District 3 Pedestrian Safety Improvements

San Francisco
County Transportation
Authority

SFMTA

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Prepared by the San Francisco Municipal Transportation Agency

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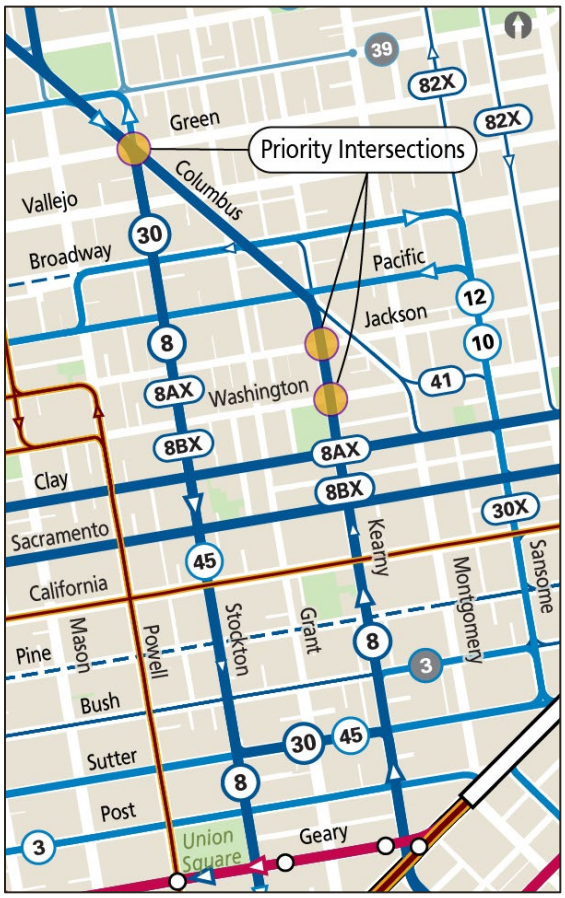
Cover Photo – Kearny Street, looking south toward Clay Street, January 2016
Street cross-section graphics made with Streetmix

This study is funded through the San Francisco County Transportation Authority's Neighborhood Transportation Improvement Program (NTIP). The NTIP was established to fund community-based efforts in San Francisco neighborhoods, especially in underserved neighborhoods and areas with vulnerable populations (e.g. seniors, children, and/or people with disabilities). The NTIP is made possible with Proposition K local transportation sales tax funds. The SFMTA thanks Commissioner Aaron Peskin and former Commissioner Julie Christensen for initiating and supporting this NTIP planning effort. The SFMTA would also like to acknowledge our project partners, including Chinatown Transportation Research and Improvement Project (TRIP), the Department of Public Works and the San Francisco County Transportation Authority. Finally, the SFMTA is grateful to the many community members who provided input into the planning process, including the North Beach Neighbors and Telegraph Hill Dwellers.

Background

The original scope of this NTIP study was broadly aimed at the full length of Kearny Street between Market Street and Broadway, with the goals of studying safety improvements for people walking and biking and transit performance improvements. The scope was amended in 2019 to focus primarily on near-term pedestrian safety improvements at three intersections identified as community priorities: Kearny and Jackson streets, Kearny and Washington streets, and Columbus Avenue at Green and Stockton streets. In addition, the study analyzed options for improving pedestrian safety by removing dual-turn lanes at intersections along Kearny Street between Post and Pine streets. Lastly, the study developed recommendations for Muni bus stop consolidation to support improved transit speed and reliability along Kearny Street between Market Street and Columbus Avenue. The map to the right highlights the dense network of transit service in the study area and the three priority intersections evaluated.



This NTIP study builds upon transportation planning studies and projects in various phases of development within District 3, including: the Central Subway[1]; the Chinatown Neighborhood Transportation Plan[2]; the Columbus Avenue Safety Project[3]; and the Portsmouth Square Improvement Project[4].

The intersections of Kearny/Jackson streets and Kearny/Washington streets were identified as community priorities for pedestrian safety improvements given their location adjacent to major pedestrian activity centers including Portsmouth Square and City College of San Francisco. These intersections are both on San Francisco's Vision Zero High Injury Network, with eight injury collisions reported in the past five years[5], four of which involved pedestrians. Each of these intersections each have more than 1,000 pedestrian crossings during the PM peak hour. Prior to this study being rescoped, the SFMTA used some of the NTIP funding to fast-track design and implementation of a

[1] https://www.sfmta.com/projects/central-subway-project
[2] https://www.sfcta.org/projects/chinatown-neighborhood-transportation-plan
[3] https://www.sfmta.com/projects/columbus-avenue-safety-project
[4] https://sfrecpark.org/1166/Portsmouth-Square-Improvement-Project
[5] Date range: October 2014 – September 2019

pedestrian scramble[6] at the neighboring intersection of Kearny/Clay in 2016 following a pedestrian fatality. The community has requested that pedestrian scrambles be added at these two intersections.

The intersection of Columbus Avenue with Green and Stockton streets (C/G/S) is also on San Francisco's Vision Zero High Injury Network, with nine injury collisions reported in the past five years, eight of which involved pedestrians. There have been several planning efforts focused on Columbus Avenue in the past decade, starting with the 2010 Columbus Avenue Neighborhood Transportation Study[7], which developed three conceptual design alternatives focused on improving pedestrian safety and comfort between the intersections of Kearny/Pacific and Greenwich/Stockton streets. This 2010 study highlighted C/G/S as having the highest concentration of pedestrian activity and the busiest Muni bus stops in the study area. The 2010 study developed several conceptual design alternatives that included a variety of pedestrian and bus bulb outs, traffic circulation changes, new crosswalk alignments and expanded median islands.

The 2010 study's design concepts were further evaluated during the planning and design phases of the City's Columbus Avenue Safety Project in 2014/15, which culminated in construction of a series of pedestrian safety and transit improvements in 2017/2018 in conjunction with a repaving and sewer and water main replacement project. At C/G/S, bulb outs were added at five of the six corners, higher visibility crosswalk markings were added and advanced limit lines on the Columbus Avenue approaches were added. The bulb outs reduce crossing distances, improve pedestrian visibility, reduce the speed of turning vehicles, reduce sidewalk corner crowding and improve Muni operations. Aerial photos depicting C/G/S before and after these changes are shown below. While these changes have improved safety, this six-legged intersection continues to be difficult for pedestrians to navigate. Neighborhood organizations including the Telegraph Hill Dwellers and North Beach Neighbors have requested that the City implement a pedestrian scramble and expand the existing median island.

Aerial View - 2015

Aerial View - 2019

[6] A pedestrian scramble, also known as an exclusive pedestrian phase, allows pedestrians to cross without conflicting vehicle turning movements.
[7] https://www.sfcta.org/projects/columbus-avenue-neighborhood-transportation-study

Outreach

Outreach for this study was conducted in coordination with the District 3 Supervisor's Office. SFMTA staff met several times with Chinatown Transportation Research and Improvement Project (TRIP) to learn about their priorities for pedestrian safety along Kearny and to share details regarding the pedestrian scrambles proposed at Kearny and Jackson streets and Kearny and Washington streets as well as bus stop modifications along the Kearny corridor. Staff also met with representatives of the North Beach Neighbors and Telegraph Hill Dwellers that informed the proposal for opening a new crosswalk at C/G/S. In April 2019 the City's Pedestrian Safety Advisory Committee passed a resolution in support of a pedestrian scramble or other pedestrian safety improvements at C/G/S.

Kearny Street - Existing Conditions

Kearny Street is a one-way major arterial connecting some of the City's densest neighborhoods. The street is a primary route from regional freeway off-ramps in SoMa, carrying over 1,000 vehicles per hour during peak periods. The street is also heavily used by trucks accessing loading zones for office buildings and retail establishments. Pedestrian volumes are very high with more than 1,000 crossings per peak hour at every intersection between Market Street and Columbus Avenue (with some exceeding 3,000). Muni's 30 Stockton and 45 Union-Stockton operate between Market and Sutter streets while the 8/8AX/8BX Bayshore routes operate along the full length of Kearny Street between Market Street and Columbus Avenue. The 8/8AX/8BX routes carry a combined average weekday ridership of 36,000 customers, including about 3,500 daily customers traveling through the Kearny/Jackson intersection.

Muni's 8/8AX/8BX bus routes operate at an average speed of 6-7 miles per hour; closely spaced bus stops, narrow lanes and conflicts with vehicles making turns or parking maneuvers all contribute to slow and unreliable service. At some intersections, traffic congestion on cross-streets results in vehicle queues blocking Kearny Street, degrading safety and slowing Muni.

Kearny Pedestrian Scrambles - Analysis

A pedestrian scramble was implemented at the intersection of Kearny/Clay streets in 2016, which required increasing the traffic signal cycle length from 60s to 80s. This created a breakpoint in the Kearny corridor signal system, with intersections along Kearny Street from Clay Street north to Columbus Avenue operating on an 80s cycle and intersections south of Clay Street remaining on a 60s cycle. This change added 10-20 seconds of delay for Muni's 8/8AX/8BX routes during peak periods – minimizing additional Muni delay is a key consideration in developing plans for additional pedestrian scrambles.

Additional signal timing changes along the Kearny corridor were implemented in 2019 as part of the NoMa/SoMa retiming project - the cycle length between Clay and Columbus was increased from 80s to 90s in May 2019 and the cycle length south of Clay was increased from 60s to 75s in September 2019. This signal retiming effort included several pedestrian safety improvements along Kearny Street including adding leading pedestrian intervals at five intersections, providing more time for pedestrians to cross at nine intersections and longer all-red and yellow timings at five intersections. A pedestrian scramble was also implemented at Kearny/Bush.

With the NoMa/SoMa signal timing changes, the intersection of Clay/Kearny remains a breakpoint in the Kearny corridor signal system and Synchro[8] modeling indicates that adding pedestrian scrambles at Kearny/Jackson and Kearny/Washington will have minimal impacts to transit and traffic travel times. Synchro outputs for the PM peak hour are provided in Appendix A. While pedestrian scrambles often increase delay for traffic, this is unlikely to occur at these two intersections, partly because the scrambles

[8] https://www.trafficware.com/synchro.html

can be added without changing the signal cycle lengths. Although the amount of green time provided to the Kearny approaches will decrease, it will be consistent with what is provided upstream at Kearny/Clay and therefore signal offsets can be set to maintain progression. In addition, with pedestrian scrambles the heavy vehicular turning movements from northbound Kearny left onto Washington and right onto Jackson will occur without conflicting pedestrian movements. However, Synchro modeling cannot account for the location of bus stops and bus dwell time in estimating transit delay. Prior to implementing pedestrian scrambles, the SFMTA will review bus dwell time data to inform the signal offsets.

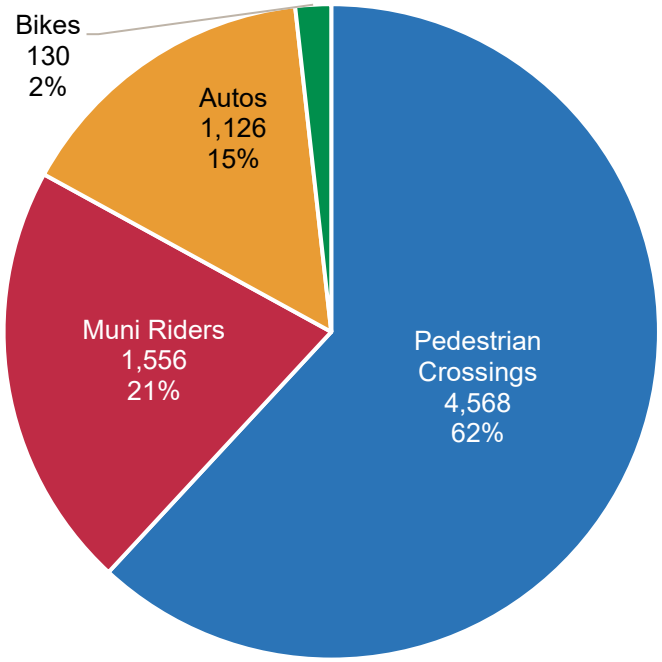
Kearny Pedestrian Scrambles – Next Steps

The SFMTA recommends implementing pedestrian scrambles at both Kearny/Jackson and Kearny/Washington. A pedestrian scramble can be implemented at Kearny/Washington with minimal signal hardware modifications – although the signal infrastructure dates from the late 1960s, a site investigation found that new pedestrian countdown signals can be accommodated on existing signal poles and there is capacity within the underground conduits for necessary wiring. Legislation restricting turns on red at Kearny/Washington was completed in February 2020 and the SFMTA plans to implement the pedestrian scramble in spring 2020.

A pedestrian scramble at Kearny/Jackson would require substantial signal hardware modifications. The signal infrastructure dates from the early 1970s, and a site investigation found underground conduits cannot accommodate additional wiring and the traffic signal pole at the northeast corner of the intersection needs to be replaced. Detailed design and construction of a signal upgrade is estimated to cost $450k, which the SFMTA was awarded through the Proposition K NTIP Capital Program in April 2020. The SFMTA will coordinate with Public Works to complete detailed design and plans to implement these improvements in conjunction with the upcoming John Yehall Chin School Safe Routes to School Project being led by Public Works. Construction of the John Yehall Chin project is scheduled to begin later in 2020 and the SMFTA anticipates the pedestrian scramble at Kearny/Jackson will be completed in mid-2021.

Columbus/Green/Stockton - Existing Conditions

The intersection of C/G/S is located in the heart of the City's North Beach neighborhood and is very busy, particularly with pedestrians as shown in the chart below, which represents PM peak hour volumes[9]. In addition, the intersection is a critical node in the Muni network where five Muni routes converge, together carrying nearly 70,000 riders per day. During peak hours, over 50 Muni buses pass through the intersection carrying over 1,500 passengers. The number of vehicles is comparatively low, but the complex traffic signal phasing required to serve all six legs of the intersection results in vehicular delays on some approaches during peak periods.



