Appendix D

Transportation Impact Study

EIR Alternatives Analysis Transportation Memo

Source: Google Earth

Prepared for

San Francisco Planning Department

Prepared by

FEHR PEERS

332 Pine Street, Floor 4
San Francisco, CA 94104

India Basin Development

Transportation Impact Study

FINAL

August 2017

Final Transportation Impact Study

India Basin

Case Number: 2014.002541ENV

Prepared for:

San Francisco Planning Department

Prepared by:

FEHR PEERS

August 2017

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1 INTRODUCTION

This transportation impact study report describes the existing transportation setting and provides a transportation impact analysis for the proposed development at India Basin (herein referred to as the "Proposed Project") in San Francisco, California. The Proposed Project, co-sponsored by Build and the San Francisco Recreation and Parks Department (RPD), would redevelop both Project Sponsors' parcels along the India Basin shoreline of the San Francisco Bay; it would develop the privately owned 16.94 acres plus 5.77 acres of developed and undeveloped public rights of way for residential, commercial, office, institutional uses, and recreational uses and create a 14.2-acre network of new and/or modified parkland and open space. The Project also includes changes to the roadway network in the immediate area, including construction of new streets, new sidewalks and bicycle facilities, an on-street and off-street vehicle parking program, and a Transportation Demand Management (TDM) Program.

Consistent with the *San Francisco Transportation Impact Analysis Guidelines for Environmental Review* (October 2002) (herein "*SF Guidelines*") and the *Resolution Modifying Transportation Impact Analysis* (March 2016)[1], this transportation impact analysis evaluates the Proposed Project's potential impacts on vehicle miles traveled (VMT), traffic hazards, transit operations, bicycle conditions, pedestrian conditions, loading operations, emergency access, construction activities, and parking, and also features a discussion of traffic operations for informational purposes. This chapter summarizes the key attributes of the project relating to transportation conditions, outlines the report structure and describes the methodology used for analysis. A detailed description of the scope of work is provided in **Appendix A**.

1.1 PROJECT SETTING

The Project is located in the Bayview Hunters Point neighborhood in the southeast quadrant of the city. **Figure 1** shows the location of the Project Site and streets in the vicinity. The site perimeter has frontage on Innes Avenue, Hunters Point Boulevard, and Earl Street, and the site has frontage onto Hawes Street, Hudson Avenue, Griffith Street, and Arelious Walker Drive. Currently, the Project Site is generally undeveloped with the exception of a few low-rise structures. Approximately twelve acres of the site is open space and includes a portion of the Blue Greenway along the shoreline, which is a City project to modify the Blue Greenway/Bay Trail. Approximately 2.5 acres between the India Basin Shoreline Park and India Basin Shoreline Open Space contains several buildings in various stages of disrepair, including the historically-designated Shipwright's Cottage. More than seven acres are public right-of-way on Griffith Street, Hudson Avenue, Earl Street, and Arelious Walker Drive. The remainder of the site contains light brush, debris, dirt, and gravel mounts.

The neighborhood surrounding the Project Site is being developed with numerous development proposals in the planning and approval stages. The Project Site is bounded to the east by the Candlestick-Hunters Point Shipyard Phase II Development project area, which includes more than 10,000 residential units, 250,000 sf of neighborhood retail, 2.5 million square feet of research and development, artist studios, hotel rooms, open space, and community services.

[1] San Francisco Planning Department, *Resolution Modifying Transportation Impact Analysis* (March 2016). http://commissions.sfplanning.org/cpcpackets/Align-CPC%20exec%20summary_20160303_Final.pdf

Study Intersection

Figure 1

Project Site Location and Study Intersections

The Proposed Project, co-sponsored by Build and the San Francisco Recreation and Park Department (RPD), would redevelop both Project Sponsors' parcels along the India Basin shoreline of the San Francisco Bay. Build and RPD are collectively referred to as "Project Sponsor" throughout this document. The parcels that are collectively referred to as 700 Innes Avenue property, comprise nearly 17.12 acres of the site and are owned or would be acquired by Build. The parcels that are collectively referred to as 900 Innes Avenue property, India Basin Open Space, and India Basin Shoreline Park, make up more than 14.2 acres and are owned by the RPD. The remaining 5.94 acres make up the developed and undeveloped public right-of-way on Griffith Street, Hudson Avenue, Earl Street, and Arelious Walker Drive. The Project Site ownership by parcel is detailed in **Figure 2A**.

1.2 PROJECT DESCRIPTION

1.2.1 Land Use Program

Two project land use variants are proposed: the Proposed Project and a Maximum Commercial Program Variant ("Project Variant"), which has fewer dwelling units and more commercial development than the Proposed Project. The land use plan for the Proposed Project is illustrated in **Figure 2B**, and the land use plan for the Project Variant is illustrated in **Figure 2C**. Land uses associated with the Proposed Project and the Project Variant are described below and detailed in **Table 1-1**. Off-street parking associated with the Proposed Project and the Project Variant are described below and detailed in **Table 1-2**. While the amount of off-street parking associated with the land use program is shown in this section, a detailed breakdown of the amount and location of both on-street and off-street parking is provided in Section 1.2.8. Detailed plans are included in **Appendix B**.

1.2.1.1 Build Property: 700 Innes Avenue

Proposed Project – The proposed development at 700 Innes Avenue would include 1,240 residential units, 35,000 square feet (35 thousand square feet [ksf]) of restaurant and café space, a 25 ksf supermarket, 40.4 ksf of general retail, and 174.93 ksf of general office in the Proposed Project. The Proposed Project would also include a preparatory school (50 ksf) and a 5.63-acre publicly accessible open space area, referred to as the "Big Green". The proposed pre-K-8 private school would be located along the eastern perimeter of the India Basin site, abutting the southwest corner of the intersection of New Hudson Avenue/Earl Street. The school would be a five-story, 50,000-sf building with 20 classrooms. A 10,000-sf yard would be provided on the roof of the building as well as a 1,700-sf auxiliary yard along the building's southern frontage. The school is expected to enroll 450 students and employ 95 teachers and staff members. The proposed school conceptual site plan is shown in **Figure 2D**.

At least one on-site childcare facility would be provided within the project; the specific location of this childcare facility has not been determined. With the exception of a barn structure at 702 Earl Street, which is a residential house structure that would be relocated within the Project Site, the existing structures on the 700 Innes Avenue property would be demolished.

The Proposed Project includes the provision of 1,800 off-street parking spaces; this includes 1,230 private parking spaces and 570 public parking spaces. These parking spaces would be located in garage structures built into the other land uses on both the ground level and up to two stories below ground. There are no separate structures that contain only parking. The Proposed Project would provide 1,506 bicycle parking spaces as follows: 1,343 Class I bicycle parking spaces (such as bike lockers, or secure bike rooms), and 163 Class II bicycle parking spaces (publicly accessible bicycle racks).

Project Variant – The Project Variant would include 500 residential units, 45 ksf of restaurant and café space, a 25 ksf supermarket, 70 ksf of general retail and 400 ksf of general office. In addition, the Project Variant would include 275 ksf of Research and Development (R&D) lab area, 85 ksf of clinical use, and 100 ksf of administrative use. The Project Variant would also include a preparatory school (50 ksf) and the "Big Green". At least one on-site childcare facility would be provided within the project; the specific location of this childcare facility has not been determined. With the exception of 702 Earl Street, a residential house that would be relocated within the Project Site, the existing structures on the 700 Innes Avenue property would be demolished.

The Project Variant includes the provision of 1,912 off-street parking spaces; this includes 1,412 private parking spaces and 500 public parking spaces. These parking spaces would be located in garage structures built into the other land uses on both the ground level and up to two stories below ground. The Project Variant will would provide 909 bicycle parking spaces as follows: 745 Class I bicycle parking spaces and 164 Class II bicycle parking spaces.

1.2.1.2 RPD Property - 900 Innes, India Basin Shoreline Park, and India Basin Open Space

The development of the RPD Property is the same for the Proposed Project and the Project Variant. The proposed development at 900 Innes Avenue, India Basin Shoreline Park, and India Basin Open Space would make changes to the park and open space use and would be combined to create a 14.2-acre network of new and/or modified parkland and open space. This new shoreline network would extend the Blue Greenway/Bay Trail and would provide pedestrian and bicycle connections to and along the shoreline. The 6.2-acre India Basin Open Space would remain in a natural state. The existing tidal salt marsh wetlands would be modified to include sand dunes, bird islands, a recreational beach area, a boat launch, a bioengineered breakwater, brackish lagoons, scrub upland planting, tree stands for wind buffering, and new wetlands and ponds. Pathways in the form of boardwalks, trails, and stairways would connect India Basin Open Space with the upland parkland and would provide continuous, publicly accessible shoreline access along the Bay. The 5.6-acre India Basin Shoreline Park would be redesigned. Potential uses that could be programmed for this property could include modified playground and recreational facilities, restrooms, additional trees, lawn areas, barbecue pits, drinking fountains, a boat launch ramp, in-water piers, art installations, lighting, and exercise or cross training course. The existing surface parking, vehicular access, and drop-off and loading zones also would be changed.

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TABLE 1-1: PROPOSED PROJECT FLOOR AREA USE				
Floor Area Use	**Proposed Project**	**Floor Area (gsf)**	**Project Variant**	**Floor Area (gsf)**
Build Property				
Residential	1,240 units[1]: 198 studios 236 one-bedroom 670 two-bedroom 136 three-bedroom	1,240,100	500 units[1]: 50 studios 125 one-bedroom 275 two-bedroom 50 three-bedroom	417,300
Commercial/ Retail	R&D Lab Area	-	R&D Lab Area	275,000
	Clinical Use	-	Clinical Use	85,000
	Administrative Use	-	Administrative Use	100,000
	General Office	174,930	General Office	400,000
	Restaurant	15,000	Restaurant	25,000
	Café	20,000	Café	20,000
	Supermarket	25,000	Supermarket	25,000
	General Retail	40,400	General Retail	70,000
	Total	*275,330*	*Total*	*1,000,000*
Institutional/ Educational	Private School	50,000	Private School	50,000
Open Space	Big Green Open Space	237,400	Big Green Open space	237,400
Subtotal	-	*1,802,830*	-	*1,654,700*
RPD Property				
Open Space (Public)	India Basin Open Space 900 Innes India Basin Shoreline Park *Total*	270,000 78,400 243,900 *592,300 (=13.6 ac)*	India Basin Open Space 900 Innes India Basin Shoreline Park *Total*	270,000 78,400 243,900 *592,300 (=13.6 ac)*
Total	-	*2,395,130*	-	*2,297,000*

Notes:

1. This unit count includes the barn structure at 702 Earl Street, a residential house on the Project Site that would be relocated elsewhere on the Project Site. However, because the relocated house would not increase trip generation it is omitted from travel demand calculations below.

Source: Draft India Basin Notice of Preparation of an Environmental Impact Report and Public Scoping Meeting, April 30, 2015, modified October 2015.

TABLE 1-2: PROPOSED PROJECT OFF-STREET PARKING AND BICYCLE PARKING		
Type	**Proposed Project**	**Project Variant**
Build Property		
Off-Street Parking	1,230 private off-street spaces 570 public off-street spaces	1,412 private off-street spaces 500 public off-street spaces
	Total: 1,800 off-street spaces	*Total: 1,912 off-street spaces*
Bike Parking[1]	1,343 Class 1 spaces 163 Class 2 spaces	745 Class 1 spaces 164 Class 2 spaces
	Total: 1,506 spaces	*Total: 909 spaces*

Notes:

1. One Class 1 space would be provided for each residential unit, i.e. 1,240 for the Proposed Project and 500 for the Project Variant. The remainder in each scenario would be for commercial users.

Source: Draft India Basin Notice of Preparation of an Environmental Impact Report and Public Scoping Meeting, April 30, 2015, modified October 2015.

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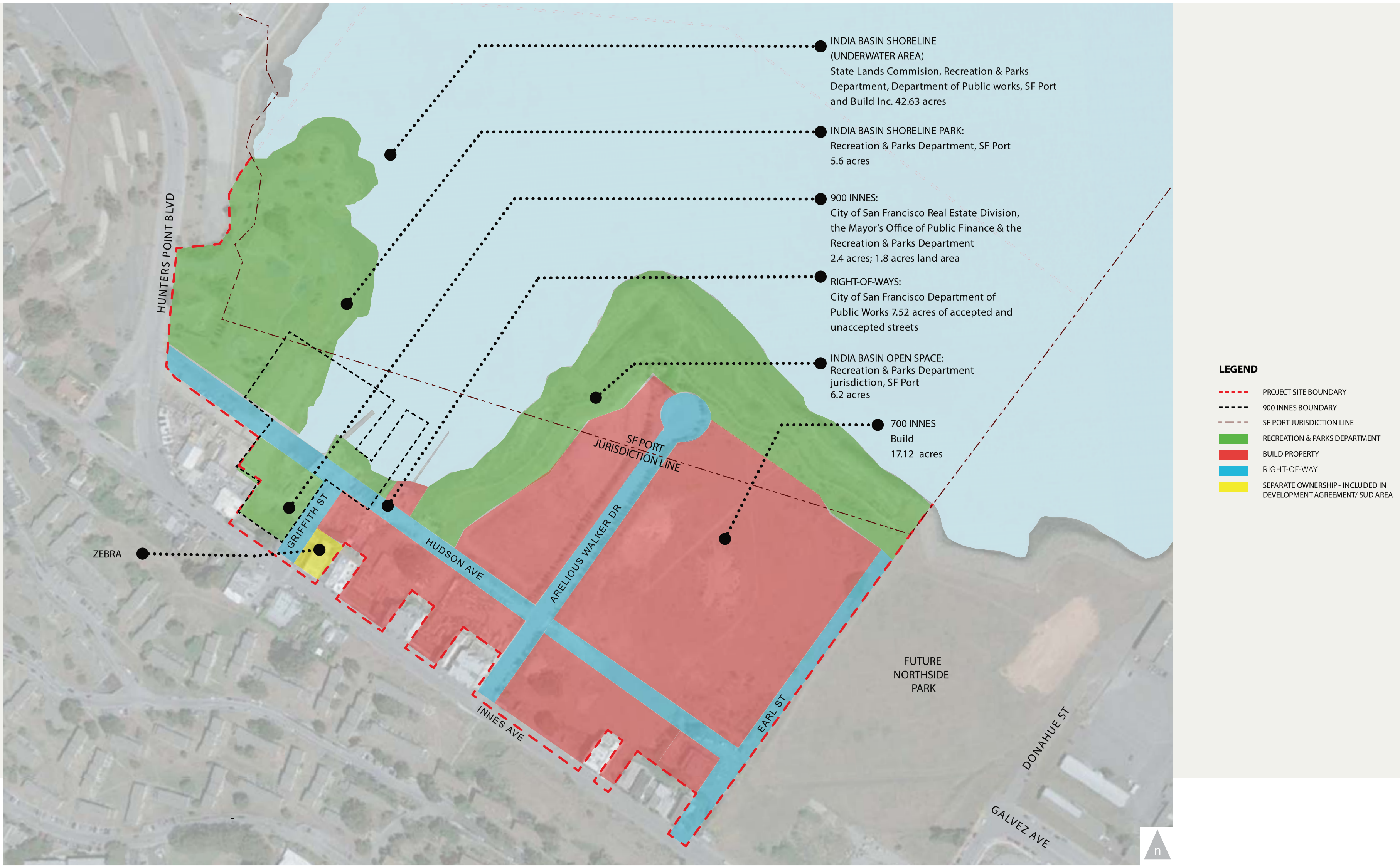

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Figure 2A
Proposed Project Site

LEGEND

- Project Site Boundary
- Potential School Location
- Residential
- Ground Floor Commercial
- Two-Level Commercial
- Two-Level Commercial w/ Residential
- Open Space
- Recreation and Parks Department

Figure 2B

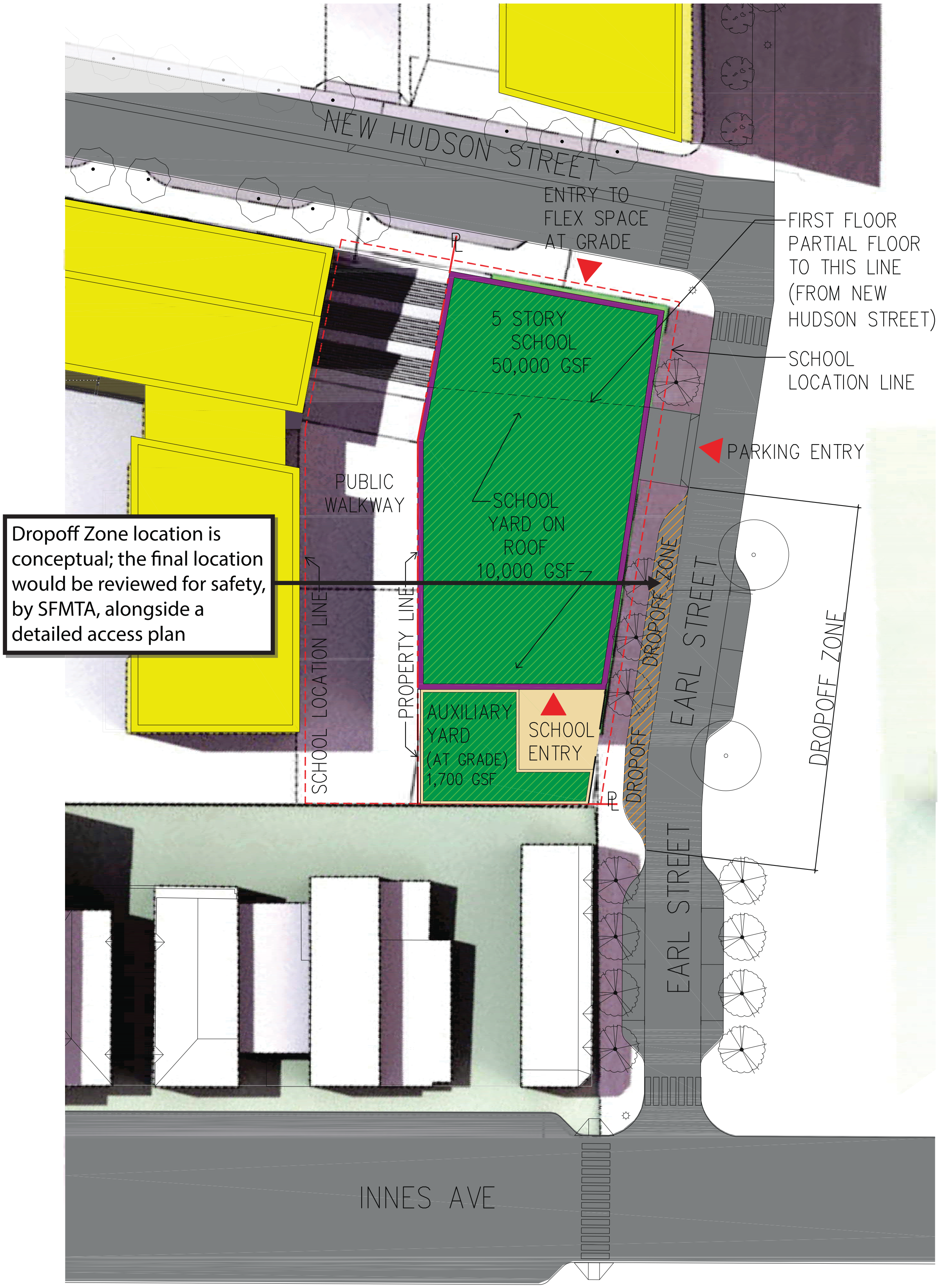
Proposed Project Land Use Plan

LEGEND

- PROJECT SITE BOUNDARY
- POTENTIAL SCHOOL LOCATION
- RESIDENTIAL
- GROUND FLOOR COMMERCIAL
- TWO-LEVEL COMMERCIAL
- TWO-LEVEL COMMERCIAL W/ RESIDENTIAL
- OFFICE/COMMERCIAL/R&D
- OPEN SPACE
- RECREATION AND PARKS DEPARTMENT

Figure 2C

Maximum Commercial Variant Land Use Plan



CONCEPTUAL DRAWING ONLY
DETAILED DESIGN MUST BE COMPLETED
PRIOR TO CONSTRUCTION

Figure 2D

Conceptual Proposed School Site Plan

1.2.2 Construction Phasing

Buildout of the Proposed Project is anticipated to occur in three phases over an approximately eight year period, from 2018 through 2026. Project construction phasing is presented in **Table 1-3**.

TABLE 1-3: PROJECT CONSTRUCTION PHASING								
Property	**Phase**	**Start Date**	**Duration (months)**	**Residential (units)**	**Commercial (ksf)**	**School (ksf)**	**Parking (ksf)**	**Site/ Outdoor**
Proposed Project								
Build	1	March 2018	40	709	233	50	655	973
	2	June 2020	30	531	43	0	25	713
RPD	RPD	January 2019	24	0	15	0	6*	592
Total	-	-	-	*1,240*	*290*	*50*	*686*	*2,278*
Project Variant								
Build	1	March 2018	40	10	869	50	692	955
	2	June 2020	30	490	132	0	25	721
RPD	RPD	January 2019	24	0	15	0	6*	597
Total	-	-	-	*500*	*1,015*	*50*	*723*	*2,272*

Notes:
* indicates parking would be outdoor surface parking

Construction phasing is presented in **Figure 2E** and **Figure 2F.**

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LEGEND

- PROJECT SITE BOUNDARY
- AREA BEING CONSTRUCTED
- **TEMPORARY ACCESS & AREA FOR CONSTRUCTION ACTIVITIES:** CLEAR & GRUB, EXCAVATION & ROUGH GRADING, SOIL MANAGEMENT, LAYDOWN, STAGING, ACCESS, TEMPORARY FACILITIES, TEMPORARY ROADS & VEHICULAR ACCESS
- BUILDINGS
- UTILITIES

Figure 2E

Construction - Phase 1

LEGEND

PROJECT SITE BOUNDARY

TEMPORARY ACCESS & AREA UNDER CONSTRUCTION:
CLEAR & GRUB, EXCAVATION & ROUGH GRADING, SOIL MANAGEMENT, LAYDOWN, STAGING, ACCESS, TEMPORARY FACILITIES, TEMPORARY ROADS & VEHICULAR ACCESS, BUILD OUT

BUILDINGS

UTILITIES

CONSTRUCTED BUILDINGS (MAJOR PHASE 1)

Figure 2F
Construction - Phase 2

1.2.3 Roadway Network Changes

Roadway network changes would be the same for both the Proposed Project and Project Variant, as explained below.

1.2.3.1 Internal to Project Site

Build Property: 700 Innes Avenue

Vehicular access to/from 700 Innes Avenue would be via Innes Avenue at either Griffith Street, Arelious Walker Drive, or Earl Street. Griffith Street would be a new residential street that would extend north of Innes Avenue into the Project Site. Arelious Walker Drive and Earl Street would be modified to become neighborhood commercial streets within the site.

The Project proposes two new streets in addition to Griffith Street: New Hudson Avenue would replace the existing unpaved Hudson Avenue[2] and would extend east-west connecting Griffith Street, Arelious Walker Drive, and Earl Street; and a new shared public way loop road would be constructed off of New Hudson Avenue. This loop would be named Beach Lane, Fairfax Lane, and Spring Lane. This street would consist of a single shared paved surface with no curbs or gutters[3] and it would have limited vehicular traffic and be designed to afford pedestrians priority over automobiles. Automobiles could access it from the adjoining streets by a curb cut similar to a typical driveway. All internal streets would be public streets.

Garage access would be provided on New Hudson Avenue, Arelious Walker Drive, Earl Street, Beach Lane, and Spring Lane. The garage access would be the same for the Proposed Project and Project Variant.

RPD Property - 900 Innes, India Basin Shoreline Park, and India Basin Open Space

Vehicular access to the India Basin Shoreline Park property would continue to be provided via Hunters Point Boulevard at Hawes Street. Hawes Street would be retained as the sole automobile access point to the park.

The existing vehicular right of way (ROW) on the western edge of the property, at Hudson Avenue, is proposed to be removed but would be maintained to provide vehicular access to the privately owned properties across Hudson Avenue, outside of the project site boundary, unless alternative access to these properties from Hunters Point Boulevard or Innes Avenue is feasible and would not create unacceptable conflicts between vehicles, cyclists and pedestrians. The Recreation and Parks Department will consider maintaining public access on Hudson Avenue to facilitate adjoining development that would activate and complement the park frontage. Emergency-vehicle access to the 900 Innes property would be permitted on the Class I bikeway, a separated right-of-way for the exclusive use of cyclists that would be constructed along the current alignment of Hudson Avenue adjacent to the 900 Innes property. This bikeway is explained in more detail in Section 1.2.6.

Table 1-4 summarizes characteristics of the streets within and adjacent to the Project.

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[2] The existing Hudson Avenue is a paper street, which is unpaved and operates as access to parking at the rear of the local buildings.

[3] Final designs would be subject to approval by the San Francisco Municipal Transportation Agency (SFMTA), San Francisco Fire Department, and the Department of Public Works to ensure that the streets are designed consistent with City policies and design standards.

TABLE 1-4: PROJECT SITE STREET TYPE AND RIGHT-OF-WAY (ROW) WIDTH					
Street	**Extent**	**Street Type**	**Travel Lanes**	**Travel Lane Width**	**Overall Right of Way**
Griffith Street	Innes Avenue to New Hudson Avenue	Neighborhood Commercial Street	2	13′	65′
Arelious Walker Drive	Innes Avenue to New Hudson Avenue	Neighborhood Commercial Street	2	13′	78′-2″
Earl Street	Innes Avenue to New Hudson Avenue	Neighborhood Commercial Street	2	11′-6″	46′-4″
New Hudson Avenue	Griffith Street to Earl Street	Neighborhood Commercial Street	2	10′	65′
Spring Lane	New Hudson Avenue to Fairfax Lane	Shared Public Way	2	10′	41′
Beach Lane	New Hudson Avenue to Fairfax Lane	Shared Public Way	2	10′	41′
Fairfax Lane	Spring Lane to Beach Lane	Shared Public Way	2	10′	41′
Hawes Street	Hunters Point Boulevard to San Francisco Bay	Parkway	2	~10′	25′

Source*:* India Basin Design Guidelines and Standards Draft, January 30, 2017.

1.2.3.2 External to Project Site

The following five intersections would be signalized as part of the Proposed Project:

- Hunters Point Boulevard/Hudson Avenue/Hawes Street
- Hunters Point Boulevard/Innes Avenue
- Innes Avenue/Griffith Street
- Innes Avenue/Arelious Walker Drive
- Innes Avenue/Earl Street

Design and construction of proposed signals would be subject to final review and approval of the city traffic engineer.

Eastbound left-turn lanes will be added along Innes Avenue at the three intersections adjacent to the Project Site to accommodate vehicle traffic entering the site:

- Innes Avenue/Griffith Street (170 feet long)
- Innes Avenue/Arelious Walker Drive (310 feet long)
- Innes Avenue/Earl Street (270 feet long)

In addition, the Project Sponsors would provide funding to the SFMTA for implementation of a transit only lane in each direction from the intersection of Hunters Point Boulevard/Evans Street/Jennings Street to the intersection of Donahue Street and Robinson Street should the SFMTA choose to implement the transit only lane at the time of the various improvements described above.

FivePoint (formerly, Lennar Urban) is obligated to reconstruct Evans Avenue, Hunters Point Boulevard, and Innes Avenue between Jennings Street and Donahue Way, as a condition of the Shipyard development. The City is currently undergoing a planning process to finalize the design of this street. The Proposed Project's external roadway improvements listed above are intended to be compatible with the ultimate configuration of Innes Avenue constructed by FivePoint as part of their obligations.

All internal and external streetscape improvements are subject to change per review by SFMTA, Department of Public Works, and the Fire Department. If changes occur, those changes will be subject to further review.

Vehicle access is illustrated in **Figure 2G**.

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LEGEND

RESIDENTIAL/ COMMERCIAL/ OPEN SPACE STREET ACCESS (PUBLIC STREET)

GARAGE ENTRANCE

Note: Innes Avenue is being studied under a separate Transportation Corridor Study. Bus stop, pedestrian crossings, and traffic light locations are preliminary.

Figure 2G

Proposed Project Roadway Network

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1.2.4 Transit Changes

The area surrounding the Proposed Project is slated for substantial additional transit service improvements not specifically tied to the Proposed Project. This section only discusses the specific transit elements included in the Proposed Project. Transit changes would be the same for both the Proposed Project and Project Variant, as explained below.

The Proposed Project would add physical elements to bus stops along Hunters Point Boulevard and Innes Avenue adjacent to the Project Site. The new elements may include amenities such as shelters and signs. However, the final locations of transit stops would be determined by SFMTA at a future date pursuant to their location guidance[4] and taking into account boarding/alighting demand and areas with higher activity and denser population. For the purposes of this study, eastbound and westbound bus stops were assumed at Hunters Point Boulevard/Hawes Street/Hudson Avenue, Hunters Point Boulevard/Innes Avenue, Innes Avenue/Griffith Street, Innes Avenue/Arelious Walker Street, and Innes Avenue/Earl Street. Proposed transit changes are shown in **Figure 2H**. Minor changes to the ultimate locations of these stops would not substantially alter the analysis or conclusions in this study.

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[4] SFMTA guidelines state that bus stops should be placed 800 to 1,360 feet apart on grades less than or equal to 10% and as close as 500 feet on grades over 10%. Rapid and Specialized stops are spaced on a case-by-case basis. Other metrics used include boarding/alighting demand, population density, and general intersection activity.

LEGEND

- PLANNED HPX
- EXISTING 19 POLK AND PLANNED 44 O'SHAUGHNESSY AND 48 QUINTARA-24TH ST
- POTENIAL* BUS STOP LOCATIONS
  Final locations of transit stops would be determined by SFMTA at a future date

Figure 2H

Proposed Transit Access

1.2.5 Pedestrian Circulation Changes

Pedestrian circulation changes would be the same for both the Proposed Project and Project Variant, as explained below.

1.2.5.1 Internal to Project Site

Build Property: 700 Innes Avenue

A new pedestrian network would be created throughout the Project Site. Sidewalks along Griffith Street, Arelious Walker Drive, Earl Street, and New Hudson Avenue would provide the primary pedestrian access to and through the Project Site. Mid-block pedestrian access from Innes Avenue would also be created via new pathways between Griffith Street and Arelious Walker Street and between Arelious Walker Street and Earl Street. All pathways and sidewalks would comply with Better Streets Plan.

The shared use bicycle and pedestrian path around the Spring Lane/Beach Lane/Fairfax Lane loop would provide pedestrian access to the residential uses along these streets. All internal site roadways would have continuous sidewalks.

An additional network of trails and shared use paths would be constructed to the Big Green open space within the Build property. The pedestrian paths would provide access to the Bay Trail, India Basin Shoreline Park, and Northside Park.

Curb extensions would be constructed at locations on corners and mid-block locations, where compatible with turning movement requirements and emergency vehicle access, as determined by SFMTA. New crosswalks are included at all internal intersections as part of the Proposed Project. Proposed pedestrian circulation within the Build property is illustrated in. **Figure 2J**.

RPD Property - 900 Innes, India Basin Shoreline Park, and India Basin Open Space

RPD proposes to make pedestrian circulation changes on RPD property which includes a network of off-street shared bicycle/pedestrian paths and pedestrian-only paths and trails through the India Basin Shoreline Park which would connect to the 700 Innes site and to existing facilities along Innes Avenue. Shared use paths would be constructed to the Big Green open space within the Project Site on the RPD Property. The pedestrian paths would provide access to the Bay Trail, India Basin Shoreline Park, and Northside Park. Proposed pedestrian circulation within the RPD property is illustrated in **Figure 2I**. A continuous sidewalk would not be provided along the full length of Hawes Street within the RPD Property, although the pedestrian pathway would run adjacent to the part of Hawes Street with on-street parking, providing access to/from parked vehicles.

Internal site roadways' proposed sidewalk widths are listed in **Table 1-5**.

TABLE 1-5: PROPOSED INTERNAL STREET SIDEWALK WIDTHS					
	Better Streets Plan			Proposed Project	
Street	Street Type	Minimum Sidewalk Width	Recommended Sidewalk Width	Sidewalk Width[1]	Sidewalk Throughway Width
Griffith Street	Neighborhood Commercial Street	12′	15′	13′-15′	5′-9′[2]
Arelious Walker Drive	Neighborhood Commercial Street	12′	15′	22-23′	9′-16′
Earl Street[2]	Neighborhood Commercial Street	12′	15′	15′	9′
New Hudson Avenue	Neighborhood Commercial Street	12′	15′	15′	9′
Spring Lane	Shared Public Way	N/A	N/A	6.5′-9′	6′-6.5′
Beach Lane	Shared Public Way	N/A	N/A	6.5′-9′	6′-6.5′
Fairfax Lane	Shared Public Way	N/A	N/A	6.5′-9′	6′-6.5′
Hawes Street	Parkway	12′	17′	N/A[3]	N/A[3]

Notes:
1. Sidewalk widths include buffer zones, pedestrian throughway, plantings, and furnishings.
2. Earl Street sidewalk widths presented are for the west side of the street. The east side of Earl Street is adjacent to Northside Park and the sidewalk widths are yet to be finalized in coordination with FivePoint who is redeveloping Northside Park. These sidewalks would be designed to comply with Better Streets Plan.
3. A continuous sidewalk would not be provided along the full length of Hawes Street within the RPD Property, although the pedestrian pathway would run adjacent to the part of Hawes Street with on-street parking, providing access to/from parked vehicles.

Source: India Basin Design Guidelines and Standards Draft, June 23, 2017.

1.2.5.2 External to Project Site

The Project Sponsor would construct a continuous sidewalk on Hunters Point Boulevard and Innes Avenue along their project frontage (i.e. the north, or bay, side of the street only). While the sidewalk design would be finalized at a later date in coordination with SFMTA, Planning Department, FivePoint, DPW, and others, it would be constructed in a manner consistent with the Better Streets Plan.

As part of the signalization of Hunters Point Boulevard/Hudson Avenue/Hawes Street, crosswalks will be constructed on the west (i.e. across Hawes Street) and north and south (i.e. across Hunters Point Boulevard) approaches. As part of the signalization of Hunters Point Boulevard/Innes Avenue, crosswalks would be installed on the north (i.e. across Hunters Point Boulevard) and south (i.e. across Innes Avenue) approaches. As part of their signalization, crosswalks would be installed on all approaches except the west leg at the intersections of Innes Avenue with Griffith Street, Arelious Walker Street, and Earl Street. Some intersection approaches would not have crosswalks in order to reduce vehicular congestion into and out of the Project Site.

Figure 2I

Proposed RPD Property Pedestrian Network

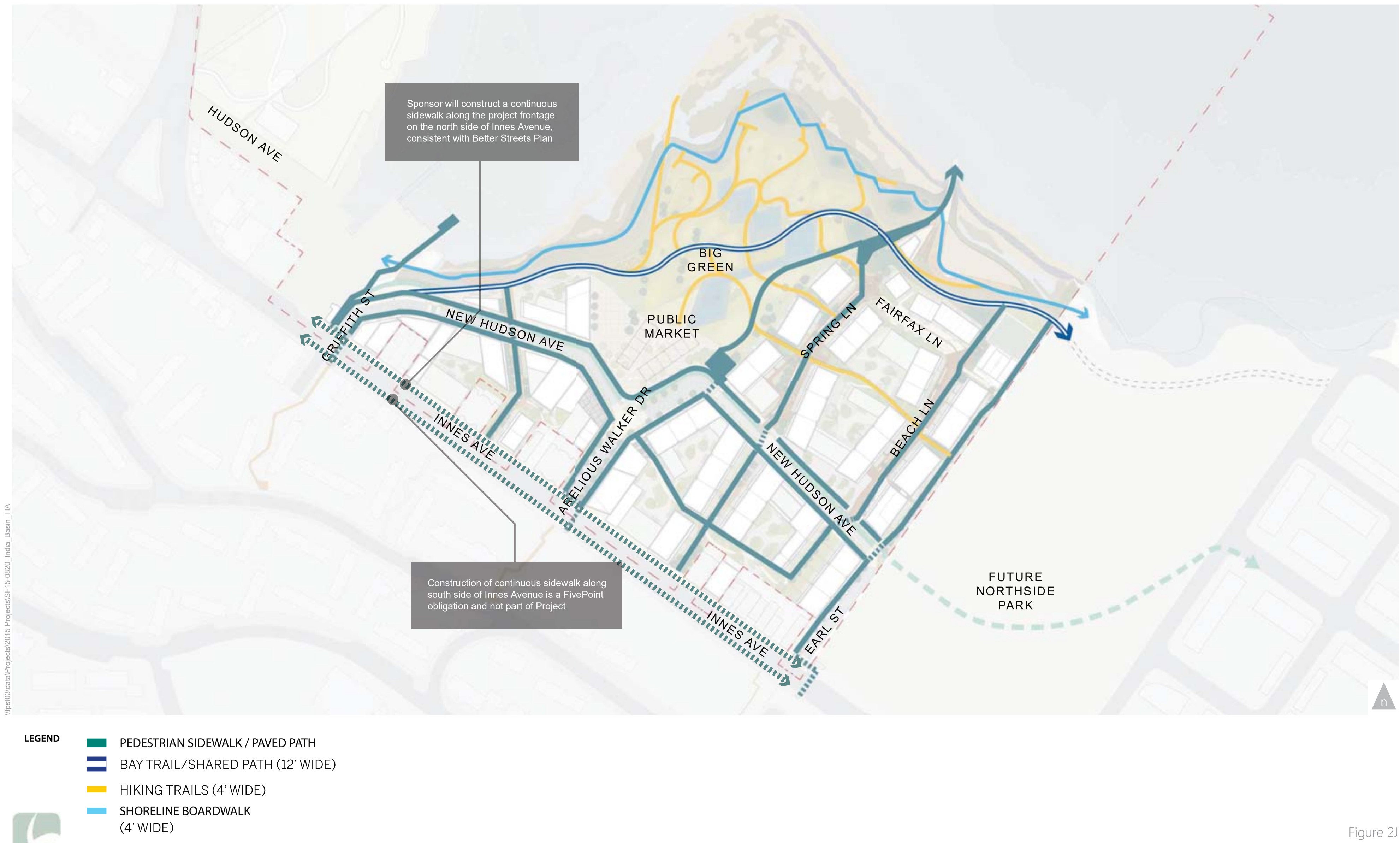


Figure 2J

Proposed Build Property Pedestrian Network

1.2.6 Bicycle Circulation Changes

Bicycle circulation changes would be the same for both the Proposed Project and Project Variant, as explained below.

As part of the Proposed Project, a new Class I bicycle corridor (i.e., cycle track) would be constructed parallel with, and to the north of, Innes Avenue, along Hudson Avenue and New Hudson Avenue connecting to Northside Park. Given that this Class I bicycle facility would be provided on Hudson Avenue and New Hudson Avenue, no bicycle facility is planned for Hunters Point Boulevard between Hawes Street and Innes Avenue nor for Innes Avenue between Hunters Point Boulevard and Earl Street. The existing Class II bicycle facility (i.e. standard bicycle lanes) on Hunters Point Boulevard between Hudson Avenue and Innes Avenue would be removed and the facility relocated to the new Class I facility. The Proposed Project would relocate any future bicycle facility along Innes Avenue between Hunters Point Boulevard and Earl Street to the new Class I facility. A Class I multi-use path would be constructed on Earl's Path, which is a north-south path that extends north from the intersection of New Hudson Avenue/Earl Street. This path would be for pedestrians and bicyclists only. Additionally, Class III shared lane markings (sharrows) would be painted along Earl Street between New Hudson Avenue and Innes Avenue.

The new Class I facility would connect India Basin with an extensive bicycle network approved within the Hunters Point Shipyard site to the east and the Blue Greenway (a planned 13-mile network of parks and trails around the waterfront of southeastern San Francisco) to the west, closing a gap link in the plans for a continuous bicycle facility from Candlestick Point and Hunters Point Shipyard along the waterfront to Downtown San Francisco. Recreational paths connecting the on-site bike route to the Bay Trail, Northside Park, and India Basin Shoreline Park would be constructed.

The Proposed Project would ensure a continuous bicycle connection from any future facility on Hunters Point Boulevard to the Class I bicycle corridor within the Project Site. The western terminus of the planned bicycle facility within the Project Site is at the intersection of Hudson Avenue/Hawes Street/Hunters Point Boulevard. Should a Class II bicycle lane be present on southbound Hunters Point Boulevard, a connection would be constructed for cyclists making left turns at the multi-lane intersection of Hunters Point Boulevard/Hudson Avenue (signalized as part of the Proposed Project) from the bike lane on southbound Hunters Point Boulevard to the Class I facility on Hudson Avenue. Design and construction of this facility would be subject to final review and approval of the City Traffic Engineer. This may include one of the following two designs:

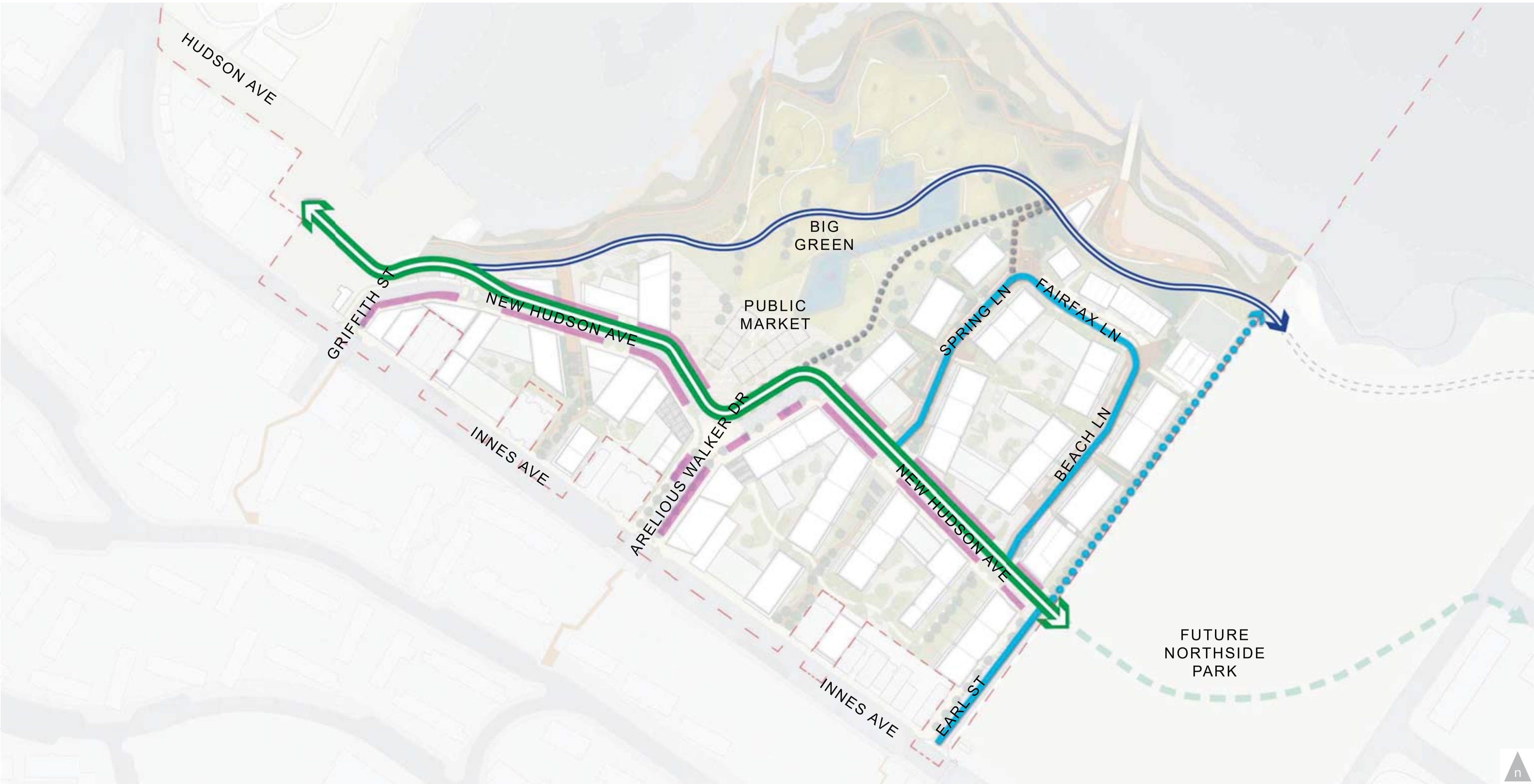
- installation of bicyclist signal heads, bicycle left-turn lane, and an accompanying dedicated signal phase for the maneuver; or,
- installation of a two-stage turn queue box at the far side of the intersection; which is a space where cyclists can wait more safely prior to completing the maneuver in a location visible to other road users.

On-street Class II bicycle parking would be installed along select locations on the north side of Innes Avenue where setbacks to the buildings would result in adequate space to accommodate the bicycle parking. These locations have not yet been determined. This bicycle parking would comply with SFMTA Rack Placement Guidelines.

The proposed bicycle circulation is illustrated in **Figure 2K** and **Figure 2L**.

Figure 2K

Proposed RPD Property Bicycle Network



LEGEND

- CLASS I BIKEWAY (2 WAY, 12' WIDE)
- BAY TRAIL (12' WIDE)
- MINOR SHARED PATH
- CLASS III BIKEWAY (SHARROW)
- SHARED USE PEDESTRIAN/ BICYCLE PATH
- BIKE PARKING- WITHIN FURNISHING ZONE

Figure 2L

Proposed Build Property Bicycle Network

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1.2.7 Loading Supply

The Proposed Project would provide a total of 21 loading zones, while the Project Variant would provide a total of 30 loading zones, as described below.

1.2.7.1 Build Property: 700 Innes Avenue

Off-street Loading – The Proposed Project would include 14 off-street loading spaces, distributed across the four proposed off-street parking garages. Each space would be at least 35 feet long and 12 feet wide to meet the dimension requirements set by the Planning Code.

The Project Variant would include 23 off-street loading spaces, distributed across the four proposed off-street parking garages. Each space would be at least 35 feet long and 12 feet wide to meet the dimension requirements set by the Planning Code.

Individual loading spaces may not be assigned to particular uses; therefore, these spaces would be shared across uses. In general, retail uses should have one loading zone per every 25,000 square feet of gross leasable area except in locations with shared loading facilities where sufficient on-street loading facilities are available. Commercial uses would have one to three nearby off-street loading spaces. Where subterranean service delivery loading is provided, it would be provided in the first subterranean level of basement parking. To minimize conflicts with pedestrians and bicyclists, the number of loading access points per building would be minimized, which would minimize curb cuts. Pedestrian movement would be prioritized at curb cuts by including a continuous material treatment extending from the sidewalk or pedestrian path over the vehicular path that makes clear the pedestrian right-of-way at these locations. Exterior loading docks would be avoided, and commercial loading entries would be located at least 60 feet from the corner of an intersection. Waste collection would occur outside of the public right-of-way, minimizing conflicts with the Project Site walkways.

On-street Loading – Both the Proposed Project and the Project Variant would include four on-street loading zones: one space located on Earl Street, two spaces on Fairfax Lane, and one space on Arelious Walker Drive. The on-street loading zones would be used for both passenger pick-up and drop-off or temporary commercial loading (e.g., mail package delivery) and would be 20-30 feet in length. Most would be dual-use zones, although in the heavier retail areas there would be some dedicated loading zones for each use; this level of distinction would be decided at a later stage in the design process, although for the purposes of this study each is assumed to be a dual-use zone. The loading zones would be located close to building entrances in order to facilitate short loading times.

An additional passenger loading zone would be provided adjacent to the school to facilitate student pick-up and drop-off, as illustrated in **Figure 2D**. This conceptual plan includes a loading zone on the west side of Earl Street between Innes Avenue and New Hudson Avenue. Loading zone size, design, and location would be further developed and reviewed for safety by the SFMTA before being finalized.

1.2.7.2 RPD Property: 900 Innes, India Basin Shoreline Park, and India Basin Open Space

Two loading zones would be included for access to the RPD Property: one on-street on the east side of Hunters Point Boulevard, to the immediate north of the Hunters Point Boulevard/Hawes Street/Hudson Avenue intersection, and one on-street on the north side of Innes Street, to the west of the intersection with Griffith Street, and adjacent to the Overlook Building. These loading zones would be located near the main picnic and gathering areas.

Final design and placement of loading spaces would be determined by the Proposed Project's final development design proposals. Loading zone locations are shown in **Figure 2M** and **Figure 2N**.

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LEGEND

PROJECT SITE BOUNDARY

PARKING GARAGES BELOW

30 FT ON STREET LOADING ZONES

GARAGE ENTRANCE

Figure 2M

Proposed Project Loading Plan

LEGEND

- PROJECT SITE BOUNDARY
- PARKING GARAGES BELOW
- 30 FT ON STREET LOADING ZONES
- GARAGE ENTRANCE

Figure 2N

Maximum Commercial Variant Loading Plan

1.2.8 Parking Supply

While on-street parking supply between the Proposed Project and Project Variant would be the same, off-street parking supply differs, as explained below.

1.2.8.1 Internal to Project Site

Build Property: 700 Innes Avenue

Off-street parking would be provided in three parking garages: Cove Parking Garage (two floors), Hillside Parking Garage (three floors), and Flats Parking Garage (two floors). Cove Parking Garage would have one driveway on New Hudson Avenue. Hillside Parking Garage would have a driveway on Arelious Walker Drive north of New Hudson Avenue and a driveway on Earl Street. Flats Parking Garage would have a driveway on Spring Lane and a driveway on Beach Lane. The school site parking would be provided within the Hillside Parking Garage.

The Proposed Project would provide a total of 1,800 off-street parking spaces, including 570 public parking spaces and 1,230 private parking spaces. The Project Variant would provide a total of 1,912 parking spaces, including 1,412 public parking spaces and 500 private parking spaces. The proposed off-street parking configuration for the Proposed Project is shown in **Figure 2Q**. The proposed off-street parking configuration for the Project Variant is shown in **Figure 2R**.

Both the Proposed Project and Project Variant would include a total of 20 on-street parking spaces within the Project Site, on the west side of Arelious Walker Drive and the west side of Earl Street. This is a decrease of 75 from the 95 existing on-street spaces within the Build property (all on Arelious Walker Drive). The proposed on-street parking configuration for the Proposed Project and Project Variant as the same and are shown in **Figure 2S**.

RPD Property - 900 Innes, India Basin Shoreline Park, and India Basin Open Space

Within the RPD open space property, the existing on-street parking on the India Basin Shoreline Park parcel would be modified to feature 12 parallel parking spaces along Hawes Street and 13 head-in parking spaces at the remodeled turnaround, for a total of 25 parking spaces (an increase of seven from the 18 existing spaces). The RPD open space parking plan is shown in **Figure 2P**.

No parking is proposed for the 900 Innes or India Basin Open Space parcels. However, members of the public who wish to drive to access these parcels could either use paid public parking available in the Build property off-street parking garages, or on-street parking. Adequate pedestrian thoroughfares are proposed to connect the pedestrian garage entries/exits to parks and open spaces throughout the Proposed Project.

Proposed parking supply is summarized in **Table 1-6**.

TABLE 1-6: PROPOSED PARKING SUPPLY

Name	Proposed Project			Project Variant		
	Public Spaces	Private Spaces	Total	Public Spaces	Private Spaces	Total
Build Property						
Cove Parking Garage	142	239	381	356	46	403
Flats Parking Garage	10	290	300	10	318	328
Hillside Parking Garage	418	701	1,119	1,046	136	1,181
Subtotal Off-Street	*570*	*1,230*	*1,800*	*1,412*	*500*	*1,912*
Subtotal On-Street	*20*	*-*	*20*	*20*	*-*	*20*
Total	*590*	*1,230*	*1,820*	*1,432*	*500*	*1,932*
RPD Property						
Total (On-Street)	*25*	*-*	*25*	*25*	*-*	*25*
Overall						
Grand Total	*615*	*1,230*	*1,845*	*1,457*	*500*	*1,957*

1.2.8.2 External to Project Site

The construction of the three eastbound left-turn pockets would result in the elimination of a total of 36 parking spaces on the north side of Innes Avenue as follows: four between Hunters Point Boulevard and Griffith Street, 10 between Griffith Street and Arelious Walker Street, nine between Arelious Walker Street and Earl Street, and 13 between Earl Street and Donahue Street. The parking removal between Earl Street and Donahue Street would be necessary to enable the travel lanes to line up with the new lane alignments west of Earl Street.

