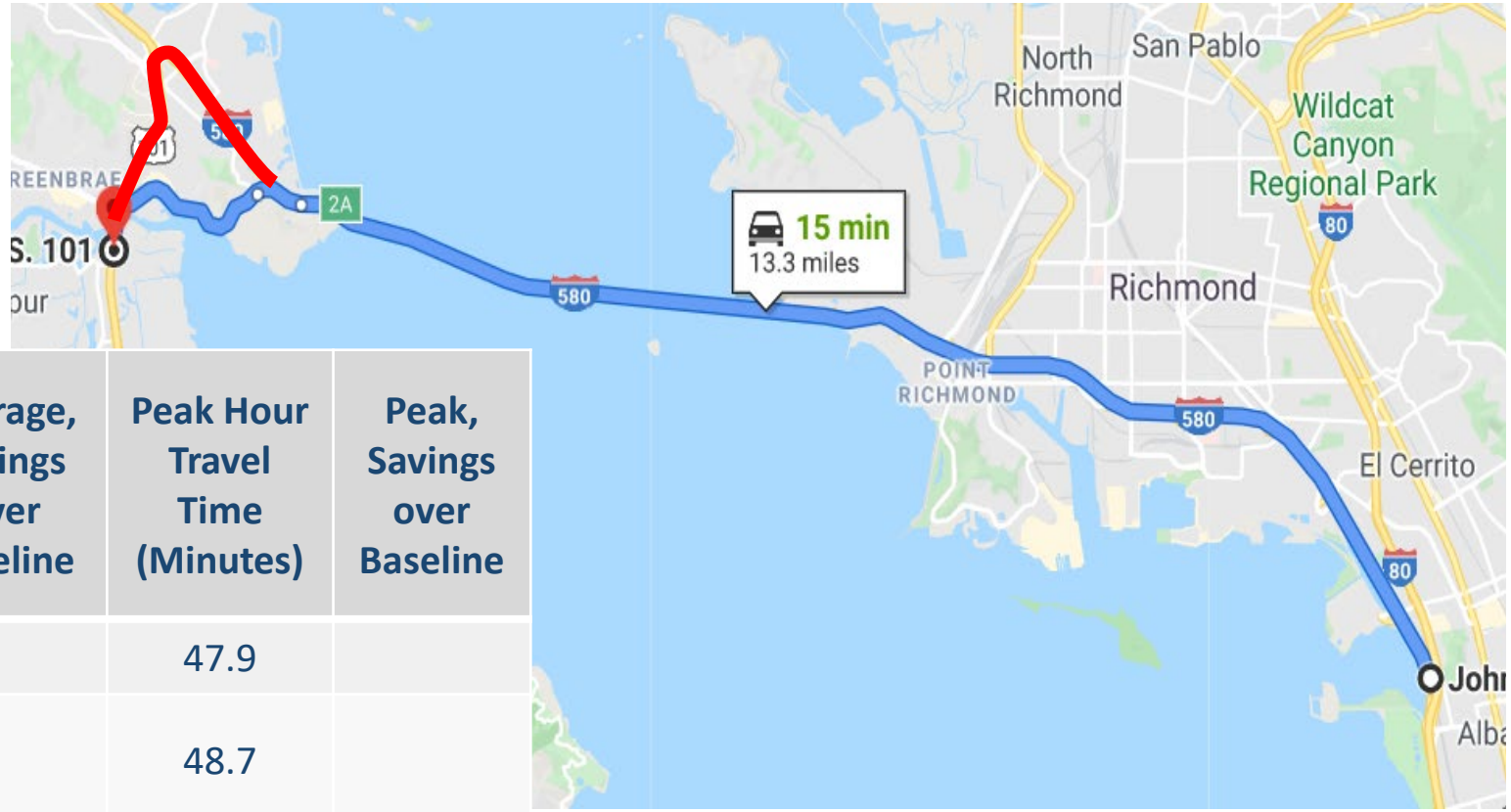
WB I-580 Travel Time: From I-80/I-580 Split to NB US 101 (Downtown San Rafael)