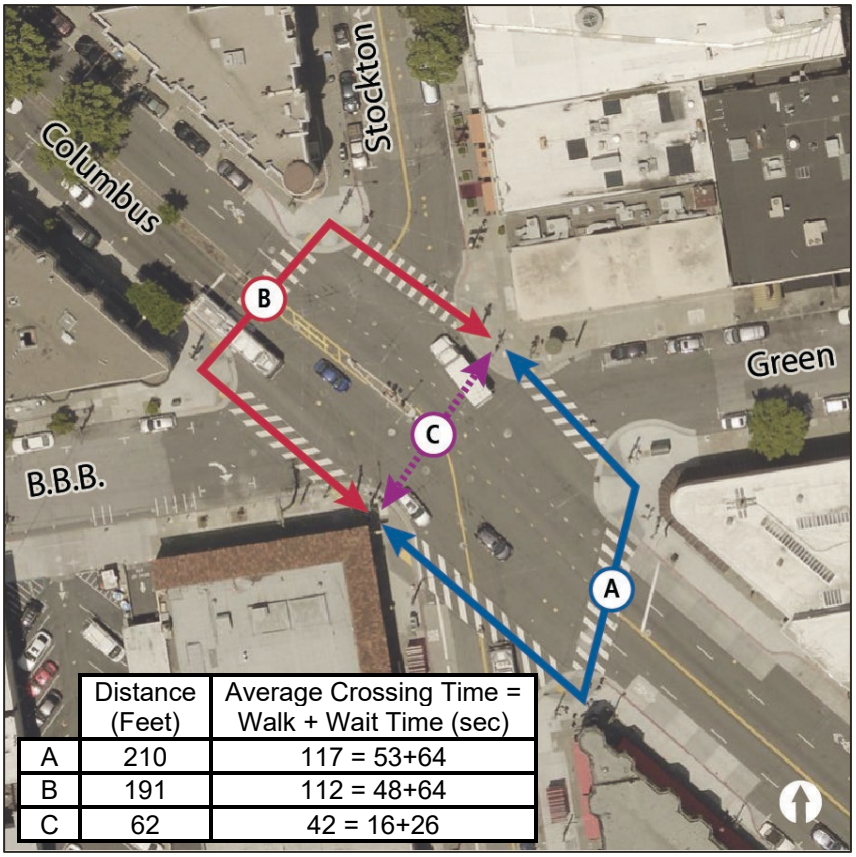
While the addition of bulb outs in 2018 has improved pedestrian safety, C/G/S continues to be a challenging intersection for pedestrians to navigate. When a person walking along a given street arrives at C/G/S and continues straight through the intersection, they must cross two streets and wait through multiple traffic signal phases. Depending on the direction of travel and when they arrive during the traffic signal cycle, it can take an able-bodied person nearly three minutes to walk between the northeast and southwest corners if they obey pedestrian signals. Many pedestrians are unwilling to tolerate these detours and delays and are observed crossing against pedestrian signal indications or crossing between corners without marked crosswalks.

[9] Data Sources: Muni – fall 2015 automatic passenger counters; pedestrians and vehicles – July 2019 SFMTA count; bikes – 2008 count for Columbus Avenue Neighborhood Transportation Study. Pedestrian crossings represents a sum from each crosswalk rather than a count of distinct people.

Columbus/Green/Stockton - Analysis

The SFMTA analyzed numerous alternatives for improving the walking experience at G/G/S by reducing pedestrian crossing delays, detours and conflicts with vehicles. Some alternatives were screened out because they would require changes to traffic circulation patterns (for example, converting Green Street and/or Beach Blanket Babylon Boulevard to one-way operation *away* from the intersection), which were opposed by local stakeholders. The existing traffic signal cycle length is 80 seconds – for the purpose of this analysis, a baseline condition with a 90-second cycle length was assumed in order to provide a more direct comparison with other alternatives that require a minimum 90-second cycle length and to account for the likelihood of a future increase to a 90-second cycle length consistent with recent changes to other traffic signals in the vicinity.

Two alternatives were ultimately selected for detailed analysis – one providing a pedestrian scramble and one modifying the intersection signal timing and opening a new crosswalk between the northeast and southwest corners – this crossing movement is currently not permitted but has been highlighted as a desired path of travel for pedestrians by the North Beach Neighbors and Telegraph Hill Dwellers. The diagram to the right indicates the average walking and waiting times between the northeast and southwest corners for pedestrians[10] following paths "A" and "B". *Figure 3* also highlights the dramatic time and distance savings that could be achieved if a new crosswalk were opened (path "C"). Detailed Synchro outputs are included in Appendix B.



	Distance (Feet)	Average Crossing Time = Walk + Wait Time (sec)
A	210	117 = 53+64
B	191	112 = 48+64
C	62	42 = 16+26

C/G/S Pedestrian Scramble

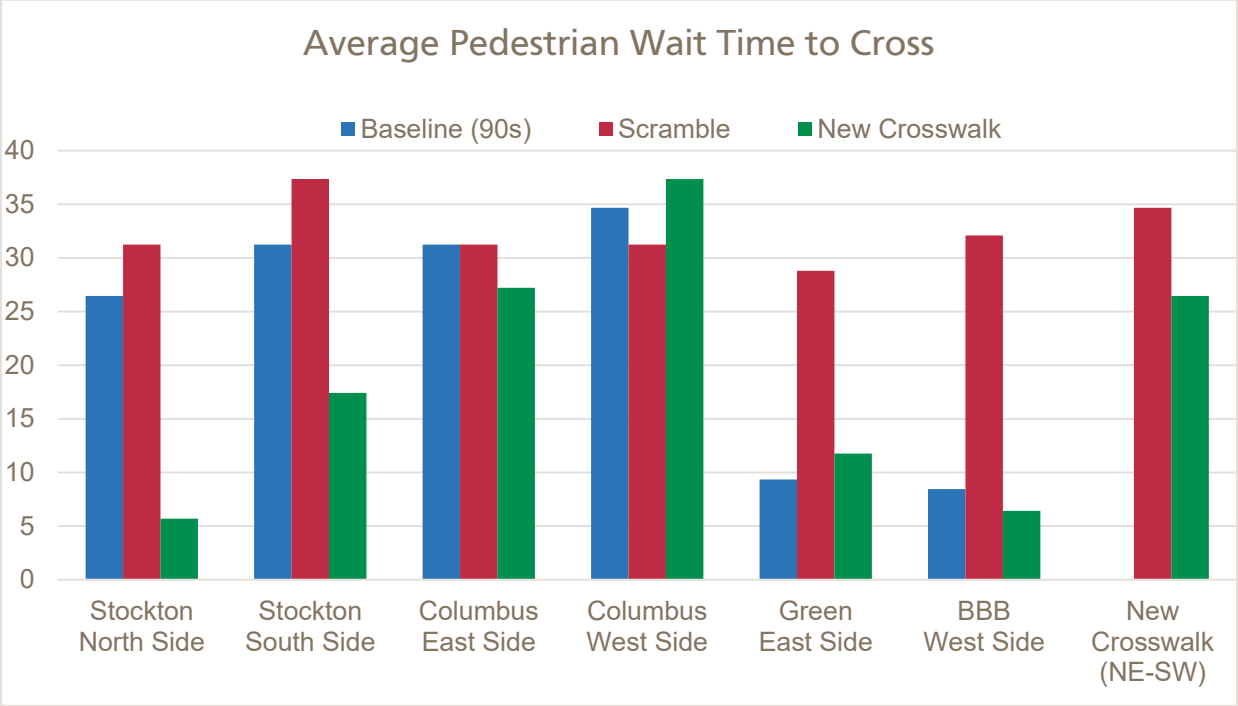
A pedestrian scramble separating all vehicular and pedestrian movements would eliminate vehicle/pedestrian conflicts, assuming all users obey traffic signals. A pedestrian scramble would also allow for a new crosswalk to be opened connecting the northeast and southwest corners along path "C." However, this alternative would substantially increase delay for pedestrians, transit and other vehicles. Increasing the number of phases within a traffic signal cycle makes the signal less efficient and adding a pedestrian scramble without closing vehicular movements from one or more legs of the intersection require five signal phases, as shown in the diagram on the following page. A pedestrian scramble would reduce the green ratio (proportion of total signal cycle provided as green light) for key transit movements by about 50% on northbound Stockton Street and in both directions on Columbus Avenue, resulting in extended vehicle queues and decreased transit reliability. Synchro modeling indicates that total Muni delay at the intersection would more than double. As shown in the chart below, a pedestrian scramble at

[10] Assumes random arrivals, walking speed of 4 feet/second, pedestrians evenly split between starting from NE/SW corners and evening split in choosing to walk clockwise/counterclockwise.

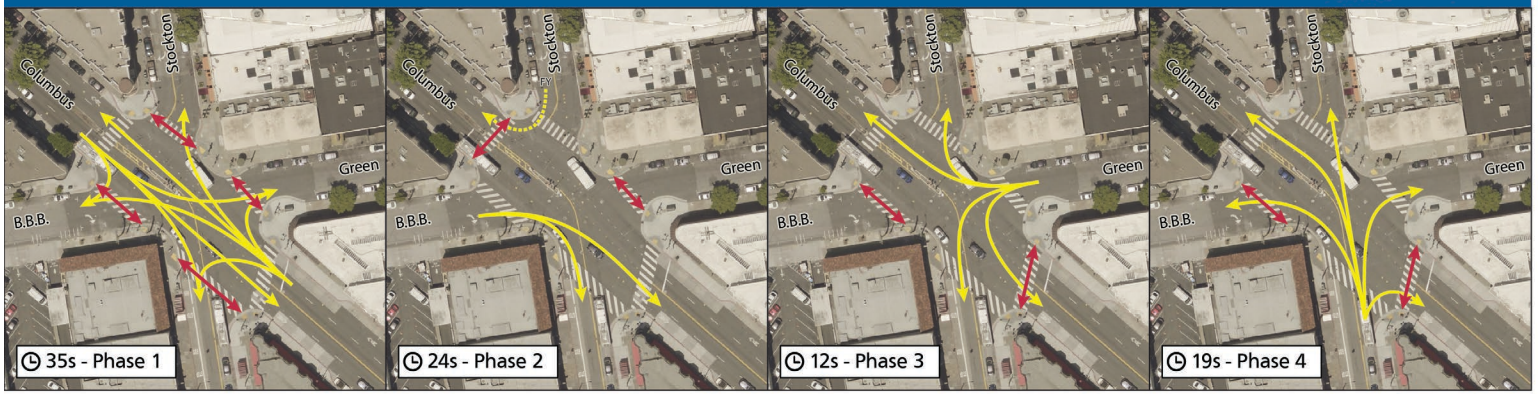
C/G/S would also increase the average waiting time pedestrians for pedestrians to receive a walk signal at most crosswalks, which could lead to reduced compliance with signal indications and an increased risk for conflicts and collisions with vehicles.

C/G/S New Crosswalk

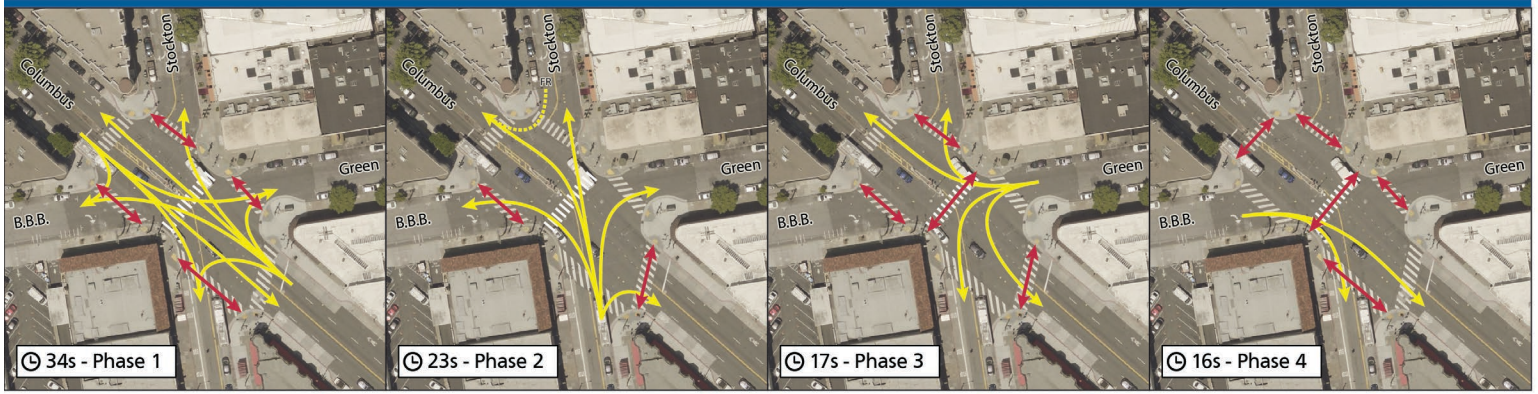
Adding a new crosswalk connecting the northeast and southwest corners could improve pedestrian convenience and greatly reduce pedestrian delays without substantially impacting traffic or transit delay. This requires rearranging the traffic signal phasing as shown in the diagram on the following page – the new crosswalk would receive a walk signal overlapping with a green signal for turning vehicles entering the intersection from Green Street and Beach Blanket Babylon Boulevard. The chart below shows how pedestrian waiting times would be reduced for most pedestrian movements.



