WASHINGTON BOULEVARD AT BROADWAY AVENUE MULTIFAMILY RESIDENTIAL PROJECT TRAFFIC IMPACT STUDY & VMT ANALYSIS
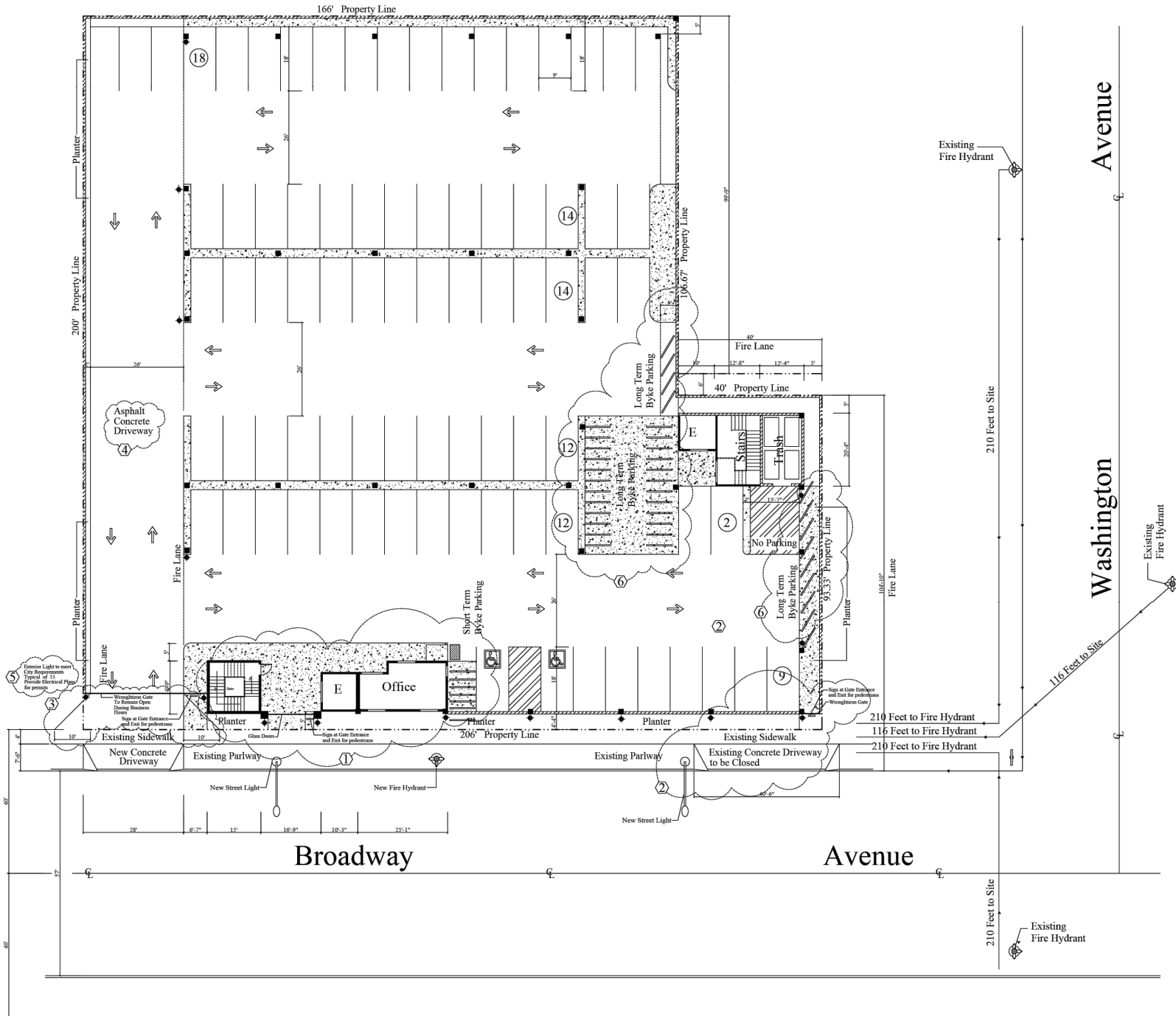## County of Los Angeles, California

RK engineering group, inc.

WASHINGTON BOULEVARD AT BROADWAY AVENUE
MULTIFAMILY RESIDENTIAL PROJECT
TRAFFIC IMPACT STUDY
County of Los Angeles, California

Prepared for:

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February 20, 2025
(Revision to January 23, 2025 Report)

RK19953.7.doc
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Table of Contents

Table of Contents

Table of Contents

Section   **Page**

List of Exhibits

Exhibits

List of Tables

Tables

List of Appendices

Appendices

1.0 Introduction

1.1   Purpose of Report & Study Objectives

The purpose of this traffic impact study is to evaluate the Washington Avenue at Broadway Avenue Multifamily Residential Project (hereinafter referred to as "Project") from a traffic and circulation standpoint and to determine whether the Project has a significant traffic impact.

This traffic study has been conducted pursuant to the *Los Angeles County Public Works Transportation Impact Analysis Guidelines,* dated July 23, 2020 (TIA Guidelines) and the California Environmental Quality Act (CEQA) requirements.

1.2   Site Location & Project Description

The Washington Boulevard at Broadway Avenue Multifamily Residential Project (hereinafter referred to as "project") is located within the Gateway Planning Area of Unincorporated Los Angeles County and within Los Angeles County Supervisorial District #4. Specifically, the site project is located at 7914 Broadway Avenue, generally located near the intersection of Broadway Avenue and Washington Boulevard.

The project characteristics are as follows:

- Assessor's Parcel Numbers (APN): 8173-023-020 and 8173-023-021

- Project's Type w/ID#: (R) 85860326429

- Project's RPPL#: RPPL2023003948

- Project's Assigned DRP Planner: Mr. Carl Nadela

The project proposes to raze the existing single-family residence and construct a five-story multifamily apartment building consisting of sixty (60) dwelling units (DU), which includes seven (7) affordable housing DU. Access to the project is proposed via one (1) full-access unsignalized driveway located along Broadway Avenue. A total of 81 on-site parking spaces are proposed. The project is planned to open in 2026 and will be evaluated in one (1) single phase.

RK has coordinated with Mr. Carl Nadela to confirm the number of proposed housing dwelling units, which has been agreed to be seven (7) affordable housing DUs. This email correspondence with Mr. Carl Nadela is provided in **Appendix A**.

Exhibit 1-1 shows the location map of the proposed project. **Exhibit 1-2** shows the proposed site plan.

Exhibit 1-1
Location Map
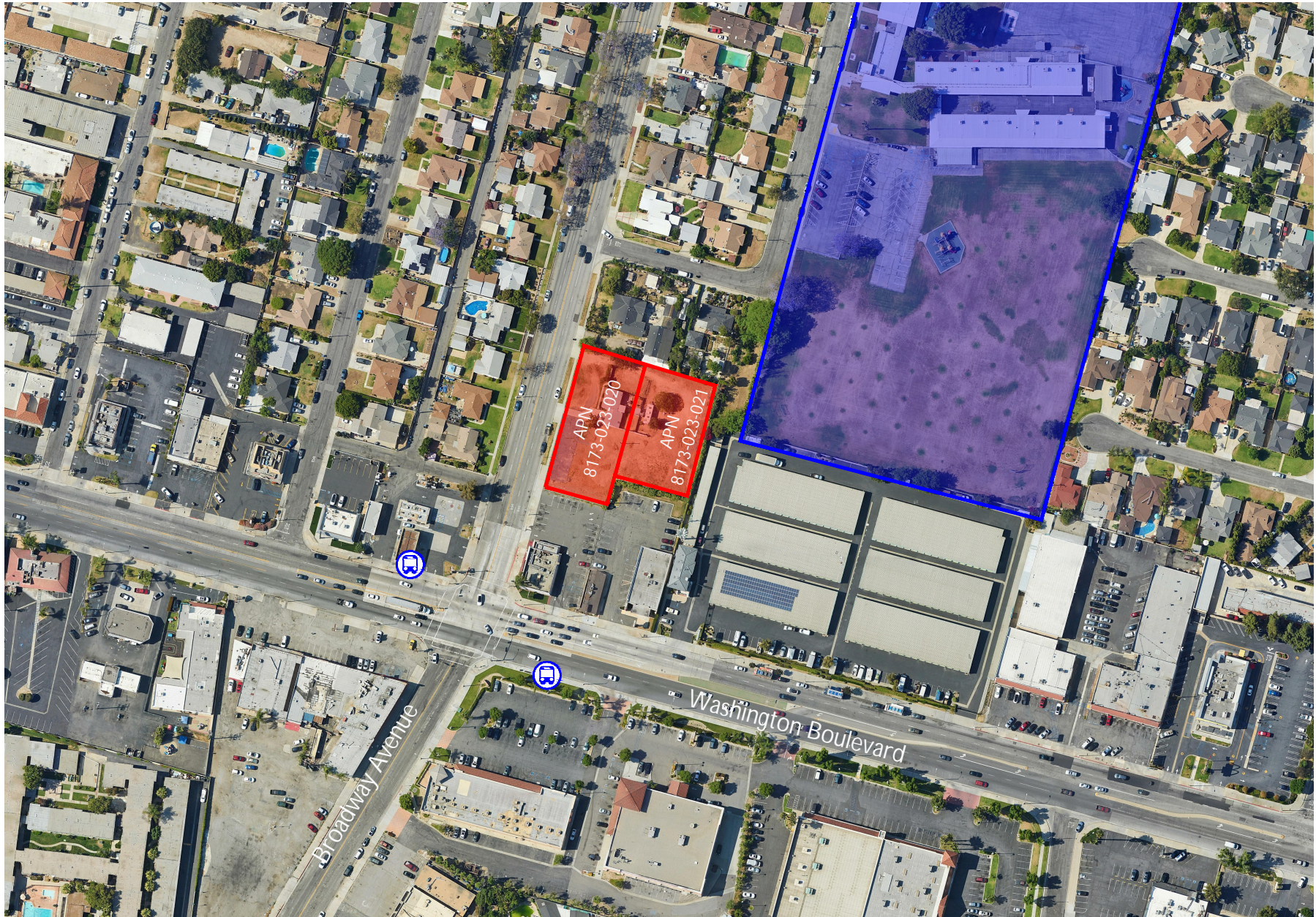
Legend:

- ☐ = Project Site
- ☐ = Adjacent Cornerstone Preschool
- 🚌 = Nearby Bus Stops Within Vicinity of Project Site

APN 8173-023-020
APN 8173-023-021

Washington Boulevard

Broadway Avenue

N

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Exhibit 1-2
Site Plan

166' Property Line

Planter

200' Property Line

18

26'

26'

Asphalt Concrete Driveway

4

14

14

106.67' Property Line

99.67'

Fire Lane

40'

12'-8" 12'-4"

40' Property Line

Long Term Byke Parking

Fire Lane

26'

Fire Lane

Planter

5

Exterior Light to meet City Requirements Typical of 15 Provide Electrical Plans for permits

3

Wroughtion Gate To Remain Open During Business Hours

Sign at Gate Entrance and Exit for pedestrians

Planter

Existing Sidewalk

10'

New Concrete Driveway

7'-6"

Long Term Byke Parking

12

Long Term Byke Parking

12

6

Short Term Byke Parking

E

Office

Glass Doors

Sign at Gate Entrance and Exit for pedestrians

206' Property Line

Existing Parlway

New Street Light

New Fire Hydrant

E

Stairs

Trash

2

No Parking

Long Term Byke Parking

93.33' Property Line

Planter

100'-10"

Fire Lane

2

6

9

Sign at Gate Entrance and Exit for pedestrians Wroughtion Gate

Planter

Planter

Existing Sidewalk

Existing Parlway

Existing Concrete Driveway to be Closed

1

2

40'-6"

New Street Light

28'   6'-7"   15'   16'-9"   10'-3"   25'-1"

Broadway   Avenue

57

40'

Existing Fire Hydrant

Washington   Avenue

Existing Fire Hydrant

210 Feet to Site

116 Feet to Site

210 Feet to Fire Hydrant

116 Feet to Fire Hydrant

210 Feet to Fire Hydrant

210 Feet to Site

Existing Fire Hydrant

N

3184-2024-01
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1.3   Traffic Study Area & Analysis Scenarios

Exhibit 1-3 illustrates the traffic analysis study area. The study area consists of two (2) off-site study intersections and one (1) project access driveway as listed below. All study intersections are located within the Unincorporated County of Los Angeles:

1. Broadway Avenue (N/S) at Mines Boulevard (E/W);

2. Broadway Avenue (N/S) at Washington Boulevard (E/W); and

3. Broadway Avenue (N/S) at Project Access Driveway (E/W) [FUTURE INTERSECTION].

The analysis evaluates traffic conditions of the three (3) study intersections for the following scenarios during the weekday (7:00 AM to 9:00 AM) and weekday PM (4:00 PM to 6:00 PM) peak periods, in accordance with the applicable jurisdictional traffic impact analysis guidelines for the Unincorporated County of Los Angeles.

*   Existing Conditions; and

*   Opening Year (2026) With Project Conditions.

Exhibit 1-3
Study Area

Broadway Avenue

Mines Boulevard

Washington Boulevard

①

③

②

N

Legend:

① = Study Area Intersection

■ = Project Site

- - - = Project Access Driveway

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2.0   Circulation System & Existing Conditions

This section provides a discussion of existing study area conditions and traffic volumes.

2.1   Traffic Controls & Intersection Geometrics

Exhibit 2-1A identifies the existing and project-specific roadway conditions for the study area roadways. **Exhibit 2-1B** identifies the future planned roadway conditions for the study area roadways. The number of through traffic lanes for existing/planned/ project-specific roadways and the existing/planned/project-specific intersection controls are identified. The type of traffic control and number of lanes at an intersection are key inputs for the calculation of level of service.

2.2   Existing Traffic Volumes

Existing conditions intersection level of service calculations are based upon manual AM and PM peak hour turning movement counts taken in May 2024 during typical weekday conditions. The weekday AM and PM peak hour traffic volumes were determined by counting the two-hour peak period from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM, respectively, and using the highest hour within each two-hour peak period.

The traffic count worksheets are included in **Appendix B**. Existing traffic volumes are provided in **Exhibit 2-2.**

2.3   Existing Potential Pedestrian Destinations

The project is located near many potential pedestrian destinations such as the shopping plazas located directly south, east, and west of the Project. Additionally, preschools are located northeast and southwest of the Project.

Exhibit 2-3 illustrates the existing potential pedestrian destinations located within 1,320 feet of the project.

It should be noted that an area map illustrating the location of the project and related future projects is discussed in Section 3.2.2. and shown in Exhibit 3-4.

2.4   County of Los Angeles General Plan 2035 Mobility Element

Exhibit 2-4 illustrates the County of Los Angeles General Plan 2035 Mobility Element's Highway Plan Policy Map. As shown in Exhibit 2-4, the classification for the roadway segments of the study intersections that appear as a major route or is part of a highway system that serves as principal network for through traffic are as follows:

Exhibit 2-1A

Existing & Project-Specific Lane Geometry and Traffic Controls

Broadway Avenue

Mines Boulevard

Washington Boulevard

① 1

② 2

③ 3

Legend:

① = Study Area Intersection

▭ = Project Site

▄▄▄ = Project Access Driveway

◑ = Traffic Signal

•─ = Stop Sign

▬▬ = Project-Specific Lane Geometry & Traffic Controls

N

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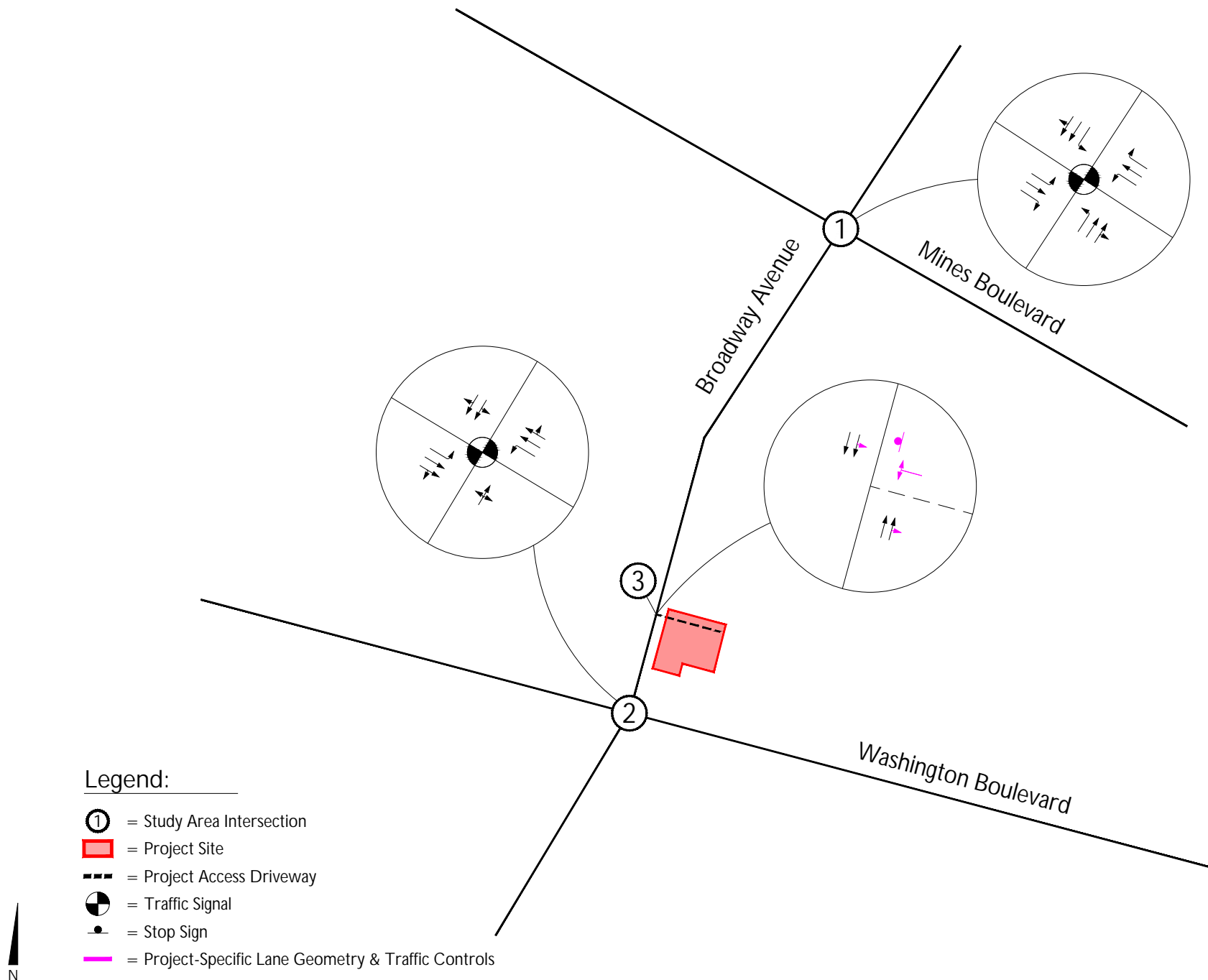
Exhibit 2-1B
Future Planned Lane Geometry and Traffic Controls
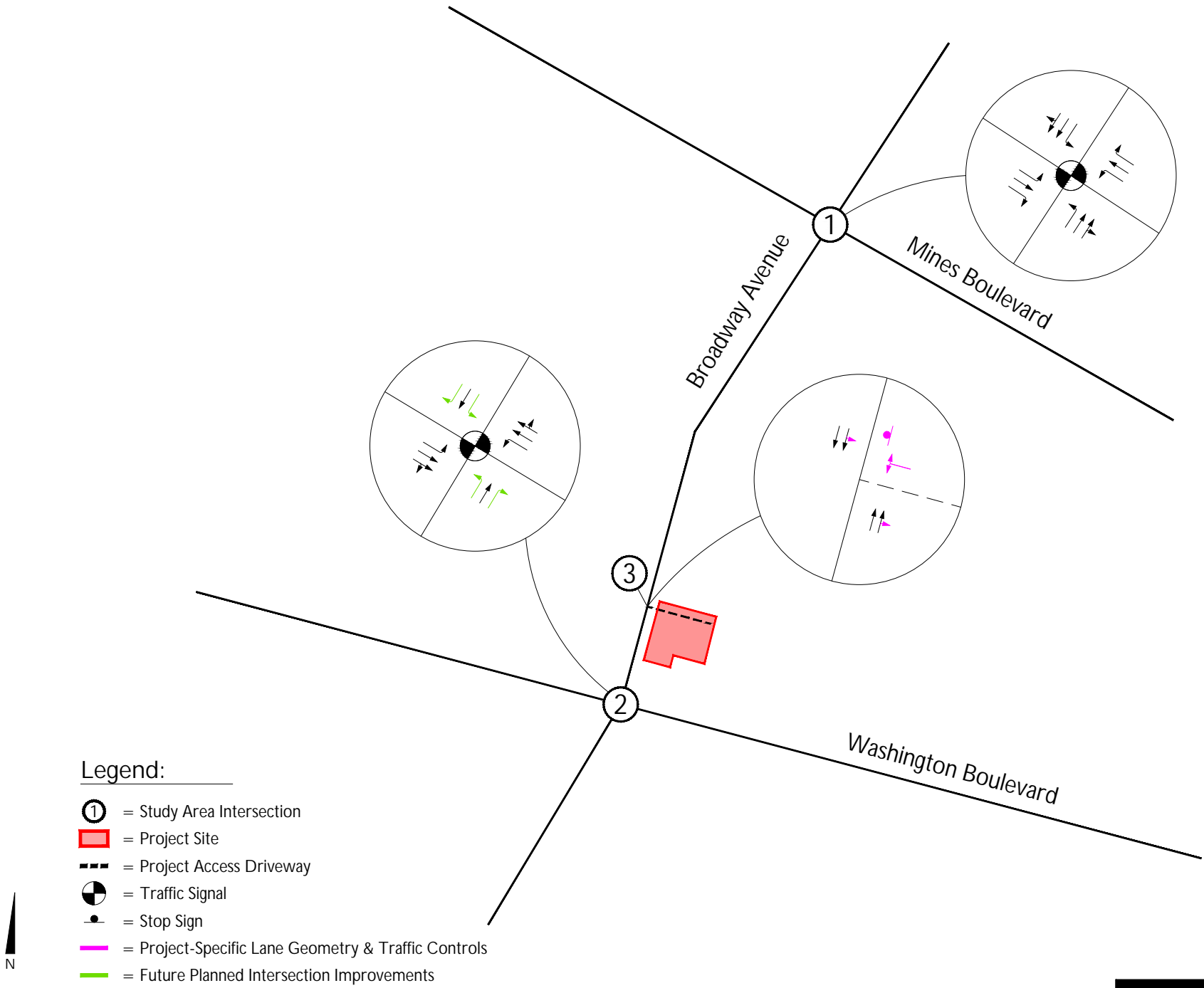
Broadway Avenue

Mines Boulevard

Washington Boulevard

①

③

②

Legend:

① = Study Area Intersection

= Project Site

= Project Access Driveway

= Traffic Signal

= Stop Sign

= Project-Specific Lane Geometry & Traffic Controls

= Future Planned Intersection Improvements

N

3184-2024-01
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Exhibit 2-2
Existing Traffic Volumes

Broadway Avenue

Mines Boulevard

Washington Boulevard

95/63
312/303
148/120
121/111
329//111
46/33
49/108
314/377
54/42
39/39
216/401
28/32

227/187
183/141
88/82
102/176
715/923
46/56
53/66
1125/1172
50/64
36/54
109/264
68/79

544/422
236/543

Legend:

① = Study Area Intersection

= Project Site

= Project Access Driveway

10/20 = Project AM/PM Peak Hour Volumes

N

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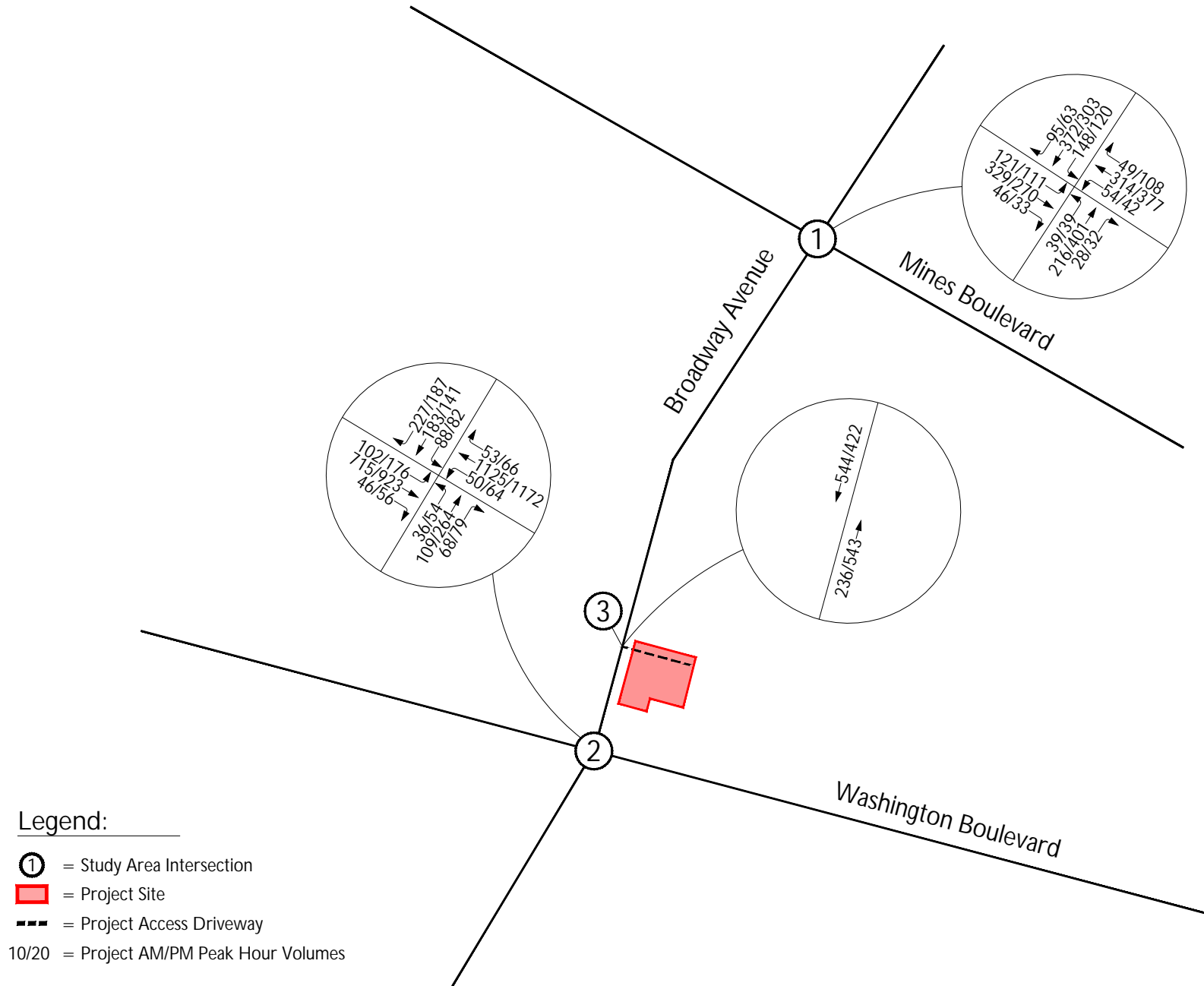
Exhibit 2-3
Existing Potential Pedestrian Destination
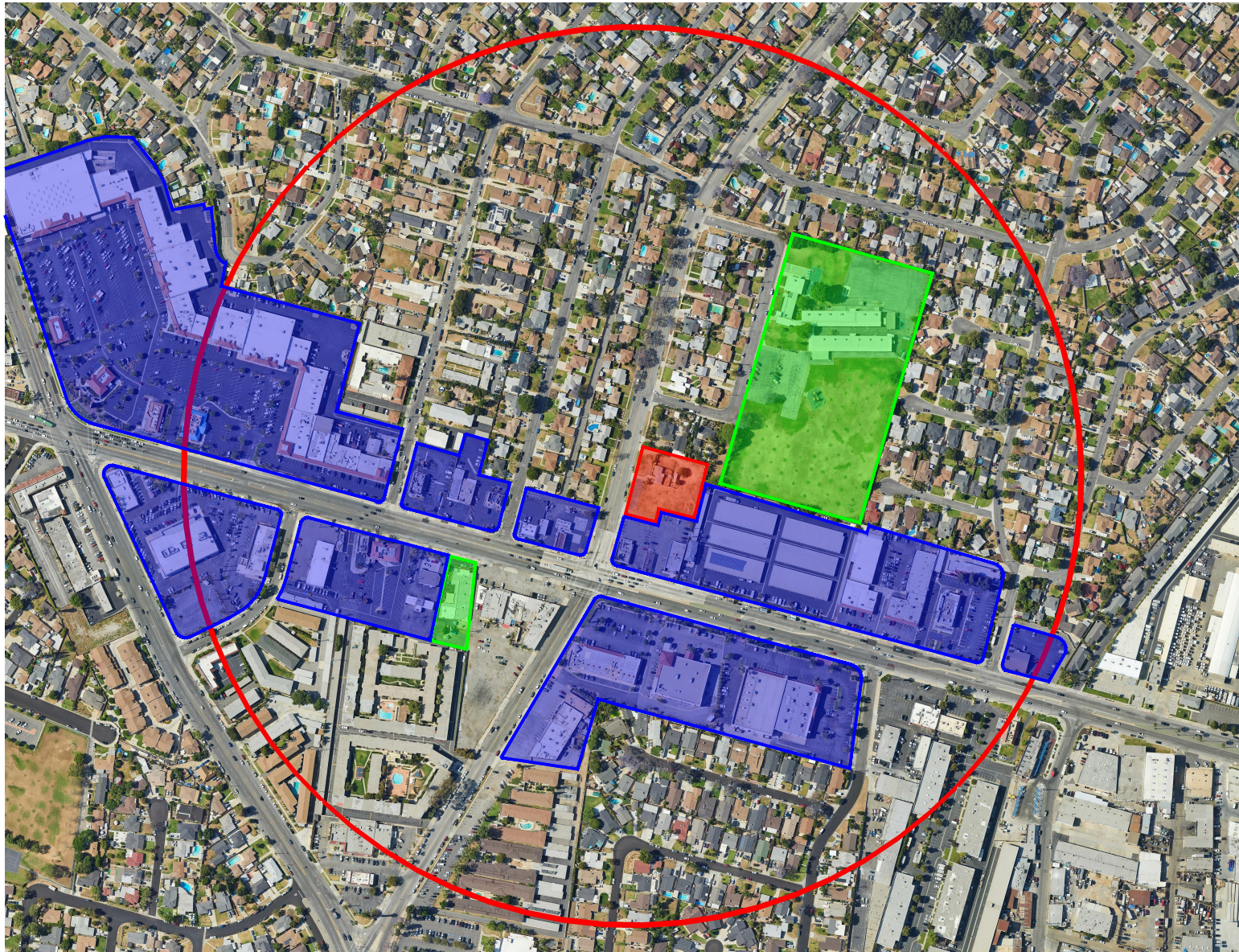
Legend:

▭	= Project
⭕	= 1,320 Feet Radius Buffer
▮	= Local Retail
▮	= Preschool

N

3184-2024-01
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PICO RIVERA

Mines Boulevard

Broadway Avenue

Washington Boulevard

605

Legend:

N
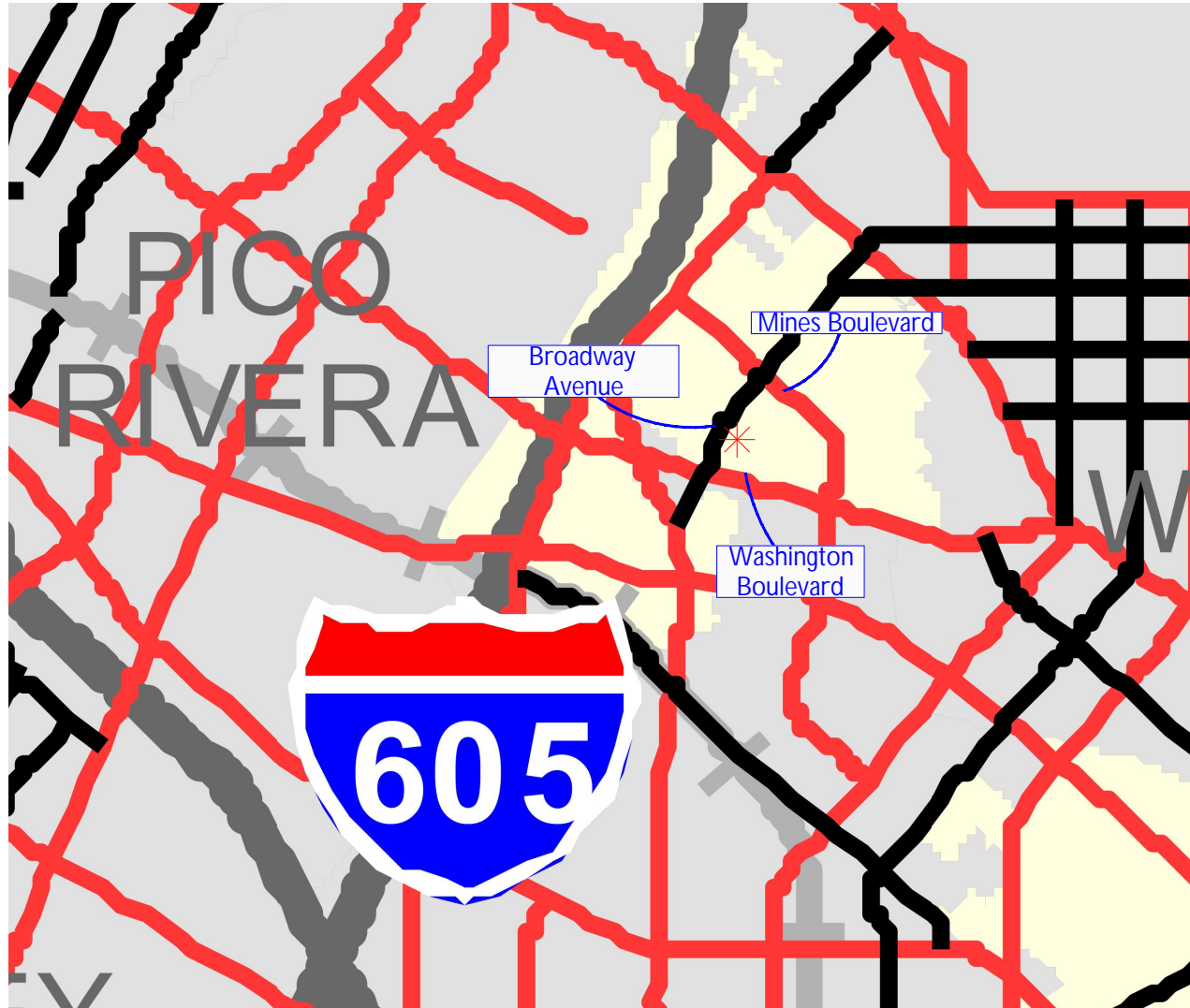
✳ = Project Site

▬ = Existing Major Highway

▬ = Existing Secondary Highway

3184-2024-01
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- Broadway Ave. – Existing Secondary Highway (undivided 4 lanes, 80 feet right-of-way);

- Washington Blvd. – Existing Major Highway (divided 4 lanes, 100 feet right-of-way); and

- Mines Blvd. – Existing Major Highway (divided 2 lanes w/ TWLTL, 100 feet right-of-way.)

