CITY OF OAKLAND

AGENDA REPORT

TO:	Sabrina B. Landreth City Administrator	**FROM:**	Ryan Russo Director, OakDOT
SUBJECT:	Transit Priority on Broadway	**DATE:**	August 26, 2019

City Administrator Approval Date: 9/12/19

RECOMMENDATION

Staff Recommends That The City Council Adopt a Resolution 1) Supporting Transit Travel Time Improvements Through Dedicated Transit Only Lanes on Broadway from 11th Street to 20th Street; 2) Adopting California Environmental Quality Act Exemption Findings; and 3) Authorizing the City Administrator or Designee to Receive Allocated Funds from Alameda County Transportation Commission for the Study and Operations of the Broadway Shuttle and for the Design and Construction of Pavement Rehabilitation, Transit Only Lanes, and Pedestrian Safety Improvements on Broadway Between 11th Street and 20th Street.

EXECUTIVE SUMMARY

Adding dedicated bus lanes to Broadway between 11th and 20th Streets in downtown Oakland will result in up to 30% travel time savings and 20% travel time reliability improvements for bus transit. Bus service on Broadway connects to all parts of the AC Transit system; therefore, improvements to bus service on Broadway will benefit the majority of AC Transit riders, including those whose origins or destinations are in East Oakland, North Oakland, West Oakland, and regional destinations countywide. Full funding for paving, red painted transit lanes, and painted pedestrian bulb-outs is available through Alameda County Transportation Commission's Measure BB Transportation Expenditure Plan, which set aside funding for transit improvements on Broadway.

Approval of this resolution will enable implementation of this 2019 3-Year Paving Plan (3YP) street including major transit travel time and reliability improvements as early as fall 2019 and will ensure that construction is coordinated with the ongoing East Bay Bus Rapid Transit project to minimize construction impacts to businesses and residents in downtown Oakland. Additionally, approval of this resolution will enable the City to seek limited-term funding for continued operations of the Broadway shuttle.

Item: _____
Public Works Committee
September 24, 2019

BACKGROUND / LEGISLATIVE HISTORY

In 1996, Oakland adopted a visionary Transit First Policy (Resolution No. 73036 C.M.S.), which established transit as a priority mode of transportation and links increased transit ridership to important city goals related to social equity and the environment. It also identifies the importance of priority transit treatments like bus bulbs, transit signal priority, and dedicated bus lanes. These elements have been identified as recommended treatments for Broadway in numerous plans and strategies (**Table 1**). In addition, dedicated transit lanes on Broadway are a central recommendation within the transportation element of the in-progress Downtown Oakland Specific Plan, slated for final approval in 2020.

Table 1: Related Policy and Plans

Policy or Plan Title	Year Approved
City of Oakland Transit-First Policy	1996
Oakland General Plan, Land Use and Transportation Element	1998
International Boulevard Transit-Oriented Development Plan	2011
City of Oakland Energy and Climate Action Plan	2012
City of Oakland Complete Streets Policy	2013
Broadway Transit Circulator Study	2014
AC Transit Major Corridors Study	2015
Alameda County Transportation Commission Countywide Transit Plan	2015
Alameda County Transportation Commission Multimodal Arterial Corridor Plan	2015
Oakland Department of Transportation Strategic Plan	2016
Downtown Oakland Specific Plan	2020 (Anticipated)

Finally, Broadway (Embarcadero to Grand Avenue) is prioritized for pavement rehabilitation through the 2019 3-Year Paving Plan (Resolution No. 87673 C.M.S.). This means that at some point in the next three years, the Department of Transportation will need to disrupt traffic on Broadway for substantial pavement rehabilitation.

ANALYSIS AND POLICY ALTERNATIVES

Why Bus Lanes Are Important

Bus lanes are important because bus lanes ensure that the bus—and its passengers—can get to their destinations on time. Poor and inconvenient bus service is one of the top three challenges to getting around Oakland for people with very low incomes. Especially for people with very low incomes, a bus that is late is costly: it can mean being late for work, missing a doctor's appointment, or missing class. The majority of AC Transit's riders have a household income of less than $35,000. More than half do not have a driver license (51%), and 40% do not have access to a vehicle. Among Oaklanders, 25% of residents say transit is their primary way to get around. More Oaklanders have a Clipper card (56%) than a private garage for a vehicle (40%) (Oakland Transportation Survey, 2018).

Why Bus Lanes Are Important on Broadway
More buses run on Broadway than on any other street in Oakland. In fact, more buses run on Broadway than on any other street in the East Bay. But travel times on Broadway are unpredictable. This means that as the many routes that serve East Oakland, North Oakland, and West Oakland enter downtown and travel along Broadway, they each experience unreliable travel times, impacting passengers from across Oakland.

Paving Broadway During East Bay Bus Rapid Transit Construction
Because Broadway must be repaved as part of the adopted 3YP, the Department of Transportation is working with AC Transit to identify opportunities to repave Broadway during the current construction activities for East Bay Bus Rapid Transit (BRT) project. Paving during the existing construction effort would eliminate the disruption of multiple construction events projects in a span of months. Given the benefits of bus lanes, near-term implementation during the current construction activities would also ensure that as BRT begins service, the benefits of dedicated lanes on Broadway would be immediately realized.

Funding Broadway Bus Lanes
Full funding for paving, red painted transit lanes, and painted pedestrian bulb outs is available through Alameda County Transportation Commission (ACTC)'s Measure BB Transportation Expenditure Plan, which set aside funding for transit improvements on Broadway. As the City and AC Transit work to identify opportunities for implementing the bus lane and paving improvements, the action before Council would authorize either the City or AC Transit to receive the construction allocation from ACTC. In either event, this external funding would save the City money and help preserve the paving program's budget which is 100% funded by Measure KK, Oakland's Affordable Housing and Infrastructure Bond.

Funding Continued Broadway Shuttle Operations
This resolution also authorizes staff to seek funding from ACTC to continue operations of the Broadway Shuttle.

FISCAL IMPACT

Approval of the resolution would enable the City Administrator to accept funds from the Alameda County Transportation Authority beyond the City's existing Measure BB direct local distribution. This would reduce the impact to Measure KK (5330).

PUBLIC OUTREACH / INTEREST

The East Bay Bus Rapid Transit project has had extensive community engagement and outreach over its 20-year planning, design, and construction horizon.

COORDINATION

The Office of the City Attorney and Budget Bureau were consulted in the preparation of this report. Additionally, City staff have coordinated extensively with AC Transit executive management, planning, and operations divisions.

SUSTAINABLE OPPORTUNITIES

Economic: Completing street construction work simultaneously with the AC Transit Bus Rapid Transit Project will eliminate additional business impacts due to multiple construction efforts.

Environmental: Transit only lanes provide reliability and travel time improvements for bus transit, which can make transit a reliable replacement for drive-alone trips which are the leading source of transportation-related emissions which contribute to climate change.

Social Equity: Improvements to transit reliability and travel time benefit Oaklanders who ride transit, who include some of Oakland's most vulnerable or underserved residents.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) DETERMINATION

The proposed Project is exempt from CEQA pursuant to CEQA Guidelines Sections 15183 (Projects Consistent with a Community Plan, General Plan or Zoning), 15301(c) (Existing Facilities, Highways and Streets), 15304(h) (minor alterations to land), and/or 15061(b)(3) (No Significant Effect on the Environment); each of the aforementioned provides a separate and independent basis for CEQA compliance.

ACTION REQUESTED OF THE CITY COUNCIL

Adopt a Resolution 1) Supporting Transit Travel Time Improvements Through Dedicated Transit Only Lanes on Broadway from 11th Street to 20th Street; 2) Adopting California Environmental Quality Act Exemption Findings; and 3) Authorizing the City Administrator or Designee to Receive Allocated Funds from Alameda County Transportation Commission for the Study and Operations of the Broadway Shuttle and for the Design and Construction of Pavement Rehabilitation, Transit Only Lanes, and Pedestrian Safety Improvements on Broadway Between 11th Street and 20th Street.

For questions regarding this report, please contact Sarah Fine, Complete Streets Paving & Sidewalks Program Manager at (510) 238-6241.

Respectfully submitted,

RYAN RUSSO
Director
Oakland Department of Transportation

Reviewed by:
Wladimir Wlassowsky, P.E., Assistant Director
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Prepared by:
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Attachments:

A: Transit First Policy (73036 C.M.S.)
B: Broadway Transit Lanes Traffic Analysis Memo

Attachment A

OAKLAND CITY COUNCIL

RESOLUTION NO. 73036 C. M. S.

INTRODUCED BY COUNCILMEMBER _____

RESOLUTION DECLARING THE CITY OF OAKLAND'S SUPPORT OF PUBLIC TRANSIT AND OTHER ALTERNATIVES TO SINGLE-OCCUPANT VEHICLES

WHEREAS, public transit including buses, trains and ferries carries 120,000 riders per day in Oakland and reduces air pollution by eliminating the need for private automobiles; and

WHEREAS, shifting additional trips from the private automobile to public transit has many benefits including: reducing traffic congestion, thereby making streets safer for pedestrians and bicyclists; decreasing demand for auto parking so that land can be put to more productive use; decreasing automobile tail pipe emissions; and potentially reducing the cost of housing by eliminating the need for garage space; and

WHEREAS, a shift from private vehicles to public transit or other transportation modes also reduces an individual's transportation costs thereby freeing up personal resources for other important needs; and

WHEREAS, increased speed, better accessibility to, and improved frequency of transit services encourages greater use of public transit and increases fare box revenues; and

WHEREAS, certain traffic engineering techniques such as creation and enforcement of exclusive transit lanes, synchronization of traffic signals to transit speed, extension of bus stop curbs out to the traveled transit lane, and the use of signal preemption devices can improve the speed of transit travel; and

WHEREAS, improvements to public transit infrastructure and pedestrian facilities can increase the attractiveness and use of public transit by making it safer, more convenient, and more comfortable; and

WHEREAS, increased use of other transportation alternatives including bicycling and walking, carpooling, vanpooling, and telecommuting also reduce traffic congestion and improve air quality, as well as enable more efficient use of our roadway system by accommodating more people in fewer vehicles; and

WHEREAS, use of transportation alternatives also frees up roadway space for freight and commercial vehicles thereby stimulating economic development; and