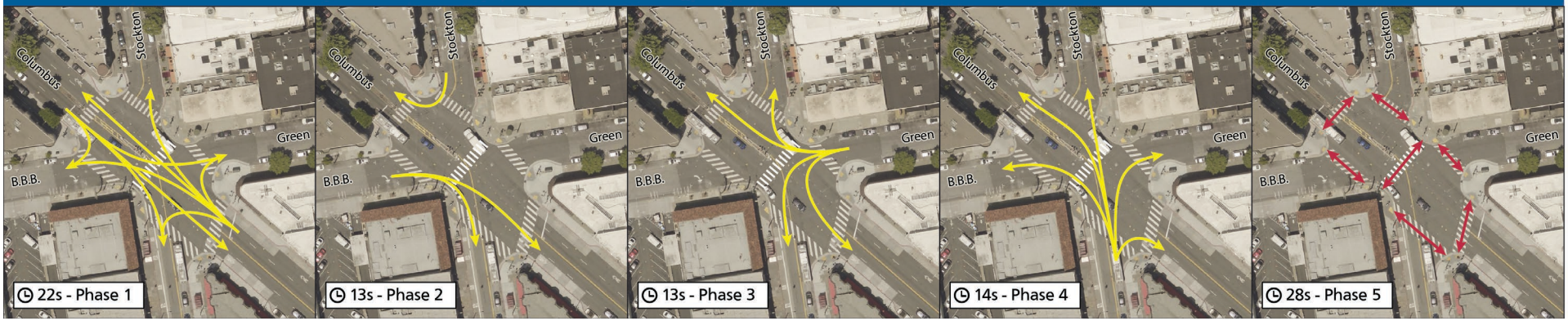
Baseline Signal Phasing (90s Cycle Length)



New Crosswalk Signal Phasing (90s Cycle Length)



Pedestrian Scramble Signal Phasing (90s Cycle Length)



Pedestrian Collision Analysis

The table below summarizes the eight pedestrian collisions at C/G/S reported to the police over a five-year period from fall 2014-2019 and compares how the two alternatives analyzed might mitigate each.

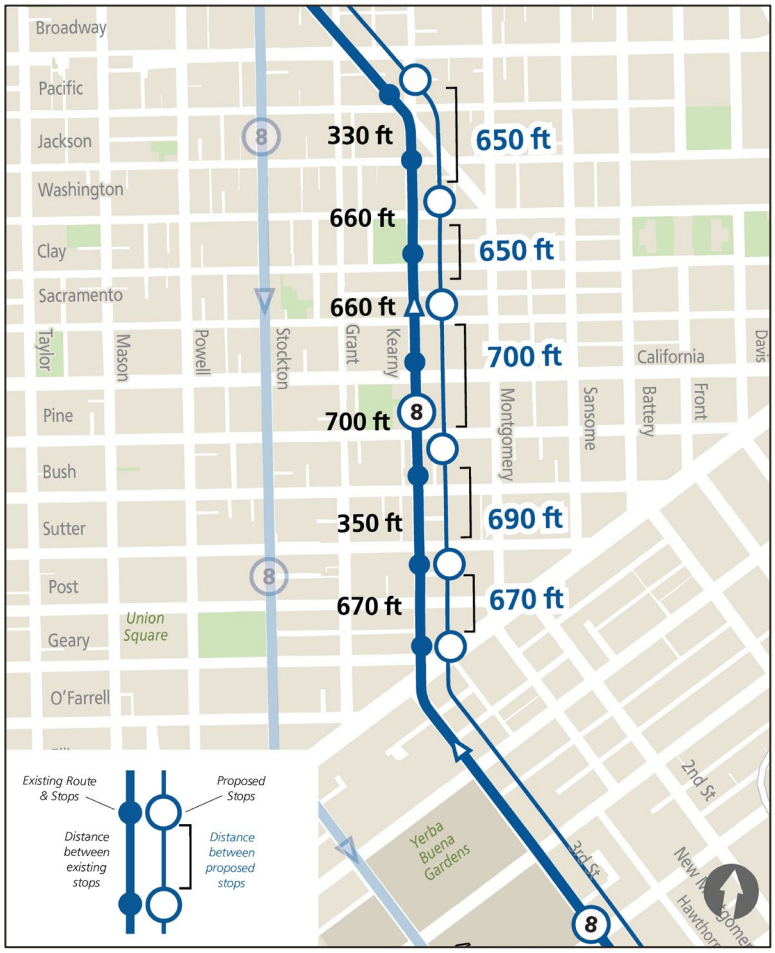
Collision Summary	Would Scramble Help?	Would New Crosswalk Help?
12/2/14 - Motorist turning left from Columbus to eastbound Green during yellow light hit pedestrian crossing Green in east crosswalk. Motorist cited for failure to yield to pedestrian.	Yes – vehicle and pedestrian movements separated.	Maybe – proposed timing adds 20s leading pedestrian interval. Banning southbound left turn would help.
7/21/16 - Muni bus turning right from Stockton to southeast-bound Columbus hit pedestrian crossing Columbus in southeast crosswalk. Muni operator cited for failure to yield to pedestrian.	Yes – vehicle and pedestrian movements separated.	No
9/11/16 – Unclear, hit-and-run may have involved speeding. Motorist traveling straight on southeast-bound Columbus hit pedestrian crossing Columbus in southeast crosswalk against red hand.	No	No
1/4/17 – Motorist turning left from Green to southeast-bound Columbus hit pedestrian crossing Columbus in southeast crosswalk. Motorist cited for failure to yield to pedestrian.	Yes – vehicle and pedestrian movements separated.	Maybe - proposed timing adds 23s leading pedestrian interval.
1/7/17 – Motorist turning left from Columbus to southbound Stockton hit pedestrian crossing Stockton midblock while trying to catch stopped Muni bus. Pedestrian cited for failure to yield to vehicle.	Maybe – unclear if pedestrian obeyed signal. Banning northbound left turn would help.	No. Banning northbound left turn would help.
4/6/17 – Motorist turning right from Columbus to northbound Stockton hit pedestrian crossing Stockton in north crosswalk. Motorist cited for failure to yield to pedestrian.	Yes	Maybe – proposed timing includes 37s leading pedestrian interval.
6/10/17 - Motorist traveling straight on southeast-bound Columbus hit pedestrian crossing Columbus outside crosswalk against red light. Pedestrian cited for crossing outside crosswalk and against signal.	No	Yes – proposed new crosswalk and signal phasing would provide opportunity for pedestrian to cross legally.
8/19/17 - Motorist on Columbus hit pedestrian crossing Columbus in northwest crosswalk (report indicates pedestrian was obeying signal - unclear if motorist ran red light traveling straight on northbound Columbus or legally turned onto Columbus). Motorist cited for failure to yield to pedestrian.	Maybe – unclear if vehicle obeyed signal.	No

Columbus/Green/Stockton – Next Steps

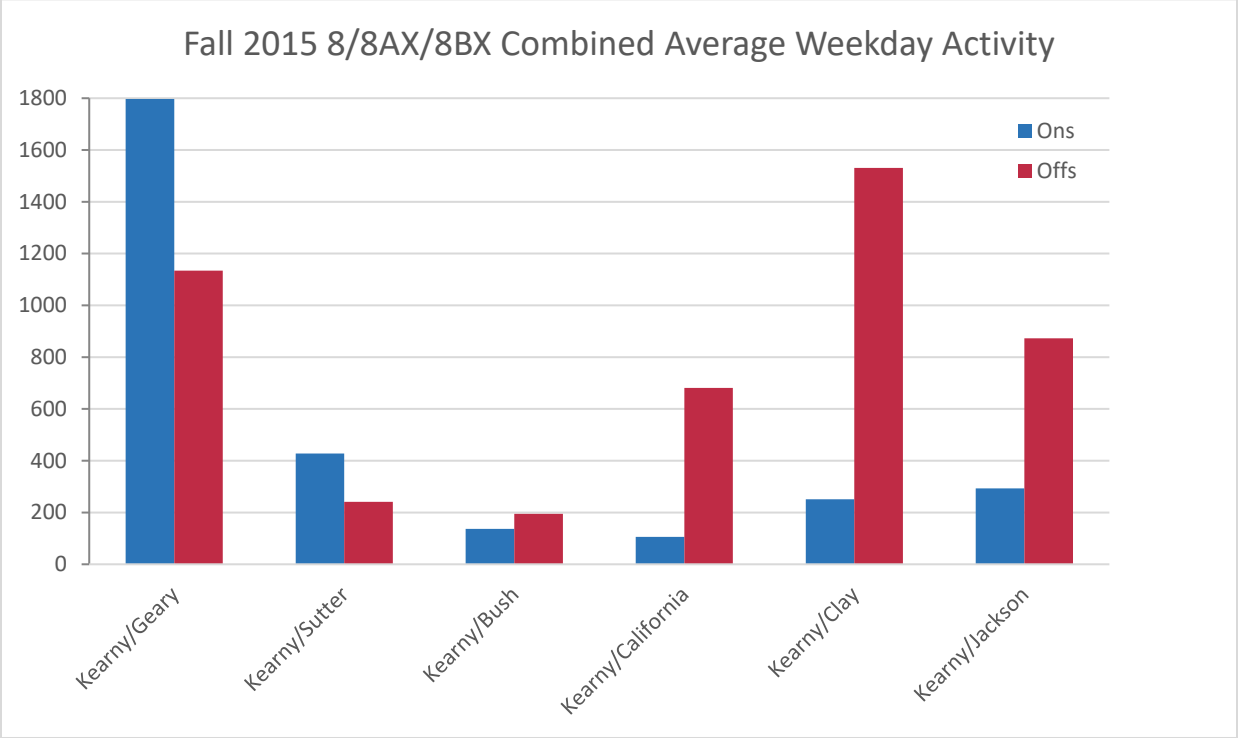
The SFMTA recommends opening a new crosswalk at C/G/S, which requires adding new curb ramps and replacing some underground signal conduits to accommodate additional wiring necessary to add pedestrian signals. In addition, the SFMTA recommends minor modifications to the existing median island within the intersection to guide vehicles through the intersection in a straighter path. The SFMTA also recommends banning left turns in both directions from Columbus Avenue – although the volume of vehicles making these movements is relatively low, two of the eight pedestrian collisions summarized in the table above involved vehicles making left turns from Columbus Avenue. Detailed design and construction of curb ramps and upgraded signal equipment is estimated to cost $370k, which the SFMTA was awarded through the Proposition K NTIP Capital Program in April 2020. The SFMTA will coordinate with Public Works to complete detailed design. If detailed design can be completed in time, these improvements could be implemented in conjunction with the upcoming John Yehall Chin School Safe Routes to School Project being led by Public Works, scheduled to be completed in 2021. Alternatively, the SFMTA will coordinate with Public Works to implement these improvements in conjunction with an upcoming Public Works curb ramp project, with construction anticipated in 2021/22.

Kearny Bus Stop Consolidation – Analysis and Recommendations

As previously described, closely spaced bus stops are one of the issues contributing to transit unreliability along Kearny Street. In addition to stop spacing, the location of some stops contributes to added delay and safety issues: the farside Bush Street stop is difficult to access due to cross-street traffic blocking the intersection; a substandard length bus zone at the farside Clay Street stop results in stopped buses blocking the busy crosswalk; and right-turning vehicles conflict with buses at the nearside Jackson Street stop. The SFMTA generally recommends that bus stops be spaced around 800-1000 feet apart except in areas with steep grades, however many of the stops on Kearny are much closer than recommended. Based on community input and staff analysis, a bus stop rebalancing proposal has been developed for Kearny Street between Market Street and Columbus Avenue. The existing and proposed stop layout is summarized in the map to the right, with a summary of changes recommended for each stop described in further detail on the following pages.



Muni's 8 Bayshore, 8AX Bayshore A Express and 8BX Bayshore B Express routes carry a combined average weekday ridership of 36,000 customers. Of these riders, approximately 3,000 board and 4,600 get off at stops along Kearny Street as summarized in the chart below.



Kearny/Market/Geary – no change

The Kearny/Market/Geary bus stop is one of the highest ridership stops in the entire Muni bus system. The stop is served by the 8/8AX/8BX Bayshore, 30 Stockton and 45 Union-Stockton routes and has almost 1,800 boardings per day. This bus stop is an important connection to Muni Metro, BART, numerous Market Street surface transit routes, and the 38/38R Geary.

Kearny/Sutter – no change

The Kearny/Sutter bus stop is shared by the 8/8AX/8BX Bayshore and 3 Jackson routes with about 470 boardings per day. This bus stop was considered for removal due to its location two short blocks away from the previous stop at Geary Street. However, removal of the stop would result in a stop spacing beyond SFMTA guidance for the 3 Jackson. If the stop were to remain for the 3 Jackson but not the 8/8AX/8BX Bayshore, it could result in passenger. Consideration was given to moving this stop from the nearside to the farside of Sutter Street in conjunction with removing the stop at Bush Street, but this is not recommended due to the traffic queues that extend back to Sutter Street from the Kearny/Bush intersection.

Kearny/Bush – remove stop

The bus stop at the Kearny/Bush intersection is served by the 8/8AX/8BX Bayshore routes. This stop has about 330 combined ons and offs per day, the lowest of any stop along the Kearny corridor and is located only 350 feet away from the previous stop at Kearny/Sutter. Although the Chinese Hospital and other senior services are located near this intersection, a new bus stop is proposed at Kearny/Pine which would also provide convenient access to these services. The SFMTA recommends removing the Kearny/Bush bus stop and adding a new bus stop at Kearny/Pine.

