



City of Palo Alto

City Council Rail Committee Staff Report

(ID # 8280)

Report Type: Action Items

Meeting Date: 6/28/2017

Summary Title: Draft Rail Program Circulation Study Scenarios

Title: Review Rail Corridor Circulation Study Sample Scenarios and Provide Recommendations

From: City Manager

Lead Department: Planning and Community Environment

Recommendation

Staff recommends that the Rail Committee receive and review the Rail Corridor Circulation Study Sample Scenarios (Attachment A) and provide recommendations regarding scenarios to include within a circulation study that is intended to support the identification and evaluation of grade separation alternatives.

Background and Discussion

Separate from the Context Sensitive Alternatives Analysis task, the Rail Program Manager is charged with completing a high-level circulation study. This study includes the following components and has already been initiated with data collection tasks:

1. Data assembly and review (complete)
2. Research existing documents (complete)
3. Collect and examine multimodal traffic counts (complete)
4. Validate base year in the regional and local travel demand models and adjust models to account for increased rail service along the corridor (underway)
5. Collate and review any relevant development proposals within the study area (underway)
6. Model future traffic conditions under up to eight scenarios to include:
 - a. No build scenario with current rail corridor service
 - b. No build scenario with increased rail corridor service (CalMod and HSR)
 - c. Build scenario 1
 - d. Build scenario 2
 - e. Build scenario 3
 - f. Build scenario 4
 - g. Build scenario 5
 - h. Build scenario 6
7. Conduct field observations on travel behavioral patterns
8. Assess the record of collision occurrences at the rail crossings and surrounding areas
9. Analyze grade crossing hazards and gate downtime
10. Quantitatively and qualitatively evaluate up to eight scenarios, using the following performance measures:

- a. Total vehicle miles travelled
- b. Total vehicle hours consumed
- c. Average trip length, trip duration time and highway network speed
- d. Changes in modal choice
- e. Total travel user benefits and collision savings benefits over a 20-year period
- f. Motor vehicle level of service by intersection
- g. LOS by movement at intersections
- h. Changes in specific origin-destination journey times
- i. Delays to transit services
- j. Delays to pedestrians and bicycles
- k. Motor vehicle queue lengths at intersections
- l. Delays at individual intersections by movement

The intent of the Rail Corridor Circulation Study is to estimate the effect on traffic circulation under up to eight different scenarios that will be modeled using the regional and local travel demand model. These scenarios will include several variations of grade crossings and grade separations at each railroad corridor crossing location. The first two scenarios will not include any new grade crossings, new grade separations or modifications to existing crossings, as they are the so-called “no build” scenarios. The remaining six scenarios will include varying collections of new multi-modal grade-separated crossings, new bicycle and pedestrian only grade-separated crossings, new grade separations, modified grade crossings, and closed grade crossings. The analysis of scenarios is intended to inform the selection of grade separations alternatives for more in depth study and evaluation.

Sample Scenarios

Attachment A presents six sample scenarios as a basis for further discussion. These scenarios are intended as examples and are not all-inclusive. From north to south, the following are the crossing locations from which the different scenarios in Attachment A are assembled:

- Palo Alto Avenue (AKA Alma Street) – existing at-grade
- Everett Avenue/Lytton Avenue – planned grade-separated bicycle/pedestrian
- University Avenue – existing grade-separated
- Homer Avenue – existing grade-separated bicycle/pedestrian
- Embarcadero Road – existing grade-separated
- Churchill Avenue – existing at-grade
- California Avenue – existing grade-separated bicycle/pedestrian
- Oregon Expressway – existing grade-separated
- Loma Verde Avenue/Matadero Creek – planned grade-separated bicycle/pedestrian
- East/West Meadow Drive – existing at-grade
- East/West Charleston Road – existing at-grade
- San Antonio Road – existing grade-separated

Each sample scenario includes a specific configuration for each crossing location and potential configurations are represented by a letter symbol, which include the following:

- A: At-grade all modes
- B: Grade-separated bicycle/pedestrian only
- Q: At-grade quiet zone all modes

- S: Grade-separated all modes
- W: Widened grade-separated all modes
- X: Closed

Table 1, below, presents a general description of each of the sample scenarios identified in Attachment A. The Rail Committee is invited to review these closely, and recommend a final suite of scenarios for inclusion in the circulation study. A blank matrix is provided in Attachment B to assist with this effort.

Scenarios that are not included in the study may still emerge as important alternatives via the community process and those that are selected should be chosen in part for their ability to inform the development of grade separation alternatives, including their physical attributes and phasing.

Please also note that where the circulation study assumes grade separations, it does not differentiate between the type of separation (underground, above ground, etc.). This is due to the focused nature of the study and means that additional circulation analysis will likely be needed for grade separation alternatives that emerge through the community process if, for example, the type of separation results in local street closures in the vicinity.