Scenario	Cost Est. (millions)	Average Travel Time Albany to 101 (Minutes)	Average, Savings over Baseline	Peak Hour Travel Time (Minutes)	Peak, Savings over Baseline
Existing (2019)	N/A	23.7		34.7	
Baseline (incl. RSR Forward)	BATA-funded	24.3		43.0	
Alt 1: Part time lane to 101	$70-90	22.7	7%	32.0	27%
Alt 2: Part time lane to 101	~$310	19.2	21%	31.5	27%

WB THIRD LANE STUDY

WB I-580 Travel Time: From I-80/I-580 Split to SB US 101



Scenario	Cost Est. (millions)	Average Travel Time Albany to 101 (Minutes)	Average, Savings over Baseline	Peak Hour Travel Time (Minutes)	Peak, Savings over Baseline
Existing (2019)	N/A	30.4		47.9	
Baseline (incl. RSR Forward)	BATA-funded	32.6		48.7	
Alt 1: Part time lane to SFD	$70-90	35.5	<9%>	52.0	<6%>
Alt 2: Part time lane to DC	~$310	20.6	37%	32.7	31%

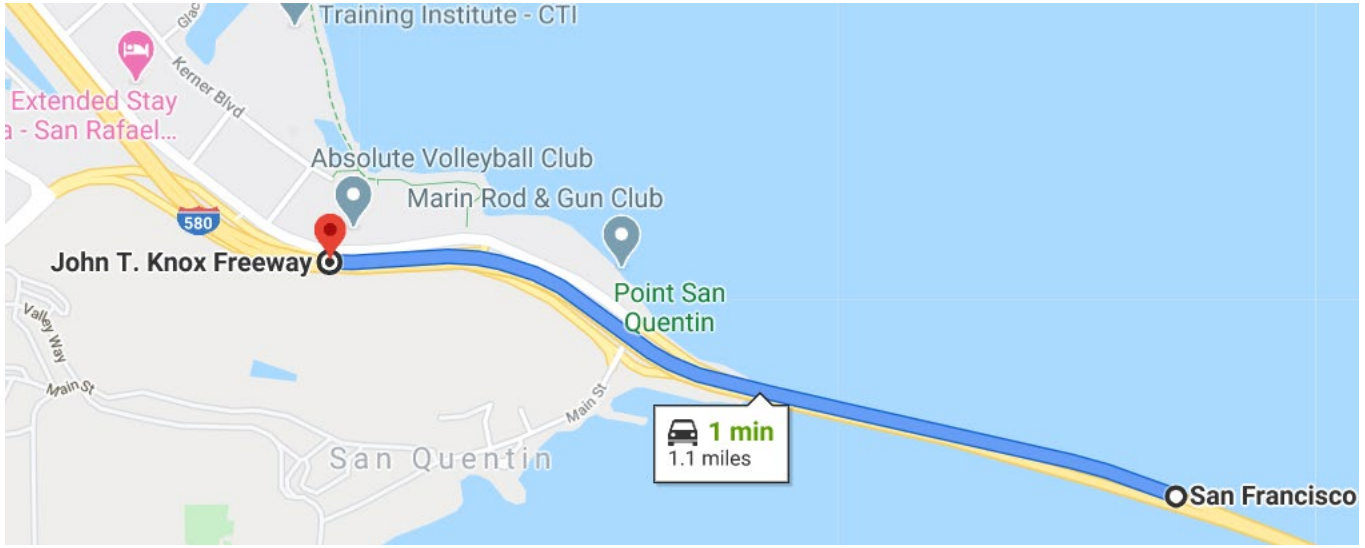
WB THIRD LANE STUDY

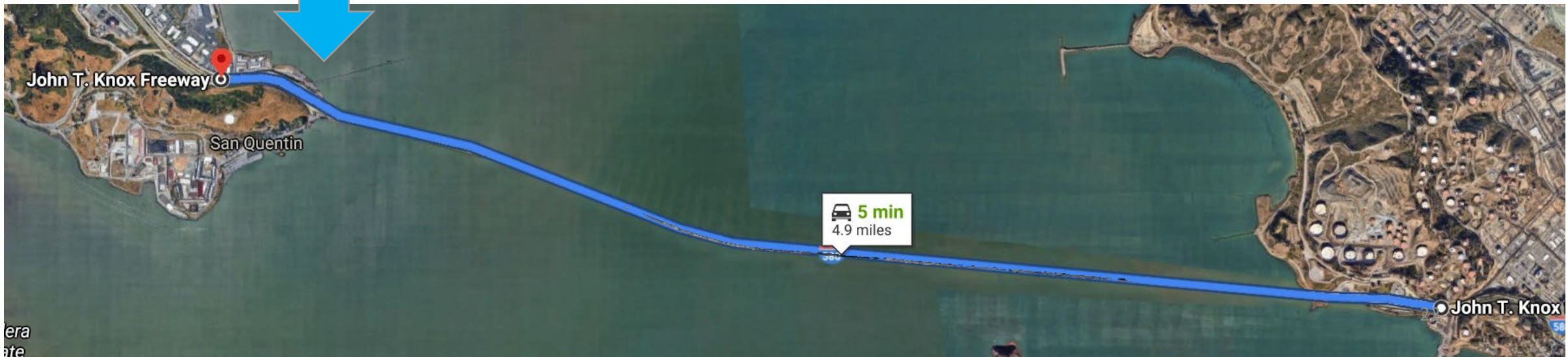
WB I-580 Maximum Queue Length at Sir Francis Drake

Existing: 0.8 Miles (7:45AM)

No Build 2025: 1.1 Miles (8:30AM)

Build Alternative 1: 4.9 Miles (9:15 AM)





WB THIRD LANE STUDY

Summary

- Peak period use lane on the upper deck would require significant new construction on the Marin County side.
- Direct access from Francisco Boulevard East/Morphew Street to Sir Francis Drake Boulevard would not be able to be maintained with the project.
- Traffic headed to northbound US 101 would have a peak hour time savings of 11 minutes with the project (Alt 1) in 2025.
- However, traffic headed to southbound US 101 would have an increased peak hour delay of 3 minutes with the project (Alt 1) in 2025.
  - Travel time savings only possible with construction of WB-SB Direct Connector.