WHEREAS, a balanced transportation system which offers an array of choices to travelers makes communities more livable; and

WHEREAS, in determining improvements that will facilitate travel by public transit and other alternative modes of transportation, it is important to strike a balance between economic development opportunities and the mobility needs of those who travel by other than the private automobile; now therefore be it

RESOLVED, that it shall be the official policy of the City of Oakland to encourage

and promote use of pu. ic transit in Oakland and to expe. , the movement of and access to transit vehicles on designated "transit streets;" and be it further

RESOLVED, that the City, in constructing and maintaining its transportation infrastructure, shall resolve any conflicts between public transit and single occupant vehicles on City streets in favor of the transportation mode that provides the greatest mobility for people, rather than vehicles, giving due consideration to the environment, public safety, economic development, health, and social equity impacts; and be it further

RESOLVED, that as part of the General Plan Transportation Element, a system of transit preferential streets and associated transit-oriented improvements shall be proposed; and be it further

RESOLVED, that the General Plan Congress shall consider and incorporate in the General Plan Transportation Element, as appropriate, various methods of expediting transit services on designated streets and encouraging greater transit use including but are not limited to:

1. Creating exclusive bus lanes.
2. Restricting automobile turning movements that conflict with transit vehicles.
3. Synchronizing traffic signals for buses on transit preferential streets.
4. Permitting transit vehicles to preempt traffic signals.
5. Installing sidewalk curb cuts at all transit stops.
6. Bulbing out bus stops into the travel lane.
7. Enforcing parking restrictions at bus stops.
8. Encouraging regular maintenance of bus stops and the provision of amenities such as benches, shelters, and posting of schedules.
9. Ensuring that designated transit loading areas are not blocked by news racks, trash receptacles, or other barriers.
10. Adhering to transit-oriented design features in all developments served by public transit (See AC Transit Board Policy No. 520).
11. Discouraging provision of free parking at transit stations and employment sites.
12. Promoting intermodal transfer stations to encourage seamless transfers among transit modes; and be it further

RESOLVED, that it shall also be the official policy of the City of Oakland to encourage and promote bicycle and pedestrian travel by providing a bicycle circulation system which includes, Class I, II and III facilities, safe and secure bicycle parking, pedestrian/bicycle bridges, pedestrian plazas, bicycle loop detectors, traffic calming devices, crosswalks and sidewalk bulbs, median "safety zones," and repair of damaged sidewalks.

IN COUNCIL, OAKLAND, CALIFORNIA, October 29, 1996

PASSED BY THE FOLLOWING VOTE:

AYES– BAYTON, CHANG, DE LA FUENTE, JORDAN, MILEY, RUSSO, SPEES, ~~WOODS-JONES~~, and PRESIDENT HARRIS #5

NOES– NONE

ABSENT– NONE

ABSTENTION– NONE

Excused-Woods-Jones #1

ATTEST: _____
CEDA FLOYD
City Clerk and Clerk of the Council
of the City of Oakland, California

600-243 (1/95)

Kimley»Horn

MEMORANDUM - DRAFT

To:	Sarah Fine City of Oakland
From:	Ryan Dole, PE, TE Kimley-Horn and Associates, Inc.
Date:	July 17th, 2019
Subject:	DRAFT: Broadway Transit and Pedestrian Safety Improvement Project

1 Understanding and Purpose

At the direction and request from the City of Oakland, the purpose of this memorandum is to document the results of a traffic and transit analysis completed for the provision of exclusive transit lanes and pedestrian safety improvements on Broadway from 11th Street to 20th Street in Downtown Oakland. The City desires to analyze the effects of providing an exclusive transit lane through the conversion of existing mixed traffic lanes. The analysis primarily includes an assessment of the improvements' effects on transit and vehicle traffic. Analysis methodology is discussed in further detail in a later section.

2 Proposed Roadway Configuration

An exclusive transit lane is proposed to be implemented in both the northbound and southbound directions on Broadway from 11th Street to 20th Street. This lane would be provided by converting an existing mixed-use lane to an exclusive transit lane. Other specific changes include the following:

- Remove southbound right-turns at Broadway & 14th Street
- Provide a leading pedestrian interval (LPI) for all pedestrian movements at Broadway & 14th Street
- Stripe high-visibility crosswalks at all intersections in the study corridor
- Converting the existing two-stage pedestrian crossing on the north leg crosswalks at Broadway & 15th Street to a one-stage crossing per a 2017 traffic study completed by Kimley-Horn for the City of Oakland.
- Provide a southbound queue jump signal phase at Broadway & 12th Street to enable southbound buses to safely weave across the mixed flow lane and access the southbound left-turn lane at Broadway & 11th Street
- Modify signal timing in the following manner:
    - Provide a new signal phase at Broadway & 12th Street for a transit-only queue jump in the southbound direction

- Modify signal phasing at Broadway & 14th to provide a leading pedestrian interval for all pedestrian movements
- Increase cycle lengths along the corridor from 70 seconds to 80 seconds in the PM peak to accommodate increase vehicle-to-capacity ratios in the mixed flow lanes and enhance corridor progression.

Physical improvements are shown at a 35% design level in Appendix A.

3 Data Collection

The following data was collected for the traffic and transit analysis consistent with the City of Oakland's DRAFT *Methodology Memorandum for Roadway Reconfiguration Feasibility Studies* (Dated January 9, 2017).

Transit Travel Times

Existing transit travel times were accessed via the Swiftly platform, which processes AC Transit automatic passenger counter (APC) data to identify stop-to-stop travel times. The Swiftly platform calculates total travel time as a combination of fixed (representative of near free-flow conditions) travel time, variable (predominately congestion-related) travel time, and stop dwell time. The fixed travel time along these stop-to-stop segments is identified as the 5th percentile travel time observed along that corridor; the variable travel time is defined as the difference between the total travel time without dwell time and the fixed travel time.

Average Daily Traffic, Speed, and Vehicle Classification

72-hour weekday roadway segment volume counts, vehicle classification, and speed data (12:00 AM Tuesday to 11:59 PM Thursday) were collected at two locations along Broadway (listed below). 72-hour counts were initially collected June 25th, 2019, to June 27th, 2019; however, street cleaning trucks interfered with data collection tubes between 12th and 13th Street. Data for that location was re-collected July 9th, 2019 to July 11th, 2019.

- Broadway – Between 12th Street and 13th Street
- Broadway – Between 17th Street and 19th Street

Intersection Turning Movement Counts

No new intersection turning movement counts were collected as part of this study. Instead, previously-collected vehicle, bicycle and pedestrian counts were used, which were collected in 2015 and 2016 as part of the Latham Square and Line 51 projects. Counts utilized included the following intersections:

- Broadway & 11th Street
- Broadway & 12th Street
- Broadway & 13th Street
- Broadway & 14th Street
- Broadway & 15th Street/Telegraph Ave
- Broadway & 16th Street/Latham Square Crossing

- Broadway & 17th Street
- Broadway & 19th Street
- Broadway & 20th Street

To determine 2019 intersection turning movement volumes, ADT volumes collected for this project were compared to volumes collected at the same locations in 2016 to determine an annual growth rate. Volumes were observed to have slightly decreased along the corridor from 2016 to 2019. To provide a more conservative analysis, it was assumed that there was no change in volumes from 2016 to 2019.

Collision History

Collision data records were retrieved from the Statewide Integrated Traffic Records System (SWITRS) for the years 2013 through 2018. Collisions were associated for an intersection if they occurred within 100 feet of the intersection.

4 Methodology

Transit Analysis

The transit analysis compares the existing transit time conditions along the project corridor to travel time projections if the project were to be implemented, resulting in identifying of potential travel time savings with the project.

The existing conditions analysis draws on travel times accessed via the Swiftly platform. Data sampled includes weekday AM and PM peak hour trips in the month of April 2019 for AC Transit lines 6, 12, 18, 51A, and 72/72M. AM and PM peak hours were defined as 8:00AM-9:00AM and 4:30PM-5:30PM to allow for the comparison of transit travel times with the peak hour Synchro models. Lines 6, 12, 18, 51A, and 72/72M were selected because they are high-frequency and/or high-ridership AC Transit lines travelling the length of the project corridor.

Providing exclusive transit lanes in this corridor will benefit buses by reducing or eliminating the effect of auto queuing on bus travel times. Some congestion-related delay will remain, as buses will still have to stop at signalized intersections. Note that the propensity and duration of signal-caused delay will be reduced from existing conditions with the implementation of transit signal priority (TSP) as part of the East Bay BRT project.

To assess the opportunity for transit travel time savings with an exclusive transit lane, estimates were developed of how much of the total existing travel time through the project corridor is comprised of buses waiting behind queued autos. The Synchro models developed for the traffic analysis were used to quantify existing vehicle queuing. Assuming compliance with the designated transit lanes, buses traveling through the project corridor would no longer be delayed waiting for the vehicle queue to clear before proceeding through most intersections, resulting in a travel time savings. Some intersections retain a shared right-turn movement with bus through movements with the proposed concept (see Appendix A), which results in some continued queue delay impact on buses.

Traffic Analysis

Traffic analysis was conducted according to City of Oakland's DRAFT *Methodology Memorandum for Roadway Reconfiguration Feasibility Studies* (Dated January 9, 2017). This methodology was developed for the purposes of analyzing road diets. The following elements of the City methodology were applied to this project:

- Task 1: Base Analysis
  - Subtask 1.1 Average Daily Traffic Analysis
  - Subtask 1.4 Corridor Crash Analysis
  - Subtask 1.5 Sensitivity Analysis
- Task 2: Key Signalized Intersections
- Task 4: Left-turn Pocket Evaluation
- Task 5: Queue Assessment

Tasks 6 (Curb Management) and 7 (Potential for Traffic Diversion) of the City methodology were excluded per City direction, as well as Subtasks 1.2 and 1.3. Task 3 (Transit Analysis) methodology was not applicable for this project; the methodology described earlier in this section was used instead to analyze transit operation impacts. Methodology for Task 5 was modified to exclude the use of simulation models to develop queue lengths; queue lengths were instead calculated using Synchro 10 software. Traffic models were developed in Synchro 10 for Existing and With Project conditions, utilizing models previously developed for the Latham Square project as a basis.