Kearny/Pine – new stop

A new bus stop for the 8/8AX/8BX Bayshore routes is proposed nearside at Kearny/Pine. In most cases Muni prefers locating bus stops at the farside of signalized intersections to minimize delay and avoid conflicts with right-turning vehicles. This stop is being proposed at the nearside due to the traffic queues that often form at the farside from vehicles turning right at California Street. Additionally, Pine Street is one-way westbound so are no potential conflicts with right-turning vehicles. These factors, combined with the improvements in stop spacing and relocation away from the congested intersection at Bush Street, make the nearside stop at Pine Street an appropriate location for the new proposed bus stop.

Kearny/California – remove stop

The existing bus stop at Kearny/California is relatively close to both the previous and next stops along Kearny, with moderately high passenger activity. This stop is notable for the high frequency of transit collisions - eight in the most recent five-year period. The previous bus stop at Bush is recommended to be removed, with a new bus stop created at Pine, which is closer to this stop. The next bus stop at Clay is also recommended to be removed, with a new stop created at Sacramento, which is also closer to this stop. After consideration of the resulting stop spacing and the safety record, SFMTA recommends removal of this bus stop.

Kearny/Sacramento – new stop

The proposed bus stop at Kearny/Sacramento would be located to serve as a transfer point to the 1 California route that crosses Kearny. The stop is also located on a flat grade and would also provide access to numerous small businesses in the area. Lastly, a new stop at this location with the removal of stops at Clay and at California would maintain three bus stops along Kearny within the Chinatown neighborhood while allowing for more balanced bus stop spacing on the entire Kearny corridor.

Kearny/Clay – remove stop

The existing bus stop at Kearny/Clay has been highlighted by Muni operators as being too short to accommodate a 60-foot bus. During peak hours, the adjacent yellow metered loading zone is a tow-away zone which provides adequate space. However, during off-peak hours or if a vehicle is illegally using the loading zone during tow-away hours, buses are unable to fully pull into the zone and their rear end can block the crosswalk. There is heavy demand for loading from nearby small businesses, so extending the bus zone by removing the loading zone is likely to result in trucks blocking bus. This intersection has also been prioritized by community members for pedestrian safety improvements and a pedestrian scramble was installed in 2016. Although this stop has the highest number of passengers getting off along the Kearny corridor, truck loading demand and safety challenges led the SFMTA to recommend removing it in conjunction with the addition of a new bus stop at the adjacent Sacramento Street intersection.

Kearny/Washington – new stop

The intersection of Kearny/Washington is another location that has been identified as a priority for improved pedestrian crossings. Staff has determined that a pedestrian scramble can be installed at this intersection to improve safety while minimizing transit and traffic impacts. Additionally, there are local destinations such as the Hilton Hotel, San Francisco City College Chinatown Campus, Portsmouth Square, and local businesses that make this intersection an ideal candidate for a bus stop. Staff previously studied crowding and queuing in front of and inside the City College building and found no conflicts that would result from installing a bus stop. For these reasons, a new bus stop is recommended at Kearny/Washington.

Kearny/Jackson – remove stop

One block north of Washington is the existing bus stop at Kearny/Jackson. This bus stop has 293 ons and 873 offs per day, which makes it a slightly less busy stop than the Clay stop but a busier stop than the adjacent Columbus stop which is only 330 feet away. This intersection is also a high transit collision location with nine collisions in the past five years. A collision pattern of sideswipes at this nearside bus stop has been identified and is the primary reason SFMTA is recommending that the bus stop be moved one block south to Kearny/Washington. The new stop would be at the other end of the same block approximately 200 feet away and no access issues are anticipated at the new stop location

Kearny Bus Stop Consolidation - Next Steps

The SFMTA will complete an outreach and implementation plan which builds off the preliminary outreach and design work that has been done between 2017 and 2019. Pending additional community input and further analysis, these bus stop changes could be implemented by late 2020. Prior to finalizing any stop change recommendations, the SFMTA will share details for potential transit shelter locations at new or relocated stops.

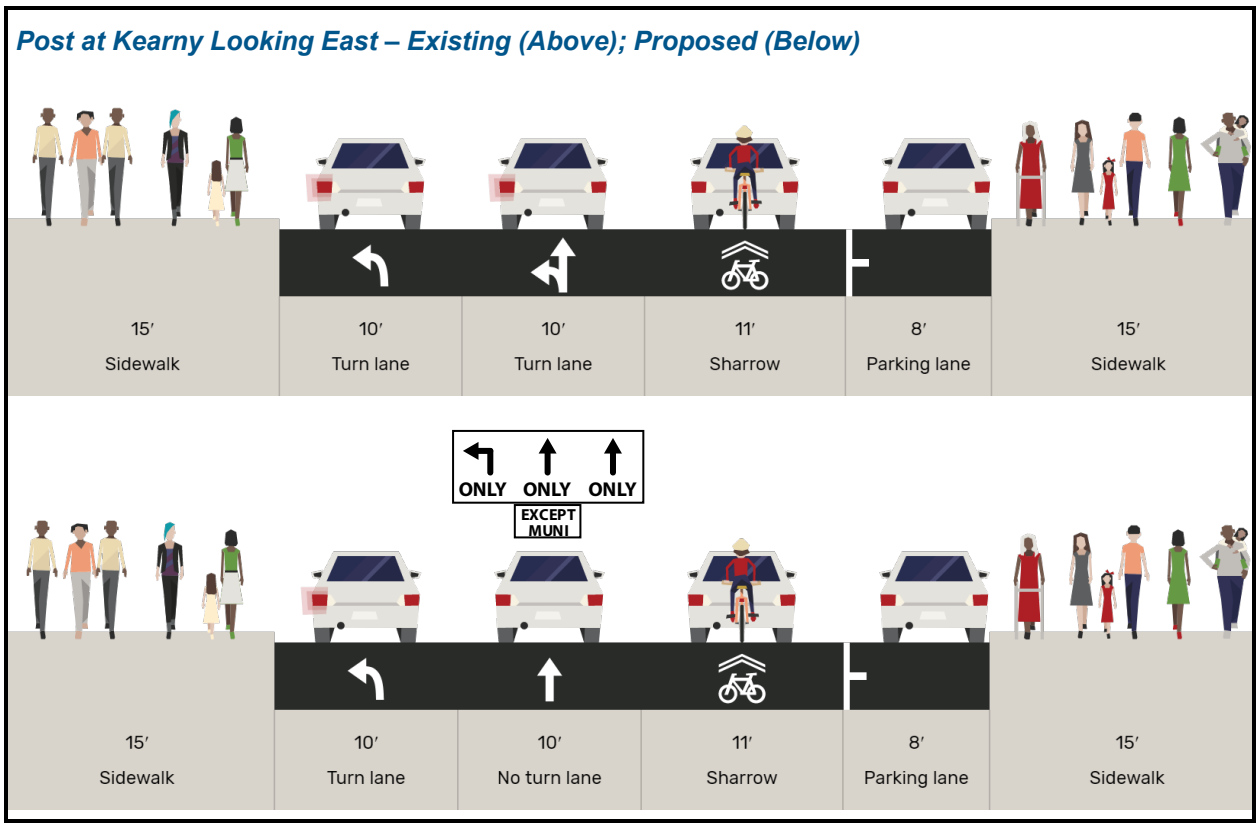
Kearny Dual-Turn Lanes – Analysis and Recommendations

The intersections of Kearny with Post, Sutter, Bush and Pine streets were highlighted as priorities for improving pedestrian safety by removing dual-turn lanes. Dual-turn lanes can create conflicts between motorists and people crossing the street due to limited visibility from the outside turning lane. The SFMTA evaluated options for removal dual-turn lanes while minimizing negative impacts to Muni service. In addition to Muni's 8/8AX/8BX Bayshore routes that operate northbound on Kearny Street, numerous Muni routes cross Kearny Street at the Bush, Pine, Post and Sutter streets intersections, including the 1AX/1BX, 31AX/31BX, 38AX/38BX (Richmond Express) routes operating eastbound on Bush Street and westbound on Pine Street, the 3 Jackson which turns right from Kearny Street onto Bush Street and the 30 Stockton and 45 Union Stockton which turn left from Kearny Street onto Sutter Street. Synchro outputs comparing existing conditions with the removal of dual-turn lanes are included in Appendix C.

Kearny/Post

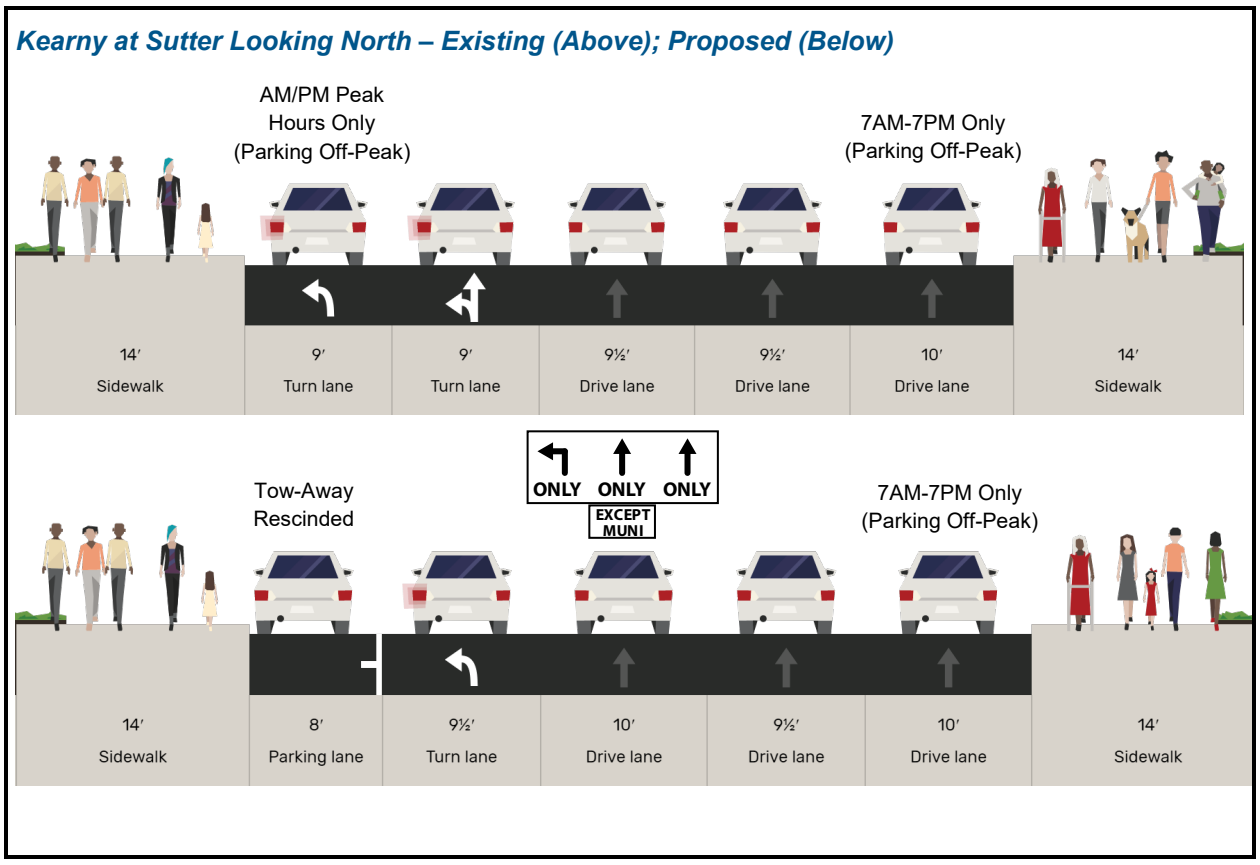
The intersection of Kearny/Post has an eastbound dual left turn from Post Street onto Kearny Street at all times, with additional capacity provided during the PM peak period by a tow-away restriction that lengthens the 2nd turn lane for the full block length to Grant Street. This turn is utilized by general traffic and Muni's 3 Jackson route. With ~500 through vehicles and ~200 left-turning vehicles during the PM peak hour, Synchro analysis suggests that reducing the eastbound left turn approach to one lane would result in 25 seconds of added delay. Since Muni's 3 Jackson makes this left turn, the SFMTA recommends removing the dual turn lane but providing a Muni exception to allow buses to turn from the adjacent through lane by adding custom lane assignment signs as shown in the diagram below, thereby permitting left-turning buses to bypass queues of left-turning vehicles.

Post at Kearny Looking East – Existing (Above); Proposed (Below)



Kearny/Sutter

The intersection of Kearny/Sutter has a northbound dual left turn from Kearny Street onto Sutter Street during AM and PM peak periods, with the 2nd lane provided by a parking tow-away restriction. This turn is utilized by general traffic and Muni's 30 Stockton and 45 Union-Stockton routes. There have been nine reported collisions in the past five years. Synchro analysis suggests that reducing the northbound left turn approach to one lane would have minimal impacts on traffic delay. However, site observations confirm that Muni buses are unable to make the turn from the curbside tow-away lane. The SFMTA recommends removing the tow-away restriction to allow parking/loading at all times on the west side of the street, providing a single left-turn lane at all times and permitting Muni vehicles to turn left from the adjacent through lane by adding custom lane assignment signs as shown in the diagram below, thereby permitting left-turning buses to bypass queues of left-turning vehicles.