Exhibit 2-5 and **Exhibit 2-6** illustrates the County of Los Angeles existing bikeways map and the County of Los Angeles General Plan 2035 Mobility Element's Bicycle Master Plan, respectively. As shown in Exhibits 2-5 and 2-6, the following bikeway classifications are identified:

- Broadway Ave. – Existing Class III Bike Route

- Washington Blvd. – No Existing Bikeways & No Proposed Bikeways

- Mines Blvd. – Existing Class II Bike Lane & Proposed Class III Bike Route

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Exhibit 2-5
County of Los Angeles Existing Bikeway Map
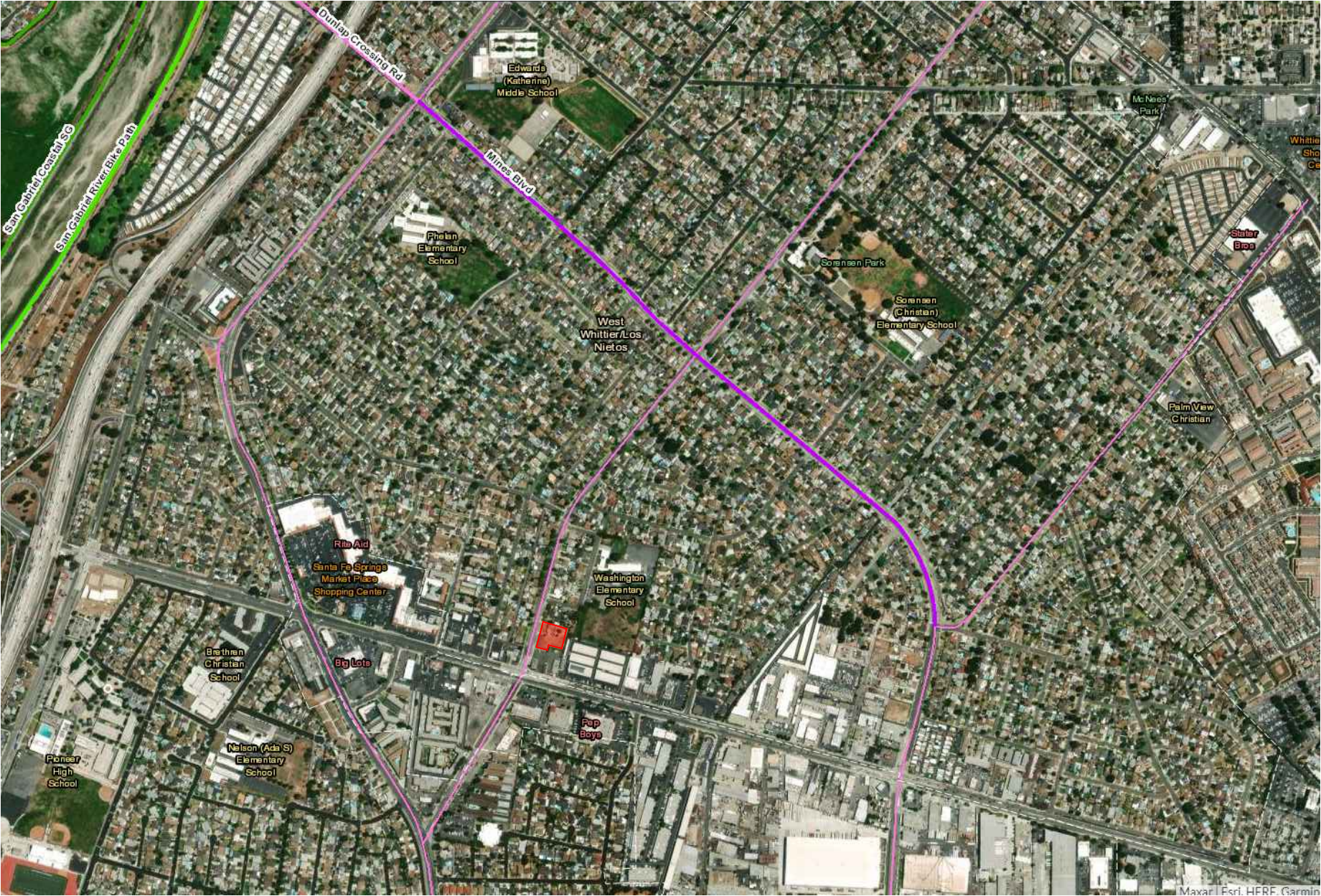
Legend:

◻ = Project Site

— = Bike Path

— = Bike Lane

— = Bike Route

N

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NORTH WHITTIER

WEST WHITTIER - LOS NIETOS

PICO RIVERA

SANTA FE SPRINGS
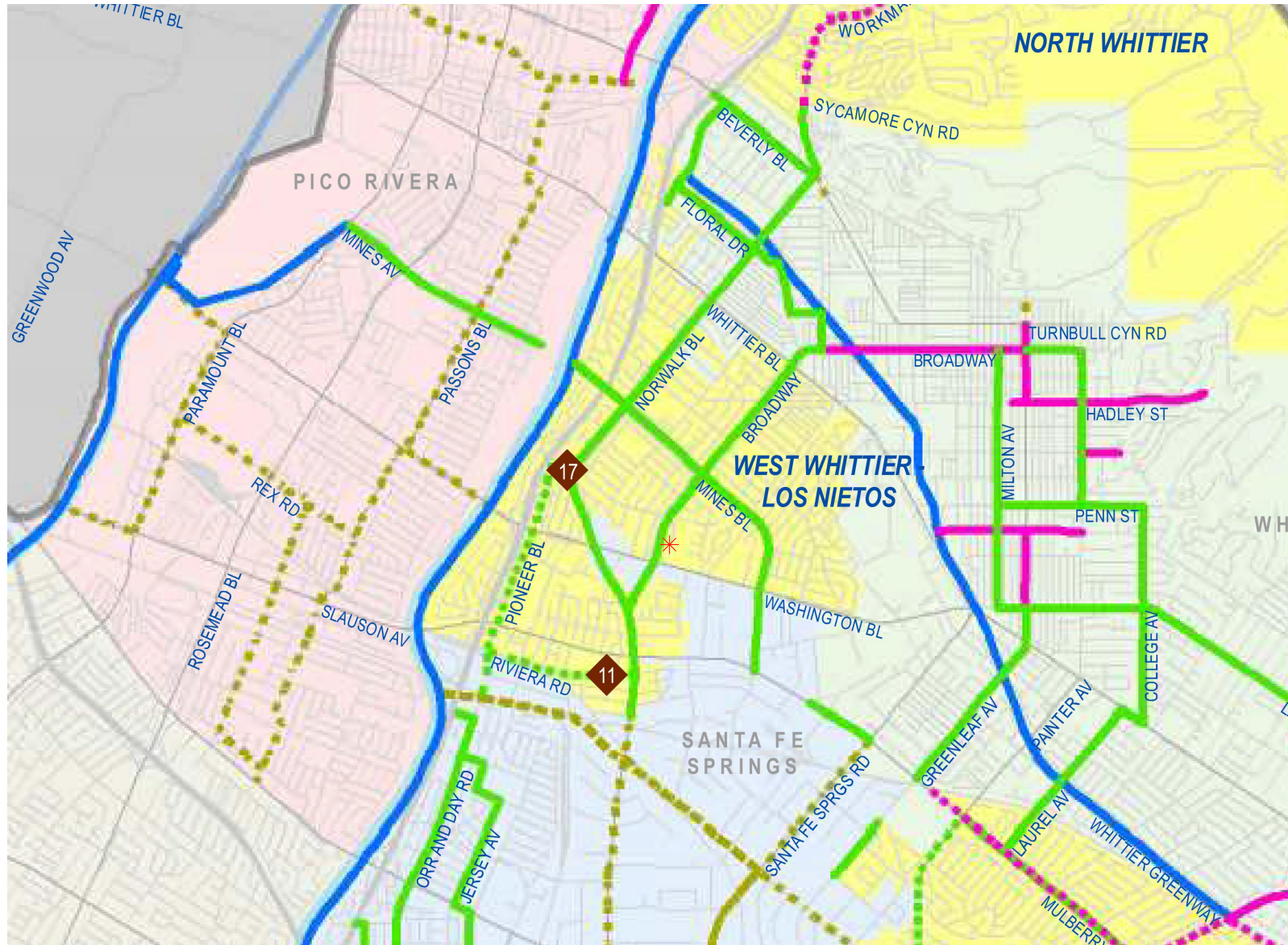
Legend:

✳ = Project Site

━━ = Class I - Bike Path

━━ = Class II - Bike Lane

━━ = Classs III - Bike Route

N

3184-2024-01

WASHINGTON BOULEVARD AT BROADWAY AVENUE MULTIFAMILY RESIDENTIAL PROJECT TIS & VMT ANALYSIS , County of Los Angeles, CA

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3.0 Future Traffic Volumes

This section provides a discussion on methodologies utilized to derive future traffic volumes for the study area.

3.1 Future Planned Improvements

It is RK's understanding that the County of Los Angeles is currently finalizing plans to configure the intersection of Broadway Avenue at Washington Boulevard (i.e., Intersection 2) to provide an exclusive northbound left-turn lane, exclusive right-turn lane, and through lane for the northbound and southbound approaches.

The future planned configuration for Intersection 2 is illustrated in Exhibit 2-1B.

3.2 Project Traffic Conditions

3.2.1 Project Trip Generation

Trip generation represents the amount of traffic that is attracted and produced by a development. Typically, trip generation rates from the latest Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021) are used when calculating a proposed project's trip generation forecast. This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

The project is proposing to construct a five-story multifamily apartment building consisting of sixty (60) dwelling units (DU), which includes seven (7) affordable housing DU. As such, ITE Land Use Code 221: Multifamily Housing (Mid-Rise) trip rates are the most appropriate for this land use.

Table 3-1 shows the referenced ITE Trip Generation Rates for the proposed project. **Table 3-2** shows the trip generation for the proposed utilizing the identified trip generation rates.

Table 3-1
ITE Trip Generation Rates[1]

Land Use	ITE Code	Units[2]	Weekday						Daily
			AM Peak Hour			PM Peak Hour			
			In	Out	Total	In	Out	Total	
Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	221	DU	23%	77%	0.37	61%	39%	0.39	4.54

[1] *Source*: ITE Trip Generation Manual (11th Edition, 2021).

[2] DU = Dwelling Units.

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Table 3-2
Project Trip Generation[1]

Land Use	Quantity	Units[2]	Weekday						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	60	DU	5	17	22	14	9	23	272

[1] Source: ITE Trip Generation Manual (11th Edition, 2021).

[2] DU = Dwelling Units.

As shown in Table 3-2, the project is forecast to generate approximately 272 daily trips with approximately 22 trips during the AM peak hour and approximately 23 trips during the PM peak hour.

3.2.2 Project Trip Distribution & Assignment

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of residential, employment and recreational opportunities, and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating existing and proposed land uses, highways within the community, and existing traffic volumes.

The assignment of traffic from the project site to the adjoining roadway system has been based upon the site's trip generation, trip distribution, existing and proposed arterial highways, and local street systems, which would be in place by the time of initial occupancy of the site.

Exhibit 3-1 shows the forecast project trip distribution.

3.2.3 Modal Split

Modal split denotes the proportion of traffic generated by a project that would use any of the transportation modes, namely buses, cars, bicycles, motorcycles, trains, carpools, etc. The traffic-reducing potential of public transit and other modes is significant. However, the traffic projections in this study are conservative in that public transit and alternative transportation may be able to reduce the traffic volumes, but no modal split reduction is applied to the projections. With the implementation of transit service and provision of alternative transportation ideas and incentives, the automobile traffic demand can be reduced significantly.

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Exhibit 3-1
Project Trip Distribution

Mines Boulevard

Broadway Avenue

20

100

45

Washington Boulevard

20

15
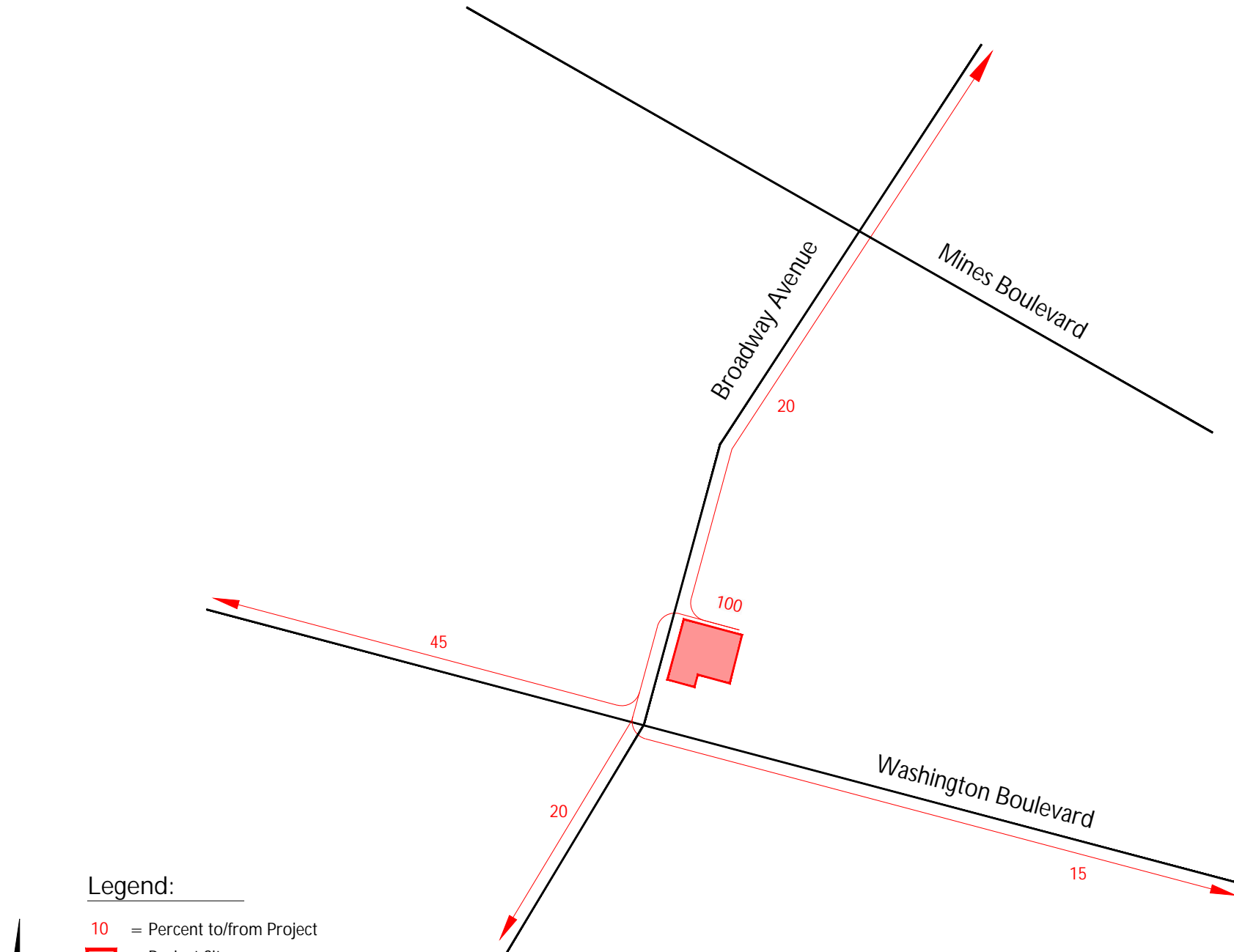
Legend:

10 = Percent to/from Project

= Project Site

= Project Access Driveway

N

3184-2024-01
WASHINGTON BOULEVARD AT BROADWAY AVENUE MULTIFAMILY RESIDENTIAL PROJECT TIS & VMT ANALYSIS , County of Los Angeles, CA

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3.2.4 Project Peak Hour Traffic Volumes

Project peak hour and daily traffic volumes have been calculated throughout the study area. The project's AM and PM peak hour intersection turning movement volumes are shown on **Exhibit 3-2.**

3.3 Background Traffic

3.3.1 Method of Projection

To assess future traffic conditions, project traffic is combined with existing traffic and area-wide growth. To account for area-wide/ambient growth in the study area, a "Year 2024 to Year 2026" growth factor of 1.0043 has been calculated based on the growth factor information provided in the Los Angeles County 2010 Congestion Management Plan (CMP), as summarized in **Table 3-3.** This growth factor has been applied to the existing (2024) traffic volumes for project opening year 2026 conditions.

Table 3-3
Traffic Volume Growth Factor Calculations

RSA	Representative City/Place	2025		2030		Derived Growth Factor from Year 2024 to Year 2026[3]
		General Traffic Growth Factors[1]	Annual Growth Rate[2]	General Traffic Growth Factors[1]	Annual Growth Rate[2]	
22	Downey	1.116	0.22%	1.127	0.21%	1.0043

[1] Source: *Los Angeles County 2010 Congestion Management Plan (CMP)*. Growth factors for the Downey Regional Statistical Area (RSA) 22. Base Year 2010.

[2] Annual growth rates of each 5 year interval were provided by County of LA staff.

[3] Derived Growth Factor from Year 2024 to Year 2026 was calculated using the annual growth rates for Year 2025 and Year 2030 & the following equation: $Growth\ Factor = (1 + \frac{Growth\ Rate_{2025}}{100})^{(2025-2024)} * (1 + \frac{Growth\ Rate_{2030}}{100})^{(2026-2025)}$

3.3.2 Cumulative Projects Traffic Volumes

Exhibit 3-3 illustrates the jurisdictions located within a 1-mile radius of the project, which consists of the City of Whittier, the City of Pico Rivera, and the City of Santa Fe Springs.

However, it should be noted that the portions of the City of Whittier and City of Pico Rivera within the 1-mile buffer are generally built-out. As such, only cumulative projects located in the City of Santa Fe Springs and the Unincorporated County of Los Angeles (within a 1-mile radius of the project) are included in this study. Information on future projects in the vicinity of the study area for inclusion in this analysis has been provided via interactive GIS maps made available from the Unincorporated County of Los Angeles Planning Department and

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Exhibit 3-2
Project Traffic Assignment

Broadway Avenue

Mines Boulevard

Washington Boulevard

Legend:

① = Study Area Intersection

= Project Site

▬ ▬ ▬ = Project Access Driveway

10/20 = Project AM/PM Peak Hour Volumes

N

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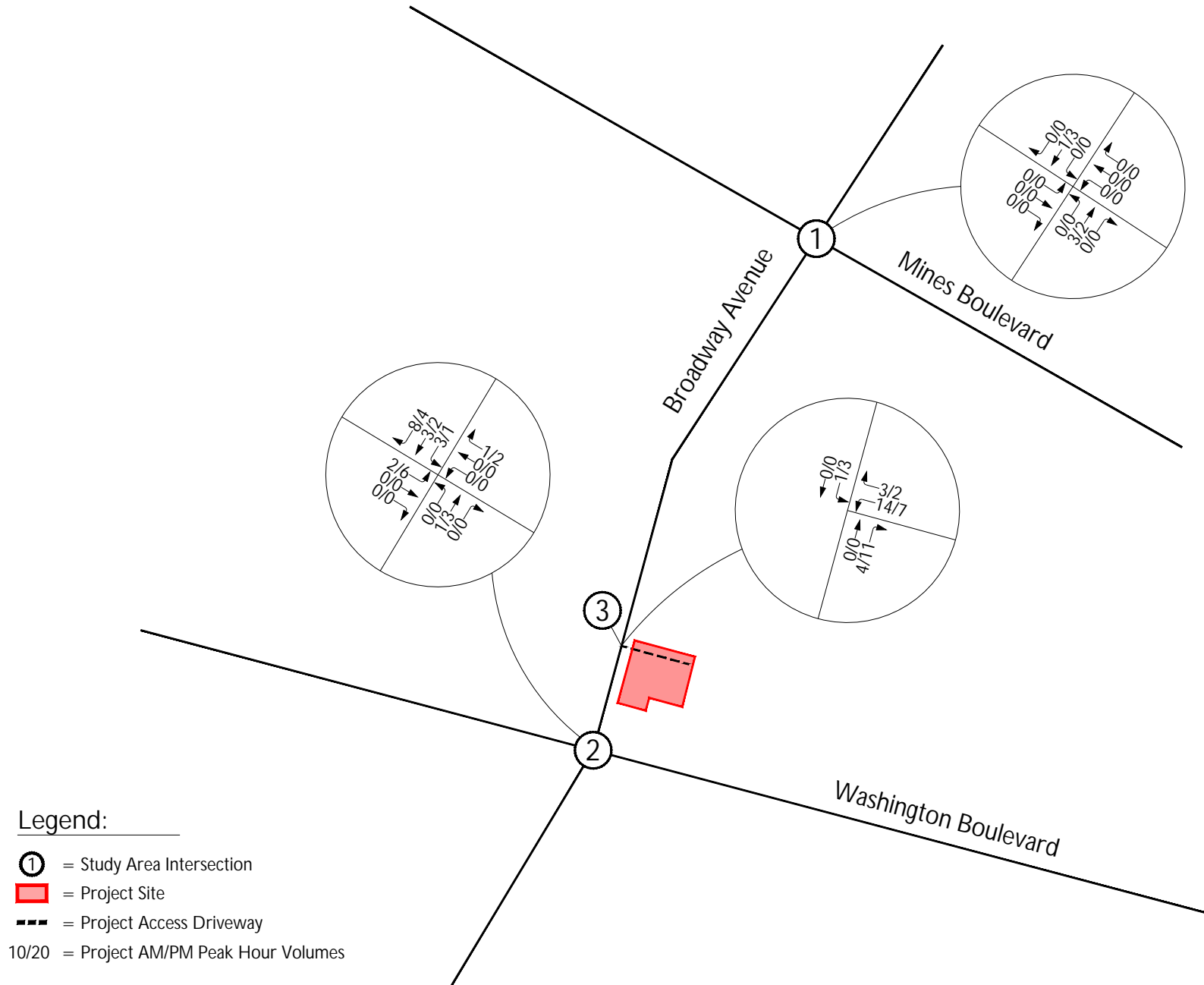
Exhibit 3-3
Local Jurisdictions Within 1-Mile Buffer of Project Site
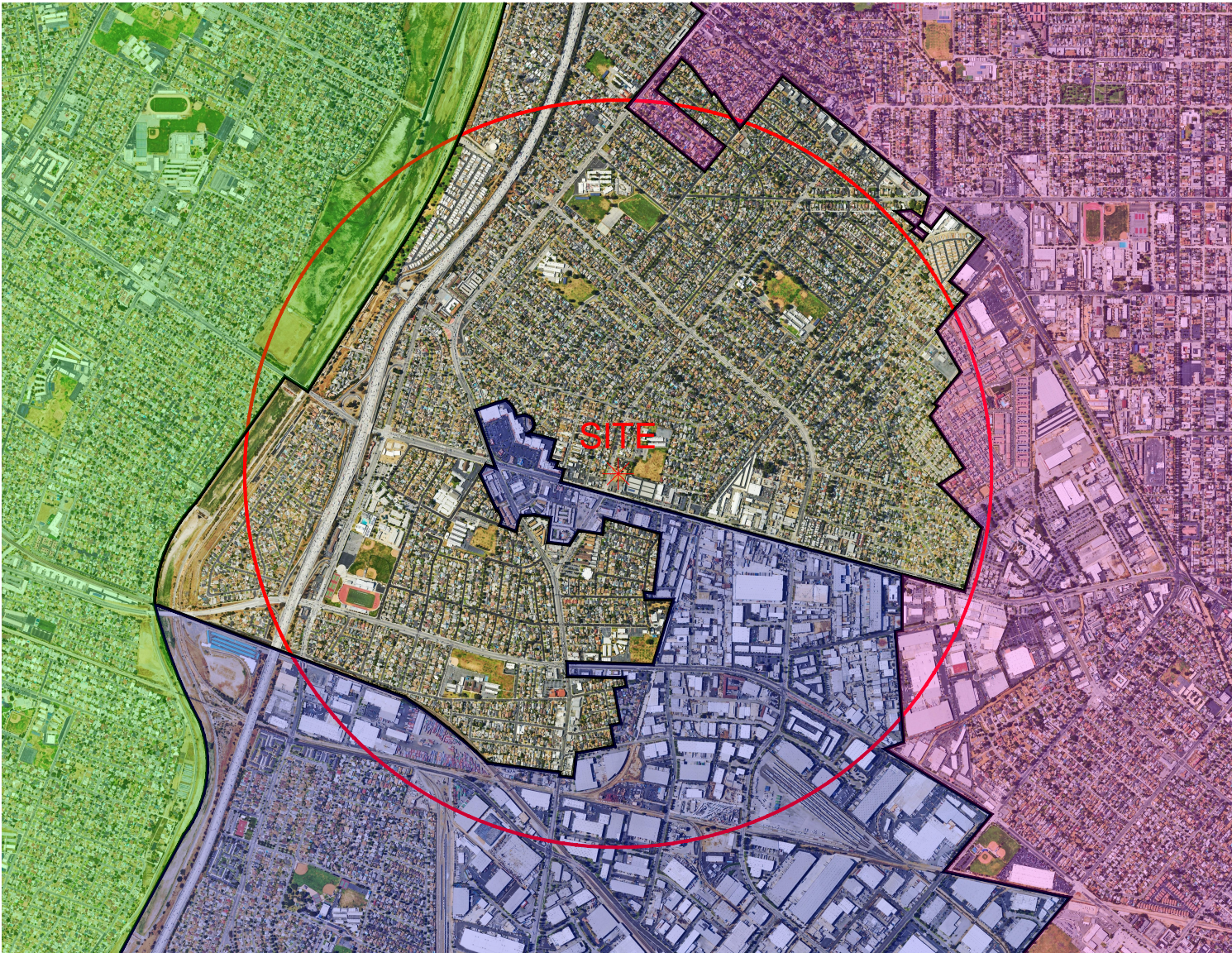
SITE

Legend:

* = Project Site

○ = 1-Mile Radius Buffer

▢ = Unincorporated County of Los Angeles

▢ = City of Pico Rivera

▢ = City of Santa Fe Springs

▢ = City of Whittier

N

3184-2024-01
WASHINGTON BOULEVARD AT BROADWAY AVENUE MULTIFAMILY RESIDENTIAL PROJECT TIS & VMT ANALYSIS , County of Los Angeles, CA

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City of Santa Fe Springs official websites, respectively. Furthermore, RK has coordinated with Mr. Carl Nadela, AICP (Principal Regional Planner) from the Los Angeles County Department of Regional Planning via email on August 18, 2024 to confirm that all required related projects are included.

Table 3-4 summarizes the cumulative projects included in this study, which shows the land uses, and daily and peak hour trip generation.

Table 3-4
Cumulative Projects Trip Generation[1,2]

ID No.	Jurisdiction	Project Name / Case Number	Land Use	Quantity	Units[3]	Weekday						ADT
						AM Peak Hour			PM Peak Hour			
						In	Out	Tot.	In	Out	Tot.	
TAZ 1												
CLA 1	Unincorporated County of Los Angeles	TR83666	Single Family Detached Housing	14	DU	2	8	10	8	5	13	132
					TAZ 1 Sub-Total	2	8	10	8	5	13	132
TAZ 2												
SFS 1	City of Santa Fe Springs	Primestor (Phase 2)	Low-Rise Residential w/ GF Comm. - GFA (1-25k)	88	DU	9	30	39	22	10	32	303
SFS 2	City of Santa Fe Springs	Primestor (Phase 1)	Affordable Housing	44	DU	6	16	22	12	8	20	212
					TAZ 2 Sub-Total	15	46	61	34	18	52	515
TAZ 3												
SFS 3	City of Santa Fe Springs	EC & Assoc. / APN: 8168-023-048	Mfg.	12.731	TSF	7	2	9	3	6	9	70
					TAZ 3 Sub-Total	7	2	9	3	6	9	70
Total Cumulative Project Developments Trip Generation						24	56	80	45	29	74	717

[1] *Unincorporated County of Los Angeles Cumulative Projects Source:*
https://rpgis.isd.lacounty.gov/Html5Viewer/index.html?viewer=GISNET_Public.GIS-NET_Public. Accessed May 2024.
City of Santa Fe Springs Cumulative Projects Source:
https://experience.arcgis.com/experience/a140df3bb4d44fa4a5d1f721efdbad8c/. Accessed May 2024.
[2] *Source*: ITE Trip Generation Manual (11th Edition, 2021).