5 Transit Analysis

Data from AC Transit's Automatic Vehicle Locator (AVL) system, accessed via Swiftly, was utilized to identify existing travel times along the study corridor. Since the APC data can be used to identify stop-to-stop travel times, existing travel times are organized by route and are listed below in Table 1.

Table 1: Existing Transit Travel Times

Route	Stop Locations on Corridor	Direction	Peak Hour	Corridor Travel Time (sec)			
				Fixed	Variable	Dwell	Total
72/72M	14th,17th,19th	Northbound	AM	73	67	91	231
			PM	73	81	85	239
	12th,13th,17th	Southbound	AM	68	43	119	230
			PM	68	89	121	278
6	14th,17th,19th	Northbound	AM	62	48	128	238
			PM	62	81	104	247
	14th,17th,19th	Southbound	AM	57	56	119	232
			PM	57	108	97	262
12	13th, 17th, 20th	Northbound	AM	98	105	68	271
			PM	99	84	81	264
	13th, 17th, 20th	Southbound	AM	118	91	103	312

			PM	117	102	94	313
51A	13th, 17th, 20th	Northbound	AM	99	114	134	347
			PM	99	102	120	321
	13th, 17th, 20th	Southbound	AM	83	69	69	221
			PM	83	104	146	333
18	17th, 19th	Northbound	AM	49	51	30	130
			PM	32	60	40	132
	17th, 19th	Southbound	AM	14	16	76	106
			PM	37	84	81	202

As described in the data collection section, there are three components to the corridor travel time: fixed travel times, variable travel time, and dwell time. Fixed travel time is based on the 5th percentile travel time and can be thought of as a best-case scenario in which buses experience little to no congestion. While it makes up a significant portion of total travel time, dwell time reductions are not anticipated from the proposed transit lanes; instead, the exclusive transit lanes are intended to reduce variable travel time. During peak periods on the routes sampled, variable travel time comprised between 20 percent and 40 percent of total travel time on the project corridor. This proportion was larger in the PM peak.

Due to data collection limitations, reported variable time may be underestimated and dwell time overestimated. In some cases, buses dwell at stops for an extended time due to downstream congestion or signal delays. This additional dwell time is not accounted for in the variable dwell time by Swiftly. Therefore the actual dwell time may be lower than is reported, and the variable dwell time may be greater than is reported.

Error! Reference source not found. shows the projected transit travel time savings with the implementation of exclusive transit lanes. A benefit of exclusive transit lanes is that they remove the need for transit vehicles to wait behind queued vehicles at traffic signals. Due to the implementation of right-only turns in which buses operate in mixed traffic, buses will encounter some additional queues from vehicles making right turns. Assuming a typical queue clear time of 2 seconds/vehicle, the time savings for avoiding the queue is shown below.

Table 2: Transit Travel Time Savings

Direction	Peak Hour	Total Queue Avoided (ft)	Additional Queue Encountered (ft)	Total Time Savings (sec)
Northbound	AM	185	0	15
	PM	287	7	22
Southbound	AM	200	2	16
	PM	446	0	36

Reduction in queue delay through the project corridor would allow northbound buses to save 15 and 22 seconds in the AM and PM peaks respectively, and southbound buses to save 16 and 32 seconds in the AM and PM peaks.

For the sampled routes, these time savings represent between a 13 percent and 43 percent reduction in variable travel times (with a mean of 29 percent), and between 4 percent and 18 percent reduction in total travel time (with a mean of 10 percent) in the project corridor at peak times. Southbound buses would experience greater travel time savings, and both northbound and southbound buses would save more time in the PM peak than in the AM Peak. In addition to providing time savings for existing transit service, the exclusive lanes will provide similar benefits for the planned East Bay BRT.

Planned service on Broadway calls for 52 buses in each direction during the peak period. Assuming 240 yearly service days, this would result in savings of approximately 1000 revenue hours per year.

While not accounted for in this analysis, one of the most significant benefits of an exclusive transit lane is reductions in transit travel time variability and increased reliability. Poor reliability results in a degraded customer experience and often contributes to both lower transit ridership and increased operating cost. By providing an exclusive transit lane, the effect of congestion, which is highly variable, on transit travel time is reduced. This reduction in variation benefits overall transit reliability, which can increase ridership and reduce operating cost.

6 Traffic Analysis

6.1 TASK 1 – BASE ANALYSIS

6.1.1 Subtask 1.1 – Average Daily Traffic Analysis

The purpose of this analysis is to compare the roadway capacity and traffic demands, and to assess the effects of lane reconfiguration. Roadway segment counts were processed and averaged to determine average daily traffic (ADT) values for the corridors. Table 3 summarizes these findings.

Table 3: ADT Volumes by Location

Location	Average Daily Traffic (ADT)	Average 1-hour Maximum Volume
Broadway – Between 12th Street and 13th Street	14,500	974
Broadway – Between 17th Street and 19th Street	12,000	954

Per the City's road diet methodology, the ADT volumes are to be compared to service volume tables developed by the City to understand current and proposed roadway capacity. To date, the City of Oakland has not completed the development of their own unique Oakland-specific service volume

tables. For the ADT analysis, service volumes were calculated using the Highway Capacity Manual (HCM) method described in Section 16.3. This methodology, in place of the rigorous multi-step Level of Service methodology, uses simplified assumptions about a roadway to quickly assess operations at different volume thresholds. Only a handful of variables are needed which are speed, number of lanes, and K-Factor and D-Factor, all of which were known or could be calculated based on ADT counts. Table 4 shows the estimated operating Level of Service (LOS) thresholds for TK Location.

Table 4: Service Volume Table

	Two-Lane Streets				Four-Lane Streets			
Level of Service	LOS B	LOS C	LOS D	LOS E	LOS B	LOS C	LOS D	LOS E
ADT	N/A	1,700	11,800	17,800	N/A	2,200	24,700	35,800

Values generated using HCM 6th Edition Exhibit 16-16 with K-Factor 0.09 and D-Factor of 0.55 with a posted speed of 25 mph.

Comparing existing volumes to the service volume tables indicate that Broadway, with a reduction of mixed traffic from four lanes to two lanes, would operate under a predicted LOS E between 17th and 19th Street and LOS E between 12th and 13th Street using the generalized HCM method.

6.1.2 Subtask 1.4 – Corridor Crash Analysis

This section examines existing conditions and seeks to identify trends, notable events, or risk that could be reduced through design elements as part of the roadway reconfiguration project. Kimley-Horn retrieved crash data through California's Statewide Integrated Traffic Records System (SWITRS) for the period between 2013 and 2018, the most recent 6-year period available. Summarized data includes all collisions occurring within 100 feet of an intersection along the project corridor. Table 5 shows the spatial and modal distribution of injuries along the corridor by intersection and Table 6 summarizes the relevant contributing factors.

Table 5: Corridor Injury Summary by Intersection

Intersections	Pedestrian Involved	Auto Only	Bicycle Involved	Property Damage	Injury Totals
Broadway & 11th St	2	3	2	1	**8**
Broadway & 12th St	8	3	1	1	**13**
Broadway & 13th St	2	4	0	0	**6**
Broadway & 14th St	12	8	1	0	**21**
Broadway & 15th St	2	2	2	0	**6**
Broadway & 17th St	2	2	2	1	**7**
Broadway & 19th St	5	4	1	0	**10**
Broadway & 20th St	4	5	2	0	**11**

Table 6: Crash Relevant Contributing Factors by Intersection

Intersections	Improper Turning	Unsafe Speed	Auto Fail to Yield	Ped Fail to Yield
Broadway & 11th St	0	3	1	1
Broadway & 12th St	1	1	4	1
Broadway & 13th St	3	1	1	0
Broadway & 14th St	2	4	3	0
Broadway & 15th St	2	0	1	1
Broadway & 17th St	1	1	1	0
Broadway & 19th St	2	0	4	1
Broadway & 20th St	1	1	3	4

Bicycle and pedestrian involved collisions comprise most of the injuries at the three intersections with the most collisions. Table 6 highlights the circumstances leading to these high injury rates. Notably, improper turning, unsafe speed, and failure to yield by cars caused 9 of the reported injuries at Broadway & 14th Street, the intersection with the most recorded collisions.

Beyond these observations, other key findings include:

- The types of automobile-only involved collisions occurring at the intersections varied, and do not indicate any deficiencies that may impact the implementation of a transit-only lane.
- No fatalities and three severe injuries were reported across the period sampled. Of the remaining injuries, 24% were reported as visible injuries and 73% were reported as complaints of pain.

6.2 TASK 2 – KEY SIGNALIZED INTERSECTIONS

Operations analyses were completed for the signalized intersections along Broadway, from 11th Street to 20th Street. At each intersection, average vehicle delay was determined for two scenarios – Existing (2019) Conditions and Existing (2019) With Project Conditions. Intersection operations and performance metrics for this evaluation were determined using HCM 2000 methodology (as called for in the City methodology) and Synchro 10 software. Kimley-Horn developed Synchro models using turning movement volumes and signal timing sheets provided as part of the Latham Square project.

When evaluating intersection operations under With Project conditions, the proposed modifications to signal timing and phasing described previously were input into the traffic model. This included the addition of a queue jump phase at Broadway & 12th Street, an LPI at Broadway & 14th, and the increase of cycle lengths throughout the corridor from 70 seconds to 80 seconds in the PM. With Project conditions were initially modeled with 70-second cycle lengths; these were increased to 80 seconds after determining that maintaining 70-second cycle lengths would result in substantial increases in control delay. It was assumed that 80 seconds represents the highest acceptable cycle length for the corridor that would still accommodate the City's desire to minimize pedestrian crossing wait times.

Intersection-level operations analysis results are presented in Table 7 and Table 8 for the AM peak (8:00-9:00 a.m.) and PM peak (4:30-5:30 p.m.) hours, respectively.