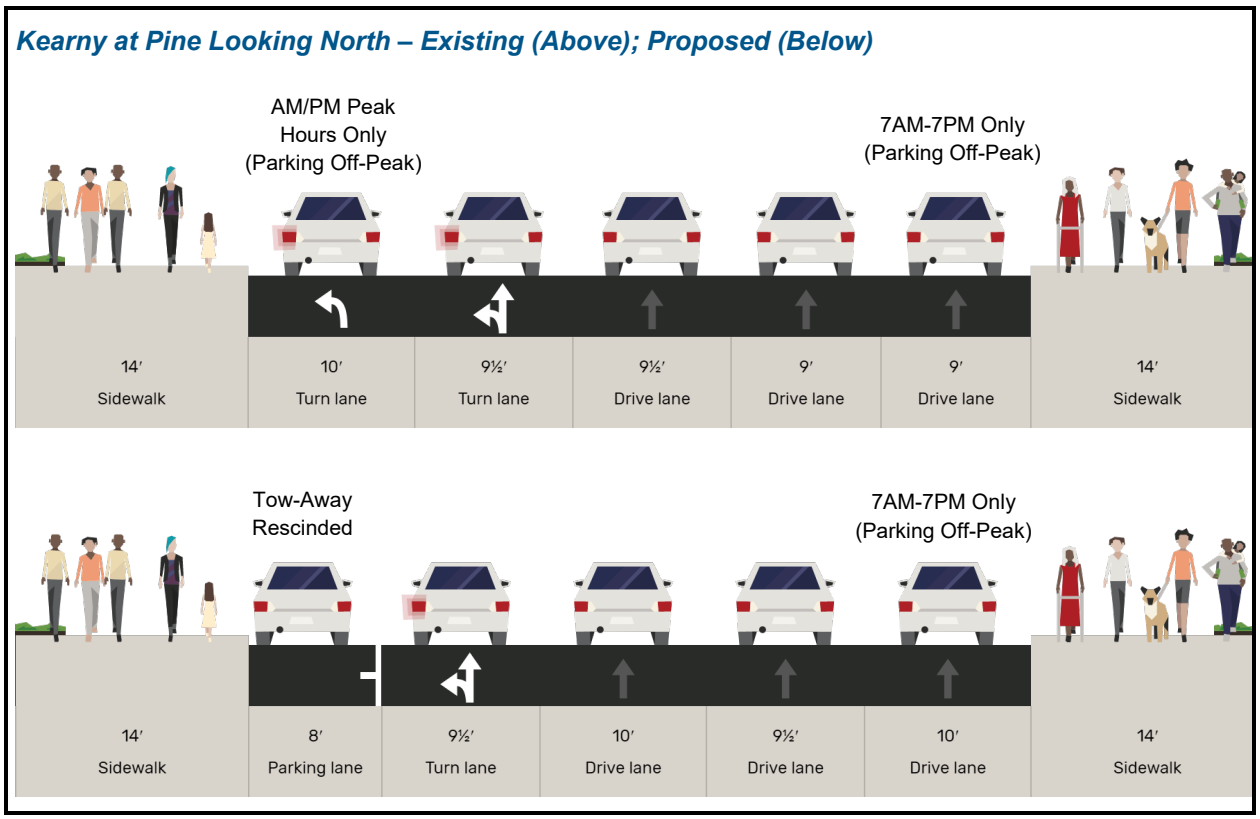


Kearny/Bush

The intersection of Kearny/Bush has a pedestrian scramble phase that was added in fall 2019 as part of SFMTA's broader NoMa/SoMa signal retiming project. This new crossing phase allows pedestrians to cross without any vehicle conflicts. Therefore, the SFMTA does not recommend modifying the dual-turn lane configuration at this time.

Kearny/Pine

The intersection of Kearny/Pine has a northbound dual left turn from Kearny Street onto Pine Street during AM and PM peak periods, with the 2nd lane provided by a parking tow-away restriction. There were five collisions in the past five years, one of which involved a motor vehicle and a pedestrian. As part of SFMTA's NoMa/SoMa signal retiming project 2019, 4-second leading pedestrian intervals were added at each crossing. Synchro analysis suggests that reducing the northbound left-turn approach to one lane would add minimal delay for northbound traffic and any delay that does result is likely to be concentrated along the left side of Kearny Street and is not likely to delay Muni buses proceeding straight in the right-most lane. The SFMTA recommends removing the tow-away restriction to allow parking/loading at all times on the west side of the street, providing a single left-turn lane at all times as shown in the diagram below.



Kearny Dual-Turn Lanes - Next Steps

SFMTA will continue to coordinate with stakeholders to pursue legislation for removal of dual-turn lanes at the Kearny/Post, Kearny/Sutter and Kearny/Pine streets intersections, and anticipates implementing changes by late 2020.

APPENDIX A
Kearny Pedestrian Scrambles
PM Peak Synchro Outputs

Lanes, Volumes, Timings
Kearny St. & Jackson St.

04/07/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	135	0	0	0	0	0	628	186	0	0	0
Future Volume (vph)	25	135	0	0	0	0	0	628	186	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-8%			0%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	1.00	1.00
Ped Bike Factor		0.95						0.79				
Frt								0.966				
Flt Protected		0.992										
Satd. Flow (prot)	0	1338	0	0	0	0	0	3090	0	0	0	0
Flt Permitted		0.992										
Satd. Flow (perm)	0	1265	0	0	0	0	0	3090	0	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109						121				
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		227			211			381			283	
Travel Time (s)		7.7			7.2			10.4			7.7	
Confl. Peds. (#/hr)	214		256				612		320			
Confl. Bikes (#/hr)			10						10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	18	0	0	0	0
Parking (#/hr)	0	20	0	0	0	0	0	20	0	0	0	0
Adj. Flow (vph)	25	135	0	0	0	0	0	628	186	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	160	0	0	0	0	0	814	0	0	0	0
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Minimum Split (s)	17.0	17.0						11.0				
Total Split (s)	24.0	24.0						58.0				
Total Split (%)	26.7%	26.7%						64.4%				
Maximum Green (s)	18.0	18.0						52.0				
Yellow Time (s)	4.0	4.0						4.0				
All-Red Time (s)	2.0	2.0						2.0				
Lost Time Adjust (s)		0.0						0.0				
Total Lost Time (s)		6.0						6.0				
Lead/Lag	Lag	Lag						Lag				
Lead-Lag Optimize?												
Walk Time (s)	0.0	0.0						0.0				
Flash Dont Walk (s)	11.0	11.0						5.0				
Pedestrian Calls (#/hr)	0	0						0				
Act Effct Green (s)		18.0						52.0				
Actuated g/C Ratio		0.20						0.58				
v/c Ratio		0.47						0.44				
Control Delay		16.9						2.9				
Queue Delay		1.1						0.0				
Total Delay		17.9						2.9				
LOS		B						A				
Approach Delay		17.9						2.9				

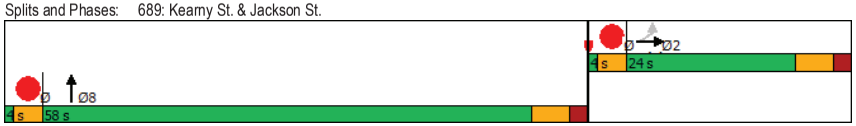
Lanes, Volumes, Timings
Kearny St. & Jackson St.

04/07/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B						A				
Queue Length 50th (ft)		24						0				
Queue Length 95th (ft)		84						13				
Internal Link Dist (ft)		147			131			301			203	
Turn Bay Length (ft)												
Base Capacity (vph)		340						1836				
Starvation Cap Reductn		0						0				
Spillback Cap Reductn		57						14				
Storage Cap Reductn		0						0				
Reduced v/c Ratio		0.57						0.45				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 41 (46%), Referenced to phase 1:Hold, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 5.4		Intersection LOS: A	
Intersection Capacity Utilization 39.5%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Change 13			

Splits and Phases: 689: Kearny St. & Jackson St.

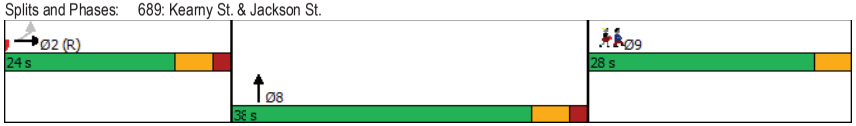


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	135	0	0	0	0	0	628	186	0	0	0
Future Volume (vph)	25	135	0	0	0	0	0	628	186	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-8%			0%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	1.00	1.00
Ped Bike Factor								0.99				
Frt								0.966				
Flt Protected		0.992										
Satd. Flow (prot)	0	1338	0	0	0	0	0	3866	0	0	0	0
Flt Permitted		0.992										
Satd. Flow (perm)	0	1338	0	0	0	0	0	3866	0	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85						92				
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		227			211			381			283	
Travel Time (s)		7.7			7.2			13.0			9.6	
Confl. Peds. (#/hr)			256				612					
Confl. Bikes (#/hr)			10						10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	18	0	0	0	0
Parking (#/hr)	0	20	0	0	0	0	0	20	0	0	0	0
Adj. Flow (vph)	25	135	0	0	0	0	0	628	186	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	160	0	0	0	0	0	814	0	0	0	0
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Minimum Split (s)	17.0	17.0						11.0				
Total Split (s)	24.0	24.0						38.0				
Total Split (%)	26.7%	26.7%						42.2%				
Yellow Time (s)	4.0	4.0						4.0				
All-Red Time (s)	2.0	2.0						2.0				
Lost Time Adjust (s)		0.0						0.0				
Total Lost Time (s)		6.0						6.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		18.0						32.0				
Actuated g/C Ratio		0.20						0.36				
v/c Ratio		0.48						0.57				
Control Delay		21.0						2.1				
Queue Delay		0.7						0.0				
Total Delay		21.7						2.1				
LOS		C						A				
Approach Delay		21.7						2.1				
Approach LOS		C						A				
Queue Length 50th (ft)		36						2				
Queue Length 95th (ft)		97						12				
Internal Link Dist (ft)		147			131			301			203	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		335						1433				
Starvation Cap Reductn		0						0				
Spillback Cap Reductn		41						34				
Storage Cap Reductn		0						0				
Reduced v/c Ratio		0.54						0.58				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 49 (54%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 40			
Control Type: Pretimed			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 37.5%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Change 13			

Splits and Phases: 689: Kearny St. & Jackson St.

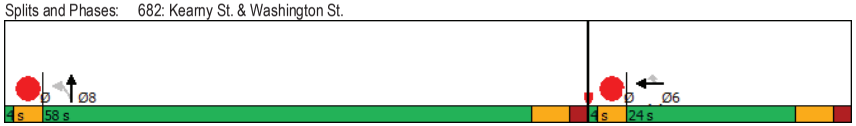


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	187	120	150	732	0	0	0	0
Future Volume (vph)	0	0	0	0	187	120	150	732	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			9%			0%			0%	
Storage Length (ft)	0		0	0		0	60		0	0		0
Storage Lanes	0		0	0		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor						0.73	0.10					
Frt						0.850						
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	1316	1118	1540	4259	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	1316	811	154	4259	0	0	0	0
Right Turn on Red			Yes			Yes	Yes		Yes			Yes
Satd. Flow (RTOR)						109	132					
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		242			210			384			381	
Travel Time (s)		8.3			7.2			10.5			10.4	
Confl. Peds. (#/hr)				184		126	520		681			
Confl. Bikes (#/hr)						10			10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	28	0	0	0	0
Parking (#/hr)	0	0	0	0	10	10				0	0	0
Adj. Flow (vph)	0	0	0	0	187	120	150	732	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	187	120	150	732	0	0	0	0
Turn Type					NA	Perm	Perm	NA				
Protected Phases					6			8				
Permitted Phases						6	8					
Minimum Split (s)					19.0	19.0	15.0	15.0				
Total Split (s)					24.0	24.0	58.0	58.0				
Total Split (%)					26.7%	26.7%	64.4%	64.4%				
Maximum Green (s)					18.0	18.0	52.0	52.0				
Yellow Time (s)					4.0	4.0	4.0	4.0				
All-Red Time (s)					2.0	2.0	2.0	2.0				
Lost Time Adjust (s)					0.0	0.0	0.0	0.0				
Total Lost Time (s)					6.0	6.0	6.0	6.0				
Lead/Lag					Lag	Lag	Lag	Lag				
Lead-Lag Optimize?												
Walk Time (s)					0.0	0.0	0.0	0.0				
Flash Dont Walk (s)					13.0	13.0	9.0	9.0				
Pedestrian Calls (#/hr)					0	0	0	0				
Act Effct Green (s)					18.0	18.0	52.0	52.0				
Actuated g/C Ratio					0.20	0.20	0.58	0.58				
v/c Ratio					0.71	0.48	1.04	0.30				
Control Delay					50.2	15.1	109.7	0.5				
Queue Delay					0.0	0.0	0.0	0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay					50.2	15.1	109.7	0.5				
LOS					D	B	F	A				
Approach Delay					36.5			19.0				
Approach LOS					D			B				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 30 (33%), Referenced to phase 5:Hold, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 23.6		Intersection LOS: C	
Intersection Capacity Utilization 40.6%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Change 16			

Splits and Phases: 682: Kearny St. & Washington St.