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A location map of the proposed project and cumulative projects is shown on **Exhibit 3-4.**

The cumulative projects' AM and PM peak hour intersection turning movement volumes are shown on **Exhibit 3-5.**

In reality, some of the cumulative projects may be downsized or may not be developed by the project opening year (2026). In addition, many of the cumulative projects have been or will be subject to a variety of mitigation measures that will reduce the potential environmental impacts associated with those projects. However, those mitigation measures have not been taken into account in projecting the environmental impact of the related projects. Therefore, the cumulative analyses set forth below are conservative and could result in greater impacts than actually anticipated.

3.4 Project Opening Year (2026) Without Project Conditions Traffic Volumes

Project Opening Year (2026) Without Project Conditions traffic volumes consists of existing traffic volumes that have been adjusted with a growth factor of 1.0043, plus traffic generated by cumulative projects.

Project Opening Year (2026) Without Project Conditions traffic volumes are depicted in **Exhibit 3-6**.

3.5 Project Opening Year (2026) With Project Conditions Traffic Volumes

Project Opening Year (2026) With Project Conditions traffic volumes consists of existing traffic volumes that have been adjusted with a growth factor of 1.0043, plus traffic generated by cumulative projects and the proposed project.

Project Opening Year (2026) With Project Conditions traffic volumes are depicted in **Exhibit 3-7**.

Exhibit 3-4
Cumulative Projects Location Map

Legend:

▢ = Project Site

⬭ = 1-Mile Radius Buffer

▢ = Unincorprated County of Los Angeles Cumulative Projects

▢ = City of Santa Fe Springs Cumulative Projects

NOTE: Additional information and detail about the cumulative projects is provided in Table 4-3.

3184-2024-01
WASHINGTON BOULEVARD AT BROADWAY AVENUE MULTIFAMILY RESIDENTIAL PROJECT TIS & VMT ANALYSIS , County of Los Angeles, CA

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Exhibit 3-5
Cumulative Projects Volumes

Broadway Avenue

Mines Boulevard

Washington Boulevard

3/7

9/4

Legend:

1 = Study Area Intersection

= Project Site

= Project Access Driveway

10/20 = Project AM/PM Peak Hour Volumes

N

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Exhibit 3-6
Project Opening Year (2026) Without Project Conditions Traffic Volumes

Broadway Avenue

Mines Boulevard

Washington Boulevard

Intersection 1 volumes:
- 95/63
- 377/311
- 149/123
- 122/111
- 330/271
- 46/33
- 51/109
- 315/379
- 54/42
- 39/39
- 226/407
- 28/32

Intersection 3 volumes:
- 549/431
- 246/549

Intersection 2 volumes:
- 230/191
- 186/145
- 88/82
- 107/179
- 723/932
- 46/56
- 53/66
- 1135/1182
- 51/66
- 36/54
- 114/267
- 71/80

Legend:

① = Study Area Intersection

▭ = Project Site

▬ ▬ ▬ = Project Access Driveway

10/20 = Project AM/PM Peak Hour Volumes

N

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Exhibit 3-7

Project Opening Year (2026) With Project Conditions Traffic Volumes

Broadway Avenue

Mines Boulevard

Washington Boulevard

Intersection 1 volumes:
95/63
378/314
149/123
122/111
330/271
46/33
51/109
315/379
54/42
39/39
229/409
28/32

Intersection 3 (left circle) volumes:
238/195
189/147
91/83
109/185
723/932
46/56
54/68
1135/1182
51/66
36/54
115/270
71/80

Intersection 3 (right circle) volumes:
549/431
1/3
3/2
14/7
246/549
4/11

Legend:

① = Study Area Intersection

🔲 = Project Site

▬ ▬ ▬ = Project Access Driveway

10/20 = Project AM/PM Peak Hour Volumes

N

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4.0 CEQA Vehicle Miles Traveled (VMT) Analysis

Los Angeles County Public Works Transportation Impact Analysis Guidelines, dated July 23, 2020 provides recommendations in the form of thresholds of significance and methodology for identifying VMT related impacts. The proposed project is subjected to a VMT analysis and will adhere to the recommendations and practices described in the County's guidelines.

4.1 Vehicle Miles Traveled (VMT) Screening Criteria

Per the County of LOS Angeles Guidelines, a development project may need to be assessed for VMT impacts if the project conflicts or is inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)(1). The County's guidelines provide screening and impact criteria to determine if the project conflicts or is inconsistent with CEQA guidelines. If the proposed project meets any of the following VMT screening criteria, the proposed project should be expected to have a less than significant impact without conducting a detailed project-level assessment:

- Non-Retail Project Trip Generation Screening Criteria: Project generates less than 110 Net Daily Trips.

- Retail Project Site Plan Screening Criteria: Project is a local serving retail land use with less than 50,000 Square Feet of Gross Floor Area.

- Proximity to Transit Based Screening Criteria: Project is located near a major transit stop or high-quality transit corridor, AND the following is true:

  o Project has an FAR Ratio is Greater than 0.75,

  o Project does not provide more parking than required by the County Code, and

  o Project is consistent the SCAG RTP/SCS.

- Residential Land Use Based Screening Criteria: Project is 100% affordable housing.

4.2 VMT Screening Assessment

The County of Los Angeles VMT Tool Version 1.0 was utilized to determine if the project meets any of the screening criteria discussed above, and is provided in **Appendix C**. As shown in Appendix C, the project does not meet any of the VMT screening criteria. As such, additional VMT analysis is required.

4.3 Vehicle Miles Traveled (VMT) Impact Criteria

The project has a potentially significant VMT impact if the project residential VMT per capita exceeds 16.8% below the existing residential VMT per capita for the Baseline Area in which the project is located. The project is located within the South County Baseline Area. As per Table 3.1.3.-1 of the County guidelines, the residential VMT per capita for the South County Baseline Area is 12.7 residential VMT per capita. Thus, as per Table 3.1.3.-2 of the County guidelines, a residential VMT per capita that exceeds 10.6 residential VMT per capita (i.e., 16.8% below 12.7 residential VMT per capita) would result in a significant environmental impact.

4.4 Project VMT Impact Assessment

The County of Los Angeles VMT Tool Version 1.0 was utilized to determine the Project VMT. **Table 4-1** summarizes the findings of the VMT impact assessment.

Table 4-1
Project VMT Impact Assessment

Project TAZ	Analysis Year	Residential VMT Per Capita
21839300	2024	11.2
County of Los Angeles (South County) Residential VMT Threshold		10.6
Percent (%) of Project VMT that Exceeds Threshold		5.7%
Requires Mitigation?		Yes

As shown in Table 4-1, the project 's VMT is 11.2 residential VMT per capita, which exceeds the County of Los Angeles (South County)'s efficiency-based residential VMT of 10.6 residential VMT per capita by approximately 5.7%. As such, VMT mitigation measures are required to reduce the project's impact to a less than significant level.

4.5 CAPCOA Transportation Demand Management Measures

The *California Air Pollution Control Officers Association Handbook for Analyzing Greenhouse Gas Emission Reduction, Assessing Climate Vulnerabilities, and Advancing Health and Equity, dated December 2021 (2021 CAPCOA Handbook)* identifies thirty (30) quantifiable transportation demand management (TDM) measures for the purposes of mitigating VMT impacts. Each measure is categorized by its subsector (i.e., Land Use, Trip Reduction Programs, Parking or Road Pricing Management, Neighborhood Design, and/or Clean Vehicles and Fuels) and its scale of application (i.e., Project / Site and Plan / Community).

It should be noted that the 2021 CAPCOA Handbook does not allow for the VMT reductions of transportation measures from different scales of application to be combined. While it may be possible that a project may involve measures that affect vehicle trips or VMT at both scales, it is likely that combining the percent reduction from measures of different scales would not be valid.

4.6 Recommended CAPCOA TDM Measures

RK evaluated each quantifiable TDM measure per the 2021 CAPCOA Handbook based on the measure's scale of application and the measure's applicability/feasibility for the Project. It should be noted that due to the Project's scale, only measures categorized as Project/Site for its scale of application was considered.

RK recommends the following two (2) CAPCOA TDM measures:

- **T-1: Increase Residential Density**
- **T-4: Integrate Affordable and Below Market Rate Housing**

The specific implementation of each measure is described below:

T-1: Increase Residential Density

The project would naturally achieve a VMT reduction due to its characteristics, which builds residential homes at a high density. Increasing residential density results in shorter and fewer trips by single-occupancy vehicles and thus a reduction in VMT.

As previously discussed, the project is located at APN 8173-023-020 and 8173-023-021.The County of Los Angeles parcel map for APNs 8173-023-020 and 8173-023-021.is provided in **Appendix D.** As shown in Appendix D, APNs 8173-023-020 and 8173-023-021 are approximately 19,430 square feet (SF) and 17,870 SF, respectively. Hence, the entire lot size is approximately 37,300 SF or 0.86 acres.

The County of Los Angeles VMT Tool Version 1.0, which was utilized to determine VMT impacts, did not provide the residential density. As such, the residential density of 9.1 DU/acres provided by the CAPCOA Handbook was utilized. It should be noted that the Project is significantly denser than the local surrounding neighborhood, which is predominantly comprised of single-family homes, and that the CAPCOA residential density of 9.1 DU/acres would therefore provide a conservative analysis.

Based on a total 60 DU count and a 0.86 lot acreage, the Project has a residential density of approximately 69.8 DU/acres, which results in a calculated 146.7% reduction for a maximum allowable VMT reduction of 30%. It should be noted that since this VMT reduction is a result of the project's characteristics, no additional implementation requirements are necessary.

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T-4: Integrate Affordable and Below Market Rate Housing

California Department of Housing and Community Development (2021) defines lower-income as 80 percent if area median income or below, and affordable housing as costing 30% of gross household income or less. To fulfill the requirements for Measure T-4, the project shall provide seven (7) affordable housing dwelling units, which will be **permanently** dedicated as affordable units per CAPCOA requirements. The project proposes to build a total of 60 dwelling units, which would result in a total of 11.7% of the dwelling units that are permanently dedicated as affordable. The application of this individual measure would result in a VMT reduction of 3.3%.

Calculated VMT Reduction

Table 4-2 identifies the TDM measures that are applicable to the project and summarizes the calculated VMT reduction associated with each TDM measure for each scale of application and subsector. The VMT reduction calculations for each TDM measure per the 2021 CAPCOA Handbook are provided in **Appendix E. As shown in Table 4-2, these two (2) TDM measures results in a VMT reduction of approximately 32.3%, which would effectively mitigate the Project VMT per capita to less than significant levels.**

Table 4-3
VMT Reduction Calculations Summary[1]

TDM Measure	Scale of Application	2021 CAPCOA Handbook Pages	Calculated Reduction in VMT (%)	Maximum Allowable Reduction in VMT (%)	VMT Reduction Credit (%)
Land Use Subsector					
T-1 Increase Residential Density	Project/Site	70-72	146.7%	30.0%	30.0%
T-4: Integrate Affordable and Below Market Rate Housing	Project/Site	80-82	3.3%	28.6%	3.3%
Total VMT Reduction (%) for Land Use Subsector[2]				**65.0%**	**32.3%**
Total VMT Reduction (%) Across Subsectors[3]					**32.3%**

[1]**Source:** *California Air Pollution Control Officers Association Handbook for Analyzing Greenhouse Gas Emission Reduction, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (CAPCOA Handbook), dated December 2021.

[2]Per the 2021 CAPCOA Handbook, effectiveness levels for multiple measures <u>within</u> a subsector are multiplied to determine a combined effectiveness level. This takes the following form: Reduction $_{subsector}$ = 1 - [(1 - A) * (1 - B) * (1 - C)]

where A, B, and C are the individual measure reduction percentages for the measures to be combined in each subsector.

Based on the equation above, the VMT calculation <u>within</u> the subsector are as follows:

Reduction $_{subsector}$ = 1 - [(1 − A$_{T-1}$) * (1 - B$_{T-2}$)]
Reduction $_{subsector}$ = 1 - [(1 - 0.3) * (1 - 0.033)]
Reduction $_{subsector}$ = 1 - (0.7 * 0.967)
Reduction $_{subsector}$ = 1 - 0.6769 = 0.3231 =32.31% ≈ **32.3%**

[3]Per the 2021 CAPCOA Handbook, effectiveness levels for multiple measures <u>across</u> a subsector are multiplied to determine a combined effectiveness level. This takes the following form: Reduction $_{multi-subsector}$ = 1 - [(1 - Land) * (1 - Design) * (1 - Parking) *(1-Transit)] ≤70%

Based on the equation above, the VMT calculations across the subsector are as follows:

Reduction $_{multi-subsector}$ = 1 - [(1 − 0.3364) * (1 − 0) * (1 − 0) *(1-0)]
Reduction $_{multi-subsector}$ = 1 - 0.6769 = 0.3231 =32.31% ≈ **32.3%**

5.0 Operational Analysis

This section of the report provides a comprehensive queuing analysis conducted for the study area for each analysis scenario. Project access is considered constrained if the project's traffic would contribute to unacceptable queuing at nearby signalized intersections. Unacceptable or extended queuing may be defined as spill over from turn pockets into through lanes and/or spillover into intersections.

5.1 Traffic Access Management Analysis Screening Criteria

For development projects, if the answer is "yes" to the following questions, further analysis may be required to assess whether the project would affect project access and circulation:

- Is the project required to submit a Transportation Impact Analysis?

- Does the development project involve a discretionary action that would be reviewed the Department of Regional Planning?

5.2 Traffic Access Management Analysis Screening Assessment

Because the project is required to submit a Transportation Impact Analysis, the project does not meet the screening criteria and is therefore required to conduct a traffic access management. As such, a HCM 7 95th percentile queue evaluation was conducted to evaluate the project's expected access and circulation analysis utilizing PTV Vistro analysis software. Existing traffic signal timing sheets have been incorporated into Vistro and are provided in **Appendix F.** Queue lengths have been reported for the following project-only turning movements:

Intersection #1 – Broadway Avenue (N/S) at Mines Boulevard (E/W)

- Northbound Through
- Southbound Through

Intersection #2 – Broadway Avenue (N/S) at Washington Boulevard (E/W)

- Northbound Shared Through/Left/Right *(Existing Conditions Only)*
- Northbound Through *(Project Opening Year [2026] With Project Conditions Only)*
- Southbound Through/Left-Turn *(Existing Conditions Only)*
- Southbound Through/Right-Turn *(Existing Conditions Only)*
- Southbound Left-Turn *(Project Opening Year [2026] With Project Conditions Only)*
- Southbound Through *(Project Opening Year [2026] With Project Conditions Only)*
- Southbound Right-Turn *(Project Opening Year [2026] With Project Conditions Only)*

- Eastbound Left Turn
- Westbound Through/Right-Turn

Intersection #3 – Broadway Avenue (N/S) at Project Access Driveway (E/W)

- Northbound Shared Through/Right-Turn
- Southbound Shared Through/Left-Turn

5.3 Existing Conditions Queue Analysis

The queue analysis under Existing Conditions has been performed for the <u>existing</u> seven (7) turning movements. Detailed Vistro worksheets for Existing Conditions are included in **Appendix G**. **Table 5-1** shows the results of the queue analysis under Existing Conditions.

Table 5-1
Study Intersection Queue Analysis Summary
Existing Conditions

Intersection	Movement	Existing Storage Length Per Lane (Feet)[2]	95th Percentile Queue Length (Feet)		Adequate Storage Provided?	
			AM	PM	AM	PM
1. Broadway Avenue (N/S) at Mines Boulevard (E/W)	Northbound Through	225	92	149	Yes	Yes
	Southbound Through	235	195	125	Yes	Yes
2. Broadway Avenue (N/S) at Washington Boulevard (E/W)	Northbound Shared Through/Left/Right	1,145	299	461	Yes	Yes
	Southbound Through/Left-Turn	482	261	168	Yes	Yes
	Southbound Through/Right-Turn	482	353	263	Yes	Yes
	Eastbound Left-Turn	100	**146**	**250**	No	No
	Westbound Through/Right-Turn	750	457	593	Yes	Yes
3. Broadway Avenue (N/S) at Project Access Driveway (E/W)	Northbound Shared Through/Right-Turn	--	*Does Not Currently Exist*			
	Southbound Shared Through/Left-Turn	--	*Does Not Currently Exist*			

[1] Queue lengths reported for intersection based on PTV Vistro Software

[2] Storage length for turning movements with dedicated turn lanes is measured as the length of the turn lanes. Storage length for through movements and turning movements without dedicated turn lanes is measured as the distance to the next intersection.

As shown in Table 5-1, the 95th percentile queues are satisfied for all turning movements except for the following turning movement:

Intersection #2 – Broadway Avenue (N/S) at Washington Boulevard (E/W)

- Eastbound Left-Turn (AM & PM Peak Hours)

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The remaining <u>existing</u> six (6) turning movements have queues that are adequately accommodated by the existing storage provided. It should be noted that the identified movements at Intersection #3 do not exist under existing conditions, and that no queues are currently generated due to the lack of conflicting movements.

5.4 Project Opening Year (2026) With Project Conditions Queue Analysis

The queue analysis under Project Opening Year (2026) With Project Conditions has been performed the nine (9) project-only turning movements. Detailed Vistro worksheets for Project Opening Year (2026) With Project Conditions are included in **Appendix H**. **Table 5-2** shows the results of the queue analysis under Opening Year (2026) With Project Conditions.

Table 5-2
Study Intersection Queue Analysis Summary
Project Opening Year (2026) With Project Conditions

Intersection	Movement	Existing/ Proposed Storage Length Per Lane (Feet)[2]	95th Percentile Queue Length (Feet)		Adequate Storage Provided?	
			AM	PM	AM	PM
1. Broadway Avenue (N/S) at Mines Boulevard (E/W)	Northbound Through	225	97	153	Yes	Yes
	Southbound Through	235	198	130	Yes	Yes
2. Broadway Avenue (N/S) at Washington Boulevard (E/W)	Northbound Through	1,145	140	282	Yes	Yes
	Southbound Left-Turn	130[3]	126	112	Yes	Yes
	Southbound Through	482	230	157	Yes	Yes
	Southbound Right-Turn	300[3]	300	213	Yes	Yes
	Eastbound Left-Turn	100	**156**	**265**	No	No
	Westbound Through/Right-Turn	750	370	505	Yes	Yes
3. Broadway Avenue (N/S) at Project Access Driveway (E/W)	Northbound Shared Through/Right-Turn	330	0	0	Yes	Yes
	Southbound Shared Through/Left-Turn	105	0	0	Yes	Yes

[1] Queue lengths reported for intersection based on PTV Vistro Software

[2] Storage length for turning movements with dedicated turn lanes is measured as the length of the turn lanes. Storage length for through movements and turning movements without dedicated turn lanes is measured as the distance to the next intersection.

[3] Recommended storage length for planned turning movements, which do not exist under Existing Conditions. The recommended lengths are based on the forecasted 95th percentile queues.

As shown in Table 5-2, the 95th percentile queues are satisfied for all turning movements except for the following turning movement:

<u>**Intersection #2**</u> – Broadway Avenue (N/S) at Washington Boulevard (E/W)

- Eastbound Left-Turn (AM & PM Peak Hours)

The remaining nine (9) turning movements have queues that are adequately accommodated by the existing storage provided.

5.5   Queue Analysis Findings and Recommendations

Based on the results of the queue evaluation, the following turning movement does not provide adequate storage capacity under Existing Conditions and Project Opening Year (2026) With Project Conditions:

Intersection #2 – Broadway Avenue (N/S) at Washington Boulevard (E/W)

- Eastbound Left-Turn (AM & PM Peak Hours)

Per discussion with County of Los Angeles Staff, RK recommends the following improvements to accommodate the 95th percentile queue length:

- Remove approximately 5 feet of existing yellow median striping and 45 feet of existing dashed white lane striping, and paint a "Keep Clear" area in front of the Vanport Avenue intersection.

- Modify the left-turn lane at Intersection #2 by installing double-double yellow striping that is the same width as the physical raised island which will be extended to the end of the "Keep Clear" area and extending the Detail 38 to the end of the "Keep Clear" area.

- Remove the existing second left-turn pavement marking located at the end of the existing eastbound left-turn lane at Intersection #2 and install a new left-turn pavement marking at the end of the proposed extended eastbound left-turn lane at Intersection #2.

- Install a through/left-turn pavement marking west of Vanport Avenue.

Exhibit 5-1 illustrates the improvements identified above.

As directed by the County, the Project is responsible for 100% of the cost for these recommended improvements.

Exhibit 5-1
Conceptual Roadway Improvements
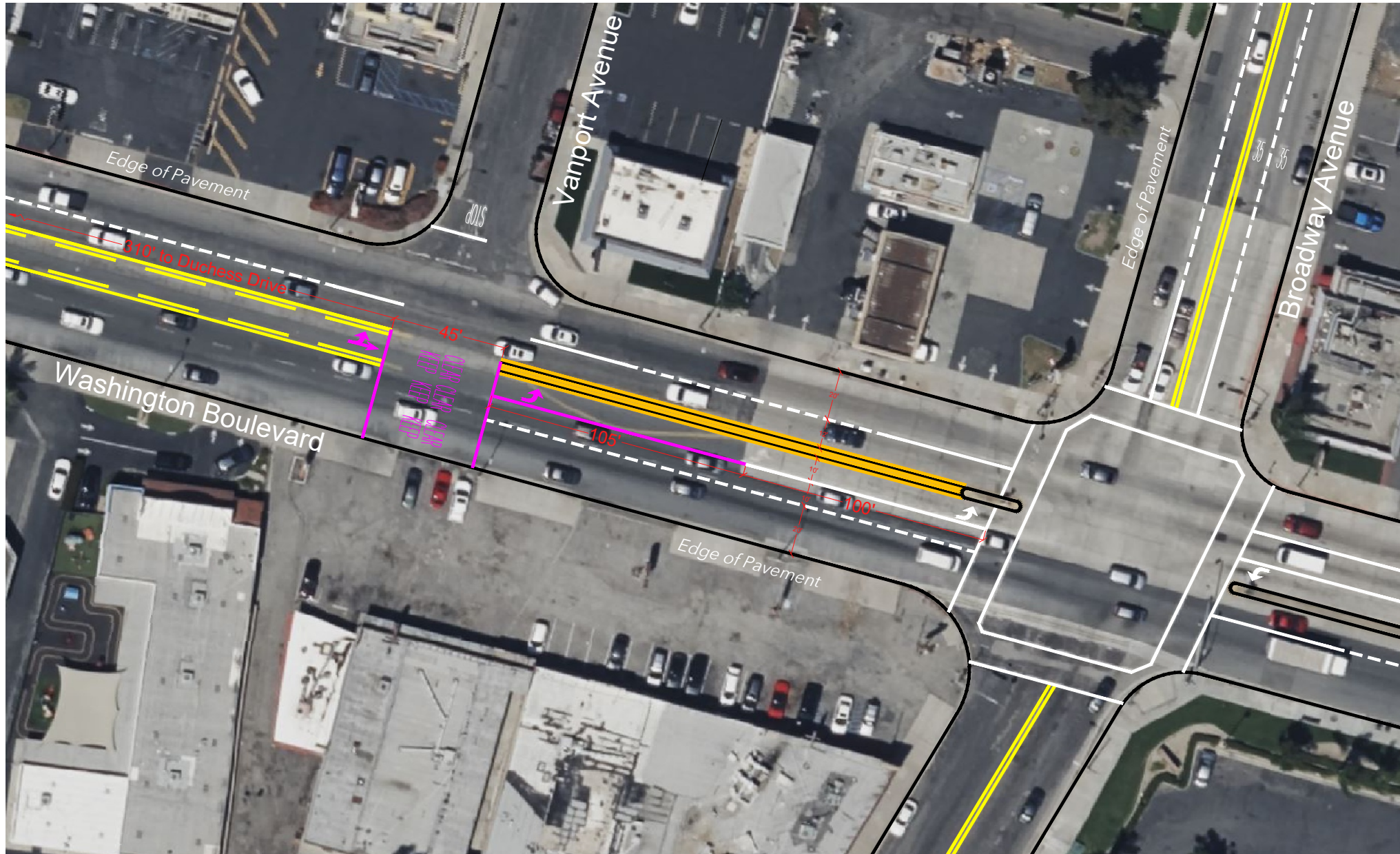
Note: The white and yellow striping illustrated above represents existing striping.

Not to Scale

Legend:
━━━ = Proposed White Striping
━━━ = Proposed Double Double Yellow Striping

3184-2024-01
WASHINGTON BOULEVARD AT BROADWAY AVENUE MULTIFAMILY RESIDENTIAL PROJECT TIS & VMT ANALYSIS , County of Los Angeles, CA

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6.0 Construction Phase Analysis

The following section of this report analyzes the potential impacts that the project's construction activities and associated major in-street improvements may have in regard to existing pedestrian, bicycle, transit, or vehicle circulation.

6.1 Construction Phase Analysis Screening Criteria

Per Section 4.2.2 of the County's Guidelines, if the answer is "Yes" to any of the following questions stated below, further analysis will be required to assess if the project could negatively affect existing pedestrian, bicycle, transit, or vehicle circulation:

- For projects that require construction activities to take place within the right-of-way of a highway, would it be necessary to close any temporary lanes, alleys, or streets for more than one day (including day and evening hours, and overnight closures if on a residential street)?

- For projects that require construction activities to take place within the right-of-way of a Local Street, would it be necessary to temporarily close any lanes, alleys, or streets for more than seven days (including day and evening hours, and including overnight closures if on a residential street)?

- Would in-street construction activities result in the loss of any vehicle, bicycle, or pedestrian access, including loss of existing bicycle parking to an existing land use for more than one day, including day and evening hours and overnight closures if access is lost to residential units?

- Would in-street construction activities result in the loss of any ADA access to an existing transit station, stop, or facility (e.g., layover zone)?

- Would in-street construction activities restrict access to any bus stops for more than one day, or necessitate any rerouting of a bus route?

- Would construction of a project interfere with pedestrian, bicycle, transit, or vehicle circulation and accessibility to adjoining areas?

6.2 Construction Phase Analysis Screening Assessment

The proposed project is located within the Gateway Planning Area of Unincorporated Los Angeles County. Primary access to the transportation network is facilitated through Washington Boulevard and Broadway Avenue. Furthermore, Broadway Avenue currently serves Sunshine Shuttle Route C and Washington Boulevard currently serves Montebello Bus Line Route 50. As previously discussed,

Broadway Avenue is identified as an existing Class II bike route; Mines Boulevard is identified as an existing Class II Bike Lanes; and no bicycle facilities exist along Washington Boulevard. Lastly, there is one (1) residential home adjacent to the project site located directly north.

The following are responses to the circumstances for assessment:

1. **No**, the project would not require construction activities to take place within the right-of-way of a highway that would require to close any temporary lanes, alleys, or streets for more than one day.

2. **No**, the project would not require construction activities to take place within the right-of-way of a Local Street that would require to temporarily close any lanes, alleys, or streets for more than seven days.

3. **No**, in-street construction activities (i.e., restriping of eastbound left-turn at Intersection 1) would not result in the loss of any vehicle, bicycle, or pedestrian access for more than one day.

4. **No**, in-street construction activities (i.e., restriping of eastbound left-turn at Intersection 1) would not result in the loss of any ADA access to an existing transit station, stop, or facility.

5. **No**, in-street construction activities (i.e., restriping of eastbound left-turn at Intersection 1) would not restrict access to any bus stops for more than one day, or necessitate any rerouting of a bus route.

6. **No**, construction of a project would not interfere with pedestrian, bicycle, transit, or vehicle circulation and accessibility to adjoining areas.

As such, the Project screens out of a Construction Phase Analysis and no further analysis is required.

7.0   Local Residential Street Cut-Through Analysis

Per Section 4.3 of the County's Guidelines, development and transportation projects may be required to conduct a Local Residential Street Cut-Through (LRSTM) Analysis. The objective of a LRSTM analysis is to determine whether the potential increases in average daily traffic (ADT) volumes on designated local residential streets, produced by a project, may adversely affect the character and function of those streets.

The potential increase in ADT generated by developments or transportation projects upon designated local residential streets are classified as cut-through trips. Cut-through trips can be defined as vehicular traffic passing through a designated local residential street without stopping or without an origin or destination within the area. Such traffic utilizes a local residential street rather than highways whose primary function is to accommodate through traffic.

7.1   LRSTM Screening Criteria

Per Section 4.3.2.1 of the County's Guidelines, if the answer is yes to the following questions, further analysis may be required to assess whether the project would negatively affect residential streets:

- Is the project required to submit a Transportation Impact Analysis?

- Does the development project involve a discretionary action that would be reviewed by the Department of Regional Planning?

The proposed project is subject to submit a Transportation Impact Analysis and is expected to have a discretionary action prior to approval. The County Guidelines also identify the following three (3) circumstances to be assessed for analysis:

- The project is located along a current Limited Secondary, Secondary, Major, Parkway, Expressway per the County's General Plan and the study intersections under project build-out conditions operate at a peak hour LOS E or LOS F.

- The project has the potential, based on connectivity to the roadway network, to add automobile traffic to the alternative local residential street route(s) during peak hours.

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7.2   Study Intersection Peak Hour Level of Service Analysis Methodology

In accordance with the *Los Angeles County Public Works Transportation Impact Analysis Guidelines,* dated July 23, 2020 (TIA Guidelines), the Highway Capacity Manual Seventh Edition (HCM 7) is utilized as the technical guide in the evaluation of traffic operations.

The HCM defines level of service as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of factors such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate LOS (Level of Service) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted. The definitions of level of service for interrupted flow (flow regulated by the existence of traffic control devices) are:

- **LOS A** (Free Flow / Insignificant Delays) describes traffic operations in which progression is exceptionally favorable or the cycle length is extremely short. Generally, LOS A operations for signalized intersections tend to result in most vehicles arriving during the green phase and traveling through the intersection without stopping.

- **LOS B** (Stable Operation / Minimal Delays) describes traffic operations in which progression slightly diminishes but is still considered highly favorable and the cycle length is short. Vehicles stop more often causing a marginal increase in average delay.

- **LOS C** (Stable Operation / Acceptable Delays) describes traffic operations in which progression is favorable and the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Many vehicles still past through the intersection but a significant number of vehicles are stopping. Average delay is fair.

- **LOS D** (Approaching Unstable / Tolerable Delays) describes traffic operations in which progression is ineffective and/or cycle length is long. Considerable amount of vehicles stop and individual cycle failures are noticeable. Average delay is adequate.

- **LOS E** (Unstable Operation / Significant Delays) describes traffic operations in which progression is unfavorable and the cycle length is exceedingly long. Individual cycle failures are frequent. Average delay is high.

- **LOS F** (Forced Flow / Excessive Delays) describes traffic operations in which progression is extremely poor and the cycle length is extremely long. Most cycles fail to clear the queue. Average delay is vast.

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For this study, the HCM level of service grades will be determined utilizing the HCM 7 methodology and PTV Vistro analysis software. As previously mentioned in Section 5.0, existing traffic signal timing sheets have been incorporated into Vistro and are provided in Appendix F.

7.3   Existing Conditions Level of Service

Existing Conditions LOS calculations for the existing study intersections are reported in **Table 7-1** and are based on the weekday AM and PM peak hour existing traffic volumes shown in Exhibit 2-2 and the existing traffic controls & intersection geometrics shown in Exhibit 2-1A.

Table 7-1
Study Intersection LOS Analysis Summary
Existing Conditions

Study Intersection	Traffic Control[1]	Methodology	Acceptable LOS	Delay (sec/veh)[2,3]		Level of Service	
				AM	PM	AM	PM
1. Broadway Avenue (N/S) at Mines Boulevard (E/W)	TS	HCM 7	D	25.3	24.1	C	C
2. Broadway Avenue (N/S) at Washington Boulevard (E/W)	TS	HCM 7	D	30.4	37.6	C	D
3. Broadway Avenue (N/S) at Project Access Driveway (E/W)	CSS	HCM 7	D	Does Not Currently Exist			

[1] CSS = Cross-Street Stop.

   TS = Traffic Signal

[2] Deficient operation shown in **Bold**.