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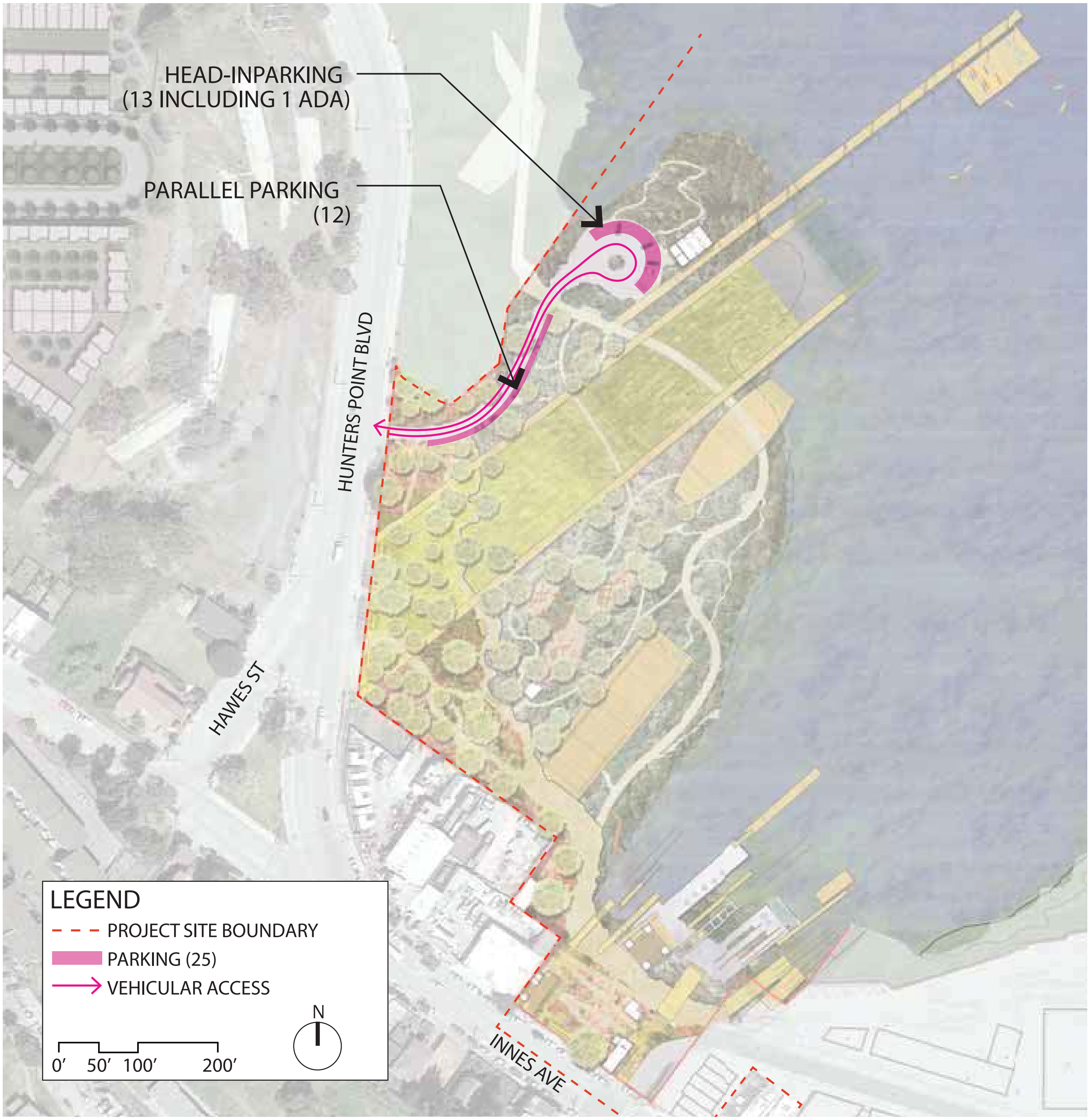

Figure 2P

Proposed RPD Property Parking Plan

COVE PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B2	114	0	114
B3	28	239	267
TOTAL	142	239	381

HILLSIDE PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B1	293	0	293
B2	124	305	429
B3	0	396	396
TOTAL	418	701	1119

FLATS PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B1	10	143	153
B2	0	147	147
TOTAL	10	290	300

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LEGEND

- PROJECT SITE BOUNDARY
- PARKING GARAGES
- GARAGE ENTRANCE

Figure 2Q

Proposed Project (Build Property) Parking Plan - Off-street

COVE PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B2	121	0	121
B3	236	46	282
TOTAL	356	46	403

HILLSIDE PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B1	310	0	310
B2	453	0	453
B3	282	136	418
TOTAL	1046	136	1181

FLATS PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B1	10	157	167
B2	0	161	161
TOTAL	10	318	328

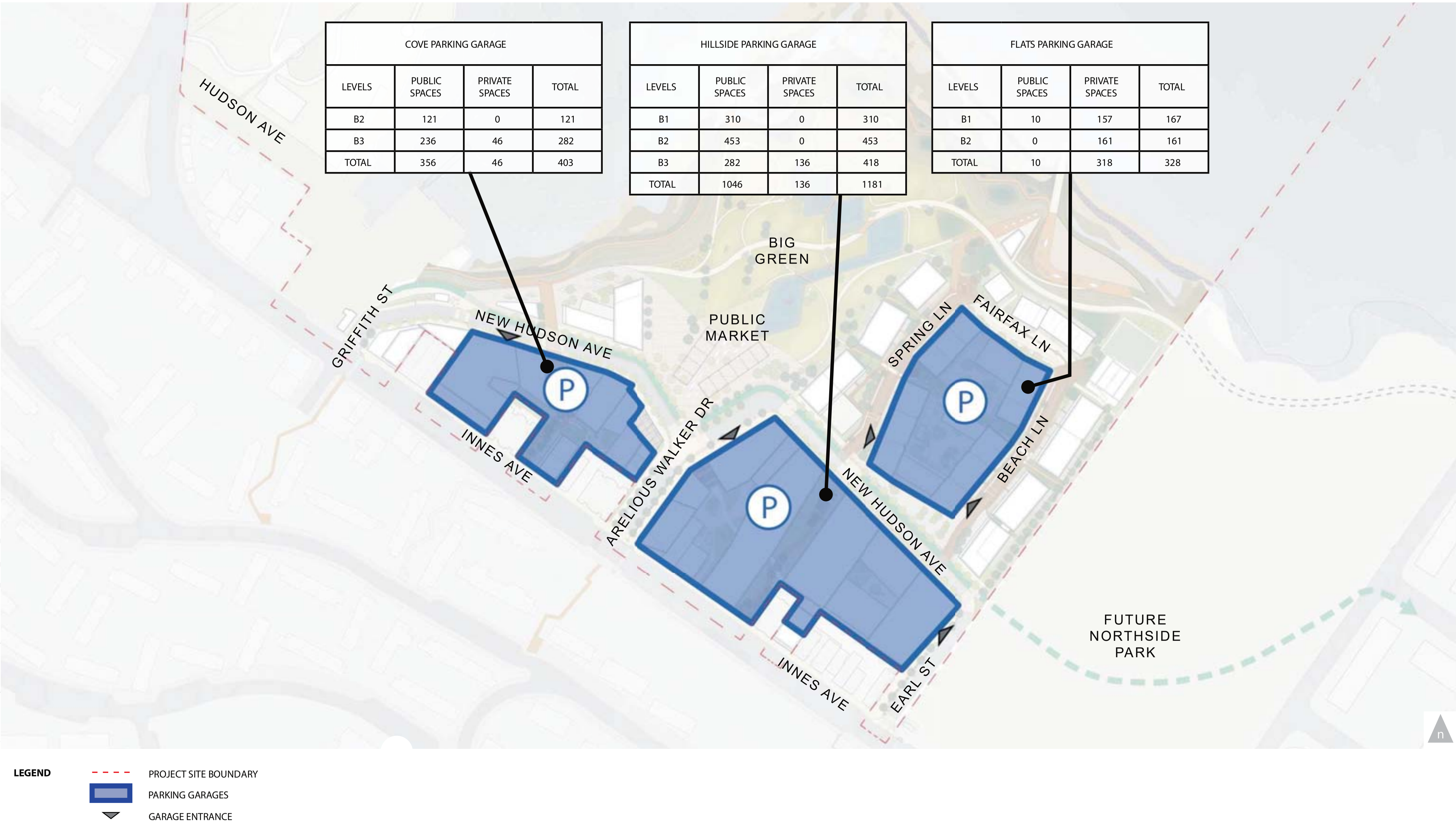

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Figure 2R

Maximum Commercial Variant (Build Property) Parking Plan - Off-street

LEGEND

PROJECT SITE BOUNDARY

ON-STREET PARKING

TOTAL ON-STREET PARKING PROVIDED:
20 SPACES

Figure 2S

Project Parking Plan (Build Property) - On-street

1.2.9 Transportation Demand Management (TDM)

The Project would include a TDM Plan that provides a comprehensive strategy to manage the transportation demand created by the Project. The TDM Plan would be the same for both the Proposed Project and Project Variant, as explained below.

This section provides a prospective outline of the TDM Plan for the Project. The details of the TDM Plan would be finalized through discussions between Build, SFMTA, Planning, and Office of Economic and Workforce Development (OEWD) as part of the Development Agreement. While the TDM Plan would be finalized in a separate process, the differences are not expected to affect the conclusions in this TIS. As is the case for other elements of the project description that may affect travel patterns, such as parking supply the Class I bicycle facility, availability of bike parking, and the pedestrian network, the TDM measures listed below are not accounted for in the project vehicle trip generation, project mode split, or project VMT calculation. This is a conservative assumption because each of these elements would reduce automobile travel beyond the levels of travel estimated in this study. The levels of travel presented in this study are estimated using the SF Guidelines, which does not consistently factor elements such as these in its approach as it is based on a generalized data set.

Administration of the TDM Plan and funding of the below measures would be the responsibility of the Property Manager, who must also comply with all reporting and monitoring requirements.

The TDM Plan would include the following measures to reduce single occupancy vehicles and encourage transit and non-motorized modes of travel:

- **Active Transportation Measures**
  - Improve Walking Conditions: provide streetscape improvements, such as sidewalk furniture, curb ramps, or additional sidewalk space, to encourage walking. All facilities that are part of the Proposed Project and Project Variant would comply with Better Streets Plan standards for the pedestrian environment.
  - Bicycle Parking: provide secure bicycle parking in the form of bicycle lockers or racks located within the project in an indoor space. The Proposed Project would provide 1,343 Class I bicycle parking spaces (such as bike lockers, or secure bike rooms), and 163 Class II bicycle parking spaces (traditional, publicly accessible bicycle racks). The Project Variant would provide 745 Class I bicycle parking spaces and 164 Class II bicycle parking spaces.
  - Showers and Lockers: provide on-site showers and lockers. At least one shower facility, and at least one locker location would be provided per commercial building.
  - Bike Share Membership: provide bike share memberships for all residents and employees.
  - Bicycle Repair Stations: provide on-site tools and space for bicycle repair. Bicycle repair stations would be provided in convenient locations for cyclists using the cross-site cycle track.
  - Bicycle Maintenance: Provide maintenance services to residents either through an on-call mechanic or vouchers to a local shop.
  - Fleet of Bicycles: Provide an on-site fleet of bicycles for residents, employees, and/or guests to use if there is no bike share station on-site. These bicycles may be owned and managed by the property manager or by an individual employer, and made available on a temporary basis for short trips.
  - Temporary Bicycle Valet Parking: Provide monitored bicycle parking for 20 percent of total guests for larger events taking place at the Open Space.

- **Carshare Measure**
  - Carshare Parking: Provide carshare parking: parking spaces would be reserved for carshare vehicles in each off-street garage at a number that meets code requirements, in locations of high convenience for residents. Signage would be installed to direct individuals to carshare access locations.
- **Delivery Measures**
  - Delivery Supportive Amenities: facilitate deliveries with a staffed reception desk, lockers, or other accommodation in every building.
  - Provide Delivery Services: Provide delivery of products (e.g., groceries) or services (e.g., dry cleaning). This measure may be provided through contracting with individual service providers.
- **Family Measures**
  - Family TDM Amenities: provide storage for car seats near carshare parking, cargo bikes, and shopping carts.
  - On-Site Childcare: provide on-site childcare services. At least one on-site childcare facility would be provided within the project.
- **Information and Communication Measures**
  - Multi-modal Wayfinding Signage: provide directional signage for locating transportation services (including shuttle stops) and amenities (bicycle parking and carshare parking).
  - Real Time Transportation Information Displays: large screen or monitor that displays, at a minimum, transit arrival and departure information.
  - Tailored Transportation: provide residents and employees with information about travel options, generally as part of a welcome packet. This may include information on local transit services, carpool matching tools, benefits provided through the TDM plan, and facilities available to support transit or active transport use.
- **Land Use Measures**
  - Healthy Food Retail in Underserved Area: The project includes a supermarket, as well as restaurant and café space, all of which are available to residents of neighboring communities. There are currently no supermarkets or grocery stores in the vicinity of the Project Site; the nearest full-service grocery store is located on Third Street, approximately 1.5 miles to the west.[5]
  - On-Site Affordable Housing: Up to 12 percent of the dwelling units in the project are designated as affordable.
- **Parking Management Measures**
  - Unbundle Parking: separating the cost of parking from the cost of rent, lease, or ownership.

The TDM checklist is included in **Appendix C**.

[5] The USDA defines what's considered a food desert and which areas will be helped by this initiative: To qualify as a "low-access community," at least 500 people and/or at least 33 percent of the census tract's population must reside more than one mile from a supermarket or large grocery store (for rural census tracts, the distance is more than 10 miles). Source: American Nutrition Association, *Nutrition Digest Volume 38, No. 2*. Accessed from: http://americannutritionassociation.org/newsletter/usda-defines-food-deserts

1.3 REPORT ORGANIZATION

The remainder of this report is divided into the following chapters:

Chapter 2 – Existing Conditions describes the operating conditions of the existing transportation network in the project vicinity, including the surrounding roadway network, weekday AM and PM peak hour traffic volumes, and intersection operations. Additionally, this section describes the public transit network, bicycle facilities, pedestrian facilities, existing loading operations, and emergency service activity and access. A discussion of current off-street and on-street parking conditions is also included.

Chapter 3 – Baseline Conditions describes the land uses, streetscape changes, and transit service changes expected to be in place upon construction of the Proposed Project, and include the associated amount of automobile activity and transit demand that would be added to the existing conditions network as part of these changes.

Chapter 4 – Travel Demand Analysis includes the Proposed Project's trip generation, trip distribution, mode split, and trip assignment forecasts, as well as parking, loading, and construction travel demand.

Chapter 5 – Project Impact Analysis describes the anticipated operating conditions of the transportation network with the Proposed Project in place, and identifies the extent to which the Project would impact the transportation network. Chapter 5 discusses the transportation network under the Baseline Plus Proposed Project Conditions for both the Proposed Project and Project Variant. Operations of the transportation network after the addition of the travel demand from the project are described, including the project's impacts on vehicle-miles traveled (VMT), transit, bicycles, pedestrians, loading, emergency vehicles, school site access, parking, and the potential impacts of the project construction on the transportation network.

Chapter 6 – Cumulative Conditions describes the anticipated operating conditions of the transportation network in Cumulative Conditions with traffic associated with the Proposed Project and other reasonably foreseeable development projects. Future year 2040 traffic analysis utilizes the traffic forecasts from most recent version of the City's travel demand forecasting model, as developed for the Central SoMa Plan, with no additional model runs required for this study.

Chapter 7 – Intersection Operations Analysis describes traffic operations for existing, baseline, and Cumulative scenarios. Improvement measures are provided to increase motor vehicle mobility.

Chapter 8 – Mitigation and Improvement Measures summarizes all of the mitigation measures and improvement measures contained in the report.

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2 EXISTING CONDITIONS

This chapter provides a description of the existing transportation and circulation setting within the vicinity of the Proposed Project. This section includes descriptions of the existing roadway network, intersection operating conditions, transit network and service, pedestrian conditions, and bicycle conditions near the Project Site, on-street loading and emergency access, and existing on-street parking supply and occupancy.

2.1 ELEMENTS OF ANALYSIS

The study examines existing facilities and conditions related to the following transportation elements:

- **Vehicle Miles Traveled (VMT) Conditions** – Estimated vehicle-miles traveled by land use type for the Transportation Analysis Zone (TAZ) in which the Proposed Project is located as well as the nine-county San Francisco Bay Area regional average VMT by land use type;

- **Traffic Hazards Conditions** – traffic volumes including areas of congestion in the immediate vicinity of the Project Site;

- **Transit Conditions** – Muni operations within ¼ mile of the site, Muni screenlines into the Downtown business district, line-by-line analysis of nearby Muni service, regional transit providers, and linkages to BART, Caltrain, and Muni light rail service;

- **Pedestrian and Bicycle Conditions** – operations along facilities within and adjacent to the Project Site;

- **Loading and Emergency Service Conditions** – operations within and adjacent to the Project Site; and

- **Parking Conditions** – characterization of supply and demand near the Project Site.

2.2 ROADWAY FACILITIES

This section describes the local and regional roadway system in the vicinity of the Project Site. Roadway classification definitions, according to the Transportation Element of the San Francisco General Plan, are contained in **Appendix D** of this report. Local access roadway descriptions also indicate the corresponding roadway designation and direction, number of travel lanes, and number of parking or bicycle lanes, where present.

2.2.1 Regional Access

Regional access to the Project Site is provided by U.S. Highway 101 (US 101) and Interstate 280 (I-280). Both of these regional freeways are located to the west of the Project Site.

U.S. Highway 101 (US 101) provides access to the north and south of the Project Site. US 101 connects to Marin County and the North Bay via the Golden Gate Bridge and continues south to San Jose. US 101 connects with I-80 and the San Francisco–Oakland Bay Bridge to the north of the Project Site. Vehicles traveling along US 101 to or from north of the Proposed Project would enter or exit the highway at Exit 432 at Cesar Chavez Street, about 2.5 miles northwest of the Project Site. Vehicles traveling along US 101 to or from south of the Proposed Project would enter or exit the highway at Exit 429 at Jamestown Avenue, 2.2 miles southwest of the Project Site.

Interstate 280 (I-280) provides regional access to the Project Site from the South Bay and Peninsula. The interstate's northern terminus is northwest of the Project Site in the South of Market neighborhood of San Francisco. An interchange about 3.5 miles southwest of the Proposed Project connects I-280 and US 101. Nearby on- and off-ramps are accessed from the Project Site via Evans Avenue to Cesar Chavez Street or Third Street.

2.2.2 Local Access

Local access to the Project Site is provided by the urban street grid network. This section describes the key local roadways adjacent to the Project Site and the study intersections, which are described later in this Chapter. This section also describes the relevant roadway classifications identified in the San Francisco General Plan Transportation Element. **Table 2-1** summarizes the roadway network immediately adjacent to the Project Site.

TABLE 2-1: SUMMARY OF EXISTING TRANSPORTATION NETWORK

Street	From	To	Travel Lanes	Parking	Bicycle Facilities	Sidewalks
Jennings Street	Cargo Way	Evans Avenue	Two lanes, one in each direction, 12′	Both sides, 12′	None	Both sides, 8′
Evans Avenue	Jennings Street	Hunters Point Blvd	Four lanes, two in each direction, outer as 17', inner as 12'	None	None	Both sides, 8' south side, 10' north side
Hunters Point Boulevard	Evans Avenue	Hudson Avenue	Four lanes, two in each direction, outer as 12', inner as 11'	None	Bicycle lanes both sides, 4′ south side, 6′ north side	Both sides, 6' south side, 7' north side
Hunters Point Boulevard	Hudson Avenue	Innes Avenue	Four lanes, two in each direction, outer as 12', inner as 11'	None	Bicycle lanes both sides, 6′ west side, 6′ east side	Both sides, 9' west side, 6' east side
Innes Avenue	Hunters Point Boulevard	Griffith Street	Four lanes, two in each direction, outer eastbound as 11', others as 10'	Both sides, 8'	None	Both sides, 6' south side, 10' north side
Innes Avenue	Griffith Street	Arelious Walker Street	Four lanes, two in each direction, outer eastbound as 11', others as 10'	Both sides, 8'	None	Both sides, 5' south side, 8' north side
Innes Avenue	Arelious Walker Street	Earl Street	Four lanes, two in each direction, outer eastbound as 11', others as 10'	Both sides, 8'	None	North side only, 4′
Innes Avenue	Earl Street	Donahue Street	Four lanes, two in each direction, outer eastbound as 11', others as 10'	Both sides, 8'	None	North side only, 5′

Source: Build et al. Draft India Basin Transportation Action Plan (IBTAP). 2015.

A figure showing key details of the existing transportation network, such as existing off-site parking, curb cuts, crosswalks, stop bars, as well as existing building locations adjacent to the Project Site, including the barn structure at 702 Innes Avenue that would be relocated within the Project Site as part of the Proposed Project, is provided in **Figure 3**.

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LEGEND

Project Site Boundary

Stop Signs

On-Street Parking

Buildings on or immediately adjacent to Project Site

Figure 3

Existing Pedestrian and Traffic Facilities

2.2.2.1 East–West Roadways

Cargo Way is a four-lane, divided two-direction roadway that runs east-west between Third Street and Jennings Street. On-street parking is not permitted along Cargo Way, and there are sidewalks present on both sides of the street. A two-way cycletrack runs along the south side of the street. Cargo Way is northwest of the Project Site, and can be accessed via Jennings Street and Hunters Point Boulevard. The San Francisco General Plan (General Plan) refers to Cargo Way as a *Secondary Arterial*.

Evans Avenue runs parallel to Cargo Way from Cesar Chavez Street to Hunters Point Boulevard, between Cesar Chavez Street and Third Street, Evans Avenue is a four-lane, two-direction roadway with a Class III bicycle facility. East of Third Street, Evans Avenue is four-lane roadway with a Class II bicycle facility and a center median. Along this segment of Evans Avenue, left turn pockets provide access to driveways and cross-streets. On-street parking is permitted along Evans Avenue, and there are sidewalks present on both sides of the street. The General Plan refers to Evans Avenue as a *Secondary Arterial*. Muni routes 19 Polk and 44 O'Shaughnessy run along Evans Avenue.

Innes Avenue runs east-west between Middle Point Road and Coleman Street. Innes Avenue runs along the perimeter of the Project Site, and it is a four-lane, two-direction roadway with on-street parking and a sidewalk on the north side of the street. Innes Avenue is a designated bicycle route. The General Plan refers to Innes Avenue as a *Secondary Arterial*. Muni route 19 Polk provides service along this roadway with an existing stop at the intersection of Innes Avenue and Arelious Walker Drive.

Oakdale Avenue runs east-west between Bayshore Boulevard and Griffith Street with a gap between Keith Street and Ingalls Street. It is situated a few blocks south of the Project Site. On-street parking is permitted on Oakdale Avenue, and there are sidewalks on both sides of the street. Oakdale Avenue has a Class II bicycle facility between Bayshore Boulevard and Mendell Street. The General Plan refers to Oakland Avenue as a *Secondary Arterial*. Muni route 23 Monterey provides service along this roadway between Bayshore Boulevard and Toland Street.

Palou Avenue runs east-west from Barneveld Avenue to a dead-end east of Griffith Street. It is situated a few blocks south of the Project Site. There are no direct routes between the Project Site and Palou Avenue, and thus, it is about one mile from the Project Site along the existing road network. On-street parking is permitted on Palou Avenue, and there are sidewalks on both sides of the street. There is a Class III bicycle facility on Palou Avenue between Phelps Street and Griffith Street. This roadway is undesignated within the General Plan. Muni route 23 Monterey provides service along Palou Avenue.

2.2.2.2 North–South Roadways

Third Street is a four-lane divided roadway that runs north-south from Market Street south through Dogpatch and Bayview neighborhoods, ending at Bayshore Boulevard near US 101. The T Third Muni route runs along this roadway's median. There is a Class III bicycle facility on the roadway, and Third Street can be accessed via Evans Avenue from the Project Site.

Middle Point Road/Jennings Street is a two-lane north-south roadway. The street is named Jennings Street between Amador Street and Evans Avenue, and becomes Middle Point Road between Evans Avenue and Innes Avenue. Middle Point Road ends at Innes Avenue and becomes Ingalls Street. The roadway is two-way north of Catalina Street, but only runs southbound south of Catalina Street. On-street parking is permitted on Middle Point Road/Jennings Street, and there are sidewalks on both sides of the street. There is no bicycle facility on this roadway. Muni Route 44 O'Shaughnessy runs along the road from Evans Avenue into Ingalls Street.

2.3 BACKGROUND VEHICLE MILES TRAVELED IN SAN FRANCISCO

Many factors affect travel behavior. These factors include density, diversity of land uses, design of the transportation network, access to regional destinations, distance to high-quality transit, development scale, demographics, and transportation demand management.[6] Typically, low-density development at great distance from other land uses, located in areas with poor access to non-private vehicular modes of travel, generates more automobile travel compared to development located in urban areas, where a higher density, mix of land uses, and travel options other than private vehicles are available.

Given the travel behavior factors described above, San Francisco (in the aggregate) has a lower average VMT ratio (i.e. VMT per person) than the nine-county San Francisco Bay Area region (hereinafter, the region). In addition, for the same reasons, different areas of the city have different VMT ratios and some areas of the City have lower VMT ratios than other areas of the city.

These geographic based differences in VMT that are associated with different parts of the city and region are identified in transportation analysis zones (TAZs). TAZs are used by planners as part of transportation planning models for transportation analysis and other planning purposes. The TAZs vary in size from single city blocks in the Downtown core, multiple blocks in outer neighborhoods, to even larger zones in historically industrial areas like the Hunters Point Shipyard.

The Project Site is located in the eastern part of TAZ 446, which is bounded by Middle Point Road to the west, Evans Avenue to the north, Innes Avenue to the south, and Earl Street to the east.. The location of the Project Site is adjacent to a Muni bus route, the citywide bicycle network, pedestrian networks and facilities, and a diversity and density of land uses. A project located in TAZ 446 would have substantially reduced vehicle trips and shorter vehicle distance, and thus, reduced VMT, when compared to other areas of the region.

This is demonstrated by comparing data on average VMT for residential, office, and retail uses in the region and the specific Project Site TAZ, TAZ 446. Thus, the following VMT rates are identified for each by category of use:

Regional VMT: For residential development, the regional average daily VMT per capita is 17.2.[7] For office and retail development, regional average daily work-related VMT per employee is 19.1 and 14.9, respectively.

TAZ 446 VMT: The average VMT estimates for each use category in TAZ 446 are projected to be substantially lower than the regional value. For residential development, the TAZ 446 average daily VMT per capita is 9.0. For office and retail development, the TAZ 446 average daily VMT per capita (measured in terms of employees) is 15.3 and 8.1, respectively. For retail uses, the San Francisco County Transportation Authority (SFCTA) uses trip-based analysis, which counts VMT from individual trips to and from the project (as opposed to entire chain of trips). A trip-based approach, as opposed to a tour-based approach, is necessary

[6] California Smart-Growth Trip Generation Rates Study, Appendix A, University of California, Davis Institute of Transportation Studies, March 2013.

[7] Includes the VMT generated by the Proposed Project (www.sftransportationmap.org, accessed October 3, 2016).

for retail projects because a tour is likely to consist of trips stopping in multiple locations, and summarizing tour VMT to each location would over-estimate VMT.[8, 9]

Table 2-2 includes a summary of the daily VMT per capita for the region and for the transportation analysis zone in which the Project Site is located, TAZ 446.

TABLE 2-2: EXISTING DAILY VEHICLE MILES TRAVELED PER CAPITA

Land Use	Bay Area Regional Average	TAZ 446
Households (Residential)	17.2	9.0
Employment (Office)	19.1	15.3
Visitors (Retail)	14.9	8.1

Source: San Francisco Planning Department, Online at sftransportationmap.org, Accessed February 15, 2017.

2.4 TRANSIT NETWORK

Primary public transit access to the Project Site is provided by San Francisco Municipal Railway ("Muni") bus service. The North Bay, East Bay, Peninsula and South Bay are public transit accessible via connections via Muni to Golden Gate Transit (North Bay), AC Transit (East Bay), Bay Area Rapid Transit (BART), Caltrain (Peninsula and South Bay), and SamTrans (San Mateo County). Transit routes near the Project Site are shown on Figure 4. Muni bus stops adjacent to the Project Site are located in both westbound and eastbound directions on Innes Avenue at the following intersections: Innes Avenue/Hunters Point Boulevard, Innes Avenue/Griffith Street, Innes Avenue/Arelious Walker Street, and Innes Avenue/Earl Street.

This section discusses Muni, which provides primary transit access to the Project Site, followed by a discussion of regional transit providers that operate within San Francisco.

2.4.1 San Francisco Muni

Muni operates bus, cable cars and light rail lines within San Francisco. Some of Muni light rail service is underground, but the majority of light rail service operates on surface streets. This transportation analysis uses a quarter-mile radius as a generally reasonable walking distance for transit access. Muni routes that fall within a quarter-mile radius of the Project Site and their characteristics are summarized in **Table 2-3**.

[8] To state another way: a tour-based assessment of VMT at a retail site would consider the VMT for all trips in the tour, for any tour with a stop at the retail site. If a single tour stops at two retail locations, for example, a coffee shop on the way to work and a restaurant on the way back home, then both retail locations would be allotted the total tour VMT. A trip-based approach allows analysts to apportion all retail-related VMT to retail sites without double-counting.

[9] San Francisco Planning Department, *Executive Summary: Resolution Modifying Transportation Impact Analysis*, Appendix F, Attachment A, March 3, 2016.

TABLE 2-3: LOCAL MUNI OPERATIONS							
Route	**AM Peak Weekday Headways (7:00 AM – 9:00 AM)**	**Midday Peak Weekday Headways (12:00 PM – 2:00 PM)**	**PM Peak Weekday Headways (4:00 PM – 7:00 PM)**	**Hours of Operation**	**Nearest Stop Location**	**Distance to Project Site[1]**	**Neighborhoods Served by Route**
Within ¼ mile of the Project Site							
19 Polk	15 min	15 min	15 min	5:15 AM – 12:45 AM	Innes Ave & Griffith St	0.1 miles	Russian Hill, Nob Hill, Civic Center, SoMa, Potrero Hill, Bayview, Hunters Point
44 O'Shaughnessy	8 min	12 min	9 min	5:30 AM-12:45 AM	Middle Point Rd & Innes Ave	0.2 miles	Inner Richmond, Inner Sunset, Forest Knolls, Bernal Heights, Bayview, Hunters Point
54 Felton	20 min	20 min	20 min	5:30 AM-12:30 AM	Northridge Rd & Harbor Rd	0.2 miles	Ingleside Heights, Sunnyside, Bernal Heights, Bayview, Hunters Point
Within 1 mile of the Project Site							
23 Monterey	20 min	20 min	20 min	5:15 AM – 11:30 PM	Oakdale Ave & Ingalls St	0.6 miles	Lake Shore, Sunnyside, Glen Park, Bernal Heights, Bayview, Hunters Point
Over one mile from the Project Site							
24 Divisadero	10 min	10 min	10 min	5:45 AM – 12:30 AM	3rd St & Palou Ave	1.1 miles	Pacific Heights, Western Addition, Haves Valley, Noe Valley, Bernal Heights, Bayview, Hunters Point
T Third	9 min	10 min	9 min	4:30 AM – 1:30 AM	Third Street & Evans Ave	1.1 miles	West Portal, Market Street, Mission Bay, Dogpatch, Portola Place, Visitation Valley

Notes:

1. Distances are approximate and are measured from the center of the proposed Project Site along local streets to reach nearest stop.

Source: SF Muni, 2013; 511.org, 2015; Prepared by Fehr & Peers, 2016.

19 - Polk
23 - Monterey
24 - Divisadero
44 - O'Shaughnessy
54 - Felton
T-Third
Nearest Stop to Project Site

Figure 4
Existing Transit Network

2.4.1.1 Individual Routes

The Maximum Load Point (MLP) for a transit route is the location where the route has its highest number of passengers relative to its capacity. Capacity utilization relates the number of passengers per transit vehicle to the design capacity of the vehicle. The capacity per vehicle includes both seated and standing capacity, where standing capacity is between 30 to 80 percent of seated capacity (depending upon the specific transit vehicle configuration).

AM and PM peak hour capacity utilization was determined at the MLP for the two Muni routes that are within convenient walking distance of the Proposed Project. Because they are within walking distance of the Proposed Project, they are the routes that most people traveling by transit to/from the Project Site will use for access, even if they are not the only routes they use during the trip (i.e. some may transfer to/from these routes as part of the journey).

The two routes within convenient walking distance of the Proposed Project are the 19 Polk and the 44 O'Shaughnessy. The 19 Polk travels along Innes Avenue and provides a direct connection to the Project as well as connections to other Muni lines, notably the T Third. The 44 O'Shaughnessy travels along Middle Point Road, with the closest stop located at Innes Avenue/Middle Point Road. This stop is about 2,000 feet from the Project Site, which is approximately a 7-minute walk, i.e. within typical walking distance. While the nearest stop for the 54 Felton route at Northridge Road/Dormitory Road is 500 feet walking distance from the Project Site (specifically from the intersection of Arelious Walker Drive/Innes Avenue), this walk features an almost-continual elevation gain of 95 feet along a stairwell. Due to this prohibitive elevation gain, this route is not considered within convenient walking distance of the Project Site and is not considered.

Typically, for route-specific capacity impact analysis, only the peak demand on a given bus route over the course of the entire route (hereafter called the Global Maximum Load Point, or GMLP) is evaluated. However, since it is expected that a substantial number of riders on the 19 Polk would transfer to the T Third before reaching the GMLP, a Local Maximum Load Point (LMLP) was also evaluated for the 19 Polk. This LMLP is located on Evans Avenue east of Third Street, to capture the large proportion of transit riders that would be expected to use the 19 Polk to transfer to the T Third.

The capacity of the bus vehicle for each of these routes is 63 passengers. The SFMTA Board has adopted an 85 percent capacity utilization performance standard for transit vehicle loads.[10] The SFMTA Board has determined that this performance standard reflects actual operations and the likelihood of "pass-ups" (i.e., vehicles not stopping to pick up more passengers). It should be noted that the 85 percent utilization is of seated and standing loads, so at 85 percent all seats are taken, and there are many standees. The Planning Department has similarly utilized the 85 percent capacity utilization standard as threshold of significance for determining peak period transit demand impacts to the SFMTA lines.

Table 2-4 outlines the AM and PM peak ridership and capacities at maximum load points for transit lines in the study area. One Muni route (44 O'Shaughnessy) records passenger loads that exceed 85 percent capacity utilization, which is SFMTA's standard maximum acceptable utilization. Overall, passenger loads

[10] SFMTA. 2017. *Short Range Transit Plan Fiscal Year 2017 – Fiscal Year 2030*. p. 40 Available online at https://www.sfmta.com/sites/default/files/agendaitems/2017/6-6-17%20Item%2011%20%20Short%20Range%20Transit%20Plan.pdf. Accessed August 8, 2017.

range from 10 percent (19 Polk inbound[11] – AM Peak Hour) to 86 percent (44 O'Shaughnessy inbound[12] – PM Peak Hour) of capacity. Immediately adjacent to the study area, capacity utilization is generally lower than the utilization at the MLP.

TABLE 2-4: MUNI PEAK HOUR LOAD AND CAPACITY UTILIZATION BY LINE

Route	Peak Hour	Maximum Load Point	Passenger Load[1]	Peak Hour Capacity[2]	Capacity Utilization
Inbound (Project Designation) / Outbound (SFMTA Designation)					
19 Polk (LMLP[3])	AM	Evans Ave/Newhall St	24	252	10%
	PM	Evans Ave/Newhall St	44	252	17%
19 Polk (GMLP[3])	AM	8th St/Howard St	160	252	63%
	PM	8th St/Mission St	168	252	67%
44 O'Shaughnessy (GMLP[3])	AM	Silver Ave/Dartmouth Ave	300	473	63%
	PM	Silver Ave/Mission St	360	420	**86%**
Outbound (Project Designation) / Inbound (SFMTA Designation)					
19 Polk (LMLP[3])	AM	Evans Ave/Newhall St	84	252	33%
	PM	Evans Ave/Newhall St	52	252	21%
19 Polk (GMLP[3])	AM	Larkin St/O'Farrell St	188	252	75%
	PM	7th St/Howard St	180	252	71%
44 O'Shaughnessy (GMLP[3])	AM	O'Shaughnessy Blvd/Del Vale	368	473	78%
	PM	Silver Ave/San Bruno Ave	240	420	57%

Notes:
Bold indicates capacity utilization of 85 percent or greater.

1. Peak hour ridership. Existing Load at Local Maximum Load Point or Global Maximum Load Point from Transit Data for Transportation Impact Studies (SF Planning, May 2015) or Transit Effectiveness Project Route analysis (Fehr & Peers, October 2011).
2. Total peak period capacity in passengers per hour.
3. GMLP is the Global Maximum Load Point, which is the route-wide maximum load point. LMLP is the Local Maximum Load Point, which is the maximum load point on the route east of Third Street.

Source: San Francisco Planning Department, "Transit Data for Transportation Impact Studies," May 2015. See **Appendix E** for transit line capacity calculations.

2.4.1.2 Downtown Screenlines

The existing transit system near the Project Site was analyzed using the screenline method. This directional analysis was used to determine if certain screenline approaches between the Project Site and Downtown San Francisco have adequate capacity to serve demand. These screenlines are defined in the *SF Guidelines* and are shown in **Appendix E**. Because the City's transit system is largely arranged to carry passengers into and out of Downtown, four screenlines that surround Downtown San Francisco were also analyzed. **Table**

[11] "Inbound" and "outbound" designations for individual routes in the text of this document are in reference to the Project. SFMTA designation for 19 Polk is opposite to the "Project" designation: i.e. SFMTA's designation of inbound is to Fisherman's Wharf, and outbound is to Hunters Point.

[12] "Inbound" and "outbound" designations for individual routes in the text of this document are in reference to the Project. SFMTA designation for 44 O'Shaughnessy is opposite to the "Project" designation: i.e. SFMTA's designation of inbound is to The Richmond, and outbound is to Hunters Point.

2-5 presents the existing ridership and capacity utilization at the maximum load point (MLP) for the routes crossing the four Downtown Screenlines during the weekday PM peak hour, using September/October 2013 ridership and hourly capacity data – the most recent data available at the time the analysis was conducted. Data is shown for the outbound direction only as that is the peak direction for PM peak period travel.

The Planning Department uses an 85 percent capacity utilization standard as the threshold of significance for identifying transit crowding impacts. While most directional screenlines and corridors within the screenlines operate under the 85 percent performance standard, some exceed 100 percent capacity utilization. Corridors exceeding this standard include the Fulton/Hayes (90 percent) and Third Street (99 percent) in the PM peak hour, Subway lines (102 percent) in the AM peak hour, and corridors composed of other lines in the Southwest screenline (94 percent).

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TABLE 2-5: MUNI DOWNTOWN SCREENLINES - EXISTING CONDITIONS

Screenline	AM Peak Hour[1]			PM Peak Hour[1]		
	Ridership	Capacity	Capacity Utilization	Ridership	Capacity	Capacity Utilization
Kearny/Stockton[2]	2,211	3,050	72%	2,245	3,327	67%
Other lines[3]	538	1,141	47%	683	1,078	63%
Northeast Screenline Total	*2,749*	*4,191*	*66%*	*2,928*	*4,405*	*66%*
Geary[4]	1,821	2,490	73%	1,964	2,623	75%
California[5]	1,610	2,010	80%	1,322	1,752	75%
Sutter/Clement[6]	480	630	76%	425	630	67%
Fulton/Hayes[7]	1,277	1,680	76%	1,184	1,323	**89%**
Balboa[8]	758	1,019	74%	625	974	64%
Northwest Screenline Total	*5,946*	*7,829*	*76%*	*5,520*	*7,302*	*76%*
Third Street[9]	350	793	44%	782	793	**99%**
Mission[10]	1,643	2,509	65%	1,407	2,601	54%
San Bruno/Bayshore[11]	1,689	2,134	79%	1,536	2,134	72%
Other lines[12]	1,466	1,756	83%	1,084	1,675	65%
Southeast Screenline Total	*5,148*	*7,192*	*72%*	*4,809*	*7,203*	*67%*
Subway lines[13]	6,330	6,205	**102%**	4,904	6,164	80%
Haight/Noriega[14]	1,121	1,554	72%	977	1,554	63%
Other lines[15]	465	700	66%	555	700	79%
Southwest Screenline Total	*7,916*	*8,459*	***94%***	*6,436*	*8,418*	*76%*
Total All Screenlines	*21,759*	*27,671*	*79%*	*19,693*	*27,328*	*72%*

Notes:

Bold indicates capacity utilization of 85 percent or greater.

1. AM Peak hour as inbound (i.e. toward Downtown) only; PM peak hour as outbound (i.e. away from Downtown) only
2. 8 Bayshore, 30 Stockton, 30X Marina Express, 41 Union, 45 Union-Stockton
3. F Market & Wharves, 10 Townsend, 12 Folsom-Pacific
4. 38 Geary, 38R Geary Rapid, 38AX Geary 'A' Express, 38BX Geary 'B' Express
5. 1 California, 1AX California 'A' Express, 1AX California 'B' Express
6. 2 Sutter, 3 Clement
7. 5 Fulton, 21 Hayes
8. 31 Balboa, 31AX Balboa 'A' Express, 31BX Balboa 'B' Express
9. T Third Street
10. 14 Mission, 14R Mission Rapid, 14X Mission Express, 49 Van Ness-Mission
11. 8AX Bayshore 'A' Express, 8BX Bayshore 'B' Express, 8 Bayshore, 9 San Bruno, 9R San Bruno Rapid
12. J Church, 10 Townsend, 12 Folsom-Pacific, 19 Polk, 27 Bryant
13. K Ingleside, L Taraval, M Ocean View, N Judah
14. 6 Haight-Parnassus, 7/7R Haight-Noriega/Limited, 7X Noriega Express, NX Judah Express
15. F Market & Wharves

Source: San Francisco Planning Department, "Transit Data for Transportation Impact Studies," May 2015; Fehr & Peers, 2016; see **Appendix E** for transit line capacity calculations.

2.4.2 Regional Transit Service

In addition to Muni operations, regional transit service was considered. The following regional transit services operate within San Francisco and are accessible from the Project Site via Muni.

2.4.2.1 Bay Area Rapid Transit (BART)

BART provides regional commuter rail service between the East Bay (from Pittsburg/Bay Point, Richmond, Dublin/Pleasanton and Fremont) and San Francisco, and between San Mateo County (from SFO Airport and Millbrae) and San Francisco, with operating hours between 4:00 AM and midnight. Within San Francisco, BART operates underground below Market Street and proceeds south through the Mission District towards Daly City after the Civic Center Station. During the weekday PM peak period, headways are generally 5 to 15 minutes for each line. The BART stations most easily accessible to the Project Site are the 24th Street Mission Station (approximately 3.5 miles northwest from the Project Site) and Glen Park Station, about 4 miles west of the Project Site. The 24th Street Mission Station can be accessed by taking the 19 Polk Muni route and transferring at 25th Street and Connecticut Street to outbound Muni route 48 Quintara. The Glen Park Station can be accessed by Muni route 44 O'Shaughnessy.

2.4.2.2 Caltrain

Caltrain provides passenger rail service on the Peninsula between San Francisco and Downtown San Jose with several stops in San Mateo County and Santa Clara County. Limited service is available south of San Jose. Within San Francisco, Caltrain terminates at the Fourth/King Station in the South of Market neighborhood. The Project Site is roughly equidistant between the 22nd Street Station to the north and the Bayshore Station to the south; each are about 2.5 miles away. The 22nd Street Station can be accessed by taking the 19 Polk Muni route and transferring at 25th Street and Connecticut Street to inbound Muni route 48 Quintara. Caltrain service headways during the AM and PM peak periods are between five and 60 minutes, depending highly on the type of train (i.e. local, limited, or express "Baby Bullet"). The 22nd Street Station is served by local, limited, and "Baby Bullet" trains. In the weekday AM and PM peak periods, the station is served around four times per hour by a mix of limited trains and "Baby Bullet" trains. The Bayshore Station can be accessed by taking the 19 Polk Muni route and transferring at Third Street/Evans Avenue to the T Third light rail line, which terminates a short walk from the Bayshore Station. The Bayshore Station is served by local and limited but not express "Baby Bullet" trains.

2.4.2.3 Alameda-Contra Costa County Transit District (AC Transit)

AC Transit operates bus service in western Alameda and Contra Costa Counties, as well as routes to the City of San Francisco and San Mateo County. AC Transit operates 27 "Transbay" bus routes between the East Bay and the Transbay Terminal, temporarily located at Howard Street and Beale Street, which is near many major San Francisco Muni routes. The Transbay Terminal about 5 miles north of the Project Site and is most easily accessible from the Project Site by taking Muni route 19 Polk to the T Third. Most Transbay service is provided only during commute periods, with headways between buses of approximately 15 to 20 minutes, although limited service is provided during off-peak hours.

2.4.2.4 San Mateo County Transit District (SamTrans)

SamTrans operates bus and rail service in San Mateo County, with select routes providing transit service outside of the County. SamTrans Routes 292, 391, and 397 serve Downtown San Francisco providing connections to San Mateo County destinations. In general, SamTrans service to Downtown San Francisco operates along Mission Street to the Transbay Terminal at First Street and Mission Street. SamTrans routes serving Downtown San Francisco do not make local stops at the Project Site, and SamTrans cannot pick up northbound passengers or drop off southbound passengers within San Francisco.

2.4.2.5 Golden Gate Transit

The Golden Gate Bridge, Highway, and Transportation District operates Golden Gate Transit (GGT) and provides bus and ferry service between the North Bay (Marin and Sonoma counties) and San Francisco. GGT operates 22 commuter bus routes, nine basic bus routes, and 16 ferry feeder bus routes into San Francisco. Basic bus routes operate at regular intervals of 15 to 90 minutes depending on time and day of week. Golden Gate Transit operates routes on Battery Street during the AM peak period and on Sansome Street during the PM peak period. The Golden Gate Transit bus service stops closest to the Project Site are located at the Temporary Transbay Terminal, on Howard Street and Beale Street. Golden Gate Transit also operates ferry service between the North Bay and San Francisco, connecting Larkspur and Sausalito with the Ferry Building during the morning and evening commute periods.

2.4.2.6 Water Emergency Transportation Authority (WETA)

The Water Emergency Transportation Authority (WETA) is a regional public transit agency that operates ferry service on the San Francisco Bay and coordinates the water transit response to regional emergencies. WETA service operates from eight terminals in Alameda, Oakland, San Francisco, South San Francisco, and Vallejo. The nearest terminal to the Project Site is the San Francisco Ferry Building. On days when the San Francisco Giants have home games, regional service is available to the ferry terminal adjacent to AT&T Park. Ferry routes typically operate at 30 to 60 minute headways depending on time and day of the week.

2.4.2.7 Regional Transit Screenlines

Similar to Muni, transit service into and out of San Francisco on regional service providers is examined on a screenline basis. The existing regional transit screenlines, as described in the *SF Guidelines*, were used to analyze regional transit capacity near the Project Site. A map of the regional screenlines is provided in **Appendix E**. **Table 2-6** presents the ridership and capacity utilization at the MLP for the regional screenlines during the weekday PM peak hour. For regional operators, the MLP is typically at the San Francisco city limit (i.e., the East Bay MLP would occur at the Transbay Tube and on the Bay Bridge; the North Bay MLP would occur at the Golden Gate Bridge; and the South Bay MLP would occur at the southern city border). Transit lines headed away from Downtown (outbound) are most congested during the weekday PM peak commute hour, therefore, the ridership presented in the table reflects only the outbound ridership and capacity.

For regional transit providers, the established capacity utilization threshold is equal to the number of available seats (and in the case of BART, standing area also), i.e. 100 percent of capacity. This standard is different from Muni because each operator decides their own threshold for capacity utilization. As shown in **Table 2-6**, the East Bay regional screenline currently exceeds its established capacity utilization standard in the AM peak hour and the South Bay regional screenline exceeds its established capacity utilization standard in the PM peak hour, primarily due to overcrowding on BART. All other regional screenlines operate within established utilization standards.

TABLE 2-6: REGIONAL TRANSIT SCREENLINES - EXISTING CONDITIONS

Screenline	AM Peak Hour			PM Peak Hour		
	Ridership	Capacity	Capacity Utilization[1]	Ridership	Capacity	Capacity Utilization[1]
East Bay						
BART	25,399	23,256	**109%**	24,488	22,784	**107%**
AC Transit	1,568	2,829	55%	2,256	3,926	58%
Ferries	810	1,170	69%	805	1,615	50%
Screenline Subtotal	27,777	27,255	**102%**	27,549	28,325	97%
North Bay						
Golden Gate Transit Buses	1,330	2,543	52%	1,384	2,817	49%
Ferries	1,082	1,959	55%	968	1,959	49%
Screenline Subtotal	*2,412*	*4,502*	*54%*	*2,352*	*4,776*	*49%*
South Bay						
BART	14,150	19,367	73%	13,500	18,900	71%
Caltrain	2,171	3,100	70%	2,377	3,100	77%
SamTrans	255	520	49%	141	320	44%
Screenline Subtotal	16,576	22,987	72%	16,018	*22,320*	*72%*
Regional Total	46,765	54,744	85%	45,919	*55,421*	*83%*

Notes:

Bold indicates capacity utilization of 100 percent or greater.

1. Whereas Muni threshold for overcrowding is 85% of capacity, each agency listed in this table has an overcrowding threshold of 100%. Therefore, none of the transit providers operate over their established load standard except for BART in the PM peak hour.

Source: San Francisco Planning Department, "Transit Data for Transportation Impact Studies," May 2015. San Francisco Planning Department, "Updated BART Regional Screenlines – Revised," October 17, 2016; Fehr & Peers, 2016.

2.5 PEDESTRIAN FACILITIES

A qualitative evaluation of existing pedestrian conditions was conducted along Jennings Street between Cargo Way and Evans Avenue, and along Hunters Point Boulevard and Innes Avenue between Evans Avenue and Donahue Street. This evaluation occurred during field visits in May 2015. Pedestrian facilities include sidewalks, crosswalks, and curb ramps. There are no signalized intersections in this area adjacent to the Project Site.

Due to the generally undeveloped nature of the Project Site area, the pedestrian facilities in the immediate vicinity range from adequate to non-existent, and the quality ranges from poor to acceptable. The presence and width of sidewalks in the vicinity of the Project Site varies greatly. There are currently crosswalks at several locations in the vicinity of the Project Site, but crosswalks are not painted/installed consistently at all intersections. The sidewalks are poorly maintained, and there is limited street furniture. Adjacent to the Project Site, most intersections include curb ramps, although they are one-directional and don't reflect the most recent best practices for installing curb ramps as defined by the City. This review summarizes pedestrian conditions from west to east on street segments between the intersection of Evans Avenue/Hunters Point Boulevard and the intersection of Earl Street/Innes Avenue. The presence of sidewalks, crosswalks, and stairwells in the Project Site vicinity are shown in **Figure 5**. Specific locations of curb cuts, curb ramps, and sidewalk widths adjacent to the Project Site are shown in **Figure 3**.

Between Cargo Way and Evans Avenue, Jennings Street includes eight-foot sidewalks on both sides of the street. Between Jennings Street and Hunters Point Boulevard, Evans Avenue includes a 10-foot sidewalk on both sides of the street. Between Evans Avenue and Hudson Avenue, Hunters Point Boulevard currently has sidewalks on both sides of the street (four feet wide on the south side and five feet wide on the north side). There are two existing flights of stairs to the Hunters View housing development up the hill on the west side of Hunters Point Boulevard across from the PG&E station, but they are separated from the sidewalk along this side of the street by a chain-link fence. Between Evans Avenue and Hudson Avenue, there is a 6.5-foot sidewalk along the east side of Hunters Point Boulevard on both sides of the trail entrance to India Basin Shoreline Park.

Pedestrians may access India Basin Shoreline Park from multiple locations: an off-street path into the park directly from the sidewalk on Hunters Point Boulevard just north of the intersection with Hudson Avenue, an 8-foot sidewalk on the south side of Hawes Street (i.e. the park driveway) that leads to multiple off-street paths within India Basin Shoreline Park, and from the Bay Trail. Hawes Street has no through access and accordingly is a low volume street, only used by vehicles visiting the park. There are no marked crossings across this segment of Hawes Street. Arelious Walker Drive provides access to India Basin Open Space and has sidewalks of approximately 6-foot-width on both sides.

There are painted stop bars and stop signs at numerous stop-controlled intersections in the vicinity of the Project Site. However, striped crosswalks are infrequent. Standard crosswalks are present across Hawes Street at Hunters Point Boulevard, across Hawes Street at Innes Avenue, and across Innes Avenue and Donahue Streets at the intersection of those two streets. Ladder crosswalks are present across Innes Avenue at Griffith Street and across Hunters Point Boulevard and Innes Avenue at the intersection of those two streets.

Between Hawes Street and Arelious Walker Drive, Innes Avenue currently has sidewalks on both sides of the street (approximately 5 feet wide on the south side and 8 feet wide on the north side). There are four flights of stairs on the south side of the street: at Hawes Street, Griffith Street, mid-block between Griffith Street and Arelious Walker Drive, and at Arelious Walker Drive. Most of these stairwells connect across a steep incline from Northridge Road at the top of the hillside to continuous sidewalks on the south side of

Innes Avenue at the bottom of the hillside; however, there is no sidewalk to the east of the base of the stairs across from Arelious Walker Drive. There are "Pedestrian Crossing" pavement markings in both the eastbound and westbound approach to Griffith Street along Innes Avenue. There are bus stops for both the inbound and outbound Muni route 19 Polk on both the north and south sides of the intersection of Arelious Walker Drive and Innes Avenue. These flag or pole bus stops consist solely of "coach stop" markings on the pavement or telephone pole; no length of curb space is reserved for buses. Pedestrian access from the Project Site to these bus stops would involve walking along internal streets to Innes Avenue, then along Innes Avenue to the intersection of Arelious Walker Drive and Innes Avenue. From the east, pedestrians would remain on the north side of Innes Avenue until reaching the intersection of Arelious Walker Drive and Innes Avenue, because the sidewalk on the south side of Innes Avenue does not continue east of that intersection.

Between Arelious Walker Drive and Earl Street, Innes Avenue currently has a 10-foot sidewalk on the north side of the street with a brief gap near Arelious Walker Drive. There is an existing staircase leading up the hillside to Jerrold Avenue south of Innes Avenue at Earl Street. The base of the stairs does not connect to a crosswalk on Innes Avenue. There are no marked crosswalks at the intersection of Innes Avenue and Earl Street.

Between Earl Street and Donahue Street, Innes Avenue currently has a nine-foot sidewalk on both sides of the street. There are brief sidewalk gaps on both sides of the street immediately east of Earl Street. At the intersection of Innes Avenue and Donahue Street there are marked crosswalks at all four crossings.

None of the sidewalks in the vicinity of the Project Site meet the *Better Streets Plan* minimum sidewalk width, which is 12 feet (15 feet recommended) for commercial and residential throughways. Innes Avenue is a commercial throughway between Hunters Point Boulevard and Arelious Walker Drive and residential throughway between Arelious Walker Drive and Earl Street.

General pedestrian impediments observed in the vicinity of the Project Site include:

- Long distances between intersections limiting crossing opportunities and intersections with no marked crosswalk;
    - In particular, people were observed to cross Innes Avenue at Arelious Walker to access the bus stop, and no crosswalk is marked at this location.
- Narrow effective sidewalk width and at times no sidewalk at all;
- Long crossing distances (across four lanes of traffic) along Innes at crosswalk locations where drivers are required to yield. Pedestrians are exposed to the "double-threat" scenario where if one vehicle stops for a pedestrian and another vehicle overtakes it on either side, the pedestrian may not be visible and be struck;
- Vehicles were regularly observed to travel above the 25 mph speed limit;
- Some missing ADA curb ramps at some intersection corners.

Pedestrian volumes adjacent to the Project Site were observed to be generally low along Innes Avenue towards Earl Street and Arelious Walker, but they were higher with people crossing Innes Avenue at Griffith Street to and from the bus stop on the north side of Innes Avenue.

Figure 5

Existing Pedestrian Network (Sidewalks and Crosswalks)

2.6 BICYCLE FACILITIES

Bicycle facilities consist of bicycle lanes, trails, and paths, as well as bike parking, bike lockers, and showers for cyclists. On-street bicycle facilities are grouped into four categories:

Class I:

Provides a completely separated right of way for the exclusive use of cyclists and pedestrians with cross-flow minimized.

Facilities consist of off-street bicycle paths and are generally shared with pedestrians. Class I facilities may be adjacent to an existing roadway, or may be entirely independent of existing vehicular facilities.

The San Francisco Bay Trail connects to the west and eastern edges of the Project Site. It is a partially-completed recreational corridor that, when complete, would encircle San Francisco and San Pablo Bays with a continuous 500-mile network of bicycling and hiking trails. It would connect the shoreline of all nine Bay Area counties, link 47 cities, and cross the major toll bridges in the region. To date, approximately 338 miles of the alignment have been completed.

Class II:

Provides a striped lane for one-way travel on a street or highway.

Facilities consist of striped bicycle lanes on roadways. These facilities reserve a minimum of four to five feet of space for bicycle traffic.

The following Class II bike lane is in the vicinity of the Project Site:

- Class II bicycle lanes run along Hunters Point Boulevard between Evans Avenue and Innes Avenue.

Class III:

Provides for shared use with motor vehicle traffic.

Facilities consist of designated and signed bicycle routes where bicyclists share the roadway with vehicles, may or may not be marked with "sharrows," but are usually signed.

The following Class III bicycle facilities are in the vicinity of the Project Site:

- A signed Class III bicycle route runs along Third Street.
- A signed Class III bicycle route runs along Phelps Street and Palou Street.
- A Class III bicycle route without marked sharrows runs along Innes Avenue alongside the Project Site between Hunters Point Boulevard and Donahue Street.

Class IV:

Provides for exclusive use including a separation required between the bikeway and the through vehicular traffic.

The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

The following Class IV bicycle facilities are in the vicinity of the Project Site:

- Class IV separated bikeway along Cargo Way.