Table 7: Intersection Operations Summary – AM Peak Hour

Intersection	Existing		With Project		
	Delay[a]	LOS[b]	Delay[a]	LOS[b]	Change
Broadway & 11th St	15.4	B	11.5	B	-3.9
Broadway & 12th St	9.1	A	12.7	B	+3.6
Broadway & 13th St	5.4	A	10.8	B	+5.4
Broadway & 14th St	12.2	B	21.0	C	+8.8
Broadway & 15th St	18.4	B	49.6	D	+31.2
Broadway & 16th St/Latham Square	2.5	A	2.1	A	-0.4
Broadway & 17th St	13.8	B	11.4	B	-2.4
Broadway & 19th St	11.0	B	16.2	B	+5.2
Broadway & 20th St	11.6	B	12.9	B	+1.3

a. Delay refers to the average control delay, measured in seconds per vehicle
b. LOS calculations are based on the methodology in the Highway Capacity Manual, 2000, performed using Synchro 10

Table 8: Intersection Operations Summary – PM Peak Hour

Intersection	Existing		With Project		
	Delay[a]	LOS	Delay[a]	LOS	Change
Broadway & 11th St	10.5	A	12.0	B	+1.5
Broadway & 12th St	10.8	B	13.4	B	+2.6
Broadway & 13th St	13.6	B	66.9	E	+53.3
Broadway & 14th St	16.2	B	22.6	C	+6.4
Broadway & 15th St	21.7	C	62.3	E	+40.6
Broadway & 16th St/Latham Square	2.1	A	2.7	A	+0.6
Broadway & 17th St	13.2	B	16.7	B	+3.5
Broadway & 19th St	12.5	B	14.8	B	+2.3
Broadway & 20th St	8.9	A	12.0	B	+3.1

a. Delay refers to the average control delay, measured in seconds per vehicle
b. LOS calculations are based on the methodology in the Highway Capacity Manual, 2000, performed using Synchro 10

Generally, the proposed improvements do not substantially increase vehicle delay at most intersections along the corridor. The intersections most affected by the improvements are Broadway & 13th Street and Broadway & 15th Street. Both intersections would see a 40-second increase in average intersection delay in the PM peak hour. Broadway/15th Street would see a 31-second increase in delay in the AM peak hour. The increased delays at Broadway & 13th Street are predominantly due to the southbound Broadway permissive left turns which will impede the

southbound through vehicles. As noted, in the previous Latham Square traffic analysis, the Broadway & 15th Street intersection is already constrained due to the pedestrian movements and exclusive left turn movement (from northbound Broadway to Telegraph), which lessens the amount of green time allocated to the southbound Broadway movement. The addition of the transit lanes further reduces capacity for the southbound approach, increasing delays.

6.3 TASK 4 – LEFT-TURN POCKET EVALUATION

Intersection turning movements volumes were utilized to evaluate the need for left turn pockets. Per the City's *Methodology Memorandum for Roadway Reconfiguration Feasibility Studies*, the following parameters define the need for left-turn pockets:

- If the peak hour left turn volume is less than 100 vehicles and peak hour left turns multiplied by oncoming/conflicting through traffic is less than 30,000 vehicles, it is anticipated that no turn pocket would be required.
- If peak hour left turn volume is more than 100 vehicles and peak hour left turns multiplied by oncoming/conflicting through traffic is more than 30,000 vehicles, either:
    - Adjust project to include a left-turn pocket; or
    - Conduct traffic operations analysis as described in Task 5: Queue Assessment to determine the potential tradeoffs of not providing a left-turn pocket (or two-way left-turn lane).

Table 9 and Table 10 show the results of the left-turn pocket evaluation for the AM and PM peak hours, respectively.

Table 9: Left-Turn Pocket Evaluation – AM Peak Hour

Intersection	Northbound				Southbound			
	Left-Turn Volume	Conflicting Through Volume	Turn Pocket Needed	Turn Pocket Provided	Left-Turn Volume	Conflicting Through Volume	Turn Pocket Needed	Turn Pocket Provided
Broadway & 11th St	-	-	No	No	64	354	No	Yes
Broadway & 12th St	93	302	No	Yes	-	-	No	No
Broadway & 13th St	-	-	No	No	118	322	Yes	No
Broadway & 14th St	-	-	No	No	-	-	No	No
Broadway & 15th St	104	334	Yes	Yes	-	-	No	No
Broadway & 16th St/Latham Square	-	-	No	No	-	-	No	No
Broadway & 17th St	-	-	No	No	69	276	No	No
Broadway & 19th St	26	281	No	No	-	-	No	No
Broadway & 20th St	47	254	No	No	34	245	No	No

Table 10: Left-Turn Pocket Evaluation – PM Peak Hour

Intersection	Northbound				Southbound			
	Left-Turn Volume	Conflicting Through Volume	Turn Pocket Needed	Turn Pocket Provided	Left-Turn Volume	Conflicting Through Volume	Turn Pocket Needed	Turn Pocket Provided
Broadway & 11th St	-	-	No	No	96	389	Yes	Yes
Broadway & 12th St	101	563	Yes	Yes	-	-	No	No
Broadway & 13th St	-	-	No	No	128	390	Yes	No
Broadway & 14th St	-	-	No	No	-	-	No	No
Broadway & 15th St	123	518	Yes	Yes	-	-	No	No
Broadway & 16th St/Latham Square	-	-	No	No	-	-	No	No
Broadway & 17th St	-	-	No	No	91	315	No	No
Broadway & 19th St	45	425	No	No	-	-	No	No
Broadway & 20th St	47	351	No	No	37	333	No	No

As can be seen in the results, the project provides left-turn pockets where needed, except for the southbound left-turn movement at Broadway & 13th Street. Given the right-of-way constraints at this location, it is not feasible to provide a southbound left-turn pocket. The trade-offs of not providing a left-turn pocket are considered in the following queuing analysis section.

6.4 TASK 5 – QUEUE ASSESSMENT

Intersection approach queue lengths were calculated for left-turn, right-turn, and through movements from Broadway at each intersection. Queue lengths were determined using Synchro software for Existing and With Project scenarios. Both 50th and 95th percentile queue lengths were identified. The 95th percentile queue length represents a queue length that is exceeded only five percent of the time, while the 50th percentile queue length reflects the typical queue length during the peak hour. The projected queue lengths were evaluated to identify potential locations were queues exceed the storage limits of the provided turn pockets or through lanes by at least one vehicle length (i.e. 25 feet). A summary of the queuing results is included in Appendix B.

As seen in the summary, queues generally do not exceed the provided capacity under With Project conditions, except at the following locations:

- Broadway & 13th Street
  - Both the 50th and 95th percentile queues for the southbound through+left movement at this intersection exceed the provided capacity in the PM peak hour. This means that in the PM peak hour, queues would frequently spill back to the Broadway & 14th Street intersection.
- Broadway & 15th Street
  - Both the 50th and 95th percentile queues for the southbound through+left movement at this intersection exceed the provided capacity in the PM peak hour. This means

that in the PM peak hour, queues would frequently spill back to the Broadway & 16th Street/Latham Square Pedestrian Crossing intersection. Queues would not spill back to the Broadway & 17th Street intersection.
    - The 95th percentile queue for the same movement also exceeds capacity in the AM peak hour. This means that queues in the AM peak hour could potentially spill back to the Broadway & 16th intersection during the peak of the peak hour. Queues would not spill back to the Broadway & 17th Street intersection.
- Broadway & 17th Street
    - The 95th percentile queue for the southbound through+left movement at this intersection exceeds the provided capacity in the PM peak hour. This means that the queues in the PM peak hour could potentially spill back to the Broadway & 20th Street intersection during the peak of the peak hour. Notably, the 50th percentile queue for the same movement is 57 feet, which is significantly less than the provided capacity (404 feet), so the queues for this movement would most commonly remain within the available space.

As noted above, the primary queuing-related tradeoffs of the proposed improvements are queuing spillovers that may occur for the southbound lane on Broadway approaching 13th Street and 15th Street in the PM peak hour.

7 Conclusion

Key findings of the analysis described in this memorandum include the following:

- Based on an estimation of transit travel time delay with and without the proposed exclusive transit lanes, the improvements would allow northbound buses to save on average roughly 15 and 22 seconds in the AM and PM peaks, respectively, and southbound buses to save on average roughly 16 and 32 seconds in the AM and PM peaks, respectively. It should be noted that while the analysis methodology used to estimate transit delay reduction is not intended to produce precise travel time reduction results.
- Planned service on Broadway calls for 52 buses in each direction during the peak period. Assuming 240 yearly service days, the transit travel time reductions would result in a savings of approximately 1000 revenue hours per year.
- Providing an exclusive transit lane is predicted to improve transit reliability, which often leads to increased transit ridership and reduced operating cost
- Substantial implications to vehicle traffic would be concentrated at the following locations:
    - Broadway & 13th Street
        - Southbound queues in the PM peak hour would frequently back up to the Broadway & 14th Street intersection
        - During the PM peak hour, auto level of service would degrade to a level considered near capacity, representing increased levels of vehicle congestion

- Broadway & 15th Street
  - Southbound queues in the PM peak hour would frequently back up to the Broadway & 16th Street/Latham Square intersection, but not the Broadway & 17th Street intersection
  - During the PM peak hour, auto level of service would degrade to a level considered near capacity, representing increased levels of vehicle congestion
- Broadway & 17th Street
  - In the most congested times of the PM peak hour, southbound queues would back up to the Broadway & 20th Street intersection.

- An analysis of recent collision history shows that the Broadway/14th Street intersection stands to benefit from the addition of leading pedestrian intervals and the removal of southbound right-turns

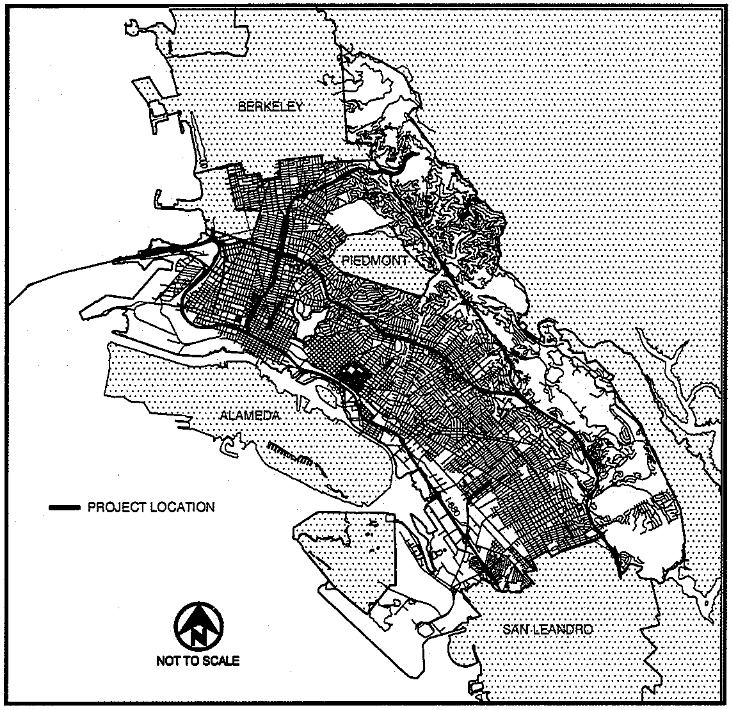
Appendix A: 35% Design Plans

BROADWAY TRANSIT LANES PROJECT - 12TH STREET TO 20TH STREET

CALL BEFORE YOU DIG
UNDERGROUND SERVICE ALERT
800-227-2600

THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT AND THE CITY PUBLIC WORKS AGENCY AT LEAST 48 HOURS (2 WORKING DAYS) PRIOR TO BEGINNING ANY EXCAVATION IN THE VICINITY OF UNDERGROUND FACILITIES.