[3] HCM Analysis Software: PTV Vistro Software

As shown in Table 7-1, the existing study intersections are currently operating at an acceptable LOS D or better during the AM and PM peak hours under Existing Conditions. Detailed LOS Analysis worksheets for Existing Conditions are included in Appendix G.

7.4   Project Opening Year (2026) With Project Conditions Level of Service

Project Opening Year (2026) With Project Conditions LOS calculations for the three (3) study intersections are reported in **Table 7-2** and are based on the Project Opening Year (2026) With Project Conditions traffic volumes shown in Exhibit 3-7 and the future planned traffic controls & intersection geometrics shown in Exhibit 2-1B.

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Table 7-2
Study Intersection LOS Analysis Summary
Project Opening Year (2026) With Project Conditions

Study Intersection	Traffic Control[1]	Methodology	Acceptable LOS	Delay (sec/veh)[2,3]		Level of Service	
				AM	PM	AM	PM
1. Broadway Avenue (N/S) at Mines Boulevard (E/W)	TS	HCM 7	D	25.2	24.0	C	C
2. Broadway Avenue (N/S) at Washington Boulevard (E/W)	TS	HCM 7	D	25.3	30.7	C	D
3. Broadway Avenue (N/S) at Project Access Driveway (E/W)	CSS	HCM 7	D	12.4	15.3	B	C

[1] CSS = Cross-Street Stop.
   TS = Traffic Signal

[2] Deficient operation shown in **Bold**.

[3] HCM Analysis Software: PTV Vistro Software

As shown in Table 7-2, the study intersections are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours under Project Opening Year (2026) With Project Conditions. Detailed LOS Analysis worksheets for Project Opening Year (2026) With Project Conditions are included in Appendix H.

7.5   LRSTM Screening Assessment

The following are responses to the three (3) circumstances for assessment:

1. All study intersections are forecast to continue operating at acceptable levels of service (LOS D or better) under Project Opening Year (2026) With Project Conditions for both AM and PM peak hours. As a result, the existing roadway facilities will be able to accommodate the proposed project and not encourage motorists to utilize alternative routes.

2. Based on the project's trip distribution, the project is not expected to add automobile traffic to alternative local residential street route(s) during peak hours.

3. There are no local residential streets in the vicinity of the projects that are expected to be viable alternative routes based on the direction of travel that traffic generated by the project is forecast to go.

Based on the project's trip distribution, site location, and forecasted LOS results, the proposed project is not expected to generate local residential cut-through traffic. Hence further residential cut-through traffic analysis is not required for the proposed project.

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8.0 Additional Site Access Analysis

Per Section 4.4 of the County's guidelines, project access and circulation constraints related to the site plan and access to and from the project site may be analyzed separately from the Transportation Impact Analysis. The following section of this report analyzes whether additional site access analysis would be required per the County's screening criteria.

8.1   Additional Site Access Analysis Screening Criteria

If the answer is "yes" to the following question, a traffic access management study may be required to assess the project site access requirements:

- Would the project provide a driveway on a rural cross section two-lane highway per the County's General Plan?

If the answer is "yes" to the following question, a traffic queuing analysis may be required to assess the project site access requirements:

- Does the project's land use require vehicles to queue on-site?

If the answer is "yes" to the following question, a traffic event management study may be required to assess the project site access requirements:

- Does the project's land use include intermittent events which may exceed the supply of on-site parking?

8.2   Additional Site Access Analysis Screening Assessment

Because the project does not provide a driveway on a rural cross-section two-lane highway, does not require vehicles to queue on-site, and does not include intermittent events which may exceed the supply of on-site parking, the project screens out of a traffic access management study, a traffic queuing analysis, and a traffic event management study. As such, no additional site access analysis is required.

9.0 Findings and Recommendations

The purpose of this traffic impact study is to evaluate the Washington Avenue at Broadway Avenue Multifamily Residential Project from a traffic and circulation standpoint and to determine whether the Project has a significant traffic impact. This traffic study has been conducted pursuant to the *Los Angeles County Public Works Transportation Impact Analysis Guidelines,* dated July 23, 2020 (TIA Guidelines) and the California Environmental Quality Act (CEQA) requirements.

9.1 Site Location & Project Description Summary

The Washington Boulevard at Broadway Avenue Multifamily Residential Project (hereinafter referred to as "project") is located within the Gateway Planning Area of Unincorporated Los Angeles County and within Los Angeles County Supervisorial District #4. Specifically, the site project is located at 7914 Broadway Avenue, generally located near the intersection of Broadway Avenue and Washington Boulevard.

The project characteristics are as follows:

- Assessor's Parcel Numbers (APN): 8173-023-020 and 8173-023-021

- Project's Type w/ID#: (R) 85860326429

- Project's RPPL#: RPPL2023003948

- Project's Assigned DRP Planner: Mr. Carl Nadela

The project proposes to raze the existing single-family residence and construct a five-story multifamily apartment building consisting of sixty (60) dwelling units (DU) which includes seven (7) affordable housing DU. Access to the project is proposed via one (1) full-access unsignalized driveway located along Broadway Avenue. A total of 81 on-site parking spaces are proposed. The project is planned to open in 2026 and will be evaluated in one (1) single phase.

9.2 Traffic Study Area & Analysis Scenarios Summary

The study area consists of two (2) off-site study intersections and one (1) project access driveway as listed below. All study intersections are located within the Unincorporated County of Los Angeles:

1. Broadway Avenue (N/S) at Mines Boulevard (E/W);

2. Broadway Avenue (N/S) at Washington Boulevard (E/W); and

3. Broadway Avenue (N/S) at Project Access Driveway (E/W) [FUTURE INTERSECTION].

The analysis evaluates traffic conditions of the three (3) study intersections for the following scenarios during the weekday (7:00 AM to 9:00 AM) and weekday PM (4:00 PM to 6:00 PM) peak periods, in accordance with the applicable jurisdictional traffic impact analysis guidelines for the Unincorporated County of Los Angeles.

- Existing Conditions; and

- Opening Year (2026) With Project Conditions.

9.3   Project Trip Generation Summary

The project is proposing to construct a five-story multifamily apartment building consisting of sixty (60) dwelling units (DU) which includes seven (7) affordable housing DU. As such, ITE Land Use Code 221: Multifamily Housing (Mid-Rise) trip rates are the most appropriate for this land use. Based on ITE Land Use Code 221, the project is forecast to generate approximately 272 daily trips with approximately 22 trips during the AM peak hour and approximately 23 trips during the PM peak hour.

9.4   CEQA VMT Analysis Summary

The project's VMT is 11.2 residential VMT per capita, which exceeds the County of Los Angeles (South County)'s efficiency-based residential VMT of 10.6 residential VMT per capita by approximately 5.7%. As such, VMT mitigation measures are required to reduce the project's impact to less than significant. RK evaluated each quantifiable TDM measure per the 2021 CAPCOA Handbook based on the measure's scale of application and the measure's applicability/feasibility for the Project. It should be noted that due to the Project's scale, only measures categorized as Project/Site for its scale of application was considered.

RK recommends the following two (2) CAPCOA TDM measures reduce the Project' VMT per capita by approximately 32.3%, which would effectively mitigate the Project VMT per capita to less than significant levels.

- **T-1: Increase Residential Density**
- **T-4: Integrate Affordable and Below Market Rate Housing**

9.5   Operational Analysis Summary

Based on the results of the queue evaluation, the following turning movement do not provide adequate storage capacity under all analysis scenarios:

Intersection #2 – Broadway Avenue (N/S) at Washington Boulevard (E/W)

- Eastbound Left-Turn (AM & PM Peak Hours)

As such, the following improvements are recommended to accommodate the 95th percentile queue length:

- Remove approximately 5 feet of existing yellow median striping and 45 feet of existing dashed white lane striping, and paint a "Keep Clear" area in front of the Vanport Avenue intersection.

- Modify the left-turn lane at Intersection #2 by installing double-double yellow striping that is the same width as the physical raised island which will be extended to the end of the "Keep Clear" area and extending the Detail 38 to the end of the "Keep Clear" area.

- Remove the existing second left-turn pavement marking located at the end of the existing eastbound left-turn lane at Intersection #2 and install a new left-turn pavement marking at the end of the proposed extended eastbound left-turn lane at Intersection #2.

- Install a through/left-turn pavement marking west of Vanport Avenue.

It should be noted that, per direction from the County, the project will be 100% responsible for the cost of the improvements.

9.6   Construction Phase Analysis Summary

The Project answered "no" to all the questions listed Section 4.2.2 of the County's Guidelines. As such, the Project screens out of a Construction Phase Analysis and no further analysis is required.

9.7   Local Residential Street Cut-Through Analysis Summary

Based on the project's trip distribution, site location, and forecasted LOS results, the proposed project is not expected to generate local residential cut-through traffic. Hence further residential cut-through traffic analysis is not required for the proposed project.

9.8   Additional Site Access Analysis Summary

Because the project does not provide a driveway on a rural cross-section two-lane highway, does not require vehicles to queue on-site, and does not include intermittent events which may exceed the supply of on-site parking, the project screens out of a traffic access management study, a traffic queuing analysis, and a traffic event management study. As such, no additional site access analysis is required.

RK engineering group, inc.

rkengineer.com

Appendices

Appendix A

E-Mail Correspondence With Mr. Carl Nadela Regarding
Affordable Units

From:	Carl Nadela <cnadela@planning.lacounty.gov>
Sent:	Wednesday, February 19, 2025 12:35 PM
To:	hamiddari; Justin Tucker
Subject:	RE: 7914 Broadway Ave

It depends on the type of affordable housing you provide. Based on our previous discussions, your minimum now is 7 units at 65% AMI.

Regards,

CARL VINCENT NADELA, AICP (he/him/his)
PRINCIPAL REGIONAL PLANNER, Puente Whittier Development Services
Office: (213) 974-6411 • Direct: (213) 893-7010
Email: cnadela@planning.lacounty.gov

Los Angeles County Department of Regional Planning
320 West Temple Street, 13th Floor, Los Angeles, CA 90012
planning.lacounty.gov

Our field offices are currently open to the public. Please visit planning.lacounty.gov for information about available services, public meeting schedules, and planning projects.

From: Hamid Dari <hamiddari@yahoo.com>
Sent: Wednesday, February 19, 2025 12:23 PM
To: Carl Nadela <cnadela@planning.lacounty.gov>; Justin Tucker <jt@rkengineer.com>
Subject: 7914 Broadway Ave

CAUTION: External Email. Proceed Responsibly.

Hello Mr. Nadela,
Hope this email finds you well. My Traffic Engineer consultant Mr. Tucker is on this email as well. We are trying to wrap up our traffic study impact with your engineering department and everything is going well. The only thing we need to know from you that What's the minimum affordable housing units we should have or we do not have to have any at all please advise? Thank you so very much.
Best regards,

Appendix B

Existing Traffic Count Worksheets

County of Los Angeles
N/S: Broadway Avenue
E/W: Mines Boulevard
Weather: Clear

File Name : 01_CLA_Broad_Mines AM
Site Code : 10524414
Start Date : 5/7/2024
Page No : 1

Groups Printed- Total Volume

Start Time	Broadway Avenue Southbound				Mines Boulevard Westbound				Broadway Avenue Northbound				Mines Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	23	75	20	118	14	41	8	63	4	37	1	42	12	51	9	72	295
07:15 AM	31	83	19	133	5	74	17	96	9	46	5	60	13	63	8	84	373
07:30 AM	39	89	23	151	13	89	13	115	11	53	6	70	27	68	7	102	438
07:45 AM	39	94	24	157	21	122	18	161	15	60	13	88	27	108	11	146	552
Total	132	341	86	559	53	326	56	435	39	196	25	260	79	290	35	404	1658
08:00 AM	39	106	31	176	12	66	6	84	5	40	5	50	36	85	14	135	445
08:15 AM	31	83	17	131	8	37	12	57	8	63	4	75	31	68	14	113	376
08:30 AM	14	71	11	96	11	67	10	88	11	51	7	69	15	70	5	90	343
08:45 AM	12	57	12	81	4	53	11	68	7	58	1	66	20	40	7	67	282
Total	96	317	71	484	35	223	39	297	31	212	17	260	102	263	40	405	1446
Grand Total	228	658	157	1043	88	549	95	732	70	408	42	520	181	553	75	809	3104
Apprch %	21.9	63.1	15.1		12	75	13		13.5	78.5	8.1		22.4	68.4	9.3		
Total %	7.3	21.2	5.1	33.6	2.8	17.7	3.1	23.6	2.3	13.1	1.4	16.8	5.8	17.8	2.4	26.1	

Start Time	Broadway Avenue Southbound				Mines Boulevard Westbound				Broadway Avenue Northbound				Mines Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:30 AM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:30 AM	**39**	89	23	151	13	89	13	115	11	53	6	70	27	68	7	102	438
07:45 AM	39	94	24	157	**21**	**122**	**18**	**161**	**15**	60	**13**	**88**	27	**108**	11	**146**	**552**
08:00 AM	39	**106**	**31**	**176**	12	66	6	84	5	40	5	50	**36**	85	**14**	135	445
08:15 AM	31	83	17	131	8	37	12	57	8	**63**	4	75	31	68	14	113	376
Total Volume	148	372	95	615	54	314	49	417	39	216	28	283	121	329	46	496	1811
% App. Total	24.1	60.5	15.4		12.9	75.3	11.8		13.8	76.3	9.9		24.4	66.3	9.3		
PHF	.949	.877	.766	.874	.643	.643	.681	.648	.650	.857	.538	.804	.840	.762	.821	.849	.820

Counts Unlimited, Inc.
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County of Los Angeles
N/S: Broadway Avenue
E/W: Mines Boulevard
Weather: Clear

File Name : 01_CLA_Broad_Mines AM
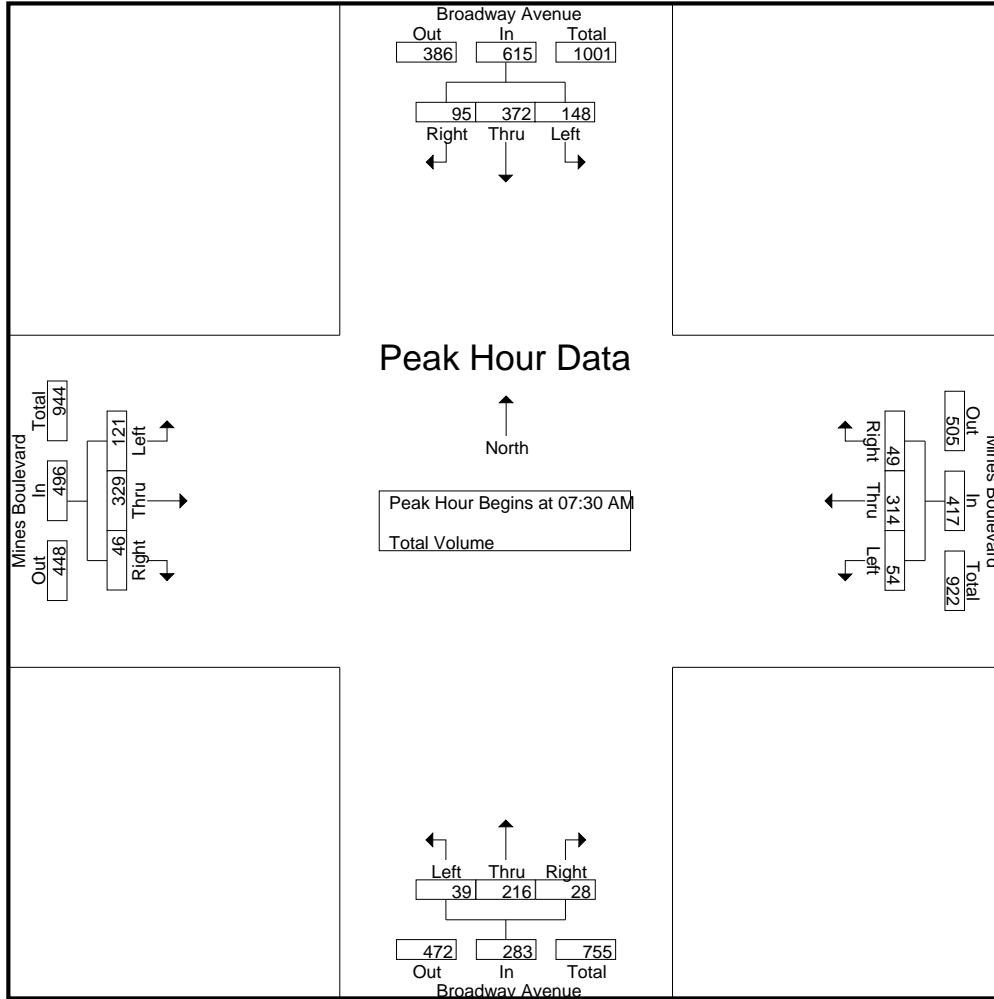Site Code : 10524414
Start Date : 5/7/2024
Page No   : 2

Peak Hour Data

Broadway Avenue

Out	In	Total
386	615	1001

95	372	148
Right	Thru	Left

North

Peak Hour Begins at 07:30 AM

Total Volume

Mines Boulevard (left)

Total 944
In 496
Out 448

Left	121
Thru	329
Right	46

Mines Boulevard (right)

Out 505
In 417
Total 922

Right	49
Thru	314
Left	54

Left	Thru	Right
39	216	28

472	283	755
Out	In	Total

Broadway Avenue

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:30 AM				07:30 AM			
+0 mins.	31	83	19	133	5	74	17	96	11	53	6	70	27	68	7	102
+15 mins.	**39**	89	23	151	13	89	13	115	**15**	60	**13**	**88**	27	**108**	11	**146**
+30 mins.	39	94	24	157	**21**	**122**	**18**	**161**	5	40	5	50	**36**	85	**14**	135
+45 mins.	39	**106**	**31**	**176**	12	66	6	84	8	**63**	4	75	31	68	14	113
Total Volume	148	372	97	617	51	351	54	456	39	216	28	283	121	329	46	496
% App. Total	24	60.3	15.7		11.2	77	11.8		13.8	76.3	9.9		24.4	66.3	9.3	
PHF	.949	.877	.782	.876	.607	.719	.750	.708	.650	.857	.538	.804	.840	.762	.821	.849

County of Los Angeles
N/S: Broadway Avenue
E/W: Mines Boulevard
Weather: Clear

File Name : 01_CLA_Broad_Mines PM
Site Code : 10524414
Start Date : 5/7/2024
Page No   : 1

Groups Printed- Total Volume

Start Time	Broadway Avenue Southbound				Mines Boulevard Westbound				Broadway Avenue Northbound				Mines Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	29	86	21	136	8	85	36	129	1	73	8	82	25	61	12	98	445
04:15 PM	30	81	12	123	11	86	32	129	12	97	8	117	19	63	13	95	464
04:30 PM	31	87	16	134	7	94	31	132	10	102	10	122	23	64	8	95	483
04:45 PM	31	70	10	111	8	102	24	134	12	119	5	136	25	55	7	87	468
Total	121	324	59	504	34	367	123	524	35	391	31	457	92	243	40	375	1860
05:00 PM	22	72	13	107	13	102	31	146	9	55	10	74	31	75	9	115	442
05:15 PM	41	88	18	147	10	86	28	124	11	124	6	141	25	58	7	90	502
05:30 PM	26	73	22	121	11	87	25	123	7	103	11	121	30	82	10	122	487
05:45 PM	16	85	16	117	10	77	28	115	12	107	8	127	20	60	4	84	443
Total	105	318	69	492	44	352	112	508	39	389	35	463	106	275	30	411	1874
Grand Total	226	642	128	996	78	719	235	1032	74	780	66	920	198	518	70	786	3734
Apprch %	22.7	64.5	12.9		7.6	69.7	22.8		8	84.8	7.2		25.2	65.9	8.9		
Total %	6.1	17.2	3.4	26.7	2.1	19.3	6.3	27.6	2	20.9	1.8	24.6	5.3	13.9	1.9	21	

Start Time	Broadway Avenue Southbound				Mines Boulevard Westbound				Broadway Avenue Northbound				Mines Boulevard Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:45 PM

	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:45 PM	31	70	10	111	8	**102**	24	134	**12**	119	5	136	25	55	7	87	468
05:00 PM	22	72	13	107	**13**	102	**31**	**146**	9	55	10	74	**31**	75	9	115	442
05:15 PM	**41**	**88**	18	**147**	10	86	28	124	11	**124**	6	**141**	25	58	7	90	**502**
05:30 PM	26	73	**22**	121	11	87	25	123	7	103	**11**	121	30	**82**	**10**	**122**	487
Total Volume	120	303	63	486	42	377	108	527	39	401	32	472	111	270	33	414	1899
% App. Total	24.7	62.3	13		8	71.5	20.5		8.3	85	6.8		26.8	65.2	8		
PHF	.732	.861	.716	.827	.808	.924	.871	.902	.813	.808	.727	.837	.895	.823	.825	.848	.946

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County of Los Angeles
N/S: Broadway Avenue
E/W: Mines Boulevard
Weather: Clear

File Name : 01_CLA_Broad_Mines PM
Site Code : 10524414
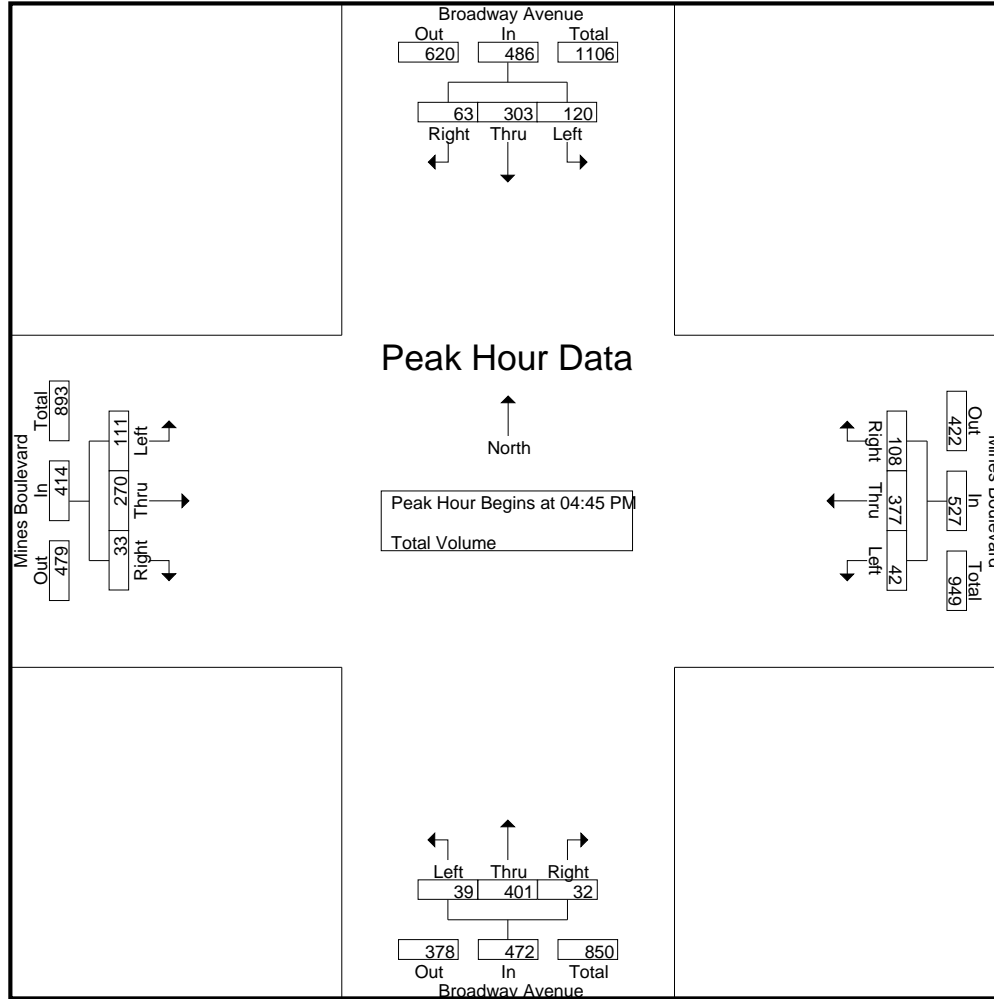Start Date : 5/7/2024
Page No : 2

Peak Hour Data

Broadway Avenue

Out	In	Total
620	486	1106

Right	Thru	Left
63	303	120

Mines Boulevard

Total	In	Out
893	414	479

Left	Thru	Right
111	270	33

Mines Boulevard

Out	In	Total
422	527	949

Right	Thru	Left
108	377	42

North

Peak Hour Begins at 04:45 PM

Total Volume

Broadway Avenue

Left	Thru	Right
39	401	32

Out	In	Total
378	472	850

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:30 PM				04:45 PM			
+0 mins.	29	86	**21**	**136**	11	86	**32**	129	10	102	**10**	122	25	55	7	87
+15 mins.	30	81	12	123	7	94	31	132	**12**	119	5	136	**31**	75	9	115
+30 mins.	**31**	**87**	16	134	8	**102**	24	134	9	55	10	74	25	58	7	90
+45 mins.	31	70	10	111	**13**	102	31	**146**	11	**124**	6	**141**	30	**82**	**10**	**122**
Total Volume	121	324	59	504	39	384	118	541	42	400	31	473	111	270	33	414
% App. Total	24	64.3	11.7		7.2	71	21.8		8.9	84.6	6.6		26.8	65.2	8	
PHF	.976	.931	.702	.926	.750	.941	.922	.926	.875	.806	.775	.839	.895	.823	.825	.848

County of Los Angeles
N/S: Broadway Avenue
E/W: Washington Boulevard
Weather: Clear

File Name : 02_CLA_Broad_Wash AM
Site Code : 10524414
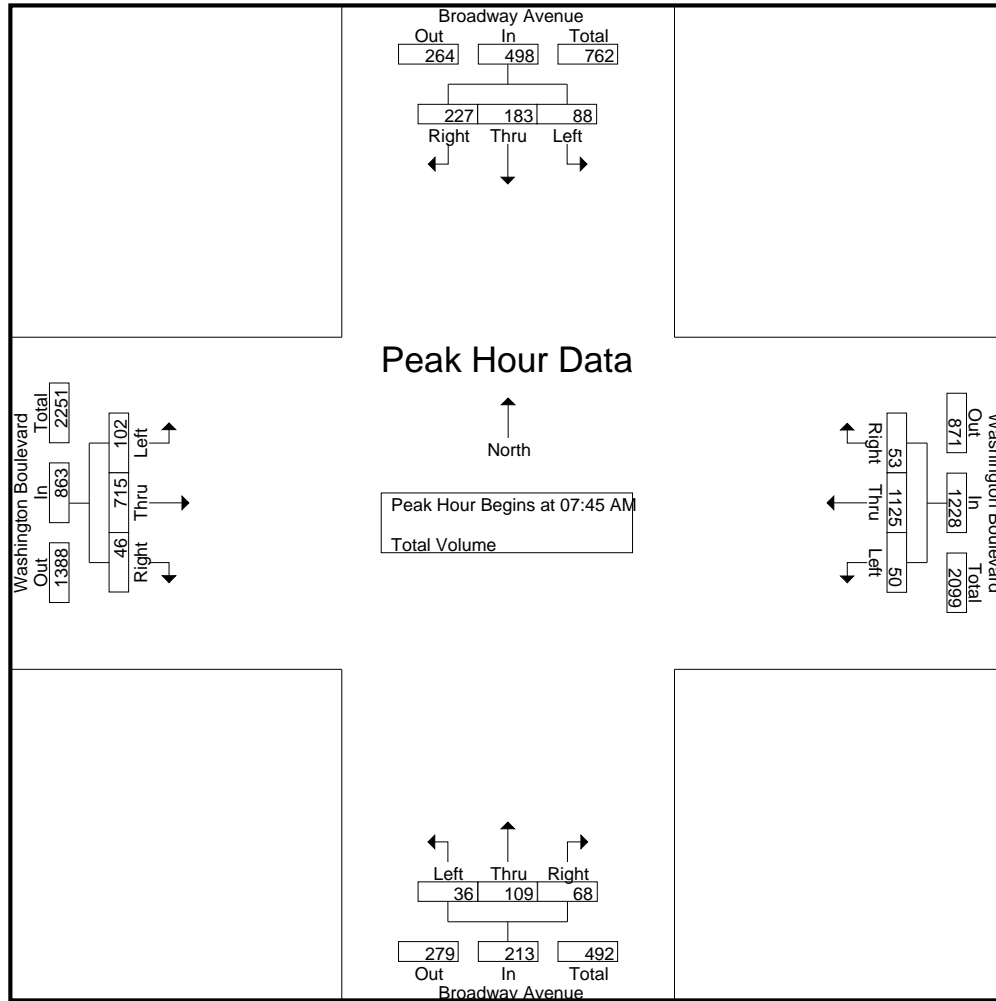Start Date : 5/7/2024
Page No   : 1

Groups Printed- Total Volume

Start Time	Broadway Avenue Southbound				Washington Boulevard Westbound				Broadway Avenue Northbound				Washington Boulevard Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	14	33	56	103	13	346	8	367	3	12	10	25	14	143	8	165	660
07:15 AM	24	42	60	126	10	324	9	343	5	26	15	46	26	145	11	182	697
07:30 AM	22	52	61	135	11	297	11	319	5	26	13	44	21	123	11	155	653
07:45 AM	24	63	63	150	19	274	16	309	18	29	16	63	28	125	10	163	685
Total	84	190	240	514	53	1241	44	1338	31	93	54	178	89	536	40	665	2695
08:00 AM	23	51	57	131	7	297	16	320	5	21	16	42	17	146	7	170	663
08:15 AM	19	41	58	118	16	252	8	276	9	33	14	56	33	235	13	281	731
08:30 AM	22	28	49	99	8	302	13	323	4	26	22	52	24	209	16	249	723
08:45 AM	22	25	34	81	14	244	16	274	5	31	24	60	22	210	6	238	653
Total	86	145	198	429	45	1095	53	1193	23	111	76	210	96	800	42	938	2770
Grand Total	170	335	438	943	98	2336	97	2531	54	204	130	388	185	1336	82	1603	5465
Apprch %	18	35.5	46.4		3.9	92.3	3.8		13.9	52.6	33.5		11.5	83.3	5.1		
Total %	3.1	6.1	8	17.3	1.8	42.7	1.8	46.3	1	3.7	2.4	7.1	3.4	24.4	1.5	29.3	

Start Time	Broadway Avenue Southbound				Washington Boulevard Westbound				Broadway Avenue Northbound				Washington Boulevard Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:45 AM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:45 AM	24	63	63	150	19	274	16	309	18	29	16	63	28	125	10	163	685
08:00 AM	23	51	57	131	7	297	16	320	5	21	16	42	17	146	7	170	663
08:15 AM	19	41	58	118	16	252	8	276	9	33	14	56	33	235	13	281	731
08:30 AM	22	28	49	99	8	302	13	323	4	26	22	52	24	209	16	249	723
Total Volume	88	183	227	498	50	1125	53	1228	36	109	68	213	102	715	46	863	2802
% App. Total	17.7	36.7	45.6		4.1	91.6	4.3		16.9	51.2	31.9		11.8	82.9	5.3		
PHF	.917	.726	.901	.830	.658	.931	.828	.950	.500	.826	.773	.845	.773	.761	.719	.768	.958

County of Los Angeles
N/S: Broadway Avenue
E/W: Washington Boulevard
Weather: Clear