Current on-street bicycle facilities in the vicinity of the Project Site, as designated by the San Francisco Bike Plan (June 2009) ("Bike Plan"), are shown in **Figure 6**. The majority of the streets in the immediate vicinity of the Project Site are flat, with limited changes in grades, facilitating bicycling within and through the area. However, the terrain south and west of the Project Site is very steep, limiting bicycle connectivity.

Bike parking in the vicinity of the Project Site is limited to two racks on the north side of Innes Avenue between Hunters Point Boulevard and Griffith Street and a bike corral containing five racks on the north side of Innes Avenue between Arelious Walker Drive and Earl Street.

Very few bicyclists were observed in the vicinity of the Project Site. The absence of bicycle facilities, the presence of high-speed traffic, and the danger presented by the door zone adjacent to on-street parking contribute to an uncomfortable bicycling experience along Innes Avenue. Along Hunters Point Boulevard, the presence of a Class II bicycle lane and the absence of on-street parking create a moderately comfortable bicycling experience; high traffic speeds however make bicycling on Hunters Point Boulevard less comfortable.

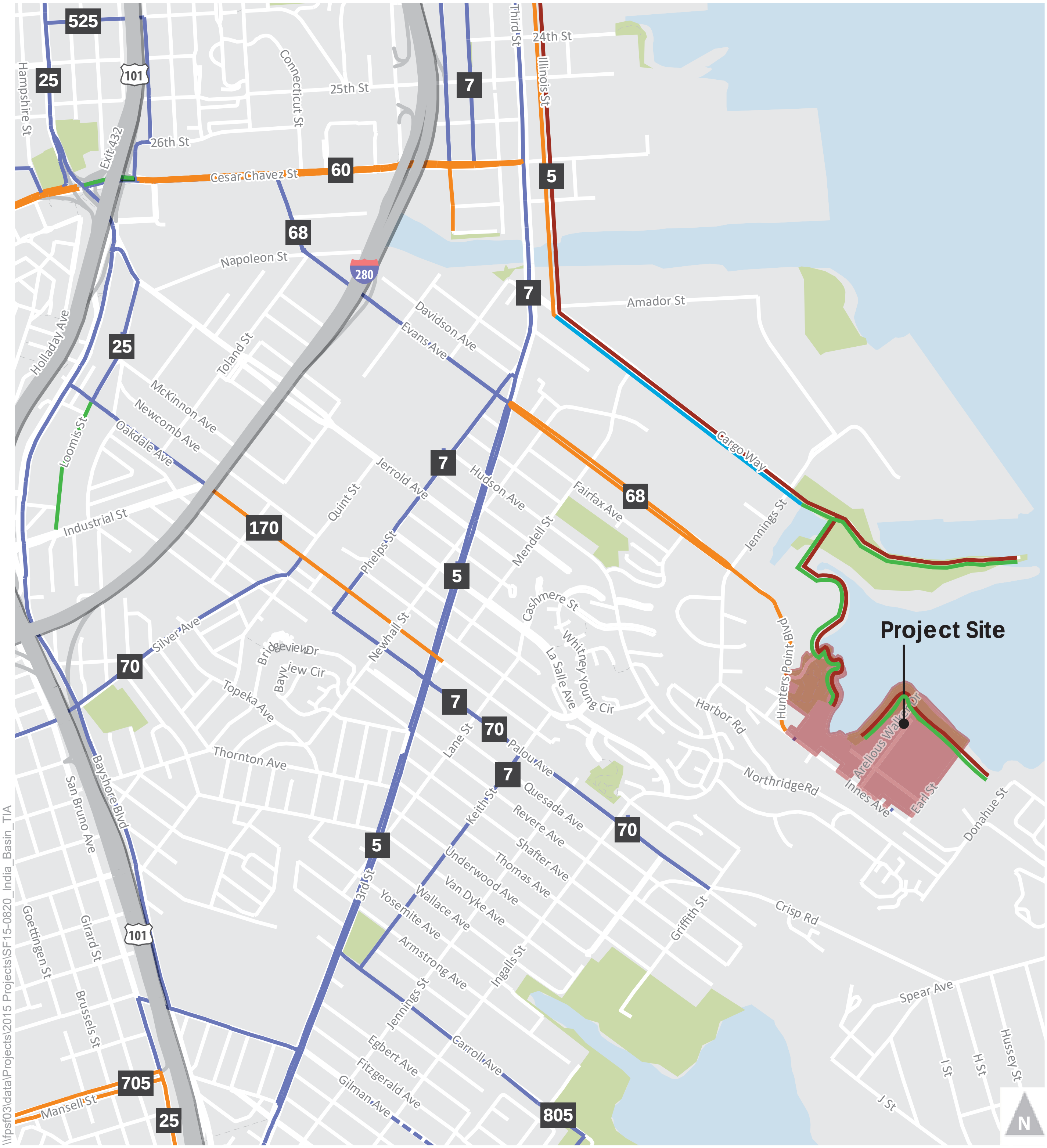
Grade changes along Innes Avenue are minor and do not present a major deterrent to bicycling. Shallow grade changes occur along Hunters Point Boulevard, presenting a minor challenge to bicyclists. The terrain to the south and immediate west of the Project Site is very steep and effectively impassable to bicyclists; however, access to Hunters Point Shipyard via Donahue Street is feasible with minimal grade changes.

A substantial proportion of bicycling activity in the vicinity of the Project Site occurs along the San Francisco Bay Trail. Conditions on the Bay Trail are mixed: the pathway is not currently continuous through the Project Site, and paving quality is adequate but not excellent.

2.6.1 Bay Area Bike Share

Bay Area Bike Share is a regional public bicycle sharing system that went into operation as a pilot project in August 2013. The bicycles are securely docked at stations throughout the City and region. After a user obtains a membership, they may take unlimited trips of up to 30 minutes between stations. There are no Bay Area Bicycle Share stations in the vicinity of the Project Site, but the system is going to expand to 7,000 bicycles through 2017 and 2018, including additional stations in San Francisco, San Jose, Oakland, Berkeley, and Emeryville, and a renaming to Ford GoBike. Upon this expansion of the Bay Area Bike Share network in San Francisco, the nearest bike share station would be located approximately 1.5 miles to the northwest of the Project Site.[13] More information on Bay Area Bike Share can be accessed at their website: https://bayareabikeshare.com/.

[13] Discussion of nearest future bike share station is based on preliminary Bay Area Bike Share Expansion station siting and may be subject to change.



Bicycle Class I
Bicycle Class II
Bicycle Class III
Bicycle Class IV
Bay Trail
Bicycle Route Number

Figure 6
Existing Bicycle Network

2.7 LOADING FACILITIES

There are currently no marked on-street loading spaces along Innes Avenue or Hunters Point Boulevard adjacent to the Project Site or along any of the streets internal to the Project Site. There are no marked loading spaces along Hawes Street within India Basin Shoreline Park, although there is a turnaround at the tip of the street (with a radius of around 35 feet) which can accommodate loading to/from larger vehicles. Because of the industrial nature of much of the India Basin area, loading was observed to typically occur off-street, or in the plentiful on-street general parking not specifically designated for loading.

Some existing commercial uses along Innes Avenue contain off-street loading zones, accessible via driveway entrances on Innes Avenue. Given the low on-street parking occupancy on Innes Avenue, existing land uses were observed to occasionally utilize available on-street parking to serve exiting loading demand. **Figure 7** depicts the existing off-street loading accommodations along this corridor.

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LEGEND

Residential Uses
Name (Address): Description

Commercial Uses
Name (Address): Description

Project Site Boundary

Garage, Roll-Up Door, or Barn Door

Figure 7

Existing Loading

2.8 EMERGENCY SERVICES & ACCESS

Emergency vehicles in the area typically use major streets when heading to and from an emergency and/or emergency facility. Arterial roadways allow the emergency vehicles to travel at higher speeds and permit other traffic to maneuver out of the path of the emergency vehicle. Non-emergency vehicles have to yield to emergency vehicles headed to the Project Site, as required by the California Vehicle Code.[14]

The San Francisco Fire Department stations closest to the Project Site are:

- Station 17 on Shafter Avenue at Ingalls Street (1.1 miles from the Project Site),
- Station 25 on Third Street at Cargo Way (1.3 miles from the Project Site),
- Station 9 on Jerrold Avenue at Upton Street (2.2 miles from the Project Site), and
- Station 42 on San Bruno Avenue at Silliman Street (2.5 miles from the Project Site).

Fire Department vehicles likely travel from these stations to the Project Site via Third Street, Evans Avenue, Hunters Point Boulevard, Innes Avenue, and Ingalls Street. Police and ambulance service vehicles also access the Project Site via Third Street, Evans Avenue, Hunters Point Boulevard, Innes Avenue, and Ingalls Street.

2.9 PARKING CONDITIONS

This section describes the results of a survey of existing supply and occupancy of on-street parking facilities conducted in March 2015. There are no public off-street parking facilities in the parking study area. **Figures 8A** and **8B** show the parking study area, which is bounded by Middle Point Road to the west, Innes Avenue to the south, Donahue Street to the east, and Hunters Point Road and the shoreline to the north.

2.9.1 On-Street Parking

Parking conditions within the parking study area were assessed for the weekday mid-afternoon period (1:30 to 3:30 PM) and the weekday evening period (6:30 to 8:00 PM). The parking study area includes a total of 533 public on-street parking spaces. **Figure 8A** shows the blocks contained within the parking study area and summarizes parking occupancy rates during the mid-afternoon period. **Figure 8B** summarizes parking occupancy rates during the PM peak period. Based on field observations, on-street parking in the Project study area is not utilized consistently throughout the study area. Parking occupancy during the mid-afternoon ranges from 0 percent to 100 percent full with most streets between 20 and 40 percent occupied. The highest occupancy mid-afternoon is along Donahue Street, likely due to parking by construction personnel working on nearby Shipyard construction. Peak hour parking during the mid-afternoon period on Arelious Walker Drive is less than 20 percent occupied. Parking occupancy is generally lower during the evening, with most streets less than 20 percent occupied, although some areas are fully occupied. Peak hour parking during the evening period on Arelious Walker Drive is less than 10 percent occupied. A detailed summary of the parking supply and occupancy in the Project area is provided in **Appendix F.**

Residential Permit Parking ("RPP") regulations generally restrict weekday on-street parking to a one-hour or two-hour period, except for residents with permits. However, the study area is not located within an RPP

[14] Per the California Vehicle Code, Section 21806, all vehicles must yield right of way to emergency vehicles, and should remain stopped until the emergency vehicle has passed.

zone; the nearest zones are in the Dogpatch and Potrero Hill neighborhoods, approximately two miles from the Project Site.

San Francisco implemented a more efficient way of managing its on-street and public garage parking supply through the SF*park* program administered by SFMTA. SF*park* uses new technologies and parking pricing policies to optimize the use of existing parking resources in order to make finding a parking space faster and easier and by extension reducing circling by vehicles looking for parking near their destination. Currently, SF*park* is managing 7,000 on-street metered parking spaces (25 percent of the City's supply) and 12,250 off-street parking spaces in city-owned garages.[15] There are no SF*park* meters in the vicinity of the Project; the nearest SF*park* blocks are in the Mission Bay neighborhood, approximately three miles from the Project Site.

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[15] SFMTA SFpark program, http://sfpark.org/about-the-project/, accessed on March 19, 2015.

< 20%
20-39%
40-59%
60-79%
> 80%
No Parking

Figure 8A

On-Street Parking Occupancy - Midday

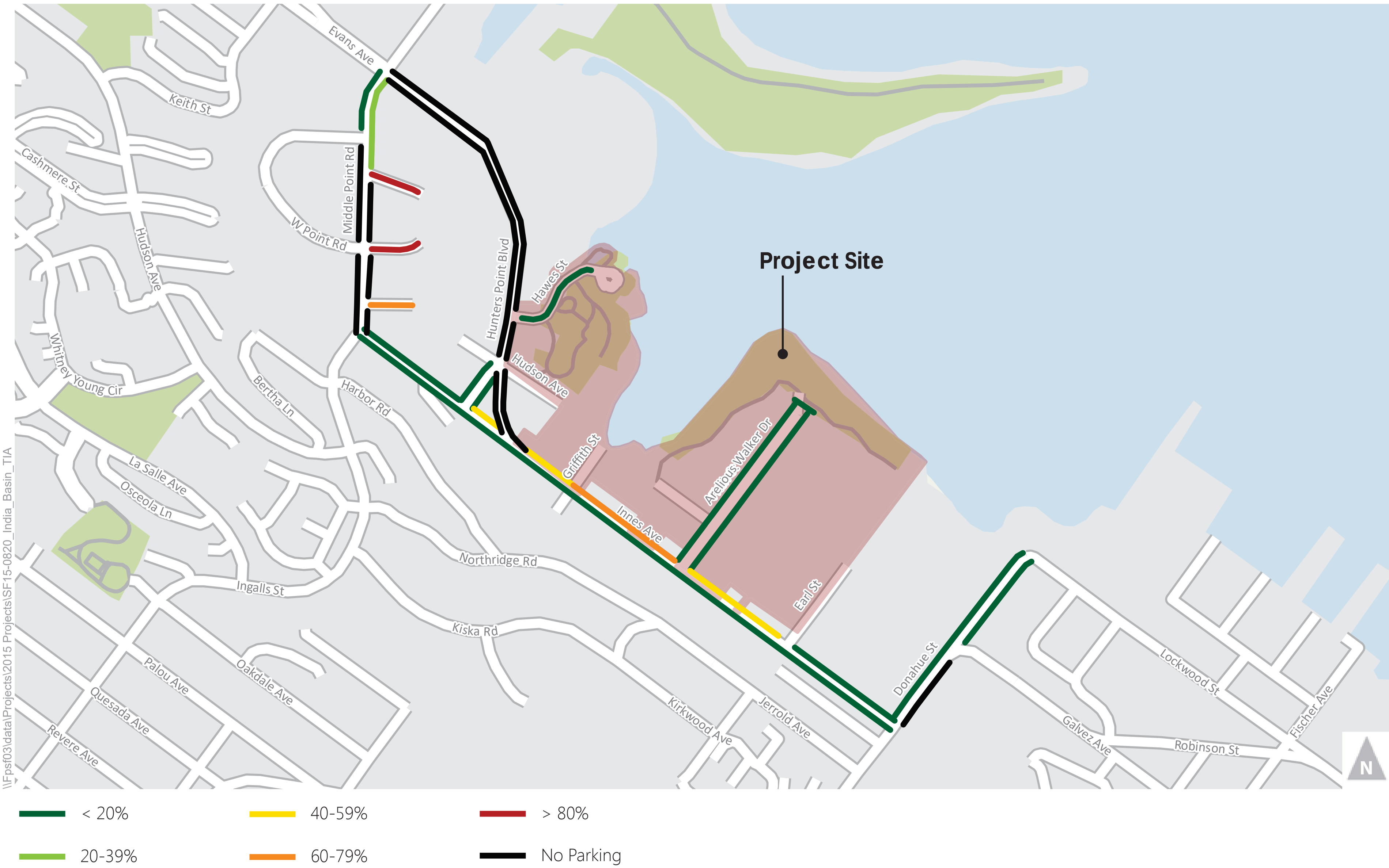

Figure 8B

On-Street Parking Occupancy - Evening

3 BASELINE CONDITIONS

Existing Conditions typically forms the baseline against which Project impacts are measured. However, conditions are in flux in this neighborhood because the Phase 1 of the nearby Hunters Point Shipyard (Shipyard) project has begun construction. Many units from the Shipyard project would be occupied prior to completion of the Proposed Project's Transportation Impact Analysis and opening of the initial phases of the Proposed Project. Additionally, Jennings Street, Evans Avenue, Hunters Point Boulevard, and Innes Avenue will be reconstructed as part of obligations for the Candlestick Point Hunters Point Shipyard (CPHPS) project. The reconstruction of these streets is planned to occur during Major Phase 1 Subphase 1 of Shipyard construction (2014-2021) and be completed in June 2020[16] prior to opening of Phase 1 of the Proposed Project, expected in July 2021. Therefore, an existing plus project transportation analysis does not accurately reflect the conditions that will exist at the time the project's impacts actually occur and an existing plus project conditions transportation analysis could be misleading to the public and decision makers. Therefore, a modified baseline scenario (Baseline Scenario) is presented and analyzed in this report.

The Baseline Scenario contains all development, changes to streetscape and circulation, and transit service improvements that are both approved and funded and near to the Project Site, as described in more detail below.

3.1 LAND USE CHANGES

This scenario includes 494 residential units approved as Phase 1 of the nearby Shipyard development that are currently under construction. The Project Sponsor for the Shipyard development is FivePoint. The 494 units included in the Baseline Scenario are part of Major Phase 1 Subphase 1 (i.e. Phase I) of the Shipyard project, which is an area adjacent to Donahue Street and extends for four blocks east towards Hunters Point.

3.1.1 Shipyard Phase 1

The Project Site is located to the immediate west of the Shipyard development. The first phase of the Shipyard development includes 519 residential units, of which 25 were occupied as of the time of traffic counts[17] collected in mid-May 2015 and are therefore accounted for in the counts. Since the remaining 494 units would be completed and occupied by 2018, the vehicle trips generated by the Shipyard Phase I project have been added to the existing conditions to form the modified Baseline Conditions scenario. **Figure 9** shows the location of the Shipyard Phase I development.

The trip generation, distribution, and mode share forecasts for the Shipyard Phase I residential units were developed based on the environmental analysis for the *CPHPS EIR*, specifically the *Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study*, a 2009 memo that is included as **Appendix G**. **Table 3-1** summarizes the vehicle trip generation forecasts for the Shipyard Phase I development that would be added to the Existing Conditions volumes to establish the modified Baseline Conditions scenario. Note that the automobile trip generation rates for the land uses within the CPHPS area assume implementation of the transit improvements proposed for the area, as no scenario was evaluated in the *CPHPS EIR* that did not assume substantial transit improvements proposed as part of that development. Without the transit improvements, the automobile trip generation rates may

[16] Candlestick Point Major Phase 1 Application, Lennar. Approved: March 15, 2016 OCII Commission Resolution 2016013. Updated August 24, 2016. Exhibit D-B, page 120.

[17] Email from Frankie Arias, Lennar, dated June 26, 2015.

be higher. These transit improvements would be implemented, as they are included in the approved CPHPS project description and mitigation measures, although the ones due for implementation after 2018 are not included as part of the Baseline Scenario. **Table 3-2** summarizes the vehicle trip distribution, and **Table 3-3** summarizes the mode share for the residential units both based on the *CPHPS EIR*.

The vehicle trips generated by these 494 units are part of the Baseline Scenario and are assigned to intersections in the vicinity of the Project Site using the trip distribution shown **Table 3-2**.

TABLE 3-1: SHIPYARD PHASE I RESIDENTIAL VEHICLE TRIP GENERATION

Time Period	Units[1]	Rate[2]	In[2]	Out[2]	Total Vehicle Trips	Trips In	Trips Out
AM Peak Hour	494	0.23	17%	83%	114	19	95
PM Peak Hour	494	0.28	67%	33%	139	93	46

Notes:

1. Number of units from email from Frankie Arias, Lennar, dated June 26, 2015
2. Trip generation rates are effective auto trip generation rates per dwelling unit from CPHPS EIR.

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Figure 9

Shipyard Phase I Location

TABLE 3-2: SHIPYARD PHASE I RESIDENTIAL TRIP DISTRIBUTION	
Zone[2]	**Trip Distribution[1]**
Superdistrict 1	13.5%
Superdistrict 2	8.5%
Superdistrict 3	36.5%
Superdistrict 4	3.5%
East Bay	9.0%
North Bay	1.5%
South Bay & Outside Region	27.5%
TOTAL	*100.0%*

Notes:

1. A 2030 PM SF-CHAMP model was used to develop trip distribution for work and non-work trips. This distribution was combined with the work/non-work trip split for residential land uses (from the SF Guidelines) to calculate an overall trip distribution.
2. A superdistrict map is included in Appendix H.

Source: Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study memo, May 2009; Fehr & Peers

TABLE 3-3: SHIPYARD PHASE I RESIDENTIAL MODE SHARE AND PERSON TRIPS			
Mode	**Percentage Share[1]**	**AM Peak Person Trips**	**PM Peak Person Trips**
Vehicle	54%	182	222
Transit	16%	53	65
Bicycle	2%	7	9
Internalized	29%	97	118
TOTAL	*100%*	*339*	*414*

Notes:

1. This mode share is based on Table 12 of the Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study which details the number of trips made by vehicle, transit, and bicycle. The vehicle trip generation rate summarized in Table 1 above incorporated the auto mode split percentage. Consistent with the Bayview Waterfront Project Transportation Study, an AVO of 1.60 was applied to vehicle trips to derive auto person trips. Then, the number of vehicle trips and the mode share percentages for the other modes were used to calculate the number of trips taken by the other modes.

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3.2 CIRCULATION AND STREETSCAPE CHANGES

The Baseline Scenario includes a range of network changes throughout the Jennings Street—Evans Avenue—Hunters Point Boulevard—Innes Avenue corridor. Excluding Jennings Street, this is the primary corridor along which a high number of Project-generated trips would occur. The changes are sourced from the 2010 CPHPS Transportation Plan[18] and the Shipyard Phase II Infrastructure Plan, both of which are approved and funded, except for the section between Earl Street and Donahue Street which is revised from the Infrastructure Plan recommendations based on a more detailed engineering feasibility study and an agreement between FivePoint (the Shipyard Project Sponsor) and the City. There have been no changes to the Hunters Point Shipyard Phase II Infrastructure Plan since 2010 that would affect circulation along Hunters Point Boulevard and Innes Avenue.

The intersection of Evans Avenue/Jennings Street is signalized in this scenario because signalization of this intersection is a mitigation measure that FivePoint is committed to implementing as part of the Shipyard project.

A table showing how Baseline cross-sections differ to Existing Conditions is shown in **Table 3-4** below.

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[18] A revised version of the CPHPS Transportation Plan was completed and approved by the Office of Community Investment and Infrastructure (OCII) in July 2014. However the changes that were made to the Plan were primarily to the Candlestick Point portion of the CPHPS development, and all cross-sectional references to streets within and adjacent to the Hunters Point Shipyard were removed from the Plan in anticipation of additional refinements to those streets. Therefore, the 2010 version of the Transportation Plan that was approved alongside the original CPHPS project contains the most recent set of approved cross-sections for the Hunters Point Shipyard.

TABLE 3-4: COMPARISON OF BASELINE SCENARIO CIRCULATION VERSUS EXISTING CONDITIONS CIRCULATION

Street	From	To	Scenario	Travel Lanes	Parking	Bicycle Facilities	Sidewalks
Jennings Street	Cargo Way	Evans Avenue	Existing Conditions	Two lanes, one in each direction, 12’	Both sides, 12’	None	Both sides, 8’
			Baseline Scenario	Two lanes, one in each direction, 12’	Both sides, 12’	None	Both sides, 8’ west side, 16’ east side
Evans Avenue	Jennings Street	Hunters Point Boulevard	Existing Conditions	Four lanes, two in each direction, outer as 18', inner as 12'	None	None	Both sides, 10' south side, 10' north side
			Baseline Scenario	Four lanes, two in each direction, outer as 11' shared bus/auto lane, inner as 10'	South side, 9'	Bicycle lanes both sides, 6’ south side, 6’ north side	Both sides, 8' south side, 10' north side
Hunters Point Boulevard	Evans Avenue	Hudson Avenue	Existing Conditions	Four lanes, two in each direction, outer as 12', inner as 11'	None	Bicycle lanes both sides, 6’ south side, 6’ north side	Both sides, 6' south side, 7' north side
			Baseline Scenario	Four lanes, two in each direction, outer as 11' shared bus/auto lane, inner as 10'	South side, 8'	Bicycle lanes both sides, 6’ south side, 6’ north side	Both sides, 8' south side, 10' north side
Hunters Point Boulevard	Hudson Avenue	Innes Avenue	Existing Conditions	Four lanes, two in each direction, outer as 12', inner as 11'	None	Bicycle lanes both sides, 6’ south side, 6’ north side	Both sides, 9' south side, 6' north side
			Baseline Scenario	Four lanes, two in each direction, outer as 11' shared bus/auto lane, inner as 10'	None	Bicycle lanes both sides, 5’ south side, 5’ north side[1]	Both sides, 8' south side, 10' north side
Innes Avenue	Hunters Point Boulevard	Griffith Street	Existing Conditions	Four 11’ lanes, two in each direction	Both sides, 8'	None	Both sides, 7’
			Baseline Scenario	Four 10' lanes, two in each direction	Both sides, 8'	Bicycle lanes, both sides, 5'[1]	Both sides, 7'
Innes Avenue	Griffith Street	Arelious Walker Street	Existing Conditions	Four lanes, two in each direction, outer as 12' shared bus/auto lane, inner as 10'	Both sides, 8'	None	Both sides, 5' south side, 8' north side
			Baseline Scenario	Four lanes, two in each direction, outer eastbound as 11' shared bus/auto lane, others as 10'	Both sides, south side 7', north side 8’	5' bicycle lane on north side, sharrows on south side[1]	Both sides, 5' south side, 7' north side
Innes Avenue	Arelious Walker	Earl Street	Existing Conditions	Four lanes, two in each direction, outer as 12' shared bus/auto lane, inner as 10'	Both sides, 8'	None	North side, 4’
			Baseline Scenario	Four lanes, two in each direction, outer eastbound as 11' shared bus/auto lane, others as 10'	Both sides, south side 7', north side 8’	5' bicycle lane on north side, sharrows on south side[1]	Both sides, 5' south side, 7' north side

Street	From	To	Scenario	Travel Lanes	Parking	Bicycle Facilities	Sidewalks
Innes Avenue	Earl Street	Donahue Street	Existing Conditions	Four 10’ lanes, two in each direction	Both sides, 8'	None	North side, 9’
			Baseline Scenario	Four lanes, two in each direction, outer as 11' shared bus/auto lane, inner as 10'	Both sides, 7'	None	Both sides, 5' south side, 7’ north side

Notes:

1. These bicycle facilities would be removed by the Proposed Project and Project Variant, and the bicycle facility relocated to a parallel Class I facility on Hudson Avenue.

Source: Draft IBTAP, 2015.

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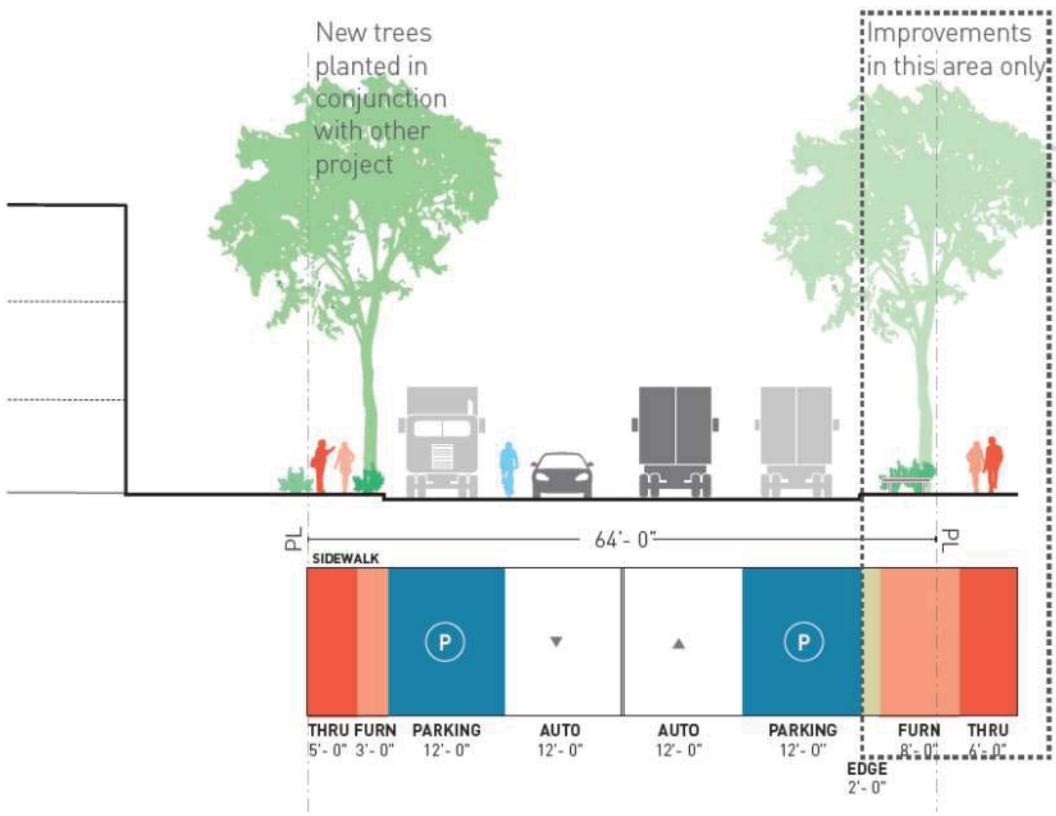
Individual road segment cross-sections for this scenario are described in detail below.

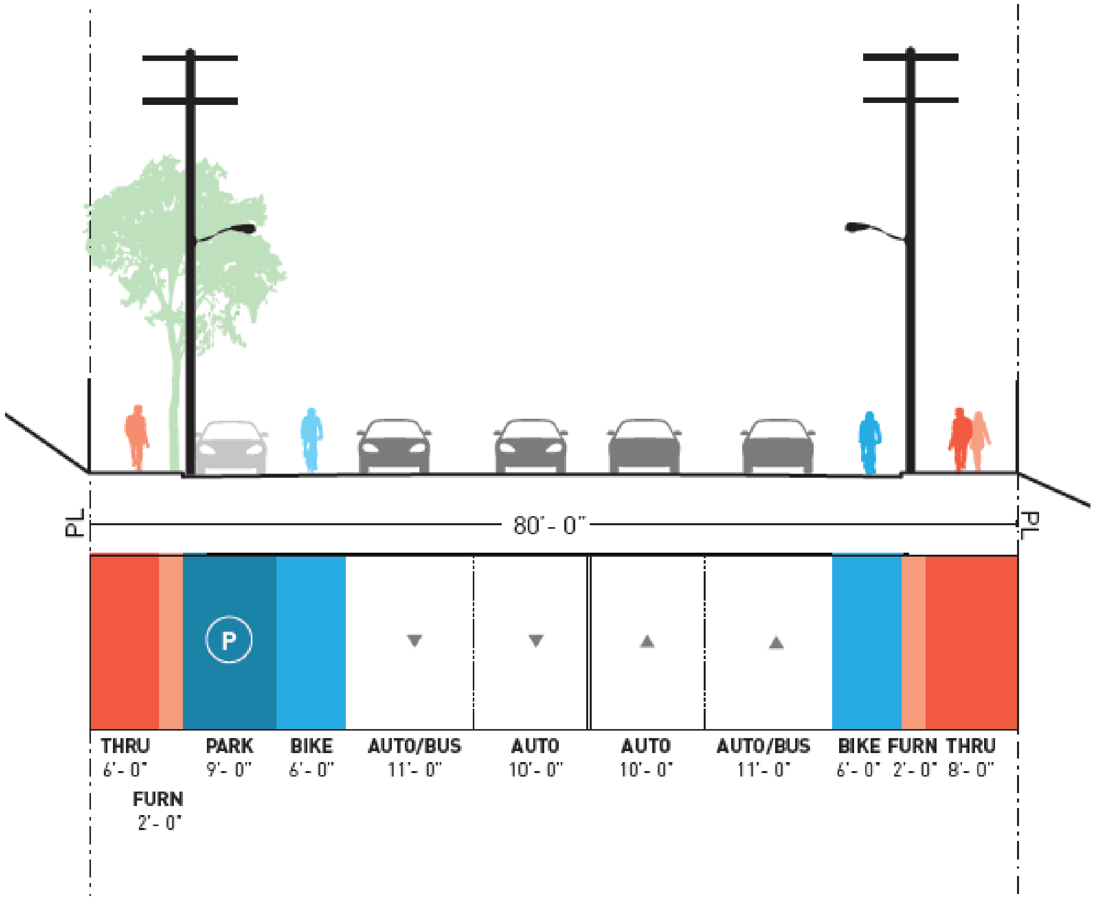
On Jennings Street, between Cargo Way and Evans Avenue, the street cross-section would include two travel lanes (one in each direction), on-street parking on both sides of the street, and sidewalks on both sides of the street (8-foot on the west side of the street and 16-foot on the east side of the street). **Inset 1** depicts the street section of Jennings Street in the Baseline scenario. All inset figures depict the street corridor looking north or west (i.e. the bay side is on the right).

Inset 1: Baseline – Jennings Street between Cargo Way and Evans Avenue



On Evans Avenue and Hunters Point Boulevard, between Jennings Street and Hudson Avenue, the street cross-section would include four travel lanes (two in each direction), on-street parking on the south side of the street, sidewalks on both sides of the street (8-foot on the south side of the street and 10-foot on the north side of the street), and 6-foot Class II bicycle lanes in both the eastbound and westbound directions. **Inset 2** depicts the street section of Evans Avenue and Hunters Point Boulevard in the Baseline scenario.

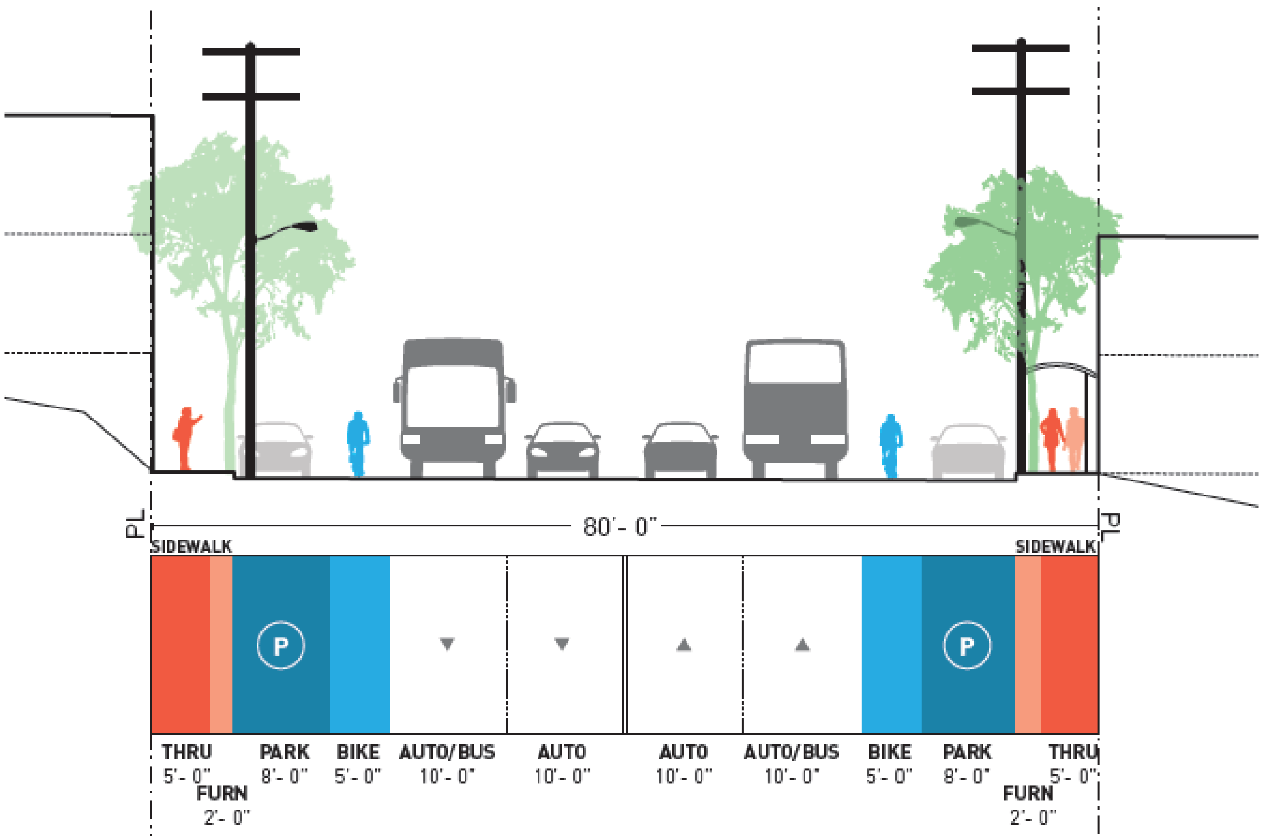
Inset 2: Baseline – Hunters Point Boulevard and Evans Avenue between Jennings Street and Hudson Avenue



Hunters Point Boulevard between Hudson Avenue and Innes Avenue and Innes Avenue between Hunters Point Boulevard and Griffith Street would provide four travel lanes (two in each direction), on-street parking on both sides of the street, 7-foot sidewalks on both sides of the street, and 5-foot Class II bicycle lanes in both directions.[19] **Inset 3** depicts the street section of Hunters Point Boulevard between Hudson Avenue and Innes Avenue and Innes Avenue between Hunters Point Boulevard and Griffith Street in the Baseline scenario.

[19] The CPHPS Transportation Plan was developed prior to plans for the proposed Class I facility on Hudson Avenue. These Class II bicycle lanes would be removed by the Proposed Project and Project Variant, and the bicycle facility relocated to a parallel Class I facility on Hudson Avenue.

Inset 3: Baseline – Hunters Point Boulevard and Innes Avenue between Hudson Avenue and Griffith Street



Between Griffith Street and Earl Street, Innes Avenue would provide four travel lanes (two in each direction), on-street parking on both sides of the street, sidewalks on both sides of the street (5-feet on the south side and 7-feet on the north side), and a Class II bicycle lane in the westbound direction only[20] (with 7-feet of unmodified hillside remaining within the right of way). **Inset 4** depicts the street section of Innes Avenue between Griffith Street and Earl Street in the Baseline scenario.

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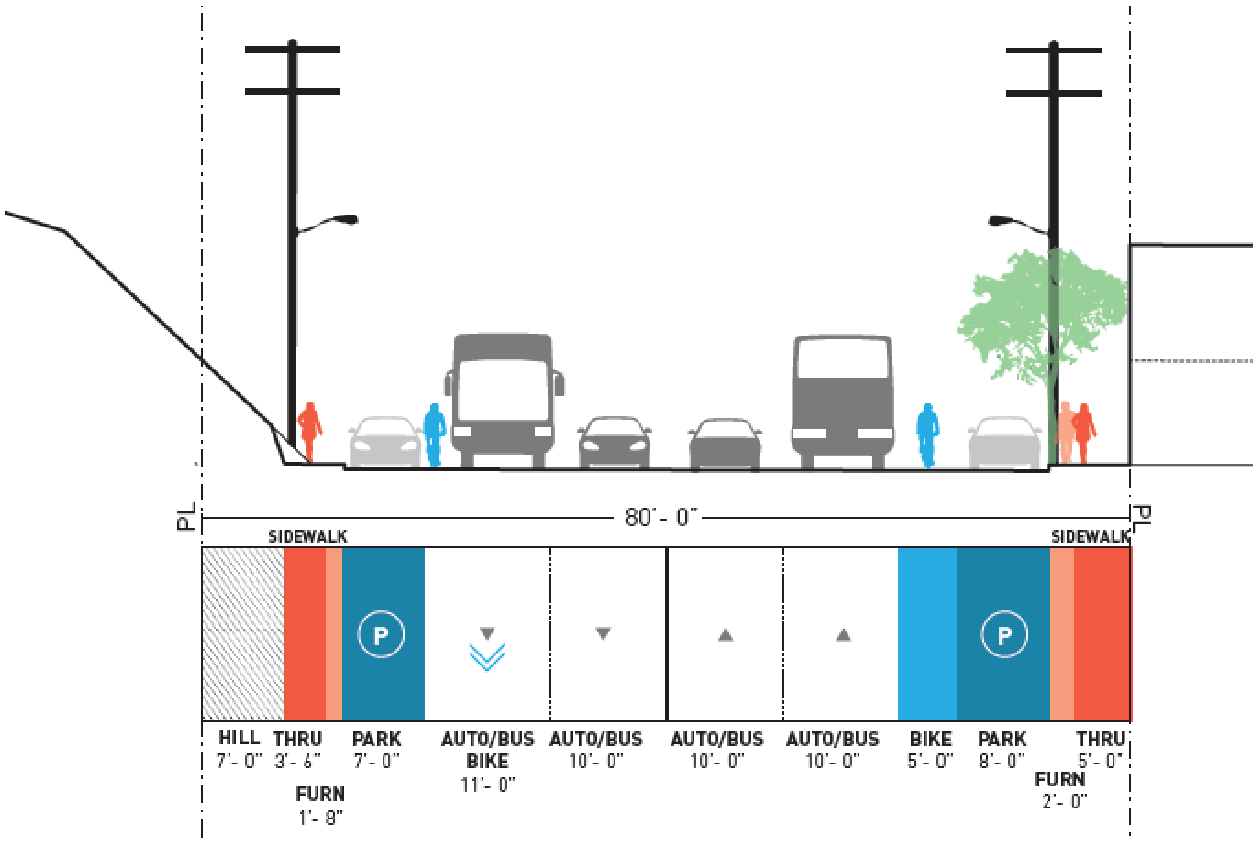
[20] This Class II bicycle lane would be removed by the Proposed Project and Project Variant, and the bicycle facility relocated to a parallel Class I facility on Hudson Avenue.

Inset 4: Baseline – Innes Avenue between Griffith Street and Earl Street



Between Earl Street and Donahue Street, the Innes Avenue cross-section is revised from the Infrastructure Plan recommendations based on a more detailed engineering feasibility study and an agreement between FivePoint (the Shipyard Project Sponsor) and the City. On this block, Innes Avenue would provide four travel lanes (two in each direction), on-street parking on both sides of the street, sidewalks on both sides of the street (12-feet on the south side and 13-feet on the north side), and no bicycle facilities. Ten-feet of unmodified hillside would remain within the right of way. **Inset 5** depicts the street section of Innes Avenue between Earl Street and Donahue Street in the Baseline scenario.

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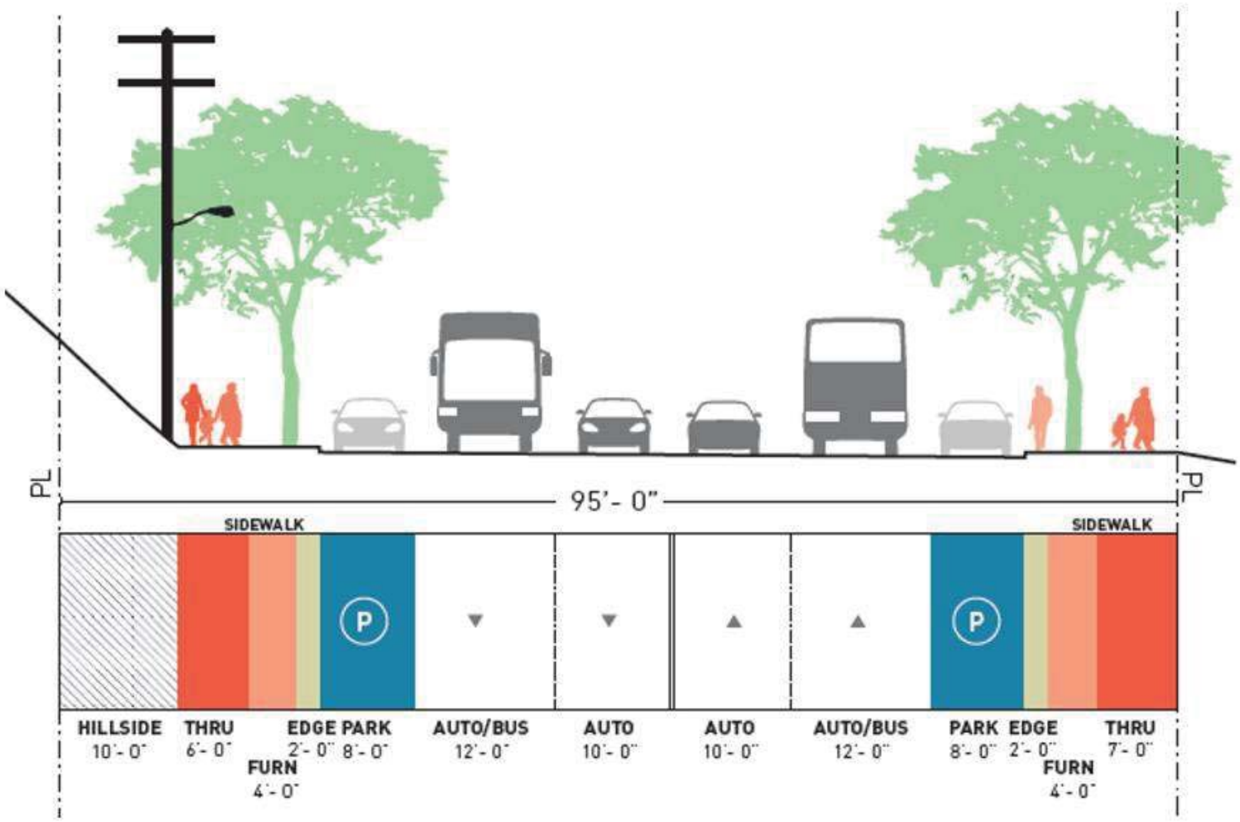
Inset 5: Baseline – Innes Avenue between Earl Street and Donahue Street



Northside Park is adjacent to the Project Site to the east. Northside Park is not part of India Basin; it is part of the Shipyard project. While a two-way Class I bicycle facility (cycletrack) has been proposed through the park, this scenario assumes this bicycle route has not been constructed. Instead, bicycle connections between the Class I facility on New Hudson and the intersection of Innes Avenue/Donahue Street include Class III sharrows along Earl Street between New Hudson Avenue and Innes Avenue, which are part of the Proposed Project, and a Class III facility on Innes Avenue between Earl Street and Donahue Street.

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3.3 TRANSIT SERVICE CHANGES

This scenario includes approved and funded transit service changes that would be implemented by the year 2018. These include two changes contained within Muni Forward and one change contained within the CPHPS Transportation Plan, as described below.

3.3.1 Muni Forward

The SFMTA and City of San Francisco Controller's Office are in the process of implementing Muni Forward, a review of the City's public transit system with recommendations designed to make Muni service more reliable, quicker, and more frequent.[21] Muni Forward includes new routes and route extensions, more service on busy routes, the elimination or consolidation of routes or route segments with low ridership, and corridor infrastructure projects to improve transit reliability by implementing transit preferential treatments such as transit only lanes or boarding islands. The SFMTA would implement Muni Forward projects based on funding and resource availability. However, no Muni Forward transit service changes are included in this scenario as there are none that are near the Project site and currently scheduled for implementation prior to 2018.

A number of recommendations that were considered as part of the Muni Forward process are not included in this scenario because those proposals are not currently scheduled for implementation prior to 2018:[22]

- **19 Polk:** The route alignment would be curtailed south of 24th Street to be replaced by the 48 Quintara-24th Street.
- **23 Monterey:** The 18 46th Ave would be combined with the 23 Monterey, providing direct service to the Outer Sunset and Outer Richmond.
- **48 Quintara-24th St:** This route would be extended to replace a portion of the 19 Polk along Evans Avenue and Innes Avenue.
- **54 Felton:** More direct routing would be provided to improve service to/from Balboa Park BART station.
- **T Third (light rail):** Increase frequency and capacity plus an extension into Chinatown via the Central Subway would be provided.

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[21] The Muni Forward recommendations were unanimously endorsed by the SFMTA Board of Directors for environmental review in October 2008, and the EIR was completed in 2014. Muni Forward was previously called the Transit Effectiveness Project (TEP), and the TEP EIR uses this previous name.

[22] These recommendations are considered as part of the Cumulative scenario, discussed in section 6.1.2.

3.3.2 CPHPS Transportation Plan

In addition to and independent of the Muni Forward improvements described above are transit service changes conditioned as part of the construction of Shipyard Phase II. Upon construction of portions of that site, substantial additional transit service would be implemented. Because the Plan is approved and funded, any improvements anticipated to be implemented by the Year 2018 are included in this scenario. Only one of the transit service changes meets this criterion, which is:

- **29 Sunset:** Extension along Gilman Ave to Harney Way

3.3.2.1 Individual Routes

The 494 Shipyard residential units assumed under the Baseline Scenario would add approximately 53 AM and 65 PM new transit trips during the weekday peak hours. Because the 19 Polk and 44 O'Shaughnessy are the only routes within convenient walking distance it was assumed that the majority of transit travel to the Superdistricts that they serve would include a trip on one of these two routes. Thirty AM and 37 PM transit trips would be assigned on the 19 Polk across the LMLP. Two trips in the AM and three trips in the PM would also pass the GMLP for this line. Twenty-one AM and 25 PM transit trips would be assigned on the 44 O'Shaughnessy at its GMLP. The 44 O'Shaughnessy route in the inbound direction would be above the capacity threshold in the PM period. All other line/direction combinations would be under the capacity threshold at all times. **Table 3-5** shows the assignment of baseline transit trips across the two routes.

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TABLE 3-5: BASELINE MUNI PEAK HOUR LOAD AND CAPACITY UTILIZATION BY LINE

Route	Peak Hour	Maximum Load Point	Passenger Load[1]	Back-ground Growth	Baseline No Project Load	Peak Hour Capacity[2]	Capacity Utilization
Inbound (Project Designation) / Outbound (SFMTA Designation)							
19 Polk (LMLP[3])	AM	Evans Ave/Newhall St	24	5	29	252	12%
	PM	Evans Ave/Newhall St	44	25	69	252	27%
19 Polk (GMLP[3])	AM	8th St/Howard St	160	0	160	252	64%
	PM	8th St/Mission St	168	2	170	252	67%
44 O'Shaughnessy (GMLP[3])	AM	Silver Ave/Dartmouth Ave	300	4	304	473	64%
	PM	Silver Ave/Mission St	360	17	377	420	**90%**
Outbound (Project Designation) / Inbound (SFMTA Designation)							
19 Polk (LMLP[3])	AM	Evans Ave/Newhall St	84	25	109	252	43%
	PM	Evans Ave/Newhall St	52	12	64	252	25%
19 Polk (GMLP[3])	AM	Larkin St/O'Farrell St	188	2	190	252	75%
	PM	7th St/Howard St	180	1	181	252	72%
44 O'Shaughnessy (GMLP[3])	AM	O'Shaughnessy Blvd/Del Vale	368	17	385	473	81%
	PM	Silver Ave/San Bruno Ave	240	8	248	420	59%

Notes:

Bold indicates capacity utilization of 85 percent or greater.

1. Peak hour ridership. Existing Load at Local Maximum Load Point or Global Maximum Load Point from Transit Data for Transportation Impact Studies (SF Planning, May 2015) or Transit Effectiveness Project Route analysis (Fehr & Peers, October 2011).
2. Total peak period capacity in passengers per hour.
3. GMLP is the Global Maximum Load Point, which is the route-wide maximum load point. LMLP is the Local Maximum Load Point, which is the maximum load point on the route east of Third Street.

Source: San Francisco Planning Department, "Transit Data for Transportation Impact Studies," May 2015. See **Appendix E** for transit line capacity calculations.

3.3.2.2 Downtown Screenlines

The 494 Shipyard residential units assumed under the Baseline Scenarios would add approximately 53 AM and 65 PM new transit trips during the weekday peak hours. The geographic distribution of these trips is the same as the distribution of baseline vehicle trips. Twelve AM and seven PM transit trips would be distributed on San Francisco Muni routes that pass Downtown Screenlines, and four AM and four PM transit trips would be on regional routes, including one AM and two PM transit trips to the East Bay and three AM and six PM transit trips to the South Bay. No new transit trips would be taken to the North Bay. **Table 3-6** shows the distribution of baseline transit trips across the Downtown Screenlines..

TABLE 3-6: MUNI DOWNTOWN SCREENLINE CAPACITY UTILIZATION – BASELINE SCENARIO					
Screenline	**Existing Peak Hour[1] Ridership**	**Peak Hour Baseline Increment**	**Peak Hour[1] Baseline Ridership**	**Peak Hour[1] Capacity**	**Peak Hour[1] Capacity Utilization**
AM Peak Hour					
Kearny/Stockton[2]	2,211	0	2,211	3,050	72%
Other lines[3]	538	0	538	1,141	47%
Northeast Screenline Total	*2,749*	*0*	*2,749*	*4,191*	*66%*
Geary[4]	1,821	0	1,821	2,490	73%
California[5]	1,610	0	1,610	2,010	80%
Sutter/Clement[6]	480	0	480	630	76%
Fulton/Hayes[7]	1,277	0	1,277	1,680	76%
Balboa[8]	758	0	758	1,019	74%
Northwest Screenline Total	*5,946*	*0*	*5,946*	*7,829*	*76%*
Third Street[9]	350	9	359	793	45%
Mission[10]	1,643	0	1,643	2,509	65%
San Bruno/Bayshore[11]	1,689	1	1,690	2,134	79%
Other lines[12]	1,466	2	1,468	1,756	84%
Southeast Screenline Total	*5,148*	*12*	*5,160*	*7,192*	*72%*
Subway lines[13]	6,330	0	6,330	6,205	**102%**
Haight/Noriega[14]	1,121	0	1,121	1,554	72%
Other lines[15]	465	0	465	700	66%
Southwest Screenline Total	*7,916*	*0*	*7,916*	*8,459*	***94%***

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PM Peak Hour					
Kearny/Stockton[2]	2,245	0	2,245	3,327	67%
Other lines[3]	683	0	683	1,078	63%
Northeast Screenline Total	*2,928*	*0*	*2,928*	*4,405*	*66%*
Geary[4]	1,964	0	1,964	2,623	75%
California[5]	1,322	0	1,322	1,752	75%
Sutter/Clement[6]	425	0	425	630	67%
Fulton/Hayes[7]	1,184	0	1,184	1,323	**89%**
Balboa[8]	625	0	625	974	64%
Northwest Screenline Total	*5,520*	*0*	*5,520*	*7,302*	*76%*
Third Street[9]	782	6	788	793	**99%**
Mission[10]	1,407	0	1,407	2,601	54%
San Bruno/Bayshore[11]	1,536	0	1,536	2,134	72%
Other lines[12]	1,084	1	1,085	1,675	65%
Southeast Screenline Total	*4,809*	*7*	*4,816*	*7,203*	*67%*
Subway lines[13]	4,904	0	4,904	6,164	80%
Haight/Noriega[14]	977	0	977	1,554	63%
Other lines[15]	555	0	555	700	79%
Southwest Screenline Total	*6,436*	*0*	*6,436*	*8,418*	*76%*

Notes:
1. AM Peak hour as inbound (i.e. toward Downtown) only; PM peak hour as outbound (i.e. away from Downtown) only
2. 8 Bayshore, 30 Stockton, 30X Marina Express, 41 Union, 45 Union-Stockton
3. F Market & Wharves, 10 Townsend, 12 Folsom/Pacific
4. 38 Geary, 38R Geary Rapid, 38AX Geary 'A' Express, 38BX Geary 'B' Express
5. 1 California, 1AX California 'A' Express, 1AX California 'B' Express
6. 2 Sutter, 3 Clement
7. 5 Fulton, 21 Hayes
8. 31 Balboa, 31AX Balboa 'A' Express, 31BX Balboa 'B' Express
9. T Third Street
10. 14 Mission, 14R Mission Rapid, 14X Mission Express, 49 Van Ness-Mission
11. 8AX Bayshore 'A' Express, 8BX Bayshore 'B' Express, 8 Bayshore, 9 San Bruno, 9L San Bruno Limited
12. J Church, 10 Townsend, 12 Folsom/Pacific, 19 Polk, 27 Bryant
13. KT Ingleside/Third Street, L Taraval, M Ocean View, N Judah
14. 6 Haight-Parnassus, 7/7R Haight-Noriega/Rapid, 7X Noriega Express, NX Judah Express
15. F Market & Wharves

Source: San Francisco Planning Department, May 2015; Fehr & Peers, 2016, see **Appendix E** for transit line capacity calculations

3.3.2.3 Regional Transit

Table 3-7 shows the distribution of baseline transit trips across regional screenlines.