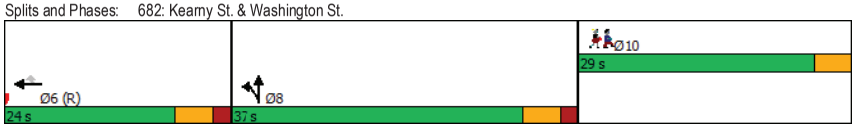
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	187	120	150	732	0	0	0	0
Future Volume (vph)	0	0	0	0	187	120	150	732	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			9%			0%			0%	
Storage Length (ft)	0		0	0		0	60		0	0		0
Storage Lanes	0		0	0		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor						0.98						
Frt						0.850						
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	1316	1118	1540	4259	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	1316	1092	1540	4259	0	0	0	0
Right Turn on Red			Yes			Yes	Yes		Yes			Yes
Satd. Flow (RTOR)						120	116					
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		242			210			384			381	
Travel Time (s)		8.3			7.2			13.1			13.0	
Confl. Peds. (#/hr)				184					681			
Confl. Bikes (#/hr)						10			10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	28	0	0	0	0
Parking (#/hr)	0	0	0	0	10	10				0	0	0
Adj. Flow (vph)	0	0	0	0	187	120	150	732	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	187	120	150	732	0	0	0	0
Turn Type					NA	Perm	Split	NA				
Protected Phases					6		8	8				
Permitted Phases						6						
Minimum Split (s)					19.0	19.0	15.0	15.0				
Total Split (s)					24.0	24.0	37.0	37.0				
Total Split (%)					26.7%	26.7%	41.1%	41.1%				
Yellow Time (s)					4.0	4.0	4.0	4.0				
All-Red Time (s)					2.0	2.0	2.0	2.0				
Lost Time Adjust (s)					0.0	0.0	0.0	0.0				
Total Lost Time (s)					6.0	6.0	6.0	6.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					18.0	18.0	31.0	31.0				
Actuated g/C Ratio					0.20	0.20	0.34	0.34				
v/c Ratio					0.71	0.38	0.25	0.50				
Control Delay					50.2	10.0	1.0	5.8				
Queue Delay					0.0	0.0	0.0	0.0				
Total Delay					50.2	10.0	1.0	5.8				
LOS					D	A	A	A				
Approach Delay					34.5			5.0				
Approach LOS					C			A				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					100	0	0	15				
Queue Length 95th (ft)					#197	46	m1	19				
Internal Link Dist (ft)		162			130			304			301	
Turn Bay Length (ft)							60					
Base Capacity (vph)					263	314	606	1466				
Starvation Cap Reductn					0	0	0	0				
Spillback Cap Reductn					0	0	0	0				
Storage Cap Reductn					0	0	0	0				
Reduced v/c Ratio					0.71	0.38	0.25	0.50				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 38 (42%), Referenced to phase 6:WBT, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 38.3%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Change 16			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 682: Kearny St. & Washington St.



APPENDIX B
Columbus/Green/Stockton
PM Peak Synchro Outputs

Lane Group	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	21	9	12	27	0	23	8	51	44	23	9	8
Future Volume (vph)	21	9	12	27	0	23	8	51	44	23	9	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.17				0.30					0.58		
Frt	0.865				0.940					0.983		
Flt Protected					0.973					0.966		
Satd. Flow (prot)	1402	0	0	0	884	0	0	0	0	1345	0	0
Flt Permitted					0.973					0.966		
Satd. Flow (perm)	236	0	0	0	444	0	0	0	0	837	0	0
Right Turn on Red		No					Yes					Yes
Satd. Flow (RTOR)					230					3		
Link Speed (mph)					30					30		
Link Distance (ft)					1065					812		
Travel Time (s)					24.2					18.5		
Confl. Peds. (#/hr)	333	333	333	333		333	333		333		333	333
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	0	0	0	0	0	0	0	15	15	15	15	15
Adj. Flow (vph)	23	10	13	29	0	25	9	55	48	25	10	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	0	0	0	76	0	0	0	0	147	0	0
Turn Type	Perm		Perm	Perm	NA			Perm	Perm	NA		
Protected Phases					8					4		
Permitted Phases	7		8	8				4	4			
Minimum Split (s)	24.0		12.0	12.0	12.0			19.0	19.0	19.0		
Total Split (s)	24.0		12.0	12.0	12.0			19.0	19.0	19.0		
Total Split (%)	26.7%		13.3%	13.3%	13.3%			21.1%	21.1%	21.1%		
Yellow Time (s)	4.0		4.0	4.0	4.0			4.0	4.0	4.0		
All-Red Time (s)	3.0		2.0	2.0	2.0			3.0	3.0	3.0		
Lost Time Adjust (s)	0.0				0.0					0.0		
Total Lost Time (s)	7.0				6.0					7.0		
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	17.0				6.0					12.0		
Actuated g/C Ratio	0.19				0.07					0.13		
v/c Ratio	0.75				0.31					1.29		
Control Delay	115.5				3.3					215.6		
Queue Delay	0.0				0.0					0.0		
Total Delay	115.5				3.3					215.6		
LOS	F				A					F		
Approach Delay					3.3					215.6		
Approach LOS					A					F		
Queue Length 50th (ft)	18				0					~107		
Queue Length 95th (ft)	#74				0					#228		
Internal Link Dist (ft)					985					732		
Turn Bay Length (ft)												
Base Capacity (vph)	44				244					114		

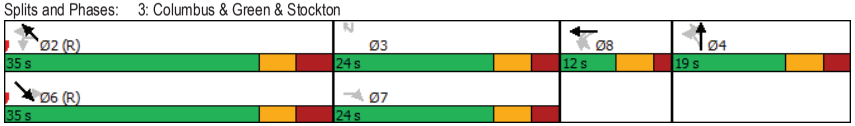
Lane Group	SBR2	SEL	SET	SER	SER2	NWL2	NWT	NWR	NWR2
Lane Configurations									
Traffic Volume (vph)	30	7	260	89	14	3	457	63	16
Future Volume (vph)	30	7	260	89	14	3	457	63	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor	0.63		0.81				0.90		
Frt	0.865		0.958				0.978		
Flt Protected			0.999						
Satd. Flow (prot)	1402	0	2400	0	0	0	2665	0	0
Flt Permitted			0.938				0.952		
Satd. Flow (perm)	879	0	2254	0	0	0	2533	0	0
Right Turn on Red	Yes				Yes				Yes
Satd. Flow (RTOR)	275		4				3		
Link Speed (mph)			30				30		
Link Distance (ft)			1265				1159		
Travel Time (s)			28.8				26.3		
Confl. Peds. (#/hr)	333			333	333	333		333	333
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	0	0	0	0	0	0	10	10	10
Adj. Flow (vph)	33	8	283	97	15	3	497	68	17
Shared Lane Traffic (%)									
Lane Group Flow (vph)	33	0	403	0	0	0	585	0	0
Turn Type	Perm	Perm	NA			Perm	NA		
Protected Phases			6				2		
Permitted Phases	3	6				2			
Minimum Split (s)	24.0	35.0	35.0			35.0	35.0		
Total Split (s)	24.0	35.0	35.0			35.0	35.0		
Total Split (%)	26.7%	38.9%	38.9%			38.9%	38.9%		
Yellow Time (s)	4.0	4.0	4.0			4.0	4.0		
All-Red Time (s)	3.0	4.0	4.0			4.0	4.0		
Lost Time Adjust (s)	0.0		0.0				0.0		
Total Lost Time (s)	7.0		8.0				8.0		
Lead/Lag									
Lead-Lag Optimize?									
Act Effct Green (s)	17.0		27.0				27.0		
Actuated g/C Ratio	0.19		0.30				0.30		
v/c Ratio	0.08		0.59				0.77		
Control Delay	0.4		30.9				36.5		
Queue Delay	0.0		0.0				0.0		
Total Delay	0.4		30.9				36.5		
LOS	A		C				D		
Approach Delay			30.9				36.5		
Approach LOS			C				D		
Queue Length 50th (ft)	0		101				157		
Queue Length 95th (ft)	0		151				222		
Internal Link Dist (ft)			1185				1079		
Turn Bay Length (ft)									
Base Capacity (vph)	389		679				762		

Lane Group	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	NBR2
Starvation Cap Reductn	0				0					0		
Spillback Cap Reductn	0				0					0		
Storage Cap Reductn	0				0					0		
Reduced v/c Ratio	0.75				0.31					1.29		

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 45 (50%), Referenced to phase 2:NWTL and 6:SETL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 54.4		Intersection LOS: D	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Columbus & Green & Stockton



Lane Group	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	21	9	12	27	0	23	8	51	44	23	9	8
Future Volume (vph)	21	9	12	27	0	23	8	51	44	23	9	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865				0.940					0.983		
Flt Protected					0.973					0.966		
Satd. Flow (prot)	1402	0	0	0	1482	0	0	0	0	1447	0	0
Flt Permitted					0.973					0.966		
Satd. Flow (perm)	1402	0	0	0	1482	0	0	0	0	1447	0	0
Right Turn on Red		No					Yes					Yes
Satd. Flow (RTOR)					339					3		
Link Speed (mph)					30					30		
Link Distance (ft)					1065					812		
Travel Time (s)					24.2					18.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	0	0	0	0	0	0	0	15	15	15	15	15
Adj. Flow (vph)	23	10	13	29	0	25	9	55	48	25	10	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	0	0	0	76	0	0	0	0	147	0	0
Turn Type	Perm		Perm	Perm	NA			Perm	Perm	NA		
Protected Phases					8					4		
Permitted Phases	7		8	8				4	4			
Detector Phase	7		8	8	8			4	4	4		
Switch Phase												
Minimum Initial (s)	5.0		1.0	1.0	1.0			1.0	1.0	1.0		
Minimum Split (s)	13.0		13.0	13.0	13.0			14.0	14.0	14.0		
Total Split (s)	13.0		13.0	13.0	13.0			14.0	14.0	14.0		
Total Split (%)	14.4%		14.4%	14.4%	14.4%			15.6%	15.6%	15.6%		
Yellow Time (s)	4.0		4.0	4.0	4.0			4.0	4.0	4.0		
All-Red Time (s)	3.0		3.0	3.0	3.0			4.0	4.0	4.0		
Lost Time Adjust (s)	0.0				0.0					0.0		
Total Lost Time (s)	7.0				7.0					8.0		
Lead/Lag								Lead	Lead	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	Max		Max	Max	Max			Max	Max	Max		
Act Effct Green (s)	6.0				6.0					6.0		
Actuated g/C Ratio	0.07				0.07					0.07		
v/c Ratio	0.35				0.18					1.48		
Control Delay	51.2				1.0					296.6		
Queue Delay	0.0				0.0					0.0		
Total Delay	51.2				1.0					296.6		
LOS	D				A					F		
Approach Delay					1.0					296.6		
Approach LOS					A					F		

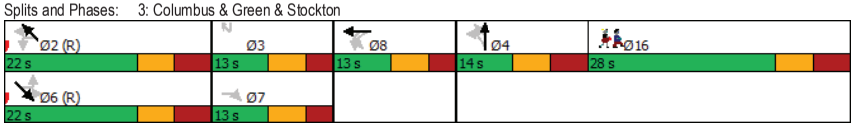
Intersection Summary	
Area Type:	CBD

Lane Group	SBR2	SEL2	SEL	SET	SER	SER2	NWL2	NWT	NWR	NWR2	Ø16
Lane Configurations											
Traffic Volume (vph)	30	1	7	260	89	14	3	457	63	16	
Future Volume (vph)	30	1	7	260	89	14	3	457	63	16	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Frt	0.865			0.958				0.978			
Flt Protected				0.999							
Satd. Flow (prot)	1402	0	0	2947	0	0	0	3011	0	0	
Flt Permitted				0.746				0.951			
Satd. Flow (perm)	1402	0	0	2201	0	0	0	2864	0	0	
Right Turn on Red	Yes					Yes				Yes	
Satd. Flow (RTOR)	622			4				3			
Link Speed (mph)				30				30			
Link Distance (ft)				1265				1159			
Travel Time (s)				28.8				26.3			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	
Adj. Flow (vph)	33	1	8	283	97	15	3	497	68	17	
Shared Lane Traffic (%)											
Lane Group Flow (vph)	33	0	0	404	0	0	0	585	0	0	
Turn Type	Perm	Perm	Perm	NA			Perm	NA			
Protected Phases				6				2			16
Permitted Phases	3	6	6				2				
Detector Phase	3	6	6	6			2	2			
Switch Phase											
Minimum Initial (s)	3.0	5.0	5.0	5.0			5.0	5.0			5.0
Minimum Split (s)	13.0	22.0	22.0	22.0			22.0	22.0			28.0
Total Split (s)	13.0	22.0	22.0	22.0			22.0	22.0			28.0
Total Split (%)	14.4%	24.4%	24.4%	24.4%			24.4%	24.4%			31%
Yellow Time (s)	4.0	4.0	4.0	4.0			4.0	4.0			4.0
All-Red Time (s)	3.0	4.0	4.0	4.0			4.0	4.0			4.0
Lost Time Adjust (s)	0.0			0.0				0.0			
Total Lost Time (s)	7.0			8.0				8.0			
Lead/Lag											Lag
Lead-Lag Optimize?											
Recall Mode	Max	C-Max	C-Max	C-Max			C-Max	C-Max			Max
Act Effct Green (s)	6.0			14.0				14.0			
Actuated g/C Ratio	0.07			0.16				0.16			
v/c Ratio	0.05			1.17				1.31			
Control Delay	0.1			139.2				186.2			
Queue Delay	0.0			0.0				0.0			
Total Delay	0.1			139.2				186.2			
LOS	A			F				F			
Approach Delay				139.2				186.2			
Approach LOS				F				F			

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 45 (50%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.48	
Intersection Signal Delay: 164.7	Intersection LOS: F
Intersection Capacity Utilization 61.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Columbus & Green & Stockton