Table 1. Description of Sample Scenarios Presented in Attachment A

Scenario	General Description of Changes
Existing No Build #1	No changes to the crossings; existing service levels
Existing No Build #2	No changes to the crossings; additional Caltrain plus high-speed rail service
Sample Scenario 1 Low Build	Closed at-grade crossings at Palo Alto Ave (AKA Alma St), Churchill Ave, and E/W Meadow Dr; widened grade-separated crossing at Embarcadero Rd; new grade-separated crossing at E/W Charleston Rd
Sample Scenario 2 Low-Medium Build	Closed at-grade crossings at Palo Alto Ave (AKA Alma St) and E/W Meadow Dr; new grade-separated bicycle/pedestrian crossing at Everett Ave/Lytton Ave and Loma Verde Ave/Matadero Creek; new quiet zone at-grade crossing at Churchill Ave; new grade-separated crossing at E/W Charleston Rd
Sample Scenario 3 Medium Build	Widened grade-separated crossing at Embarcadero Rd; new grade-separated bicycle/pedestrian crossings at Churchill Ave and E/W Meadow Dr; new grade-separated crossing at E/W Charleston Rd
Sample Scenario 4 Full Build Phase 1	New grade-separated bicycle/pedestrian crossing at Loma Verde Ave/Matadero Creek; new grade-separated crossing at E/W Charleston Rd
Sample Scenario 5 Full Build Option A	New at-grade quiet zone crossing at Palo Alto Ave (Alma St); new grade-separated bicycle/pedestrian crossings at Churchill Ave and Loma Verde Ave/Matadero Creek; new grade-separated crossing at and E/W Meadow Dr and E/W Charleston Rd
Sample Scenario 6 Full Build Option B	New grade-separated crossings at Palo Alto Ave (AKA Alma St), Churchill Ave, E/W Meadow Dr, and E/W Charleston Rd; new grade-separated bicycle/pedestrian crossings at Everett Ave/Lytton Ave and Loma Verde Ave/Matadero Creek; widened grade-separated crossing at Embarcadero Rd

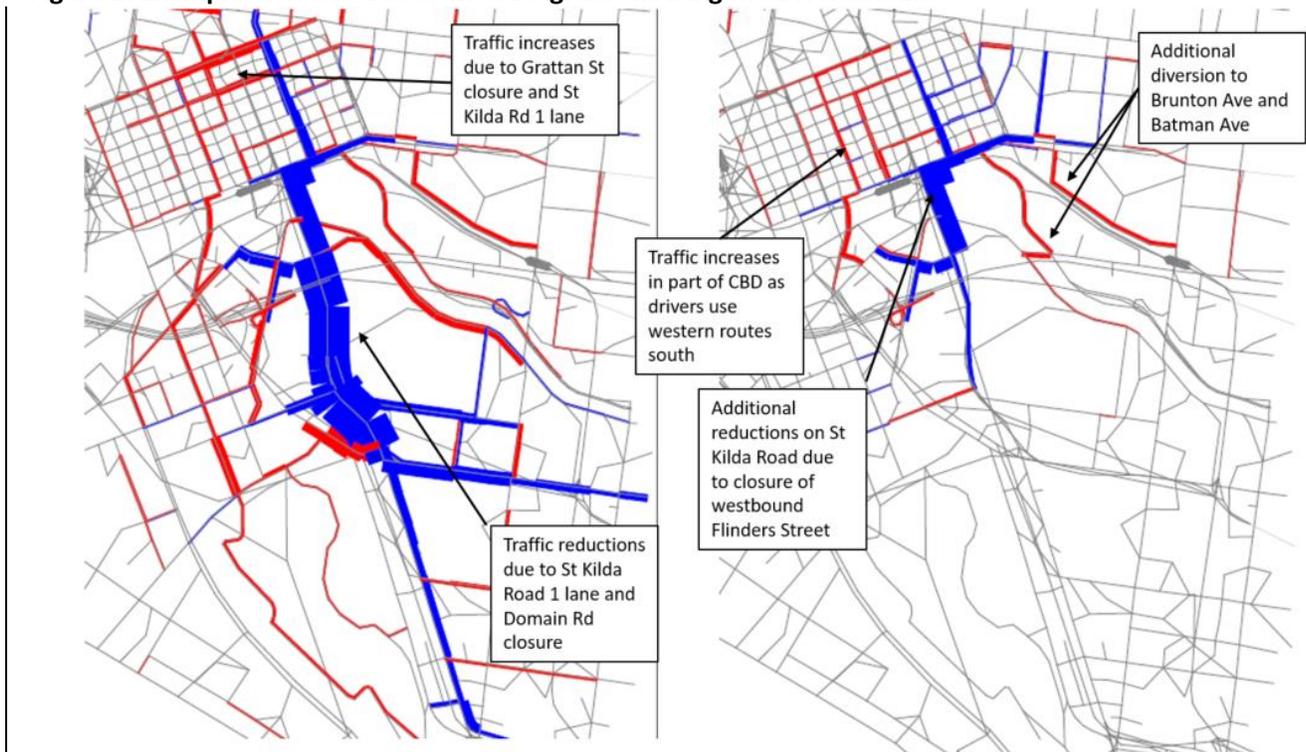
Source: Planning and Community Environment Department, June 2017

Traffic Diversions

Once the six test scenarios are identified, the regional and local travel demand models will be used to assess the diversion effects. The model can be used to estimate how travel patterns will change when accessibility changes. The model will be run for the average peak hour for the AM and PM periods for a future forecast year of 2030. It can display where increases and decreases occur in traffic volumes, when a scenario is compared to the two “No Build” scenarios. The “No build scenario with current rail corridor service” will include all infrastructure and rail service as it is today with the forecast 2030 traffic demand. The “No build scenario with increased rail corridor service (CalMod and HSR)” will include all infrastructure as it is today with the forecast 2030 traffic demand and the increase in the frequency of rail crossing gate closures resulting from proposed Caltrain and high-speed rail service. One qualification is that the models do not need to know the design of the grade separations, only whether a location is grade-separated or not.