TABLE 3-7: REGIONAL TRANSIT SCREENLINE – BASELINE SCENARIO					
Screenline	**Existing Peak Hour Ridership**	**Baseline Increment**	**Baseline Ridership**	**Peak Hourly Capacity**	**Capacity Utilization**
AM Peak Hour					
East Bay					
BART	25,399	1	25,400	23,256	**109%**
AC Transit	1,568	0	1,568	2,829	55%
Ferries	810	0	810	1,170	69%
Screenline Subtotal	*27,777*	*1*	*27,778*	*27,255*	***102%***
North Bay					
Golden Gate Transit Buses	1,330	0	1,330	2,543	52%
Ferries	1,082	0	1,082	1,959	55%
Screenline Subtotal	*2,412*	*0*	*2,412*	*4,502*	*54%*
South Bay					
BART	14,150	1	14,151	19,367	73%
Caltrain	2,171	2	2,173	3,100	70%
SamTrans	255	0	255	520	49%
Screenline Subtotal	*16,576*	*3*	*16,579*	*22,987*	*72%*
Regional Total	*46,765*	*4*	*46,769*	*54,744*	*85%*
PM Peak Hour					
East Bay					
BART	24,488	2	24,490	22,784	**107%**
AC Transit	2,256	0	2,256	3,926	57%
Ferries	805	0	805	1,615	50%
Screenline Subtotal	*27,549*	*2*	*27,551*	*28,325*	*97%*
North Bay					
Golden Gate Transit Buses	1,384	0	1,384	2,817	49%
Ferries	968	0	968	1,959	49%
Screenline Subtotal	*2,352*	*0*	*2,352*	*4,776*	*49%*
South Bay					
BART	13,500	2	13,502	18,900	71%
Caltrain	2,377	4	2,381	3,100	77%
SamTrans	141	0	141	320	44%
Screenline Subtotal	*16,018*	*6*	*16,024*	*22,320*	*72%*
Regional Total	*45,919*	*8*	*45,927*	*55,421*	*83%*

Bold indicates capacity utilization of 100 percent or greater.
Source: San Francisco Planning Department, "Transit Data for Transportation Impact Studies," May 2015. San Francisco Planning Department, "Updated BART Regional Screenlines – Revised," and October 17, 2016; Fehr & Peers, 2016.

4 TRAVEL DEMAND ANALYSIS

Travel demand refers to the new vehicle, transit, bicycle and pedestrian traffic that would be generated by the Proposed Project and Project Variant. This chapter provides a forecast of the trips that would be generated by the new residential, retail, office, open space, and school uses. Parking demand and delivery/service vehicle-trips for the new uses are also presented.

4.1 TRIP GENERATION

The methods commonly used for forecasting trip generation of projects in San Francisco are based on person-trip generation rates, trip distribution information, and mode split data described in the *SF Guidelines*, which are then used to assign trips to the surrounding roadway network. These data are based on a number of detailed travel behavior surveys conducted within San Francisco. The data in the *SF Guidelines* are generally accepted as more appropriate for use in the complex environs of San Francisco than more conventional methods because of the relatively unique mix of uses, density, availability of transit, and cost of parking commonly found in San Francisco. Therefore, the *SF Guidelines* were used for trip generation for all uses except schools and open space, for which guidance is not given. For the proposed R&D lab space, the general office trip rates from the *SF Guidelines* were applied. This assumption recognizes that R&D uses in San Francisco, due to their high employee densities, typically have trip rates more similar to typical office uses than to traditional R&D facilities.

For open space, this analysis uses rates and in/out splits from ITE Trip Generation, 9th Edition surveys.[23] The ITE rates are consistent with the type and extent of use expected from the proposed park(s).

For the school, trip generation rates were developed from data collected for a comparable school in San Francisco. The proposed school at the Project Site will be a private school for pre-K-through-8 students. The estimated number of daily person trips per student is 4.2, which considers the variety of modes that students would be expected to take and separately considers trips inbound and outbound from school, for both parents and students, in both the AM and PM periods. Those students dropped off by a parent/guardian or carpooling would generate at least four person trips per student per day, as parents/guardian trips are also considered. Those walking or taking transit or bicycle would result in two trips per student per day. When weighted over all modes, the average person trips per student per day is 4.2. The details of this calculation are provided in **Appendix I**.

Special events have not been considered as part of the travel demand assessment. While some planned events could occur on the Project Site, the size of the events are expected to create a small amount of traffic compared with the levels of traffic the Project would normally generate. They would also likely not occur at times of peak trip generation. Therefore, such events are not expected to complicate overall circulation and have not been considered.

4.1.1 Developing AM Rates from PM Rates

The *SF Guidelines* provide a method to calculate PM peak hour person-trips but do not provide rates to calculate AM peak hour person-trips. Therefore, for each land use included in the *SF Guidelines*, a conversion factor was developed to calculate AM peak hour person trips based on the number of PM peak hour person

[23] Land Use 411 - City Park.

trips. This conversion factor is based on the ratio of AM peak hour vehicle-trips to PM peak hour vehicle-trips as provided by ITE *Trip Generation*, 9th Edition, for comparable land uses. The conversion factors for the land uses included in the project are shown below in **Table 4-1**. The rates presented in the **Table 4-1** are vehicle trip generation rates. These rates were used for developing a person-trip PM to AM conversion factor only, by virtue of being the best data available, and were not used for the purposes of person-trip generation.

TABLE 4-1: DERIVING PM TO AM CONVERSION FACTORS FOR PERSON TRIP GENERATION

Land Use	ITE Code	Vehicle Trip Generation Rate (per ksf or Dwelling Unit)		Conversion Factor (PM to AM)
		AM Peak Hour	PM Peak Hour	
Residential	223	0.30	0.39	77%
Clinical Use	710	1.56	1.49	105%
Administrative Use	710	1.56	1.49	105%
General Office	710	1.56	1.49	105%
Restaurant	931	0.81	7.49	11%
Café	932	10.81	9.85	110%
Supermarket	850	3.40	9.48	36%
General Retail	820	0.96	3.71	26%

Source: ITE Trip Generation, 9th Edition, 2012

4.1.2 AM, PM, and Daily Trip Rates and Person Trips

The conversion factors were applied to the *SF Guidelines* PM peak hour person trip rates to give AM peak hour person trip rates. The trip rates for land uses included in the *SF Guidelines* and the person trips for all uses in the Proposed Project are shown in **Table 4-2**. The calculations of trip generation rates for uses not included in the *SF Guidelines* (R&D, open space, and educational) are also shown.

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TABLE 4-2: PROJECT PERSON TRIP GENERATION							
Land Use	**Size**	**Trip Generation Rates**			**Person Trips Generated**		
		Daily Trip Rate	**AM Peak Hour as % of Daily**[1]	**PM Peak Hour as % of Daily**	**Daily**	**AM Peak Hour**	**PM Peak Hour**
Proposed Project							
700 Innes							
Residential	198 studio units	7.5 per unit	13.3%	17.3%	1,485	198	257
	236 1-bedroom units	7.5 per unit	13.3%	17.3%	1,770	235	306
	805[4] 2+ bedroom units	10 per unit	13.3%	17.3%	8,050	1,072	1,393
	Subtotal	-	-	-	11,305	1,505	1,956
Commercial	174,930 sf General Office	18.1 per ksf	8.9%	8.5%	3,166	282	269
	Subtotal	-	-	-	3,166	282	269
Retail	15,000 sf Restaurant	200 per ksf	1.5%	13.5%	3,000	44	405
	20,000 sf Café	200 per ksf[2]	14.8%	13.5%	4,000	593	540
	25,000 sf Supermarket	297 per ksf	2.6%	7.3%	7,425	194	542
	40,400 sf General Retail	150 per ksf	2.3%	9.0%	6,060	141	545
	Subtotal	--	--	--	20,485	972	2,032
Educational[3]	450 students	4.2 per student	50.0%	15.7%	1,890	945	297
	95 staff	2.0 per staff	25.0%	25.0%	190	48	48
	Subtotal	--	--	--	2,080	993	345
Open space	5.4 acres	24.3 per acre	23.3%	25.9%	131	31	34
Parcel Total	--	--	--	--	*37,167*	*3,783*	*4,636*
RPD Property							
Open Space	5.6 acres of India Basin Shoreline Park	24.3 per acre	23.3%	25.9%	137	32	35
	1.8 acres of 900 Innes Avenue	24.3 per acre	23.3%	25.9%	44	10	11
	6.2 acres of India Basin Open Space	24.3 per acre	23.3%	25.9%	152	35	39
	Subtotal	--	--	--	333	77	85
Site Total	**--**	**--**	**--**	**--**	**37,500**	**3,860**	**4,722**

Project Variant							
700 Innes							
Residential	50 studio units	7.5 per unit	13.3%	17.3%	375	50	65
	125 1-bedroom units	7.5 per unit	13.3%	17.3%	938	125	162
	324[4] 2+ bedroom units	10 per unit	13.3%	17.3%	3,240	432	561
	Subtotal	--	--	--	4,553	607	788
Commercial	85,000 sf Clinical Use	43.3 per ksf	15.2%	14.5%	3,681	559	534
	100,000 sf Administrative	36.4 per ksf	17.0%	16.2%	3,640	618	590
	400,000 sf General Office & 275,000 sf R&D Lab Area	18.1 per ksf	8.9%	8.5%	12,218	1,087	1,038
	Subtotal	--	--	--	19,539	2,264	2,162
Retail	25,000 sf Restaurant	200 per ksf	1.5%	13.5%	5,000	73	675
	20,000 sf Café	200 per ksf[2]	14.8%	13.5%	4,000	593	540
	25,000 sf Supermarket	297 per ksf	2.6%	7.3%	7,425	194	542
	70,000 sf General Retail	150 per ksf	2.3%	9.0%	10,500	245	945
	Subtotal	--	--	--	26,925	1,105	2,702
Educational	450 students	4.2 per student	50.0%	15.7%	1,890	945	297
	95 staff	2.0 per staff	25.0%	25.0%	190	48	48
	Subtotal	--	--	--	2,080	993	345
Open space	5.4 acres	24.3 per acre	23.3%	25.9%	131	31	34
Parcel Subtotal	--	--	--	--	*53,228*	*5,000*	*6,031*
RPD Property							
Open Space	5.6 acres of India Basin Shoreline Park	24.3 per acre	23.3%	25.9%	137	32	35
	1.8 acres of 900 Innes Avenue	24.3 per acre	23.3%	25.9%	44	10	11
	6.2 acres of India Basin Open Space	24.3 per acre	23.3%	25.9%	152	35	39
Open Space	Subtotal	--	--	--	333	77	85
Total	--	**--**	**--**	**--**	**53,561**	**5,077**	**6,117**

Notes:

1. For uses whose trip generation is from SF Guidelines, the AM Peak Hr rate was calculated using conversion factors shown in **Table 4-1**.
2. Quality sit-down rate (200) is used for the Café Type Area. SF Guidelines does not provide a café trip generation, and the composite rate (600) is inappropriately high because it is skewed upward by the Fast Food rate (1,400). Based on the similarities in use between café and quality sit-down restaurant, the quality sit-down rate from SF Guidelines (200) is adopted to represent café use, noting that it is comparable to the ITE rate for this use (land use code 932), which is 195.
3. School trip rates developed from *Sacred Heart Campus Circulation Study* data, conducted by Fehr & Peers, April 24, 2015.
4. The unit count for 2+ bedrooms is one fewer than contained within the project description because it does not contain one private residence that currently exists and would be relocated from its current location with the Project Site, therefore not affecting travel demand.

Source: *SF Guidelines*, 2002

As is shown in the above table, the Proposed Project is expected to generate 3,860 person trips during the AM peak hour (3,783 person trips on the 700 Innes parcel and 77 person trips on the RPD Property) and 4,722 person trips in the PM peak hour (4,636 person trips on the 700 Innes parcel and 85 person trips on the RPD Property). The Project Variant is expected to generate 5,077 person trips in the AM peak hour (5,000 person trips on the 700 Innes parcel and 77 person trips on the RPD Property) and 6,117 person trips in the PM peak hour (6,031 person trips on the 700 Innes parcel and 85 person trips on the RPD Property).

4.2 TRIP DISTRIBUTION

The next component of the analysis is a forecast of the geographic trip distribution of project trips by trip purpose. The proposed project trip distribution for residential, office, and retail uses was primarily derived from San Francisco CHAMP travel demand forecasting model outputs, maintained by the San Francisco County Transportation Authority (SFCTA). As described below, this report proposes to use trip distribution forecasts consistent with the CPHPS EIR. Because the forecasts from the CPHPS EIR are from 2009, Fehr & Peers compared the trip distribution from the CPHPS EIR with forecasts from the most recent version of the SF-CHAMP model to verify the validity of the CPHPS forecasts. School trip distribution is based on student catchment area data.

4.2.1 Residential, Office, Retail, and Open Space Uses

The trip distribution for work and non-work trips from India Basin was developed previously as part of the CPHPS EIR, as described in the letter report *Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study* from May 2009 (*CPHPS Travel Demand Memo*), included in the Technical Appendix to the CPHPS EIR's Transportation Impact Study, and shown in **Appendix G**.

Because the forecasts from the *CPHPS EIR* are from 2009, Fehr & Peers compared the trip distribution from the *CPHPS EIR* with forecasts from the most recent version of the SF-CHAMP model[24] to verify the validity of the CPHPS forecasts. Specifically, the CPHPS EIR forecasts were compared with model runs recently developed for the Central SoMa EIR. The SF-CHAMP model assumptions from the Central SoMa EIR for the India Basin site were similar to the Proposed Project, in terms of growth in households (as shown in **Table 4-3**). In terms of employment, the SF-CHAMP model assumed approximately the average of the Proposed Project and Project Variant, and therefore represents a reasonable approximation of trip distribution for the project overall.

TABLE 4-3: LAND USE GROWTH COMPARISONS (USING CENTRAL SOMA SF-CHAMP MODEL)

Land Use Characteristic	2012 to 2040 Central SoMa SF-CHAMP Model Growth (TAZ #446)	Proposed Project Growth (India Basin)	Project Variant Growth (India Basin)
Households	1,140	1,190	781
Employees	1,220	244	2,108

Source: SF-CHAMP 2012 and 2040, Central SoMa EIR

24 SF-CHAMP model runs from the *Central SoMa Plan Draft Environmental Impact Report (*Case No. 2011.1356E) were used

Table 4-4 compares the trip distribution from the more recent SF-CHAMP model output (developed for Central SoMa) with the trip distribution as derived from the SF-CHAMP model used for the *CPHPS EIR*.

TABLE 4-4: TRIP DISTRIBUTION COMPARISON

Location	SF TAZ #446 - 2040 SF-CHAMP (Central SoMa)	Total Trip Distribution – 2030 SF-CHAMP (*CPHPS EIR*)
Superdistrict 1	8%	12%
Superdistrict 2	6%	8%
Superdistrict 3	46%	36%
Superdistrict 4	5%	3%
East Bay	8%	9%
North Bay	3%	3%
South Bay & Out of Region	23%	29%
Total	***100%***	***100%***

Source: *Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study*, May 2009; Central SoMa CHAMP model runs, 2015

As shown in **Table 4-4**, although there are moderate differences between the two models, overall, the trip distribution percentages for the TAZ from the SF-CHAMP model for Central SoMa are similar to those presented from the *CPHPS Travel Demand Memo*. Therefore, since the trip distribution results are similar for the two models, this analysis uses the more detailed and refined trip distribution percentages for work and non-work trips from the *CPHPS Travel Demand Memo*.

4.2.2 School

Trip distribution for the school was developed using data provided by Mission Prep School[25], which is a school with a similar student profile to the proposed school (i.e. a preparatory school for grades K-8). Trip distribution data was collected for a second similar school, also located in Superdistrict 3 (La Scuola International School[26]). The trip distribution profiles of the two schools were similar, justifying using data from Mission Prep as an adequately generic representation of the proposed school. Home locations of students for Mission Prep school were provided by the head of school. Home location served as the basis for trip distribution for all student school trips. Staff/faculty trips are assumed to be the same as the composite for residential, office, and retail uses.

It was assumed that home locations of students at the proposed school would be similar to those elsewhere in Superdistrict 3. Home locations are as follows: 50 percent of students in zip code 94112 (which incorporates Excelsior, Balboa Park, Ingleside, and Outer Mission), 37 percent throughout other southeastern San Francisco neighborhoods, and 13 percent outside of San Francisco. Zip Code 94112 is entirely within Superdistrict 3. The 37 percent throughout other southeastern San Francisco neighborhoods was assigned to Superdistrict 3. As the school would be located approximately 3 miles from San Mateo

[25] Located at 75 Francis Street in the Excelsior neighborhood

[26] Located at 728 20th Street in the Dogpatch neighborhood

County, the 13 percent outside of San Francisco was assumed to be from the Peninsula/South Bay region. Trip distribution splits are shown in **Table 4-5**.

<table>
<tr><th colspan="4">TABLE 4-5: SCHOOL STUDENT TRIP DISTRIBUTION</th></tr>
<tr><th colspan="2">Data from School</th><th colspan="2">Data for Analysis</th></tr>
<tr><th>Location</th><th>Percentage</th><th>Location</th><th>Percentage</th></tr>
<tr><td>Zip code 94112</td><td>50%</td><td>Superdistrict 3</td><td>50%</td></tr>
<tr><td>Other southeastern SF neighborhoods</td><td>37%</td><td>Superdistrict 3</td><td>37%</td></tr>
<tr><td rowspan="2">Other SF neighborhoods</td><td rowspan="2">0%</td><td>Superdistrict 1</td><td>0%</td></tr>
<tr><td>Superdistrict 2</td><td>0%</td></tr>
<tr><td rowspan="2">Outside of SF</td><td rowspan="2">13%</td><td>South Bay</td><td>13%</td></tr>
<tr><td>East Bay, North Bay, Out of Region</td><td>0%</td></tr>
<tr><td>Total</td><td>100%</td><td>Total</td><td>100%</td></tr>
</table>

Source: Email from Jane Henzerling, Head of Mission Prep School, 2015

4.3 MODE SPLIT

The project-generated person-trips were assigned to travel modes in order to determine the number of auto, transit, walk, and “other” trips. “Other” includes bicycle, motorcycle, taxi and additional modes. Mode split information for the residential portion of the project was based on the most recent US Census American Community Survey data available (2009-2013). An average vehicle occupancy rate, obtained from US Census American Community Survey data, was applied to the number of auto person trips to determine the number of vehicle trips generated by the Proposed Project. The Proposed Project is located in Census Tract 231.03.

Mode split forecasts were developed for two different scenarios:

- **Baseline Plus Project:** This scenario contains transit service approved and funded and expected to be implemented by 2018, which is the same as existing levels of transit service, and
- **Cumulative Plus Project:** This scenario contains substantial changes to transit service expected to occur through 2029 as part of the implementation of the adjacent CPHPS project, shown in **Figure 10** below. Because these changes are part of the Cumulative scenario, they are explained in detail in Section 6.1.2.

This section first presents the approach to determining mode split for residential, office, and retail uses. The approach for open space and school uses is different and is presented at the end of the section.

Existing Light Rail

Potential Extension of T-Third

New/Modified MUNI Bus Routes in Mixed Flow Lanes

Improvement

Downtown Express Bus

Bus Rapid Transit

Proposed Transit Stop

Figure 10

Transit Network Improvements

4.3.1.1 Residential, Office, and Retail Uses

As per trip distribution, mode split forecasts for development within the India Basin project were previously developed in 2009 as part of the *CPHPS EIR*. In that study, the level of transit provided by the full implementation of the CPHPS Transportation Plan (shown in **Figure 10** and explained in Section 6.1.2) was assumed; therefore, this analysis will use those mode split percentages for the Cumulative Plus Project scenario. Using this as a starting point, the analysis then calculates the Project mode split percentages for the Baseline Plus Project scenario by comparing SF-CHAMP model runs for conditions with and without the increased transit service.

Large, mixed-use projects such as the Proposed Project and Project Variant would be expected to have a certain amount of internalization of trips, whereby trips between complementary land uses are captured internally. For a project of this size and composition, these internal trips are assumed to be walking trips, and all walking trips are assumed to be to and from destinations within the Project Site.

While the *SF Guidelines* methodology provides a walk mode split percentage for retail and commercial work and non-work trips separately in Superdistrict 3, it is not sensitive to the unique combination of retail, residential, and commercial development within the Project Site.

Instead, internalization was forecasted using a mixed-use development trip generation methodology (MXD+) based on two individual studies of mixed-used developments: one study sponsored by the US Environmental Protection Agency (EPA)[27] and another by the Transportation Research Board (TRB)[28]. The two studies examined over 260 mixed-use development sites throughout the U.S. and, using different approaches, developed new quantification methods for mixed-use development trip generation. The two methods, including the basis, capabilities, and appropriate uses of each, have been combined to produce the MXD+ method which combines the strengths of the two individual advances to best practice. The MXD+ tool has been validated by applying it at a set of 28 independent MXD sites across the country that were not included in the initial model development. The MXD+ model has been approved for use by the EPA[29]. It has also been peer-reviewed in the American Society of Civil Engineers (ASCE) Journal of Urban Planning and Development,[30] peer-reviewed in a 2012 TRB paper evaluating various smart growth trip generation methodologies,[31] recommended by the San Diego Association of Governments (SANDAG) for use on mixed-use smart growth developments,[32] and has been applied to forecasts for new development throughout California.

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[27] *Traffic Generated by Mixed-Use Developments—A Six-Region Study Using Consistent Built Environmental Measures* (Ewing et al, ASCE UP0146, Sept 2011)

[28] National Cooperative Highway Research Program (NCHRP) Report 684 *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* (Bochner et al, March 2011)

[29] Trip Generation Tool for Mixed-Use Developments (2012). www.epa.gov/dced/mxd_tripgeneration.html

[30] "Traffic Generated by Mixed-Use Developments—Six-Region Study Using Consistent Built Environmental Measures." Journal of Urban Planning and Development, 137(3), 248–261.

[31] Shafizadeh, Kevan et al. "Evaluation of the Operation and Accuracy of Available Smart Growth Trip Generation Methodologies for Use in California". Presented at 91st Annual Meeting of the Transportation Research Board, Washington, D.C., 2012.

[32] SANDAG Smart Growth Trip Generation and Parking Study.
http://www.sandag.org/index.asp?projectid=378&fuseaction=projects.detail

As part of the trip generation process, the MXD+ tool calculates the estimated internalization rate of the site. The MXD+ model incorporates local area factors such as local and regional demographic data (average household size, employment within 1 mile of site, and employment within 30 minutes of transit), number of vehicles per household, and intersection density to estimate the rate of internalization. Using the proposed land uses for the Project, the MXD+ tool estimated that the Proposed Project Scenario would result in an internalization of 15 percent in the AM peak hour and 21 percent in the PM peak hour. The MXD+ tool estimated that the Project Variant Scenario would result in an internalization of 10 percent in the AM peak hour and 17 percent in the PM peak hour.

The Proposed Project internalization rate of 15 percent in the AM peak is slightly lower than the 2040 walk mode split for the TAZ as predicted by the SF-CHAMP model (Central SoMa Plan model run), which yielded a walk mode split of 19 percent, and lower than the internalization rate for the India Basin forecasted in the CPHPS EIR, which estimated an internalization of 38 percent for a somewhat different mix of uses. The PM peak internalization is slightly higher than the SF-CHAMP estimate, but still lower than the prior internalization rate for India Basin from the CPHPS EIR. The remaining trips (85 percent and 79 percent, respectively) are external trips. The mode split percentages from the *CPHPS EIR* were scaled accordingly to represent percentages of all person trips including the walking trips, as shown in **Table 4-6**, below. These calculations are detailed in **Appendix I**.

TABLE 4-6: MODE SPLIT FOR CUMULATIVE PLUS PROPOSED PROJECT SCENARIO

Mode	External Mode Split (by Trip Purpose)		Total Mode Split	
	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips
AM Peak Hour				
Automobile	70%	83%	59%	70%
Transit	27%	15%	23%	12%
Bike	3%	3%	3%	3%
Walk	-	-	15%[1]	15%[1]
Total	***100%***	***100%***	***100%***	***100%***
PM Peak Hour				
Automobile	70%	83%	55%	65%
Transit	27%	15%	22%	12%
Bike	3%	3%	2%	2%
Walk	-	-	21%[1]	21%[1]
Total	***100%***	***100%***	***100%***	***100%***

Notes:

1. These generally represent trips that are internal to the neighborhood. These are trips that would travel external to the Project Site, but would walk to destinations in the surrounding neighborhood (e.g. Hunters Point). This mode split was calculated by applying the MXD+ methodology using the proposed land uses for the Proposed Project Scenario

Source: *Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study*, May 2009; Fehr & Peers, 2016

The Project Variant internalization rate of 10 percent in the AM peak and 17 percent in the PM peak is lower than both the SF-CHAMP model and the CPHPS EIR's forecasts for the India Basin site, which is likely due to the domination of a single land use, in this case office, when compared to the Proposed Project Scenario.

The remaining trips (90 percent and 83 percent, respectively) are external trips, and so the external mode split percentages from the *CPHPS EIR* were scaled accordingly to represent percentages of all person trips including the walking trips, as shown in **Table 4-7,** below.

TABLE 4-7: MODE SPLIT FOR CUMULATIVE PLUS PROJECT VARIANT SCENARIO

Mode	External Mode Split (by Trip Purpose)		Total Mode Split	
	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips
AM Peak Hour				
Automobile	70%	83%	63%	74%
Transit	27%	15%	24%	13%
Bike	3%	3%	3%	3%
Walk	-	-	10%[1]	10%[1]
Total	***100%***	***100%***	***100%***	***100%***
PM Peak Hour				
Automobile	70%	83%	58%	68%
Transit	27%	15%	23%	13%
Bike	3%	3%	2%	2%
Walk	-	-	17%[1]	17%[1]
Total	***100%***	***100%***	***100%***	***100%***

Notes:

1. These generally represent trips that are internal to the neighborhood. These are trips that would travel external to the Project Site, but would walk to destinations in the surrounding neighborhood (e.g. Hunters Point). This mode split was calculated by applying the MXD+ methodology using the proposed land uses for the Project Variant Scenario.

Source: *Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study*, May 2009; Fehr & Peers, 2016.

The forecasted change in mode splits for the site from SF-CHAMP between 2012 and 2040 were used to estimate the project mode split without the effect of future transit changes (i.e. existing conditions), with the exception of the walk mode split. The 2012 SF-CHAMP model was used as a proxy for the Baseline scenario, while the 2040 model was used to represent the Cumulative scenario. The walk mode split essentially represents an internalization rate and was forecasted to be 15 percent and 10 percent in the AM peak hour and at 21 percent and 17 percent in the PM peak for the Proposed Project and Project Variant Scenarios, respectively. This was accomplished by calculating the shifts in transit mode split for the India Basin TAZ using recent SF-CHAMP model runs developed for the ongoing Central SoMa Plan project in San Francisco. From the 2040 to the 2012 SF-CHAMP model, the automobile mode split increases by eight percent, while transit would decrease by the same amount. The bicycle mode share decreases by one percent while walking increases by the same amount. The mode split outputs from the 2012 and 2040 SF-CHAMP models and the resulting mode splits for work and non-work trips that will be applied to the Baseline and Cumulative scenarios are shown in **Table 4-8** and **Table 4-9**, below.

Mode	Total Mode Split Shift Calculation[1] (SF TAZ #446)			Mode Split Cumulative Scenario		Mode Split Baseline Scenario	
	2040 SF-CHAMP	2012 SF-CHAMP	*Shifts (2040 to 2012)[2]*	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips
AM Peak Hour							
Automobile	55%	63%	*+8%*	59%	70%	67%	78%
Transit	20%	12%	*-8%*	23%	12%	15%	4%
Bike	4%	3%	*-1%*	3%	3%	3%	3%
Walk & Other[4]	21%	22%	*+1%*	15%[3]	15%[3]	15%[3]	15%[3]
Total	*100%*	*100%*		*100%*	*100%*	*100%*	*100%*
PM Peak Hour							
Automobile	55%	63%	*+8%*	55%	65%	63%	73%
Transit	20%	12%	*-8%*	22%	12%	14%	4%
Bike	4%	3%	*-1%*	2%	2%	2%	2%
Walk & Other[4]	21%	22%	*+1%*	21%[3]	21%[3]	21%[3]	21%[3]
Total	*100%*	*100%*		*100%*	*100%*	*100%*	*100%*

Notes:

1. "Total" mode split means work and non-work trips combined
2. Positive entry indicates that 2012 percentage is larger than 2040 percentage, i.e. a decrease from 2012 to 2040. Negative entry indicates that 2012 percentage is smaller than 2040 percentage, i.e. an increase from 2012 to 2040.
3. The walk mode split was calculated using the MXD+ methodology. While the 2040 SF-CHAMP walk mode split for the TAZ of 19 percent is slightly higher in the AM peak and lower in the PM peak than the estimated internalization rates, the project walk mode split was assumed to remain at 15 percent in the AM and 21 percent in the PM in the future scenario. Therefore, the shift between 2040 and 2012 was applied to the bike mode split.
4. Other includes truck and taxi trips. This mode was not included as part of the project mode split.

Source: SF-CHAMP runs from Central SoMa project (2015)

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TABLE 4-9: MODE SPLIT FOR PROJECT VARIANT							
Mode	Total Mode Split Shift Calculation[1] (SF TAZ #446)			Mode Split Cumulative Scenario		Mode Split Baseline Scenario	
	2040 SF-CHAMP	2012 SF-CHAMP	*Shifts (2040 to 2012)[2]*	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips
AM Peak Hour							
Automobile	55%	63%	*+8%*	63%	74%	71%	82%
Transit	20%	12%	*-8%*	24%	13%	16%	5%
Bike	4%	3%	*-1%*	3%	3%	3%	3%
Walk & Other[4]	21%	22%	*+1%*	10%[3]	10%[3]	10%[3]	10%[3]
Total	*100%*	*100%*		*100%*	*100%*	*100%*	*100%*
PM Peak Hour							
Automobile	55%	63%	*+8%*	58%	68%	66%	76%
Transit	20%	12%	*-8%*	23%	13%	15%	5%
Bike	4%	3%	*-1%*	2%	2%	2%	2%
Walk & Other[4]	21%	22%	*+1%*	17%[3]	17%[3]	17%[3]	17%[3]
Total	*100%*	*100%*		*100%*	*100%*	*100%*	*100%*

Notes:
1. "Total Mode Split" means work and non-work trips combined
2. Positive entry indicates that 2012 percentage is larger than 2040 percentage, i.e. a decrease from 2012 to 2040. Negative entry indicates that 2012 percentage is smaller than 2040 percentage, i.e. an increase from 2012 to 2040.
3. The walk mode split as calculated using MXD+ methodology. While the 2040 SF-CHAMP walk mode split for the TAZ of 19 percent is slightly higher in the and PM peak than the estimated internalization rates, the project walk mode split was assumed to remain at 10 percent in the AM and 17 percent in the PM in the future scenario. Therefore, the shift between 2040 and 2012 was applied to the bike mode split.
4. Other includes truck and taxi trips. This mode was not included as part of the project mode split.

Source: SF-CHAMP runs from Central SoMa project (2015)

4.3.1.2 Pass-by Trips

When retail developments (supermarkets, restaurants, etc.) are located adjacent to arterial roadways, a portion of the trips attracted to the site would come from existing traffic passing by the site on the way from an origin to an ultimate destination. These types of trips attracted by the site are referred to as "pass-by trips" but are not new trips added to the traffic network, since they are trips that would already occur without the development in place. In the case of India Basin, most of the pass-by traffic would be those traveling to/from the Hunters Point Shipyard and other parts of the neighborhood who stop off at the India Basin retail on their way to/from their destination. Applying a pass-by percentage is justified because the retail mix planned for this location is not "destination" retail but neighborhood-serving in nature.

The ITE *Trip Generation Handbook (9th Edition)* provides guidance on the application of pass-by trips for retail development. The Handbook includes empirical retail pass-by trip percentages based on site surveys for several types of land uses, similar to the *Trip Generation Manual's* extensive trip generation surveys.

Based on the proposed size of retail for the Project, its location adjacent to an arterial street, and using the 820 Shopping Center land use code (which has many data points), the Handbook shows that a 40 percent average pass-by trip percentage would be applied. However, based on the geographic remoteness of the location, the neighborhood-serving nature of the retail uses (instead of being "destination" retail like a shopping center), and the fact that the Shipyard will contain many similar uses and therefore would compete for pass-by trips with India Basin, a dampened average pass-by trip percentage of only 10 percent was conservatively assumed for usage for Project retail uses.

Using the methodology outlined in the ITE *Trip Generation Handbook (9th Edition)*, retail trips entering and exiting the Project Site and eastbound and westbound base volumes along Innes were adjusted to incorporate the chosen pass-by rate.

4.3.2 Open Space Land Use

This analysis assumes the same mode split for the Project open spaces for the Baseline scenario as what was observed at Heron's Head Park. Heron's Head Park is located approximately 0.5 miles from the Project Site and consists primarily of open space and Bay shoreline access with minimal parking facilities and a few short trails, which is similar to what the Proposed Project would provide. This analysis also assumes that the relationship between the mode splits in the Baseline scenario and the Cumulative scenario detailed in **Table 4-6** and **Table 4-7** would apply to open space land uses. Therefore these shifts (eight percent decrease for automobile, eight percent increase for transit, and no change for bicycle) are applied to the Baseline scenario mode split to calculate the Cumulative scenario mode split. The mode split for open spaces in the Existing Conditions and the Cumulative scenarios are detailed in **Table 4-10**.

TABLE 4-10: OPEN SPACE MODE SPLIT

Mode	Mode Split Baseline Scenario		Mode Split Cumulative scenario	
	AM	PM	AM	PM
Automobile	83%	58%	75%	50%
Transit	0%	0%	8%	8%
Bike	13%	14%	13%	14%
Pedestrian	4%	28%	4%	28%
Total	*100%*	*100%*	*100%*	*100%*

Source: Count conducted on June 25, 2015 at Heron's Head Park; Adjustments from SF-CHAMP runs from Central SoMa Plan project (2015) – see Table 4-12.

4.3.3 School

As part of a previous study, Fehr & Peers collected travel data from Sacred Heart School, which is a private K-12 school located in the Pacific Heights neighborhood. This travel data contained mode split information, based on a 2015 survey.

The mode split survey from Sacred Heart was used to develop the mode split and trip generation because it has similar characteristics to the proposed school (private, elementary- and middle-level education) and the data was readily available. The trip distribution data from the Sacred Heart study would not have been appropriate to use for the proposed school in India Basin, since the Sacred Heart School is located in the

Pacific Heights neighborhood. Instead, as discussed in Section 4.2.2, the school trip distribution was prepared using available data from schools in the same Superdistrict as the proposed school (Mission Preparatory and La Scuola).

At Sacred Heart, the majority of student trips are by car (92 percent)[33] with a smaller share traveling by walking (six percent) and transit (one percent). An average vehicle occupancy (AVO) of 1.54 was recorded. The Cumulative scenario would result in increased transit accessibility to the school over the Baseline scenario. As a result, mode splits were modified based on the shifts presented in **Table 4-6** and **Table 4-7**.

Forecasted mode splits for the school for the Baseline and Cumulative scenarios are shown below in **Table 4-11**.

TABLE 4-11: SCHOOL MODE SPLIT

Mode	Students		Staff	
	Baseline Scenario	Cumulative scenario	Baseline Scenario	Cumulative scenario
Automobile	92%	83%	100%	92%
Transit	1%	9%	0%	8%
Bike	0%	1%	0%	0%
Walk/Other	7%	7%	0%	0%
Total	*100%*	*100%*	*100%*	*100%*

Source: Observed student mode split from Table 7 of *Sacred Heart Campus Circulation Study*, by Fehr & Peers, dated April 24, 2015; Plus Cumulative scenario adjustments from SF-CHAMP runs from Central SoMa project (2015)

4.3.4 Person and Vehicle Trip Summary

The four tables below (**Table 4-12** through **Table 4-15**) summarize the number of person and vehicle trips generated by each land use for both scenarios, for daily, AM, and PM peak hours for the Proposed Project and Project Variant for both the Baseline scenario and Cumulative scenario. Travel demand calculations are presented in **Appendix I**.

[33] Student trips also include accompanying parent/guardian trips.

TABLE 4-12: BASELINE SCENARIO - PROPOSED PROJECT PERSON TRIP GENERATION (BY MODE AND LAND USE)										
Land Use	Net New Uses	Person Trips by Mode					Vehicle Trips		Transit Trips	
		Vehicle	Transit	Bike	Walk	*Total*	In	Out	In	Out
AM Peak Hour										
Build Property										
School	50 ksf	915	14	5	59	*993*	427	167	14	0
Retail	100.4 ksf	754	43	29	146	*972*	253[1]	145[1]	27	16
Office	174.93 ksf	194	37	8	42	*281*	122	17	33	4
Residential	1,239 du	1,091	143	45	226	*1,505*	201	447	44	99
Open Space	5.4 acres	26	0	4	1	*31*	14	11	0	0
Subtotal		*2,980*	*237*	*91*	*474*	*3,782*	*1,017*	*787*	*118*	*119*
RPD Property										
India Basin Shoreline Park	5.6 acres	26	0	4	1	*32*	14	11	0	0
900 Innes Avenue	1.8 acres	9	0	1	0	*10*	5	4	0	0
India Basin Open Space	6.2 acres	29	0	5	3	*36*	15	12	0	0
Subtotal		*64*	*0*	*10*	*4*	*78*	*34*	*27*	*0*	*0*
Total		*3,044*	*237*	*101*	*478*	*3,860*	*1,051*[1]	*814*[1]	*118*	*119*
		79%	*6%*	*3%*	*12%*	*100%*	*56%*	*44%*	*50%*	*50%*

TABLE 4-12: BASELINE SCENARIO - PROPOSED PROJECT PERSON TRIP GENERATION (BY MODE AND LAND USE)

Land Use	Net New Uses	Person Trips by Mode					Vehicle Trips		Transit Trips	
		Vehicle	Transit	Bike	Walk	*Total*	In	Out	In	Out
PM Peak Hour										
Build Property										
School	50 ksf	321	4	1	19	*345*	62	146	0	4
Retail	100.4 ksf	1,476	89	41	427	*2,033*	376[1]	403[1]	39	50
Office	174.93 ksf	175	33	5	57	*270*	12	113	1	32
Residential	1,239 du	1,330	176	39	411	*1,956*	506	284	160	16
Open Space	5.4 acres	20	0	5	9	34	11	8	0	0
Subtotal		*3,322*	*302*	*91*	*923*	*4,638*	*967*	*954*	*200*	*98*
RPD Property										
India Basin Shoreline Park	5.6 acres	21	0	5	10	35	11	9	0	0
900 Innes Avenue	1.8 acres	7	0	2	3	11	4	3	0	0
India Basin Open Space	6.2 acres	22	0	5	11	38	12	9	0	0
Subtotal		*50*	*0*	*12*	*24*	*84*	*27*	*21*	*0*	*0*
Total		*3,372*	*302*	*103*	*947*	*4,724*	*994*[1]	*975*[1]	*200*	*102*
		71%	*6%*	*2%*	*20%*	*100%*	*50%*	*50%*	*66%*	*34%*

Source: *SF Guidelines*, 2002, Fehr & Peers, 2016.

1. Numbers shown do not include retail pass-by trip reductions, which would be made to Innes E-W volumes as follows - AM: 25 trips in, 15 trips out; PM: 38 trips in, 40 trips out

TABLE 4-13: BASELINE SCENARIO - PROJECT VARIANT PERSON TRIP GENERATION (BY MODE AND LAND USE)

Land Use	Net New Uses	Person Trips by Mode					Vehicle Trips		Transit Trips	
		Vehicle	Transit	Bike	Walk	*Total*	In	Out	In	Out
AM Peak Hour										
Build Property										
School	50 ksf	915	14	5	59	*993*	427	167	14	0
Retail	140 ksf	901	60	33	110	*1,104*	307[1]	169[1]	39	21
Office/R&D	860 ksf	1,649	320	68	226	*2,263*	1,039	142	282	38
Residential	499 du	463	64	18	61	*606*	85	190	20	44
Open Space	5.4 acres	26	0	4	1	*31*	14	11	0	0
Subtotal		*3,954*	*458*	*128*	*457*	*4,997*	*1,872*	*679*	*355*	*103*
RPD Property										
India Basin Shoreline Park	5.6 acres	26	0	4	1	*32*	14	11	0	0
900 Innes Avenue	1.8 acres	9	0	1	0	*10*	5	4	0	0
India Basin Open Space	6.2 acres	29	0	5	3	*36*	15	12	0	0
Subtotal		64	0	10	4	*78*	34	27	0	0
Total		*4,018*	*458*	*138*	*461*	*5,075*	*1,906[1]*	*706[1]*	*355*	*103*
		79%	*9%*	*3%*	*9%*	*100%*	*73%*	*27%*	*78%*	*22%*

TABLE 4-13: BASELINE SCENARIO - PROJECT VARIANT PERSON TRIP GENERATION (BY MODE AND LAND USE)

Land Use	Net New Uses	Person Trips by Mode					Vehicle Trips		Transit Trips	
		Vehicle	Transit	Bike	Walk	*Total*	In	Out	In	Out
PM Peak Hour										
Build Property										
School	50 ksf	321	4	1	19	*345*	62	146	0	4
Retail	140 ksf	2,043	146	54	459	*2,702*	534[1]	545[1]	52	94
Office/R&D	860 ksf	1,464	288	43	368	*2,163*	100	948	7	281
Residential	499 du	559	79	16	134	*788*	213	119	64	15
Open Space	5.4 acres	20	0	5	9	*34*	11	8	0	0
Subtotal		*4,407*	*517*	*119*	*989*	*6,032*	*920*	*1,766*	*123*	*394*
RPD Property										
India Basin Shoreline Park	5.6 acres	21	0	5	10	*35*	11	9	0	0
900 Innes Avenue	1.8 acres	7	0	2	3	*11*	4	3	0	0
India Basin Open Space	6.2 acres	22	0	5	11	*38*	12	9	0	0
Subtotal		*50*	*0*	*12*	*24*	*84*	*27*	*21*	*0*	*0*
Total		*4,457*	*517*	*131*	*1,013*	*6,118236*	*947*[1]	*1,787*[1]	*123*	*394*
		73%	*8%*	*2%*	*17%*	*100%*	*35%*	*65%*	*24%*	*76%*

Source: *SF Guidelines*, 2002, Fehr & Peers, 2016.

1. Numbers shown do not include retail pass-by trip reductions, which would be made to Innes E-W volumes as follows - AM: 31 trips in, 17 trips out; PM: 53 trips in, 55 trips out

TABLE 4-14: CUMULATIVE SCENARIO – PROPOSED PROJECT PERSON TRIP GENERATION (BY MODE AND LAND USE)										
Land Use	**Net New Uses**	**Person Trips by Mode**					**Vehicle Trips**		**Transit Trips**	
		Vehicle	**Transit**	**Bike**	**Walk**	***Total***	**In**	**Out**	**In**	**Out**
AM Peak Hour										
Build Property										
School	50 ksf	836	93	5	59	*993*	390	153	93	0
Retail	100.4 ksf	676	121	29	146	*972*	227[1]	130[1]	77	44
Office	174.93 ksf	172	60	8	42	*282*	108	15	53	7
Residential	1,239 du	970	263	45	226	*1,504*	178	397	82	181
Open Space	5.4 acres	23	3	4	1	*31*	12	10	1	1
Subtotal		2,677	540	91	474	*3,782*	915	705	306	233
RPD Property										
India Basin Shoreline Park	5.6 acres	24	3	4	1	*32*	13	10	1	1
900 Innes Avenue	1.8 acres	8	1	1	0	*10*	4	3	0	0
India Basin Open Space	6.2 acres	26	3	4	3	*36*	14	11	3	3
Subtotal		*58*	*7*	*9*	*4*	*78*	*31*	*24*	*4*	*4*
Total		*2,735*	*546*	*101*	*478*	*3,860*	*946[1]*	*729[1]*	*310*	*237*
		71%	*14%*	*3%*	*12%*	*100%*	*56%*	*44%*	*57%*	*43%*

Note: The cumulative scenario reflects a higher mode share for transit and walking compared to baseline conditions. Under cumulative conditions, there is expected to be more transit service near the project as well as additional nearby development (i.e. Hunters Point) that would make non-auto modes more attractive to use.

TABLE 4-14: CUMULATIVE SCENARIO – PROPOSED PROJECT PERSON TRIP GENERATION (BY MODE AND LAND USE)

Land Use	Net New Uses	Person Trips by Mode					Vehicle Trips		Transit Trips	
		Vehicle	Transit	Bike	Walk	*Total*	In	Out	In	Out
PM Peak Hour										
Build Property										
School	50 ksf	293	32	1	19	*345*	57	133	0	32
Retail	100.4 ksf	1,313	252	41	427	*2,033*	361[1]	333[1]	117	135
Office	174.93 ksf	153	55	5	57	*270*	11	98	3	52
Residential	1,239 du	1,173	332	39	411	*1,955*	476	219	264	68
Open Space	5.4 acres	17	3	5	9	*34*	9	7	1	1
Subtotal		*2,949*	*674*	*91*	*923*	*4,637*	*914*	*790*	*385*	*288*
RPD Property										
India Basin Shoreline Park	5.6 acres	18	3	5	10	*35*	10	7	1	1
900 Innes Avenue	1.8 acres	6	1	2	3	*11*	3	2	0	0
India Basin Open Space	6.2 acres	19	3	5	11	*40*	11	8	3	3
Subtotal		*43*	*7*	*12*	*24*	*86*	*24*	*17*	*4*	*4*
Total		*2,992*	*681*	*103*	*947*	*4,723*	*938*[1]	*808*[1]	*389*	*292*
		63%	*14%*	*2%*	*20%*	*100%*	*54%*	*46%*	*57%*	*43%*

Source: *SF Guidelines*, 2002, Fehr & Peers, 2016.

1. Numbers shown do not include retail pass-by trip reductions, which would be made to Innes E-W volumes as follows - AM: 23 trips in, 13 trips out; PM: 36 trips in, 33 trips out

TABLE 4-15: CUMULATIVE SCENARIO – PROJECT VARIANT PERSON TRIP GENERATION (BY MODE AND LAND USE)

Land Use	Net New Uses	Person Trips by Mode					Vehicle Trips		Transit Trips	
		Vehicle	Transit	Bike	Walk	*Total*	In	Out	In	Out
AM Peak Hour										
Build Property										
School	50 ksf	836	93	5	59	*993*	390	153	93	0
Retail	140 ksf	813	148	33	110	*1,104*	278[1]	152[1]	96	52
Office/R&D	860 ksf	1,468	501	68	226	*2,263*	924	126	441	60
Residential	499 du	415	112	18	61	*606*	76	170	35	77
Open Space	5.4 acres	23	3	4	1	*31*	12	10	1	1
Subtotal		3,555	857	131	457	*4,997*	1,680	2,011	666	190
RPD Property										
India Basin Shoreline Park	5.6 acres	24	3	4	1	*32*	13	10	1	1
900 Innes Avenue	1.8 acres	8	1	1	0	*10*	4	3	0	0
India Basin Open Space	6.2 acres	26	3	4	3	*36*	14	11	3	3
Subtotal		58	7	9	4	*78*	31	24	4	4
Total		*3,613*	*863*	*138*	*461*	*5,075*	*1,711*[1]	*635*[1]	*670*	*194*
		71%	*17%*	*3%*	*9%*	*100%*	*73%*	*27%*	*78%*	*22%*

Note: The cumulative scenario reflects a higher mode share for transit and walking compared to baseline conditions. Under cumulative conditions, there is expected to be more transit service near the project as well as additional nearby development (i.e. Hunters Point) that would result in increased congestion and make non-auto modes more attractive to use.

TABLE 4 15: CUMULATIVE SCENARIO – PROJECT VARIANT PERSON TRIP GENERATION (BY MODE AND LAND USE)

Land Use	Net New Uses	Person Trips by Mode					Vehicle Trips		Transit Trips	
		Vehicle	Transit	Bike	Walk	*Total*	In	Out	In	Out
PM Peak Hour										
Build Property										
School	50 ksf	293	32	1	19	*345*	57	133	0	32
Retail	140 ksf	1,827	362	54	459	*2,702*	480[1]	485[1]	156	206
Office/R&D	860 ksf	1,291	460	43	368	*2,162*	92	831	22	438
Residential	499 du	496	142	16	134	*788*	191	103	106	36
Open Space	5.4 acres	17	3	5	9	*34*	9	7	1	1
Subtotal		*3,924*	*999*	*119*	*989*	*6,031*	*829*	*1,559*	*285*	*713*
RPD Property										
India Basin Shoreline Park	5.6 acres	18	3	5	9	*35*	9	7	1	1
900 Innes Avenue	1.8 acres	5	1	1	4	*11*	4	3	0	0
India Basin Open Space	6.2 acres	20	3	6	11	*40*	11	8	3	3
Subtotal		43	7	12	24	*86*	24	18	4	4
Total		*3,967*	*1,006*	*131*	*1,013*	*6,117*	*853*[1]	*1,577*[1]	*289*	*717*
		65%	*16%*	*2%*	*17%*	*100%*	*35%*	*65%*	*29%*	*71%*

Source: *SF Guidelines*, 2002, Fehr & Peers, 2016.

1. Numbers shown do not include retail pass-by trip reductions, which would be made to Innes E-W volumes as follows - AM: 28 trips in, 15 trips out; PM: 48 trips in, 49 trips out

4.4 TRIP ASSIGNMENT

The trips were distributed across the transportation network based on the percentages for the respective land uses as shown on **Figure 11.** Project-generated vehicle trips were assigned to specific turning movements, presented in **Figure 12A** for the Baseline Plus Proposed Project Scenario. **Figure 13A** shows project-generated trip assignment for the Baseline Plus Project Variant Scenario. **Figure 12B** shows project-generated trip assignment for the Cumulative Plus Proposed Project Scenario. **Figure 13B** shows project-generated trip assignment for the Cumulative Plus Project Variant Scenario. The difference between baseline and cumulative trip assignments is a manifestation of the different mode splits assumed for each scenario. All trips were assumed to begin/end at the Project Site. Using the trip distribution percentages in **Table 4-4**, transit trips were assigned to specific routes based on the most direct transit route to and from the trip end.