INDEX OF DRAWINGS



CITY OF OAKLAND MAP

WLAD WLASSOUWSKY, P.E.
ASSISTANT DIRECTOR
BUREAU OF ENGINEERING & CONSTRUCTION

CITY OF OAKLAND
BUREAU OF ENGINEERING AND CONSTRUCTION
250 FRANK H. OGAWA PLAZA
SUITE 4314
OAKLAND, CA 94612
(510) 238-3546
FAX (510) 238-7227

TRANSPORTATION PLANNING AND FUNDING
PROJECT MANAGER

PROJECT DELIVERY
PROJECT MANAGER

PROJECT DELIVERY
DIVISION MANAGER

TRANSPORTATION SERVICES
DIVISION MANAGER

BUREAU OF ADMINISTRATOR
CITY ADA COORDINATOR

BUREAU OF INFRASTRUCTURE & OPERATIONS
ASSISTANT DIRECTOR

BUREAU OF FACILITIES & ENVIRONMENT
ASSISTANT DIRECTOR

Kimley»Horn
1300 Clay Street, Suite 325
Oakland, California 94612

CHECKED BY	EKC/RJD
DESIGNED BY	BDP
DRAWN BY	MEW

No.	BY	DATE	REFERENCE

PROJECT NO.

SCALE: AS SHOWN
DATE: 7/16/2019

SHEET NO. CV
1 OF 8

BROADWAY TRANSIT LANES

DRAWING NAME: K:\OAK_ITS\097056055 - Oakland Broadway Transit Lanes\04_CADD\Plan Sheets\1 CV.dwg
PLOT DATE: 07-16-19
PLOTTED BY: Brendan.Pittman

GENERAL NOTES

1. UNDERGROUND FACILITIES AND OBSTRUCTIONS INDICATED ARE FOR INFORMATION ONLY. EXISTING UTILITY LOCATIONS SHOWN ON THE PLANS WERE LOCATED BASED ON THE INFORMATION PROVIDED BY THE CITY AND/OR FROM SCHEMATIC DRAWINGS PROVIDED AND ARE APPROXIMATE LOCATIONS ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE WORK AREA PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) AT 811 OR (800) 227-2600 A MINIMUM OF TWO (2) WORKING DAYS IN ADVANCE OF ANY EXCAVATION.

2. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE AGENCIES PRIOR TO STARTING ANY WORK WHICH MAY AFFECT THEIR FACILITIES. THE FOLLOWING UTILITIES AND AGENCIES ARE KNOWN TO HAVE FACILITIES WITH THE PROJECT LIMITS:

CITY OF OAKLAND STORM DRAIN	(510) 238-7116
CITY OF OAKLAND SEWER	(510) 238-6939
CITY OF OAKLAND ELECTRICAL	(510) 615-5438
CITY OF OAKLAND FIBER	(510) 238-6103
EBMUD	(510) 287-1006
PACIFIC GAS & ELECTRIC	(925) 674-6357
AT&T (TEL.) CONTACT: KAREN BOLES	(925) 901-8520

3. THE CONTRACTOR SHALL INSPECT THE PROJECT SITE PRIOR TO SUBMITTING A BID IN ORDER TO OBSERVE AND DETERMINE THE EXISTING JOB SITE CONDITIONS.

4. TRAFFIC CONTROL DURING CONSTRUCTION SHALL BE THE CONTRACTOR'S RESPONSIBILITY. ALL TRAFFIC CONTROL AND DEVICES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."

5. THE CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR SHALL BE REQUIRED TO ASSUME COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT. THESE PLANS DO NOT INCLUDE COMPONENTS NECESSARY FOR CONSTRUCTION SAFETY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE FOR THE SAFETY OF ALL PERSONS AND PROPERTY DURING THE COURSE OF THE PROJECT.

6. THE CONTRACTOR SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS AND CAL/OSHA. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

7. THE CONTRACTOR SHALL PROVIDE FOR CONTINUOUS INGRESS AND EGRESS TO ALL PRIVATE PROPERTIES ADJACENT TO THE WORK THROUGHOUT THE PERIOD OF CONSTRUCTION UNLESS OTHERWISE SHOWN.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO THE SITE OR THE SURROUNDING AREA AS A RESULT OF THE CONTRACTOR'S WORK OR OPERATIONS. EXISTING CURB, GUTTER AND OTHER IMPROVEMENTS THAT ARE DAMAGED OR DISPLACED BY THE CONTRACTOR SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

9. ALL STREET SURVEY MONUMENTS AND RECORDED SURVEY POINTS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, BEFORE THE IMPROVEMENTS ARE ACCEPTED BY THE CITY. REPLACEMENT SHALL BE MADE UNDER THE DIRECTION OF A LICENSED PROFESSIONAL LAND SURVEYOR AND AS INSTRUCTED IN SECTION 8771 OF THE PROFESSIONAL LAND SURVEYORS CODE.

10. THE CONTRACTOR SHALL PROTECT IN PLACE EXISTING TRAFFIC SIGNAL DETECTOR LOOPS TO REMAIN. LIMITS OF ASPHALT CONCRETE REMOVAL OR COLD PLANING SHALL BE MARKED BY THE CONTRACTOR AND APPROVED IN ADVANCE BY THE ENGINEER. ANY DETECTOR LOOPS (TO REMAIN IN PLACE) DAMAGED DURING CONSTRUCTION, SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

11. THE CONTRACTOR SHALL LOCATE, REFERENCE, AND SET SUFFICIENT MARKS NECESSARY TO LOCATE ALL MANHOLE COVERS, VALVE COVERS, AND MONUMENT LIDS PRIOR TO STARTING ANY EXCAVATION AND PAVEMENT WORK.

12. WORK IS NOT PERMITTED ON SATURDAYS, SUNDAYS, OR DESIGNATED LEGAL HOLIDAYS, AS RECOGNIZED BY THE CITY OF OAKLAND, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. THE CONTRACTOR SHALL REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

13. WHEN NECESSARY TO FACILITATE THE CONSTRUCTION, ON-STREET PARKING MAY BE PROHIBITED PROVIDED THAT SIGNS GIVING NOTICE OF SUCH PARKING RESTRICTION ARE ERECTED OR PLACED AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO EFFECTIVE TIME OF SUCH RESTRICTION. SIGNS SHALL INDICATE THE DATE AND TIME OF RESTRICTION. CONTRACTOR SHALL FURNISH AND INSTALL ALL SIGNS AND SIGN SUPPORTS.

LEGEND

Symbol	Description
GV	GAS VALVE
WV	WATER VALVE
	JOINT UTILITY POLE
	FIRE HYDRANT
	STREET LIGHT
	SIGN
	CURB INLET
	PACIFIC BELL (AT&T) MANHOLE
	COMMUNICATION MANHOLE
S	SANITARY SEWER MANHOLE
——SS——	SANITARY SEWER
—X——X—	FENCE

ABBREVIATIONS

BW	BACK OF WALK
EX	EXISTING
FL	FLOW LINE
FG	FINISHED GROUND
HMA	HOT MIX ASPHALT
MAX	MAXIMUM
N	NORTH
PCC	PORTLAND CEMENT CONCRETE
TC	TOP OF CURB
TYP.	TYPICAL

CONSTRUCTION NOTES

TO BE COMPLETED NEXT SUBMITTAL

SIGN DETAILS

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PLAN PRODUCTION WARNING
THE PLANS HAVE BEEN CREATED ON ANSI B (11" X 17") SHEETS. REFER TO GRAPHIC SCALE FOR SHEETS OF DIFFERENT SIZES.

CITY OF OAKLAND
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PHONE: 510-625-0712

CIVIL ENGINEER RYAN J. DOLE
RCE NO. 075749 EXP. 06/30/20
DESIGNED BY BRENDAN PITTMAN, EIT
CHECKED BY RYAN DOLE, P.E.
DRAWN BY MICHAELA WOOD, EIT

No.	DATE	BY	REFERENCE

LEGEND, ABBREVIATIONS, AND GENERAL NOTES

GN-01

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DATE: JULY 2019
SHEET NO. 2 OF 8