Peak Hour Data

Broadway Avenue

Out	In	Total
264	498	762

227	183	88
Right	Thru	Left

North

Peak Hour Begins at 07:45 AM

Total Volume

Washington Boulevard

Total	In	Out
2251	863	1388

102	715	46
Left	Thru	Right

Washington Boulevard

Out	In	Total
871	1228	2099

53	1125	50
Right	Thru	Left

Left	Thru	Right
36	109	68

279	213	492
Out	In	Total

Broadway Avenue

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:45 AM				08:00 AM			
+0 mins.	**24**	42	60	126	13	**346**	8	**367**	**18**	29	16	**63**	17	146	7	170
+15 mins.	22	52	61	135	10	324	9	343	5	21	16	42	**33**	**235**	13	**281**
+30 mins.	24	**63**	**63**	**150**	11	297	11	319	9	**33**	14	56	24	209	**16**	249
+45 mins.	23	51	57	131	**19**	274	**16**	309	4	26	**22**	52	22	210	6	238
Total Volume	93	208	241	542	53	1241	44	1338	36	109	68	213	96	800	42	938
% App. Total	17.2	38.4	44.5		4	92.8	3.3		16.9	51.2	31.9		10.2	85.3	4.5	
PHF	.969	.825	.956	.903	.697	.897	.688	.911	.500	.826	.773	.845	.727	.851	.656	.835

County of Los Angeles
N/S: Broadway Avenue
E/W: Washington Boulevard
Weather: Clear

File Name : 02_CLA_Broad_Wash PM
Site Code : 10524414
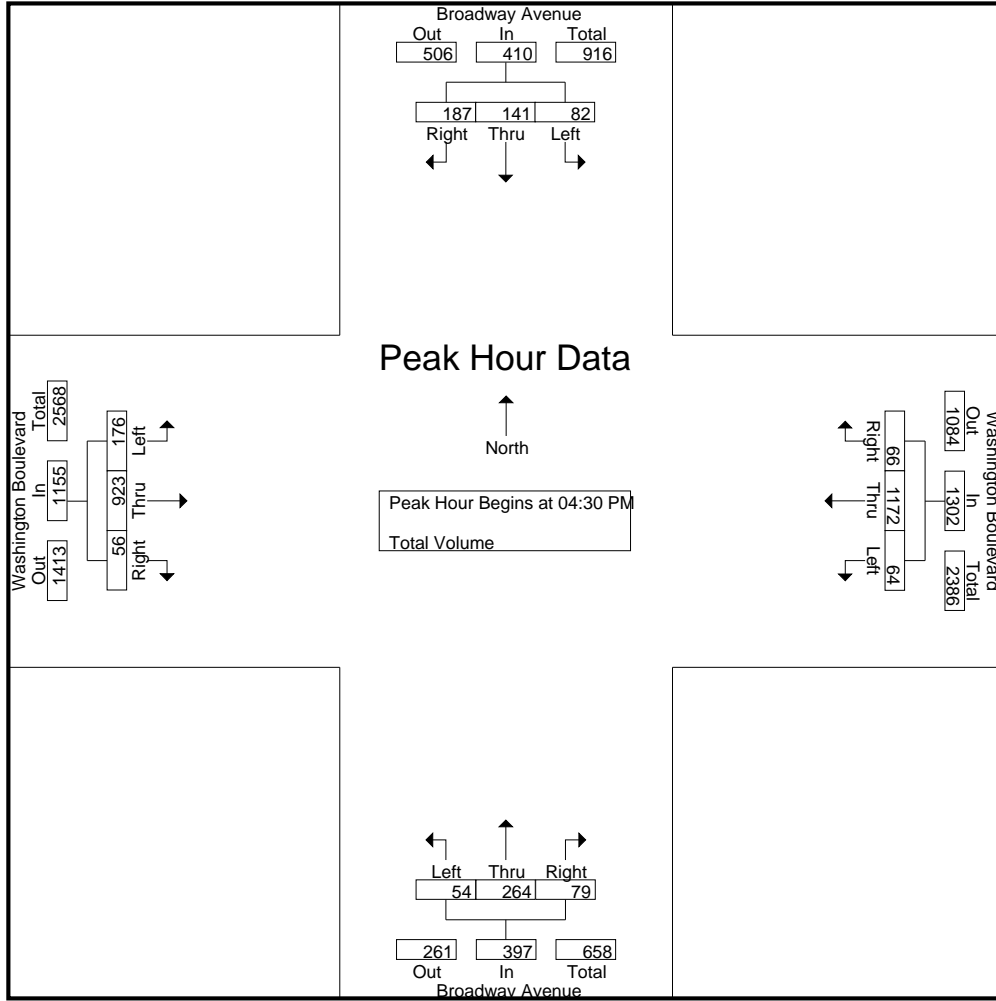Start Date : 5/7/2024
Page No   : 1

Groups Printed- Total Volume

Start Time	Broadway Avenue Southbound				Washington Boulevard Westbound				Broadway Avenue Northbound				Washington Boulevard Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	19	31	56	106	17	256	13	286	12	57	19	88	34	257	10	301	781
04:15 PM	24	31	47	102	20	252	14	286	12	70	29	111	34	255	8	297	796
04:30 PM	21	39	54	114	14	291	12	317	9	51	11	71	43	236	19	298	800
04:45 PM	25	18	44	87	20	262	21	303	14	59	25	98	56	258	17	331	819
Total	89	119	201	409	71	1061	60	1192	47	237	84	368	167	1006	54	1227	3196
05:00 PM	17	40	41	98	18	299	18	335	17	79	22	118	38	220	10	268	819
05:15 PM	19	44	48	111	12	320	15	347	14	75	21	110	39	209	10	258	826
05:30 PM	24	27	53	104	21	250	23	294	19	72	16	107	35	232	13	280	785
05:45 PM	10	32	42	84	15	246	18	279	15	65	18	98	44	266	21	331	792
Total	70	143	184	397	66	1115	74	1255	65	291	77	433	156	927	54	1137	3222
Grand Total	159	262	385	806	137	2176	134	2447	112	528	161	801	323	1933	108	2364	6418
Apprch %	19.7	32.5	47.8		5.6	88.9	5.5		14	65.9	20.1		13.7	81.8	4.6		
Total %	2.5	4.1	6	12.6	2.1	33.9	2.1	38.1	1.7	8.2	2.5	12.5	5	30.1	1.7	36.8	

Start Time	Broadway Avenue Southbound				Washington Boulevard Westbound				Broadway Avenue Northbound				Washington Boulevard Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:30 PM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:30 PM	21	39	**54**	**114**	14	291	12	317	9	51	11	71	43	236	**19**	298	800
04:45 PM	**25**	18	44	87	**20**	262	**21**	303	14	59	**25**	98	**56**	**258**	17	**331**	819
05:00 PM	17	40	41	98	18	299	18	335	**17**	**79**	22	**118**	38	220	10	268	819
05:15 PM	19	**44**	48	111	12	**320**	15	**347**	14	75	21	110	39	209	10	258	**826**
Total Volume	82	141	187	410	64	1172	66	1302	54	264	79	397	176	923	56	1155	3264
% App. Total	20	34.4	45.6		4.9	90	5.1		13.6	66.5	19.9		15.2	79.9	4.8		
PHF	.820	.801	.866	.899	.800	.916	.786	.938	.794	.835	.790	.841	.786	.894	.737	.872	.988

County of Los Angeles
N/S: Broadway Avenue
E/W: Washington Boulevard
Weather: Clear

File Name : 02_CLA_Broad_Wash PM
Site Code : 10524414
Start Date : 5/7/2024
Page No   : 2

Peak Hour Data

Broadway Avenue

Out	In	Total
506	410	916

Right	Thru	Left
187	141	82

North

Peak Hour Begins at 04:30 PM

Total Volume

Washington Boulevard

Total	In	Out
2568	1155	1413

Left	Thru	Right
176	923	56

Washington Boulevard

Out	In	Total
1084	1302	2386

Right	Thru	Left
66	1172	64

Broadway Avenue

Left	Thru	Right
54	264	79

Out	In	Total
261	397	658

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:45 PM				04:00 PM			
+0 mins.	21	39	**54**	**114**	14	291	12	317	14	59	**25**	98	34	257	10	301
+15 mins.	**25**	18	44	87	**20**	262	**21**	303	17	**79**	22	**118**	34	255	8	297
+30 mins.	17	40	41	98	18	299	18	335	14	75	21	110	43	236	**19**	298
+45 mins.	19	**44**	48	111	12	**320**	15	**347**	**19**	72	16	107	**56**	**258**	17	**331**
Total Volume	82	141	187	410	64	1172	66	1302	64	285	84	433	167	1006	54	1227
% App. Total	20	34.4	45.6		4.9	90	5.1		14.8	65.8	19.4		13.6	82	4.4	
PHF	.820	.801	.866	.899	.800	.916	.786	.938	.842	.902	.840	.917	.746	.975	.711	.927

County of Los Angeles
N/S: Broadway Avenue
E/W: Alleyway
Weather: Clear

File Name : 03_CLA_Broad_Alley AM
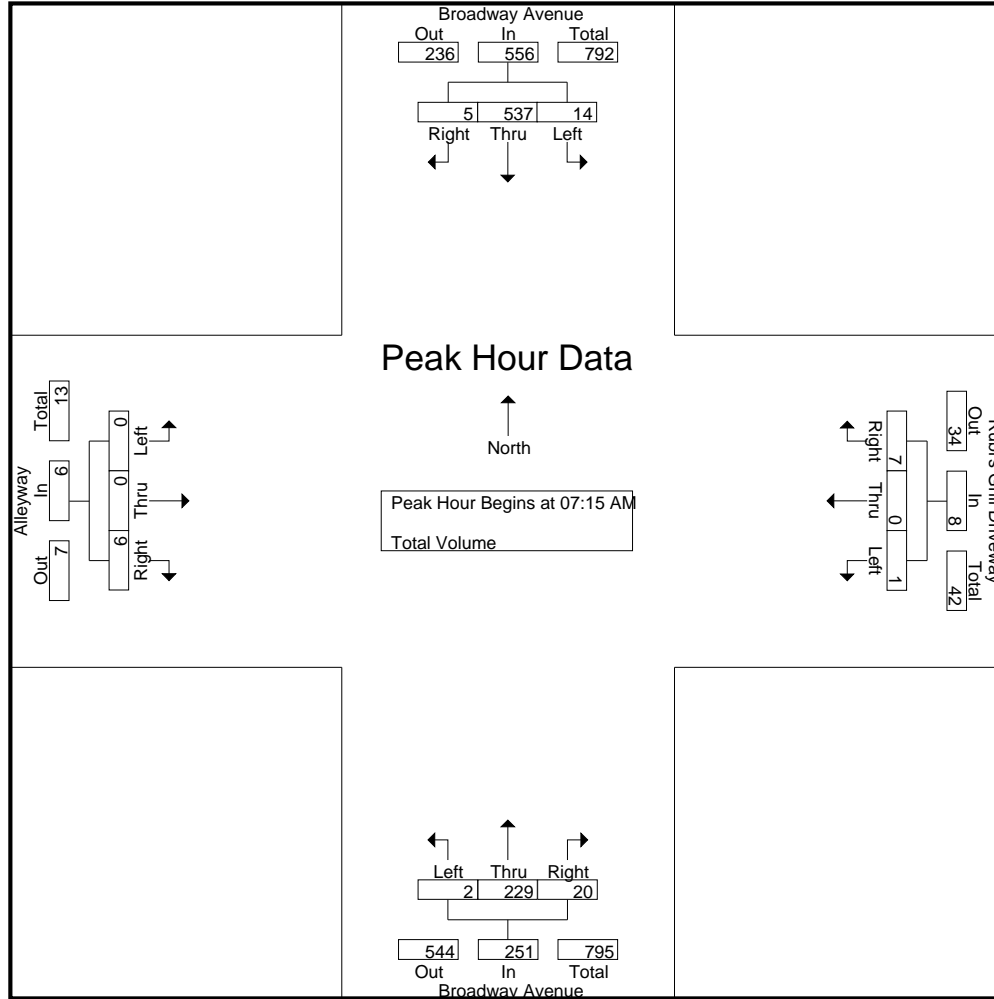Site Code : 10524414
Start Date : 5/7/2024
Page No   : 1

Groups Printed- Total Volume

Start Time	Broadway Avenue Southbound				Rubi's Grill Driveway Westbound				Broadway Avenue Northbound				Alleyway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	1	119	0	120	1	0	1	2	0	36	1	37	0	0	0	0	159
07:15 AM	3	124	0	127	0	0	3	3	1	55	4	60	0	0	2	2	192
07:30 AM	2	137	0	139	0	0	2	2	1	60	2	63	0	0	2	2	206
07:45 AM	6	140	2	148	1	0	0	1	0	66	6	72	0	0	1	1	222
Total	12	520	2	534	2	0	6	8	2	217	13	232	0	0	5	5	779
08:00 AM	3	136	3	142	0	0	2	2	0	48	8	56	0	0	1	1	201
08:15 AM	5	109	1	115	0	0	2	2	0	70	3	73	1	0	0	1	191
08:30 AM	4	105	1	110	4	0	1	5	1	63	3	67	1	1	1	3	185
08:45 AM	4	71	1	76	0	0	2	2	0	63	5	68	0	0	0	0	146
Total	16	421	6	443	4	0	7	11	1	244	19	264	2	1	2	5	723
Grand Total	28	941	8	977	6	0	13	19	3	461	32	496	2	1	7	10	1502
Apprch %	2.9	96.3	0.8		31.6	0	68.4		0.6	92.9	6.5		20	10	70		
Total %	1.9	62.6	0.5	65	0.4	0	0.9	1.3	0.2	30.7	2.1	33	0.1	0.1	0.5	0.7	

Start Time	Broadway Avenue Southbound				Rubi's Grill Driveway Westbound				Broadway Avenue Northbound				Alleyway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:15 AM	3	124	0	127	0	0	3	3	1	55	4	60	0	0	2	2	192
07:30 AM	2	137	0	139	0	0	2	2	1	60	2	63	0	0	2	2	206
07:45 AM	6	140	2	148	1	0	0	1	0	66	6	72	0	0	1	1	222
08:00 AM	3	136	3	142	0	0	2	2	0	48	8	56	0	0	1	1	201
Total Volume	14	537	5	556	1	0	7	8	2	229	20	251	0	0	6	6	821
% App. Total	2.5	96.6	0.9		12.5	0	87.5		0.8	91.2	8		0	0	100		
PHF	.583	.959	.417	.939	.250	.000	.583	.667	.500	.867	.625	.872	.000	.000	.750	.750	.925

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Los Angeles
N/S: Broadway Avenue
E/W: Alleyway
Weather: Clear

File Name : 03_CLA_Broad_Alley AM
Site Code : 10524414
Start Date : 5/7/2024
Page No   : 2

Peak Hour Data

Broadway Avenue

Out	In	Total
236	556	792

Right	Thru	Left
5	537	14

North

Peak Hour Begins at 07:15 AM

Total Volume

Alleyway

Total	13
In	6
Out	7

Left	0
Thru	0
Right	6

Rubi's Grill Driveway

Out	34
In	8
Total	42

Right	7
Thru	0
Left	1

Left	Thru	Right
2	229	20

Out	In	Total
544	251	795

Broadway Avenue

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				08:00 AM				07:45 AM				07:15 AM			
+0 mins.	3	124	0	127	0	0	**2**	2	0	66	6	72	0	0	**2**	**2**
+15 mins.	2	137	0	139	0	0	2	2	0	48	**8**	56	0	0	2	2
+30 mins.	**6**	**140**	2	**148**	**4**	0	1	**5**	0	**70**	3	**73**	0	0	1	1
+45 mins.	3	136	**3**	142	0	0	2	2	**1**	63	3	67	0	0	1	1
Total Volume	14	537	5	556	4	0	7	11	1	247	20	268	0	0	6	6
% App. Total	2.5	96.6	0.9		36.4	0	63.6		0.4	92.2	7.5		0	0	100	
PHF	.583	.959	.417	.939	.250	.000	.875	.550	.250	.882	.625	.918	.000	.000	.750	.750

County of Los Angeles
N/S: Broadway Avenue
E/W: Alleyway
Weather: Clear

File Name : 03_CLA_Broad_Alley PM
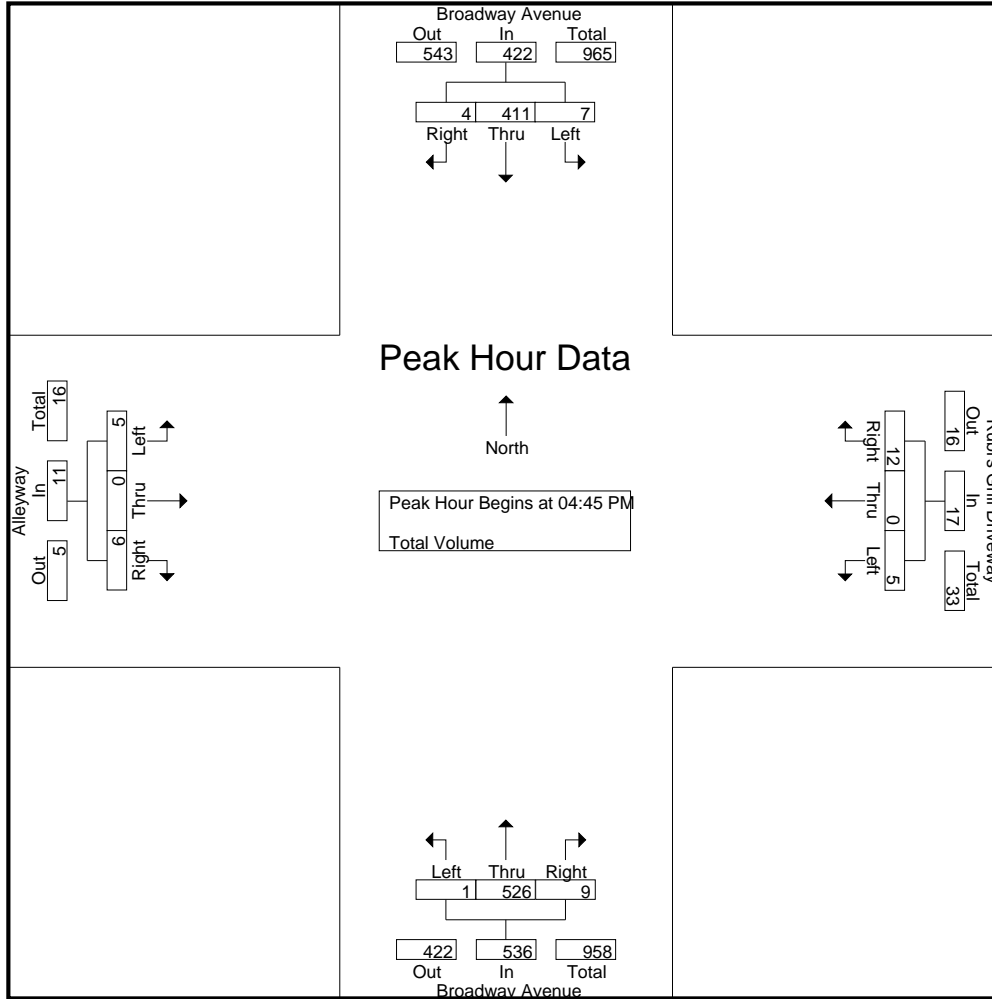Site Code : 10524414
Start Date : 5/7/2024
Page No   : 1

Groups Printed- Total Volume

Start Time	Broadway Avenue Southbound				Rubi's Grill Driveway Westbound				Broadway Avenue Northbound				Alleyway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	2	109	1	112	1	0	2	3	0	104	0	104	1	0	2	3	222
04:15 PM	0	106	0	106	0	0	2	2	0	124	1	125	0	0	1	1	234
04:30 PM	2	108	1	111	0	0	5	5	1	102	1	104	1	0	1	2	222
04:45 PM	0	94	1	95	1	0	4	5	0	139	4	143	2	0	3	5	248
Total	4	417	3	424	2	0	13	15	1	469	6	476	4	0	7	11	926
05:00 PM	3	106	1	110	3	0	3	6	0	128	2	130	0	0	1	1	247
05:15 PM	1	107	1	109	0	0	3	3	0	126	1	127	1	0	1	2	241
05:30 PM	3	104	1	108	1	0	2	3	1	133	2	136	2	0	1	3	250
05:45 PM	1	92	1	94	1	0	5	6	1	127	4	132	1	0	0	1	233
Total	8	409	4	421	5	0	13	18	2	514	9	525	4	0	3	7	971
Grand Total	12	826	7	845	7	0	26	33	3	983	15	1001	8	0	10	18	1897
Apprch %	1.4	97.8	0.8		21.2	0	78.8		0.3	98.2	1.5		44.4	0	55.6		
Total %	0.6	43.5	0.4	44.5	0.4	0	1.4	1.7	0.2	51.8	0.8	52.8	0.4	0	0.5	0.9	

Start Time	Broadway Avenue Southbound				Rubi's Grill Driveway Westbound				Broadway Avenue Northbound				Alleyway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	94	1	95	1	0	4	5	0	139	4	143	2	0	3	5	248
05:00 PM	3	106	1	110	3	0	3	6	0	128	2	130	0	0	1	1	247
05:15 PM	1	107	1	109	0	0	3	3	0	126	1	127	1	0	1	2	241
05:30 PM	3	104	1	108	1	0	2	3	1	133	2	136	2	0	1	3	250
Total Volume	7	411	4	422	5	0	12	17	1	526	9	536	5	0	6	11	986
% App. Total	1.7	97.4	0.9		29.4	0	70.6		0.2	98.1	1.7		45.5	0	54.5		
PHF	.583	.960	1.00	.959	.417	.000	.750	.708	.250	.946	.563	.937	.625	.000	.500	.550	.986

County of Los Angeles
N/S: Broadway Avenue
E/W: Alleyway
Weather: Clear

Broadway Avenue

Out	In	Total
543	422	965

Right	Thru	Left
4	411	7

Peak Hour Data

North

Peak Hour Begins at 04:45 PM

Total Volume

Alleyway

Total	16
In	11
Out	5

Left	5
Thru	0
Right	6

Rubi's Grill Driveway

Out	16
In	17
Total	33

Right	12
Thru	0
Left	5

Left	Thru	Right
1	526	9

Out	In	Total
422	536	958

Broadway Avenue

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:45 PM				04:00 PM			
+0 mins.	2	**108**	**1**	**111**	0	0	**5**	5	0	**139**	**4**	**143**	1	0	2	3
+15 mins.	0	94	1	95	1	0	4	5	0	128	2	130	0	0	1	1
+30 mins.	**3**	106	1	110	**3**	0	3	**6**	0	126	1	127	1	0	1	2
+45 mins.	1	107	1	109	0	0	3	3	**1**	133	2	136	**2**	0	**3**	**5**
Total Volume	6	415	4	425	4	0	15	19	1	526	9	536	4	0	7	11
% App. Total	1.4	97.6	0.9		21.1	0	78.9		0.2	98.1	1.7		36.4	0	63.6	
PHF	.500	.961	1.000	.957	.333	.000	.750	.792	.250	.946	.563	.937	.500	.000	.583	.550

Appendix C

County of Los Angeles VMT Tool Worksheet Print-Out

COUNTY OF LOS ANGELES VMT TOOL

version 1.0

Project Information

Project Name | Analysis Year
Washington Blvd at Broadway Avenue Multifamily Residential | 2024

Parcel Number (TAZ# 21839300)
8173023020, 8173023021

Project Land Use Information
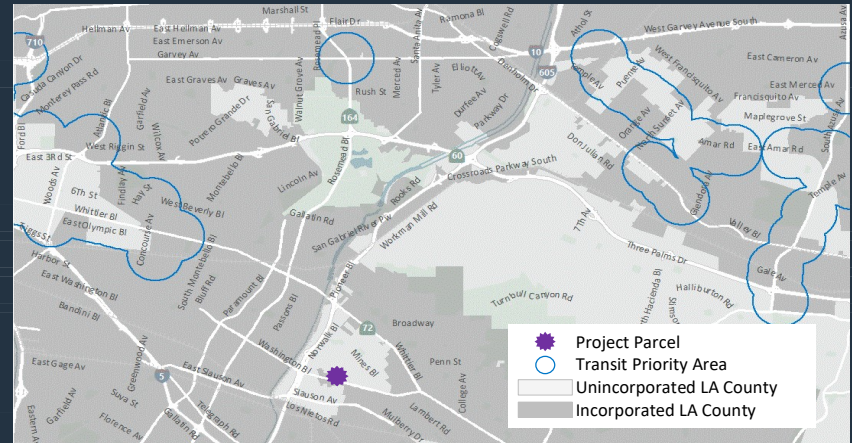
	Values	Unit
Residential - Single-Family Housing		DU
Residential - Multifamily Housing	53	DU
Residential - Affordable Housing	7	DU
Office - General Office		KSF
Office - Medical Office		KSF
Retail - Shopping Center, Restaurant, Services		KSF
Industrial - Warehousing		KSF
Industrial - Light Industrial		KSF
Custom Land Use (ignores all other land use entries)		Daily Trips

Project Daily Trips: 317

Screening Criteria for County of Los Angeles

|	Value
Is the project screened in a Transit Priority Area?	No
Is the project's residential land uses 100% affordable housing?	No
Is the project's local service retail land uses under 50,000 square foot?	N/A
Does the project generate fewer than 110 daily trips?	No
(enter project land use in the section above)	

Project Location and VMT Information

Legend:
- Project Parcel
- Transit Priority Area
- Unincorporated LA County
- Incorporated LA County

Project Summary Information

South County Residential VMT Baseline (11.9)	16.8%	% Threshold for Screening
South County Work VMT Baseline (16.0)	16.8%	% Threshold for Screening

Residential VMT per capita

11.2
9.9

- Residential VMT per capita
- 16.8% < South County Baseline

Work VMT per employee

0.0
0
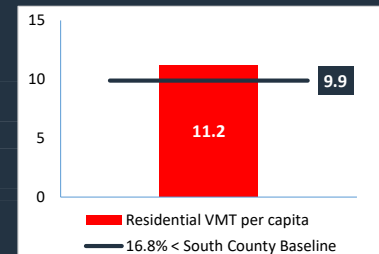
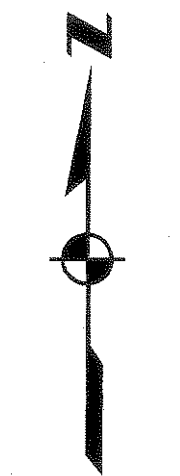- Work VMT per employee
- 16.8% < South County Baseline
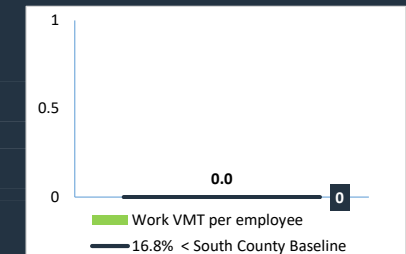
The project is not presumed to have a less than significant impact on VMT, therefore a CEQA VMT analysis may be required. Please refer to the Transportation Impact Analysis Guidelines on how to proceed forward.
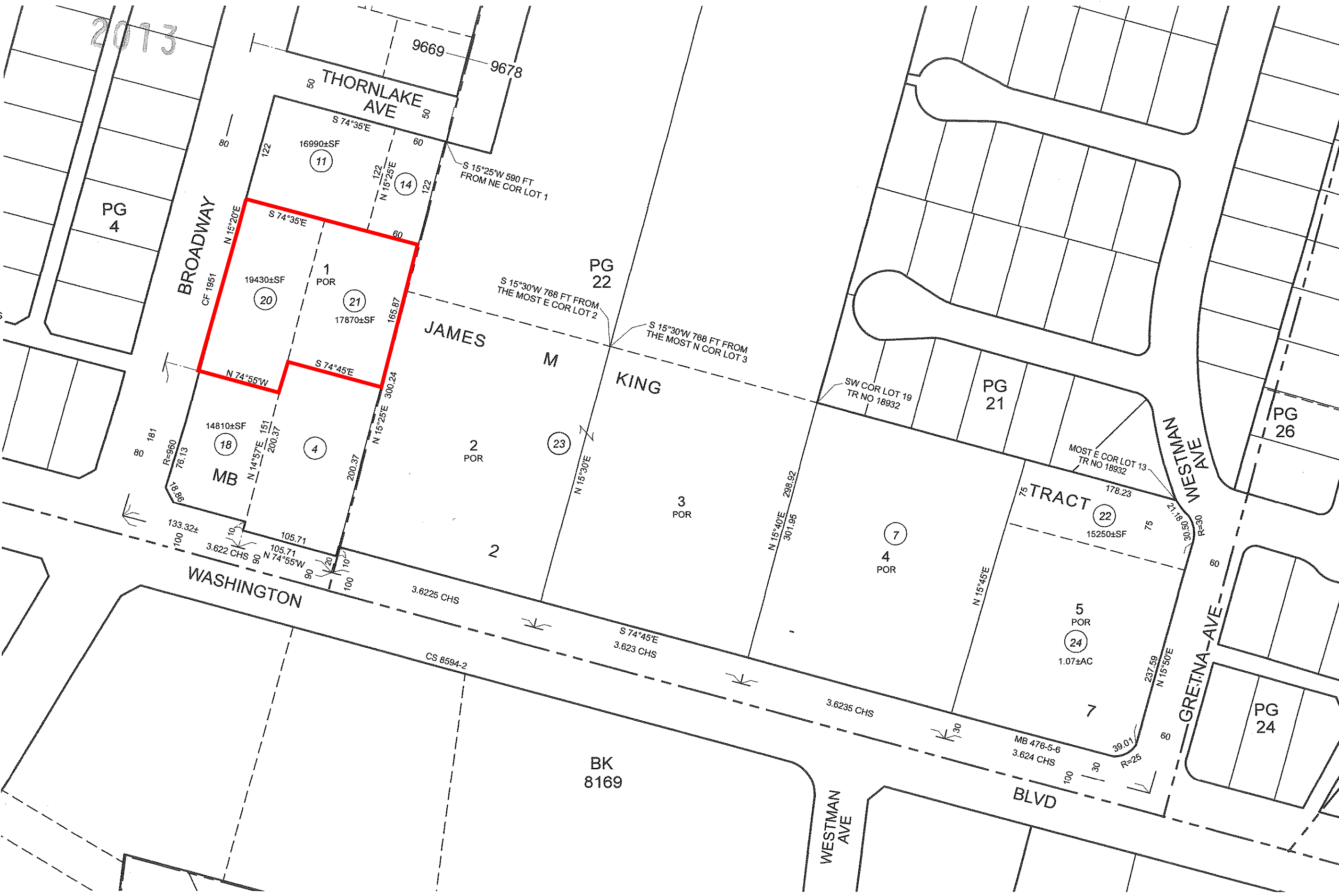
FEHR PEERS

Appendix D

APNs 8173-023-020 and 8173-023-021
Parcel Map

| 8173 | 23 SHEET | P. A. 842-27 | TRA 9669 9678 | REVISED 770512307 2003032707001001-27 | 201205091900 5001-27 | | | SEARCH NO | | OFFICE OF THE ASSESSOR COUNTY OF LOS ANGELES COPYRIGHT © 2002 |

2013

9669

9678

THORNLAKE AVE

50

50

50

60

S 74°35'E

16990±SF
11

14

122

122

N 15°25'E

122

S 15°25'W 590 FT
FROM NE COR LOT 1

PG 4

BROADWAY

80

N 15°20'E

122

S 74°35'E

60

1 POR

19430±SF

CF 1951

20

21

17870±SF

165.87

PG 22

S 15°30'W 768 FT FROM
THE MOST E COR LOT 2

S 15°30'W 768 FT FROM
THE MOST N COR LOT 3

JAMES

M

KING

N 74°55'W

S 74°45'E

300.24

N 15°25'E

SW COR LOT 19
TR NO 18932

PG 21

MOST E COR LOT 13
TR NO 18932

178.23

PG 26

14810±SF
18

4

2 POR

23

N 15°30'E

3 POR

298.92

N 15°40'E

WESTMAN AVE

75

22

15250±SF

75

181

R=960

76.13

200.37

151

N 14°57'E

200.37

N 15°25'E

80

MB

2

7

4 POR

N 15°45'E
301.95

TRACT

75

30.50

R=30

GRETNA AVE

78.86

133.32±

100

10

105.71

90

3.622 CHS

N 74°55'W

105.71

90

20

100

10

5 POR

24

1.07±AC

237.59

N 15°50'E

60

WASHINGTON

3.6225 CHS

S 74°45'E

3.623 CHS

30

7

39.01

60

CS 8594-2

BK 8169

WESTMAN AVE

30

MB 476-5-6

3.624 CHS

100

30

R=25

BLVD

PG 24

MAPPING AND GIS SERVICES
SCALE 1" = 100'

N

Appendix E

CAPCOA VMT Mitigation Measures Calculation Worksheets

T-1   **Increase Residential Density**

GHG Reduction Formula

$$A = \frac{B - C}{C} \times D$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project VMT in study area	0–30.0	%	calculated
User Inputs				
B	Residential density of project development	[]	du/acre	user input
Constants, Assumptions, and Available Defaults				
C	Residential density of typical development	9.1	du/acre	Ewing et al. 2007
D	Elasticity of VMT with respect to residential density	-0.22	unitless	Stevens 2016

Output

A	=	-146.7%

User Inputs, Constants, Assumptions, and Defaults:

B	=	69.77
b_{DUs}	=	60
$b_{Project\ Acreage}$	=	0.86
C	=	9.1
D	=	-0.22

VMT Reduction	=	-30.0%

RK engineering group, inc.