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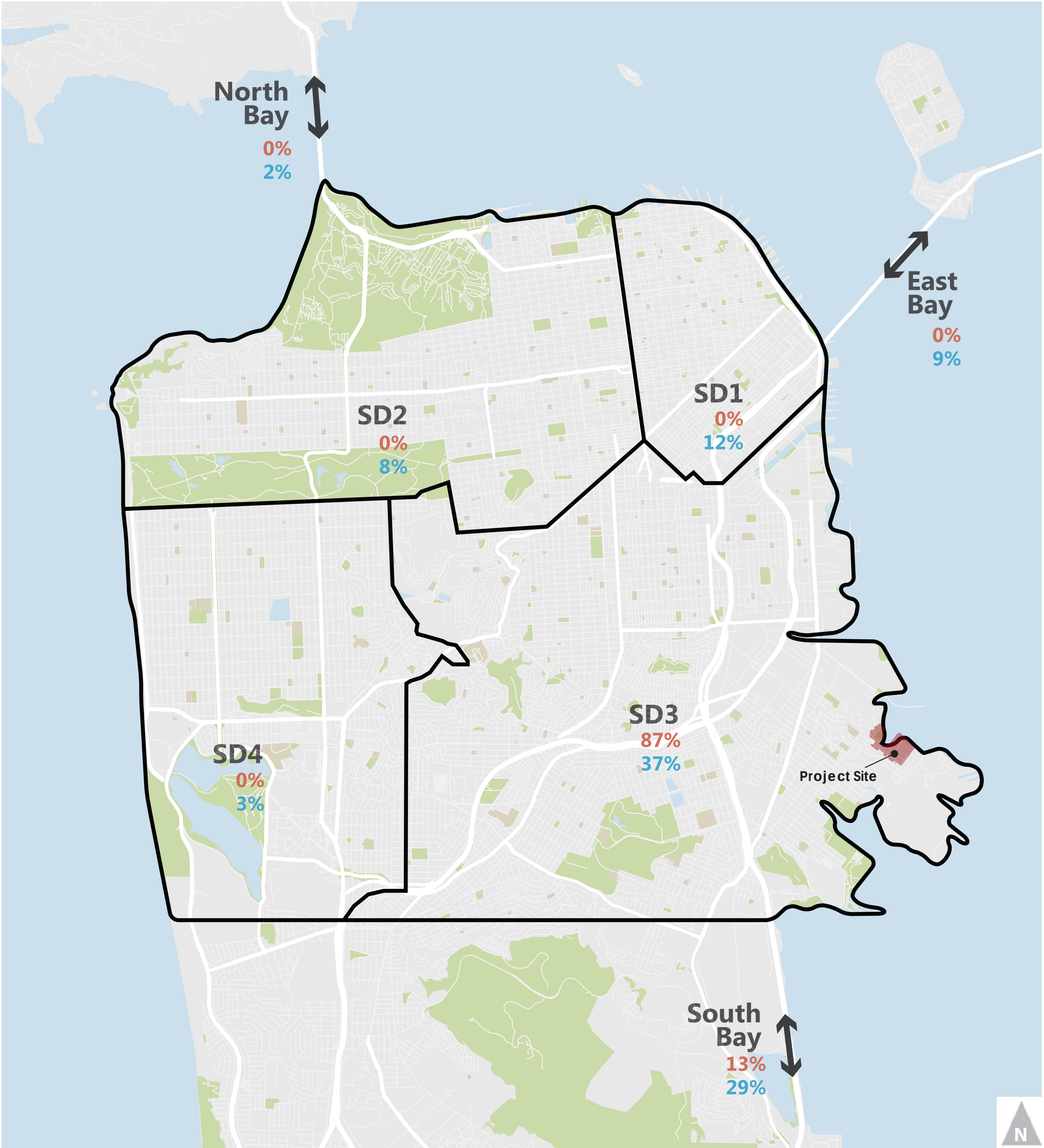


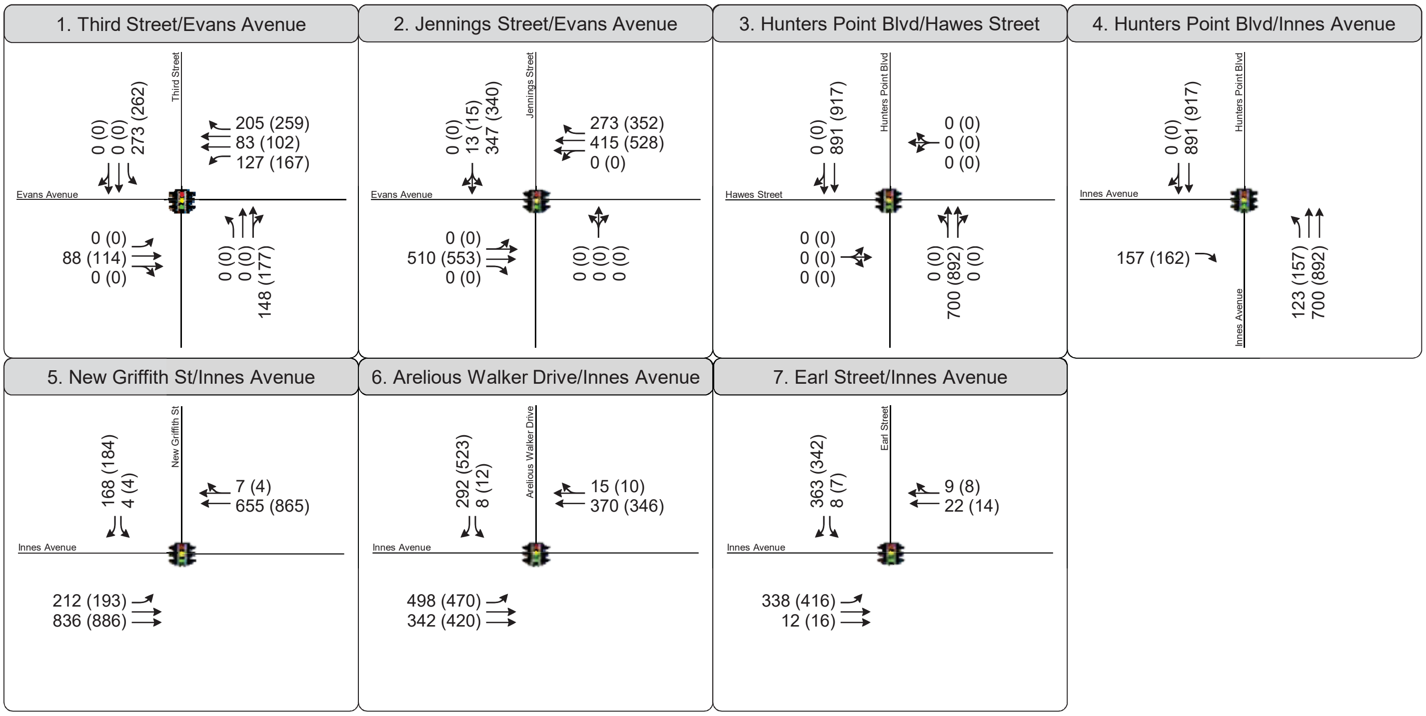
XX% School

XX% Residential, Office, Retail and Open Space

\\fpsf03\data\Projects\2015 Projects\SF15-0824_2675_Folsom_Street_TIA

Figure 11

Trip Distribution



Turn Lane

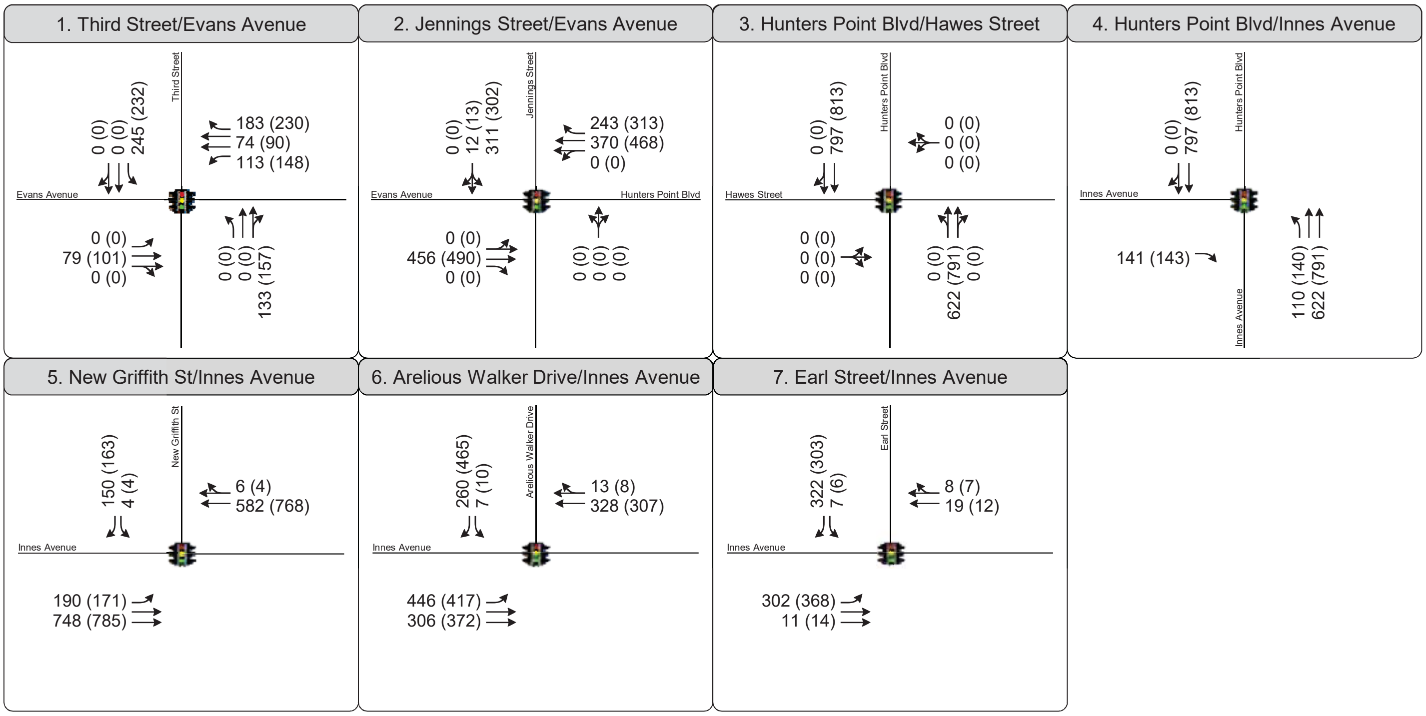
AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 12A

Trip Assignment - Proposed Project



Turn Lane

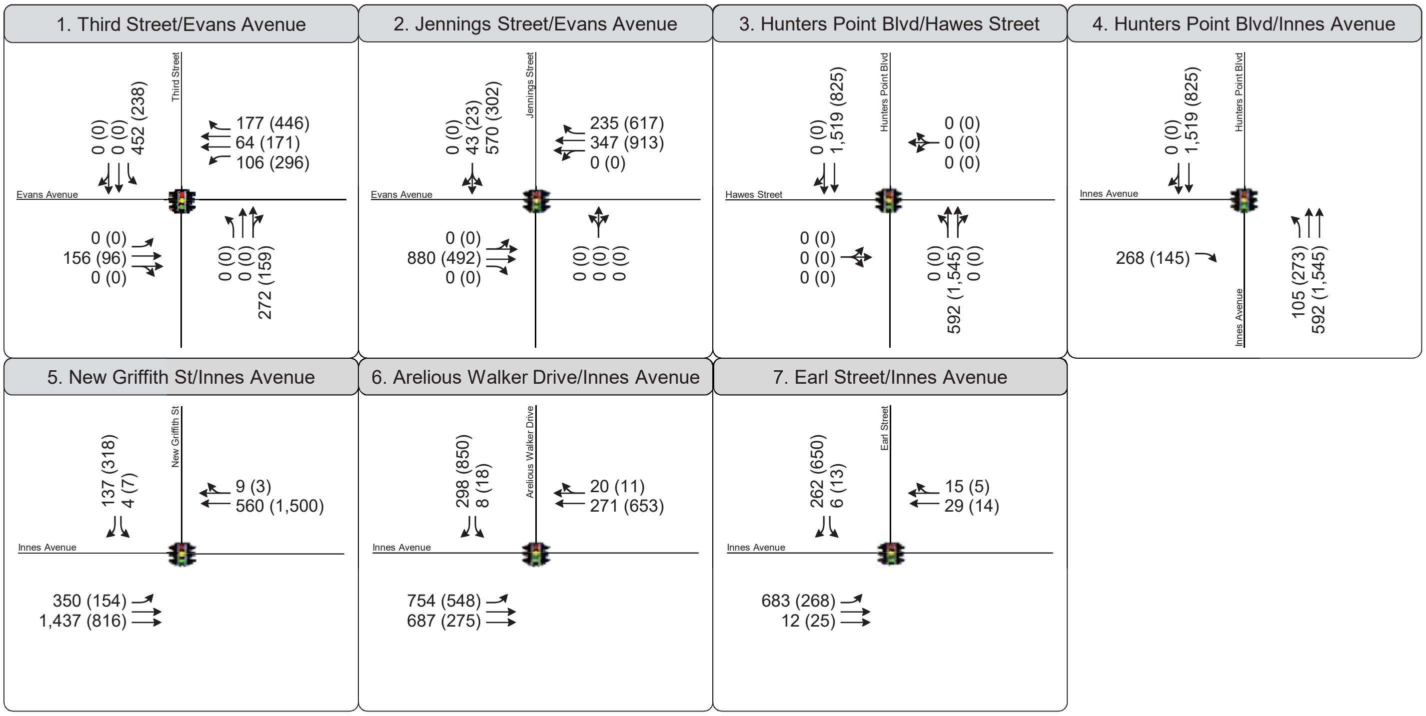
AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 12B

Trip Assignment - Proposed Project (Cumulative Scenario)



Turn Lane

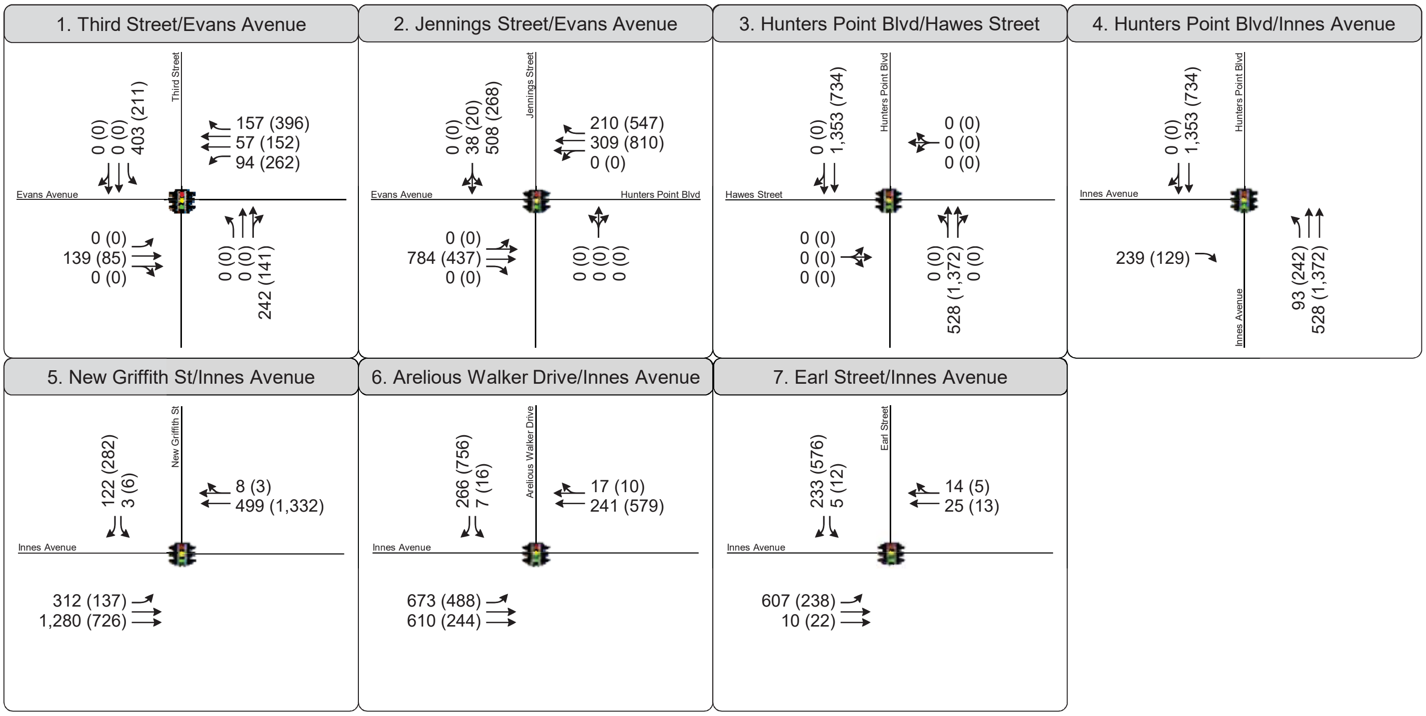
AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 13A

Trip Assignment - Project Variant



Turn Lane

AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 13B

Trip Assignment - Project Variant (Cumulative Scenario)

4.5 FREIGHT DELIVERY AND SERVICE DEMAND

The delivery/service vehicle demand was forecast based on the methodology and truck trip generation rates presented in the *SF Guidelines*. Delivery/service vehicle demand is based on the types and amount of land uses. The *SF Guidelines* do not include rates for loading demand for supermarkets. While the supermarket tenant would likely plan for and provide the loading spaces required, this analysis provides an estimate based on a recent study for a similar use. The Whole Foods grocery store at 2001 Market Street is 31,000 square feet would have a daily truck trip generation of 39 trips, peak hour demand for 3.6 loading spaces, and average hour demand for 2.4 loading spaces.[34] A supermarket loading demand rate was derived from this example and applied to the proposed supermarket on the Project Site.

The *SF Guidelines* also do not provide a loading demand rate for open spaces. This analysis assumes that the regular loading demand for the open space use would be negligible. There are no buildings that require resupply or deliveries. Recreational use may have occasional loading needs such as boat launch, but this demand would be accommodated by the two proposed on-street loading zones and the turnaround at the end of the proposed Hawes Street loop.

As shown in **Table 4-16**, the Proposed Project would generate a demand for 246 daily delivery/service vehicle-trips for the Proposed Project and 408 daily delivery/service vehicle trips for the Project Variant. This corresponds to a demand for 16 loading spaces for the Proposed Project and 25 loading spaces for the Project Variant during the peak hour of loading activities.

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[34] 2001 Market Street Mixed-Use Development (Case No. 2008.0550E) *Certificate of Determination for Exemption from Environmental Review*, November 10, 2010.

TABLE 4-16: DELIVERY/SERVICE VEHICLE TRIPS AND LOADING DEMAND					
Land Use	**Size (ksf)**	**Daily Truck Generation Rate (per ksf)**	**Daily Truck Generation**	**Average Hour Loading Space Demand**	**Peak Hour Loading Space Demand**
Proposed Project					
700 Innes					
Office	174.9	0.21	37	1.7	2.1
General Retail[1]	40.4	0.22	9	0.4	0.5
Restaurant	35.0	3.60	126	5.8	7.3
Supermarket	25.0	1.26[2]	32	1.9	2.9
Residential	1,240.1	0.03	37	1.7	2.2
School[3]	50.0	0.10	5	0.2	0.3
Open Space	237.4	n/a[4]	-	-	-
Subtotal	1802.8	-	246	11.8	15.3
RPD Property					
Open Space	592.3	n/a[3]	-	-	-
TOTAL	*2,395.1*		*246*	*11.8*	*15.3*
Project Variant					
700 Innes					
Office	860.0	0.21	181	8.4	10.5
General Retail[1]	70.0	0.22	15	0.7	0.9
Restaurant	45.0	3.60	162	7.5	9.4
Supermarket	25.0	1.26[2]	32	1.9	2.9
Residential	417.3	0.03	13	0.6	0.7
School[3]	50.0	0.10	5	0.2	0.3
Open Space	237.4	n/a[4]	-	-	-
Subtotal	1,704.7	-	408	19.3	24.6
RPD Property					
Open Space	592.3	n/a[3]	-	-	-
TOTAL	*2,297.0*		*408*	*19.3*	*24.6*

Notes:

1. The *SF Guidelines* do not provide a daily loading rate for a supermarket. This rate is calculated based on the assumption that the proposed supermarket would have a peak hour demand of less than one.
2. Includes café use.
3. The school loading demand is based on the “Institution” loading trip generation rate provided in the *SF Guidelines.*
4. The *SF Guidelines* do not provide a daily loading rate for open space.

Source: *SF Guidelines*, 2002

4.6 PARKING DEMAND

The daily parking demand generated by the proposed residential and retail uses was forecast using the methodology described in the *SF Guidelines*. The parking demand estimated for a development reflects a free, unconstrained supply of parking at the development; the approach conservatively estimates the parking demand from the development to inform decision-makers of the potential adverse effects from the development.[35]

Table 4-17 shows that the Proposed Project would create a demand for 2,553 parking spaces midday and for 2,439 parking spaces in the evening/overnight. **Table 4-18** shows that the Project Variant would create a demand for 3,624 parking spaces midday and 1,800 parking spaces in the evening/overnight. Because the existing site contributes relatively little to existing on-street demand, the analysis does not account for any existing parking demand that would be removed by the Proposed Project.

The calculated residential parking demand is based on the following rates as given in the *SF Guidelines:*[36]

- 1.1 vehicles per market-rate studio/1 bedroom unit (382 in the Proposed Project and 154 in the Project Variant)
- 1.5 vehicles per market-rate 2+ bedroom unit (709 in the Proposed Project and 286 in the Project Variant)
- 0.45 vehicles per affordable studio/1 bedroom unit (52 in the Proposed Project and 21 in the Project Variant)
- 0.92 vehicles per affordable 2 + bedroom unit (97 in the Proposed Project and 39 in the Project Variant)

Parking demand for retail, office, school, and open space is broken into long-term and short-term demand. The calculated long-term parking demand for retail, office, and the school[37] is based on the number of employees (calculated based on an average rate of square feet per employee from the *SF Guidelines*, Table C-1, or provided by the Project Sponsor), an auto mode split for workers traveling to Superdistrict 3 of 71.1 percent (*SF Guidelines*, Table E-5), and an average vehicle occupancy (*SF Guidelines*, Table E-5).

Short-term retail, office, and open space[38] demand is calculated based on non-work auto trips (based on the mode split analysis), non-work average vehicle occupancy (based on the mode split analysis), and an assumed daily parking turnover rate of 5.5 vehicles per space per day (*SF Guidelines*, Appendix G).

Table 4-17 presents the project-generated parking demand during the midday and evening. For the Proposed Project, the estimated midday peak of 2,553 and the evening demand of 2,439 spaces.

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[35] San Francisco Planning Commission, "*California Environmental Quality Act: Vehicle Miles Traveled, Parking, For-Hire Vehicles, and Alternatives*", February 2017

[36] This analysis assumes that 12 percent of studio/1 bedroom and 12 percent of 2+ bedroom units are affordable units.

[37] This analysis assumes that there are no employees associated with the open space land uses.

[38] This analysis assumes that there are no short-term parking uses associated with the school.

TABLE 4-17: PROPOSED PROJECT PARKING DEMAND						
Land Use	**Midday**			**Evening**		
	Long Term Parking Demand	**Short Term Parking Demand**	**Total Parking Demand**	**Long Term Parking Demand**	**Short Term Parking Demand**	**Total Parking Demand**
Build Property						
Residential	1,276	-	1,276	1,595	-	1,595
Retail	166	678	844	166	678	844
Office	366	15	381	-	-	0
School	29	-	29	-[1]	-[1]	0
Open Space	-	7	7	-[2]	-[2]	0
Subtotal	*1,837*	*700*	*2,537*	*1,761*	*678*	*2,439*
RPD Property						
India Basin Shoreline Park	-	7	7	-[2]	-[2]	0
900 Innes Avenue	-	2	2	-[2]	-[2]	0
India Basin Open Space	-	7	7	-[2]	-[2]	0
Subtotal	-	*16*	*16*	-[2]	-[2]	*0*
Total	*1,837*	*716*	*2,553*	*1,761*	*678*	*2,439*

Notes:
1. This analysis assumes negligible activities generating parking demand at the school after 6:00 PM.
2. This analysis assumes negligible activities generating parking demand at the open space after 6:00 PM.

Source: *SF Guidelines* Appendix G

Table 4-18 presents the parking demand for the Project Variant during the midday and evening. For the Project Variant, the estimated midday peak of 3,624 spaces, and the evening demand of 1,800 spaces.

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TABLE 4-18: PROJECT VARIANT PARKING DEMAND						
Land Use	Midday			Evening		
	Long Term Parking Demand	Short Term Parking Demand	Total Parking Demand	Long Term Parking Demand	Short Term Parking Demand	Total Parking Demand
Build Property						
Residential	514	-	514	642	-	642
Retail	231	927	1,158	231	927	1,158
Office	1,801	99	1,900	-	-	0
School	29	-	29	-[1]	-[1]	0
Open Space	-	7	7	-[2]	-[2]	0
Subtotal	*2,575*	*1,033*	*3,608*	*873*	*927*	*1,800*
RPD Property						
India Basin Shoreline Park	-	7	7	-[2]	-[2]	0
900 Innes Avenue	-	2	2	-[2]	-[2]	0
India Basin Open Space	-	7	7	-[2]	-[2]	0
Subtotal	-	16	16	-[2]	-[2]	0
Total	*2,575*	*1,049*	*3,624*	*873*	*927*	*1,800*

Notes:

1. This analysis assumes negligible activities generating parking demand at the school after 6:00 PM.
2. This analysis assumes negligible activities generating parking demand at the open space after 6:00 PM.

Source: *SF Guidelines* Appendix G.

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5 PROJECT IMPACT ANALYSIS

This chapter presents the assessment of transportation impacts resulting from the travel demand generated by the Proposed Project. The impacts are grouped into nine potential impact areas: (1) VMT, (2) traffic hazards, (3) transit, (4) bicycles, (5) pedestrian, (6) loading, (7) emergency access, (8) construction, and (9) parking impacts. Impact areas were analyzed for the Baseline Plus Project Conditions by adding net project travel demand associated with the Project to Baseline Conditions.

5.1 SIGNIFICANCE CRITERIA

The significance criteria listed below are organized by mode to facilitate the transportation impact analysis; however, the transportation significance thresholds are essentially the same as the ones in the environmental checklist (Appendix G of the State *CEQA Guidelines*) and within the SF Planning Commission Resolution 19579 (and supporting materials). For the purpose of this analysis, the following applicable thresholds were used to determine whether implementing the proposed project would result in a significant impact on transportation and circulation:

Vehicle Miles Traveled (VMT) – The project would have a significant effect on the environment if it would cause substantial additional VMT. Also, the project would have a significant effect on the environment if it would substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow travel lanes) or by adding new roadways to the network.

Traffic Hazards – A project would have a significant adverse impact if it would cause major traffic hazards.

Transit – A project would have a significant effect on the environment if it would result in an increase in delay of at least half a headway in the round-trip travel time for a particular transit route adjacent to the Project Site. This significance threshold is based on the need to retain a comparable transit headway to what is planned. The half-headway threshold represents the tipping point at which point investment in an additional vehicle would be required to counterbalance degradation in transit travel times to maintain the same headway.

A project would also have a significant effect on the environment if it would cause a substantial increase in transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service; or cause a substantial increase in operating costs such that significant adverse impacts in transit service levels could result. With the Muni and regional transit screenlines analyses, the project would have a significant effect on the transit provider if project-related transit trips would cause the capacity utilization standard to be exceeded during the peak hour. For screenlines that already operate above the utilization standard during the peak hour, a project would have a significant effect on the transit provider if project-related transit trips were more than five percent of total transit trips during the peak hour.

Pedestrians – A project would have a significant effect on the environment if it would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the site and adjoining areas.

Bicycles – A project would have a significant effect on the environment if it would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.

Loading – A project would have a significant effect on the environment if it would result in a loading demand during the peak hour of loading activities that could not be accommodated within proposed on-site loading facilities or within convenient on-street loading zones, and if it would create potentially hazardous conditions affecting traffic, transit, bicycles, or pedestrians or significant delays affecting transit.

Emergency Vehicle Access – A project would have a significant effect on the environment if it would result in inadequate emergency access.

Construction – Construction of the project would have a significant effect on the environment if, in consideration of the Project Site location and other relevant project characteristics, the temporary construction activities' duration and magnitude would result in substantial interference with pedestrian, bicycle, or vehicle circulation and accessibility to adjoining areas thereby resulting in potentially hazardous conditions.

Parking – The project would have a significant effect on the environment if it would result in a substantial parking deficit that could create hazardous conditions affecting traffic, transit, bicycles, or pedestrians or significant delays affecting transit and where particular characteristics of the project or its site demonstrably render use of other modes infeasible.

5.2 VEHICLE-MILES TRAVELED (VMT) IMPACTS

5.2.1 VMT Analysis

Transportation is a major contributor to greenhouse gas emissions and a direct result of population and employment growth, which generates vehicle trips to move goods, provides public services, and connects people with work, school, shopping, and other activities. Growth in travel (especially vehicle travel) is due in large part to urban development patterns (i.e., the built environment).

A performance measure used to quantify the amount of travel is vehicle-miles traveled (VMT). VMT is also an important input to GHG analysis since the amount of travel and conditions under which the travel occurs directly relate to how much fuel vehicles burn. One combusted gallon of gas from a vehicle produces approximately 19 pounds of carbon dioxide.[39] Given today's average vehicle fuel mileage (approximately 22 miles per gallon for light duty vehicles),[40] one mile of travel equates to about 14 ounces of carbon dioxide. As a result, increases in VMT directly cause increases in greenhouse gas emissions and air pollution.

In January 2016, the State of California Office of Planning and Research (OPR) published for public review and comment a *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA* recommending that transportation impacts for projects be measured using a vehicle miles traveled (VMT) metric. On March 3, 2016, in anticipation of the future certification of the revised CEQA Guidelines, the San Francisco Planning Commission adopted OPR's recommendation to use the VMT metric instead of automobile delay to evaluate the transportation impacts of projects (Resolution 19579).

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[39] U.S. Energy Information Administration, "How much carbon dioxide is produced from burning gasoline and diesel fuel?" 2017. Available online at https://www.eia.gov/tools/faqs/faq.php?id=307&t=11.

[40] USDOT, Bureau of Transportation Statistics, "Average Fuel Efficiency of U.S. Light Duty Vehicles," 2017. Available online at https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_04_23.html

Prior to the Planning Commission's action on March 3, 2016, some projects, including the Proposed project, were in the process of environmental review, and had substantively completed draft Transportation Impact Studies using the methodology and the level of service (LOS) CEQA significance criteria formerly used by the San Francisco Planning Department (*2002 San Francisco Transportation Impact Analysis Guidelines for Environmental Review [SF Guidelines]*). Therefore, Section 7 of this study includes a discussion of LOS conditions under existing, baseline, baseline plus project, and cumulative conditions for informational purposes. In addition, improvement measures that would address intersection operations are identified. Localized traffic volumes are described in the TIS to inform transportation improvement projects proposed/agreed to by the Project Sponsor, and to help inform related topics such as air quality and noise. In addition, traffic volumes are used in CEQA transportation impact determinations, as they may affect traffic hazards and transit delay.

As noted above, the Planning Commission's Resolution No. 19579 is consistent with the direction of CEQA Section 21099(b)(2), and OPR's proposed transportation impact guidelines. Moreover, it is based upon, and consistent with, the authority and deference CEQA provides to local agencies to identify the methodology to analyze and environmental impact.[41] Residential and office projects located in areas with low VMT, and that incorporate similar features (i.e., sufficient density, mix of uses, transit accessibility) tend to exhibit similarly low VMT. OPR's Technical Advisory recognizes that there are various methods for assessing VMT, and specifically acknowledged the efficacy of a map-based screening approach. The City uses this approach.

San Francisco, and other lead agencies, such as Oakland and Pasadena, use maps illustrating areas that exhibit below threshold VMT to screen out projects that may not require a detailed VMT analysis. Under this approach, travel demand models or survey data provide the existing residential or office VMT, which can be modified for mixed use projects by using each use-based map as a screen for the respective use-portion of the project, to then develop maps illustrating VMT for different areas in the city. Thus, the maps demonstrate whether a proposed project is in a transportation-efficient location, (e.g., transit-oriented infill), with safe and adequate access to a multi-modal transportation system and key destinations, and that will help the city, region, and state reach their GHG reduction targets under AB 32.

This mapping approach for VMT screening has also been recently acknowledged in the Caltrans Local Development Intergovernmental Review Program, Interim Guidance, revised November 9, 2016. This Caltrans Guidance provides further support for use of a map-based screening approach. (The Interim Caltrans Guidelines replaces Caltrans' 2002 Guidelines, and is part of Caltrans' effort to support smart growth and efficient development. It is intended to help ensure that greenhouse gas emissions reduction, good community design, improved proximity to key destinations, and a safe multimodal transportation system are all integral parts of the land use decision-making process.)

The San Francisco County Transportation Authority (Transportation Authority) uses SF-CHAMP to estimate VMT by private automobiles and taxis for different land use types within individual TAZs. Travel behavior in SF-CHAMP is calibrated by Transportation Authority staff based on observed behavior from the California Household Travel Survey 2010-2012, Census data regarding automobile ownership rates and county-to-county worker flows, and observed vehicle counts and transit boardings. SF-CHAMP uses a synthetic population, which is a set of individual actors that represents the Bay Area's actual population, who make simulated travel decisions for a complete day. The Transportation Authority uses tour-based analysis for office and residential uses, which examines the entire chain of trips over the course of a day, not just trips to and from the project. For retail uses, the Transportation Authority uses trip-based analysis, which counts

[41] California Public Resources Code Section 21099(b)(1); 14 Cal. Code Regs., Section 15064(b).

VMT from individual trips to and from the project (as opposed to entire chain of trips). A trip-based approach, as opposed to a tour-based approach, is necessary for retail projects because a tour is likely to consist of trips stopping in multiple locations, and the summarizing of tour VMT to each location would over-estimate VMT.[42, 43] The VMT metric does not apply to the analysis of impacts on non-automobile modes of travel such as riding transit, walking and bicycling.

The following identifies thresholds of significance and screening criteria used to determine if a land use project or plan would result in significant impacts under the VMT metric.

For residential projects, a project would generate substantial additional VMT if it exceeds the regional household VMT per capita minus 15 percent. . In San Francisco, the City's average VMT per capita (8.4) is lower than the regional average (17.2). Therefore, the City average is irrelevant for the purposes of the analysis.

For office projects, a project would generate substantial additional VMT if it exceeds the regional VMT per employee minus 15 percent.

For retail projects, the Planning Department uses a VMT efficiency metric approach for retail projects: a project would generate substantial additional VMT if it exceeds the regional VMT per retail employee minus 15 percent.

For mixed-use projects, each proposed land use is evaluated independently, per the significance criteria described above.

The Planning Department's transportation impact guidelines do not provide screening criteria or thresholds of significance for other types of land uses, other than those projects that meet the definition of a small project, which does not apply to the Proposed Project. Therefore, the Planning Department provides additional screening criteria and thresholds of significance to determine if land uses similar in function to residential, office, and retail would generate a substantial increase in VMT.[44] The Planning Department applies the Map-Based Screening and Proximity to Transit Station screening criteria to the following land use types:

- Research and Development (R&D) Lab Area, Restaurants, Childcare, K-12 Schools – Trips associated with these land uses typically function similarly to office. While some of these uses may have some visitor/customer trips associated with them (e.g., childcare and school drop-off, etc.), those trips are often a side trip within a larger tour. For example, the visitor/customer trips are influenced by the

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[42] Retail travel is not explicitly captured in SF-CHAMP, rather, there is a generic "Other" purpose which includes retail shopping, medical appointments, visiting friends or family, and all other non-work, non-school tours. The retail efficiency metric captures all of the "Other" purpose travel generated by Bay Area households. The denominator of employment (including retail; cultural, institutional, and educational; and medical employment; school enrollment, and number of households) represents the size, or attraction, of the zone for this type of "Other" purpose travel.

[43] San Francisco Planning Department, Executive Summary: Resolution Modifying Transportation Impact Analysis, Appendix F, Attachment A, March 3, 2016.

[44] San Francisco Planning Department, Executive Summary: Resolution Modifying Transportation Impact Analysis, Appendix F, Attachment A, March 3, 2016.

origin (e.g., home) and/or ultimate destination (e.g., work) of those tours. Therefore, these land uses are treated as office for screening and analysis.

- Grocery Stores and Parks – Trips associated with grocery stores and parks typically function similar to retail. Therefore, these types of land uses are treated as retail for screening and analysis.

This approach is consistent with CEQA Section 21099 and the thresholds of significance for other land uses recommended in OPR's Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA[45] ("proposed transportation impact guidelines"). OPR described a 15 percent threshold below existing development as being "both reasonably ambitious and generally achievable" for the following reasons.

First, Section 21099/SB 743 states that the criteria for determining significance must "promote the reduction in greenhouse gas emissions." SB 743 also states the Legislature's intent that the analysis of transportation in CEQA better promote the State's goals of reducing greenhouse gas emissions. It cites in particular the reduction goals in the Global Warming Solutions Act and the Sustainable Communities and Climate Protection Act, both of which call for substantial reductions. The California Air Resources Board established long-term reduction targets for the largest regions in the state that ranged from 13 to 16 percent.

Second, Caltrans has developed a statewide VMT reduction target in its Strategic Management Plan. Specifically, it calls for a 15 percent reduction in per capita VMT, compared to 2010 levels, by 2020.

Third, according to the California Air Pollution Control Officers Association (CAPCOA), 15 percent reductions in VMT are typically achievable at the project level in a variety of place types.[46]

Fourth, the First Update to the AB 32 Scoping Plan states, "[r]ecognizing the important role local governments play in the successful implementation of AB 32, the initial Scoping Plan called for local governments to set municipal and communitywide GHG reduction targets of 15 percent below then-current levels by 2020, to coincide with the statewide limit."[47]

In addition to the map-based screening criterion the City has adopted a Proximity to Transit Stations screening criterion. The Planning Department recommends that residential, retail, and office projects, as well projects that are a mix of these uses, proposed within 0.5 mile of an existing major transit stop (as defined by CEQA Section 21064.3) or an existing stop along a high quality transit corridor (as defined by CEQA Section 21155) would not result in a substantial increase in VMT. However, this presumption would not apply if the project would: have a floor area ratio of less than 0.75; (2) include more parking for use by residents, customers, or employees of the project than required or allowed, without a conditional use; or (3) is inconsistent with the applicable Sustainable Communities Strategy.[48]

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[45] This document is available online at: https://www.opr.ca.gov/s_sb743.php, Page III:20.

[46] CAPCOA, *Quantifying Greenhouse Gas Measures*, 2010, p. 55. Available online at http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.

[47] *First Update to the AB 32 Scoping Plan,* p. 113. Available online at https://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

[48] A project is considered to be inconsistent with the Sustainable Communities Strategy if development is located outside of areas contemplated for development in the Sustainable Communities Strategy.

Although the Proposed Project does not require a detailed VMT analysis per the Eligibility Checklist: CEQA Section 21099 (February 15, 2017, included in **Appendix J**), an overview of the expected VMT impact of the Project is included below.

City policies recognize that improvements to transit service would make transit more attractive in comparison to vehicular travel and would therefore reduce VMT. As a result, projects which are solely transit improvements are typically screened out of a VMT assessment as they can be reasonably anticipated that no significant impacts to VMT would result.

For residential development, the regional average daily household VMT per capita is 17.2. For office and retail development, regional average daily work-related VMT per employee are 19.1 and 14.9, respectively. As detailed in Section 5.1, a project is considered to have the potential for a significant VMT impact if it exceeds the regional average minus 15 percent. **Table 5-1** shows the regional average VMT values for these land uses, the values for the region minus 15 percent, and the value for the transportation analysis zone in which the Project Site is located, TAZ 446. TAZ 446 is bounded by Middle Point Road to the west, Evans Avenue to the north, Innes Avenue to the south, and Earl Street to the east. As the VMT impact analysis focuses on per capita VMT generated by the project instead of the aggregate VMT generated, the two land use scenarios – the Proposed Project and the Project Variant – are not analyzed separately. It is assumed that the VMT per capita for residents, office employees, and retail employees would be the same in both land use scenarios.

TABLE 5-1: DAILY VEHICLE-MILES TRAVELED (BASELINE)

	Regional VMT Average Per Capita	Regional Average Minus 15%	TAZ 446 (Project)
Residential (per resident)	17.2	14.6	9.0
Office[1] (per office employee)	19.1	16.2	15.3
Retail (per retail employee)	14.9	12.6	8.1

Notes:

1. School VMT falls within the office category. While some school-related trips are visitor trips (e.g. pick-up/drop-off), those trips are most heavily influenced by the origin (e.g. home) and/or the ultimate destination (e.g. work) and are therefore typically a component of a larger tour. It is therefore appropriate to assign school trips to the use which is the dominant influence within that tour, which is office work trips.

Source: SF-CHAMP 2015, Fehr & Peers 2015, San Francisco Planning Department 2016.

5.2.1.1 *Role of TDM in Achieving VMT Reductions*

As stated above, many factors affect travel behavior. These factors include density, diversity of land uses, design of the transportation network, access to regional destinations, distance to high-quality transit, development scale, demographics, and transportation demand management.[49] The Transportation Authority's SF-CHAMP accounts for a variety of these factors to estimate VMT throughout San Francisco. SF-CHAMP is not sensitive to site-level characteristics like Transportation Demand management (TDM) measures. The amount of parking provided on a site is considered a TDM measure.

As part of the "Shift" component of the Transportation Sustainability Program, the City has recently adopted the San Francisco TDM Program. The purpose of the TDM Program is to reduce the VMT that otherwise

[49] California Smart-Growth Trip Generation Rates Study, Appendix A, University of California, Davis Institute of Transportation Studies, March 2013.

would be forecast to occur from new development (in SF-CHAMP or other transportation modeling software) based upon the new development's TAZ location. In order to achieve this VMT reduction, the San Francisco TDM Program requires that property owners select from a menu of TDM measures, defined as measures that reduce VMT by residents, tenants, employees, and visitors and are under the control of the property owner. A reduction in VMT may result from shifting vehicle trips to sustainable travel modes or reducing vehicle trips, increasing vehicle occupancy, or reducing the average vehicle trip length.

The TDM Technical Justification document[50] provides the technical basis for the creation of the applicability, targets, and assignment of points to individual measures on the TDM menu used for the San Francisco TDM Program. Each of the TDM measures on the menu is assigned a number of points, reflecting its relative effectiveness in reducing VMT. This relative effectiveness determination is grounded in literature review, local data collection, best practices research, and professional transportation expert opinion. One of the individual measures in the TDM menu that was researched was parking supply, as described below.

In 2010, the California Air Pollution Control Officers Association (CAPCOA) published a report that quantifies project-level land use, transportation, energy use, and other measures effects on GHG emissions based upon a literature review of research conducted to date.[51] The CAPCOA report identifies a maximum of 12.5 percent reduction in VMT related to parking supply (PDT-1). Recent research, described further below, indicates that an area with more parking influences a higher demand for more automobile use.

A New York City study of three boroughs showed a clear relationship between guaranteed vehicular parking at home and a greater tendency to use the automobile for trips made to and from work, even when both work and home are well served by transit. The study also infers that driving to other non-work activities is also likely to be higher for households with guaranteed vehicular parking.[52] Related literature focused on the relationship between the availability of free on-street parking supply and the number of cars per household supports the findings that the availability of parking increases private car ownership by approximately nine percent.[53] A study of households within a two-mile radius of ten rail stations in New Jersey concluded that if development near transit stations provides a high parking supply (on- and off-street), then those developments wouldn't reduce automobile use compared to developments located further away from transit stations. In addition, parking supply can undermine the incentive to use transit that proximity to transit provides.[54] A study of nine cities across the United States looked at the question of whether citywide changes in vehicular parking cause automobile use to increase, or whether minimum parking requirements an appropriate response the already rising automobile use. The study concluded that:

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[50] San Francisco Planning Department, *Transportation Demand Management Technical Justification*, June 2016.

[51] California Air Pollution Control Officers Association (CAPCOA), *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures,* August 2010.

[52] Rachel Weinberger, "Death by a thousand curb-cuts: Evidence on the effect of minimum parking requirements on the choice to drive," *Transport Policy, 20,* March 2012.

[53] Zhan Guo, "Residential Street Parking and Car Ownership," *Journal of the American Planning Association, 79:1*, 32-48, May 9, 2013.

[54] Daniel Chatman, "Does Transit-Oriented Development Need the Transit?", Access, Fall 2015.

"parking provision in cities is a likely cause of increased driving among residents and employees in those places".[55]

Research conducted in San Francisco focused on whether or not a relationship exists between the provision of off-street parking and the choice to drive among individuals traveling to or from the site (similar to the focus of one of the questions in the nine-city United States study). Following data collection and an empirical review of the data, this research found that reductions in off-street vehicular parking for office, residential, and retail developments reduce the overall automobile mode share associated with those developments, relative to projects with the same land uses in similar contexts that provide more off-street vehicular parking.[56] In other words, more off-street vehicular parking is linked to more driving and people without dedicated parking spaces are less likely to drive.

Based upon the recent research, a reduced parking supply is one the most effective TDM measures available in the menu for the San Francisco TDM Program. Eleven options (with points associated with them) are provided for this TDM measure in the TDM Program, depending upon the development project's parking supply[57] compared to the neighborhood parking rate. The neighborhood parking rate is number of existing parking spaces provided per dwelling unit or per 1,000 square feet of non-residential uses for each TAZ within San Francisco.

Using the neighborhood parking rate as a basis for assigning points accounts for the variability in geography throughout San Francisco and the effect this can have on travel behavior. Although parking supply is not an input into SF-CHAMP, based upon the recent research, the existing parking supply within a TAZ has a relationship with the VMT for that TAZ. Therefore, a new development would most likely not reduce VMT as it relates to parking supply if the new development is not parked at least at or below the neighborhood parking rate.

The existing neighborhood parking rate for the Project Site (TAZ 446) is 0.92 spaces per residential unit and 0.02 per 1,000 square feet of non-residential space. The parking rate takes into account the amount of parking and residential units and non-residential square footage in the TAZ itself and other nearby accessible TAZs within a 0.75 mile network-based walking distance, with more distant parking and residential units and non-residential square footage within that walking distance given decreasing weight. The rate for non-residential space is substantially lower than many areas in the City, likely due to the prevalence of large industrial warehousing spaces in the neighborhood that tend to have large square footages with relatively low travel activity, and thus require low amounts of off-street parking, particularly when on-street parking exists.

In addition, even though parking is not specifically an input into SF-CHAMP, the existing parking is reflected in the estimates of VMT outputs from SF-CHAMP because it is an existing condition on the ground. As mentioned above, existing average daily VMT per capita, per employee, and per retail employee in TAZ 446 is below the existing regional average daily VMT per capita, per employee, and per retail employee, respectively. Therefore, in order to exceed the threshold of 15 percent below regional averages, the project would have to substantially increase VMT per capita, per employee, and per retail employee.

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[55] Chris McCahill, et al., "Effects of Parking Provision on Automobile Use in Cities: Inferring Causality," Transportation Research Board, November 13, 2015.

[56] Fehr and Peers, *Parking Analysis and Methodology Memo – Final*, April 2015.

[57] This refers to accessory (or off-street) parking supply, which is defined in the TDM Program Standards.

In typical conditions, a proposed project would be relatively similar in land use mix to the surrounding neighborhood's land uses. Under these circumstances, in order to account for an increase or decrease in VMT per capita from the project's parking supply, the project's parking rate is compared to the neighborhood parking rate.

The Proposed Project includes 1,845 parking spaces on the Project Site (1,800 off-street plus 45 on-street) and the Project Variant includes 1,957 parking spaces (1,912 off-street plus 45 on-street) on the Project Site. Maximum parking supply rates per land use are 1.0 spaces per residential unit and 2.03 spaces per 1,000 square feet for non-residential uses for the Proposed Project and 1.0 spaces per residential unit and 1.41 spaces per 1,000 square feet for non-residential uses for the Project Variant. The residential parking rate (1.0 spaces per residential unit) is slightly higher than the neighborhood average rate (0.92 spaces per residential unit); however, it is very close to the neighborhood average, and to the extent such a small difference (a 9 percent increase) may affect VMT, it is not likely to increase VMT to the point where it would exceed the threshold since the residential VMT per capita in TAZ 446 is expected to be 9.0 VMT per capita, 48 percent below the regional average of 17.2 VMT per capita and 5.6 VMT per capita below the threshold of 15 percent below regional averages.

The Proposed Project's parking supply rates for non-residential uses, in terms of spaces per 1,000 square feet of development, are much higher than the neighborhood average. In the case of the Proposed Project, the existing neighborhood non-residential parking supply, expressed as a rate per 1,000 square feet of development, is highly influenced by the prevalence of warehouses and other industrial uses which have large square footages and relatively little transportation activity per square foot. In contrast, the Proposed Project would consist primarily of residential, retail, and office, which would result in a higher population (employees and visitors) per square foot than industrial uses. Thus, the fact that the Proposed Project's non-residential parking supply rates, which are based on retail and office are higher than the existing neighborhood's non-residential parking ratio, which consists of industrial uses, does not necessarily suggest that the Proposed Project's land uses would generate VMT per capita for office and retail uses at a higher rate than forecasted by SF-CHAMP. Because the uses and densities are dramatically different, comparing parking supply rates in terms of spaces per 1,000 square feet of development does not allow for a comparison in terms of VMT per capita, because the comparative density of persons per 1,000 square feet is greater in office and retail uses..

Further, as noted in Section 5.11.3, the Proposed Project's parking supply is forecast to be less than the forecast parking demand, meaning that parking is constrained and likely contributing to decreases in VMT compared to conditions with an unconstrained parking supply. Thus, the parking at the Proposed Project may not be readily available and travelers may experience parking shortfalls during peak times. As a result, even though the proposed project parking ratios would be higher than the neighborhood average, the VMT per capita levels forecast by SF-CHAMP should not be adjusted to account for the fact that parking rates are higher for proposed office and retail uses than parking rates for existing warehouse and industrial uses.

This analysis indicates that office trips to and from India Basin would be longer on average than residential trips, which are slightly longer than retail trips. As a result, the Proposed Project can be expected to have lower VMT per capita than the Project Variant; while the Project Variant has slightly more retail uses (including restaurants) than the Proposed Project, it also has significantly more office uses and fewer residential units, which would result in a higher average VMT across all uses on the site. Nevertheless, because projected VMT per capita for office, residential, and retail uses in the Project Site's TAZ are below 85% of the regional average, the Project Variant would not cause a significant VMT impact.

As listed in **Table 5-1**, existing average daily VMT per capita is more than 15 percent below the existing regional average daily VMT per capita for residential, office, and retail uses in TAZ 446 where the Proposed Project is located. Given that the Project Site is located in an area where existing VMT is more than 15 percent below the existing regional average and that the Proposed Project incorporates similar features to other development within the TAZ that influence the lower-than-average VMT, such as density, mix of uses, and transit accessibility, the Proposed Project's residential, office, and retail (and thus, restaurant, open space, and school) uses would not result in substantial additional VMT and impacts would be **less-than-significant**. Furthermore, the Project Site meets the Proximity to Transit Stations screening criterion, which also indicates that the Proposed Project's uses would not cause substantial additional VMT. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**. Additionally, the above assessment does not fully account for the reduction in VMT likely to occur due to the Proposed Project's TDM Plan, which includes robust measures (such as participation in the regional bikeshare program and unbundled parking supply) to reduce VMT. Therefore, with full accounting of the TDM Plan, the VMT impacts of the Proposed Project would be **less-than-significant**.

Residential and commercial development projects that locate in areas with low VMT per capita and incorporate similar features, such as density, mix of uses, transit accessibility, tend to exhibit similarly low VMT per capita. While the Proposed Project would generate a large number of trips to and from the Project Site, the significant metric for measuring VMT is measured per capita and is not an aggregate of VMT. The aim of this metric is to direct growth to areas of low VMT per capita, not to prevent any growth in VMT from new development.

5.3 TRAFFIC IMPACTS

5.3.1 Induced Travel

The Proposed Project is not a transportation project. However, the Project would include features that would alter the transportation network. These features include sidewalk widening, installation of on-street loading zones, curb cuts, on-street safety strategies, intersection signalization, and left-turn lanes. These features fit within the general types of projects identified that would not substantially induce automobile travel as they do not create substantial increases in roadway capacity.[58] Instead, they are modifications to facilitate non-automobile modes to make them more attractive when compared to automobile travel. While intersection signalization may induce automobile travel in some situations, in this location, it is being installed to provide a safe pedestrian crossing and would not increase vehicle speeds or reduce automobile delay. While a lane addition such as a turn-pocket may induce automobile travel in some situations, in this location, the left-turn pockets are minor changes to the transportation network and are being installed to provide access to the site and would not increase vehicle speeds or reduce automobile delay; therefore it is assumed that they would not induce automobile travel. Therefore, impacts would be **less-than-significant**. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

5.3.2 Traffic Hazard Impacts

The Proposed Project would have a significant impact to traffic if it caused major traffic hazards. In this section, the impacts for the Project Variant would be the same as for the Proposed Project because the

[58] San Francisco Planning Department, *Executive Summary: Resolution Modifying Transportation Impact Analysis*, Appendix F, Attachment A, March 3, 2016.

street design is the same. The effect on traffic hazards of the difference in traffic generated between the Proposed Project and Project Variant are explained in this section.

The layouts for the internal street network have not been finalized, but would conform to the specifications in the draft India Basin Design Standards and Guidelines as well as the Better Streets Plan. Layouts for the internal street network are subject to review and approval by the City. The draft design has been analyzed in this document and features small corner radii, curb extensions at intersections, and speed tables at midblock and intersection crossing locations, which all serve to calm traffic as is appropriate for neighborhood streets. Griffith Street, New Hudson Avenue, Arelious Walker Drive, and Earl Street have the design vehicle of a passenger car and are also designed to accommodate larger vehicles, including SU-30 single unit, fire, and WB-40 semi-trailer trucks. The garages with access off of these streets are also designed to accommodate the WB-40 truck. Spring Lane, Beach Lane, and Fairfax Lane have a design vehicle of a passenger car and are also designed to accommodate SU-30 and fire trucks, but not WB-40 trucks. As such, WB-40 trucks will not be permitted access to these streets.

While the small turn radii will slow speeds for all vehicles, they would cause some larger vehicles (such as SU-30 and WB-40) to cross the centerline, which requires appropriate design elements to avoid introducing hazards. For this reason, Griffith Street, Arelious Walker Drive, and Earl Street have been designed with mountable buffer zones when needed, and roadway design along these streets complies with the seven-foot-wide refuge zone for vehicles. The SU-30 vehicle is the same as a smaller move-in truck and a larger delivery vehicle. Based on the land uses (residential and commercial) these vehicles are expected to frequently use the internal roads for residential move-in/move-out and deliveries. The small turn radii would also cause WB-40 trucks to cross the centerline in places. This is permitted in the Better Streets Plan, is typical when these vehicles traverse neighborhood streets, is addressed with appropriate design elements that minimize truck speed and ensure truck visibility, and therefore does not constitute a major traffic hazard.

In general, the Proposed Project would add vehicle trips to the surrounding roadways; however, a general increase in traffic would not be considered a traffic hazard. Existing vehicle, pedestrian, and bicycle volumes on Innes Avenue and other streets near the Project are low. The additional Project vehicle trips would substantially contribute to traffic and occasional congestion at nearby intersections. The Proposed Project would generate around 2,000 vehicle trips in both the AM and PM peak hours and the Project Variant would generate around 2,600 vehicle trips in both the AM and PM peak hours. A large majority of the Project vehicle traffic would travel along Evans Avenue, Hunters Point Boulevard, and Innes Avenue to the west of the Project Site to access other destinations in the city and region. Therefore the Project would cause increases to traffic volumes primarily at nearby intersections along these streets to the west of the Project Site. While the project would increase the total number of trips within the vicinity of the project site, increased trips alone do not cause traffic hazards. The inclusion of signalization at the project intersections along Innes Avenue removes conflicts that would otherwise exist between the substantial number of project vehicles and the substantial number of people driving along Innes Avenue in a way that does not cause any new traffic hazards. Therefore the project impact would be **less-than-significant**.

5.3.3 Intersection Improvement Measures Identified

A detailed traffic analysis utilizing the level of service metric (LOS) was conducted for informational and site planning purposes. Although private passenger vehicle delay as measured by LOS in that analysis is not relevant to the Proposed Project's environmental review and no significant impacts are identified associated with that analysis, the traffic analysis did result in a recommendation for an improvement to an intersection that is summarized here. Note that the numbering does not begin at I-TR-1, as this improvement measure is described in more detail later in this document and the numbering reflects its position later in this report. Also, note that there is no I-TR-4A. In this document, improvement and mitigation measures with the suffix "A" apply only to the Proposed Project and those with suffix "B" apply only to the Project Variant.

Improvement Measure I-TR-4B: Reconfigure Southbound Approach of Jennings Street/Evans Avenue (Project Variant only)

To improve vehicular mobility at the intersection of Jennings Street/Evans Avenue in the Baseline Plus Project Variant Scenario, Improvement Measure I-TR-4B reconfigures the southbound approach to the intersection of Jennings Street/Evans Avenue include a 100-foot left turn pocket. Adding this turn pocket to this intersection would require restricting parking on the west side of Jennings Street, removing approximately five parking spaces.

For the Project Variant, responsibility for implementing the improvement measure would be based on the relative contribution of traffic to the intersection from the four parcels. At this location, 98 percent of vehicle trips would be generated by the 700 Innes Avenue parcel, one percent of vehicle trips would be generated by the India Basin Shoreline Park parcel, zero percent of vehicle trips would be generated by the 900 Innes Avenue parcel, and one percent of trips would be generated by the India Basin Open Space parcel.

Improvement Feasibility

This improvement is feasible. FivePoint is committed to signalizing the intersection as part of the Hunters Point Shipyard project, and construction of this improvement would occur at the same time as signalization. Trips generated from the Build Property comprise 98 percent of the Project Variant Scenario vehicle trips through this intersection during both the AM and PM peak hours. Trips generated from the RPD Property comprise two percent of the Project Variant Scenario vehicle trips through this intersection during both the AM and PM peak hours. Therefore Build would be responsible for 98 percent of the costs, and RPD would be responsible for 2 percent of the costs.

Operations After Improvement

Restriping the southbound approach to include a southbound left turn pocket improves intersection operations to LOS E in the AM peak period and LOS C in the PM peak period.

More detail on the traffic analysis is presented in Chapter 7.

5.4 TRANSIT CAPACITY IMPACTS

Transit capacity impacts were evaluated based on the ability of the transit system to accommodate existing and projected future ridership demands. Most transit users would be expected to travel between the Project Site and transit stops/stations by foot. A discussion on pedestrian access to transit can be found in Section 5.7 on Pedestrian Impacts.

The geographic trip distribution presented earlier in this report also applies to transit trips generated by both the Proposed Project and Project Variant. The Project would have a significant impact if the addition of project trips to an individual route would cause the capacity utilization to exceed SFMTA's 85 percent operating threshold. The Project would also have a significant impact if the addition of project trips to the Downtown Screenlines would cause the capacity utilization to exceed SFMTA's 85 percent operating threshold. The Project would also have a significant impact if the generated trips exceed the thresholds for regional operators, which is 100 percent.

5.4.1 Baseline Plus Proposed Project

Transit capacity impacts for the Proposed Project were assessed at the individual route level, the Downtown Screenline level, and at the regional screenline level. Analysis is presented in turn, below.