In Figure 1, an example of a “traffic differences” diagram is shown, the red showing which roads will have increased traffic flows and the blue showing where traffic flows will be reduced.

Figure 1: Example of Traffic Differences Diagram Showing the Diversion Effect



Source: Mott McDonald; June 20, 2017

Intersection Traffic Operational Analyses

For each scenario, the intersection delay will be estimated at a detailed level. The process will use Synchro software, which is a proprietary and universally recognized technique. The input will be based on currently observed traffic flows and traffic growth estimates to 2030 from the travel model.

Timeline

The schedule for the Rail Program and the Rail Corridor Circulation Study is subject to modification;

however the current schedule shows the Rail Corridor Circulation Study being completed within six months of Notice to Proceed. While partial Notice to Proceed for this task was issued by Staff on January 2017, the Rail Program Manager was asked to hold-off on additional work under this task until the Rail Committee provides recommendations regarding the scenarios to be analyzed as part of the Rail Corridor Circulation Study. Staff will provide an updated schedule for the Rail Corridor Circulation Study once these scenarios are identified. Staff hopes that preliminary results of the circulation study can be used to inform a discussion of grade separation alternatives with the public in September 2017.

Resource Impact

Funding for the Rail Corridor Circulation Study is included in the Fiscal Year 2017 Adopted Capital Budget in CIP PL-17001, Railroad Grade Separation.

Policy Implications

The Rail Corridor Circulation Study is consistent with the following Comprehensive Plan goals, policies and projects:

- Policy T-7: Support plans for a quiet, fast rail system that encircles the Bay, and for intracounty and transbay transit systems that link Palo Alto to the rest of Santa Clara County and adjoining counties.
- Program T-17: Support Caltrain electrification and its extension to downtown San Francisco.
- Program T-21: Study projects to depress bikeways and pedestrian walkways under Alma Street and the Caltrain tracks and implement if feasible.

Environmental Review

The Rail Corridor Circulation Study is part of the required environmental analysis under the California Environmental Quality Act (CEQA).

Attachments:

- Attachment A - Table Rail Corridor Circulation Study Scenarios Sample
- Attachment B - Table Rail Corridor Circulation Study Scenarios Blank

Rail Corridor Circulation Study

Sample Scenarios for Analysis (For Traffic Model Testing Purposes Only)

Crossing	Existing	Sample Scenario					
		1	2	3	4	5	6
		Low Build	Low-Medium Build	Medium Build	Full Build Phase 1	Full Build Option A	Full Build Option B
Palo Alto Ave (Alma St)	A	X	X	A	A	Q	S
Everett Ave/Lytton Ave	-	-	B	-	-	-	B
University Ave	S	S	S	S	S	S	S
Homer Ave	B	B	B	B	B	B	B
Embarcadero Rd	S	W	S	W	S	S	W
Churchill Ave	A	X	Q	B ¹	A	B ¹	S
California Ave	B	B	B	B	B	B	B
Oregon Expwy	S ²	S ²	S ²	S ²	S ²	S ²	S ²
Loma Verde Ave/Matadero Creek	-	-	B	-	B	B	B
E/W Meadow Dr	A	X	X	B	A	S	S
E/W Charleston Rd	A	S	S	S	S	S	S

Key: A: At-grade all modes*

B: Grade-separated bicycle/pedestrian only

1: In close proximity

Q: At-grade quiet zone all modes*

S: Grade-separated all modes

2: No pedestrians permitted

W: Widened grade-separated all modes

X: Closed

* No difference in traffic modeling

Rail Corridor Circulation Study

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Crossing	Existing	Sample Scenario					
		1	2	3	4	5	6
		Low Build	Low-Medium Build	Medium Build	Full Build Phase 1	Full Build Option A	Full Build Option B
Palo Alto Ave (Alma St)	A						
Everett Ave/Lytton Ave	-						
University Ave	S						
Homer Ave	B						
Embarcadero Rd	S						
Churchill Ave	A						
California Ave	B						
Oregon Expwy	S ²						
Loma Verde Ave/Matadero Creek	-						
E/W Meadow Dr	A						
E/W Charleston Rd	A						

Key: A: At-grade all modes*

Q: At-grade quiet zone all modes*

W: Widened grade-separated all modes

B: Grade-separated bicycle/pedestrian only

S: Grade-separated all modes

X: Closed

1: In close proximity

2: No pedestrians permitted

* No difference in traffic modeling