T-4   Integrate Affordable and Below Market Rate Housing

GHG Reduction Formula

$A = B \times C$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from Project/Site VMT for multifamily residential developments	0–28.6	%	calculated
User Inputs				
B	Percent of multifamily units permanently dedicated as affordable	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent reduction in VMT for qualified units compared to market rate units	-28.6	%	ITE 2021

Further explanation of key variables:

- (B) – This refers to percent of multifamily units in the project that are deed restricted or otherwise permanently dedicated as affordable.

- (C) – The 11th Edition of the *ITE Trip Generation Manual* (ITE 2021) contains daily vehicle trip rates for market rate multifamily housing that is low-rise and not close to transit (ITE code 221) as well as affordable multifamily housing (ITE code 223). While these rates do not account for trip length, they serve as a proxy for the expected difference in vehicle trip generation and VMT generation presuming similar trip lengths for both types of land use. If the user has information about trip length differences between market rate and affordable housing, then adjusting the percent reduction accordingly is recommended.

   Users should note that the ITE trip rate estimates are based on a small sample of studies for the affordable housing rate and that no stratification of affordable housing by number of stories was available. This is an important distinction since the multifamily low-rise vehicle trip rate applies to four or fewer stories. Therefore, this measure may not apply to affordable housing projects with more than four stories.

Output

A	=	-3.3%

User Inputs, Constants, Assumptions, and Defaults:

B	=	11.7%
$b_{\text{affordable housing DUs}}$	=	7
$b_{\text{total multifamily DUs}}$	=	60
C	=	-28.6%

VMT Reduction	=	-3.3%

Combining Measures Within Subsectors - Land Use
CAPCOA Equation

$$Reduction_{subsector} = 1 - [(1 - A) \times (1 - B) \times (1 - C)]$$

Output

VMT Reduction$_{Land\ Use}$	=	-32.3%

Input

$A_{T\text{-}1:\ Increase\ Residential\ Density}$	=	-30.0%
$B_{T\text{-}4:\ Integrate\ Affordable\ and\ Below\ Market\ Rate\ Housing}$	=	-3%
VMT Reduction$_{Land\ Use}$	=	-32.3%

Combining Measures Across Subsectors
CAPCOA Equation

$$Reduction_{multi\text{-}subsector} = 1 - [(1 - Land) \times (1 - Design) \times (1 - Parking) \times (1 - Transit)] \leq 70\%$$

<u>**Output**</u>

VMT Reduction$_{multi\text{-}subsector}$	=	-32.3%

<u>**Input**</u>

Land	=	-32.3%
Design	=	0%
Parking	=	0.0%
Transit	=	0%

VMT Reduction$_{multi\text{-}subsector}$	=	-32.3%

RK **engineering group, inc.**

Appendix F

Existing Traffic Signal Timing Plans

Public Works — LOS ANGELES COUNTY

LACO - 1R WWV - TIME - BASED TYPE 170 PROGRAM

Intersection:	BROADWAY (N/S) @ MINES BLVD (E/W)	Date Prepared:	11-20-2023 PL	By: RBO
T.S. No.:	1038	Date Implemented:	12/13/23	By: OP

PHASE TIMING — Keystrokes: F + Phase + Interval

Phase #		1	2	3	4	5	6	7	8
Minimum Walk	0		12		11		12		11
Flashing Don't Walk	1		24		17		23		17
Minimum Green	2		9		8		9		8
Queue Maximum	3		25		0		0		0
Added Green/Actuation	4		0.0		0.0		0.0		0.0
Vehicle Extension	5		4.0		4.0		2.0		3.0
Maximum Gap	6		5.0		5.0		2.0		3.0
Minimum Gap	7		3.0		3.0		2.0		3.0
Max Extension 1 (Free)	8		40		40		40		40
Max Extension 2 (Coord)	9								
Offset 1	A	Dial 1	Dial 2	Dial 3					
Offset 2	b								
Offset 3	C								
Reduce 0.1 Sec. Every...	d		1.1		1.1		0.0		0.0
Yellow	E		5.0		5.0		5.0		5.0
Red Clearance	F		0.5		0.5		0.5		0.5

Max Added Green	F-0-E	0
Red Revert	F-0-F	2.0

PREEMPTION — Keystrokes: F+E+Function

RR Select (0, 1, 2)	0
Track Clearance	1
RR Red	2
RR2 Maximum(Minutes)	3
EV-A Delay	4
EV-A Clearance	5
EV-B Delay	6
EV-B Clearance	7
EV-C Delay	8
EV-C Clearance	9
EV-D Delay	A
EV-D Clearance	b
EV Maximum (Seconds)	C
Delay Timer	d
Clearance Timer	E
Maximum Timer	F

PHASE FUNCTION FLAGS — Keystrokes: F+F+Function

		1	2	3	4	5	6	7	8
Phases Permitted	0		X		X		X		X
Red Lock	1								
Red & Yellow Lock	2		X		X				
Minimum Vehicle Recall	3								
Pedestrian Recall + Rest in Walk	4								
Pedestrian Phases	5		X		X		X		X
Rest in Red	6								
Semi Traffic Actuated Mode	7								
Double Entry	8		X		X		X		X
Maximum Vehicle Recall	9								
Overlap A	A								
Overlap B	b								
Barrier Recall	C								
Rest in Green	d								
Yellow Start Up	E		X				X		
Protected/Permissive Left Turn	F								

LAG PHASE FLAGS

		1	2	3	4	5	6	7	8
Lag Free	d-F-0		X		X		X		X
Lag Dial 1	d-F-1								
Lag Dial 2	d-F-2								
Lag Dial 3	d-F-3								
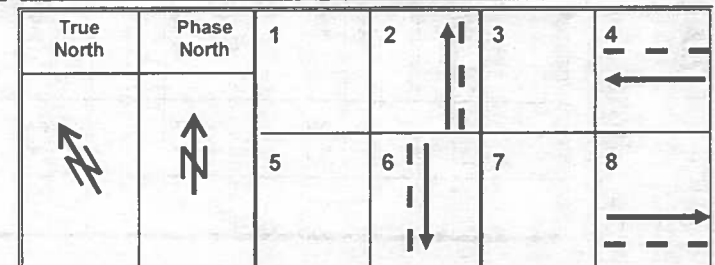
Remarks:

True North	Phase North	1	2	3	4
		5	6	7	8

LACO-1R WWV   DETECTOR ASSIGNMENTS

T.S.: **1038**   Intersection: **BROADWAY (N/S) @ MINES BLVD (E/W)**   Date Prepared: 11-20-2023   By: *RBO*
12/13/23 OP

App	Lanes	Description	Phase File - Slot Channel	Delay Code	Delay Seconds	Extended Call Code	Extended Call Seconds	Remarks (Note: The four Programmable Detectors will default to normal phasing if not flagged.)	Yellow Disconnect Code	Lite	On	Queue Clearing Code	Lite	On
			1I1U	d10		d30			dF4	1		dF8	1	
			1I1L											
N	1,2	ADVANCE	2I2U	d11		d31			dF4	2		dF8	2	
S	1,2	ADVANCE	2I2L	d12		d32			dF4	3		dF8	3	
			2I3U	d13		d33			dF4	4		dF8	4	
			2I3L	d14		d34			dF4	5		dF8	5	
N	1,2	QUEUE CL. *	2I4U	d15		d35	2.0	Call Ø 1 2 3 4 5 6 7 8 / dd8	dF4	6		dF8	6	X
S	1,2	QUEUE CL. *	2I4L						dF4			dF8		
			3I5U	d16		d36			dF4	7		dF8	7	
			3I5L						dF4			dF8		
E	1,2	ADVANCE	4I6U	d17		d37			dF4	8		dF8	8	
W	1,2	ADVANCE	4I6L	d18		d38			dF5	1		dF9	1	
			4I7U	d19		d39			dF5	2		dF9	2	
			4I7L	d1A		d3A			dF5	3		dF9	3	
			4I8U	d1b		d3b		Call Ø 1 2 3 4 5 6 7 8 / dd9	dF5	4		dF9	4	
			4I8L						dF5			dF9		
			1I9U	d1C		d3c			dF5	5		dF9	5	
			3I9L	d1d		d3d			dF5	6		dF9	6	
			5J1U	d20		d40			dF6	1		dFA	1	
			5J1L						dF6			dFA		
			6J2U	d21		d41			dF6	2		dFA	2	
			6J2L	d22		d42			dF6	3		dFA	3	
N	LT	HOLDING *	6J3U	d23	3.0	d43		2-6'X6'	dF6	4		dFA	4	
S	LT	HOLDING *	6J3L	d24	3.0	d44		2-6'X6'	dF6	5		dFA	5	
			6J4U	d25		d45		Call Ø 1 2 3 4 5 6 7 8 / ddA	dF6	6		dFA	6	
			6J4L						dF6			dFA		
			7J5U	d26		d46			dF6	7		dFA	7	
			7J5L						dF6			dFA		
E	Lt,Th,B	1ST VEH. *	8J6U	d27		d47		2-6'X6', (Bike Lane: 6'X6')	dF6	8		dFA	8	
E	RT	1ST VEH. *	8J6L	d28	10.0	d48		2-6'X6'	dF7	1		dFb	1	
W	Lt,Th,B	1ST VEH. *	8J7U	d29		d49		2-6'X6', (Bike Lane: 6'X6')	dF7	2		dFb	2	
W	RT	1ST VEH. *	8J7L	d2A	10.0	d4A		2-6'X6'	dF7	3		dFb	3	
			8J8U	d2b		d4b		Call Ø 1 2 3 4 5 6 7 8 / ddb	dF7	4		dFb	4	
			8J8L						dF7			dFb		
			5J9U	d2C		d4C			dF7	5		dFb	5	
			7J9L	d2d		d4d			dF7	6		dFb	6	

YELLOW DISCONNECT QUICK REFERENCE

Code	1	2	3	4	5	6	7	8
dF4								
dF5								
dF6								
dF7								

Remarks:

* Bike/Vehicle Detection

QUEUE CLEARING DETECTOR QUICK REFERENCE

Code	1	2	3	4	5	6	7	8
dF8						X		
dF9								
dFA								
dFb								

T.S. No. : 1038 Intersection: BROADWAY (N/S) @ MINES BLVD (E/W)

System Limits:

Remote Master:

Date Prepared: 11-20-2023 By: RBO

Date Implemented: 12/13/23 By: OP

TIME OF DAY OPERATION SUMMARY			
	Dial 1	Dial 2	Dial 3 / Offset Timing
Offset 1			
Offset 2			
Offset 3			
Free			
Special			

* Set Local Manual to 14 (free) before setting or changing dial intervals & functions. Setting either of the Manuals to 0 will release that Manual.
Offset Timing Mode:
A 12 at C-0-1 or by T.O.D enables this mode and uses the Dial 3 Intervals and Functions.

Observe:
Call	d-F-C
Hold	d-F-d
Ped Restrict	d-F-E
Force - Off	d-F-F
Cycle with Field Calls	C-0-b
Master Sync Pulse Width	d-0-d

INTERCONNECT SELECT

d-0-0   [   ] 7 = Slave   [   ] 170 = Master

d-0-E Set Maximum Width 4.0 Seconds

d-0-F Set Minimum Width 1.0 Seconds

Remarks:

Keystrokes: C + Column + Row		INTERVALS (in seconds)			FUNCTION FLAGS												
					DIAL 1				DIAL 2				DIAL 3 / OFFSET TIMING				
Coordination Parameters		Dial 1	Dial 2	Dial 3	Force Off	Hold	Ped Rstrict	Call	Force Off	Hold	Ped Rstrict	Call	Force Off	Hold	Ped Rstrict	Call	
0	Int	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F	Int
System Manual* 14	0																0
Local Manual* 14	1																1
Master Dial	2																2
Current Dial	3																3
Offset Number	4																4
Time of Day Plan	5																5
Function 6 14	6																6
Current Table	7																7
Minimum Cycle 0	8																8
Maximum Cycle 255	9																9
Master Timer	A																A
Local Timer	b																b
New Offset	C																C
Current Offset	d																d
Last Master Cycle	E																E
Last Local Cycle	F																F

Intersection: __BROADWAY (N/S) @ MINES BLVD (E/W)__

T.S. No.: __1038__

Date Prepared: 11-20-2023 / PL   By: __RBO__

Date Implemented: __12/13/23__   By: __OP__

CONTROL CODE A-C   CLOCK

FIG. 1

CONTROL CODE A-D

FIG. 2

ABOVE EXAMPLES
7:58 A.M. ON THURSDAY (FIG. 1)
MAY 27, 1982 (FIG. 2)

DAY OF WEEK
1 SUNDAY
2 MONDAY
3 TUESDAY
4 WEDNESDAY
5 THURSDAY
6 FRIDAY
7 SATURDAY

MONTH
1	JANUARY	7	JULY
2	FEBRUARY	8	AUGUST
3	MARCH	9	SEPTEMBER
4	APRIL	A	OCTOBER
5	MAY	B	NOVEMBER
6	JUNE	C	DECEMBER

DIRECTIONS
At control code A - C, key in hours and minutes, then key in 0 for seconds activity. Enter key E and turn on call light corresponding to day of the week. (NOTE: Seconds start at 0 seconds - for observation and correction use address D - 4 - F). At cibtrik cide A - D, key in the day of the month, year and month, then enter key E.

CONTROL CODE 9-3   EVENT TABLE

FIG. 3

ABOVE EXAMPLE

The example (FIG. 3), shows a time of day event at control code 9-3 with dial 2 to start at 3:30 P.M. each weekday from Monday through Friday.

DIRECTIONS

To set an event, key in 9 + the table location, key in hour, minute, and event, then enter key E. Set day(s) with call/active lights. To observe current event use address C - 0 - 5. (NOTE: These time of day events are local - not system events.)

FOR DIRECT INTERCONNECT ONLY. (D00=7)

LOC. 9+ ↓	TIME	EVENT *DIAL	SUN 1	MON 2	TUE 3	WED 4	THUR 5	FRI 6	SAT 7
0									
1									
2									
3									
4									
5									
6									
7									
8									
9									
A									
B									
C									
D									
E									
F									

DAY AND LIGHT
← Set DAY using call/active LIGHT →

REMARKS:

* DIAL 1 = 1, 2 = 2, 3 = 3, FREE = E, OFF = 0.
(NOTE: At C - 0 - 5, Free = 14)
OFFSET TIMING =C   T.O.D. FLASH=F

Intersection: BROADWAY (N/S) @ MINES BLVD (E/W) Date Prepared: 11-20-2023 By: RBO

T.S. No.: 1038 Date Implemented: 12/13/23 By:

TABLE 0 - DEFAULT				s	m	t	w	t	f	s
Code	Hour	Min	Plan	1	2	3	4	5	6	7
0 -0	:									
0 -1	:									
0 -2	:									
0 -3	:									
0 -4	:									
0 -5	:									
0 -6	:									
0 -7	:									
0 -8	:									
0 -9	:									
0 -A	:									
0 -b	:									
0 -C	:									
0 -d	:									
0 -E	:									
0 -F	:									

TABLE 3				s	m	t	w	t	f	s
Code	Hour	Min	Plan	1	2	3	4	5	6	7
3 -0	:									
3 -1	:									
3 -2	:									
3 -3	:									
3 -4	:									
3 -5	:									
3 -6	:									
3 -7	:									
3 -8	:									
3 -9	:									
3 -A	:									
3 -b	:									
3 -C	:									
3 -d	:									
3 -E	:									
3 -F	:									

ANNUAL EVENTS				s	m	t	w	t	f	s
Code	Month /	N^th	Table	1	2	3	4	5	6	7
5 -0	/									
5 -1	/									
5 -2	/									
5 -3	/									
5 -4	/									
5 -5	/									
5 -6	/									
5 -7	/									
5 -8	/									
5 -9	/									
5 -A	/									
5 -b	/									
5 -C	/									
5 -d	/									
5 -E	/									
5 -F	/									

TABLE 1				s	m	t	w	t	f	s
Code	Hour	Min	Plan	1	2	3	4	5	6	7
1 -0	:									
1 -1	:									
1 -2	:									
1 -3	:									
1 -4	:									
1 -5	:									
1 -6	:									
1 -7	:									
1 -8	:									
1 -9	:									
1 -A	:									
1 -b	:									
1 -C	:									
1 -d	:									
1 -E	:									
1 -F	:									

Plan = Plan Number

		D1	D2	D3
O1	=	1	2	3
O2	=	4	5	6
O3	=	7	8	9

Plans:
A = Arrows On
B = TOD Output On
C = Offset Timing
D = Arrows / TOD
   Output Off
E = Function 6
F = Flash

Keys:
0 = No Days
8 = All Days
9 = Weekdays

Table #4, N^{th} = The number of the occurrence in the month (1-5). 99 = Always the last occurance in the month.

I.E. Thanksgiving = 11/04 [Table] and Thursday.

ANNUAL EVENTS				s	m	t	w	t	f	s
Code	Month /	N^th	Table	1	2	3	4	5	6	7
6 -0	/									
6 -1	/									
6 -2	/									
6 -3	/									
6 -4	/									
6 -5	/									
6 -6	/									
6 -7	/									
6 -8	/									
6 -9	/									
6 -A	/									
6 -b	/									
6 -C	/									
6 -d	/									
6 -E	/									
6 -F	/									

TABLE 2				s	m	t	w	t	f	s
Code	Hour	Min	Plan	1	2	3	4	5	6	7
2 -0	:									
2 -1	:									
2 -2	:									
2 -3	:									
2 -4	:									
2 -5	:									
2 -6	:									
2 -7	:									
2 -8	:									
2 -9	:									
2 -A	:									
2 -b	:									
2 -C	:									
2 -d	:									
2 -E	:									
2 -F	:									

FLOATING HOLIDAYS				s	m	t	w	t	f	s
Code	Month /	N^th	Table	1	2	3	4	5	6	7
4 -0	/									
4 -1	/									
4 -2	/									
4 -3	/									
4 -4	/									
4 -5	/									
4 -6	/									
4 -7	/									
4 -8	/									
4 -9	/									
4 -A	/									
4 -b	/									
4 -C	/									
4 -d	/									
4 -E	/									
4 -F	/									

ANNUAL EVENTS				s	m	t	w	t	f	s
Code	Month /	N^th	Table	1	2	3	4	5	6	7
7 -0	/									
7 -1	/									
7 -2	/									
7 -3	/									
7 -4	/									
7 -5	/									
7 -6	/									
7 -7	/									
7 -8	/									
7 -9	/									
7 -A	/									
7 -b	/									
7 -C	/									
7 -d	/									
7 -E	/									
7 -F	/									

Intersection: BROADWAY (N/S) @ MINES BLVD (E/W)

T.S. No.: 1038

Date Prepared: 11-20-2023 ⌐ By: RBO

Date Implemented: 12/13/27 By: OP

EXCEPTION DAYS

				s	m	t	w	t	f	s
Code	Month / Day	Flag	1	2	3	4	5	6	7	
8 - 0	/									
8 - 1	/									
8 - 2	/									
8 - 3	/									
8 - 4	/									
8 - 5	/									
8 - 6	/									
8 - 7	/									
8 - 8	/									
8 - 9	/									
8 - A	/									
8 - b	/									
8 - C	/									
8 - d	/									
8 - E	/									
8 - F	/									

EXCEPTION TIMES

				Table 8 Flags						
Code	Hour	Min	Plan	1	2	3	4	5	6	7
9 - 0	:									
9 - 1	:									
9 - 2	:									
9 - 3	:									
9 - 4	:									
9 - 5	:									
9 - 6	:									
9 - 7	:									
9 - 8	:									
9 - 9	:									
9 - A	:									
9 - b	:									
9 - C	:									
9 - d	:									
9 - E	:									
9 - F	:									

NOTES ON USING TABLES:

Starting from the base display [A/b], Table access is gained with a two digit Table Code. Access is verified by the flashing of both Call Light 9 and the Phase digit* of the display (* No Flash if Table # & Event # match).

Five keypresses will be required followed by [E] to either the data and open the flag mode. Day of Week flags can now be set.

ADDITIONAL KEY CODES:
- d-0-3=1   Search Tables
- d-0-3=3   Repoll WWV Clock
- d-A-F=1   Repoll WWV Clock
- d-0-3=071 Save Timing to Prom Module
- d-0-3=170 Download TIming into 170
- d-0-3=999 Clear All Tables
- F-0-0=Phase/Dial Copy - Source
- F-0-1=Phase/Dial Copy - Destination
- F-0-4=Program Number (66)
- d-0-8,9,A=Mo,Day,Yr of Latest Revision
- E-E-0-0= Reinitialization

SPECIAL FUNCTION TABLE

Keystrokes: F + d + Function

		Phase Flags							
		1	2	3	4	5	6	7	8
(Green) Calling Phases	0								
(Green) Call To Phases	1								
(Yellow) Calling Phases	2								
(Yellow) Call To Phases	3								
Auxiliary Ovlp A Output	4								
Mid-Block Ped Crossing	5								
Driveway Flash	6								
Green Extension	7								
Sequential Ped	8								
Not Used	9								
EV- A Clearance Phases	A								
EV- B Clearance Phases	b								
EV- C Clearance Phases	C								
EV- D Clearance Phases	d								
Track Clerance Phases	E								
Limited Servces Phases	F								

When Any Flagged Phase Is Green ---

--- Place A Locked Call To These Phases.

When Any Flagged Phase Is Yellow ---

--- Place A Locked Call To These Phases.

"Three Color single Phase Overlap" Outputs On Auxiliary File - Slot 1

Ø4P Only. Ø2 & Ø6 Reds Flash During Ø4P Clearance

Flashes The Green Outputs of The Selected Phases

Staggered Termination At Barrier Crossing

Allows Ø1, Ø3 or Ø5 Ped to output on the Ø8P Load Switch

OVERLAP GREEN OMIT

OVERLAP GREEN OMIT	Keys	1	2	3	4	5	6	7	8
Green Omit for Overlap A	F-C-4								
Green Omit for Overlap B	F-C-5								
Green Omit for Overlap C	F-C-6								
Green Omit for Overlap D	F-C-7								

F-9-7		Coordination Free Time (Seconds) After railroad preempt
F-9-d		Green Rest Delay Time (Seconds)
d-0-1		RAILROAD ROUTINE SELECT: 0=Normal Railroad 1=Special Two Input Railroad Routine
d-0-2		MANUAL CONTROL: 0=Not Enabled 1=No Rcalls 2=Vehicle recalls 3=Vehicle and Ped Recalls

PHASE OMIT

PHASE OMIT	Keys	1	2	3	4	5	6	7	8
Phase Omit (Observe Only)	d-d-4								
Phase Omit for Dial 1	d-d-5								
Phase Omit for Dial 2	d-d-6								
Phase Omit for Dial 3	d-d-7								

ADDITIONAL OVERLAPS

ADDITIONAL OVERLAPS	Keys	1	2	3	4	5	6	7	8
Aux File 2 Color Overlap C	d-d-C								
Aux File 2 Color Overlap D	d-d-d								
Ø7 Load Sw. 3 Color Ovrlp E	d-d-E								
Green Omit for Overlap E	d-d-F								

PHASE OMIT is active when Coordination CALL function is active _and_ the OMIT flag is set.

Overlap E will not function if the Railroad Preempt has been selected.

Intersection: BROADWAY (N/S) @ MINES BLVD (E/W)

T.S. No.:   1038

Date Prepared: 11-20-2023   By: *RBO*

Date Implemented: 12/13/23   By: ☐

SPECIAL OPTIONS	Keys								
Comm 3 Options	F-9-3								
		1	2	3	4	5	6	7	8
User Flag Options	F-C-2								
AB3418 Slave Number (1-62)	F-9-0								

Comm 3 Options (F-9-3)
1. Unused
2. Transmit 7-Wire
3. Unused
4. Transmit Time & Day
5. Unused
6. Transmit Plan
7. Transmit State Protocal AB3418 Time & Date
8. Receive & Respond to State Protocal AB3418

Note: A Slave Number must be entered at F-9-0 (1-62) when using Option # 8.

User Flag Options (F-C-2)
1. Send out the "System Sync Pulse" on Phase 4 Ped Yellow
2. Send out the "Time of Day Output" on Phase 4 Ped Yellow
3. Send out the "Midnight Sync Pulse" on Phase 4 Ped Yellow
4. Reserved
5. Enable AB3418 to set the Time & Date
6. Enable AB3418 to set the Coordination Free
7. Enable the Special Time of Day Overlap B
8. Enable the Freeway Ramp Release Logic Routine

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
TRAFFIC & LIGHTING DIVISION
TRAFFIC SIGNAL TIMING

LACO - 1R WWV - TIME - BASED

TYPE 170 PROGRAM

Page 1 of 7

Intersection: **Washington Boulevard @ Broadway**

T.S. No.: **463**

Date Prepared: SMP 61/13/16   By: JSH

Date Implemented: 3/21/16   By: DT

PHASE TIMING

Keystrokes: F + Phase + Interval

Phase #		1	2	3	4	5	6	7	8
Minimum Walk	0	0	11		12	0	10		
Flashing Don't Walk	1	0	17		24	0	18		
Minimum Green	2	9	10		8	9	10		
Queue Maximum	3	0	0		25	0	0		
Added Green/Actuation	4	0.0	1.5		0.0	0.0	1.5		
Vehicle Extension	5	2.0	4.0		4.0	2.0	4.0		
Maximum Gap	6	2.0	5.0		5.0	2.0	5.0		
Minimum Gap	7	2.0	3.0		3.0	2.0	3.0		
Max Extension 1 (Free)	8	20	50		40	20	50		
Max Extension 2 (Coord)	9	20	130		40	20	130		
Offset 1	A	Dial 1 56	Dial 2 48	Dial 3 117					
Offset 2	b								
Offset 3	C								
Reduce 0.1 Sec. Every...	d	0.0	1.5		1.2	0.0	1.5		
Yellow	E	3.5	4.5		4.5	3.5	4.5		
Red Clearance	F	0.5	0.5		0.5	0.5	0.5		

Max Added Green	F-0-E	20
Red Revert	F-0-F	2.0

Remarks:

PREEMPTION

Keystrokes: F+E+Function

RR Select (0, 1, 2)		0
Track Clearance		1
RR Red		2
RR2 Maximum(Minutes)		3
EV-A Delay		4
EV-A Clearance		5
EV-B Delay		6
EV-B Clearance		7
EV-C Delay		8
EV-C Clearance		9
EV-D Delay		A
EV-D Clearance		b
EV Maximum (Seconds)		C
Delay Timer		d
Clerance Timer		E
Maximum Timer		F

PHASE FUNCTION FLAGS

Keystokes: F+F+Function

		1	2	3	4	5	6	7	8
Phases Permitted	0	X	X		X	X	X		
Red Lock	1								
Red & Yellow Lock	2		X		X		X		
Minimum Vehicle Recall	3		X				X		
Pedestrian Recall + Rest in Walk	4								
Pedestrian Phases	5		X		X		X		
Rest in Red	6								
Semi Traffic Actuated Mode	7								
Double Entry	8								
Maximum Vehicle Recall	9								
Overlap A	A								
Overlap B	b								
Barrier Recall	C								
Rest in Green	d								
Yellow Start Up	E		X				X		
Protected/Permissive Left Turn	F								

LAG PHASE FLAGS

		1	2	3	4	5	6	7	8
Lag Free	d-F-0		X		X		X		X
Lag Dial 1	d-F-1		X		X		X		X
Lag Dial 2	d-F-2		X		X		X		X
Lag Dial 3	d-F-3		X		X		X		X

True North	Phase North	1 ↱	2 ⬅	3	4 ⬇⬆
⚡	⚡	5 ↴	6 ➡	7	8

LACO-1R WWV   DETECTOR ASSIGNMENTS
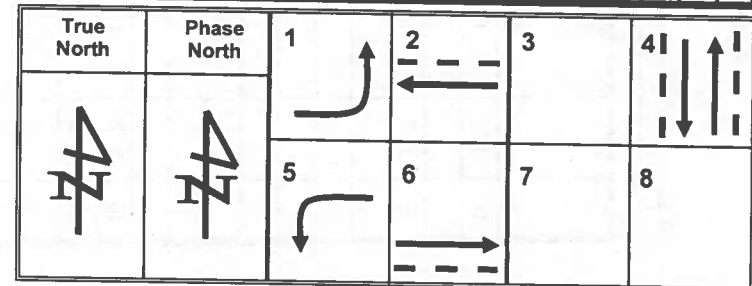
T.S.: **463**   Intersection: **Washington Boulevard @ Broadway**   Date Prepared: SMP 01/13/16 3/21/16   By: JSH BST

App	Lanes	Description	Phase File-Slot Channel	Delay Code	Delay Seconds	Ext Call Code	Ext Call Seconds	Remarks	YD Code	YD Lite	YD On	QC Code	QC Lite	QC On
W	LT	6'X100'	1I1U	d10		d30			dF4	1		dF8	1	
			1I1L						dF4			dF8		
E	1,2	ADVANCE	2I2U	d11		d31			dF4	2		dF8	2	
			2I2L	d12		d32			dF4	3		dF8	3	
			2I3U	d13		d33			dF4	4		dF8	4	
			2I3L	d14		d34			dF4	5		dF8	5	
			2I4U	d15		d35		Call Ø 1 2 3 4 5 6 7 8	dF4	6		dF8	6	
			2I4L					dd8	dF4			dF8		
			3I5U	d16		d36			dF4	7		dF8	7	
			3I5L						dF4			dF8		
N	1,2	ADVANCE	4I6U	d17		d37			dF4	8		dF8	8	
S	1,2	ADVANCE	4I6L	d18		d38			dF5	1		dF9	1	
			4I7U	d19		d39			dF5	2		dF9	2	
			4I7L	d1A		d3A			dF5	3		dF9	3	
N	1,2	QUEUE CL.	4I8U	d1b	10	d3b		Call Ø 1 2 3 4 5 6 7 8	dF5	4		dF9	4	X
S	1,2	QUEUE CL.	4I8L					dd9	dF5			dF9		
			1I9U	d1C		d3c			dF5	5		dF9	5	
			3I9L	d1d		d3d			dF5	6		dF9	6	
E	LT	6'X100'	5J1U	d20		d40			dF6	1		dFA	1	
			5J1L						dF6			dFA		
W	1,2	ADVANCE	6J2U	d21		d41			dF6	2		dFA	2	
			6J2L	d22		d42			dF6	3		dFA	3	
			6J3U	d23		d43			dF6	4		dFA	4	
			6J3L	d24		d44			dF6	5		dFA	5	
			6J4U	d25		d45		Call Ø 1 2 3 4 5 6 7 8	dF6	6		dFA	6	
			6J4L					ddA	dF6			dFA		
			7J5U	d26		d46			dF6	7		dFA	7	
			7J5L						dF6			dFA		
			8J6U	d27		d47			dF6	8		dFA	8	
			8J6L	d28		d48			dF7	1		dFb	1	
			8J7U	d29		d49			dF7	2		dFb	2	
			8J7L	d2A		d4A			dF7	3		dFb	3	
			8J8U	d2b		d4b		Call Ø 1 2 3 4 5 6 7 8	dF7	4		dFb	4	
			8J8L					ddb	dF7			dFb		
			5J9U	d2C		d4C			dF7	5		dFb	5	
			7J9L	d2d		d4d			dF7	6		dFb	6	

Note: The four Programmable Detectors will default to normal phasing if not flagged.