5.4.1.1 Individual Muni Routes

The Project's impact to transit capacity on transit routes adjacent to the Project was evaluated. Two Muni bus lines would continue to serve the Project Site in the Baseline scenario: the 19 Polk and the 44 O'Shaughnessy. The 19 Polk travels along Innes Avenue and would provide a direct connection to the Project as well as connections to other Muni lines, notably the T Third. The 44 O'Shaughnessy travels along Middle Point Road, with the closest stop located at Innes Avenue/Middle Point Road. This stop is about 2,000 feet from the Project Site, which is approximately a 7-minute walk (i.e. considered within walking distance for the purpose of this analysis).

Using the previously-calculated transit trip distributions to each Superdistrict and an understanding of which neighborhoods each line serves, the proportion of Project trips to each of these two lines was estimated. The current frequency of each line was used to estimate the number of Project trips that would be added to each bus vehicle in the inbound and outbound directions during the AM and PM peak periods.

Typically, for route-specific capacity impact analysis, only the peak demand on a given bus route over the course of the entire route (hereafter called the Global Maximum Load Point, or GMLP) is evaluated. However, since it is expected that a substantial number of riders on the 19 Polk would transfer to the T Third before reaching the GMLP, a Local Maximum Load Point (LMLP) was also evaluated for the 19 Polk. This LMLP is located on Evans Avenue east of Third Street, to capture the large proportion of transit riders that would be expected to use the 19 Polk to transfer to the T Third.

Table 5-2 below summarizes the results of the transit line capacity analysis for the 19 Polk and 44 O'Shaughnessy. In the AM period, the Proposed Project would add up to 67 trips per bus on the 19 Polk and up to 52 trips per bus on the 44 O'Shaughnessy. In the PM period, the Proposed Project would add up to 106 trips per bus on the 19 Polk and up to 88 trips per bus on the 44 O'Shaughnessy.

As a result of the added transit trips, the Proposed Project's impact on transit capacity would be considered **significant** on the 44 O'Shaughnessy in the inbound direction during the AM peak period and in the outbound direction during the PM peak period. The significant impact to the 44 O'Shaughnessy would be triggered by the development contained within Phase 1 of the construction plan for the Proposed Project.

TABLE 5-2: LOCAL TRANSIT CAPACITY - PROPOSED PROJECT								
Route	**Peak Hour**	**Existing Load (pax)[1]**	**Background Growth[2]**	**Baseline No Project Load**	**Project-Added Trips**	**Baseline Plus Project Load**	**Threshold (pax)[3]**	**Significant Impact?**
Inbound (Project Designation) / Outbound (SFMTA Designation)								
19 Polk (LMLP[4])	AM	24	5	29	63	92	216	No
	PM	44	25	69	106	175		No
19 Polk (GMLP[4])	AM	160	0	160	4	164		No
	PM	168	2	170	6	176		No
44 O'Shaughnessy (GMLP[4])	AM	300	4	304	52	355	405	No
	PM	362	17	379	88	467	362	**Yes**
Outbound (Project Designation) / Inbound (SFMTA Designation)								
19 Polk (LMLP[4])	AM	84	25	109	67	176	216	No
	PM	52	12	64	57	121		No
19 Polk (GMLP[4])	AM	188	2	190	5	195		No
	PM	180	1	181	4	185		No
44 O'Shaughnessy (GMLP[4])	AM	368	17	385	49	433	405	**Yes**
	PM	241	8	249	42	291	362	No

Notes:

Bold and shaded indicates significant transit capacity impact.

1. Existing Load at Local Maximum Load Point or Global Maximum Load Point from *Transit Data for Transportation Impact Studies* (SF Planning, May 2015) or Transit Effectiveness Project Route analysis (Fehr & Peers, October 2011). Pax = passengers.
2. Background Growth reflects 494 residential units approved as Phase 1 of the nearby Hunters Point Shipyard development that are currently under construction.
3. Threshold is based on a total capacity of 63 persons (seated plus standing) per bus for both 19 Polk and 44 O'Shaughnessy (as identified in *Transit Data for Transportation Impact Studies*) and 85 percent capacity utilization significance threshold per SF TIA Guidelines. Pax = passengers.
4. GMLP is the Global Maximum Load Point, which is the route-wide maximum load point. LMLP is the Local Maximum Load Point, which is the maximum load point on the route east of Third Street.

Source: Fehr & Peers, 2017

Mitigation Measure M-TR-1A (Proposed Project): Implement Transit Capacity Improvements

To mitigate significant transit capacity impacts that could occur as a result of Proposed Project transit trips before the transit service improvements that are part of the Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) are in operation, the Project Sponsor of the 700 Innes Avenue property shall fund and/or implement a transit capacity improvement measure as described below. Implementation of one of the two options described would mitigate the transit capacity impact of the Project to less than significant.

Option 1 – Fund Temporary Transit Service Improvements until applicable portion of Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) is in Operation

To mitigate significant transit capacity impacts, the Project Sponsors shall fund, and the SFMTA shall provide, temporary increased frequencies on the 44 O'Shaughnessy from for the period of time until similar improvements required as part of the Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) are in operation. Specifically, the frequency of the transit service shall be increased from 8 minutes to 6.5 minutes in the AM peak period and from 9 minutes to 7.5 minutes in the PM peak period. This increased frequency is set at the level where the project-generated transit trips would no longer result in a significant transit capacity impact. The Project Sponsor's funding contributions would be based on the cost to serve the relative proportion of transit trips generated by each of the four parcels that make up the Proposed Project, and it would include the cost to requisition and operate any additional buses needed to increase the frequencies as specified.

Under Option 1, the increased frequency on the 44 O'Shaughnessy would result in increased passenger capacity along the route (because more buses would be provided per hour), thereby lowering the average passenger load per bus below the 85 percent capacity utilization threshold.

Mitigation Measure M-TR-1A, Option 1 would be implemented prior to the issuance of the building permits for the incremental amount of development at the Project Site (20 transit trips outbound to the Project on the 44 O'Shaughnessy in the AM peak hour or 18 transit trips inbound to the Project on the 44 O'Shaughnessy in the PM peak hour) that would cause the significant impact. This incremental amount of development would be a subset of the first phase of construction.

Option 2 – Implement Temporary Shuttle Service until Applicable Portion of Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) is in Operation

If for any reason the SFMTA determines that the provision of increased transit frequency is not feasible at the time its implementation would be required, the Project Sponsor for the 700 Innes Avenue property shall implement a temporary shuttle service that would supplement existing nearby transit service by providing connections to local and regional rail service. A shuttle service operating at 20 minute headways in the AM and PM peak periods could accommodate the estimated demand, although a minimum frequency of 15 minutes is recommended in order to provide an adequate level of service to urban commuters. The AM peak period is defined as from 7:00 AM to 9:00 AM, and the PM peak period is defined as from 4:00 PM to 6:00 PM. Shuttle operations should extend on either side of these defined periods if necessary to adequately serve the peak period of project travel demand. The shuttle would connect the Project Site with T-Third, Caltrain, and BART stations. The shuttle stop location would either be located on Innes Avenue at

Arelious Walker Drive or on New Hudson Street at Innes Avenue. The shuttle would be required to operate during the period of time until improvements required as part of the Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) are in operation. The shuttle would be required to operate within all applicable SFMTA and City of San Francisco regulations and programs. The Project Sponsors shall be required to monitor ridership on the shuttle annually and produce a report to the SFMTA describing the level of service provided and associated ridership. If ridership on the overcrowded Muni route is above 85 percent of overall service capacity as routinely monitored by the SFMTA, additional shuttle frequency shall be provided by the Project Sponsors to reduce occupancy to below 85 percent utilization.

Mitigation Measure M-TR-1A Option 2 would be implemented prior to the issuance of the Temporary Certificates of Occupancy (TCO) for the incremental amount of development at the Project Site (20 transit trips outbound to the Project on the 44 O'Shaughnessy in the AM peak hour or 18 transit trips inbound to the Project on the 44 O'Shaughnessy in the PM peak hour) that would cause the significant impact. This incremental amount of development would be a subset of the first phase of construction.

Effects of Mitigation Measure M-TR-1A

Under Option 1, the increased frequency of the 44 O'Shaughnessy would result in increased passenger capacity along the route (due to the provision of more buses per hour), thereby lowering the average passenger load per pus below the 85 percent capacity utilization threshold.

Under Option 2, the shuttle service would supplement existing transit routes by providing sufficient capacity to accommodate the demand generated by the Project above the 85 percent utilization threshold with a 20 percent factor of safety.

Riders travelling to/from destinations in Downtown San Francisco and the northern neighborhoods of San Francisco could use the shuttle to connect with Muni, Caltrain, or BART. Absent the shuttle, many of these transit trips would be taken using the 19 Polk to get to Downtown or to transfer to the T Third to travel to Mission Bay or Downtown. The shuttle service would provide additional transit capacity along Evans Avenue to access the T Third as well as provide an alternative route to Downtown San Francisco via the connection to BART.

Riders travelling to/from destinations in the southern and western neighborhoods of San Francisco could transfer to the 48 Quintara at the 24th Street Mission BART station or use the shuttle to transfer to BART at 24th Street Mission station to travel to destinations close to other BART stations in the southwest of the City. Absent the shuttle, many of these transit trips would be taken using the 44 O'Shaughnessy. The shuttle would provide an alternate option to the 44 O'Shaughnessy to access the BART network and would provide a quicker connection to BART than the 44 O'Shaughnessy as it would have fewer intermediate stops. It would therefore be an attractive option for these travelers and may attract trips from the 44 O'Shaughnessy, which would alleviate overcrowding on that route. Transit service would be monitored, and the shuttle service would be adjusted, if needed, to reach the capacity utilization threshold.

The shuttle service would be provided only during peak hours, and only until the CPHPS TP Transit Service Improvements are in place.

Mitigation Measure Implementation

If selected, Option 1 of Mitigation Measure M-TR-1A would be implemented prior to the issuance of building permits for the incremental amount of development at the Project Site (20 transit trips outbound to the Project on the 44 O'Shaughnessy in the AM peak hour or 18 transit trips inbound to the Project on the 44 O'Shaughnessy in the PM peak hour) that would cause the significant impact. This incremental amount of development would be a subset of the first phase of construction. If selected, Option 2 of Mitigation Measure M-TR-1A would be implemented prior to occupancy of the incremental amount of development at the Project Site that would cause the significant impact. The funding contribution from the Project Sponsors is detailed in Section 5.4.1.

With the implementation of one of the options under Mitigation Measure M-TR-1A, the Proposed Project's impacts to transit capacity would become **less-than-significant with mitigation**. Because the proposed changes are restricted to providing additional capacity for transit riders, they would not result to changes to pedestrian facilities or bicycle facilities, nor create potentially hazardous conditions or elsewhere interfere with pedestrian or bicycle accessibility. The shuttle service may need to be compliant with the City's Commuter Shuttle Program Policy, which includes measures to minimize effect on pedestrians and bicyclists. The proposed changes would not have an effect on parking provision. Therefore, the mitigation measure would result in **less-than-significant** pedestrian, bicycle, and parking impacts. The mitigation measure would not require any construction, so therefore it would result in a **less-than-significant** impact due to construction. There would also be a **less-than-significant** impact to emergency access since the mitigation measure does not propose to change existing access to the Project Site.

Table 5-3 below summarizes the incremental number of Project transit trips above which there would be a significant transit capacity impact to either the 19 Polk or 44 O'Shaughnessy.

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TABLE 5-3: TRANSIT TRIP THRESHOLDS (MM M-TR-1A AND M-TR-1B)			
Transit Route	**Peak Hour**	**Added Transit Trips[1] (passengers)**	
		Proposed Project	**Project Variant**
Outbound (SFMTA Designation) / Inbound (Project Designation)			
19 Polk (LMLP[2])	AM	-	187
	PM	-	-
44 O'Shaughnessy (GLMP[3])	AM	-	101
	PM	18	18
Inbound (SFMTA Designation) / Outbound (Project Designation)			
19 Polk (LMLP[2])	AM	-	-
	PM	-	152
44 O'Shaughnessy (GLMP[3])	AM	20	20
	PM	-	112

Notes:

1. The added transit trips are the incremental number of Project transit trips above which there would be a significant transit capacity impact to the respective route. Added trips are identified only for the route/direction/time period where the Proposed Project (or Project Variant) would cause a significant impact.
2. LMLP = Local Maximum Load Point
3. GMLP = Global Maximum Load Point

Source: Fehr & Peers, 2017.

The following section specifies the total number of project transit trips that would result in a significant transit capacity impact, allocated to the different land uses. By identifying the number of Project trips that would need to be generated to cause a significant impact, this implementation plan enables the City and the Project Sponsor to determine, in a straightforward manner, when each mitigation measure should be implemented according to the level of development completed. This approach provides the desired development flexibility and also ensures that mitigation measures are implemented at the appropriate time. Providing these trip rates also allows for recalculation of impact significance in the event of changes to the development profile in response to changing market demands over time.

This plan presents distinct trip generation levels when the appropriate mitigation measure would be recommended. **Table 5-4** which details the vehicle trip generation rates for each land use in both the Proposed Project and the Project Variant, can then be used to simply calculate whether any particular development would generate a significant transit impact.

<table>
<tr><th colspan="7">TABLE 5-4: TRANSIT TRIPS GENERATED BY PROJECT DEVELOPMENT UNDER BASELINE CONDITIONS</th></tr>
<tr><th rowspan="3">Land Use</th><th colspan="6">Project Transit Trips (Under Baseline Conditions)</th></tr>
<tr><th colspan="3">AM Peak Hour</th><th colspan="3">PM Peak Hour</th></tr>
<tr><th>Rate</th><th>Inbound</th><th>Outbound</th><th>Rate</th><th>Inbound</th><th>Outbound</th></tr>
<tr><td>Open Space</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>School</td><td>0.03 per student, plus 0.01 per staff</td><td>100%</td><td>0%</td><td>0.01 per student, plus 0.01 per staff</td><td>0%</td><td>100%</td></tr>
<tr><td colspan="7">Retail</td></tr>
<tr><td>Restaurant</td><td>0.16 per 1000 square feet (KSF)</td><td rowspan="4">65%</td><td rowspan="4">35%</td><td>1.44 per KSF</td><td rowspan="4">36%</td><td rowspan="4">64%</td></tr>
<tr><td>Café</td><td>1.60 per KSF</td><td>1.45 per KSF</td></tr>
<tr><td>Supermarket</td><td>0.44 per KSF</td><td>1.20 per KSF</td></tr>
<tr><td>General Retail</td><td>0.19 per KSF</td><td>0.73 per KSF</td></tr>
<tr><td colspan="7">Office</td></tr>
<tr><td>R&D Lab Area</td><td>0.19 per KSF</td><td rowspan="4">88%</td><td rowspan="4">12%</td><td>0.16 per KSF</td><td rowspan="4">2%</td><td rowspan="4">98%</td></tr>
<tr><td>Clinical Use</td><td>0.98 per KSF</td><td>0.88 per KSF</td></tr>
<tr><td>Administrative</td><td>0.91 per KSF</td><td>0.83 per KSF</td></tr>
<tr><td>General Office</td><td>0.24 per KSF</td><td>0.22 per KSF</td></tr>
<tr><td colspan="7">Residential</td></tr>
<tr><td>Studio</td><td>0.10 per dwelling unit (DU)</td><td rowspan="3">31%</td><td rowspan="3">69%</td><td>0.14 per DU</td><td rowspan="3">81%</td><td rowspan="3">19%</td></tr>
<tr><td>1 Bedroom</td><td>0.10 per DU</td><td>0.13 per DU</td></tr>
<tr><td>2+ Bedrooms</td><td>0.14 per DU</td><td>0.17 per DU</td></tr>
</table>

Source: Fehr & Peers, 2017.

With the implementation of one of the options under Mitigation Measure M-TR-1A, the Proposed Project's impacts to transit capacity would become **less-than-significant with mitigation**. The mitigation measure would result in **less-than-significant** pedestrian, bicycle, and parking impacts because the proposed changes are restricted to providing additional capacity for transit riders, and therefore would not result in changes to those facilities. The mitigation measure would not require any construction, so therefore it would result in a **less-than-significant** impact due to construction. There would also be a **less-than-significant** impact to emergency access since the mitigation measure does not propose to change existing access to the Project Site.

5.4.1.2 Downtown Screenlines

Under the Baseline Scenario, the Proposed Project would generate 237 transit trips during the weekday AM peak hour and 302 transit trips during the PM peak hour. Transit trips to and from the Project Site would use nearby Muni lines (such as 19 Polk, 44 O'Shaughnessy, and the T Third), BART, Caltrain, or regional bus service, and would transfer to and from other Muni bus and light rail lines as needed. Of these transit trips, 39 would cross the screenlines inbound to Downtown in the AM peak hour, and 58 would cross the screenlines outbound from Downtown in the PM peak hour; the remainder of the transit trips do not cross the Downtown Screenlines. As shown in **Table 5-5** the addition of 39 AM and 58 PM Proposed Project-generated local transit trips crossing screenlines inbound in the AM peak hour and outbound in the PM peak hour would not increase screenline capacity utilization to greater than the 85 percent threshold an any screenline, except for the Southwest Screenline in the AM peak hour. The Southwest screenline would operate at 94 percent utilization in the PM peak hour; however, the Proposed Project would add only one trip to this screenline which is less than the threshold of five percent of ridership for screenlines exceeding the capacity utilization threshold under conditions without the Proposed Project.

Three subcorridors operate above the capacity utilization threshold of 85 percent in the Baseline Plus Proposed Project condition: Subway lines—AM only, Fulton/Hayes—PM only, and Third Street—PM only. For each of these subcorridors, the Proposed Project contribution to the screenline would be less than five percent.

TABLE 5-5: MUNI DOWNTOWN SCREENLINES - PROPOSED PROJECT

Screenline	Baseline[1]			Baseline Plus Proposed Project		
	Peak Hour[2] Baseline Ridership	Peak Hour[2] Capacity	Peak Hour[2] Capacity Utilization	Peak Hour Proposed Project Trips	Peak Hour[1] Ridership	Peak Hour[1] Capacity Utilization
AM Peak Hour						
Kearny/Stockton[3]	2,211	3,050	72%	3	2,214	73%
Other lines[4]	538	1,141	47%	1	539	47%
Northeast Screenline Total	*2,749*	*4,191*	*66%*	*4*	*2,753*	*66%*
Geary[5]	1,821	2,490	73%	2	1,823	73%
California[6]	1,610	2,010	80%	1	1,611	80%
Sutter/Clement[7]	480	630	76%	1	481	76%
Fulton/Hayes[8]	1,277	1,680	76%	1	1,278	76%
Balboa[9]	758	1,019	74%	1	759	74%
Northwest Screenline Total	*5,946*	*7,829*	*76%*	*6*	*5,951*	*76%*
Third Street[10]	359	793	45%	22	381	48%
Mission[11]	1,643	2,509	65%	0	1,643	65%
San Bruno/Bayshore[12]	1,690	2,134	79%	2	1,692	79%
Other lines[13]	1,468	1,756	84%	5	1,473	84%
Southeast Screenline Total	*5,160*	*7,192*	*72%*	*29*	*5,189*	*72%*
Subway lines[14]	6,330	6,205	**102%**	0	6,330	**102%**
Haight/Noriega[15]	1,121	1,554	72%	1	1,122	72%
Other lines[16]	465	700	66%	0	465	66%
Southwest Screenline Total	*7,916*	*8,459*	***94%***	*1*	*7,917*	***94%***

PM Peak Hour						
Kearny/Stockton[3]	2,245	3,327	67%	3	2,248	68%
Other lines[4]	683	1,078	63%	1	684	63%
Northeast Screenline Total	*2,928*	*4,405*	*66%*	*4*	*2,932*	*67%*
Geary[5]	1,964	2,623	75%	2	1,966	75%
California[6]	1,322	1,752	75%	1	1,323	76%
Sutter/Clement[7]	425	630	67%	1	426	68%
Fulton/Hayes[8]	1,184	1,323	**89%**	1	1,185	**90%**
Balboa[9]	625	974	64%	1	626	64%
Northwest Screenline Total	*5,520*	*7,302*	*76%*	*6*	*5,526*	*76%*
Third Street[10]	788	793	**99%**	37	825	**104%**
Mission[11]	1,407	2,601	54%	0	1,407	54%
San Bruno/Bayshore[12]	1,536	2,134	72%	4	1,541	72%
Other lines[13]	1,085	1,675	65%	9	1,094	65%
Southeast Screenline Total	*4,816*	*7,203*	*67%*	*50*	*4,866*	*68%*
Subway lines[14]	4,904	6,164	80%	0	4,904	80%
Haight/Noriega[15]	977	1,554	63%	1	978	63%
Other lines[16]	555	700	79%	0	555	79%
Southwest Screenline Total	*6,436*	*8,418*	*76%*	*1*	*6,437*	*76%*

Notes:

Bold indicates capacity utilization of 85 percent or greater.

1. Baseline condition is a modified existing condition.
2. AM Peak hour as inbound (i.e. toward Downtown) only; PM peak hour as outbound (i.e. away from Downtown) only
3. 8 Bayshore, 30 Stockton, 30X Marina Express, 41 Union, 45 Union-Stockton
4. F Market & Wharves, 10 Townsend, 12 Folsom/Pacific
5. 38 Geary, 38R Geary Rapid, 38AX Geary 'A' Express, 38BX Geary 'B' Express
6. 1 California, 1AX California 'A' Express, 1AX California 'B' Express
7. 2 Sutter, 3 Clement
8. 5 Fulton, 21 Hayes
9. 31 Balboa, 31AX Balboa 'A' Express, 31BX Balboa 'B' Express
10. T Third Street
11. 14 Mission, 14R Mission Rapid, 14X Mission Express, 49 Van Ness-Mission
12. 8AX Bayshore 'A' Express, 8BX Bayshore 'B' Express, 8 Bayshore, 9 San Bruno, 9L San Bruno Limited
13. J Church, 10 Townsend, 12 Folsom/Pacific, 19 Polk, 27 Bryant
14. KT Ingleside/Third Street, L Taraval, M Ocean View, N Judah
15. 6 Haight-Parnassus, 7/7R Haight-Noriega/Rapid, 7X Noriega Express, NX Judah Express
16. F Market & Wharves

Source: San Francisco Planning Department, May 2015; Fehr & Peers, 2016, see **Appendix E** for transit line capacity calculations

Therefore, the Proposed Project's impact to Muni transit capacity at the Downtown Screenlines and subcorridors would be **less-than-significant.** As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

5.4.1.3 Regional Transit

The Proposed Project would add approximately 44 AM peak hour and 40 PM peak hour transit trips to regional transit providers. These include 10 AM and 9 PM transit trips to the East Bay, 33 AM and 30 PM transit trips to the South Bay[59], and two AM and one PM transit trips to the North Bay. The thresholds for regional operators is 100 percent, compared to 85 percent for Muni. As shown in **Table 5-6** the East Bay screenline would operate at 102 percent in the AM peak hour. However, the Proposed Project would add only 10 trips to this screenline, which is less than the threshold of five percent of ridership for screenlines exceeding the capacity utilization threshold under conditions without the Proposed Project. Therefore, the Proposed Project would have a **less-than-significant** impact to regional transit capacity. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

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[59] Because there are no proposed direct transit links to nearby Caltrain stations, transit passengers traveling to and from the South Bay are expected to utilize first/last mile services such as taxi, Transportation Network Companies (TNCs), or bicycling to access Caltrain.

TABLE 5-6: REGIONAL TRANSIT SCREENLINES - PROPOSED PROJECT						
Screenline	Baseline[1]			Baseline Plus Proposed Project		
	Baseline Ridership	Peak Hourly Capacity	Capacity Utilization	Project Trips	Ridership	Capacity Utilization
AM Peak Hour						
East Bay						
BART	25,400	23,256	**109%**	10	25,410	**109%**
AC Transit	1,568	2,829	55%	0	1,568	55%
Ferries	810	1,170	69%	0	810	69%
Screenline Subtotal	*27,778*	*27,255*	***102%***	*10*	*27,788*	***102%***
North Bay						
Golden Gate Transit	1,330	2,543	52%	1	1,331	52%
Ferries	1082	1,959	55%	0	1082	55%
Screenline Subtotal	*2,412*	*4,502*	*54%*	*1*	*2,413*	*54%*
South Bay						
BART	14,151	19,367	73%	10	14,161	73%
Caltrain	2,173	3,100	70%	23	2,196	71%
SamTrans	255	520	49%	0	255	49%
Screenline Subtotal	*16,579*	*22,987*	*72%*	*33*	*16,612*	*72%*
Regional Total	*46,769*	*54,744*	*85%*	*44*	*46,813*	*86%*
PM Peak Hour						
East Bay						
BART	24,490	22,784	**107%**	9	24,499	**108%**
AC Transit	2,256	3,926	57%	0	2,256	57%
Ferries	805	1,615	50%	0	805	50%
Screenline Subtotal	*27,551*	*28,325*	*97%*	*9*	*27,560*	*97%*
North Bay						
Golden Gate Transit	1,384	2,817	49%	1	1,385	49%
Ferries	968	1,959	49%	0	968	49%
Screenline Subtotal	*2,352*	*4,776*	*49%*	*1*	*2,353*	*49%*
South Bay						
BART	13,502	18,900	71%	9	13,511	71%
Caltrain	2,381	3,100	77%	21	2,404	78%
SamTrans	141	320	44%	0	141	44%
Screenline Subtotal	*16,024*	*22,320*	*72%*	*30*	*16,054*	*72%*
Regional Total	*45,927*	*55,421*	*83%*	*40*	*45,967*	*83%*

Notes:

Bold indicates capacity utilization of 100 percent or greater.

1. Baseline condition is a modified existing condition.

Source: San Francisco Planning Department, "Transit Data for Transportation Impact Studies," May 2015. San Francisco Planning Department, "Updated BART Regional Screenlines – Revised," October 17, 2016; Fehr & Peers, 2016.

5.4.2 Baseline Plus Project Variant

Transit capacity impacts for the Project Variant were assessed at the individual route level, the Downtown Screenline level, and at the regional screenline level. Analysis is presented in turn, below.

5.4.2.1 Individual Muni Routes

Table 5-7 below summarizes the results of the transit line capacity analysis for the 19 Polk and 44 O'Shaughnessy under the Project Variant. In the AM peak hour, the Project Variant would add up to 195 trips on the 19 Polk and up to 149 trips on the 44 O'Shaughnessy. In the PM peak hour, the Project Variant would add up to 221 trips on the 19 Polk and up to 162 trips on the 44 O'Shaughnessy.

As a result of the added transit trips, the Project Variant's impact on transit capacity would be considered **significant** on the 19 Polk at the Local Maximum Load Point in the inbound direction in the AM peak period and in the outbound direction in the PM peak period. In addition, the Project Variant's impact on transit capacity would be considered **significant** on the 44 O'Shaughnessy in both the inbound and outbound direction during both the AM and PM peak periods. The significant impact to the 44 O'Shaughnessy would be triggered by the development contained within Phase 1 of the construction plan for the Project Variant. The significant impact to the 19 Polk would be triggered by the development contained within Phase 2 of the construction plan for the Project Variant.

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TABLE 5-7: LOCAL TRANSIT CAPACITY - PROPOSED PROJECT VARIANT								
Route	**Peak Hour**	**Existing Load (pax)[1]**	**Background Growth[2]**	**Baseline No Project Load**	**Project Variant - Added Trips**	**Baseline Plus Variant Load**	**Threshold (pax)[3]**	**Significant Impact?**
Inbound (Project Designation) / Outbound (SFMTA Designation)								
19 Polk (LMLP[4])	AM	24	5	29	195	224	216	**Yes**
	PM	44	25	69	68	137		No
19 Polk (GMLP[4])	AM	160	0	160	14	175		No
	PM	168	2	170	5	175		No
44 O'Shaughnessy (GMLP[4])	AM	300	4	304	149	453	405	**Yes**
	PM	362	17	379	52	431	362	**Yes**
Outbound (Project Designation) / Inbound (SFMTA Designation)								
19 Polk (LMLP[4])	AM	84	25	109	58	167	216	No
	PM	52	12	64	221	285		**Yes**
19 Polk (GMLP[4])	AM	188	2	190	4	194		No
	PM	180	1	181	16	197		No
44 O'Shaughnessy (GMLP[4])	AM	368	17	385	42	427	405	**Yes**
	PM	241	8	249	162	412	362	**Yes**

Notes:

Bold and shaded indicates significant transit capacity impact.

1. Existing Load at Local Maximum Load Point or Global Maximum Load Point from *Transit Data for Transportation Impact Studies* (SF Planning, May 2015) or Transit Effectiveness Project Route analysis (Fehr & Peers, October 2011). Pax = passengers.
2. Background Growth reflects 494 residential units approved as Phase 1 of the nearby Hunters Point Shipyard development that are currently under construction.
3. Threshold is based on a total capacity of 63 persons (seated plus standing) per bus for both 19 Polk and 44 O'Shaughnessy (as identified in *Transit Data for Transportation Impact Studies*) and 85 percent capacity utilization significance threshold per SF TIA Guidelines.
4. GMLP is the Global Maximum Load Point, which is the route-wide maximum load point. LMLP is the Local Maximum Load Point, which is the maximum load point on the route east of Third Street.

Source: Fehr & Peers, 2017

Mitigation Measure M-TR-1B (Project Variant): Implement Transit Capacity Improvements

To mitigate significant transit capacity impacts that could occur as a result of Project or Variant transit trips before the transit service improvements that are part of the Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) are in operation, the Project Sponsors shall fund and/or implement a transit capacity improvement measure as described below.

Option 1 – Fund Temporary Transit Service Improvements until applicable portion of Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) is in Operation

To mitigate significant transit capacity impacts, the Project Sponsors shall fund, and the SFMTA shall provide, temporary increased frequencies on the 44 O'Shaughnessy for the period of time until similar improvements required as part of the Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) are in operation. SFMTA shall also increase frequencies to the 48 Quintara for the same time period. The 48 Quintara would replace the 19 Polk that currently travels along Innes Avenue—Hunters Point Boulevard—Evans Avenue. Specifically, frequency for the 44 O'Shaughnessy shall be increased from 8 minutes to 6.5 minutes in the AM and from 9 minutes to 7.5 minutes in the PM peak period, and for the 48 Quintara the frequency shall increase from 15 minutes to 10 minutes in both the AM and PM peak period. These increases frequency are set at the level where the project would no longer have a significant impact. The Project Sponsors' funding contributions would be based on the cost to serve the relative proportion of transit trips generated by each of the four parcels that make up the Proposed Variant, and it would include the cost to requisition and operate any additional buses needed to increase the frequencies as specified.

Option 2 – Implement Temporary Shuttle Service until applicable portion of Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) is in Operation

If for any reason the SFMTA determines that the provision of increased transit frequency is not feasible at the time its implementation would be required, the Project Sponsors shall implement a temporary shuttle service that would supplement existing nearby transit service by providing connections to local and regional rail service. A shuttle service operating at 20-minute headways in the AM and PM peak periods could accommodate the estimated demand, although a minimum frequency of 15 minutes is recommended in order to provide an adequate level of service to urban commuters. The AM peak period is defined as from 7:00 AM to 9:00 AM, and the PM peak period is defined as from 4:00 PM to 6:00 PM. Shuttle operations would extend on either side of these defined periods if necessary to adequately serve the peak period of project travel demand. The shuttle would connect the Project Site with T-Third, Caltrain, and BART stations. The shuttle stop location would either be located on Innes Avenue at Arelious Walker Drive or on New Hudson Street at Innes Avenue. The shuttle would be required to operate within all applicable SFMTA and City of San Francisco regulations and programs. The Project Sponsors shall be required to monitor ridership on the shuttle annually and produce a report to the SFMTA describing the level of service provided and associated ridership. If ridership on the overcrowded Muni route is above 85 percent of overall service capacity, additional shuttle frequency shall be provided by the Project Sponsors to reduce capacity on the affected transit routes to below 85 percent utilization.

Impacts of Mitigation Measure M-TR-1B

Under Option 1, the increased frequency of the 44 O'Shaughnessy would result in increased passenger capacity along the route (due to the provision of more buses per hour), thereby lowering the average passenger load per pus below the 85 percent capacity utilization threshold.

Under Option 2, the shuttle service would supplement existing transit routes by providing sufficient capacity to accommodate the demand generated by the Project above the 85 percent utilization threshold with a 20 percent factor of safety. Riders travelling to/from destinations in Downtown San Francisco and the northern neighborhoods of San Francisco could use the shuttle to connect with Muni, Caltrain, or BART. Absent the shuttle, many of these transit trips would be taken using the 19 Polk to get to Downtown or to transfer to the T Third to travel to Mission Bay or Downtown. The shuttle service would provide additional transit capacity along Evans Avenue to access the T Third as well as provide an alternative route to Downtown San Francisco via the connection to BART.

Riders travelling to/from destinations in the southern and western neighborhoods of San Francisco could transfer to the 48 Quintara at the 24th Street Mission BART station or use the shuttle to transfer to BART at 24th Street Mission to travel to destinations close to other BART stations in the southwest of the City. Absent the shuttle, many of these transit trips would be taken using the 44 O'Shaughnessy. The shuttle provides an alternate option to the 44 O'Shaughnessy to access the BART network and would provide a quicker connection to BART than the 44 O'Shaughnessy as it would have fewer intermediate stops. It would therefore be an attractive option for these travelers and may attract trips from the 44 O'Shaughnessy, which would alleviate overcrowding on that route.

The shuttle service would be provided only during peak hours, and only until the CPHPS TP Transit Service Improvements are in place.

Mitigation Measure Implementation

If selected, Option 1 of Mitigation Measure M-TR-1B would be implemented prior to the issuance of building permits for the incremental amount of development at the Project Site (187 transit trips inbound to the Project on the 19 Polk in the AM peak hour, 152 transit trips outbound to the Project on the 19 Polk in the PM peak hour, 20 transit trips outbound to the Project on the 44 O'Shaughnessy in the AM peak hour, or 18 transit trips inbound to the Project on the 44 O'Shaughnessy in the PM peak hour. that would cause the significant impact. This incremental amount of development would be a subset of the first phase of construction. If selected, Option 2 of Mitigation Measure M-TR-1B would be implemented prior to the issuance of the Temporary Certificate of Occupancy (TCO) of the incremental amount of development at the Project Site that would cause a significant impact. The funding contribution from the Project Sponsors is detailed in Section 5.4.1.

With the implementation of one of the options under Mitigation Measure M-TR-1B, the Project Variant's impacts to transit capacity would become **less-than-significant with mitigation**. Because the proposed changes are restricted to providing additional capacity for transit riders, they would not result to changes to pedestrian facilities or bicycle facilities, nor create potentially hazardous conditions or elsewhere interfere with pedestrian or bicycle accessibility. The shuttle service may need to be compliant with the City's Commuter Shuttle Program Policy, which includes measures to minimize effect on pedestrians and bicyclists. The proposed changes would not have an effect on parking provision. Therefore, the mitigation measure would result in **less-than-significant** pedestrian, bicycle, and parking impacts. The mitigation measure would not require any construction, so therefore it would result in a **less-than-significant** impact due to construction. There would also be a **less-than-significant** impact to emergency access since the mitigation measure does not propose to change existing access to the Project Site.

5.4.2.2 Downtown Screenlines

The Project Variant would generate 458 transit trips during the weekday AM peak hour and 517 transit trips during the weekday PM peak hour. Transit trips to and from the Project Site would use nearby Muni lines, BART, Caltrain, or regional bus service, and would transfer to and from other Muni bus and light rail lines as needed. Of these transit trips, 60 would cross the Downtown Screenlines inbound to Downtown in the AM peak hour, and 67 would cross the screenlines outbound away from Downtown in the PM peak hour; the remainder of the transit trips do not cross the Downtown Screenlines. As shown in **Table 5-8**, the addition of the 60 AM and 67 PM Project-generated transit trips crossing screenlines inbound in the AM peak hour and outbound in the PM peak hour would not increase screenline capacity utilization to greater than the 85 percent threshold. The Southwest screenline would operate at 94 percent utilization in the AM peak hour; however, the Project Variant would add only three trips to this screenline which is less than the threshold of five percent of ridership for screenlines exceeding the capacity utilization threshold under conditions without the Proposed Project.

Three subcorridors operate above the capacity utilization threshold of 85 percent in the Baseline Plus Project Variant condition: Subway lines—AM only, Fulton/Hayes—PM only, and Third Street—PM only. For each of these subcorridors, the Proposed Project contribution to the screenline would be less than five percent.

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TABLE 5-8: MUNI DOWNTOWN SCREENLINE CAPACITY UTILIZATION – PROJECT VARIANT						
Screenline	Baseline[1]			Baseline Plus Project Variant		
	Peak Hour[2] Baseline Ridership	Peak Hour[2] Capacity	Peak Hour[2] Capacity Utilization	Peak Hour Proposed Project Trips	Peak Hour[2] Ridership	Peak Hour[2] Capacity Utilization
AM Peak Hour						
Kearny/Stockton[3]	2,211	3,050	72%	8	2,219	73%
Other lines[4]	538	1,141	47%	3	541	47%
Northeast Screenline Total	*2,749*	*4,191*	*66%*	*11*	*2,760*	*66%*
Geary[5]	1,821	2,490	73%	6	1,827	73%
California[6]	1,610	2,010	80%	4	1,614	80%
Sutter/Clement[7]	480	630	76%	4	484	77%
Fulton/Hayes[8]	1,277	1,680	76%	3	1,280	76%
Balboa[9]	758	1,019	74%	3	761	75%
Northwest Screenline Total	*5,946*	*7,829*	*76%*	*20*	*5,966*	*76%*
Third Street[10]	359	793	45%	20	379	48%
Mission[11]	1,643	2,509	65%	0	1,643	65%
San Bruno/Bayshore[12]	1,690	2,134	79%	2	1,692	79%
Other lines[13]	1,468	1,756	84%	5	1,473	84%
Southeast Screenline Total	*5,160*	*7,192*	*72%*	*27*	*5,187*	*72%*
Subway lines[14]	6,330	6,205	**102%**	1	6,331	**102%**
Haight/Noriega[15]	1,121	1,554	72%	2	1,123	72%
Other lines[16]	465	700	66%	0	465	66%
Southwest Screenline Total	*7,916*	*8,459*	***94%***	*3*	*7,919*	***94%***

PM Peak Hour						
Kearny/Stockton[3]	2,245	3,327	67%	8	2,253	68%
Other lines[4]	683	1,078	63%	3	686	64%
Northeast Screenline Total	*2,928*	*4,405*	*66%*	*11*	*2,93*	*67%*
Geary[5]	1,964	2,623	75%	6	1,970	75%
California[6]	1,322	1,752	75%	5	1,327	76%
Sutter/Clement[7]	425	630	67%	5	430	68%
Fulton/Hayes[8]	1,184	1,323	**89%**	3	1,187	**90%**
Balboa[9]	625	974	64%	3	628	64%
Northwest Screenline Total	*5,520*	*7,302*	*76%*	*22*	*5,542*	*76%*
Third Street[10]	788	793	**99%**	23	811	**102%**
Mission[11]	1,407	2,601	54%	0	1,407	54%
San Bruno/Bayshore[12]	1,536	2,134	72%	2	1,538	72%
Other lines[13]	1,085	1,675	65%	5	1,090	65%
Southeast Screenline Total	*4,816*	*7,203*	*67%*	*30*	*4,846*	*67%*
Subway lines[14]	4,904	6,164	80%	1	4,905	80%
Haight/Noriega[15]	977	1,554	63%	3	980	63%
Other lines[16]	555	700	79%	0	555	79%
Southwest Screenline Total	*6,436*	*8,418*	*76%*	*4*	*6,440*	*77%*

Notes:

Bold indicates capacity utilization of 85 percent or greater.

1. Baseline condition is a modified existing condition.
2. AM Peak hour as inbound (i.e. toward Downtown) only; PM peak hour as outbound (i.e. away from Downtown) only
3. 8 Bayshore, 30 Stockton, 30X Marina Express, 41 Union, 45 Union-Stockton
4. F Market & Wharves, 10 Townsend, 12 Folsom/Pacific
5. 38 Geary, 38R Geary Rapid, 38AX Geary 'A' Express, 38BX Geary 'B' Express
6. 1 California, 1AX California 'A' Express, 1AX California 'B' Express
7. 2 Sutter, 3 Clement
8. 5 Fulton, 21 Hayes
9. 31 Balboa, 31AX Balboa 'A' Express, 31BX Balboa 'B' Express
10. T Third Street
11. 14 Mission, 14R Mission Rapid, 14X Mission Express, 49 Van Ness-Mission
12. 8AX Bayshore 'A' Express, 8BX Bayshore 'B' Express, 8 Bayshore, 9 San Bruno, 9L San Bruno Limited
13. J Church, 10 Townsend, 12 Folsom/Pacific, 19 Polk, 27 Bryant
14. KT Ingleside/Third Street, L Taraval, M Ocean View, N Judah
15. 6 Haight-Parnassus, 7/7R Haight-Noriega/Rapid, 7X Noriega Express, NX Judah Express
16. F Market & Wharves

Source: San Francisco Planning Department, May 2015; Fehr & Peers, 2016, see **Appendix E** for transit line capacity calculations

Therefore, the Proposed Project's impact to Muni transit capacity would be **less-than-significant.** As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

5.4.2.3 Regional Transit

The Project Variant would add approximately 140 weekday AM peak hour and 158 weekday PM peak hour transit trips to regional transit providers. During the AM peak hour, this includes 32 transit trips to the East

Bay, 103 transit trips to the South Bay,[60] and five transit trips to the North Bay. During the PM peak hour, this includes 37 transit trips to the East Bay, 115 transit trips to the South Bay, and six transit trips to the North Bay. The thresholds for regional operators is 100 percent, compared to 85 percent for Muni. As shown in **Table 5-9**, the East Bay screenline would operate at 102 percent in the AM peak hour. However, the Project Variant would add only 32 trips to this screenline, which is less than the threshold of five percent of ridership for screenlines exceeding the capacity utilization threshold under conditions without the Proposed Project. Therefore, the Project Variant would have a **less-than-significant** impact to regional transit capacity. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

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[60] Because there are no proposed direct transit links to nearby Caltrain stations, transit passengers traveling to and from the South Bay are expected to utilize first/last mile services such as taxi, employer shuttles, TNCs, or bicycling to access Caltrain.

TABLE 5-9: REGIONAL TRANSIT SCREENLINE - PROJECT VARIANT						
Screenline	Baseline[1]			Baseline Plus Project Variant		
	Baseline Ridership	Peak Hourly Capacity	Capacity Utilization	Project Trips	Ridership	Capacity Utilization
AM Peak Hour						
East Bay						
BART	25,400	23,256	**109%**	32	25,432	**109%**
AC Transit	1,568	2,829	55%	0	1,568	55%
Ferries	810	1,170	69%	0	810	69%
Screenline Subtotal	*27,778*	*27,255*	***102%***	*32*	*27,810*	***102%***
North Bay						
Golden Gate Transit	1,330	2,543	52%	4	1,334	52%
Ferries	1082	1,959	55%	1	1083	55%
Screenline Subtotal	*2,412*	*4,502*	*54%*	*5*	*2,417*	*54%*
South Bay						
BART	14,151	19,367	73%	31	14,182	73%
Caltrain	2,173	3,100	70%	72	2,245	72%
SamTrans	255	520	49%	0	255	49%
Screenline Subtotal	*16,579*	*22,987*	*72%*	*103*	*16,682*	*73%*
Regional Total	*46,769*	*54,744*	*85%*	*140*	*46,909*	*86%*
PM Peak Hour						
East Bay						
BART	24,490	22,784	**107%**	37	24,527	**108%**
AC Transit	2,256	3,926	57%	0	2,256	57%
Ferries	805	1,615	50%	0	805	50%
Screenline Subtotal	*27,551*	*28,325*	*97%*	*37*	*27,588*	*97%*
North Bay						
Golden Gate Transit	1,384	2,817	49%	4	1,388	49%
Ferries	968	1,959	49%	1	969	49%
Screenline Subtotal	*2,352*	*4,776*	*49%*	*5*	*2,357*	*49%*
South Bay						
BART	13,502	18,900	71%	35	13,537	72%
Caltrain	2,381	3,100	77%	81	2,462	79%
SamTrans	141	320	44%	0	141	44%
Screenline Subtotal	*16,024*	*22,320*	*72%*	*116*	*16,140*	*72%*
Regional Total	*45,927*	*55,421*	*83%*	*158*	*46,085*	*83%*

Notes:

Bold indicates capacity utilization of 100 percent or greater.

1. Baseline condition is a modified existing condition.

Source: San Francisco Planning Department, "Transit Data for Transportation Impact Studies," May 2015. San Francisco Planning Department, "Updated BART Regional Screenlines – Revised," October 17, 2016; Fehr & Peers, 2016.

5.5 TRANSIT DELAY IMPACTS

Transit delay impacts were evaluated based on the Project's impacts to nearby transit operations and transit delay.

A quantitative transit delay analysis is prompted by a number of distinctive factors of the Project: the large size of the Project and associated trips generated by it (over 2,000 vehicle trips in a typical peak hour for the Project and over 2,600 vehicle trips in a typical peak hour for the Variant), the constrained site circulation and access (i.e. a singular access route to the west), and the presence of transit service along the Innes Avenue corridor. The transit delay analysis consists of an evaluation of how the addition of Proposed Project or Project Variant vehicle trips to the roadway network would affect the travel time of transit that operates in the Project vicinity. As stated in Section 5.1, the Proposed Project (or Project Variant) would have a transit impact if project-generated trips cause an increase in transit travel time of at least half a headway in the round-trip travel time for a particular transit route as a result of the Project. The half-headway threshold represents the tipping point at which investment in an additional transit vehicle would be required to counterbalance degradation in transit travel times to maintain the same headway. Transit delay consists of congestion delay caused by Project vehicle trips plus delay caused by Project boardings and alightings while the bus is dwelling at a stop.

The study area for this corridor analysis is the Evans Avenue–Hunters Point Boulevard–Innes Avenue corridor between Third Street and Donahue Street, which is approximately 1.4 miles long. While no one unique route travels the extent of this corridor in this scenario, different routes would overlap to serve the entire corridor at different levels of completion of the CPHPS Transportation Plan. Therefore, this is a non-route-specific presentation of transit delay impacts along the entire corridor. As part of the CPHPS project's approvals, a mitigation measure to provide transit-only lanes along Evans Avenue between Third Street and Jennings Street was identified; that measure is not assumed to be in place in any of the Baseline scenarios because it is not expected to be triggered until beyond 2022.

Transit service would be unchanged from what currently exists, and thus the highest frequency route along the Evans Avenue—Hunters Point Boulevard—Innes Avenue corridor would be the 44 O'Shaughnessy (although it does not serve the Project Site directly) with a frequency of 8 and 9 minutes in the AM and PM period, respectively. The 19 Polk, which does serve the Project directly, has frequency of 15 minutes in both periods. Therefore, the significance threshold for this scenario would vary depending on which bus route was under consideration. Namely, the significance threshold for the 19 Polk route would be equal to 4 minutes in the AM period and 4½ minutes in the PM period, while the significance threshold for the 44 O'Shaughnessy route would be equal to 7½ minutes in both the AM and PM periods.

The Proposed Project would generate around 2,000 vehicle trips in both the AM and PM peak hours and the Project Variant would generate around 2,600 vehicle trips in both the AM and PM peak hours. A large majority of the Project vehicle traffic would travel along Evans Avenue, Hunters Point Boulevard, and Innes Avenue to the west of the Project Site to access other destinations in the city and region. Therefore the Project would cause increases to traffic congestion primarily at nearby intersections along these streets to the west of the Project Site.

Baseline project-caused transit delay was analyzed using Synchro intersection delay calculations (i.e. a macroscopic traffic analysis) for the Baseline Scenario, and Project ridership forecasts for each route were incorporated to account for increased dwell time caused by boarding and alighting of Project transit trips. Intersection delays with and without the Proposed Project or Project Variant were compared, and the difference in intersection delay was attributed to the presence of the Proposed Project or Project Variant.

For each bus route, the Project's forecasted peak hour bus ridership was divided by the number of buses per hour, yielding the expected number of project-generated passengers per bus trip. Added boarding delay was estimated as equal to two seconds per added passenger. The sum of project-added intersection delay at all intersections traversed by each bus route and project-added boarding delay, in both directions, constituted total added transit delay associated with the Proposed Project or Project Variant along the corridor. The results of the baseline transit delay analysis are presented in **Table 5-10**. Details of this analysis are presented in **Appendix L**.

The combination of the congestion delay plus the boarding/alighting delay due to the Proposed Project or Project Variant trips in the AM or PM peak hours would not lead to an increase in round-trip travel time to buses of greater than half of each bus route's peak-hour headway. Therefore, the Proposed Project and Project Variant's transit delay impact for the Baseline scenario would be **less-than-significant**.

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TABLE 5-10: BASELINE TRANSIT DELAY IMPACTS

Project	Time Period	Measure	Muni Route	
			19 Polk	44 O'Shaughnessy
Proposed Project	AM Peak Hour	Added Intersection Delay (s)	22	15
		Added Boarding Delay (s)	65	27
		Total Added Delay (s)	*86*	*42*
		Significance Threshold (s)	450	240
		Significant Impact?	No	No
	PM Peak Hour	Added Intersection Delay (s)	31	14
		Added Boarding Delay (s)	82	40
		Total Added Delay (s)	*113*	*54*
		Significance Threshold (s)	450	270
		Significant Impact?	No	No
Project Variant	AM Peak Hour	Added Intersection Delay (s)	45	18
		Added Boarding Delay (s)	123	54
		Total Added Delay (s)	*168*	*72*
		Significance Threshold (s)	450	240
		Significant Impact?	No	No
	PM Peak Hour	Added Intersection Delay (s)	49	27
		Added Boarding Delay (s)	143	66
		Total Added Delay (s)	*192*	*93*
		Significance Threshold (s)	450	270
		Significant Impact?	No	No

Notes:
1. "Added Delay" is the total delay caused by the Project above and beyond No Project baseline conditions. Added delay is presented as the sum of inbound and outbound project-caused delay.

Source: Fehr & Peers, 2016

5.6 BICYCLE IMPACTS

The first part of this section describes the City of San Francisco bicycle parking requirements per the Planning Code, as they relate to the project. The second part describes the bicycle circulation impacts in the area around the Project Site.

5.6.1 Bicycle Parking

The City of San Francisco Planning Code Section 155.2 specifies the following Class 1 and Class 2 bicycle space minimum requirements as outlined in **Table 5-11**, below.

- **Class 1 bicycle parking** can include bicycle lockers, check-in facilities, monitored parking, or other types of restricted-access parking areas. Required bicycle parking spaces shall not be provided within dwelling units, balconies, or required open space. Bicycle parking must otherwise meet the standards set out for Class 1 parking as described in Section 155.1 of the Planning Code.

- **Class 2 bicycle parking** should constitute racks located in a publicly-accessible, highly visible location intended for transient or short-term use by visitors, guests, and patrons to the building or use. They shall be located, as feasible, near all main pedestrian entries to the uses to which they are accessory, and should not be located in or immediately adjacent to service, trash or loading zones.

TABLE 5-11: BICYCLE PARKING CODE REQUIREMENTS		
Land Use	**Class 1 Minimum Requirement**	**Class 2 Minimum Requirement**
Dwelling units (including SRO units and student housing that are dwelling units)	One Class 1 space for every dwelling Unit. For buildings containing more than 100 dwelling units, 100 Class 1 spaces plus one Class 1 space for every four dwelling units over 100. Dwelling units that are also considered Student Housing per Section 102.36 shall provide 50 percent more spaces than would otherwise be required.	One per 20 units. Dwelling units that are also considered Student Housing per Section 102.36 shall provide 50 percent more spaces than would otherwise be required.
Personal Services, Financial Services, Restaurants, Limited Restaurants and Bars	One Class 1 space for every 7,500 square feet of occupied floor area.	Minimum two spaces. One Class 2 space for every 750 square feet of occupied floor area.
Offices	One Class 1 space for every 5,000 occupied square feet	Minimum two spaces for any office use greater than 5,000 gross square feet, once Class 2 space for each additional 50,000 occupied square feet.
Retail Sales, including grocery stores	One Class 1 space for every 7,500 square feet of occupied floor area.	Minimum two spaces. One Class 2 space for every 2,500 sq. ft. of occupied floor area. For uses larger than 50,000 gross square feet, 10 Class 2 spaces plus one Class 2 space for every additional 10,000 occupied square feet.
Personal Services, Financial Services, Restaurants, Limited Restaurants and Bars	One Class 1 space for every 7,500 square feet of occupied floor area.	Minimum two spaces. One Class 2 space for every 750 square feet of occupied floor area.
School	Four Class 1 spaces for every classroom.	One Class 2 space for every classroom.
Open Space	None required.	None required.
Source: City of San Francisco Planning Code Section 155.2		

The amount of bicycle parking required is shown in **Table 5-12**, below. For the Proposed Project, 1,369 Class 1 and 162 Class 2 bicycle parking spaces are required. For the Project Variant, 771 Class 1 and 185 Class 2 bicycle parking spaces are required.

TABLE 5-12: BICYCLE PARKING REQUIRED						
Land Use	Proposed Project			Project Variant		
	Size	Class 1 Required Spaces	Class 2 Required Spaces	Size	Class 1 Required Spaces	Class 2 Required Spaces
Dwelling Units	1,240 du	1,240[1]	62	500 du	500[1]	25
Office	174,930 sf	35	6	860,000 sf	172	20
Retail (including supermarket)	65,400 sf	9	27[2]	95,000 sf	13	60[2]
Restaurants	35,000 sf	5	47	45,000 sf	6	60
School[3]	20 classrooms	80	20	20 classrooms	80	20
Open Space	829,700 sf	-	-	829,700 sf	-	-
Total		*1,369*	*162*		*771*	*185*

Notes:
1. The Class 1 bicycle parking requirement rate for dwelling units decreases in buildings with more than 100 units. This calculation assumes that no single building in the development has more than 100 units; the number of required Class 1 bicycle parking spaces would be slightly lower in any buildings with more than 100 units, and therefore this calculation is conservative.
2. The Class 2 bicycle parking requirement rate for retail decreases in buildings with more than 50,000 square feet. This calculation assumes that no single building in the development has more than 50,000 square feet of retail use; the number of required Class 2 bicycle parking spaces would be slightly lower in any buildings with more than 50,000 square feet of retail space, and therefore this calculation is conservative.
3. The San Francisco Planning Code specifies different bicycle parking requirements for schools (see **Table 5-11**).

Source: City of San Francisco Planning Code Section 155.2

The Proposed Project and Project Variant propose to provide bicycle parking spaces in compliance with the Planning Code requirements.

Bicycle parking would be provided for school employees and students, and would be provided in the school grounds and in the parking garage nearest to the school.

5.6.2 Bicycle Circulation

The Proposed Project is expected to increase bicycle demand in the area, by 101 new AM peak hour trips and 103 new PM peak hour trips. The Project Variant would produce 138 new AM peak hour trips and 131 new PM peak hour trips by bicycling.