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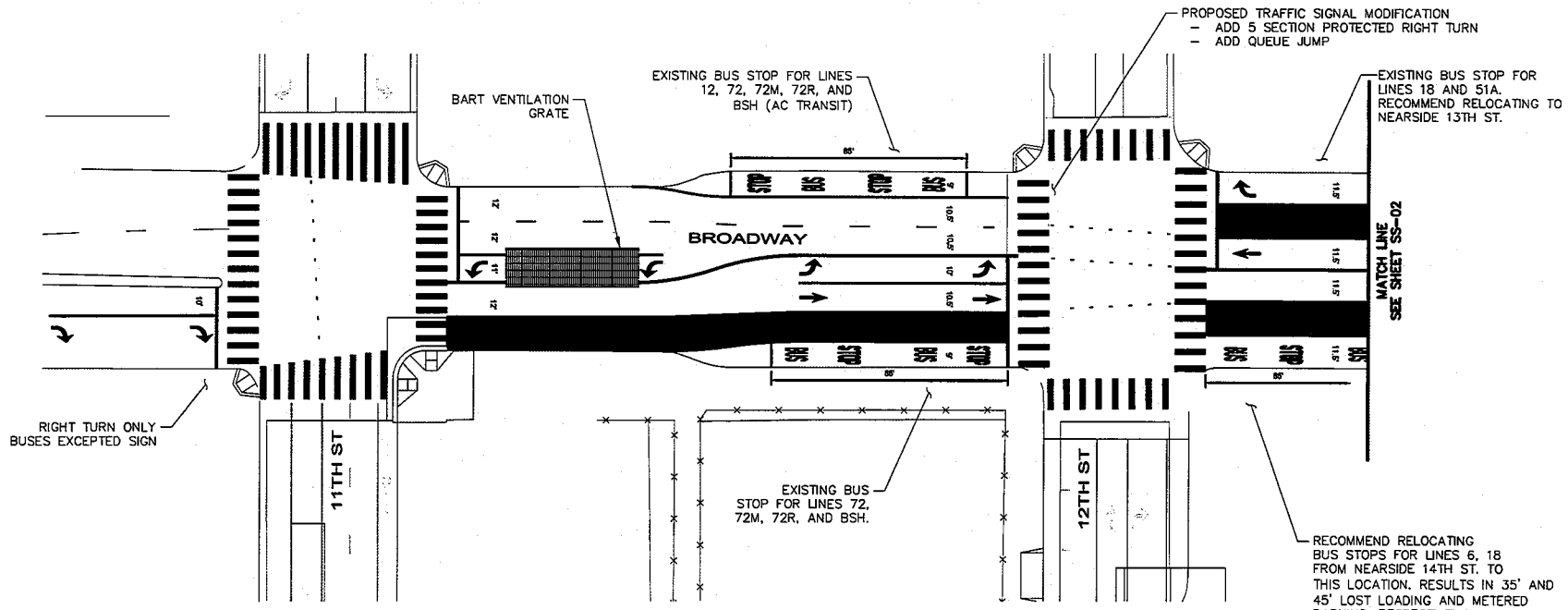
PLOTTED BY: Brendan Pittman



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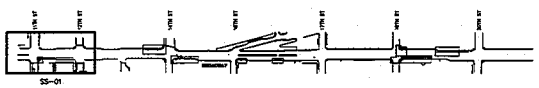

VICINITY MAP

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SIGN DETAILS

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BROADWAY TRANSIT LANES

CIVIL ENGINEER	No.	DATE	BY	REFERENCE
RYAN J. DOLE				
RCE NO. 0757/49 EXP. 06/30/20				
DESIGNED BY BRENDAN PITTMAN, EIT				
CHECKED BY RYAN DOLE, P.E.				
DRAWN BY MICHAELA WOOD, EIT				

SIGNING AND STRIPING PLAN

SS-01

SCALE: 1"=40'

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SHEET NO. 3 OF 8

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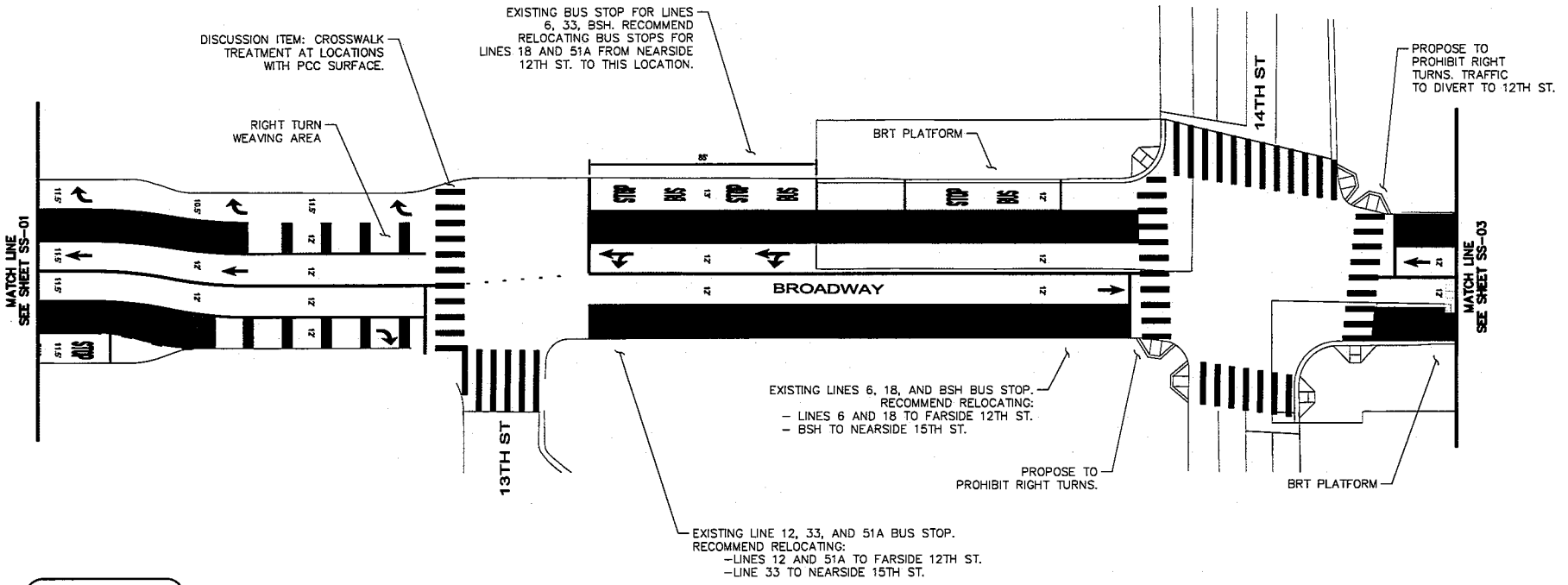

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BROADWAY TRANSIT LANES

CIVIL ENGINEER	No.	DATE	BY	REFERENCE
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RCE NO. 075749 EXP. 06/30/20				
DESIGNED BY BRENDAN PITTMAN, EIT				
CHECKED BY RYAN DOLE, P.E.				
DRAWN BY MICHAELA WOOD, EIT				

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SS-02

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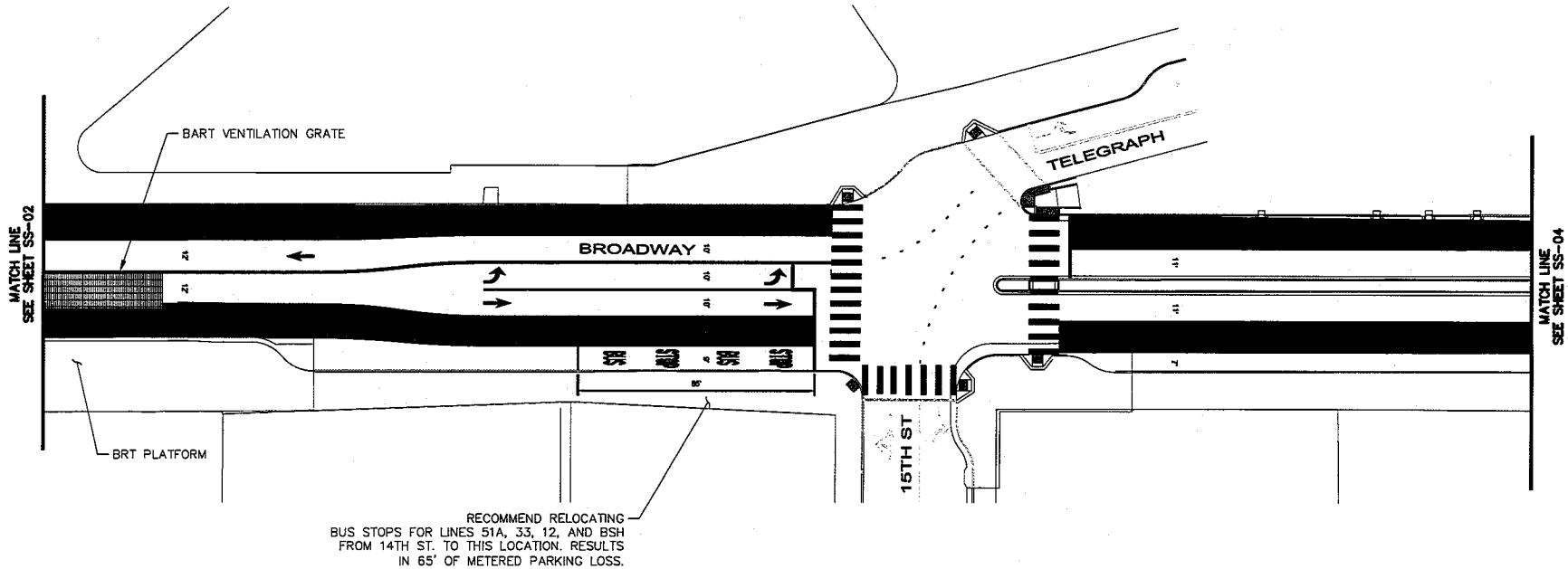

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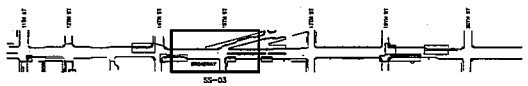

VICINITY MAP

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OAKLAND, CA 94612
PHONE: 510-625-0712

BROADWAY
TRANSIT LANES

CIVIL ENGINEER	No.	DATE	BY	REFERENCE
RYAN J. DOLE				
RCE NO. 075749 EXP. 06/30/20				
DESIGNED BY BRENDAN PITTMAN, EIT				
CHECKED BY RYAN DOLE, P.E.				
DRAWN BY MICHAELA WOOD, EIT				

SIGNING AND STRIPING PLAN

SS-03

SCALE: 1":40'