YELLOW DISCONNECT QUICK REFERENCE

Call Lights

Code	1	2	3	4	5	6	7	8
dF4								
dF5							▓	▓
dF6								
dF7							▓	▓

Remarks:

QUEUE CLEARING DETECTOR QUICK REFERENCE

Call Lights

Code	1	2	3	4	5	6	7	8
dF8								
dF9				X			▓	▓
dFA								
dFb							▓	▓

T.S. No.: 463 **Intersection:** Washington Boulevard @ Broadway

System Limits: Pioneer Boulevard to Sorensen Avenue

Remote Master: WWV

Date Prepared: SMP 01/13/16 **By:** JSH

Date Implemented: 3/21/16 **By:** JX

TIME OF DAY OPERATION SUMMARY

	Dial 1	Dial 2	Dial 3 / Offset Timing
Offset 1	ALL OTHER TIMES	0530-0830 M-F	1400-1830 M-F
Offset 2			
Offset 3			
Free	2200-0530 CONTINUOUS		
Special			

* Set Local Manual to 14 (free) before setting or changing dial intervals & functions. Setting either of the Manuals to 0 will release that Manual.

Offset Timing Mode:
A 12 at C-0-1 or by T.O.D enables this mode and uses the Dial 3 Intervals and Functions.

Observe:

Call	d-F-C
Hold	d-F-d
Ped Restrict	d-F-E
Force - Off	d-F-F
Cycle with Field Calls	C-0-b
Master Sync Pulse Width	d-0-d

INTERCONNECT SELECT

d-0-0 [ ] 7 = Slave   [X] 170 = Master

d-0-E Set Maximum Width 4.0 Seconds

d-0-F Set Minimum Width 1.0 Seconds

Remarks:

Keystrokes: C + Column + Row

Coordination Parameters		INTERVALS (in seconds)			FUNCTION FLAGS DIAL 1				DIAL 2				DIAL 3 / OFFSET TIMING				
		Dial 1	Dial 2	Dial 3	Force Off	Hold	Ped Rstrict	Call	Force Off	Hold	Ped Rstrict	Call	Force Off	Hold	Ped Rstrict	Call	
0	Int	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F	Int
System Manual* 0	0	120	120	120	2,6				2,6				2,6				0
Local Manual* 0	1	1	1	1	-,-	2,6			-,-	2,6			-,-	2,6			1
Master Dial	2	6	6	6		-,-	4			-,-	4			-,-	4		2
Current Dial	3	29	29	29		2,6	4			2,6	4			2,6	4		3
Offset Number	4	42	42	42	4	2,6	-		4	2,6	-		4	2,6	-		4
Time of Day Plan	5	43	43	43	-	2,6			-	2,6			-	2,6			5
Function 6 14	6	59	59	59	1,5	2,6			1,5	2,6			1,5	2,6			6
Current Table	7	60	60	60	-,-	2,6			-,-	2,6			-,-	2,6			7
Minimum Cycle 0	8	69	69	69		-,-				-,-				-,-			8
Maximum Cycle 255	9	92	92	92			2,6				2,6				2,6		9
Master Timer	A	120	120	120			-,-				-,-				-,-		A
Local Timer	b																b
New Offset	C																C
Current Offset	d																d
Last Master Cycle	E																E
Last Local Cycle	F																F

Intersection: Washington Boulevard @ Broadway

T.S. No.: 463

Date Prepared: SMP 01/13/16 **By:** JSH

Date Implemented: 3/21/16 **By:** OT

CONTROL CODE A-C   CLOCK   CONTROL CODE A-D

FIG. 1

- LOCATION: 0
- SECONDS ACTIVITY: 0
- HOURS (00-23): 0 7
- MINUTES (00-59): 5 8
- DAY OF WEEK

FIG. 2

- LOCATION: 1
- MONTH (1-C): 5
- DAY OF MONTH (01-31): 2 7
- YEAR: 8 2
- DAY OF WEEK

ABOVE EXAMPLES
7:58 A.M. ON THURSDAY (FIG. 1)
MAY 27, 1982 (FIG. 2)

DAY OF WEEK
1 SUNDAY
2 MONDAY
3 TUESDAY
4 WEDNESDAY
5 THURSDAY
6 FRIDAY
7 SATURDAY

MONTH
1 JANUARY   7 JULY
2 FEBRUARY   8 AUGUST
3 MARCH   9 SEPTEMBER
4 APRIL   A OCTOBER
5 MAY   B NOVEMBER
6 JUNE   C DECEMBER

DIRECTIONS

At control code A - C, key in hours and minutes, then key in 0 for seconds activity. Enter key E and turn on call light corresponding to day of the week. (NOTE: Seconds start at 0 seconds - for observation and correction use address D - 4 - F). At cibtrik cide A - D, key in the day of the month, year and month, then enter key E.

CONTROL CODE 9-3   EVENT TABLE

FIG. 3

- LOCATION: 3
- DIAL: 2
- HOURS (00-23): 1 5
- MINUTES (00-59): 3 0
- DAY OF WEEK

ABOVE EXAMPLE

The example (FIG. 3), shows a time of day event at control code 9-3 with dial 2 to start at 3:30 P.M. each weekday from Monday through Friday.

DIRECTIONS

To set an event, key in 9 + the table location, key in hour, minute, and event, then enter key E. Set day(s) with call/active lights. To observe current event use address C - 0 - 5. (NOTE: These time of day events are local - not system events.)

REMARKS:

FOR DIRECT INTERCONNECT ONLY. (D00=7)

LOC. 9+ ↓	TIME	EVENT *DIAL	DAY AND LIGHT ← Set DAY using call/active LIGHT →						
			SUN 1	MON 2	TUE 3	WED 4	THUR 5	FRI 6	SAT 7
0									
1									
2									
3									
4									
5									
6									
7									
8									
9									
A									
B									
C									
D									
E									
F									

* DIAL 1 = 1, 2 = 2, 3 = 3, FREE = E, OFF = 0.

(NOTE: At C - 0 - 5, Free = 14)
OFFSET TIMING =C   T.O.D. FLASH=F

Intersection: Washington Boulevard @ Broadway

T.S. No.: 463

Date Prepared: _Smp 01/13/16_ **By:** JSH

Date Implemented: 3/21/16 **By:** ST

TABLE 0 - DEFAULT

Code	Hour : Min	Plan	s 1	m 2	t 3	w 4	t 5	f 6	s 7
0 -0	00 : 00	E	X	X	X	X	X	X	X
0 -1	05 : 30	1	X						X
0 -2	05 : 30	2		X	X	X	X	X	
0 -3	08 : 30	1		X	X	X	X	X	
0 -4	14 : 00	3		X	X	X	X	X	
0 -5	18 : 30	1		X	X	X	X	X	
0 -6	22 : 00	E	X	X	X	X	X	X	X
0 -7	:								
0 -8	:								
0 -9	:								
0 -A	:								
0 -b	:								
0 -C	:								
0 -d	:								
0 -E	:								
0 -F	:								

TABLE 3

Code	Hour : Min	Plan	s 1	m 2	t 3	w 4	t 5	f 6	s 7
3 -0	:								
3 -1	:								
3 -2	:								
3 -3	:								
3 -4	:								
3 -5	:								
3 -6	:								
3 -7	:								
3 -8	:								
3 -9	:								
3 -A	:								
3 -b	:								
3 -C	:								
3 -d	:								
3 -E	:								
3 -F	:								

ANNUAL EVENTS

Code	Month / Nth	Table	s 1	m 2	t 3	w 4	t 5	f 6	s 7
5 -0	/								
5 -1	/								
5 -2	/								
5 -3	/								
5 -4	/								
5 -5	/								
5 -6	/								
5 -7	/								
5 -8	/								
5 -9	/								
5 -A	/								
5 -b	/								
5 -C	/								
5 -d	/								
5 -E	/								
5 -F	/								

TABLE 1

Code	Hour : Min	Plan	s 1	m 2	t 3	w 4	t 5	f 6	s 7
1 -0	00 : 00	E		X	X	X	X	X	
1 -1	05 : 30	1		X	X	X	X	X	
1 -2	22 : 00	E		X	X	X	X	X	
1 -3	:								
1 -4	:								
1 -5	:								
1 -6	:								
1 -7	:								
1 -8	:								
1 -9	:								
1 -A	:								
1 -b	:								
1 -C	:								
1 -d	:								
1 -E	:								
1 -F	:								

Plan = Plan Number

		D1	D2	D3
O1	=	1	2	3
O2	=	4	5	6
O3	=	7	8	9

Plans:
A = Arrows On
B = TOD Output On
C = Offset Timing
D = Arrows / TOD Output Off
E = Function 6
F = Flash

Keys:
0 = No Days
8 = All Days
9 = Weekdays

Table #4, Nth = The number of the occurrence in the month (1-5). 99 = Always the last occurance in the month.

I.E. Thanksgiving = 11/04 [Table] and Thursday.

ANNUAL EVENTS

Code	Month / Nth	Table	s 1	m 2	t 3	w 4	t 5	f 6	s 7
6 -0	/								
6 -1	/								
6 -2	/								
6 -3	/								
6 -4	/								
6 -5	/								
6 -6	/								
6 -7	/								
6 -8	/								
6 -9	/								
6 -A	/								
6 -b	/								
6 -C	/								
6 -d	/								
6 -E	/								
6 -F	/								

TABLE 2

Code	Hour : Min	Plan	s 1	m 2	t 3	w 4	t 5	f 6	s 7
2 -0	:								
2 -1	:								
2 -2	:								
2 -3	:								
2 -4	:								
2 -5	:								
2 -6	:								
2 -7	:								
2 -8	:								
2 -9	:								
2 -A	:								
2 -b	:								
2 -C	:								
2 -d	:								
2 -E	:								
2 -F	:								

FLOATING HOLIDAYS

Code	Month / Nth	Table	s 1	m 2	t 3	w 4	t 5	f 6	s 7
4 -0	01 / 03	1		X					
4 -1	02 / 03	1		X					
4 -2	05 / 99	1		X					
4 -3	09 / 01	1		X					
4 -4	11 / 04	1					X		
4 -5	/								
4 -6	/								
4 -7	/								
4 -8	/								
4 -9	/								
4 -A	/								
4 -b	/								
4 -C	/								
4 -d	/								
4 -E	/								
4 -F	/								

ANNUAL EVENTS

Code	Month / Nth	Table	s 1	m 2	t 3	w 4	t 5	f 6	s 7
7 -0	/								
7 -1	/								
7 -2	/								
7 -3	/								
7 -4	/								
7 -5	/								
7 -6	/								
7 -7	/								
7 -8	/								
7 -9	/								
7 -A	/								
7 -b	/								
7 -C	/								
7 -d	/								
7 -E	/								
7 -F	/								

Intersection: Washington Boulevard @ Broadway

T.S. No.: 463

Date Prepared: SMP 01/13/14 **By:** JSH

Date Implemented: 8/22/16 **By:** OT

EXCEPTION DAYS

Code	Month / Day	Flag	s 1	m 2	t 3	w 4	t 5	f 6	s 7
8 - 0	01 / 01	1		X	X	X	X		
8 - 1	01 / 02	1		X					
8 - 2	07 / 04	1		X	X	X	X		
8 - 3	07 / 05	1		X					
8 - 4	11 / 10	1						X	
8 - 5	11 / 11	1		X	X	X	X		
8 - 6	11 / 12	1		X					
8 - 7	12 / 24	1		X	X	X	X		
8 - 8	12 / 25	1		X	X	X	X		
8 - 9	12 / 26	1		X				X	
8 - A	/								
8 - b	/								
8 - C	/								
8 - d	/								
8 - E	/								
8 - F	/								

EXCEPTION TIMES

Code	Hour : Min	Plan	Table 8 Flags 1	2	3	4	5	6	7
9 - 0	00 : 00	E		X	X	X	X	X	
9 - 1	05 : 30	1		X	X	X	X	X	
9 - 2	22 : 00	E		X	X	X	X	X	
9 - 3	:								
9 - 4	:								
9 - 5	:								
9 - 6	:								
9 - 7	:								
9 - 8	:								
9 - 9	:								
9 - A	:								
9 - b	:								
9 - C	:								
9 - d	:								
9 - E	:								
9 - F	:								

NOTES ON USING TABLES:

Starting from the base display [A/b], Table access is gained with a two digit Table Code. Access is verified by the flashing of both Call Light 9 and the Phase digit* of the display (* No Flash if Table # & Event # match).

Five keypresses will be required followed by [E] to either the data and open the flag mode. Day of Week flags can now be set.

ADDITIONAL KEY CODES:

Code	Description
d-0-3=1	Search Tables
d-0-3=3	Repoll WWV Clock
d-A-F=1	Repoll WWV Clock
d-0-3=071	Save Timing to Prom Module
d-0-3=170	Download Timing into 170
d-0-3=999	Clear All Tables
F-0-0=Phase/Dial Copy - Source
F-0-1=Phase/Dial Copy - Destination
F-0-4=Program Number (66)
d-0-8,9,A=Mo,Day,Yr of Latest Revision
E-E-0-0= Reinitialization

SPECIAL FUNCTION TABLE

Keystrokes: F + d + Function

		Phase Flags 1	2	3	4	5	6	7	8
(Green) Calling Phases	0								
(Green) Call To Phases	1								
(Yellow) Calling Phases	2								
(Yellow) Call To Phases	3								
Auxiliary Ovlp A Output	4								
Mid-Block Ped Crossing	5	▒	▒		▒		▒		▒
Driveway Flash	6								
Green Extension	7								
Sequential Ped	8		▒		▒		▒		▒
Not Used	9	▒	▒	▒	▒	▒	▒	▒	▒
EV- A Clearance Phases	A								
EV- B Clearance Phases	b								
EV- C Clearance Phases	C								
EV- D Clearance Phases	d								
Track Clerance Phases	E								
Limited Servces Phases	F								

When Any Flagged Phase Is Green ---

--- Place A Locked Call To These Phases.

When Any Flagged Phase Is Yellow ---

--- Place A Locked Call To These Phases.

"Three Color single Phase Overlap" Outputs On Auxiliary File - Slot 1

Ø4P Only. Ø2 & Ø6 Reds Flash During Ø4P Clearance

Flashes The Green Outputs of The Selected Phases

Staggered Termination At Barrier Crossing

Allows Ø1, Ø3 or Ø5 Ped to output on the Ø8P Load Switch

OVERLAP GREEN OMIT

OVERLAP GREEN OMIT	Keys	1	2	3	4	5	6	7	8
Green Omit for Overlap A	F-C-4								
Green Omit for Overlap B	F-C-5								
Green Omit for Overlap C	F-C-6								
Green Omit for Overlap D	F-C-7								

Code	Description
F-9-7	Coordination Free Time (Seconds) After railroad preempt
F-9-d	Green Rest Delay Time (Seconds)
d-0-1	RAILROAD ROUTINE SELECT: 0=Normal Railroad 1=Special Two Input Railroad Routine
d-0-2	MANUAL CONTROL: 0=Not Enabled 1=No Rcalls 2=Vehicle recalls 3=Vehicle and Ped Recalls

PHASE OMIT

PHASE OMIT	Keys	1	2	3	4	5	6	7	8
Phase Omit (Observe Only)	d-d-4								
Phase Omit for Dial 1	d-d-5								
Phase Omit for Dial 2	d-d-6								
Phase Omit for Dial 3	d-d-7								

ADDITIONAL OVERLAPS

ADDITIONAL OVERLAPS	Keys	1	2	3	4	5	6	7	8
Aux File 2 Color Overlap C	d-d-C								
Aux File 2 Color Overlap D	d-d-d								
Ø7 Load Sw. 3 Color Ovrlp E	d-d-E								
Green Omit for Overlap E	d-d-F								

PHASE OMIT is active when Coordination CALL function is active and the OMIT flag is set.

Overlap E will not function if the Railroad Preempt has been selected.

Intersection: Washington Boulevard @ Broadway

T.S. No.: 463

Date Prepared: SMP 01/13/16 **By:** JSH

Date Implemented: 3/21/16 **By:** SC

SPECIAL OPTIONS	Keys								
Comm 3 Options	F-9-3								
		1	2	3	4	5	6	7	8
User Flag Options	F-C-2								
AB3418 Slave Number (1-62)	F-9-0								

Comm 3 Options (F-9-3)
1. Unused
2. Transmit 7-Wire
3. Unused
4. Transmit Time & Day
5. Unused
6. Transmit Plan
7. Transmit State Protocal AB3418 Time & Date
8. Receive & Respond to State Protocal AB3418

Note: A Slave Number must be entered at F-9-0 (1-62) when using Option # 8.

User Flag Options (F-C-2)
1. Send out the "System Sync Pulse" on Phase 4 Ped Yellow
2. Send out the "Time of Day Output" on Phase 4 Ped Yellow
3. Send out the "Midnight Sync Pulse" on Phase 4 Ped Yellow
4. Reserved
5. Enable AB3418 to set the Time & Date
6. Enable AB3418 to set the Coordination Free
7. Enable the Special Time of Day Overlap B
8. Enable the Freeway Ramp Release Logic Routine

Appendix G

Intersection Analysis Worksheets
for
Existing Conditions

Intersection Level Of Service Report
Intersection 1: Broadway Avenue (N/S) at Mines Boulevard (E/W)

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.408

Intersection Setup

Name	Broadway Avenue			Broadway Avenue			Mines Boulevard			Mines Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⌐⌐⊢			⌐⌐⊢			⌐⌐⌐			⌐⌐⌐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	60.00	100.00	100.00	60.00	100.00	100.00	155.00	100.00	55.00	155.00	100.00	55.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Avenue			Broadway Avenue			Mines Boulevard			Mines Boulevard		
Base Volume Input [veh/h]	39	216	28	148	372	95	121	329	46	54	314	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	216	28	148	372	95	121	329	46	54	314	49
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	66	9	45	113	29	37	100	14	16	96	15
Total Analysis Volume [veh/h]	48	263	34	180	454	116	148	401	56	66	383	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	28	0	0	28	0	6	24	0	0	24	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	3.0	5.0	0.0	0.0	5.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	1.0	0.5	0.0	0.0	0.5	0.0
Walk [s]	0	12	0	0	12	0	0	11	0	0	11	0
Pedestrian Clearance [s]	0	24	0	0	23	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	0.0	3.5	0.0	2.0	3.5	0.0	0.0	3.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
Advanced Detector Location [ft]	0.0	235.0	0.0	0.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering 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

Phasing & Timing: Pattern 1

Split [s]	0	51	0	0	51	0	124	69	0	0	69	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	6	8	0	0	8	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	2.0	0.0	3.0	3.0	0.0	0.0	4.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	66	66	66	66	66	66	43	43	43	43	43	43
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.55	0.55	0.36	0.36	0.36	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.08	0.17	0.16	0.16	0.16	0.21	0.04	0.07	0.20	0.04
s, saturation flow rate [veh/h]	842	1870	1797	1082	1870	1741	946	1870	1589	934	1870	1589
c, Capacity [veh/h]	432	1025	984	587	1025	954	234	674	573	223	674	573
d1, Uniform Delay [s]	19.85	13.33	13.35	18.95	14.56	14.57	47.31	31.25	25.44	43.98	30.87	25.51
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.15	0.15	0.15
I, Upstream Filtering 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
d2, Incremental Delay [s]	0.52	0.30	0.32	1.35	0.71	0.76	2.79	0.84	0.07	1.04	1.08	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression 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

Lane Group Results

	L	C	C	L	C	C	L	C	R	L	C	R
X, volume / capacity	0.11	0.15	0.15	0.31	0.29	0.29	0.63	0.60	0.10	0.30	0.57	0.10
d, Delay for Lane Group [s/veh]	20.37	13.63	13.67	20.30	15.26	15.33	50.11	32.09	25.52	45.02	31.94	25.62
Lane Group LOS	C	B	B	C	B	B	D	C	C	D	C	C
Critical Lane Group	No	No	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.85	2.04	1.99	3.24	4.38	4.11	4.41	9.47	1.07	1.80	8.98	1.15
50th-Percentile Queue Length [ft/ln]	21.27	50.89	49.86	80.91	109.40	102.63	110.25	236.64	26.75	44.98	224.60	28.87
95th-Percentile Queue Length [veh/ln]	1.53	3.66	3.59	5.83	7.81	7.39	7.85	14.51	1.93	3.24	13.90	2.08
95th-Percentile Queue Length [ft/ln]	38.28	91.60	89.76	145.64	195.17	184.73	196.35	362.78	48.15	80.96	347.48	51.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.37	13.65	13.67	20.30	15.29	15.33	50.11	32.09	25.52	45.02	31.94	25.62
Movement LOS	C	B	B	C	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	14.59			16.50			35.89			32.89		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	25.29											
Intersection LOS	C											
Intersection V/C	0.408											

Emissions

Vehicle Miles Traveled [mph]	1.50	4.69	4.58	5.62	9.20	8.59	7.66	20.76	2.90	3.59	20.82	3.26
Stops [stops/h]	25.52	61.07	59.84	97.09	131.29	123.15	132.30	283.97	32.10	53.97	269.51	34.65
Fuel consumption [US gal/h]	0.45	1.05	1.03	1.69	2.25	2.11	2.80	5.55	0.64	1.15	5.31	0.70
CO [g/h]	31.32	73.73	72.20	117.99	157.51	147.67	195.44	387.62	44.92	80.20	371.18	48.77
NOx [g/h]	6.09	14.35	14.05	22.96	30.65	28.73	38.03	75.42	8.74	15.60	72.22	9.49
VOC [g/h]	7.26	17.09	16.73	27.35	36.50	34.22	45.29	89.84	10.41	18.59	86.02	11.30

Other Modes

g_Walk,mi, Effective Walk Time [s]	15.0	15.0	16.0	16.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.94	45.94	45.07	45.07
I_p,int, Pedestrian LOS Score for Intersectio	2.614	2.799	2.537	2.717
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	758	758	1058	1058
d_b, Bicycle Delay [s]	23.13	23.13	13.30	13.30
I_b,int, Bicycle LOS Score for Intersection	1.844	2.178	2.558	2.399
Bicycle LOS	A	B	B	B

Sequence
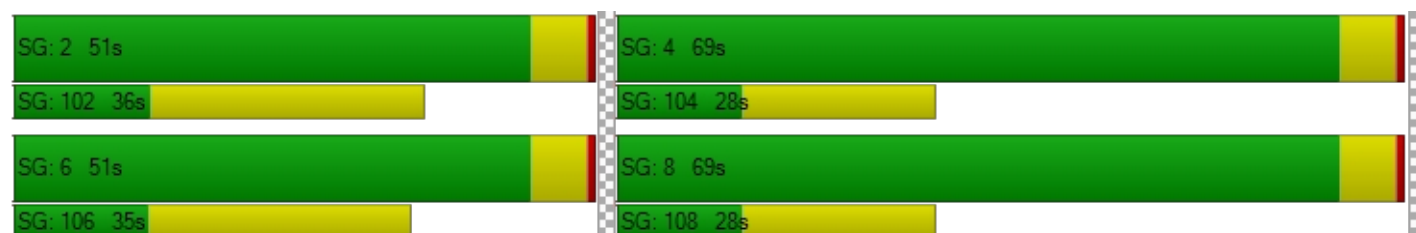
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 51s
SG: 102 36s
SG: 6 51s
SG: 106 35s
SG: 4 69s
SG: 104 28s
SG: 8 69s
SG: 108 28s

Intersection Level Of Service Report
Intersection 2: Broadway Avenue (N/S) at Washington Boulevard (E/W)

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.717

Intersection Setup

Name	Broadway Avenue			Broadway Avenue			Washington Boulevard			Washington Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Avenue			Broadway Avenue			Washington Boulevard			Washington Boulevard		
Base Volume Input [veh/h]	36	109	68	88	183	227	102	715	46	50	1125	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	109	68	88	183	227	102	715	46	50	1125	53
Peak Hour Factor	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	28	18	23	48	59	27	187	12	13	294	14
Total Analysis Volume [veh/h]	38	114	71	92	191	237	106	746	48	52	1174	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	48.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Maximum Green [s]	0	30	0	0	30	0	17	31	0	17	31	0
Amber [s]	0.0	4.5	0.0	0.0	4.5	0.0	3.5	4.5	0.0	3.5	4.5	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0
Walk [s]	0	12	0	0	12	0	0	10	0	0	11	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	18	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0	2.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	40.0	0.0	0.0	40.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0
Advanced Detector Location [ft]	0.0	250.0	0.0	0.0	250.0	0.0	0.0	185.0	0.0	0.0	210.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering 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

Phasing & Timing: Pattern 1

Split [s]	0	41	0	0	41	0	46	66	0	13	33	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	8	0	0	8	0	9	10	0	9	10	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	4.0	0.0	2.0	4.0	0.0	2.0	4.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	4.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	2.00	3.00	3.00	2.00	3.00	3.00
g_i, Effective Green Time [s]	35	35	35	9	64	64	7	62	62
g / C, Green / Cycle	0.29	0.29	0.29	0.08	0.53	0.53	0.06	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.21	0.06	0.21	0.21	0.03	0.33	0.33
s, saturation flow rate [veh/h]	882	777	1506	1781	1870	1831	1781	1870	1841
c, Capacity [veh/h]	290	268	435	135	996	975	110	970	955
d1, Uniform Delay [s]	39.26	39.18	38.60	54.49	16.68	16.68	54.41	20.77	20.79
k, delay calibration	0.35	0.35	0.26	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.75	11.96	5.92	3.76	1.21	1.24	1.17	3.21	3.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.74	0.74	0.79	0.40	0.40	0.47	0.64	0.64
d, Delay for Lane Group [s/veh]	52.01	51.14	44.52	58.26	17.89	17.92	55.58	23.98	24.06
Lane Group LOS	D	D	D	E	B	B	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.47	6.32	9.15	3.24	6.59	6.46	1.53	12.63	12.47
50th-Percentile Queue Length [ft/ln]	186.63	157.93	228.72	80.94	164.82	161.54	38.31	315.63	311.79
95th-Percentile Queue Length [veh/ln]	11.95	10.44	14.11	5.83	10.80	10.63	2.76	18.45	18.26
95th-Percentile Queue Length [ft/ln]	298.65	260.98	352.73	145.68	270.09	265.76	68.95	461.31	456.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.01	52.01	52.01	51.14	48.19	44.52	58.26	17.90	17.92	55.58	24.02	24.06
Movement LOS	D	D	D	D	D	D	E	B	B	E	C	C
d_A, Approach Delay [s/veh]	52.01			47.04			22.66			25.30		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.39											
Intersection LOS	C											
Intersection V/C	0.717											

Emissions

Vehicle Miles Traveled [mph]	7.40	5.99	9.75	5.56	21.06	20.61	3.52	41.85	41.26
Stops [stops/h]	223.95	189.51	274.46	97.12	197.78	193.84	45.97	378.76	374.15
Fuel consumption [US gal/h]	4.33	3.71	5.35	2.41	4.16	4.07	1.17	8.24	8.14
CO [g/h]	302.43	259.53	374.22	168.45	290.63	284.82	81.47	575.95	569.03
NOx [g/h]	58.84	50.49	72.81	32.77	56.55	55.42	15.85	112.06	110.71
VOC [g/h]	70.09	60.15	86.73	39.04	67.36	66.01	18.88	133.48	131.88

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	15.0	16.0	16.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.82	45.94	45.07	45.07
I_p,int, Pedestrian LOS Score for Intersectio	2.147	2.368	2.975	3.010
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	1017	467
d_b, Bicycle Delay [s]	29.40	29.40	14.50	35.27
I_b,int, Bicycle LOS Score for Intersection	1.928	1.989	2.302	2.616
Bicycle LOS	A	A	B	B

Sequence
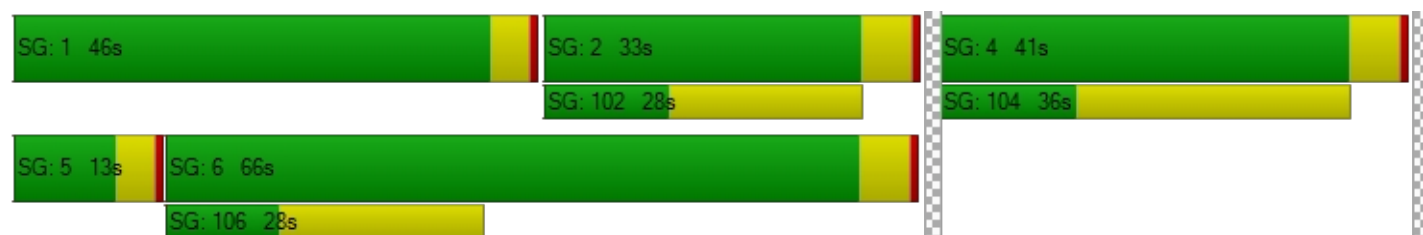
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 1: Broadway Avenue (N/S) at Mines Boulevard (E/W)

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.374

Intersection Setup

Name	Broadway Avenue			Broadway Avenue			Mines Boulevard			Mines Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	60.00	100.00	100.00	60.00	100.00	100.00	155.00	100.00	55.00	155.00	100.00	55.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Avenue			Broadway Avenue			Mines Boulevard			Mines Boulevard		
Base Volume Input [veh/h]	39	401	32	120	303	63	111	270	33	42	377	108
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	401	32	120	303	63	111	270	33	42	377	108
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	106	8	32	80	17	29	71	9	11	100	29
Total Analysis Volume [veh/h]	41	424	34	127	320	67	117	285	35	44	399	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	28	0	0	28	0	6	24	0	0	24	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	3.0	5.0	0.0	0.0	5.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	1.0	0.5	0.0	0.0	0.5	0.0
Walk [s]	0	12	0	0	12	0	0	11	0	0	11	0
Pedestrian Clearance [s]	0	24	0	0	23	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	0.0	3.5	0.0	2.0	3.5	0.0	0.0	3.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
Advanced Detector Location [ft]	0.0	235.0	0.0	0.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering 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

Phasing & Timing: Pattern 1

Split [s]	0	48	0	0	48	0	124	72	0	0	72	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	6	8	0	0	8	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	2.0	0.0	3.0	3.0	0.0	0.0	4.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	66	66	66	66	66	66	43	43	43	43	43	43
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.55	0.55	0.36	0.36	0.36	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.12	0.12	0.14	0.11	0.11	0.13	0.15	0.02	0.04	0.21	0.07
s, saturation flow rate [veh/h]	996	1870	1822	933	1870	1760	887	1870	1589	1059	1870	1589
c, Capacity [veh/h]	546	1021	994	506	1021	961	199	678	576	290	678	576
d1, Uniform Delay [s]	16.44	14.12	14.13	18.93	13.84	13.86	49.12	28.77	24.93	38.36	31.00	26.27
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.15	0.15	0.15
I, Upstream Filtering 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
d2, Incremental Delay [s]	0.27	0.52	0.53	1.19	0.42	0.46	2.74	0.42	0.04	0.34	1.16	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression 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

Lane Group Results

X, volume / capacity	0.08	0.23	0.23	0.25	0.19	0.20	0.59	0.42	0.06	0.15	0.59	0.20
d, Delay for Lane Group [s/veh]	16.71	14.64	14.67	20.12	14.27	14.32	51.85	29.19	24.98	38.71	32.16	26.51
Lane Group LOS	B	B	B	C	B	B	D	C	C	D	C	C
Critical Lane Group	No	No	No	Yes	No	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.64	3.32	3.26	2.27	2.78	2.66	3.52	6.18	0.66	1.08	9.43	2.27
50th-Percentile Queue Length [ft/ln]	15.94	82.90	81.42	56.63	69.53	66.59	88.05	154.60	16.42	27.09	235.74	56.70
95th-Percentile Queue Length [veh/ln]	1.15	5.97	5.86	4.08	5.01	4.79	6.34	10.26	1.18	1.95	14.47	4.08
95th-Percentile Queue Length [ft/ln]	28.68	149.21	146.56	101.94	125.15	119.86	158.49	256.56	29.56	48.76	361.64	102.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.71	14.65	14.67	20.12	14.29	14.32	51.85	29.19	24.98	38.71	32.16	26.51
Movement LOS	B	B	B	C	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	14.82			15.73			34.92			31.52		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	24.07											
Intersection LOS	C											
Intersection V/C	0.374											