As discussed in Section 3.2, the Baseline Scenario includes several bicycle facilities (primarily Class II Bicycle Lanes and Class III Bicycle Routes) in the area around the Proposed Project. As part of the Proposed Project and Project Variant, additional bicycle facilities would be implemented and bicycle access would be improved from the Baseline Scenario. The Class II Bicycle Lanes included along Hunters Point Boulevard and Innes Avenue in the Baseline Scenario would be removed by the Proposed Project and Project Variant, and the bicycle facility would be relocated to a parallel Class I facility on Hudson Avenue. A map of the bicycle network for Baseline Plus Proposed Project is shown in Figure 14. The network would be identical for Baseline Plus Project Variant.

5.6.2.1 Internal Circulation

Within the Project Site, the Proposed Project would include a Class IV cycle-track along New Hudson Avenue through the Project Site. This facility would provide a higher level of protection for east-west cyclists than exists under Baseline Scenario. The Proposed Project would also complete the segment of the Bay Trail/Blue Greenway running along the shoreline through the Project Site. Within the Project Site, Spring Lane, Fairfax Lane, and Beach Lane, which form a loop to access the buildings north of New Hudson Avenue, would have a Class III bicycle route. Recreational paths would provide bicycle access from these bicycle lanes to the Bay Trail in two locations: at the corner of Spring Lane/Fairfax Lane and at the corner of Fairfax Lane/Beach Lane. Two additional recreational paths would provide a connection from New Hudson Avenue and Hudson Avenue to the Bay Trail on either side of Earl Street. Earl Street would also have a Class III bicycle route. The Proposed Project's bicycle facilities would provide a robust bicycle network within the site to connect to nearby facilities, improving bicycle accessibility in the area. These additional bicycle facilities would also reduce hazards for bicyclists; by providing designated or protected bicycle facilities, the Proposed Project would reduce bicycle-vehicle conflicts.

The eastern terminus of the project-funded Class IV bicycle facility along New Hudson Avenue within the Project Site would be at the intersection with Earl Street. FivePoint, the developer of the adjacent Hunters Point Shipyard project, which includes the Northside Park opposite Earl Street from the Proposed Project, has tentatively agreed to fund the continuation of the facility through Northside Park, although no formal commitments have been made and the park's design is still in progress.

5.6.2.2 Access to the Project Site

The Project Site is within convenient bicycling distance (approximately three miles or less) of office and retail buildings in the Hunters Point, Dogpatch, Potrero Hill, and Bayview neighborhoods. As such, it is anticipated that a substantial portion of the non-motorized trips generated by the Proposed Project would be bicycle trips. As noted on **Figure 6**, there are bicycle routes nearby to the Project Site, including bicycle lanes on Evans Avenue and the Bay Trail. Bicyclists heading to or from the north, south, or west would connect to one of the several existing bicycle facilities in the area, including the Class III bicycle routes on Third Street/Phelps Street (Route 7), Third Street (Route 5), Silver Avenue/Palou Avenue (Route 70), and the Class II bicycle lanes on Cesar Chavez Street (Route 60) and Oakdale Avenue (Route 170). Bicyclists heading east towards Hunters Point would use the Bay Trail. Nearly all bicycle travel near the Project Site is east-west; the steep hillside results in limited north-south connectivity and bicycle travel.

With construction of the Proposed Project, bicycle facilities would be present on the streets adjacent to the Project Site. On Hunters Point Boulevard and Evans Avenue, the street section would include a Class II bicycle facility (bike lanes in each direction). No bicycle facilities would be present along Hunters Point Boulevard or Innes Avenue between Hawes Street and Earl Street as a Class IV cycle-track provided within the Project Site on New Hudson Avenue would parallel Innes Avenue, forming a continuous two-way cycle-track from Jennings Street to the Northside Park adjacent to the Hunters Point Shipyard project. While the Project would move the bicycle facility east of Hawes Street away from the Class II facility on Hunters Point Boulevard and Innes Avenue, leading to some bicycle lane removal, the proposed Class IV facility would be a general improvement over the current facility for cyclists traveling east-west along the corridor.

The conditions surrounding the Project Site present limited hazards to bicyclists. No corridors adjacent to the Project Site have been designated as Vision Zero High Injury Corridors for the City of San Francisco, as there were zero bicyclist injuries and fatalities in this area between 2007 and 2011. Locations where vehicles cross a bicyclist's path of travel are potential conflict areas. These locations could include vehicles turning into and out of driveways, as well as intersection turning movements that cross a high volume of cyclists. There are few driveways along corridors connecting to the Project Site, so there would be minimal opportunities for this type of conflict. In sum, the Proposed Project would not create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility within the Project Site and in the surrounding area.

As discussed above, the Project would comply with the Planning Code requirements for bicycle parking; the Project would not increase bicycle traffic to a level that adversely affects bicycle facilities in the area; nor would the Proposed Project create a new hazard or substantial conflict to bicycling. The Project would not negatively affect bicycle accessibility to the Project Site or adjoining areas. Thus, the Project's impact to bicycle facilities and circulation would be considered **less-than-significant** for both the Proposed Project and Project Variant. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

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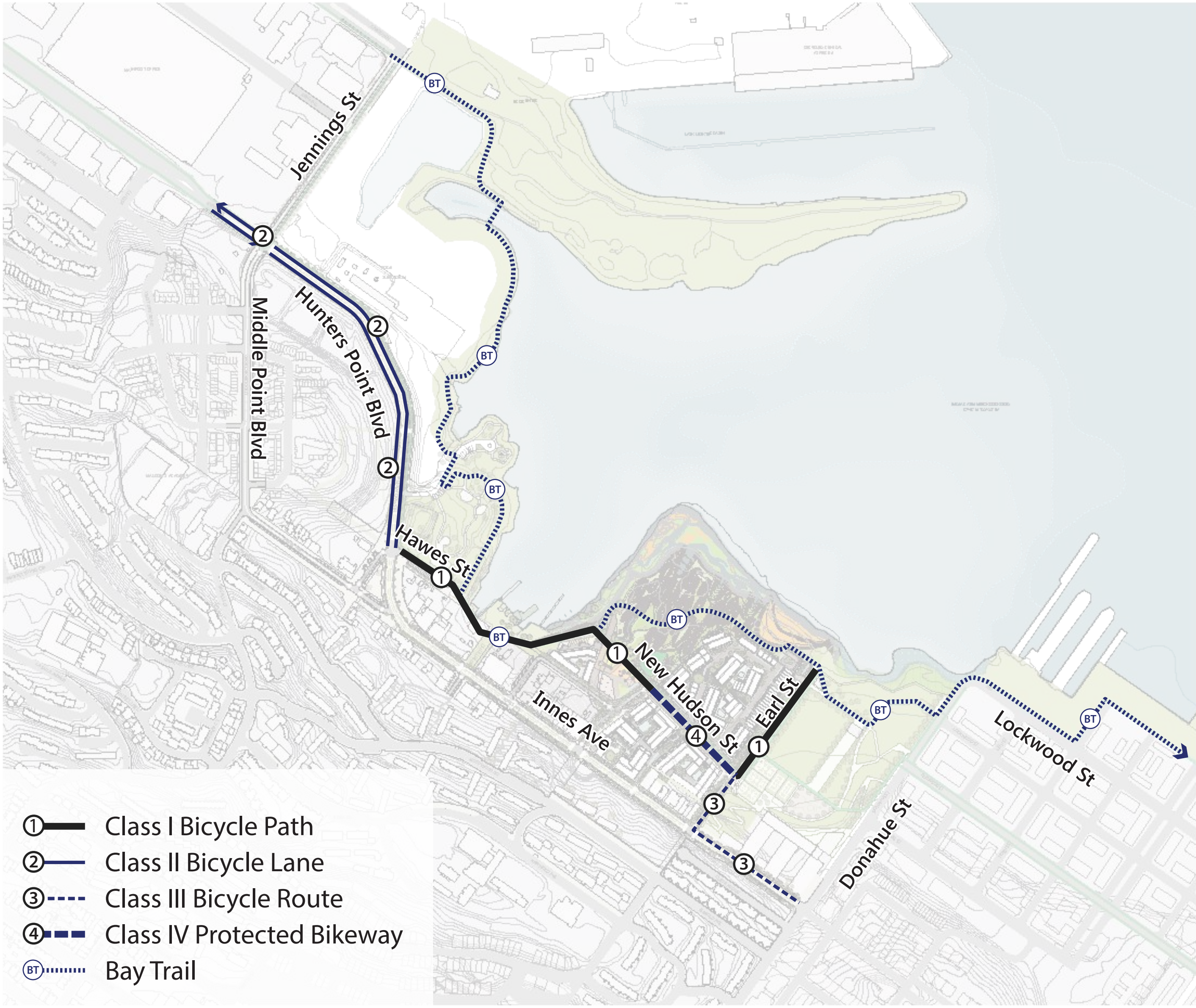

Figure 10

Baseline Plus Project Bicycle Network

5.7 PEDESTRIAN IMPACTS

Pedestrian trips generated by the Proposed Project would include walk trips to and from the local and regional transit stops, as well as some walk trips to and from nearby complementary land uses. The Proposed Project would generate 478 walk trips in the AM peak hour and 947 during the weekday PM peak hour. The Project Variant would generate 461 walk trips in the AM peak hour and 1,013 during the weekday PM peak hour.

In addition to walk trips between the Project Site and other uses, project-generated transit trips would begin as pedestrian trips traveling to the appropriate transit stop. Residents and employees traveling to and from the site to access transit would typically access the 19 Polk on Innes Avenue. They may also walk to access the 44 O'Shaughnessy on Hunters Point Boulevard. Some may walk to access the 54 Felton on Northridge Road although this includes an elevation climb of 950 feet along a stairwell which may be inconvenient for many pedestrians. Pedestrian changes included as part of the Project would provide adequate pedestrian access along Innes Avenue to the 19 Polk and the 44 O'Shaughnessy on Hunters Point Boulevard, as they will fill the existing gaps in the sidewalk network on the north side of the street along the Project frontage, and improve pedestrian crossings across Innes Avenue by restriping crosswalks and signalizing the intersections so that vehicles must stop while pedestrians have right-of-way to cross (except turning vehicles which would have to yield). Proposed crosswalks and sidewalk infill that are part of the Baseline scenarios would provide adequate pedestrian access to existing staircases that provide access to the nearest 54 Felton bus stops on Northridge Road.

The Project's access points would be on Hudson Avenue from Hunters Point Boulevard to the west, from Earl Street and Northside Park to the east, and from four pedestrian pathways into the site from Innes Avenue to the south, as shown in **Figure 2J**. Pedestrians would access the Project Site from Innes Avenue at Griffith Street, Arelious Walker Drive, and Earl Street, and from pedestrian paths between Griffith Street and Arelious Walker Drive and between Arelious Walker Drive and Earl Street.

The Proposed Project would include the construction of pedestrian facilities along each of the new internal project streets, in addition to changes to the pedestrian realm along the north side of Innes Avenue and Hunters Point Boulevard in the vicinity of the Project as explained in Section 2.5. Internal to the Project Site, all streets would have sidewalks that meet ADA requirements and Better Streets Plan requirements. External to the Project Site, the sidewalks along Hunters Point Boulevard and the south side of Innes Avenue would meet ADA requirements.

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TABLE 5-13: SIDEWALK WIDTH GUIDELINES					
Street	Better Streets Plan			Existing Width	Baseline Plus Project Width
	Street Type[1]	Minimum Width	Recommended Width		
External to Project Site					
Hunters Point Boulevard	Commercial Throughway	12′	15′	6′-9′	**8′-10′**
Innes Avenue (Hunters Point Blvd to Griffith)	Commercial Throughway	12′	15′	7′	**7′**
Innes Avenue (Griffith to Earl)	Commercial/ Residential Throughway[2]	12′	15′	0′-8′	**5′-7′**
Innes Avenue (Earl to Donahue)	Residential Throughway	12′	15′	0′-9′	**5′-7′**
Internal to Project Site					
New Hudson Avenue	Neighborhood Commercial	12′	15′	n/a	15′
Arelious Walker Drive	Neighborhood Commercial	12′	15′	6′	22′-23′
Earl Street	Neighborhood Commercial	12′	15′	0′-11′	15′
Griffith Street	Neighborhood Commercial	12′	15′	n/a	13′-15′
New Hudson Avenue	Neighborhood Commercial	12′	15′	n/a	15′
Spring Lane	Shared Public Way	n/a	n/a	n/a	6.5′-9′[3]
Fairfax Lane	Shared Public Way	n/a	n/a	n/a	6.5′-9′[3]
Beach Lane	Shared Public Way	n/a	n/a	n/a	6.5′-9′[3]

Notes:
Bold indicates that Baseline Plus Proposed Project width is less than the Better Streets Plan minimum width.

1. Street type designations are taken from San Francisco Planning Department, Online at sftransportationmap.org, Accessed February 15, 2017.
2. Commercial Throughway west of Arelious Walker Drive and Residential Throughway east of Arelious Walker Drive.
3. Spring Lane, Fairfax Lane, and Beach Lane are designated as shared use between vehicles, bicyclists, and pedestrians. The Project proposes a 6.5-9′ sidewalk throughway plus a 20′ foot right-of-way to be shared by all users.

Source: Source: Draft IBTAP, 2015; India Basin Design Guidelines and Standards Draft, January 30, 2017.

All internal roadways would be two lane roads, some with on-street parking which is likely to result in lower travel speeds (i.e. at most 25 miles per hour). The Proposed Project would also include a shared street treatment on Spring Lane, Fairfax Lane, and Beach Lane, with curbless streets designed to prioritize pedestrian travel by implicitly slowing traffic speeds to approximately 5-15 miles per hour using pedestrian volumes, design, and other cues to slow or divert vehicle traffic. The intent of shared streets is to increase driver awareness of other road users to result in more careful driving and lower travel speeds. The India

Basin Design Guidelines & Standards includes a section related to "Public Realm", focused on the interior of the Project Site. This report, currently being developed by Build (draft released in January 2017), explains the application of varying City regulations to the Project design, such as parking requirements. All streets and sidewalk designs have undergone preliminary review by DPW's Disabled Access Coordinator, and the plans will be submitted for final approval when submitted to the City with the Subdivision Map application. Final designs would be subject to approval by the SFMTA, San Francisco Fire Department, and the Department of Public Works to ensure that the streets are designed consistent with ADA and City policies and design standards.

Additionally, the project would make modifications to the Bay Trail which runs along the San Francisco Bay to the north side of the Project Site. As part of the Proposed Project, the portion of the Bay Trail passing through the Project Site would be completed, providing connections to each side for this planned multi-use path along the eastern waterfront of San Francisco. The access points along Innes Avenue would be signalized as part of the Proposed Project, and would include pedestrian phases for pedestrian travel across the proposed crosswalks at each of these intersections. These pedestrian phases would provide for a safer environment for pedestrians to cross at these location where there would be higher speeds, higher automobile volumes, and wider right-of-way than internal to the project site.

Intersections would be designed to meet ADA requirements with curb ramps with truncated domes. Additionally, each intersection would be designed to incorporate pedestrian safety elements such as marked crosswalks and pedestrian countdown timers. All new intersections would be designed to City standards, generally as compact as possible (given design vehicle requirements for turning) for a pedestrian-friendly design. All new crosswalks on public streets would be compliant with the Better Streets Plan, which recommends that crosswalks be marked with the continental striping pattern for high visibility.

External to the Project Site, the Baseline scenario includes reconstruction of the existing sidewalks along Hunters Point Boulevard and Innes Avenue and the construction of new sidewalks along the south side of Innes Avenue where no sidewalks are currently present. The proposed sidewalk networks in the Baseline would be consistent with ADA requirements.

Pedestrian travel to nearby land uses would occur along the Blue Greenway, a dedicated bike/pedestrian path that goes through the Project Site, or along Innes Avenue. Pedestrians would likely use the sidewalk on the north side of Innes Avenue, adjacent to the Project Site, due to its proximity to the Project Site, the livelier land use mix on the north side of Innes Avenue, and the generally greater sidewalk width. Pedestrian travel to transit stops along Innes Avenue would similarly involve exiting the Project Site via internal streets, then traveling along Innes Avenue and crossing Innes Avenue, when necessary, at a marked crosswalk. All Project crosswalks would be striped as continental crosswalks to be compliant with the Better Streets Plan.

The school's primary pedestrian entry would be located on its southern frontage, next to the auxiliary yard, just off of Earl Street. This entry would be immediately adjacent to a proposed passenger loading zone on Earl Street. A public walkway would run along the school's western frontage, and sidewalks would be installed along the proposed school's northern and eastern frontages (along New Hudson Avenue and Earl Street, respectively). Within close proximity to the school, crosswalks are planned across Earl Street at New Hudson Avenue and at Innes Avenue, as well as across Innes Avenue at Earl Street and across New Hudson Avenue at Earl Street. Students and staff accessing the school by transit would likely alight along Innes Avenue at either Arelious Walker Drive or Earl Street depending on the route. From either location, the students and staff would have continuous sidewalk access to the main school entrance.

While some of the pedestrian facilities included in the Baseline scenarios would not meet the minimum desired width in the Better Streets Plan, those changes would meet ADA requirements and would generally result in a net improvement from current conditions (where sidewalks are very narrow or non-existent) and thus represent a net benefit for users. Compared to most other areas within San Francisco, existing pedestrian volumes in the vicinity of the Project Site are very low, due to its comparatively remote location. Combining the existing activity with additional activity associated with projects that would be operating under the Baseline scenario, the amount of pedestrian activity added by the Proposed Project or Project Variant would not exceed the capacity of the proposed sidewalk widths within and adjacent to the Project Site.

The proposed pedestrian facilities would not create potentially hazardous conditions for pedestrians or interfere with pedestrian accessibility to the site. The Proposed Project would include three parking garages. Cove Parking Garage would have one driveway on New Hudson Avenue, Flats Parking Garage would have a driveway on Arelious Walker Drive and a driveway on Earl Street, and the Hillside Parking Garage would have a driveway on Spring Lane and a driveway on Beach Lane. Each driveway would present an opportunity for vehicle/pedestrian conflicts, however, the driveways would not create hazardous conditions for pedestrians. The internal streets and driveways would be designed to keep vehicle speeds low. In addition, audio and visual alerts installed at project driveways would notify pedestrians of oncoming vehicles exiting the driveways.

Generally, the Proposed Project and Project Variant's pedestrian network would be adequate to accommodate expected pedestrian demand, would not create potentially hazardous conditions for pedestrians, nor otherwise interfere with pedestrian accessibility to the site and adjoining areas, and therefore would result in a **less-than-significant** impact. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

The Proposed Project's parking structures would be dispersed throughout the site, with driveways that could create conflicts with pedestrians as vehicles queue to enter or exit the parking structures. These conflicts would be minimized by the internal street and driveway design, which would reduce vehicle speeds and alert vehicles to pedestrians. In addition, the effect of vehicle queuing across sidewalks should be minimized with implementation of **Improvement Measure I-TR-1**, to ensure that pedestrian travel is unimpeded:

Improvement Measure I-TR-1: Queue Abatement

As an improvement measure to minimize the vehicle queues at the Proposed Project garage entrances into the public right-of-way, the Proposed Project would be subject to the Planning Department's vehicle queue abatement Conditions of Approval[61] (see **Appendix K**).

Although each of the four components of the Proposed Project would be subject to the Queue Abatement Conditions of Approval, only the 700 Innes parcel would have parking garages and therefore the measure is applicable to that parcel only.

It shall be the responsibility of the owner/operator of any off-street parking facility located at the 700 Innes property with more than 20 parking spaces (excluding loading and car-share spaces) to ensure that recurring vehicle queues do not occur on the public right-of-way. A vehicle queue is defined as one or more vehicles (destined to the parking facility) blocking any portion of any

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[61] The queue abatement conditions of approval were established in a Memo to the Planning Commission, *Condition of Approval to address vehicle queues*, dated November 23, 2010

public street, alley or sidewalk for a consecutive period of three minutes or longer on a daily or weekly basis.

If a recurring queue occurs, the owner/operator of the parking facility shall employ abatement methods as needed to abate the queue. Appropriate abatement methods will vary depending on the characteristics and causes of the recurring queue, as well as the characteristics of the parking facility, the street(s) to which the facility connects, and the associated land uses (if applicable). Suggested abatement methods include but are not limited to the following: redesign of facility to improve vehicle circulation and/or on-site queue capacity; employment of parking attendants; installation of LOT FULL signs with active management by parking attendants; use of valet parking or other space-efficient parking techniques; use of off-site parking facilities or shared parking with nearby uses; use of parking occupancy sensors and signage directing drivers to available spaces; travel demand management strategies such as additional bicycle parking, customer shuttles, delivery services; and/or parking demand management strategies such as parking time limits, paid parking, time-of-day parking surcharge, or validated parking.

If the Planning Director, or his or her designee, suspects that a recurring queue is present, the Department shall notify the property owner in writing. The Property Owner shall have no less than 45 days to take reasonable measures to abate the queues. If after 45 days, the Planning Director, or his or her designee, reasonably believes, upon further examination that the abatement measures have not been effective, then the Planning Director may suggest additional measures or may request, the owner/operator shall hire a qualified transportation consultant to evaluate the conditions at the site for no less than seven days. The consultant shall prepare a monitoring report to be submitted to the Department for review. If the Department determines that a recurring queue does exist, the facility owner/operator shall have 90 days from the date of the written determination to abate the queue.

5.8 LOADING IMPACTS

This section describes the Proposed Project's freight and delivery (i.e. goods) loading impacts. A project would have a significant effect on the environment if it would result in a loading demand during the peak hour of loading activities that could not be accommodated within proposed on-site loading facilities or within convenient on-street loading zones and it would create potentially hazardous conditions or significant delays affecting traffic, transit, bicycles or pedestrians.

In this analysis it is assumed that loading demand for the RPD site would not use loading zones provided on or adjacent to the Build property, and vice versa. This is because the loading zones would be sufficiently far enough from each other that loading demand for one property would be very unlikely to use supply provided on or adjacent to the other property.

5.8.1 Existing Uses

On-street loading demand for the existing commercial and residential land uses along Innes Avenue that would remain with construction of the Proposed Project is not expected to change. For existing residential uses nearby, on-street loading amounts to move-in/move-out events, which would occur on an infrequent basis and for which a special permit can be obtained from SFMTA to reserve nearby on-street parking spaces for this purpose. All commercial uses nearby currently use off-street loading into their garages and warehouse spaces as there are currently no designated on-street loading spaces. To the extent that some commercial uses may currently use nearby on-street parking spaces for occasional goods loading, this could continue after construction of the Proposed Project or Project Variant as parking would still be available on each side of Innes Avenue on each block that businesses are located on.

5.8.2 Build Property: 700 Innes Avenue

5.8.2.1 Residential, Commercial, Retail, and School Goods Loading

The proposed off-street loading spaces discussed below are each at least 35 feet long and 12 feet wide to meet the dimension requirements set by the Planning Code. There would be a built-in vertical height buffer in the overall building design for the proposed parking garages that would allow for 14-foot vertical clearance for all loading spaces within the parking garages.

Residential loading demand would typically be generated when tenants move in and out of the building and would require a parking permit if they park large moving trucks on-street. Due to the high number of units, move in and move out would be a frequent occurrence, occurring multiple times per week. Parcel delivery vehicles (e.g., UPS) would also arrive at the residential buildings; however, these deliveries are usually short and would not substantially affect conditions around the site. The four dual-use on-street loading spaces could be used for short delivery and residential move in and move out, for which parking permits may be required. The off-street loading zones could also be used. The preliminary locations for the four on-street dual-use loading zones on the Build property that could accommodate residential loading have been identified, but final locations are yet to be determined. Preliminary locations are one loading zone on Earl Street, one on Arelious Walker Drive, and two on Fairfax Lane. The Project Sponsor would apply to the SFMTA for final authorization for the on-street loading spaces.

Commercial loading demand would typically be generated by trucks delivering goods to businesses, such as the restaurants and retail tenants. These deliveries would primarily occur in the off-street loading zones located in the underground parking garages (Proposed Project would have 14 and Project Variant would have 23), which would be used for commercial loading only. Some commercial loading, typically the parcel deliveries and other deliveries featuring smaller vehicles, would occur at the four on-street dual-use loading zones on the Build property.

The Project’s school would have a loading demand for one delivery/freight loading spaces during the average and peak hour. School loading would typically be generated by food delivery trucks, parcel delivery vehicles, and other short-term services. These deliveries would occur at an off-street loading dock contained within a nearby parcel.

The four on-street loading zones on the Build property are assumed to be dual use for the purposes of this analysis and it is assumed that during the peak demand hour, half (two) of the spaces are available for goods/delivery loading and the remaining for passenger loading. The school passenger loading zone is not considered part of available supply for goods loading.

Proposed Project and Proposed Variant loading demand is reported as the sum of individual land use loading demand, rounded up to the next integer. The Proposed Project would have a demand for 12 delivery/freight loading spaces during the average hour and 16 during the peak hour. The supply of 14 off-street loading zones plus two on-street goods/delivery loading zones (total of 16 spaces) on the Build property would meet loading demand for the Proposed Project. Therefore, the Proposed Project would have a **less-than-significant** impact on goods loading at the Build Property.

The Project Variant would have a demand for 20 delivery/freight loading spaces during the average hour and 25 during the peak hour. The supply of 23 off-street loading zones plus two on-street goods/delivery loading zones (total of 25 spaces) on the 700 Innes site would meet commercial loading demand during the peak hour for the Proposed Project Variant. The school loading zone is not considered part of available supply for these uses. Therefore, the Project Variant would have a **less-than-significant** impact on goods loading at the Build Property.

A summary of goods loading supply and demand is shown in **Table 5-14**.

TABLE 5-14: BUILD PROPERTY GOODS LOADING SUPPLY AND DEMAND SUMMARY

			Proposed Project	Project Variant
Demand	Residential	Average hour	1.7	0.6
		Peak hour	2.2	0.7
	Commercial/Retail/School	Average hour	10.1	18.7
		Peak hour	13.1	23.9
	Total	*Average hour*	*11.8*	*19.3*
		Peak hour	*15.3*	*24.6*
Supply		On-Street[1, 2]	2	2
		Off-Street	14	23
		Total	*16*	*25*

Notes:
1. Four dual use zones available; assumes two spaces available for goods loading at any one time (considered here) with the other two available for passenger loading at any one time (not considered here).
2. On-street supply does not include school loading zone.

While loading supply would be sufficient to meet the anticipated loading demand, the following improvement measure should be implemented to manage loading activity throughout the Project Site:

Improvement Measure I-TR-2: Active Loading Management Plan

If the Project Sponsor for the 700 Innes Property proposes to provide fewer loading spaces than required under the Special Use District (SUD) for the Project or Variant, the Project Sponsors would develop an Active Loading Management Plan for approval by Planning Department to address operational loading actions for City review and approval. The Active Loading Management Plan would facilitate efficient use of loading spaces and may incorporate the following ongoing actions to address potential ongoing loading issues:

- Direct residents and commercial tenants to schedule all move-in and move-out activities and deliveries of large items (e.g., furniture) with management of the respective building.
- Direct commercial and retail tenants to schedule deliveries, to the extent feasible.

- Reduce illegal stopping of delivery vehicles by directing the lobby attendants of each building and retail tenants to notify any illegally-stopped delivery personnel (i.e., in the red zones) that delivery vehicles should be parked within the on-street commercial loading spaces.

- Design the loading areas to include sufficient storage space for deliveries to be consolidated for coordinated deliveries internal to project facilities (i.e., retail and residential); and

- Design the loading areas to allow for unassisted delivery systems (i.e., a range of delivery systems that eliminate the need for human intervention at the receiving end), particularly for use when the receiver site (e.g., retail space) is not in operation. Examples could include the receiver site providing a key or electronic fob to loading vehicle operators, which enables the loading vehicle operator to deposit the goods inside the business or in a secured area that is separated from the business, but is accessible from a public right-of-way.

A Draft Active Loading Management Plan would be included as part of the Design Guidelines and Standards document for the entire Project site. A Final Active Loading Management Plan and all subsequent revisions, if implemented, would be reviewed and approved by the Planning Department. The Final Active Loading Management Plan would be approved prior to receipt of the first certificate of occupancy for the first parking/loading garage.

The Draft and Final Active Loading Management Plan would be evaluated by a qualified transportation professional, retained by the Project Sponsors and approved by the Planning Department, after the combined occupancy of the commercial and residential uses reaches 50 percent occupancy and once a year going forward until such time that the Planning Department determines that the evaluation is no longer necessary or could be done at less frequent intervals. The content of the evaluation report would be determined by Planning Department staff, in consultation with SFMTA, and generally shall include an assessment of on-site and on-street loading conditions, including actual loading demand, loading operation observations, and an assessment of how the project meets this improvement measure.

The Final Active Loading Management Plan evaluation report would be reviewed by Planning Department staff, which shall make the final determination whether there are conflicts associated with loading activities. In the event that the conflicts are occurring, Project Sponsor may propose modifications to the above Final Active Loading Management Plan requirements to reduce conflicts and improve performance under the Plan such as the hour and day restrictions to be included in the Active Loading Management Plan, number of loading vehicle operations permitted during certain hours, etc. to address the circumstances for review and approval by the Planning Department.

5.8.2.2 School and Childcare Facility Passenger Loading

The school would experience passenger loading demand relating to student drop-off/pick-up. To provide context for the expected passenger loading demand, **Table 5-15** shows the loading space provision per student at other San Francisco schools. With an enrollment of 450 students, the amount of loading space that would be appropriate to provide, consistent with these examples, is approximately 185 feet. While a preliminary location for an on-street drop-off/pick-up zone is shown in **Figure 2D**, the length and location of this zone are conceptual. The location will be further developed and reviewed for safety by the SFMTA before being finalized. SFMTA must approve the final designs prior to construction of the school.

TABLE 5-15: SCHOOL LOADING ZONE COMPARISON

School Name	Address	Enrollment	Loading Zone(s) Total Length (ft)	Loading (ft/student)
Schools of the Sacred Heart: Stuart Hall High School Campus	1715 Octavia Street	210 (K-12)	165	0.79
Schools of the Sacred Heart: Broadway Campus	2222 Broadway Street	850 (K-12)	300	0.35
San Francisco Friends School	250 Valencia Street	435 (K-8)	150	0.34
			Average Rate	*0.41*

Due to the comparably short periods of heavy drop-off and pick-up at the school, it will have a much higher level of passenger loading activity during its peak than any other of the proposed uses. Because of this, and because the design of the school passenger loading zone is not finalized, the school site passenger loading impacts are **significant**. To ensure adequate operations of the proposed school loading zone, the following mitigation measure is proposed:

Mitigation Measure M-TR-2: School Site Loading Plan

Once school enrollment reaches 22 students, the school will provide and enforce a pick-up/drop-off plan subject to review and approval by the SFMTA to minimize disruptions to traffic, bicycle, and pedestrian circulation associated with school pick-up/drop-off activities and ensure safety of all modes. This plan may include elements such as size and location of loading zone, parking monitors, staggered drop-offs, a number system for cars, one-way circulation, encouragement of car pools/ride-sharing, and a safety education program. The safety education program would be targeted at students, parents, school staff, and residents and businesses near the school site. Informational materials targeted to parents, nearby residents, and nearby employees shall focus on the importance of vehicular safety, locations of school crossings, and school zone speed limits and hours. The school is located on the 700 Innes parcel, and therefore, responsibility for implementing this Mitigation Measure would be on the 700 Innes component of the Proposed Project.

School site passenger loading impacts would be **less-than-significant with mitigation.**

Passenger loading for the childcare facility would be similar in nature to the school, but with a much lesser intensity given that daily enrollment is expected to be much lower than the school. While the specific location has not been identified, it would meet City requirements, such as be adjacent to code required open space, and be accompanied by a passenger loading zone whose proximity to the site and whose length would meet City standards. The length of the loading zone would be a function of projected number of children. Also, the details of design would have to be approved by City as part of Phase Application. The impact of passenger loading at the childcare facility would therefore be **less-than-significant**.

5.8.3 RPD Property: 900 Innes, India Basin Shoreline Park, and India Basin Open Space

The Proposed Project's open space does not specifically require loading spaces. While loading demand for the open spaces is expected to be low, particularly during weekdays, designing curb space adjacent to the open space would allow for loading activities. The Proposed Project proposes two loading zones adjacent to India Basin Shoreline Park, one on Hunters Point Boulevard at Hudson Avenue, and the other on Innes Avenue west of Griffith Street. The Project Sponsor would apply to the SFMTA for final authorization for the on-street loading spaces. Because no loading spaces are required at the open space, the Proposed Project and Project Variant would have a **less-than-significant** impact on loading at the RPD Property.

5.9 EMERGENCY ACCESS IMPACTS

The Project Sponsor will provide emergency vehicle access to the site off of Innes Avenue along Arelious Walker Drive, Hudson Avenue, New Hudson Avenue, Earl Street, Spring Lane, Fairfax Lane, and Beach Lane. The Project Sponsor has worked with San Francisco Fire Department (SFFD) to develop preliminary street designs for all internal streets that meet emergency access requirements. The action of SFFD reviewing and signing off on the subdivision map and final street design is part of the project approval process.

Emergency vehicles would approach the Project Site from nearby fire stations located on Shafter Avenue at Ingalls Street, Third Street at Cargo Way, Jerrold Avenue at Upton Street, and San Bruno Avenue at Silliman Street. Emergency vehicles would likely access the Project Site and other nearby parcels via Third Street, Evans Avenue, Hunters Point Boulevard, Innes Avenue, and Ingalls Street. The Proposed Project's streetscape changes would maintain a sufficient right of way for emergency vehicles and therefore would not result in a significant impact to emergency vehicle access.

The proposed widths of internal streets are presented in **Table 1-4**, and range from 25 to 78 feet. The shared way along Spring Lane, Fairfax Lane, and Beach Lane would include 20-foot-wide clear emergency vehicle access around the loop with most areas having a 26-foot-wide staging area for emergency vehicles. These proposed widths are greater than or equal to the acceptable minimum widths for emergency vehicle access. While final roadway designs would need to be approved by the Fire Department prior to construction, all roadways have been designed to accommodate a standard fire truck. Thus, the Proposed Project or Variant would have a **less-than-significant** impact to emergency access. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

5.10 CONSTRUCTION IMPACTS

The discussion of construction impacts is based on currently available information from the Project Sponsor and professional knowledge of typical construction practices in San Francisco. Prior to construction, as part of the construction application phase, the Project Sponsor and construction contractor(s) would be required to meet with the Department of Public Works and SFMTA to develop and review truck routing plans for demolition, disposal of excavated materials, materials delivery and storage, as well as staging for construction vehicles. In general, lane and sidewalk closures or diversions are subject to review and approval by the City's Transportation Advisory Staff Committee ("TASC"), which consists of representatives from the Fire Department, Police Department, SFMTA Traffic Engineering Division, and the Department of Public Works (DPW). The construction contractor would be required to meet the City of San Francisco's Regulations for Working in San Francisco Streets (the Blue Book), and would meet with SFMTA staff to determine if any special traffic permits would be required.[62] In addition to the regulations in the Blue Book, the contractor would be responsible for complying with all city, state, and federal codes, rules, and regulations. Although conflicts with transit operations are not anticipated, the Project contractor is required to coordinate with Muni's Street Operations and Special Events Office to coordinate construction activities and reduce any impacts to transit operations.

Construction impacts would be the same for the Proposed Project and Project Variant. Buildout of the Project is anticipated to occur in three phases over an approximately five to eight year period, from 2018 through 2026. **Figure 15** depicts the planned construction traffic routes. Infrastructure would be constructed in tandem with new buildings and open space. Construction-related activities would generally occur Monday through Saturday, between 7:00 AM and 8:00 PM, and the typical work shift for most construction workers would be from 7:00 AM to approximately 3:30 PM on weekdays.[63] Construction is not anticipated to occur on Sundays or major legal holidays, but it may occur on an as-needed basis if approved by the Department of Building Inspection (DBI). The hours of construction would be stipulated by the DBI, and the contractor would be required to comply with the San Francisco Noise Ordinance.

Throughout the construction period, there would be construction-related trucks entering and exiting the site. There would be an average of between 50 and 100 construction trucks traveling to the site on a daily basis during the demolition, site preparation and grading/excavation phases. The greatest number of construction trips would occur during the grading and excavation phase with an average of 85 and up to 250 per day. There would be between 30 and 60 construction workers per day at the site during demo, site prep, grading/excavation, drainage/utilities/subgrade phases of construction and increase up to 200-250 during the building construction and architectural coating phases. The impact of construction truck traffic would be a temporary lessening of the capacities of local streets due to the size, slower acceleration, and larger turning radii of trucks, which may temporarily affect traffic and transit operations and increase traffic, pedestrian, and bicycle conflicts near the Project Site. Truck traffic to and from the site would be routed along major arterials and freight routes, as identified by SFMTA.

The trip distribution and mode split of construction workers are speculative to estimate. However, it is anticipated that the addition of the worker-related vehicle- or transit-trips would not substantially affect transportation conditions, as impacts on local intersections or the transit network would be substantially less than those associated with the Proposed Project and temporary in nature. Construction workers who drive to the site and potential temporary parking restrictions along the building frontage would cause a temporary increase in parking demand and a decrease in supply. Construction workers would need to park either on-street or in parking facilities that currently have availability during the day. However, parking shortfalls would be temporary and are not considered a significant environmental impact.

The construction impacts of the Proposed Project and Project Variant would be **less-than-significant**. Although no significant construction impacts have been identified, the following Improvement Measure has been identified:

[62] The Blue Book is available at http://www.sfmta.com/cms/vcons/bluebook.htm.

[63] Per the San Francisco Department of Public Health, construction noise is generally permitted in San Francisco between the hours of 7:00 AM to 8:00 PM, seven days per week.

Improvement Measure I-TR-3: Construction Management

Each of the four parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would be responsible for developing their own construction management plan.

Traffic Control Plan for Construction – In order to reduce potential conflicts between construction activities and pedestrians, transit and autos during construction activities, the Project applicant shall require construction contractor(s) to prepare a traffic control plan for major phases of Project construction (e.g. demolition, construction, or renovation of individual buildings). The Project applicant and their construction contractor(s) will meet with relevant City agencies to coordinate feasible measures to reduce traffic congestion, including temporary transit stop relocations and other measures to reduce potential traffic and transit disruption and pedestrian circulation effects during major phases of construction. For any work within the public right-of-way, the contractor would be required to comply with the City of San Francisco's Regulations for Working in San Francisco Streets, which establish rules and permit requirements so that construction activities can be done safely and with the least possible interference with pedestrians, bicyclists, transit, and vehicular traffic. Additionally, truck movements and deliveries will be limited during peak hours to the extend feasible and commercially reasonable in light of noise regulations, labor and contract requirements, available daylight hours, and critical path construction schedule (generally 4:00 to 6:00 PM, or other times, as determined by SFMTA and its Transportation Advisory Staff Committee [TASC]).

In the event that the construction timeframes of the major phases and other development projects adjacent to the Project Site overlap, the Project applicant should coordinate with City Agencies through the TASC and the adjacent developers to minimize the severity of any disruption to adjacent land uses and transportation facilities from overlapping construction transportation impacts. The Project applicant, in conjunction with the adjacent developer(s), shall propose a construction traffic control plan that includes measures to reduce potential construction traffic conflicts to the extent feasible and commercially reasonable in light of noise regulations, labor and contract requirements, available daylight hours, and critical path construction schedule, such as coordinated material drop offs, collective worker parking and transit to job site and other measures.

Reduce SOV Mode Share for Construction Workers – In order to minimize parking demand and vehicle trips associated with construction workers, the Project Sponsor will require the construction contractor to include in the Traffic Control Plan for Construction methods to encourage walking, bicycling, carpooling, and transit access to the project sites by construction workers.

Project Construction Updates for Adjacent Residents and Businesses – In order to minimize construction impacts on access for nearby residences, institutions, and businesses, the Project applicant will provide nearby residences and adjacent businesses with regularly-updated information regarding Project construction, including construction activities, peak construction vehicle activities (e.g., concrete pours), travel lane closures, and lane closures via a newsletter and/or website.

Contruction Traffic Route

Figure 15

Construction Traffic Routes

5.11 PARKING IMPACTS

Parking conditions are not static, as parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel. While parking conditions change over time, a substantial deficit in parking caused by a project that creates hazardous conditions or significant delays to traffic, transit, bicycles or pedestrians could adversely affect the physical environment. Whether a deficit in parking creates such conditions would depend on the magnitude of the shortfall and the ability of drivers to change travel patterns or switch to other travel modes. If a substantial deficit in parking caused by a project creates hazardous conditions or significant delays in travel, such a condition could also result in secondary physical environmental impacts (e.g., air quality or noise impacts cause by congestion), depending on the project and its setting.

The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles or travel by foot) and a relatively dense pattern of urban development induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service or other modes (walking and biking), would be in keeping with the City's "Transit First" policy and numerous San Francisco General Plan Polices, including those in the Transportation Element. The City's Transit First Policy, established in the City's Charter Article 8A, Section 8A.115, provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

The transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the Project Site and then seek parking farther away if convenient parking is unavailable. The secondary effects of drivers searching for parking is typically offset by a reduction in vehicle trips due to others who are aware of constrained parking conditions in a given area, and thus choose to reach their destination by other modes (i.e. walking, biking, transit, taxi). If this occurs, any secondary environmental impacts that may result from a shortfall in parking in the vicinity of the proposed project would be minor, and the traffic assignments used in the transportation analysis, as well as in the associated air quality, noise and pedestrian safety analyses, would reasonably address potential secondary effects.

5.11.1 Planning Code Parking Requirements

The Proposed Project currently falls within the Light Industrial (M-1), Heavy Industrial (M-2), Public (P), and Small Scale Neighborhood Commercial (NC-2) designations for zoning use districts, though the Proposed Project would re-zone the site to add a new India Basin Special Use District (SUD). The India Basin Special Use District would establish parking requirements for the Proposed Project.

Per Table 166 of the San Francisco Planning Code, newly constructed residential buildings with more than 201 residential units require two carshare spaces plus one additional carshare space for every 200 dwelling units over 200. As a result, the Proposed Project would require seven carshare spaces and the Project Variant would require three carshare spaces.

5.11.2 On-Street Parking Supply

In this section, reference to Proposed Project also applies to Project Variant.

The area under consideration for parking impacts is the portion of the street network within a 5 to 10 minute walk from the Project Site (approximately 1,300 to 2,600 feet). This is also the area used for data collection for existing parking conditions. The Innes Avenue corridor, between Hunters Point Boulevard and Donahue Street, has 209 on-street parking spaces under existing conditions (there are no on-street parking spaces on Hunters Point Boulevard, either existing or proposed). There are 113 additional on-street spaces along Arelious Walker Drive within the Build Property and Hawes Street within the RPD Property, for a total of 322 spaces. The Proposed Project would include left-turn pockets at three intersections along Innes Avenue, which would reduce the number of on-street parking spaces by an estimated 36 spaces. The Proposed Project would also reduce on-street parking on the Build property by 75 and increase on-street parking on the RPD Property by seven, resulting in a net decrease of 104 on-street spaces. **Table 5-16** summarizes the on-street parking supply adjacent to and internal to the Project Site under each scenario.

TABLE 5-16: ON-STREET PARKING SUPPLY

	Innes Avenue				Internal		
From:	**Hunters Point Boulevard[1]**	**Griffith Street**	**Arelious Walker Drive**	**Earl Street**	**Build Property**	**RPD Property**	***Total***
To:	**Griffith Street**	**Arelious Walker Drive**	**Earl Street**	**Donahue Street**			
Existing Conditions	37	56	57	59	95	18	*322*
Baseline	37	56	57	59	95	18	*322*
Baseline Plus Project	33	46	48	46	20	25	*218*

Notes:
1. Hunters Point Boulevard does not contain any on-street parking spaces in any scenario.

5.11.3 Parking Demand & Occupancy

As discussed earlier (see Section 4.6), the parking demand forecast was developed using a methodology identified in the *SF Guidelines*. The Proposed Project would have a peak demand for 2,553 parking spaces midday and 2,439 spaces in the evening. The Project Variant would have a peak demand for 3,624 parking spaces midday and 1,800 spaces in the evening.

The Proposed Project includes the provision of 1,800 off-street parking spaces; this includes 1,230 private parking spaces and 570 public parking spaces. The Project Variant includes the provision of 1,912 off-street parking spaces; this includes 1,412 private parking spaces and 500 public parking spaces.

Figures 8A and **8B** show the parking study area, which is bounded by Middle Point Road to the west, Innes Avenue to the south, Donahue Street to the east, and Hunters Point Road and the shoreline to the north. Midday occupancy of on-street parking in the parking study area was found to be 188 of 533 spaces (35 percent). There is therefore an available supply of 345 on-street spaces. Evening occupancy of on-street parking in the parking study area was found to be 164 of the 533 spaces (31 percent). There is therefore an available supply of 369 on-street spaces in the evening. It is assumed that the Project residents would first use the available off-street parking spaces in the Project's parking garage and the remaining demand would park on-street.

The school would provide reserved parking for staff and teachers within the proposed Hillside parking garage, located adjacent to the school.

The Project-generated and existing midday parking supply and demand for the Baseline scenarios is presented in **Table 5-17**, below. The Proposed Project is primarily residential and therefore demand is highest during the evening/overnight. The Project Variant has more retail and office uses and therefore demand is highest during the midday.

Parking demand would exceed the combined on-street and off-street parking supply for both the Proposed Project and Project Variant during the midday peak period. During the evening peak period, parking demand would exceed the combined on-street and off-street parking supply in the Proposed Project, but the supplied parking for the Project Variant would satisfy the demand during the evening peak period.

TABLE 5-17: PARKING SUPPLY, DEMAND, AND CODE REQUIREMENTS

Scenario	Proposed Off-Street Supply	Proposed Change in On-Street Supply	Existing Off-Street Parking Surplus	Existing On-Street Parking Surplus[1]	Calculated Peak Demand	Project Parking Surplus Compared with Demand[2]
Midday						
Proposed Project	1,800	-104	0	345	2,553	-512
Project Variant	1,912	-104			3,624	-1,471
Evening						
Proposed Project	1,800	-104	0	369	2,439	-374
Project Variant	1,912	-104			1,800	377

Notes:

1. Existing on-street parking surplus refers to the number of existing on-street spaces that are vacant spaces during that time period.
2. Refers to the proposed change in supply plus the existing surplus minus project peak demand, i.e. the anticipated parking surplus. Negative surpluses refer to anticipated parking demand higher than proposed supply, i.e. shortfalls.

Source: *SF Guidelines*, 2002; CPHPS Transportation Plan, 2010; *IBTAP*, 2015; Fehr & Peers, 2016.

While the above analysis forecasts a parking deficit for both scenarios, the Project would implement TDM measures (presented in Section 1.2.9) to encourage the use of transit, walking, bicycling, and other modes and discourage the use of single occupancy automobiles or automobiles in general. These measures were not specifically accounted for in the travel demand forecast process and would likely result in a substantial shift in mode share away from automobiles and decrease the demand for parking. As a result, the parking demand estimate is conservative; it overestimates vehicle trips by excluding vehicle trip reductions resulting from TDM. Additionally, the Project Site is well served by public transit and bicycle facilities, which would be further expanded by changes contained within the Baseline. These would serve to further provide transportation choices to the automobile. Because of this anticipated mode shift, any unmet parking demand associated with the project would not be substantial.

In summary, neither the Proposed Project nor the Project Variant would result in a substantial parking deficit with the on-street and off-street parking currently proposed. Therefore, impacts related to parking would be **less-than-significant**. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

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6 CUMULATIVE CONDITIONS

As noted earlier, the Proposed Project's impacts were evaluated for Baseline Plus Project conditions and for longer-term Cumulative conditions, projected for the year 2040. This chapter discusses the project's contribution to cumulative transportation-related impacts. Cumulative Conditions typically forms the future condition against which Project impacts are measured. However, future conditions are in flux in this neighborhood. While the below project list and transit improvements are assumed to be implemented in all Cumulative scenarios, there are multiple alternative circulation and streetscape conditions for 2040.

In 2015, Build led a planning study focused on a number of streets adjacent to and near the Project Site, and the resulting plan is called the India Basin Transportation Action Plan (IBTAP). FivePoint as well as City agencies such as SFMTA, DPW, RPD, OCII, and the Planning Department were also involved. The 2015 draft of this plan is a vision for streetscape and mobility improvements along the India Basin transportation corridor along Jennings Street, Evans Avenue, Hunters Point Boulevard, and Innes Avenue. It integrates work documented in the India Basin Neighborhood Association Vision Plan; The Bayview Transportation and Infrastructure Plan; The Candlestick Point Hunters Point Shipyard Transportation and Infrastructure Plans; PG&E's power plant site streetscape improvements; Build's ongoing development plans; and the Recreation and Parks Department plans for 900 Innes, India Basin Shoreline Park, and India Basin Open Space. While not yet approved, the IBTAP design is an evolution of design intentions for the corridor, building off the CPHPS Transportation Plan, and is therefore included as a separate Cumulative scenario in this study.

Some IBTAP improvements are included in the Proposed Project. These elements include:

- Sidewalk improvements along the project frontage, constructed in a manner consistent with Better Streets Plan. Detailed designs would be developed with SFMTA, Planning, Fivepoint, DPW, and other key stakeholders.
- Relocation of the Innes Avenue bicycle facility to New Hudson Avenue
- Construction of five signals at Hunters Point Boulevard/Hudson Avenue/Hawes Street, Hunters Point Boulevard/Innes Avenue, Innes Avenue/Griffith Street, Innes Avenue/Arelious Walker Drive, and Innes Avenue/Earl Street. Signal construction includes removal of some parking and installation of new pedestrian crosswalks at these locations, as well as the addition of eastbound-left turn pockets at Innes Avenue/Griffith Street, Innes Avenue/Arelious Walker Drive, and Innes Avenue/Earl Street (note that these turn pockets are not included in the IBTAP).

6.1 SCENARIO ASSUMPTIONS

To fully analyze project impacts and provide information for decision makers, three Cumulative scenarios are presented and analyzed in this report:

- Cumulative Scenario
    - CPHPS Transportation Plan streetscape is assumed
- Cumulative – IBTAP Subvariant A

- IBTAP streetscape is assumed between Jennings Street and Donahue Street[64]
- CPHPS Transportation Plan streetscape is assumed between Cargo Way and Jennings Street[65]

- Cumulative – IBTAP Subvariant B
  - IBTAP streetscape is assumed between Cargo Way and Donahue Street

FivePoint is obligated to reconstruct the entire IBTAP corridor except Jennings Street between Evans Avenue and Cargo Way. There are two IBTAP scenarios to separately environmentally analyze: the full extent of the IBTAP versus only the extent of the corridor that FivePoint is obligated to obstruct. B

Project impacts for all modes are analyzed for the Cumulative scenario. The two IBTAP scenarios are assessed for traffic hazards, bicycle, pedestrian, and parking impacts, as these are the elements which IBTAP would affect.

6.1.1 Project List

Forecasts of transportation activity in the Cumulative Scenario take into account a combination of specific development projects and general background population growth. Reasonably foreseeable development projects and transportation network changes were considered in the Cumulative Scenario. Projects include (but are not limited to) the following:

- San Francisco Bicycle Plan
- Muni Forward
- Eastern Neighborhoods Plan
- CPHPS
- San Francisco Public Utilities Commission (PUC) Southeast Treatment Plant construction projects, including new Biosolids Digester Facilities and replacement of the Headworks facility
- Blue Greenway/Bay Trail
- Hunters View
- Executive Park
- Visitacion Valley/Schlage Lock Redevelopment

San Francisco Bicycle Plan – No long-term Bicycle Plan transportation network changes (other than those proposed by the Proposed Project) were included for the streets adjacent to the project as none are included in the 2009 Bicycle Plan.

Muni Forward – As indicated in Section 3.3.1, Muni Forward (formerly the Transit Effectiveness Project) anticipates changes to Muni routes in the vicinity of the Proposed Project. Year 2040 Cumulative analysis

[64] This is the extent that FivePoint is obligated to construct.

[65] FivePoint is not obligated to reconstruct Jennings Street between Evans Avenue and Cargo Way.

assumes changes to the capacity of the lines as identified by route changes and headway changes indicated within Muni Forward.

Eastern Neighborhoods Plan – The Eastern Neighborhoods Plan included changes in zoning controls and General Plan amendments for an approximately 2,200-acre area on the eastern side of the City. It is intended to encourage new housing while maintaining or creating cohesive neighborhoods.

CPHPS Development – City-approved CPHPS Development includes 10,500 housing units, 134.5 ksf office, 3 million square feet (MSF) Research & Development, 1,200 seat film arts center, 4,400 seat performance venue, 220 hotel rooms, 256 ksf neighborhood retail, 635 ksf regional retail, 255 ksf artist's studio/art center, and 100 ksf community facilities.

PUC Southeast Treatment Plant construction projects – PUC plans to update its large wastewater treatment plant, located along Phelps Street between Jerrold Avenue and Evans Avenue, with new biosolids digesters and headworks. These projects are not included in the cumulative SF-CHAMP forecast as they are not substantial trip generators, but are discussed in Section 6.10, Cumulative Construction Impacts.

Blue Greenway/Bay Trail – a 13-mile network of connected parks, trails, and green open space along San Francisco's southeastern waterfront.

Hunters View – approximately 800 new residential units on the former site of 267 public housing units along West Point Road. 350 units will be for rental, all of which will be affordable (and 267 of which will provide a direct replacement for the 267 existing units); up to 450 units will be for sale, approximately 10 to 15 percent of which will be affordable.

Executive Park – construction of 964 housing units north of Executive Park Boulevard North and Crescent Way. Existing office park buildings within Executive Park will be redeveloped as a predominantly residential area to include 1,600 housing units and 73,000 square feet of retail.

Visitacion Valley/Schlage Lock Redevelopment – a large development in the Visitacion Valley neighborhood planned to include 2,014 housing units, 72,700 square feet of neighborhood-serving commercial establishments, and 25,000 square feet of cultural use.

6.1.2 Transit Service

The Cumulative Scenario includes full implementation of the transit improvements contained within Muni Forward and the CPHPS Transportation Plan, which are as follows:

- **19 Polk:** Discontinuation of the route south of 24th Street (i.e. in the vicinity of the Project Site); in this extent, service would be replaced by the 48 Quintara-24th Street. Approximate implementation 2019.

- **24 Divisadero:** Extension along Palou, Crisp and Spear avenues to the Hunters Point Shipyard Transit Center. Approximate implementation 2019.

- **23 Montgomery:** Extension to Hunters Point Shipyard Transit Center to provide interim service prior to the extension of the 24 Divisadero. Once 24 Divisadero service is extended, 23 Montgomery would resume providing service along its original route.

- **28R 19th Ave/Geneva Limited (BRT):** Extension along Geneva Ave through Candlestick Point to Hunters Point Shipyard. Conversion to BRT, with streetscape modifications along Geneva Ave. Approximate implementation 2023.
- **29 Sunset:** Extension along Gilman Ave to Harney Way. Approximate implementation 2017.
- **44 O'Shaughnessy:** Extension along Innes Avenue to Hunters Point Shipyard Transit Center. Approximate implementation 2023.
- **48 Quintara-24th St:** Extension to Hunters Point Shipyard Transit Center. Approximate implementation 2019.
- **Candlestick Point Express (CPX):** Provide new express bus service between Candlestick Point and Downtown San Francisco. Approximate implementation 2020.
- **Hunters Point Express (HPX):** Provide new express bus service between Hunters Point Shipyard and Downtown San Francisco. Approximate implementation 2023.
- **T Third (light rail):** Increase frequency and capacity plus an extension into Chinatown via the Central Subway would be provided.