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5 OF 8

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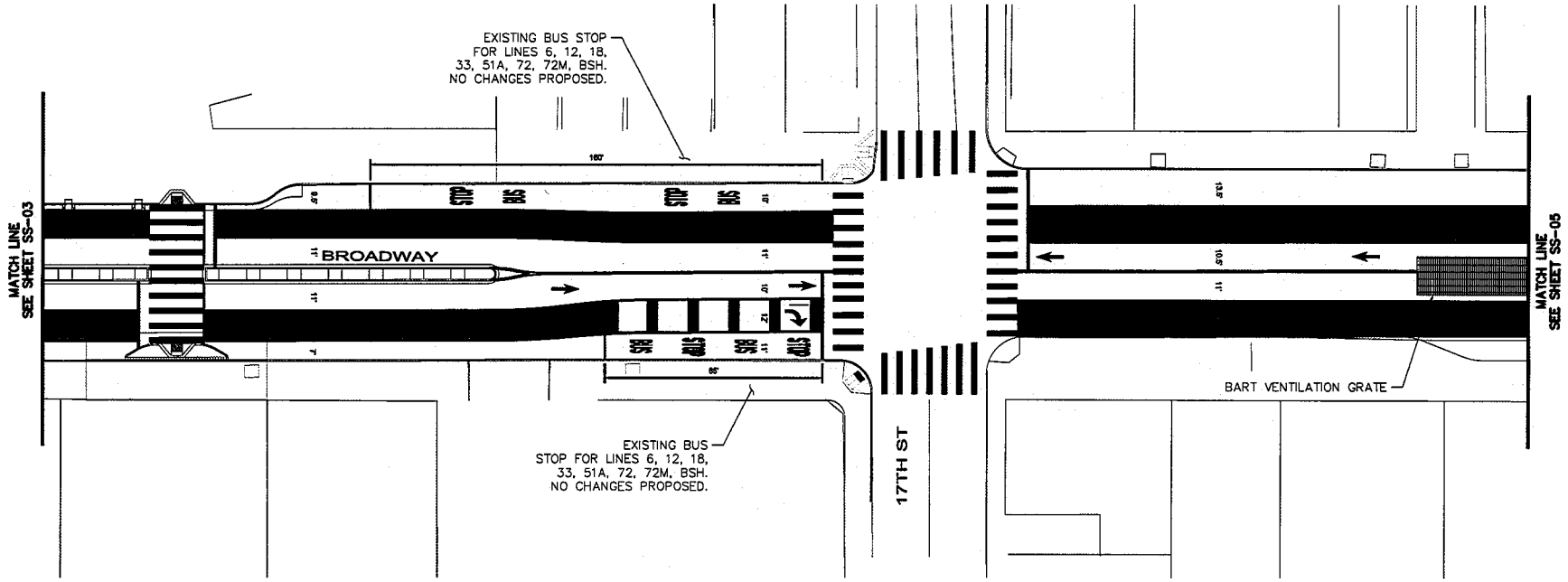

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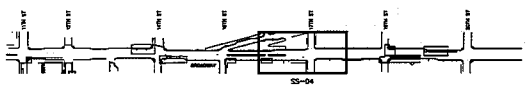

VICINITY MAP

SCALE 1" = 750'

CONSTRUCTION NOTES

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SIGN DETAILS

TO BE COMPLETED NEXT SUBMITTAL

GRAPHIC SCALE
(IN FEET)
0 20 40 80

PLAN PRODUCTION WARNING
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PROJECT NO. _____

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1300 CLAY STREET, SUITE 325,
OAKLAND, CA 94612
PHONE: 510-625-0712

BROADWAY
TRANSIT LANES

CIVIL ENGINEER	RYAN J. DOLE
RCE NO. 87574/G	EXP. 06/30/20
DESIGNED BY	BRENDAN PITTMAN, EIT
CHECKED BY	RYAN DOLE, P.E.
DRAWN BY	MICHAELA WOOD, EIT

No.	DATE	BY	REFERENCE

SIGNING AND STRIPING PLAN

SS-04

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DATE: JULY 2019
SHEET NO.
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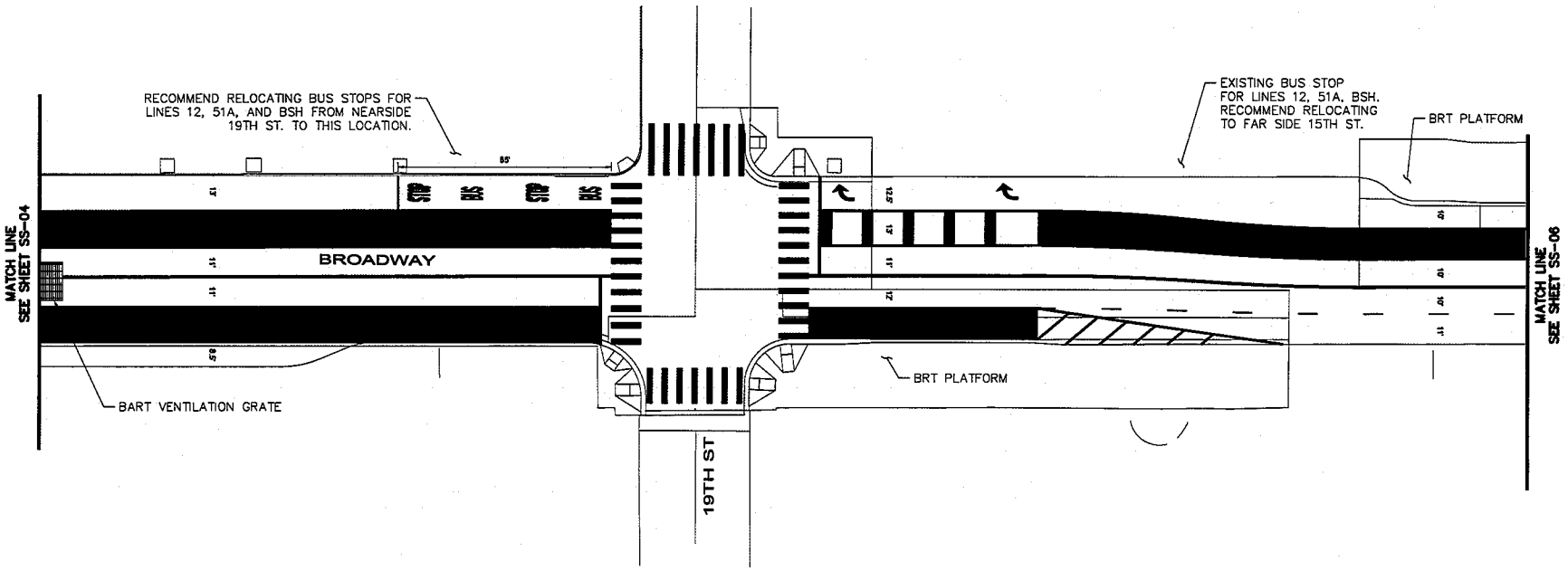
PLOTTED BY: Brendan Pittman



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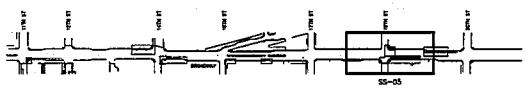


VICINITY MAP

SCALE 1" = 750'

CONSTRUCTION NOTES

TO BE COMPLETED NEXT SUBMITTAL

SIGN DETAILS

TO BE COMPLETED NEXT SUBMITTAL

GRAPHIC SCALE (IN FEET)

0 20 40 80

PLAN PRODUCTION WARNING

THE PLANS HAVE BEEN CREATED ON ANSI B (11" X 17") SHEETS. REFER TO GRAPHIC SCALE FOR SHEETS OF DIFFERENT SIZES.

CITY OF OAKLAND
DEPARTMENT OF ENGINEERING AND CONSTRUCTION SERVICES
250 FRANK OGAWA PLAZA, SUITE 4314 * OAKLAND, CA 94612
(510) 238-3437 * FAX (510) 238-7227
PROJECT NO. _____

Kimley»Horn
1300 CLAY STREET, SUITE 325,
OAKLAND, CA 94612
PHONE: 510-625-0712

BROADWAY
TRANSIT LANES

CIVIL ENGINEER	No.	DATE	BY	REFERENCE
RYAN J. DOLE				
RCE NO. 075749 EXP. 06/30/20				
DESIGNED BY BRENDAN PITTMAN, EIT				
CHECKED BY RYAN DOLE, P.E.				
DRAWN BY MICHAELA WOOD, EIT				

SIGNING AND STRIPING PLAN

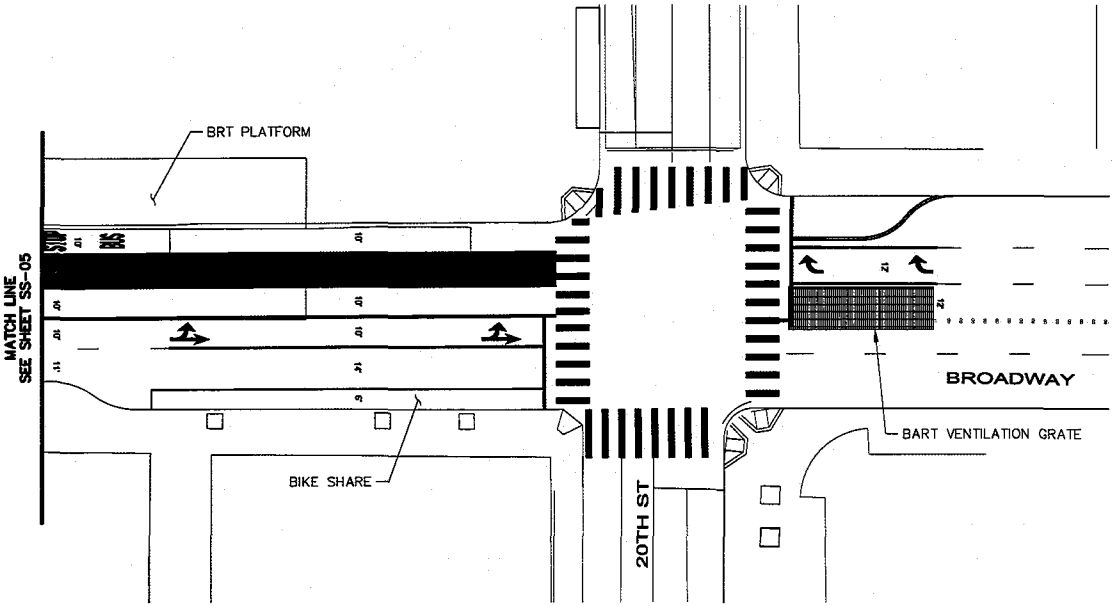
SS-05

SCALE: 1":40'

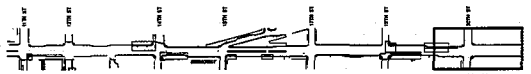
DATE: JULY 2019

SHEET NO. 7 OF 8

DRAWING NAME: K:\OAK_ITR\078\078005 - Oakland Broadway Transit Lanes\04_CAD\Plan Sheets\7 SS-05.dwg
PLOT DATE: 07-15-19
PLOTTED BY: Brendan.Pittman



35% DESIGN
FOR REVIEW ONLY



VICINITY MAP

SCALE 1" = 750'

CONSTRUCTION NOTES

TO BE COMPLETED NEXT SUBMITTAL

SIGN DETAILS

TO BE COMPLETED NEXT SUBMITTAL

GRAPHIC SCALE
(IN FEET)

0 20 40 80

PLAN PRODUCTION WARNING
THE PLANS HAVE BEEN CREATED ON ANSI B (11" X 17") SHEETS. REFER TO GRAPHIC SCALE FOR SHEETS OF DIFFERENT SIZES.