- The Project may shift the congestion and bottlenecks from the toll plaza area to Sir Francis Drake Blvd.
- MTC/BATA has raised concerns that the PPU Lane will result in Induced Demand for vehicles WB on the Bridge, potentially in conflict with the goals of RSR Forward.

MARIN WATER PIPELINE

MARIN WATER

- Marin Municipal Water District (MMWD) is exploring a water pipeline on the RSR Bridge to mitigate for drought, with an aggressive operational schedule by Summer 2022.
- Caltrans is reviewing feasibility for pipeline on bridge, impacts are unknown at this time.
- MMWD is studying two options for a water pipeline on the RSRB including one in the multi-use path.
- Impacts of the multi-use path option are being evaluated, likely would preclude use of the right lane for any future vehicle lane.

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SUMMARY

- **Asset Management Study** resulted in no immediate need for bridge replacement and identified need for retrofit/maintenance projects.
- **RSR Access Improvement Project Pilot** studies are ongoing and Final Report is expected in Summer 2024.
- **RSR Forward** near-term strategies to improve transportation demand management and relieve congestion on the westbound bridge approach.
- **Westbound 3rd Lane Study** shows improvement in peak hour travel time savings for some drivers/destinations, slightly worsens others; would require significant new construction in Marin. Cost to implement estimated at $70-90M.
- **Marin Water** evaluating pipeline options across bridge in response to drought.

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