Lane Group	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	21	9	12	27	0	23	8	51	44	23	9	8
Future Volume (vph)	21	9	12	27	0	23	8	51	44	23	9	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.10				0.30					0.58		
Frt	0.865				0.940					0.983		
Flt Protected					0.973					0.966		
Satd. Flow (prot)	1402	0	0	0	884	0	0	0	0	1345	0	0
Flt Permitted					0.973					0.966		
Satd. Flow (perm)	137	0	0	0	444	0	0	0	0	837	0	0
Right Turn on Red		No					Yes					Yes
Satd. Flow (RTOR)					279					3		
Link Speed (mph)					30					30		
Link Distance (ft)					1065					812		
Travel Time (s)					24.2					18.5		
Confl. Peds. (#/hr)	333	333	333	333		333	333		333		333	333
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	0	0	0	0	0	0	0	15	15	15	15	15
Adj. Flow (vph)	23	10	13	29	0	25	9	55	48	25	10	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	0	0	0	76	0	0	0	0	147	0	0
Turn Type	Perm		Perm	Perm	NA			Perm	Perm	NA		
Protected Phases					8					4		
Permitted Phases	7		8	8				4	4			
Minimum Split (s)	16.0		17.0	17.0	17.0			19.0	19.0	19.0		
Total Split (s)	16.0		13.0	13.0	13.0			19.0	19.0	19.0		
Total Split (%)	17.8%		14.4%	14.4%	14.4%			21.1%	21.1%	21.1%		
Yellow Time (s)	4.0		4.0	4.0	4.0			4.0	4.0	4.0		
All-Red Time (s)	2.0		3.0	3.0	3.0			2.0	2.0	2.0		
Lost Time Adjust (s)	0.0				0.0					0.0		
Total Lost Time (s)	6.0				7.0					6.0		
Lead/Lag	Lag		Lag	Lag	Lag							
Lead-Lag Optimize?	Yes		Yes	Yes	Yes							
Act Effct Green (s)	10.0				6.0					13.0		
Actuated g/C Ratio	0.11				0.07					0.14		
v/c Ratio	2.20				0.26					1.20		
Control Delay	732.1				2.2					179.3		
Queue Delay	0.0				0.0					0.0		
Total Delay	732.1				2.2					179.3		
LOS	F				A					F		
Approach Delay					2.2					179.3		
Approach LOS					A					F		
Queue Length 50th (ft)	~30				0					~101		
Queue Length 95th (ft)	#91				0					#222		
Internal Link Dist (ft)					985					732		
Turn Bay Length (ft)												
Base Capacity (vph)	15				290					123		

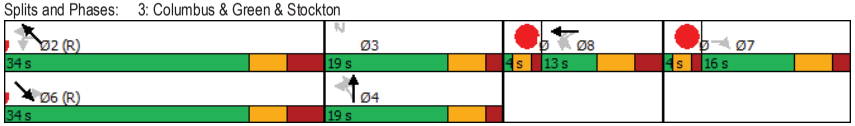
Lane Group	SBR2	SEL	SET	SER	SER2	NWL2	NWT	NWR	NWR2	Ø1	Ø5
Lane Configurations											
Traffic Volume (vph)	30	7	260	89	14	3	457	63	16		
Future Volume (vph)	30	7	260	89	14	3	457	63	16		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	11	11	11	11	11	11	11	11	11		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Ped Bike Factor	0.56		0.81				0.90				
Frt	0.865		0.958				0.978				
Flt Protected			0.999								
Satd. Flow (prot)	1402	0	2400	0	0	0	2719	0	0		
Flt Permitted			0.937				0.952				
Satd. Flow (perm)	781	0	2251	0	0	0	2585	0	0		
Right Turn on Red	Yes				Yes				Yes		
Satd. Flow (RTOR)	391		4				3				
Link Speed (mph)			30				30				
Link Distance (ft)			1265				1159				
Travel Time (s)			28.8				26.3				
Confl. Peds. (#/hr)	333			333	333	333		333	333		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0		
Adj. Flow (vph)	33	8	283	97	15	3	497	68	17		
Shared Lane Traffic (%)											
Lane Group Flow (vph)	33	0	403	0	0	0	585	0	0		
Turn Type	Perm	Perm	NA			Perm	NA				
Protected Phases			6				2			1	5
Permitted Phases	3	6				2					
Minimum Split (s)	19.0	34.0	34.0			34.0	34.0			4.0	4.0
Total Split (s)	19.0	34.0	34.0			34.0	34.0			4.0	4.0
Total Split (%)	21.1%	37.8%	37.8%			37.8%	37.8%			4%	4%
Yellow Time (s)	4.0	4.0	4.0			4.0	4.0			2.0	2.0
All-Red Time (s)	2.0	4.0	4.0			4.0	4.0			1.0	1.0
Lost Time Adjust (s)	0.0		0.0				0.0				
Total Lost Time (s)	6.0		8.0				8.0				
Lead/Lag										Lead	Lead
Lead-Lag Optimize?										Yes	Yes
Act Effct Green (s)	13.0		26.0				26.0				
Actuated g/C Ratio	0.14		0.29				0.29				
v/c Ratio	0.07		0.62				0.78				
Control Delay	0.3		32.3				37.9				
Queue Delay	0.0		0.0				0.0				
Total Delay	0.3		32.3				37.9				
LOS	A		C				D				
Approach Delay			32.3				37.9				
Approach LOS			C				D				
Queue Length 50th (ft)	0		103				159				
Queue Length 95th (ft)	0		153				#226				
Internal Link Dist (ft)			1185				1079				
Turn Bay Length (ft)											
Base Capacity (vph)	447		653				748				

Lane Group	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	NBR2
Starvation Cap Reductn	0				0					0		
Spillback Cap Reductn	0				0					0		
Storage Cap Reductn	0				0					0		
Reduced v/c Ratio	2.20				0.26					1.20		

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 45 (50%), Referenced to phase 2:NWTL and 6:SETL, Start of Green			
Natural Cycle: 105			
Control Type: Pretimed			
Maximum v/c Ratio: 2.20			
Intersection Signal Delay: 67.3		Intersection LOS: E	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Columbus & Green & Stockton



APPENDIX C
Kearny Dual-Turn Lanes
PM Peak Synchro Outputs

Lanes, Volumes, Timings
Kearny St. & Post St.

04/09/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	491	0	0	0	0	0	1499	64	0	0	0
Future Volume (vph)	173	491	0	0	0	0	0	1499	64	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	1.00	1.00
Ped Bike Factor	0.46	0.94						0.98				
Frt								0.994				
Flt Protected	0.950	0.995										
Satd. Flow (prot)	1401	2715	0	0	0	0	0	5261	0	0	0	0
Flt Permitted	0.950	0.995										
Satd. Flow (perm)	644	2562	0	0	0	0	0	5261	0	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	124	124						15				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		465			208			380			362	
Travel Time (s)		12.7			5.7			10.4			9.9	
Confl. Peds. (#/hr)	894		1241				1427		1462			
Confl. Bikes (#/hr)			30						10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	29	0	0	0	0
Parking (#/hr)		10	10	0	0	0				0	0	0
Adj. Flow (vph)	173	491	0	0	0	0	0	1499	64	0	0	0
Shared Lane Traffic (%)	33%											
Lane Group Flow (vph)	116	548	0	0	0	0	0	1563	0	0	0	0
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Minimum Split (s)	18.0	18.0						16.0				
Total Split (s)	25.0	25.0						41.0				
Total Split (%)	33.3%	33.3%						54.7%				
Yellow Time (s)	4.0	4.0						4.0				
All-Red Time (s)	1.5	1.5						1.5				
Lost Time Adjust (s)	0.0	0.0						0.0				
Total Lost Time (s)	5.5	5.5						5.5				
Lead/Lag	Lag	Lag						Lag				
Lead-Lag Optimize?												
Act Effct Green (s)	19.5	19.5						35.5				
Actuated g/C Ratio	0.26	0.26						0.47				
v/c Ratio	0.45	0.72						0.63				
Control Delay	7.2	15.1						16.0				
Queue Delay	0.0	0.0						0.0				
Total Delay	7.2	15.1						16.0				
LOS	A	B						B				
Approach Delay		13.7						16.0				
Approach LOS		B						B				
Queue Length 50th (ft)	1	62						148				
Queue Length 95th (ft)	m9	m112						185				
Internal Link Dist (ft)		385			128			300			282	
Turn Bay Length (ft)												

Lanes, Volumes, Timings
Kearny St. & Post St.

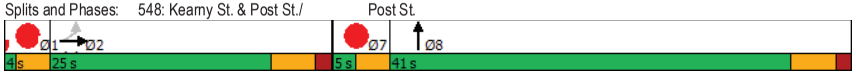
04/09/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	259	757						2498				
Starvation Cap Reductn	0	0						0				
Spillback Cap Reductn	0	0						0				
Storage Cap Reductn	0	0						0				
Reduced v/c Ratio	0.45	0.72						0.63				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 2 (3%), Referenced to phase 1:Hold, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 48.8%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Change 24			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 548: Kearny St. & Post St./ Post St.



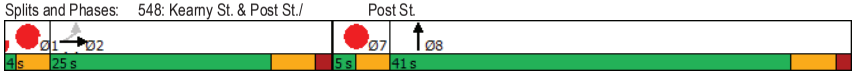
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	491	0	0	0	0	0	1499	64	0	0	0
Future Volume (vph)	173	491	0	0	0	0	0	1499	64	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	1.00	1.00
Ped Bike Factor		0.86						0.98				
Frt								0.994				
Flt Protected		0.987										
Satd. Flow (prot)	0	2811	0	0	0	0	0	5261	0	0	0	0
Flt Permitted		0.987										
Satd. Flow (perm)	0	2416	0	0	0	0	0	5261	0	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		124						15				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		465			208			380			362	
Travel Time (s)		12.7			5.7			10.4			9.9	
Confl. Peds. (#/hr)	894		1241				1427		1462			
Confl. Bikes (#/hr)			30						10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	29	0	0	0	0
Parking (#/hr)		10	10	0	0	0				0	0	0
Adj. Flow (vph)	173	491	0	0	0	0	0	1499	64	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	664	0	0	0	0	0	1563	0	0	0	0
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Minimum Split (s)	18.0	18.0						16.0				
Total Split (s)	25.0	25.0						41.0				
Total Split (%)	33.3%	33.3%						54.7%				
Yellow Time (s)	4.0	4.0						4.0				
All-Red Time (s)	1.5	1.5						1.5				
Lost Time Adjust (s)		0.0						0.0				
Total Lost Time (s)		5.5						5.5				
Lead/Lag	Lag	Lag						Lag				
Lead-Lag Optimize?												
Act Effct Green (s)		19.5						35.5				
Actuated g/C Ratio		0.26						0.47				
v/c Ratio		0.92						0.63				
Control Delay		32.1						16.0				
Queue Delay		0.0						0.0				
Total Delay		32.1						16.0				
LOS		C						B				
Approach Delay		32.1						16.0				
Approach LOS		C						B				
Queue Length 50th (ft)		98						148				
Queue Length 95th (ft)		m#220						185				
Internal Link Dist (ft)		385			128			300			282	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		719						2498				
Starvation Cap Reductn		0						0				
Spillback Cap Reductn		0						0				
Storage Cap Reductn		0						0				
Reduced v/c Ratio		0.92						0.63				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 2 (3%), Referenced to phase 1:Hold, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 55.7%		ICU Level of Service B	
Analysis Period (min) 15			
Description: Change 24			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 548: Kearny St. & Post St./ Post St.



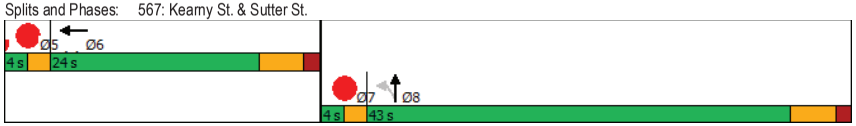
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	332	116	292	996	0	0	0	0
Future Volume (vph)	0	0	0	0	332	116	292	996	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	0.91	0.81	0.81	1.00	1.00	1.00	1.00
Ped Bike Factor					0.86		0.46	0.97				
Frt					0.961							
Flt Protected							0.950	0.997				
Satd. Flow (prot)	0	0	0	0	3653	0	1247	5120	0	0	0	0
Flt Permitted							0.950	0.997				
Satd. Flow (perm)	0	0	0	0	3653	0	574	4953	0	0	0	0
Right Turn on Red			Yes			Yes	Yes		Yes			Yes
Satd. Flow (RTOR)					105		194	95				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			447			362			330	
Travel Time (s)		12.8			12.2			9.9			9.0	
Confl. Peds. (#/hr)				848		867	1391		1383			
Confl. Bikes (#/hr)						30			10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	22	0	0	0	0
Parking (#/hr)	0	0	0							0	0	0
Adj. Flow (vph)	0	0	0	0	332	116	292	996	0	0	0	0
Shared Lane Traffic (%)							22%					
Lane Group Flow (vph)	0	0	0	0	448	0	228	1060	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Minimum Split (s)					18.0		15.0	15.0				
Total Split (s)					24.0		43.0	43.0				
Total Split (%)					32.0%		57.3%	57.3%				
Yellow Time (s)					4.0		4.0	4.0				
All-Red Time (s)					1.5		1.5	1.5				
Lost Time Adjust (s)					0.0		0.0	0.0				
Total Lost Time (s)					5.5		5.5	5.5				
Lead/Lag					Lag		Lag	Lag				
Lead-Lag Optimize?												
Act Effct Green (s)					18.5		37.5	37.5				
Actuated g/C Ratio					0.25		0.50	0.50				
v/c Ratio					0.46		0.59	0.42				
Control Delay					9.5		8.8	1.5				
Queue Delay					0.0		0.0	0.0				
Total Delay					9.5		8.8	1.5				
LOS					A		A	A				
Approach Delay					9.5			2.8				
Approach LOS					A			A				
Queue Length 50th (ft)					41		14	6				
Queue Length 95th (ft)					69		m101	9				
Internal Link Dist (ft)		388			367			282			250	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)					980		384	2524				
Starvation Cap Reductn					0		0	0				
Spillback Cap Reductn					0		0	0				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.46		0.59	0.42				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 14 (19%), Referenced to phase 5:Hold, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 4.5		Intersection LOS: A	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			
Description: Change 20			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 567: Kearny St. & Sutter St.