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PROJECT NO. _____

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1300 CLAY STREET, SUITE 325,
OAKLAND, CA 94612
PHONE: 510-625-0712

BROADWAY
TRANSIT LANES

CIVIL ENGINEER	No.	DATE	BY	REFERENCE
RYAN J. DOLE				
RCE NO. 0727/49 EXP. 06/30/20				
DESIGNED BY BRENDAN PITTMAN, EIT				
CHECKED BY RYAN DOLE, P.E.				
DRAWN BY MICHAELA WOOD, EIT				

SIGNING AND STRIPING PLAN

SS-06

SCALE: 1":40'
DATE: JULY 2019
SHEET NO.
8 OF 8

DRAWING NAME: K:\OAK_IT\067000005 - Oakland Broadway Transit Lanes\04_CADD\Plan Sheets\ss-06.dwg
PLOT DATE: 07-15-19
PLOTTED BY: Brendan Pittman

Appendix B: Queuing Summary

50th Percentile Queue Summary
Broadway Exclusive Transit Lanes

Scenarios Analyzed	Turning Movement	Broadway & 11th Street			Broadway & 12th Street			Broadway & 13th Street			Broadway & 14th Street			Broadway & 15th Street			Broadway & 16th Street			Broadway & 17th Street			Broadway & 19th Street			Broadway & 20th Street		
		Storage	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM
Existing	NBL				***90***	9								***150***	29														
	NBT	***204***	116	20	***200***	16	26	***193***	18	76	***210***	3	60	***316***	67	41	***212***	10	20	***225***	44	36	***377***	43	54	***432***	117	21
	NBR																											
	SBL	***75***	8	19																								
	SBT	***200***	23	37	***193***	0	29	***210***	28	118	***316***	35	83	***212***	48	130	***225***	16	11	***377***	19	49	***432***	54	26	***330***	15	10
	SBR																											
With Project	NBL				***90***	10	13							***113***	27	63												
	NBT	***204***	23	36	***200***	37	55	***193***	49	148	***210***	72	2	***316***	123	99	***212***	19	48	***225***	6	33	***377***	159	155	***432***	16	36
	NBR							***75***	0	7										***75***	0	0						
	SBL	***75***	9	12																								
	SBT	***200***	27	43	***193***	49	82	***210***	51	**595**	***316***	266	231	***212***	191	362	***225***	13	16	***377***	44	320	***432***	104	91	***330***	44	42
	SBR																						***75***	2	0			

Notes
1. 50th percentile queue lengths presented above are measured in feet.
2. Locations where turn pocket queues exceed lane storage by more than one car (i.e. 25 feet) are shown in**BOLD**. Locations are highglithed for instances where queues are projected to spill beyond turn pocket storage lengths, AND the proposed project increases queues by at least one vehicle length (i.e. 25 feet)

95th Percentile Queue Summary
Broadway Exclusive Transit Lanes

Scenarios Analyzed	Turning Movement	Broadway & 11th Street			Broadway & 12th Street			Broadway & 13th Street			Broadway & 14th Street			Broadway & 15th Street			Broadway & 16th Street			Broadway & 17th Street			Broadway & 19th Street			Broadway & 20th Street		
		Storage	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM	*Storage*	AM	PM
Existing	NBL				***90***	16	23							***150***	61	80													
	NBT	***204***	168	30	***200***	22	38	***193***	27	106	***210***	21	103	***316***	102	43	***212***	14	26	***225***	39	71	***377***	79	93	***432***	117	24
	NBR																											
	SBL	***75***	16	19																								
	SBT	***200***	32	49	***193***		41	***210***	35	176	***316***	47	115	***212***	67	206	***225***	20	20	***377***	23	82	***432***	54	38	***330***	15	16
	SBR																											
With Project	NBL				***90***	18	23							***150***	70	109												
	NBT	***204***	33	51	***200***	49	73	***193***	73	194	***210***	97	2	***316***	190	123	***212***	26	65	***225***	50	49	***377***	174	221	***432***	117	34
	NBR							***75***	4	33										***75***	2	3						
	SBL	***75***	24	m17																								
	SBT	***200***	48	53	***193***	118	180	***210***	#81	639	***316***	266	145	***212***	318	517	***225***	18	20	***377***	57	404	***432***	159	125	***330***	56	59
	SBR																						***75***	6	13			

Notes
1. 95th percentile queue lengths presented above are measured in feet.
2. Locations where turn pocket queues exceed lane storage by more than one car (i.e. 25 feet) are shown in**BOLD**. Locations are highglithed for instances where queues are projected to spill beyond turn pocket storage lengths, AND the proposed project increases queues by at least one vehicle length (i.e. 25 feet)

Approved as to Form and Legality

City Attorney

OAKLAND CITY COUNCIL

RESOLUTION NO._____C.M.S.

Introduced by Councilmember _____

RESOLUTION 1) SUPPORTING TRANSIT TRAVEL TIME IMPROVEMENTS THROUGH DEDICATED TRANSIT ONLY LANES ON BROADWAY FROM 11TH STREET TO 20TH STREET; 2) ADOPTING CALIFORNIA ENVIRONMENTAL QUALITY ACT EXEMPTION FINDINGS; AND 3) AUTHORIZING THE CITY ADMINISTRATOR OR DESIGNEE TO RECEIVE ALLOCATED FUNDS FROM ALAMEDA COUNTY TRANSPORTATION COMMISSION FOR THE STUDY AND OPERATIONS OF THE BROADWAY SHUTTLE; AND FOR THE DESIGN AND CONSTRUCTION OF PAVEMENT REHABILITATION, TRANSIT ONLY LANES, AND PEDESTRIAN SAFETY IMPROVEMENTS ON BROADWAY BETWEEN 11TH STREET AND 20TH STREET

WHEREAS, Oakland's Transit First Policy (73036 C.M.S.) establishes transit as a priority mode of transportation and links increased transit ridership to important city goals related to social equity and the environment; and

WHEREAS, Oakland's Transit First Policy also identifies the importance of priority transit treatments like bus bulbs, transit signal priority, and dedicated bus lanes; and

WHEREAS, such priority transit treatments have long been identified a priority treatments for Broadway in downtown Oakland; and

WHEREAS, staff analysis finds that adding dedicated bus lanes to Broadway between 11th and 20th Streets in downtown Oakland will result in up to 30% travel time savings and 20% travel time reliability improvements for transit; and

WHEREAS, such improvements align both with the City of Oakland's Transit First Policy (73036 C.M.S.) and its Complete Streets Policy (13153 C.M.S.); and

WHEREAS, improvements that make transit more reliable benefit Oakland's most vulnerable and underserved residents; and

WHEREAS, Broadway between 11th Street and 20th Street/Thomas L. Berkley Way is prioritized for pavement rehabilitation and maintenance as part of the adopted 2019 3-Year Paving Plan (87673 C.M.S.); and

WHERAS, funding is earmarked for Broadway transit investments through the Alameda County Transportation Commission's Measure BB Transportation Expenditure Plan; and

WHEREAS, the Project is consistent with the City's General Plan, Transit First Policy, and Complete Streets Policy; and

WHEREAS, after a duly noticed public meeting, on September 24, 2019, the Public Works Committee voted to recommend the proposal to the City Council; and

WHEREAS, on October 1, 2019, the City Council considered the proposed Project; and

WHEREAS, the proposed Project is exempt from CEQA pursuant to CEQA Guidelines Sections 15183 (Projects Consistent with a Community Plan, General Plan or Zoning), 15301(c) (Existing Facilities, Highways and Streets), 15304(h) (minor alterations to land), and/or 15061(b)(3) (No Significant Effect on the Environment); each of the aforementioned provides a separate and independent basis for CEQA compliance; now, therefore be it

RESOLVED, that, to improve transit service for Oaklanders, the City Council of the City of Oakland hereby supports the implementation of dedicated bus only lanes on Broadway between 11th and 20th Streets in downtown Oakland; and be it

FURTHER RESOLVED, that the proposed Project is exempt from CEQA pursuant to CEQA Guidelines Sections 15183 (Projects Consistent with a Community Plan, General Plan or Zoning), 15301(c) (Existing Facilities, Highways and Streets), 15304(h) (minor alterations to land), and/or 15061(b)(3) (No Significant Effect on the Environment); each of the aforementioned provides a separate and independent basis for CEQA compliance; and be it

FURTHER RESOLVED, that this Resolution complies with CEQA and the City Administrator or designee shall file a Notice of Exemption with appropriate agencies, and be it

FURTHER RESOLVED, that the City Administrator is authorized to accept funds on behalf of the City of Oakland from Alameda County Transportation Commission to implement such improvements on Broadway; and be it

FURTHER RESOLVED, that the City Administrator is authorized to accept funds on behalf of the City of Oakland from Alameda County Transportation Commission to continue operations and study the future of the Broadway Shuttle; and be it

FURTHER RESOLVED, that, to reduce construction impacts to extent possible and to realize the benefits to transit operations soonest, the City will commit to work with AC

Transit to complete construction of improvements on Broadway during the current East Bay Bus Rapid Transit construction effort.

IN COUNCIL, OAKLAND, CALIFORNIA, _____

PASSED BY THE FOLLOWING VOTE:

AYES – FORTUNATO BAS, GALLO, GIBSON MCELHANEY, KALB, REID, TAYLOR, THAO and PRESIDENT KAPLAN

NOES -

ABSENT -

ABSTENTION -

ATTEST:_____
LaTonda Simmons
City Clerk and Clerk of the Council
of the City of Oakland, California