Emissions

Vehicle Miles Traveled [mph]	1.28	7.22	7.07	3.96	6.18	5.90	6.06	14.75	1.81	2.39	21.69	6.20
Stops [stops/h]	19.12	99.47	97.71	67.96	83.43	79.91	105.66	185.52	19.71	32.50	282.88	68.04
Fuel consumption [US gal/h]	0.33	1.71	1.68	1.18	1.44	1.38	2.26	3.65	0.40	0.68	5.57	1.36
CO [g/h]	23.21	119.68	117.52	82.63	100.54	96.20	157.97	255.15	27.62	47.68	389.03	95.26
NOx [g/h]	4.52	23.29	22.86	16.08	19.56	18.72	30.74	49.64	5.37	9.28	75.69	18.53
VOC [g/h]	5.38	27.74	27.24	19.15	23.30	22.30	36.61	59.13	6.40	11.05	90.16	22.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	15.0	15.0	16.0	16.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.94	45.94	45.07	45.07
I_p,int, Pedestrian LOS Score for Intersectio	2.578	2.743	2.468	2.607
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	1108	1108
d_b, Bicycle Delay [s]	25.03	25.03	11.93	11.93
I_b,int, Bicycle LOS Score for Intersection	1.971	1.984	2.281	2.479
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 48s
SG: 102 36s
SG: 6 48s
SG: 106 35s
SG: 4 72s
SG: 104 28s
SG: 8 72s
SG: 108 28s

Intersection Level Of Service Report
Intersection 2: Broadway Avenue (N/S) at Washington Boulevard (E/W)

Control Type:	Signalized	Delay (sec / veh):	37.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.832

Intersection Setup

Name	Broadway Avenue			Broadway Avenue			Washington Boulevard			Washington Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Avenue			Broadway Avenue			Washington Boulevard			Washington Boulevard		
Base Volume Input [veh/h]	54	264	79	82	141	187	176	923	56	64	1172	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	264	79	82	141	187	176	923	56	64	1172	66
Peak Hour Factor	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	67	20	21	36	47	45	234	14	16	297	17
Total Analysis Volume [veh/h]	55	267	80	83	143	189	178	934	57	65	1186	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	117.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Maximum Green [s]	0	30	0	0	30	0	17	31	0	17	31	0
Amber [s]	0.0	4.5	0.0	0.0	4.5	0.0	3.5	4.5	0.0	3.5	4.5	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0
Walk [s]	0	12	0	0	12	0	0	10	0	0	11	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	18	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0	2.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	40.0	0.0	0.0	40.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0
Advanced Detector Location [ft]	0.0	250.0	0.0	0.0	250.0	0.0	0.0	185.0	0.0	0.0	210.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering 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

Phasing & Timing: Pattern 1

Split [s]	0	51	0	0	51	0	20	56	0	13	49	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	8	0	0	8	0	9	10	0	9	10	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	4.0	0.0	2.0	4.0	0.0	2.0	4.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	4.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	2.00	3.00	3.00	2.00	3.00	3.00
g_i, Effective Green Time [s]	42	42	42	14	56	56	8	50	50
g / C, Green / Cycle	0.35	0.35	0.35	0.12	0.47	0.47	0.07	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.31	0.24	0.18	0.10	0.27	0.27	0.04	0.34	0.34
s, saturation flow rate [veh/h]	1294	577	1517	1781	1870	1832	1781	1870	1835
c, Capacity [veh/h]	486	249	529	206	875	858	118	783	769
d1, Uniform Delay [s]	38.27	32.52	31.04	52.15	23.19	23.19	54.27	30.60	30.63
k, delay calibration	0.33	0.22	0.15	0.16	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.49	4.09	1.12	14.54	2.71	2.77	1.48	8.70	8.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.57	0.52	0.86	0.57	0.57	0.55	0.81	0.81
d, Delay for Lane Group [s/veh]	48.76	36.61	32.16	66.68	25.89	25.96	55.75	39.30	39.58
Lane Group LOS	D	D	C	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.62	3.75	6.38	6.00	10.49	10.30	1.92	17.18	16.97
50th-Percentile Queue Length [ft/ln]	315.54	93.68	159.60	150.03	262.23	257.59	48.07	429.60	424.21
95th-Percentile Queue Length [veh/ln]	18.45	6.75	10.53	10.02	15.80	15.57	3.46	23.98	23.72
95th-Percentile Queue Length [ft/ln]	461.20	168.63	263.19	250.47	395.02	389.19	86.52	599.56	593.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.76	48.76	48.76	36.61	33.97	32.16	66.68	25.92	25.96	55.75	39.43	39.58
Movement LOS	D	D	D	D	C	C	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	48.76			33.67			32.13			40.25		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	37.59											
Intersection LOS	D											
Intersection V/C	0.832											

Emissions

Vehicle Miles Traveled [mph]	13.35	4.27	8.29	9.34	26.26	25.75	4.40	42.71	42.01
Stops [stops/h]	378.65	112.42	191.52	180.04	314.68	309.11	57.68	515.52	509.05
Fuel consumption [US gal/h]	7.35	2.06	3.55	4.52	6.67	6.55	1.46	11.65	11.51
CO [g/h]	513.43	143.86	248.14	315.83	466.09	457.91	102.15	814.05	804.56
NOx [g/h]	99.89	27.99	48.28	61.45	90.68	89.09	19.88	158.38	156.54
VOC [g/h]	118.99	33.34	57.51	73.20	108.02	106.13	23.68	188.66	186.46

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	15.0	16.0	16.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.82	45.94	45.07	45.07
I_p,int, Pedestrian LOS Score for Intersectio	2.205	2.405	3.064	3.056
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767	850	733
d_b, Bicycle Delay [s]	22.82	22.82	19.84	24.07
I_b,int, Bicycle LOS Score for Intersection	2.223	1.902	2.524	2.647
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 1 20s   SG: 2 49s   SG: 4 51s
SG: 102 28s   SG: 104 36s
SG: 5 13s   SG: 6 56s
SG: 106 28s
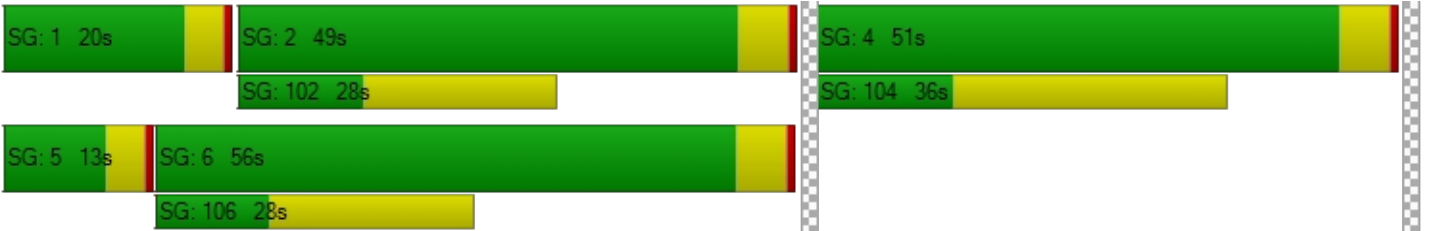
Appendix H

Intersection Analysis Worksheets
for
Project Opening Year (2026) With Project Conditions

Intersection Level Of Service Report
Intersection 1: Broadway Avenue (N/S) at Mines Boulevard (E/W)

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.413

Intersection Setup

Name	Broadway Avenue			Broadway Avenue			Mines Boulevard			Mines Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	60.00	100.00	100.00	60.00	100.00	100.00	155.00	100.00	55.00	155.00	100.00	55.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Avenue			Broadway Avenue			Mines Boulevard			Mines Boulevard		
Base Volume Input [veh/h]	39	229	28	149	378	95	122	330	46	54	315	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	229	28	149	378	95	122	330	46	54	315	51
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	70	9	45	115	29	37	101	14	16	96	16
Total Analysis Volume [veh/h]	48	279	34	182	461	116	149	402	56	66	384	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	28	0	0	28	0	6	24	0	0	24	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	3.0	5.0	0.0	0.0	5.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	1.0	0.5	0.0	0.0	0.5	0.0
Walk [s]	0	12	0	0	12	0	0	11	0	0	11	0
Pedestrian Clearance [s]	0	24	0	0	23	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	0.0	3.5	0.0	2.0	3.5	0.0	0.0	3.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
Advanced Detector Location [ft]	0.0	235.0	0.0	0.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering 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

Phasing & Timing: Pattern 1

Split [s]	0	51	0	0	51	0	124	69	0	0	69	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	6	8	0	0	8	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	2.0	0.0	3.0	3.0	0.0	0.0	4.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	66	66	66	66	66	66	43	43	43	43	43	43
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.55	0.55	0.36	0.36	0.36	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.09	0.17	0.16	0.16	0.16	0.21	0.04	0.07	0.21	0.04
s, saturation flow rate [veh/h]	836	1870	1800	1066	1870	1742	944	1870	1589	933	1870	1589
c, Capacity [veh/h]	427	1022	984	575	1022	952	235	677	575	224	677	575
d1, Uniform Delay [s]	20.07	13.49	13.51	19.34	14.69	14.70	47.24	31.12	25.32	43.84	30.74	25.42
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.15	0.15	0.15
I, Upstream Filtering 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
d2, Incremental Delay [s]	0.53	0.32	0.34	1.44	0.72	0.78	2.81	0.84	0.07	1.03	1.07	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression 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

Lane Group Results

	L	C	C	L	C	C	L	C	R	L	C	R
X, volume / capacity	0.11	0.15	0.16	0.32	0.29	0.29	0.63	0.59	0.10	0.29	0.57	0.11
d, Delay for Lane Group [s/veh]	20.60	13.81	13.85	20.79	15.41	15.48	50.05	31.95	25.39	44.87	31.81	25.53
Lane Group LOS	C	B	B	C	B	B	D	C	C	D	C	C
Critical Lane Group	No	No	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.86	2.17	2.12	3.33	4.46	4.19	4.44	9.47	1.07	1.80	8.99	1.19
50th-Percentile Queue Length [ft/ln]	21.42	54.13	53.05	83.15	111.49	104.63	110.98	236.66	26.67	44.88	224.63	29.79
95th-Percentile Queue Length [veh/ln]	1.54	3.90	3.82	5.99	7.92	7.53	7.89	14.51	1.92	3.23	13.90	2.14
95th-Percentile Queue Length [ft/ln]	38.56	97.43	95.49	149.66	198.07	188.34	197.37	362.80	48.01	80.79	347.53	53.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.60	13.83	13.85	20.79	15.44	15.48	50.05	31.95	25.39	44.87	31.81	25.53
Movement LOS	C	B	B	C	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	14.73			16.73			35.79			32.73		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	25.23											
Intersection LOS	C											
Intersection V/C	0.413											

Emissions

Vehicle Miles Traveled [mph]	1.50	4.94	4.83	5.68	9.31	8.70	7.71	20.81	2.90	3.59	20.87	3.37
Stops [stops/h]	25.71	64.95	63.66	99.77	133.79	125.56	133.18	283.99	32.00	53.86	269.56	35.74
Fuel consumption [US gal/h]	0.45	1.12	1.10	1.74	2.30	2.15	2.81	5.54	0.64	1.14	5.31	0.72
CO [g/h]	31.57	78.41	76.80	121.40	160.53	150.57	196.64	387.44	44.77	79.99	371.05	50.29
NOx [g/h]	6.14	15.26	14.94	23.62	31.23	29.30	38.26	75.38	8.71	15.56	72.19	9.78
VOC [g/h]	7.32	18.17	17.80	28.14	37.20	34.90	45.57	89.79	10.38	18.54	85.99	11.65

Other Modes

g_Walk,mi, Effective Walk Time [s]	15.0	15.0	16.0	16.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.94	45.94	45.07	45.07
I_p,int, Pedestrian LOS Score for Intersectio	2.619	2.807	2.538	2.721
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	758	758	1058	1058
d_b, Bicycle Delay [s]	23.13	23.13	13.30	13.30
I_b,int, Bicycle LOS Score for Intersection	1.857	2.186	2.561	2.404
Bicycle LOS	A	B	B	B

Sequence
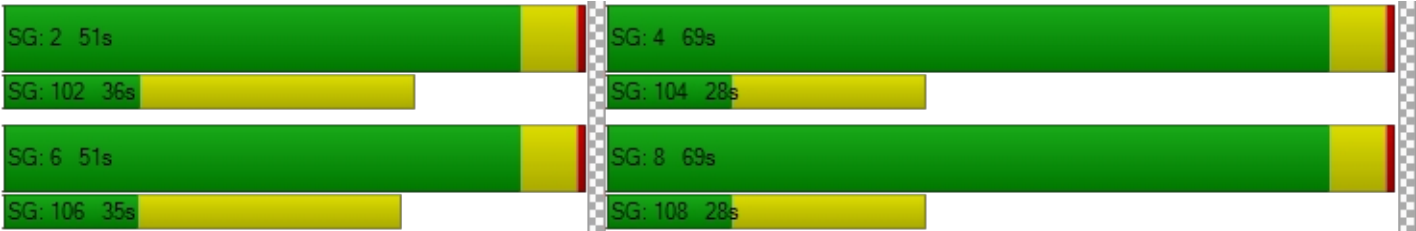
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 51s
SG: 102 36s
SG: 4 69s
SG: 104 28s
SG: 6 51s
SG: 106 35s
SG: 8 69s
SG: 108 28s

Intersection Level Of Service Report
Intersection 2: Broadway Avenue (N/S) at Washington Boulevard (E/W)

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	Broadway Avenue			Broadway Avenue			Washington Boulevard			Washington Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Avenue			Broadway Avenue			Washington Boulevard			Washington Boulevard		
Base Volume Input [veh/h]	36	115	71	91	189	238	109	723	46	51	1135	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	115	71	91	189	238	109	723	46	51	1135	54
Peak Hour Factor	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	30	19	24	49	62	28	189	12	13	296	14
Total Analysis Volume [veh/h]	38	120	74	95	197	248	114	755	48	53	1185	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	48.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Maximum Green [s]	0	30	0	0	30	0	17	31	0	17	31	0
Amber [s]	0.0	4.5	0.0	0.0	4.5	0.0	3.5	4.5	0.0	3.5	4.5	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0
Walk [s]	0	12	0	0	12	0	0	10	0	0	11	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	18	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0	2.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	40.0	0.0	0.0	40.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0
Advanced Detector Location [ft]	0.0	250.0	0.0	0.0	250.0	0.0	0.0	185.0	0.0	0.0	210.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering 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

Phasing & Timing: Pattern 1

Split [s]	0	41	0	0	41	0	46	66	0	13	33	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	8	0	0	8	0	9	10	0	9	10	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	4.0	0.0	2.0	4.0	0.0	2.0	4.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00	2.00	3.00	3.00
g_i, Effective Green Time [s]	24	24	24	24	24	24	10	75	75	7	73	73
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.20	0.20	0.08	0.62	0.62	0.06	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.05	0.08	0.11	0.16	0.06	0.22	0.22	0.03	0.33	0.33
s, saturation flow rate [veh/h]	945	1870	1589	1189	1870	1589	1781	1870	1831	1781	1870	1840
c, Capacity [veh/h]	142	368	313	210	368	313	145	1167	1143	111	1131	1113
d1, Uniform Delay [s]	52.09	41.34	40.58	49.75	43.24	45.84	54.10	10.83	10.83	54.38	14.06	14.07
k, delay calibration	0.15	0.15	0.15	0.15	0.15	0.15	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering 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
d2, Incremental Delay [s]	1.41	0.73	0.55	2.15	1.72	6.31	3.56	0.82	0.84	1.19	1.94	1.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression 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

Lane Group Results

	L	C	R	L	C	R	L	C	C	L	C	C
X, volume / capacity	0.27	0.33	0.24	0.45	0.53	0.79	0.79	0.35	0.35	0.48	0.55	0.55
d, Delay for Lane Group [s/veh]	53.51	42.07	41.12	51.90	44.96	52.15	57.66	11.65	11.67	55.57	16.00	16.05
Lane Group LOS	D	D	D	D	D	D	E	B	B	E	B	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.14	3.11	1.88	2.81	5.38	7.50	3.47	5.03	4.93	1.56	9.82	9.70
50th-Percentile Queue Length [ft/ln]	28.44	77.69	47.09	70.27	134.62	187.52	86.69	125.68	123.21	39.05	245.59	242.59
95th-Percentile Queue Length [veh/ln]	2.05	5.59	3.39	5.06	9.19	11.99	6.24	8.70	8.57	2.81	14.96	14.81
95th-Percentile Queue Length [ft/ln]	51.19	139.85	84.77	126.49	229.76	299.81	156.04	217.61	214.23	70.28	374.09	370.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.51	42.07	41.12	51.90	44.96	52.15	57.66	11.66	11.67	55.57	16.03	16.05
Movement LOS	D	D	D	D	D	D	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	43.64			49.48			17.38			17.65		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	25.35											
Intersection LOS	C											
Intersection V/C	0.616											

Emissions

Vehicle Miles Traveled [mph]	1.26	3.98	2.46	2.87	5.96	7.50	5.98	21.29	20.85	3.58	42.25	41.66
Stops [stops/h]	34.12	93.23	56.51	84.33	161.54	225.02	104.03	150.82	147.85	46.86	294.71	291.11
Fuel consumption [US gal/h]	0.72	1.88	1.14	1.75	3.24	4.61	2.57	3.21	3.14	1.19	6.44	6.36
CO [g/h]	50.22	131.43	79.54	122.12	226.78	322.24	179.90	224.10	219.65	83.04	450.43	444.91
NOx [g/h]	9.77	25.57	15.48	23.76	44.12	62.70	35.00	43.60	42.74	16.16	87.64	86.56
VOC [g/h]	11.64	30.46	18.43	28.30	52.56	74.68	41.69	51.94	50.91	19.24	104.39	103.11

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	15.0	16.0	16.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.82	45.94	45.07	45.07
I_p,int, Pedestrian LOS Score for Intersectio	2.432	2.499	2.985	3.022
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	1017	467
d_b, Bicycle Delay [s]	29.40	29.40	14.50	35.27
I_b,int, Bicycle LOS Score for Intersection	1.942	2.451	2.316	2.627
Bicycle LOS	A	B	B	B

Sequence
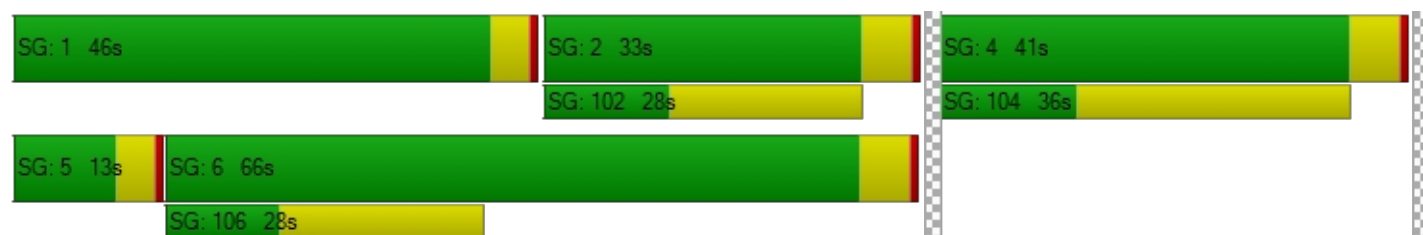
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Broadway Avenue (N/S) at Project Access (E/W)

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	Broadway Avenue		Broadway Avenue		Project Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	⬆⬈		⬅⬆		⊤	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Broadway Avenue		Broadway Avenue		Project Access	
Base Volume Input [veh/h]	246	4	1	549	14	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	246	4	1	549	14	3
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	1	0	144	4	1
Total Analysis Volume [veh/h]	259	4	1	578	15	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.03	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.77	0.00	13.04	9.29
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.04	0.02	2.77	2.77
d_A, Approach Delay [s/veh]	0.00		0.01		12.41	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.27					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Broadway Avenue (N/S) at Mines Boulevard (E/W)

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.380

Intersection Setup

Name	Broadway Avenue			Broadway Avenue			Mines Boulevard			Mines Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	60.00	100.00	100.00	60.00	100.00	100.00	155.00	100.00	55.00	155.00	100.00	55.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Avenue			Broadway Avenue			Mines Boulevard			Mines Boulevard		
Base Volume Input [veh/h]	39	409	32	123	314	63	111	271	33	42	379	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	409	32	123	314	63	111	271	33	42	379	109
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	108	8	33	83	17	29	72	9	11	100	29
Total Analysis Volume [veh/h]	41	432	34	130	332	67	117	286	35	44	401	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	28	0	0	28	0	6	24	0	0	24	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	3.0	5.0	0.0	0.0	5.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	1.0	0.5	0.0	0.0	0.5	0.0
Walk [s]	0	12	0	0	12	0	0	11	0	0	11	0
Pedestrian Clearance [s]	0	24	0	0	23	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	0.0	3.5	0.0	2.0	3.5	0.0	0.0	3.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
Advanced Detector Location [ft]	0.0	235.0	0.0	0.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering 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

Phasing & Timing: Pattern 1

Split [s]	0	48	0	0	48	0	124	72	0	0	72	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	6	8	0	0	8	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	2.0	0.0	3.0	3.0	0.0	0.0	4.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	65	65	65	65	65	65	44	44	44	44	44	44
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.55	0.55	0.36	0.36	0.36	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.13	0.13	0.14	0.11	0.11	0.13	0.15	0.02	0.04	0.21	0.07
s, saturation flow rate [veh/h]	985	1870	1823	927	1870	1763	885	1870	1589	1059	1870	1589
c, Capacity [veh/h]	537	1018	993	500	1018	960	199	680	578	291	680	578
d1, Uniform Delay [s]	16.66	14.24	14.25	19.22	13.97	13.99	49.07	28.67	24.83	38.26	30.92	26.18
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.15	0.15	0.15
I, Upstream Filtering 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
d2, Incremental Delay [s]	0.28	0.53	0.55	1.26	0.44	0.48	2.73	0.41	0.04	0.34	1.16	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression 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

Lane Group Results

	L	C	C	L	C	C	L	C	R	L	C	R
X, volume / capacity	0.08	0.23	0.23	0.26	0.20	0.20	0.59	0.42	0.06	0.15	0.59	0.20
d, Delay for Lane Group [s/veh]	16.94	14.77	14.80	20.48	14.41	14.47	51.81	29.09	24.88	38.60	32.08	26.42
Lane Group LOS	B	B	B	C	B	B	D	C	C	D	C	C
Critical Lane Group	No	No	No	Yes	No	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.64	3.39	3.33	2.35	2.89	2.77	3.52	6.20	0.66	1.08	9.47	2.28
50th-Percentile Queue Length [ft/ln]	16.07	84.83	83.33	58.67	72.17	69.15	88.03	154.90	16.39	27.05	236.72	57.11
95th-Percentile Queue Length [veh/ln]	1.16	6.11	6.00	4.22	5.20	4.98	6.34	10.28	1.18	1.95	14.52	4.11
95th-Percentile Queue Length [ft/ln]	28.93	152.70	150.00	105.60	129.91	124.47	158.45	256.96	29.49	48.69	362.89	102.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.94	14.78	14.80	20.48	14.43	14.47	51.81	29.09	24.88	38.60	32.08	26.42
Movement LOS	B	B	B	C	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	14.96			15.93			34.82			31.43		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	24.02											
Intersection LOS	C											
Intersection V/C	0.380											

Emissions

Vehicle Miles Traveled [mph]	1.28	7.34	7.20	4.06	6.37	6.08	6.06	14.80	1.81	2.39	21.80	6.25
Stops [stops/h]	19.29	101.80	100.00	70.40	86.60	82.98	105.63	185.88	19.66	32.46	284.07	68.53
Fuel consumption [US gal/h]	0.34	1.75	1.72	1.23	1.49	1.43	2.26	3.66	0.39	0.68	5.58	1.37
CO [g/h]	23.42	122.51	120.30	85.70	104.37	99.92	157.88	255.49	27.55	47.59	390.39	95.90
NOx [g/h]	4.56	23.84	23.41	16.67	20.31	19.44	30.72	49.71	5.36	9.26	75.96	18.66
VOC [g/h]	5.43	28.39	27.88	19.86	24.19	23.16	36.59	59.21	6.38	11.03	90.48	22.23

Other Modes

g_Walk,mi, Effective Walk Time [s]	15.0	15.0	16.0	16.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.94	45.94	45.07	45.07
I_p,int, Pedestrian LOS Score for Intersectio	2.582	2.748	2.469	2.613
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	1108	1108
d_b, Bicycle Delay [s]	25.03	25.03	11.93	11.93
I_b,int, Bicycle LOS Score for Intersection	1.978	1.996	2.282	2.484
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 48s
SG: 102 36s
SG: 6 48s
SG: 106 35s
SG: 4 72s
SG: 104 28s
SG: 8 72s
SG: 108 28s

Intersection Level Of Service Report
Intersection 2: Broadway Avenue (N/S) at Washington Boulevard (E/W)

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	Broadway Avenue			Broadway Avenue			Washington Boulevard			Washington Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Avenue			Broadway Avenue			Washington Boulevard			Washington Boulevard		
Base Volume Input [veh/h]	54	270	80	83	147	195	185	932	56	66	1182	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	270	80	83	147	195	185	932	56	66	1182	68
Peak Hour Factor	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	68	20	21	37	49	47	236	14	17	299	17
Total Analysis Volume [veh/h]	55	273	81	84	149	197	187	943	57	67	1196	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	117.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Maximum Green [s]	0	30	0	0	30	0	17	31	0	17	31	0
Amber [s]	0.0	4.5	0.0	0.0	4.5	0.0	3.5	4.5	0.0	3.5	4.5	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0
Walk [s]	0	12	0	0	12	0	0	10	0	0	11	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	18	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0	2.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	40.0	0.0	0.0	40.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0
Advanced Detector Location [ft]	0.0	250.0	0.0	0.0	250.0	0.0	0.0	185.0	0.0	0.0	210.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering 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

Phasing & Timing: Pattern 1

Split [s]	0	51	0	0	51	0	20	56	0	13	49	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	8	0	0	8	0	9	10	0	9	10	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	4.0	0.0	2.0	4.0	0.0	2.0	4.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00	2.00	3.00	3.00
g_i, Effective Green Time [s]	32	32	32	32	32	32	14	66	66	8	59	59
g / C, Green / Cycle	0.27	0.27	0.27	0.27	0.27	0.27	0.12	0.55	0.55	0.07	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.05	0.08	0.08	0.12	0.11	0.27	0.27	0.04	0.34	0.34
s, saturation flow rate [veh/h]	1035	1870	1589	1027	1870	1589	1781	1870	1833	1781	1870	1834
c, Capacity [veh/h]	259	507	431	195	507	431	214	1020	999	119	920	902
d1, Uniform Delay [s]	41.29	37.33	33.59	49.29	34.64	36.39	51.87	16.99	17.00	54.28	23.51	23.54
k, delay calibration	0.15	0.15	0.15	0.15	0.15	0.15	0.19	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering 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
d2, Incremental Delay [s]	0.57	1.27	0.30	2.13	0.45	1.08	16.85	1.72	1.76	1.54	4.29	4.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression 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

Lane Group Results

	L	C	R	L	C	R	L	C	C	L	C	C
X, volume / capacity	0.21	0.54	0.19	0.43	0.29	0.46	0.87	0.50	0.50	0.56	0.69	0.70
d, Delay for Lane Group [s/veh]	41.87	38.60	33.89	51.43	35.09	37.47	68.72	18.71	18.75	55.82	27.80	27.95
Lane Group LOS	D	D	C	D	D	D	E	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.42	6.96	1.85	2.48	3.50	4.90	6.43	8.65	8.49	1.98	14.24	14.05
50th-Percentile Queue Length [ft/ln]	35.62	173.94	46.14	62.03	87.43	122.44	160.80	216.13	212.36	49.60	356.02	351.25
95th-Percentile Queue Length [veh/ln]	2.56	11.28	3.32	4.47	6.30	8.53	10.59	13.47	13.27	3.57	20.43	20.20
95th-Percentile Queue Length [ft/ln]	64.12	282.08	83.05	111.66	157.38	213.18	264.79	336.69	331.85	89.28	510.75	504.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.87	38.60	33.89	51.43	35.09	37.47	68.72	18.73	18.75	55.82	27.87	27.95
Movement LOS	D	D	C	D	D	D	E	B	B	E	C	C
d_A, Approach Delay [s/veh]	38.11			39.37			26.61			29.28		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.70											
Intersection LOS	C											
Intersection V/C	0.659											

Emissions

Vehicle Miles Traveled [mph]	1.83	9.06	2.69	2.54	4.51	5.96	9.81	26.49	25.99	4.53	43.12	42.41
Stops [stops/h]	42.74	208.72	55.37	74.44	104.92	146.93	192.96	259.36	254.83	59.52	427.23	421.50
Fuel consumption [US gal/h]	0.86	4.06	1.08	1.54	2.02	2.83	4.86	5.42	5.32	1.51	9.35	9.23
CO [g/h]	60.09	283.76	75.32	107.35	141.54	198.11	339.83	378.77	372.16	105.40	653.55	644.99
NOx [g/h]	11.69	55.21	14.65	20.89	27.54	38.55	66.12	73.69	72.41	20.51	127.16	125.49
VOC [g/h]	13.93	65.76	17.46	24.88	32.80	45.91	78.76	87.78	86.25	24.43	151.47	149.48

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	15.0	16.0	16.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.82	45.94	45.07	45.07
I_p,int, Pedestrian LOS Score for Intersectio	2.467	2.529	3.073	3.064
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767	850	733
d_b, Bicycle Delay [s]	22.82	22.82	19.84	24.07
I_b,int, Bicycle LOS Score for Intersection	2.234	2.269	2.539	2.659
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
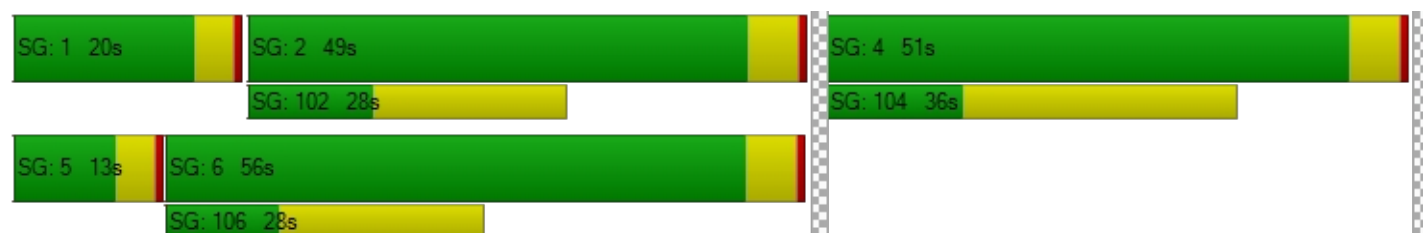
Intersection Level Of Service Report
Intersection 3: Broadway Avenue (N/S) at Project Access (E/W)

Control Type:	Two-way stop	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Broadway Avenue		Broadway Avenue		Project Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Broadway Avenue		Broadway Avenue		Project Access	
Base Volume Input [veh/h]	549	11	3	431	7	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	549	11	3	431	7	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	144	3	1	113	2	1
Total Analysis Volume [veh/h]	578	12	3	454	7	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					No	
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.67	0.00	16.75	10.39
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.00	0.08	0.08
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.13	0.06	1.93	1.93
d_A, Approach Delay [s/veh]	0.00		0.06		15.34	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.16					
Intersection LOS	C					