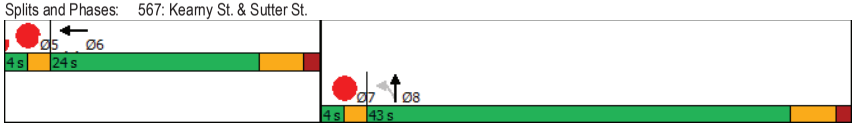
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	332	116	292	996	0	0	0	0
Future Volume (vph)	0	0	0	0	332	116	292	996	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor					0.86		0.46					
Frt					0.961							
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	3653	0	1540	4294	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	3653	0	708	4294	0	0	0	0
Right Turn on Red			Yes			Yes	Yes		Yes			Yes
Satd. Flow (RTOR)					105		194					
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			447			362			330	
Travel Time (s)		12.8			12.2			9.9			9.0	
Confl. Peds. (#/hr)				848		867	1391		1383			
Confl. Bikes (#/hr)						30			10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	22	0	0	0	0
Parking (#/hr)	0	0	0							0	0	0
Adj. Flow (vph)	0	0	0	0	332	116	292	996	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	448	0	292	996	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Minimum Split (s)					18.0		15.0	15.0				
Total Split (s)					24.0		43.0	43.0				
Total Split (%)					32.0%		57.3%	57.3%				
Yellow Time (s)					4.0		4.0	4.0				
All-Red Time (s)					1.5		1.5	1.5				
Lost Time Adjust (s)					0.0		0.0	0.0				
Total Lost Time (s)					5.5		5.5	5.5				
Lead/Lag					Lag		Lag	Lag				
Lead-Lag Optimize?												
Act Effct Green (s)					18.5		37.5	37.5				
Actuated g/C Ratio					0.25		0.50	0.50				
v/c Ratio					0.46		0.65	0.46				
Control Delay					9.5		8.9	2.9				
Queue Delay					0.0		0.0	0.0				
Total Delay					9.5		8.9	2.9				
LOS					A		A	A				
Approach Delay					9.5			4.3				
Approach LOS					A			A				
Queue Length 50th (ft)					41		18	18				
Queue Length 95th (ft)					69		m86	m22				
Internal Link Dist (ft)		388			367			282			250	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)					980		451	2147				
Starvation Cap Reductn					0		0	0				
Spillback Cap Reductn					0		0	0				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.46		0.65	0.46				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 14 (19%), Referenced to phase 5:Hold, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 78.0%		ICU Level of Service D	
Analysis Period (min) 15			
Description: Change 20			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 567: Kearny St. & Sutter St.



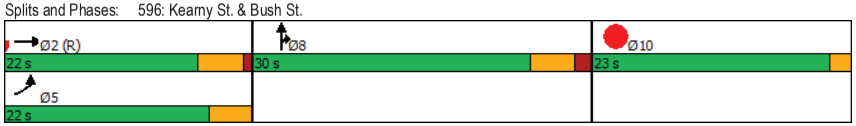
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	328	655	0	0	0	0	0	1120	134	0	0	0
Future Volume (vph)	328	655	0	0	0	0	0	1120	134	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			0%			0%			0%	
Storage Length (ft)	50		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.86	0.86	1.00	1.00	1.00	1.00	1.00	0.86	1.00	1.00	1.00	1.00
Ped Bike Factor	0.56	0.96										
Frt									0.850			
Flt Protected	0.950	0.996										
Satd. Flow (prot)	1096	4023	0	0	0	0	0	5474	1378	0	0	0
Flt Permitted	0.950	0.996										
Satd. Flow (perm)	613	3876	0	0	0	0	0	5474	1378	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	234	65							134			
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		479			463			330			336	
Travel Time (s)		10.9			10.5			9.0			9.2	
Confl. Peds. (#/hr)	805		989				1189		1347			
Confl. Bikes (#/hr)			10						10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	18	0	0	0	0
Parking (#/hr)	20	20	20	0	0	0				0	0	0
Adj. Flow (vph)	328	655	0	0	0	0	0	1120	134	0	0	0
Shared Lane Traffic (%)	18%											
Lane Group Flow (vph)	269	714	0	0	0	0	0	1120	134	0	0	0
Turn Type	Prot	NA						NA	Prot			
Protected Phases	5	2						8	8			
Permitted Phases												
Minimum Split (s)	8.0	17.0						18.0	18.0			
Total Split (s)	22.0	22.0						30.0	30.0			
Total Split (%)	29.3%	29.3%						40.0%	40.0%			
Yellow Time (s)	4.0	4.0						4.0	4.0			
All-Red Time (s)	0.0	1.0						1.5	1.5			
Lost Time Adjust (s)	0.0	0.0						0.0	0.0			
Total Lost Time (s)	4.0	5.0						5.5	5.5			
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	18.0	17.0						24.5	24.5			
Actuated g/C Ratio	0.24	0.23						0.33	0.33			
v/c Ratio	0.61	0.74						0.63	0.25			
Control Delay	7.3	14.6						13.5	1.6			
Queue Delay	0.0	0.0						0.0	0.0			
Total Delay	7.3	14.6						13.5	1.6			
LOS	A	B						B	A			
Approach Delay		12.6						12.2				
Approach LOS		B						B				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	29	63						89	0			
Queue Length 95th (ft)	m32	m120						111	1			
Internal Link Dist (ft)		399			383			250			256	
Turn Bay Length (ft)	50											
Base Capacity (vph)	440	962						1788	540			
Starvation Cap Reductn	0	0						0	0			
Spillback Cap Reductn	0	0						0	0			
Storage Cap Reductn	0	0						0	0			
Reduced v/c Ratio	0.61	0.74						0.63	0.25			

Intersection Summary			
Area Type:	CBD		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 38 (51%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 48.7%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Change 23			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 596: Kearny St. & Bush St.

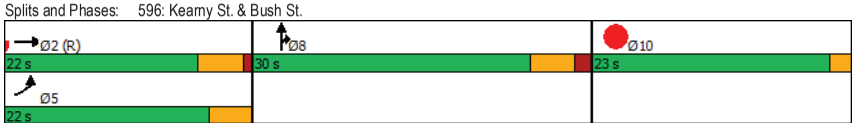


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	328	655	0	0	0	0	0	1120	134	0	0	0
Future Volume (vph)	328	655	0	0	0	0	0	1120	134	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			0%			0%			0%	
Storage Length (ft)	50		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor		0.85										
Frt									0.850			
Flt Protected		0.984										
Satd. Flow (prot)	0	4205	0	0	0	0	0	4318	1378	0	0	0
Flt Permitted		0.984										
Satd. Flow (perm)	0	3586	0	0	0	0	0	4318	1378	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		155							134			
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		479			463			330			336	
Travel Time (s)		10.9			10.5			9.0			9.2	
Confl. Peds. (#/hr)	805		989				1189		1347			
Confl. Bikes (#/hr)			10						10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bus Blockages (#/hr)	0	0	0	0	0	0	0	18	0	0	0	0
Parking (#/hr)	20	20	20	0	0	0				0	0	0
Adj. Flow (vph)	328	655	0	0	0	0	0	1120	134	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	983	0	0	0	0	0	1120	134	0	0	0
Turn Type	Prot	NA						NA	Prot			
Protected Phases	5	2						8	8			
Permitted Phases												
Minimum Split (s)	8.0	17.0						18.0	18.0			
Total Split (s)	22.0	22.0						30.0	30.0			
Total Split (%)	29.3%	29.3%						40.0%	40.0%			
Yellow Time (s)	4.0	4.0						4.0	4.0			
All-Red Time (s)	0.0	1.0						1.5	1.5			
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		5.0						5.5	5.5			
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		17.0						24.5	24.5			
Actuated g/C Ratio		0.23						0.33	0.33			
v/c Ratio		0.92						0.79	0.25			
Control Delay		21.1						17.3	1.7			
Queue Delay		0.0						0.0	0.0			
Total Delay		21.1						17.3	1.7			
LOS		C						B	A			
Approach Delay		21.1						15.6				
Approach LOS		C						B				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		86						165	0			
Queue Length 95th (ft)		#210						200	0			
Internal Link Dist (ft)		399			383			250			256	
Turn Bay Length (ft)												
Base Capacity (vph)		1073						1410	540			
Starvation Cap Reductn		0						0	0			
Spillback Cap Reductn		0						0	0			
Storage Cap Reductn		0						0	0			
Reduced v/c Ratio		0.92						0.79	0.25			

Intersection Summary			
Area Type:	CBD		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 38 (51%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Change 23			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 596: Kearny St. & Bush St.



Lanes, Volumes, Timings
Kearny St. & Pine St.

04/09/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1097	136	392	1011	0	0	0	0
Future Volume (vph)	0	0	0	0	1097	136	392	1011	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			6%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.86	0.86	0.81	0.81	1.00	1.00	1.00	1.00
Ped Bike Factor					0.96		0.46					
Frt					0.983							
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	4828	0	1122	5054	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	4828	0	516	5054	0	0	0	0
Right Turn on Red			Yes			Yes	Yes		Yes			Yes
Satd. Flow (RTOR)					45		144					
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		463			476			336			389	
Travel Time (s)		10.5			10.8			9.2			10.6	
Confl. Peds. (#/hr)				299		441	956		1201			
Confl. Bikes (#/hr)						10			10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Parking (#/hr)	0	0	0	0	20	0	0	10		0	0	0
Adj. Flow (vph)	0	0	0	0	1097	136	392	1011	0	0	0	0
Shared Lane Traffic (%)							0%					
Lane Group Flow (vph)	0	0	0	0	1233	0	392	1011	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Minimum Split (s)					19.0		17.0	17.0				
Total Split (s)					32.0		35.0	35.0				
Total Split (%)					42.7%		46.7%	46.7%				
Yellow Time (s)					4.0		4.0	4.0				
All-Red Time (s)					1.5		1.5	1.5				
Lost Time Adjust (s)					0.0		0.0	0.0				
Total Lost Time (s)					5.5		5.5	5.5				
Lead/Lag					Lag		Lag	Lag				
Lead-Lag Optimize?												
Act Effct Green (s)					26.5		29.5	29.5				
Actuated g/C Ratio					0.35		0.39	0.39				
v/c Ratio					0.71		1.35	0.51				
Control Delay					8.5		193.7	8.9				
Queue Delay					0.0		0.0	0.0				
Total Delay					8.5		193.7	8.9				
LOS					A		F	A				
Approach Delay					8.5			60.5				
Approach LOS					A			E				
Queue Length 50th (ft)					19		~275	68				
Queue Length 95th (ft)					m13		m#479	75				
Internal Link Dist (ft)		383			396			256			309	
Turn Bay Length (ft)												

Lanes, Volumes, Timings
Kearny St. & Pine St.

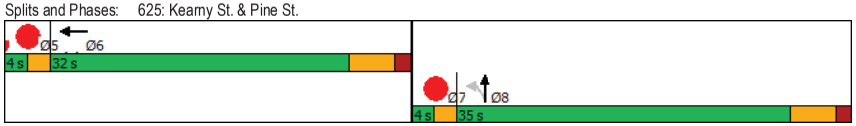
04/09/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)					1734		290	1987				
Starvation Cap Reductn					0		0	0				
Spillback Cap Reductn					0		0	0				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.71		1.35	0.51				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 33 (44%), Referenced to phase 5:Hold, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 1.35			
Intersection Signal Delay: 36.2		Intersection LOS: D	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			
Description: Change 19			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 625: Kearny St. & Pine St.



Lanes, Volumes, Timings
Kearny St. & Pine St.

04/09/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1097	136	392	1011	0	0	0	0
Future Volume (vph)	0	0	0	0	1097	136	392	1011	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			6%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.86	0.86	0.86	0.86	1.00	1.00	1.00	1.00
Ped Bike Factor					0.96			0.85				
Frt					0.983							
Flt Protected								0.986				
Satd. Flow (prot)	0	0	0	0	4828	0	0	5291	0	0	0	0
Flt Permitted								0.986				
Satd. Flow (perm)	0	0	0	0	4828	0	0	4492	0	0	0	0
Right Turn on Red			Yes			Yes	Yes		Yes			Yes
Satd. Flow (RTOR)					45			144				
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		463			476			336			389	
Travel Time (s)		10.5			10.8			9.2			10.6	
Confl. Peds. (#/hr)				299		441	956		1201			
Confl. Bikes (#/hr)						10			10			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Parking (#/hr)	0	0	0	0	20	0	0	10		0	0	0
Adj. Flow (vph)	0	0	0	0	1097	136	392	1011	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1233	0	0	1403	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Minimum Split (s)					19.0		17.0	17.0				
Total Split (s)					32.0		35.0	35.0				
Total Split (%)					42.7%		46.7%	46.7%				
Yellow Time (s)					4.0		4.0	4.0				
All-Red Time (s)					1.5		1.5	1.5				
Lost Time Adjust (s)					0.0			0.0				
Total Lost Time (s)					5.5			5.5				
Lead/Lag					Lag		Lag	Lag				
Lead-Lag Optimize?												
Act Effct Green (s)					26.5			29.5				
Actuated g/C Ratio					0.35			0.39				
v/c Ratio					0.71			0.76				
Control Delay					8.5			10.6				
Queue Delay					0.0			0.1				
Total Delay					8.5			10.7				
LOS					A			B				
Approach Delay					8.5			10.7				
Approach LOS					A			B				
Queue Length 50th (ft)					19			191				
Queue Length 95th (ft)					m13			m188				
Internal Link Dist (ft)		383			396			256			309	
Turn Bay Length (ft)												

Lanes, Volumes, Timings
Kearny St. & Pine St.

04/09/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)					1734			1854				
Starvation Cap Reductn					0			28				
Spillback Cap Reductn					0			0				
Storage Cap Reductn					0			0				
Reduced v/c Ratio					0.71			0.77				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 33 (44%), Referenced to phase 5:Hold, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Change 19			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 625: Kearny St. & Pine St.