6.1.3 Circulation and Streetscape

All improvements described in the Baseline Scenario would be implemented at this time, and there are other streetscape improvements in the area that may be implemented by 2040 as well. This section summarizes the proposed circulation and streetscape improvements associated with each of the three Cumulative scenarios: Cumulative Scenario, IBTAP Subvariant A, and IBTAP Subvariant B. The only difference between the two IBTAP scenarios is the configuration of Jennings Street between Evans Avenue and Cargo Way.

6.1.3.1 Cumulative Scenario

The Cumulative Scenario includes the same network changes throughout the Jennings Street—Evans Avenue—Hunters Point Boulevard—Innes Avenue corridor that are included in the Baseline Conditions. The changes are sourced from the 2010 CPHPS Transportation Plan and the Hunters Point Shipyard Phase II Infrastructure Plan, both of which are approved and funded, except for the section between Earl Street and Donahue Street which is revised from the Infrastructure Plan recommendations based on a more detailed engineering feasibility study and an agreement between FivePoint (the Shipyard Project Sponsor) and the City. This exception is included in the Baseline Scenario as well. There have been no changes to the Hunters Point Shipyard Phase II Infrastructure Plan since 2010 that would affect circulation along Hunters Point Boulevard and Innes Avenue. All Cumulative scenarios would include the addition of the Class I bicycle path through Northside Park, connecting India Basin to Shipyard.

6.1.3.2 IBTAP Subvariant A

The IBTAP Subvariant A varies from the Cumulative Scenario by including all proposed IBTAP improvements (denoted as "Recommended" in IBTAP) between Jennings Street and Donahue Street, which would replace streetscape proposals contained within CPHPS Transportation Plan on these streets. The streetscape on Jennings Street between Cargo Way and Evans Avenue would remain as that contained within the CPHPS

Transportation Plan. FivePoint is obligated to implement the improvements along Evans Avenue, Hunters Point Boulevard, and Innes Avenue. Funding has not yet been identified for proposed improvements along Jennings Street.

A table showing how IBTAP cross-sections differ to the Cumulative Scenario is shown in **Table 6-1** below.

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TABLE 6-1: SUMMARY OF IBTAP TRANSPORTATION NETWORK CHANGES

Street	From	To	Scenario	Travel Lanes	Parking	Bicycle Facilities	Sidewalks
Jennings Street	Cargo Way	Evans Avenue	Cumulative Scenario[1] and IBTAP Subvariant A	Two lanes, one in each direction, 12’	Both sides, 12’	None	Both sides, 8’ west side, 16’ east side
			IBTAP Subvariant B Only	Two lanes, one in each direction, 12’	West side, 8'	11' two-way cycle track on east side	Both sides, 8' west side, 16' east side
Evans Avenue	Jennings Street	Hunters Point Boulevard	Cumulative Scenario	Four lanes, two in each direction, outer as 11' shared bus/auto lane, inner as 10'	South side, 9'	Bicycle lanes both sides, 6’ south side, 6’ north side	Both sides, 8' south side, 10' north side
			IBTAP scenarios	Four lanes, two in each direction, outer as 12' shared bus/auto lane, inner as 10'	None	11' two-way cycle track on north side	Both sides, 10'
Hunters Point Boulevard	Evans Avenue	Hudson Avenue	Cumulative Scenario	Four lanes, two in each direction, outer as 11' shared bus/auto lane, inner as 10'	South side, 8'	Bicycle lanes both sides, 6’ south side, 6’ north side	Both sides, 8' south side, 10' north side
			IBTAP scenarios	Four lanes, two in each direction, outer as 12' shared bus/auto lane, inner as 10'	None	11' two-way cycle track on north side	Both sides, 10'
Hunters Point Boulevard	Hudson Avenue	Innes Avenue	Cumulative Scenario	Four lanes, two in each direction, outer as 11' shared bus/auto lane, inner as 10'	None	Bicycle lanes both sides, 5’ south side, 5’ north side[2]	Both sides, 8' south side, 10' north side
			IBTAP scenarios	Four lanes, two in each direction, outer as 12' shared bus/auto lane, inner as 10'	None	11' two-way cycle track on north side	Both sides, 8' south side, 10' north side
Innes Avenue	Hunters Point Boulevard	Griffith Street	Cumulative Scenario	Four 10' lanes, two in each direction	Both sides, 8'	Bicycle lanes, both sides, 5'[2]	Both sides, 7'
			IBTAP scenarios	Four lanes, two in each direction, outer as 12' shared bus/auto lane, inner as 10'	Intermittent bays on north and south side, 8’ width	None	Both sides, 10’
Innes Avenue	Griffith Street	Arelious Walker Street	Cumulative Scenario	Four lanes, two in each direction, outer eastbound as 11' shared bus/auto lane, others as 10'	Both sides, south side 7', north side 8’	5' bicycle lane on north side, sharrows on south side[2]	Both sides, 5' south side, 7' north side
			IBTAP scenarios	Four lanes, two in each direction, outer as 12' shared bus/auto lane, inner as 10'	Intermittent bays on north side, 8’ width	None	both sides, 8' south side, 10' north side

Street	From	To	Scenario	Travel Lanes	Parking	Bicycle Facilities	Sidewalks
Innes Avenue	Arelious Walker Street	Earl Street	Cumulative Scenario	Four lanes, two in each direction, outer eastbound as 11' shared bus/auto lane, others as 10'	Both sides, south side 7', north side 8'	5' bicycle lane on north side, sharrows on south side[2]	Both sides, 5' south side, 7' north side
			IBTAP scenarios	Four lanes, two in each direction, outer as 12' shared bus/auto lane, inner as 10'	Intermittent bays on north side, 8' width	None	both sides, 8' south side, 10' north side
Innes Avenue	Earl Street	Donahue Street	Cumulative Scenario	Four lanes, two in each direction, outer as 12' shared bus/auto lane, inner as 10'	Both sides, 8'	None	Both sides, 12' south side, 13' north side
			IBTAP scenarios	Same as Cumulative scenario			

Notes:

1. The Cumulative Scenario, which for streetscape purposes along the Evans Avenue—Hunters Point Boulevard—Innes Avenue corridor is the same as the Baseline Scenario, features streetscape designs from the CPHPS Transportation Plan.
2. These bicycle facilities would be removed by the Proposed Project and Project Variant, and the bicycle facility relocated to a parallel Class I facility on Hudson Avenue.

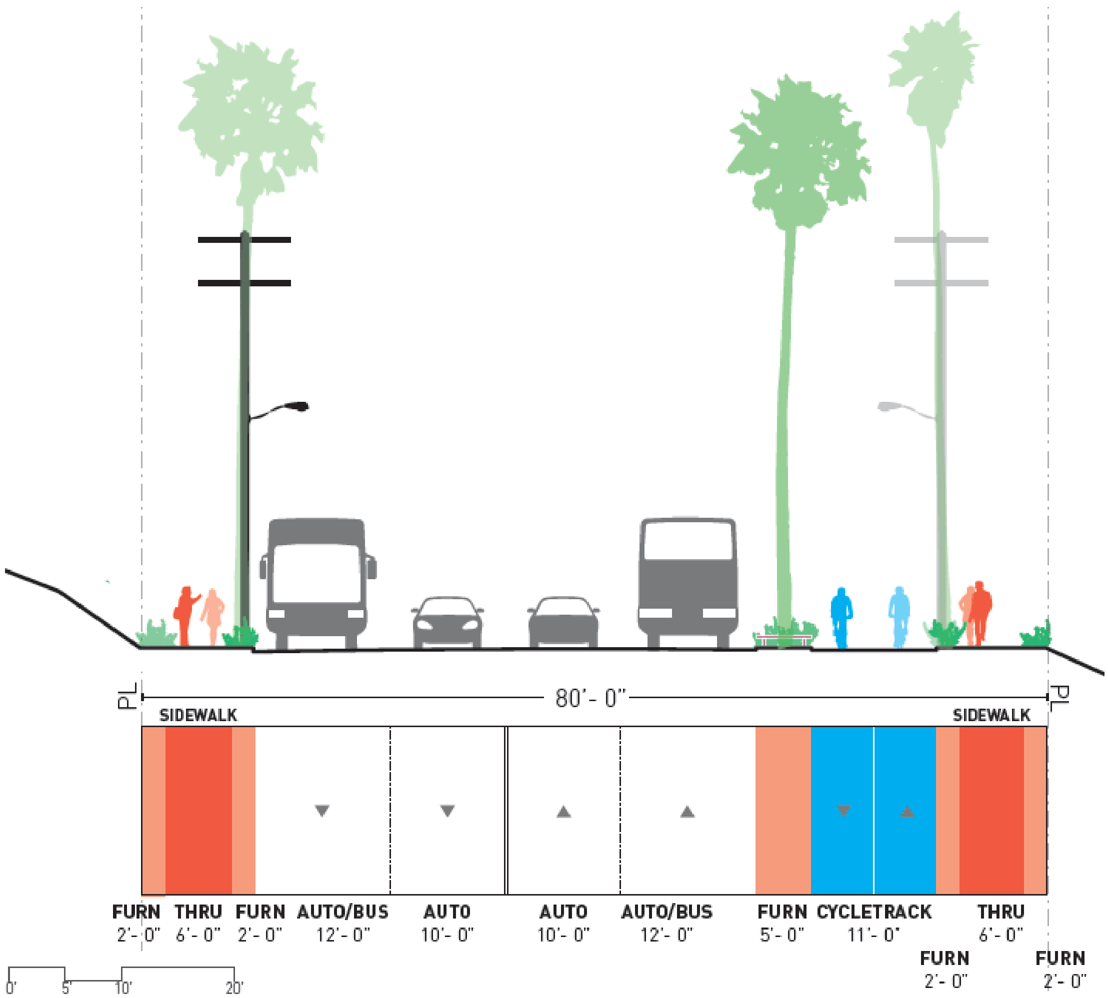
Source: Draft IBTAP, 2015

Individual road segment cross-sections for IBTAP Subvariant A are described in detail below.

On Jennings Street between Cargo Way and Evans Avenue, the cross-section would be the same as for the Cumulative Scenario.

On Evans Avenue and Hunters Point Boulevard, between Jennings Street and Hudson Avenue, the street cross-section would include four travel lanes (two in each direction), 10-foot sidewalks on both sides of the street, and an 11-foot two-way Class I cycle-track on the bay side of the street. The cycle-track would be separated from vehicle traffic by a 5-foot furnishing zone. No on-street parking would be provided along this street segment. **Inset 6** depicts the street section of Evans Avenue and Hunters Point Boulevard in the IBTAP scenarios. This segment would have the same streetscape in both IBTAP Subvariant A and IBTAP Subvariant B.

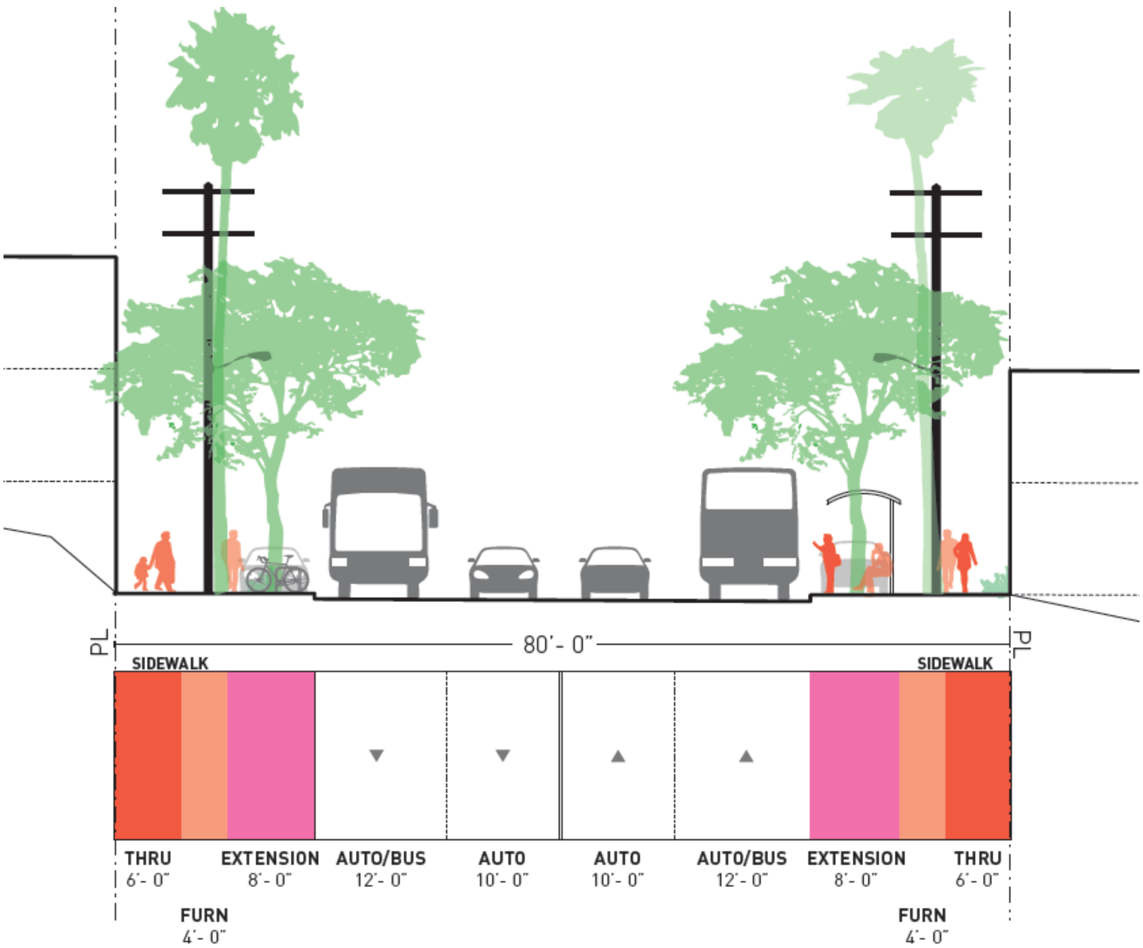
Inset 6: IBTAP Scenarios – Evans Avenue and Hunters Point Boulevard between Jennings Street and Hudson Avenue



Hunters Point Boulevard between Hudson Avenue and Innes Avenue and Innes Avenue between Hunters Point Boulevard and Griffith Street would provide four travel lanes (two in each direction), 10-foot sidewalks on both sides of the street, and 8-foot intermittent sidewalk extension zones on both sides of the street.

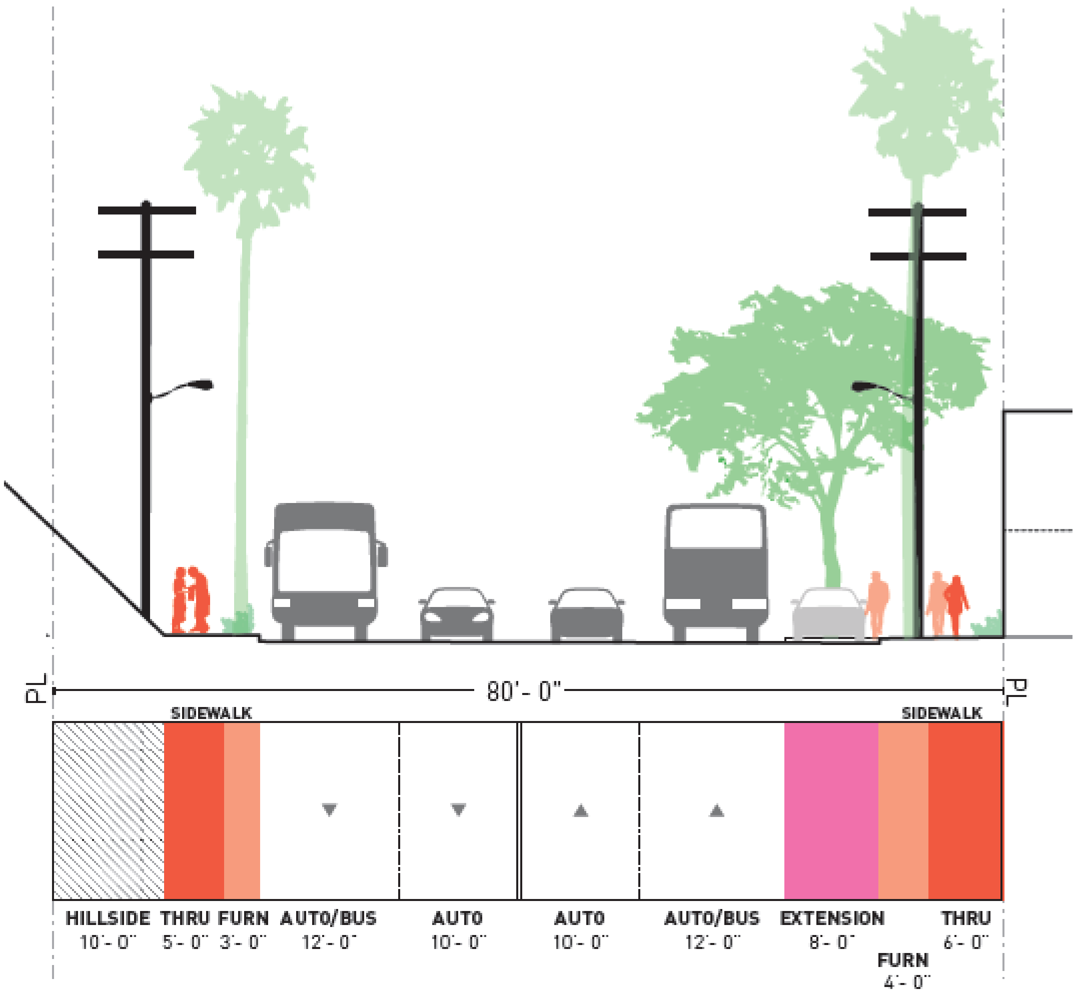
The extension zone is similar to a bulb out of the sidewalk, in that it is intermittent across the length of the block. Where there is no extension zone, the sidewalk is ten feet wide. Where the extension zone is present, the sidewalk is 18 feet wide. The extension zone would include special paving for pedestrian zones and planting, as well as distinctive paving in the parking lane to differentiate it from the travel lanes. Parking would be provided in locations where the sidewalk extensions are not provided. **Inset 7** depicts the street section of Hunters Point Boulevard between Hudson Avenue and Innes Avenue and Innes Avenue between Hawes Street and Griffith Street in the IBTAP scenarios.

Inset 7: IBTAP Scenarios – Hunters Point Boulevard and Innes Avenue between Hudson Avenue and Griffith Street



Between Griffith Street and Earl Street, Innes Avenue would provide four travel lanes (two in each direction), sidewalks on both sides of the street (8-feet on the south side and 10-feet on the north side), and at a few locations there would be 8-foot-wide sidewalk extension zones (i.e. bulbouts) on the north side of the street. Parking would be provided in locations where the sidewalk extension is not provided. Ten-feet of unmodified hillside would remain within the right of way. **Inset 8** depicts the street section of Innes Avenue between Hawes Street and Griffith Street in the IBTAP scenarios.

Inset 8: IBTAP Scenarios – Innes Avenue between Griffith Street and Earl Street



As shown, no bicycle facilities would be included along these segments of Hunters Point Boulevard and Innes Avenue (from Hudson Avenue to Earl Street), as a Class I cycle-track provided within the Project Site on Hudson Avenue and New Hudson Avenue would parallel this street.

Between Earl Street and Donahue Street, the Innes Avenue street section would match the Cumulative Scenario, which is "Recommended" IBTAP design. Northside Park is adjacent to the Project Site to the east. Northside Park is not part of India Basin; it is a different project, namely Shipyard. Under the Cumulative Scenario and the IBTAP scenarios, Northside Park would include a two-way cycle-track through the park, providing an off-street bicycle connection between the Project Site, Donahue Street, and bicycle facilities in the Hunters Point Shipyard site.

A map of the Cumulative (IBTAP scenarios) Plus Proposed Project bicycle network is shown below in **Figure 16**.

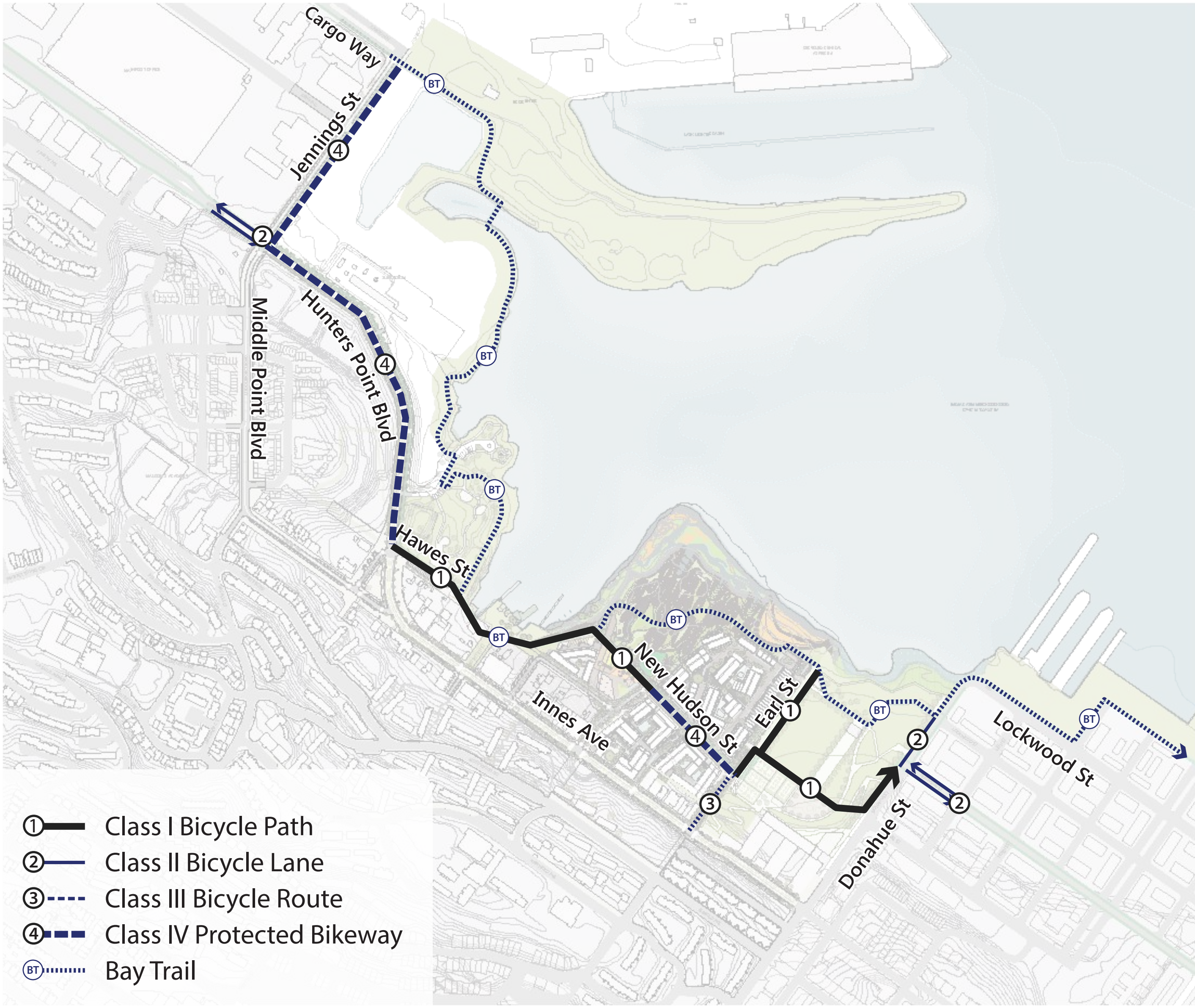


Figure 16

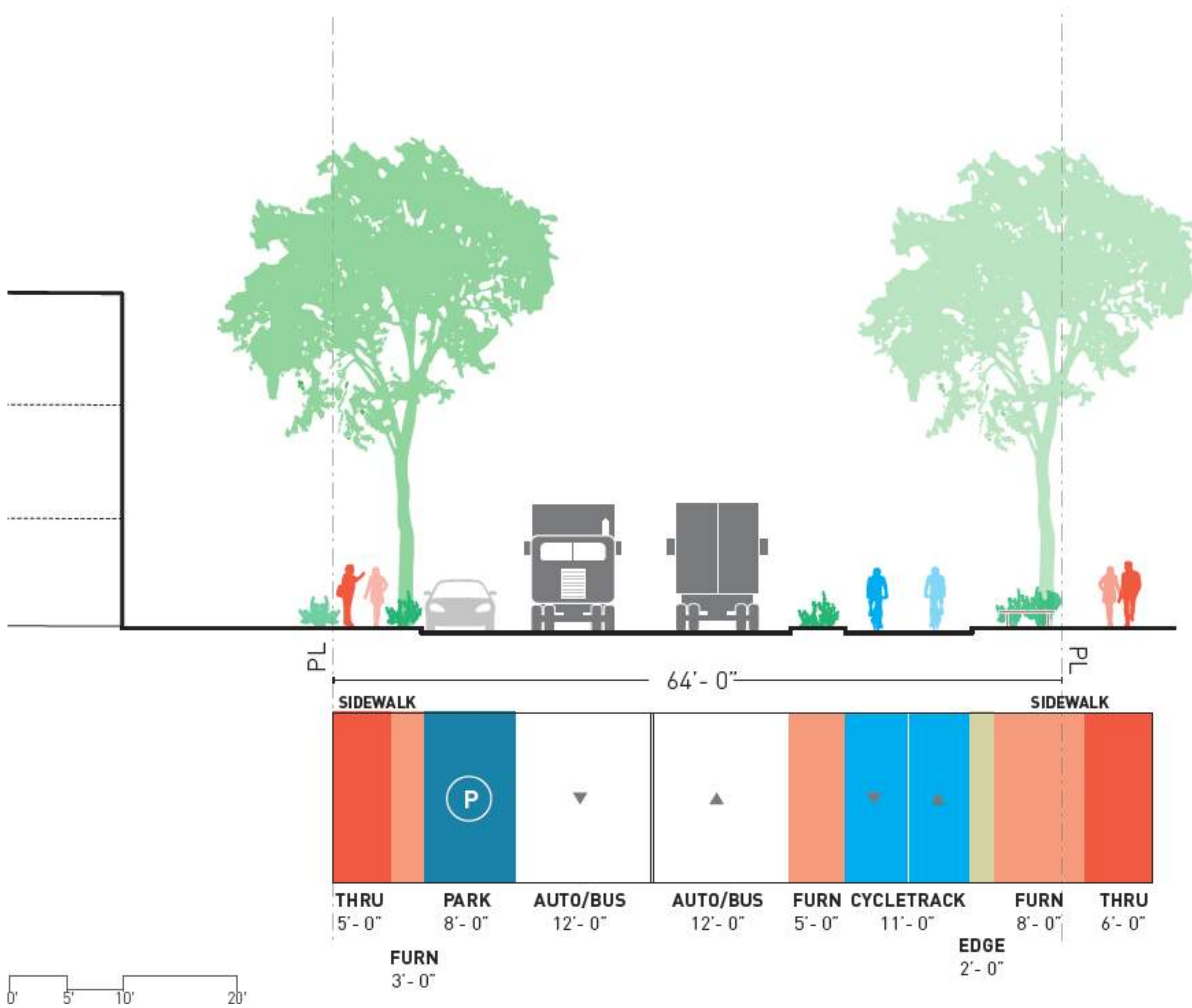
Cumulative (IBTAP Subvariant) Plus Project Bicycle Network

6.1.3.3 IBTAP Subvariant B

The IBTAP Subvariant B varies from the Cumulative Scenario by including all proposed IBTAP improvements between Cargo Way and Donahue Street (described in IBTAP Subvariant A, above), which would replace streetscape proposals contained within CPHPS Transportation Plan on these streets. FivePoint would be conditioned to implement the improvements along Evans Avenue, Hunters Point Boulevard, and Innes Avenue. Funding has not yet been identified for proposed improvements along Jennings Street.

On Jennings Street, the street cross-section would be that described as "Recommended" in IBTAP. It would include two travel lanes (one in each direction), an 11-foot two way cycle track on the bay side of the street, and sidewalks on both sides of the street. The sidewalk on the south side of the street would be five feet wide with a three-foot-wide furnishing zone. The sidewalk on the north side of the street would be six feet wide with an eight-foot-wide furnishing zone and two-foot-wide edge zone. On-street parking would be provided on the south side of the street. **Inset 9** depicts the street section of Jennings Street in IBTAP Subvariant B.

Inset 9: IBTAP Subvariant B – Jennings Street



6.2 CUMULATIVE VMT IMPACTS

Because the transportation network and forecasted land uses are different in 2040 Cumulative conditions from in the Baseline conditions, it is likely that the VMT per capita and VMT per employee for the Project and Project Variant TAZ would change.

An SF-CHAMP model run for the 2040 Cumulative conditions was conducted to estimate VMT by private automobiles and taxis for different land use types. Under Cumulative conditions, for residential development, the regional average daily household VMT per capita is 15.8, a decrease of approximately eight percent from baseline conditions. For office and retail development, regional average daily work-related VMT per employee is 16.7 and 14.3, respectively. This represents a decrease of twelve and four percent, respectively, from baseline conditions. As detailed in Section 5.1, a project is considered to have a significant impact if it exceeds the regional average minus 15 percent. **Table 6-2** shows the regional VMT values for these land uses, the values for the region minus 15 percent, and the value for the transportation analysis zone in which the Project Site is located, TAZ 446, which is bounded by Middle Point Road to the west, Evans Avenue to the north, Innes Avenue to the south, and Earl Street to the east. As the VMT impact analysis focuses on per capita VMT generated by the project instead of the aggregate VMT generated, the two land use scenarios – the Proposed Project and the Project Variant – are not analyzed separately. It is assumed that the VMT per capita for residents, office employees, and retail employees will be the same in both land use scenarios.

TABLE 6-2: AVERAGE DAILY VEHICLE-MILES TRAVELED (YEAR 2040)			
Land Use	**Regional Average VMT Per Capita**	**Regional Average Minus 15%**	**TAZ 446 (Project)[1]**
Residential (per resident)	15.8	13.7	8.9
Office[2] (per office employee)	16.7	14.5	13.4
Retail (per retail employee)	14.3	12.4	8.8

As listed in **Table 6-2** Cumulative average daily VMT per capita is more than 15 percent below the Cumulative regional average daily VMT per capita for residential, office, and retail uses in TAZ 446 where the Proposed Project is located. Given that the Project Site is located in an area where Cumulative VMT is more than 15 percent below the Cumulative regional average, the Proposed Project's residential, office, and retail (and thus, restaurant, opens space, and school) uses would not result in substantial additional VMT and impacts on cumulative conditions would be **less-than-significant**. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, on cumulative conditions would also be **less-than-significant**.

Research conducted in California and New York indicates a relationship between built environment factors, such as density, mix of uses, transit accessibility, transportation network design, development scale, and transportation demand management, and travel patterns including VMT. In particular, the supply of guaranteed vehicular parking was associated with a higher rate of driving. The recently adopted San Francisco TDM Program includes a menu of TDM measures, including parking supply reduction, available to Project Sponsors. In San Francisco, using the neighborhood parking supply rate accounts for variability in geography, so projects' parking rates are evaluated in comparison with the prevailing parking supply rate in the project's TAZ. The Proposed Project's parking rate slightly exceeds the surrounding TAZ's (TAZ 446) residential and commercial parking rates, but still falls short of projected parking demand, meaning that parking would be constrained at the Proposed Project and parking would thus contribute to TDM at the Project Site. A full discussion of these themes is presented in Section 5.2.1.1 above.

6.3 CUMULATIVE TRAFFIC HAZARDS IMPACTS

In this section, the impacts for the Project Variant would be the same as for the Proposed Project.

6.3.1 Induced Travel

As mentioned in Chapter 5, the Proposed Project is not a transportation project. However, the Proposed Project would include features that would alter the transportation network. These features would be sidewalk reconstruction and widening, on-street loading zones, curb cuts, on-street safety strategies, and intersection signalization. These features fit within the general types of projects identified that would not substantially induce automobile travel as they do not create substantial increases in roadway capacity.[66] Therefore, impacts on cumulative conditions would be **less-than-significant**.

6.3.2 Traffic Hazard Impacts

The Proposed Project would have a significant impact to traffic if it caused major traffic hazards. In this section, the impacts for the Project Variant would be the same as for the Proposed Project because the street design is the same.

The Proposed Project would add vehicle trips to the surrounding roadways; however, a general increase in area traffic would not be considered a traffic hazard. Cumulative vehicle, pedestrian, and bicycle volumes on Innes Avenue and other streets near the Project Site are substantial (in the range of 600 to 900 vehicles per peak hour in each direction). The additional Project vehicle trips would substantially contribute to traffic and occasional congestion at nearby intersections. The Proposed Project would generate around 2,000 vehicle trips in both the AM and PM peak hours and the Project Variant would generate around 2,600 vehicle trips in both the AM and PM peak hours. A large majority of the Project vehicle traffic would travel along Evans Avenue, Hunters Point Boulevard, and Innes Avenue to the west of the Project Site to access other destinations in the city and region. Therefore, the Project would cause increases to traffic congestion primarily at nearby intersections along these streets to the west of the Project Site. This substantial increase in vehicle volumes, added to already substantial Cumulative volumes, would worsen vehicular delay, but vehicular delay alone does not create traffic hazards. The inclusion of signalization at the project intersections along Innes Avenue removes conflicts that would otherwise exist between the substantial number of project vehicles and the substantial number of people driving along Innes Avenue. Therefore, no traffic hazard would be caused. Therefore the project impact would be **less-than-significant**.

Vehicle queues at the Proposed Project garage entrance driveways into the public right-of-way would be subject to the Planning Department's vehicle queue abatement Conditions of Approval as described in Improvement Measure I-TR-1. The Proposed Project's new internal street system is currently under development; however, the final designs would be subject to approval by the SFMTA, San Francisco Fire Department, and the Department of Public Works to ensure that the streets are designed consistent with

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[66] San Francisco Planning Department, *Executive Summary: Resolution Modifying Transportation Impact Analysis*, Appendix F, Attachment A, March 3, 2016.

City policies and design standards which contain minimum widths required for emergency (i.e. fire truck) access and streetscape elements consistent with the proposed neighborhood type.

6.3.3 Intersection Improvement Measures Identified

A detailed traffic analysis was conducted for informational and site planning purposes. Although the results of that analysis are not relevant to the Proposed Project's environmental review and no significant impacts are identified associated with that analysis, the traffic analysis did result in a recommendation for an improvement to an intersection in the Cumulative Scenario that is summarized here (note that the numbering does not follow on from the previous measure, as this measure is described in more detail later in this document and the numbering reflects its position later in this report):

Cumulative Improvement Measure C-I-TR-5: Reconfigure Eastbound Approach of Jennings Street/Evans Avenue

To improve vehicular mobility at the intersection in the Cumulative Plus Project and Project Variant Scenario, Cumulative Improvement Measure C-I-TR-5 proposes that the Project Sponsors fund the reconfiguration of the eastbound approach of the intersection of Jennings Street/Evans Avenue by the SFMTA from one shared through/left lane, one through lane, and one 100-foot left turn pocket to have one 100-foot left turn pocket, one through lane, and one shared through/right turn lane. No additional right-of-way would be required to implement this measure. The Project Sponsors will fund their fair share cost of the design and implementation of the new eastbound approach configuration for the intersection of Jennings Street/Evans Avenue.

Responsibility for paying a fair share fee would be based on the relative contribution of traffic to the intersection from the four parcels. At this location, 98 percent of vehicle trips would be generated by the 700 Innes Avenue parcel, one percent of vehicle trips would be generated by the India Basin Shoreline Park parcel, zero percent of vehicle trips would be generated by the 900 Innes Avenue parcel, and one percent of trips would be generated by the India Basin Open Space parcel.

Improvement Measure Feasibility

This improvement is feasible pending endorsement and subsequent funding commitment from the SFMTA. The funding contribution from the Project Sponsors is detailed in Section 7.5.3.

Operations After Improvement Measure

Implementing Cumulative Improvement Measure C-I-TR-5 would improve the intersection operation to LOS C in AM peak hour under Cumulative Plus Proposed Project and would result in LOS E intersection operation under Cumulative Plus Project Variant in AM peak hour. Cumulative Improvement Measure C-I-TR-5 would result in LOS D intersection operation in the PM peak hour for both Cumulative Scenarios (Project or Variant). Therefore, Improvement Measure C-I-TR-5 would improve operations under the Cumulative Plus Proposed Project Scenario; no feasible improvement measure has been identified that would improve further the operations at this intersection in the Cumulative Plus Project Variant Scenario. This improvement measure is a minor capacity increase at a single location. While it would reduce automobile delay at this location in the short run, because the capacity of the corridor as a whole is not being changed, it would result in a negligible change in the level of congestion on the roadway network.

6.4 CUMULATIVE TRANSIT CAPACITY IMPACTS

Future year 2040 Cumulative ridership projections were developed based on transit growth projections provided by the Planning Department.[67] Estimated future hourly ridership demand was then compared to expected hourly capacity, as determined by the likely route and headway changes identified in Muni Forward to estimate capacity utilization under 2040 Cumulative conditions. The year 2040 Cumulative analysis assumes changes to the capacity of the lines as identified by route changes and headway changes indicated within the recommended Muni Forward.

6.4.1 Cumulative Plus Proposed Project

The transit person-trips estimated to be generated by the Proposed Project were compared to the Cumulative Conditions projections on a screenline basis. Both transit capacity and utilization increase in the future, captured by this Cumulative Scenario. This section summarizes capacity utilization for the individual route HPX Hunters Point Express, a project-specific cordon, and the Downtown Screenlines.

6.4.1.1 Individual Muni Routes

It is assumed that in both directions of travel in the Cumulative Scenario, two-thirds of the project-generated transit trips through the Third Street subcorridor (within the Southeast Screenline) would use the Hunters Point Express (HPX) route (as it serves the Project Site directly), while one-third of trips would use the T-Third route. It is then conservatively assumed that of all project transit trips that utilize the T-Third route, all use either the 44 O'Shaughnessy or the 48 Quintara routes to transfer to/from the T Third, as it is not possible to transfer from the HPX route to the T-Third, as the HPX route would run express to Downtown after stopping at the Project Site.

As shown in **Table 6-3**, the HPX would operate below the established capacity utilization threshold of 85 percent. Therefore, the Proposed Project's cumulative transit impacts to the HPX would be **less-than-significant**. As a result, the cumulative transit impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, to the HPX would also be **less-than-significant**.

[67] San Francisco Planning Department, *Transit Data for Transportation Impact Studies*, May 15, 2015.

TABLE 6-3: CUMULATIVE HPX CAPACITY UTILIZATION - PROPOSED PROJECT					
Route	Cumulative			Project Contribution to /Route	
	Peak Hour[1] Ridership	Peak Hour[1] Capacity	Peak Hour[1] Capacity Utilization	Project Trips	Project Contribution to Ridership
AM Peak Hour					
HPX Inbound[1]	128	270	49%	25	19.5%
PM Peak Hour					
HPX Outbound[1]	181	270	67%	41	22.6%

Notes:
Bold indicates capacity utilization of 85 percent or greater
1. Inbound is towards Downtown; Outbound is away from Downtown. Data source: CPHPS Variant 2A (PPV2A)

Source: San Francisco Planning Department, May 2015; Fehr & Peers, 2015, see **Appendix E** for transit line capacity calculations

6.4.1.2 Project-Specific Cordon (Muni)

Because the 48 Quintara has been extended to directly serve the Project Site, people would now have the option of using either the 48 Quintara or the 44 O'Shaughnessy as a first- or last-mile connector from the T Third to the Project Site, which was not available in the Baseline Plus Project scenario where the 44 O'Shaughnessy stopped around a half-mile short of serving the Project Site. Because both routes can serve this function, travelers may choose either route to do so, and therefore treating them as a bundle for the purposes of a transit capacity analysis is appropriate. Crowding on these local routes is a concern, particularly as they would be used as feeder services to the T Third by both India Basin and Shipyard residents and employees. A cordon has been established between the T Third stop at Third Street/Evans Avenue and the Project Site. Peak hour ridership at the cordon is estimated at the local maximum load point between Third Street and the Project Site from SF-CHAMP 2040 model runs, located at Third Street/Palou Avenue.

As described in detail in Section 7.3, the SF-CHAMP model does account for some growth in the Project TAZ. However, the amount of traffic growth forecasted by the model for the roadways surrounding the Project Site is considerably less than the traffic growth projected to be generated by either the Proposed Project or Project Variant because the original land use proposed for India Basin and assumed in the model was of a smaller scale than the land use currently proposed by the Proposed Project or Project Variant. It can thus be inferred that the amount of transit trips generated by the Project as a part of the Cumulative Scenario is similarly underestimated.[68] However, the effect of this disparity lessens with distance because transit trips disperse onto different routes and streets. Because transit impacts are assessed at the Downtown Screenline level, the effect of the disparity in the India Basin TAZ would be reduced to a negligible level this far from the Project Site. Therefore no adjustments have been made to the Downtown Screenlines. Because the relative effect of the disparity is much higher adjacent to the project, the project

[68] The SF-CHAMP model forecasts are based on the Planning Department's (and ABAG's) estimation of how much development in San Francisco is economically feasible by 2040. So, if the Proposed Project were to build out more fully by 2040 than projected in the model, other development included in the model may occur at a slightly slower pace than projected, such that the overall total (and thus, the ridership demands across the Downtown Screenlines) would be the same.

trip contribution has been added to the project-specific cordon peak hour ridership to provide a conservative estimate.

As shown in **Table 6-4**, in each direction, the cordon would operate below the established capacity utilization threshold of 85 percent. Therefore, the Proposed Project's cumulative transit impacts at the cordon would be **less-than-significant**. As a result, the cumulative transit impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, on the cordon would also be **less-than-significant**.

TABLE 6-4: CUMULATIVE PROJECT-SPECIFIC CORDON CAPACITY UTILIZATION - PROPOSED PROJECT

Cordon	Cumulative			Project Contribution to Cordon	
	Peak Hour[1] Ridership	Peak Hour[1] Capacity	Peak Hour[1] Capacity Utilization	Project Trips	Project Contribution to Ridership
AM Peak Hour					
Project-Specific Cordon					
Westbound	646	1,016	64%	52	8.1%
Eastbound	515	1,016	51%	96	18.6%
PM Peak Hour					
Project-Specific Cordon					
Westbound	611	1,016	60%	76	12.4%
Eastbound	684	1,016	67%	86	12.6%

Bold indicates capacity utilization of 85 percent or greater
Source: San Francisco Planning Department, May 2015; Fehr & Peers, 2015, see **Appendix E** for transit line capacity calculations

6.4.1.3 Downtown Screenlines

All four Downtown Screenlines and constituent subcorridors were analyzed under cumulative conditions. As shown in **Table 6-5**, the following seven subcorridors and one screenline would operate above the 85 percent threshold in the AM peak hour without the Proposed Project, resulting in a **significant cumulative impact**: California, Fulton/Hayes, Mission, San Bruno/Bayshore, Southeast Other Lines, Subway lines, Haight/Noriega, and the Southwest Screenline. The following five subcorridors and one screenline would operate above the 85 percent threshold in the PM peak hour without the Proposed Project, resulting in a **significant cumulative impact**: California, Sutter/Clement, Fulton/Hayes, Mission, San Bruno/Bayshore, and the Northwest Screenline. Because the Proposed Project is estimated to contribute a negligible amount of riders to these subcorridors and screenlines (less than one percent in each case), the Proposed Project's contribution to this significant impact would **not be considerable**. No mitigation is required.

The remaining subcorridors and screenlines operate below the 85 percent threshold in the AM peak hour without the Proposed Project, resulting in a **less-than-significant** cumulative impact. As a result, the cumulative transit capacity impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, at these subcorridors and screenlines would also be **less-than-significant**.

TABLE 6-5: CUMULATIVE MUNI DOWNTOWN SCREENLINE CAPACITY UTILIZATION - PROPOSED PROJECT					
Screenline	Cumulative			Project Contribution to Screenline	
	Peak Hour[1] Ridership	Peak Hour[1] Capacity	Peak Hour[1] Capacity Utilization	Project Trips	Project Contribution to Ridership
AM Peak Hour					
Kearny/Stockton[2]	7,394	9,473	78%	4	0.1%
Other lines[3]	758	1,785	42%	2	0.3%
Northeast Screenline Total	*8,152*	*11,258*	*72%*	*6*	*0.1%*
Geary[4]	2,673	3,763	71%	3	0.1%
California[5]	1,989	2,306	**86%**	3	0.2%
Sutter/Clement[6]	581	756	77%	3	0.5%
Fulton/Hayes[7]	1,962	1,977	**99%**	2	0.1%
Balboa[8]	690	1,008	68%	2	0.3%
Northwest Screenline Total	*7,895*	*9,810*	*80%*	*13*	*0.2%*
Third Street[9]	2,442	5,712	43%	17	0.7%
Mission[10]	3,117	3,008	**104%**	0	0.0%
San Bruno/Bayshore[11]	1,952	2,197	**89%**	5	0.3%
Other lines[12]	1,795	2,027	**89%**	10	0.6%
Southeast Screenline Total	*9,286*	*12,944*	*72%*	*32*	*0.4%*
Subway lines[13]	6,314	7,020	**90%**	1	0.0%
Haight/Noriega[14]	1,415	1,596	**89%**	1	0.1%
Other lines[15]	175	560	31%	0	0.0%
Southwest Screenline Total	*7,904*	*9,176*	***86%***	*2*	*0.0%*
PM Peak Hour					
Kearny/Stockton[2]	6,295	8,329	76%	6	0.1%
Other lines[3]	1,229	2,065	60%	2	0.2%
Northeast Screenline Total	*7,524*	*10,394*	*72%*	*8*	*0.1%*
Geary[4]	2,996	3,621	83%	4	0.1%
California[5]	2,766	2,021	**137%**	3	0.1%
Sutter/Clement[6]	749	756	**99%**	3	0.4%
Fulton/Hayes[7]	2,762	1,878	**147%**	2	0.1%
Balboa[8]	776	974	80%	2	0.3%
Northwest Screenline Total	*8,049*	*9,250*	***87%***	*14*	*0.2%*
Third Street[9]	2,300	5,712	40%	29	1.3%
Mission[10]	2,673	3,008	**89%**	0	0.0%
San Bruno/Bayshore[11]	1,817	2,134	**85%**	8	0.4%
Other lines[12]	1,582	1,927	82%	17	1.1%
Southeast Screenline Total	*8,372*	*12,781*	*66%*	*54*	*0.6%*
Subway lines[13]	5,692	6,804	84%	1	0.0%
Haight/Noriega[14]	1,265	1,596	79%	2	0.2%
Other lines[15]	380	840	45%	0	0.0%
Southwest Screenline Total	*7,337*	*9,240*	*79%*	*3*	*0.0%*

Notes:
Bold indicates capacity utilization of 85 percent or greater
1. AM Peak hour as inbound (i.e. toward Downtown) only; PM peak hour as outbound (i.e. away from Downtown) only
2. 8 Bayshore, 30 Stockton, 30X Marina Express, 41 Union, 45 Union-Stockton
3. F Market & Wharves, 10 Townsend, 12 Folsom/Pacific
4. 38 Geary, 38R Geary Rapid, 38AX Geary 'A' Express, 38BX Geary 'B' Express

5. 1 California, 1AX California 'A' Express, 1AX California 'B' Express
6. 2 Sutter, 3 Clement
7. 5 Fulton, 21 Hayes
8. 31 Balboa, 31AX Balboa 'A' Express, 31BX Balboa 'B' Express
9. T Third Street
10. 14 Mission, 14R Mission Rapid, 14X Mission Express, 49 Van Ness-Mission
11. 8AX Bayshore 'A' Express, 8BX Bayshore 'B' Express, 8 Bayshore, 9 San Bruno, 9L San Bruno Limited
12. J Church, 10 Townsend, 12 Folsom/Pacific, 19 Polk, 27 Bryant
13. KT Ingleside/Third Street, L Taraval, M Ocean View, N Judah
14. 6 Haight-Parnassus, 7/7R Haight-Noriega/Rapid, 7X Noriega Express, NX Judah Express
15. F Market & Wharves

Source: San Francisco Planning Department, May 2015; Fehr & Peers, 2015, see **Appendix E** for transit line capacity calculations

6.4.1.4 Regional Transit

As noted previously, the Proposed Project would add approximately 99 AM transit trips and 109 PM transit trips to regional transit providers. In the AM, these trips include 20 transit trips to the East Bay, 76 transit trips to the South Bay,[69] and three transit trips to the North Bay. In the PM, these trips include 24 transit trips to the East Bay, 81 transit trips to the South Bay, and four transit trips to the North Bay (see **Table 6-6**). Under the Cumulative Scenario, BART would operate at higher occupancies than the established capacity utilization threshold (100 percent) resulting in a **significant cumulative impact**. Because the Proposed Project is estimated to contribute a negligible amount of riders to these screenlines (around 0.1 percent in each case), the Proposed Project's contribution to this significant impact would **not be considerable**. No mitigation is required. As a result, the contribution to the **significant cumulative impact** from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would be **not considerable**.

[69] Because there are no proposed direct transit links to nearby Caltrain stations, transit passengers traveling to and from the South Bay are expected to utilize first/last mile services such as taxi, TNCs, or bicycling to access Caltrain.

TABLE 6-6: REGIONAL TRANSIT SCREENLINES – CUMULATIVE PLUS PROPOSED PROJECT					
Screenline	**Cumulative 2040**			**Cumulative Plus Proposed Project**	
	Peak Hour Ridership	**Peak Hourly Capacity**	**Capacity Utilization**	**Project Trips**	**Project Contribution to Ridership**
AM Peak Hour					
East Bay					
BART	38,000	32,100	**118.4%**	20	0.1%
AC Transit	7,000	12,000	58.3%	0	0.0%
Ferries	4,682	5,940	78.8%	0	0.0%
Screenline Subtotal	*49,682*	*50,040*	*99.3%*	*20*	*0.0%*
North Bay					
Golden Gate Transit Bus	1,990	2,543	78.3%	2	0.1%
Ferries	1,619	1,959	82.6%	1	0.1%
Screenline Subtotal	*3,609*	*4,502*	*80.2%*	*3*	*0.1%*
South Bay					
BART	21,000	28,808	72.9%	23	0.2%
Caltrain	2,310	3,600	64.2%	53	2.3%
SamTrans	271	520	52.1%	0	0.0%
Ferries	59	200	29.5%	0	0.0%
Screenline Subtotal	*23,640*	*33,128*	*71.4%*	*76*	*0.3%*
Regional Subtotal	*76,931*	*87,670*	*87.8%*	*99*	*0.1%*
PM Peak Hour					
East Bay					
BART	36,000	32,100	**112.1%**	24	0.1%
AC Transit	7,000	12,000	58.3%	0	0.0%
Ferries	5,319	5,940	89.5%	0	0.0%
Screenline Subtotal	*48,319*	*50,040*	*96.6%*	*24*	*0.1%*
North Bay					
Golden Gate Transit Bus	2,070	2,817	73.5%	3	0.1%
Ferries	1,619	1,959	82.6%	1	0.1%
Screenline Subtotal	*3,689*	*4,776*	*77.2%*	*4*	*0.1%*
South Bay					
BART	20,000	28,808	69.4%	24	0.2%
Caltrain	2,529	3,600	70.3%	56	2.2%
SamTrans	150	320	46.9%	0	0.0%
Ferries	59	200	29.5%	0	0.0%
Screenline Subtotal	*22,738*	*32,928*	*69.1%*	*80*	*0.5%*
Regional Subtotal	*74,746*	*87,744*	*85.2%*	*108*	*0.2%*

Source: San Francisco Planning Department, "Transit Data for Transportation Impact Studies," May 2015. San Francisco Planning Department, "Updated BART Regional Screenlines – Revised," October 17, 2016; Fehr & Peers 2016.

6.4.2 Cumulative Plus Project Variant

The transit person-trips estimated to be generated by the Project Variant were compared to the Cumulative Conditions projections on a screenline basis. Both transit capacity and utilization increase in the future, captured by this Cumulative Scenario. This section summarizes capacity utilization for the individual route HPX Hunters Point Express, a project-specific cordon, and the Downtown Screenlines. The same assumptions were used as for the Proposed Project analysis presented above.

6.4.2.1 Individual Muni Routes

As shown in **Table 6-7**, the HPX would operate below the established capacity utilization threshold of 85 percent. Therefore, the Project Variant's cumulative transit impacts to the HPX would be **less-than-significant**. As a result, the cumulative transit impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, to the HPX would also be **less-than-significant**.

TABLE 6-7: CUMULATIVE HPX CAPACITY UTILIZATION - PROPOSED VARIANT

Route	Cumulative			Project Contribution to /Route	
	Peak Hour[1] Ridership	Peak Hour[1] Capacity	Peak Hour[1] Capacity Utilization	Project Trips	Project Contribution to Ridership
AM Peak Hour					
HPX Inbound[1]	128	270	47%	20	15.6%
PM Peak Hour					
HPX Outbound[1]	181	270	67%	30	16.6%

Notes:
Bold indicates capacity utilization of 85 percent or greater
1. Inbound is towards Downtown; Outbound is away from Downtown. Data source: CPHPS Variant 2A (PPV2A)

Source: San Francisco Planning Department, May 2015; Fehr & Peers, 2015, see **Appendix E** for transit line capacity calculations

6.4.2.2 Project-Specific Cordon (Muni)

As shown in **Table 6-8**, in each direction, the cordon would operate below the established capacity utilization threshold of 85 percent. Therefore, the Project Variant's cumulative transit impacts at the cordon would be **less-than-significant**. As a result, the cumulative transit impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, on the cordon would also be **less-than-significant**.

TABLE 6-8: CUMULATIVE PROJECT-SPECIFIC CORDON CAPACITY UTILIZATION - PROJECT VARIANT					
Cordon	Cumulative			Project Contribution to Cordon	
	Peak Hour[1] Ridership	Peak Hour[1] Capacity	Peak Hour[1] Capacity Utilization	Project Trips	Project Contribution to Ridership
AM Peak Hour					
Project-Specific Cordon					
Westbound	636	1,016	63%	42	6.6%
Eastbound	599	1,016	59%	180	30.0%
PM Peak Hour					
Project-Specific Cordon					
Westbound	711	1,016	70%	176	24.7%
Eastbound	662	1,016	65%	64	9.7%

Notes:
Bold indicates capacity utilization of 85 percent or greater
Source: San Francisco Planning Department, May 2015; Fehr & Peers, 2015, see **Appendix E** for transit line capacity calculations

6.4.2.3 Downtown Screenlines

All four Downtown Screenlines and constituent subcorridors were analyzed under cumulative conditions. As shown in **Table 6-5**, the following seven subcorridors and one screenline would operate above the 85 percent threshold in the AM peak hour without the Project Variant, resulting in a **significant cumulative impact**: California, Fulton/Hayes, Mission, San Bruno/Bayshore, Southeast Other Lines, Subway lines, Haight/Noriega, and the Southwest Screenline. The following five subcorridors and one screenline would operate above the 85 percent threshold in the PM peak hour without the Project Variant, resulting in a **significant cumulative impact**: California, Sutter/Clement, Fulton/Hayes, Mission, San Bruno/Bayshore, and the Northwest Screenline. Because the Project Variant is estimated to contribute a negligible amount of riders to these subcorridors and screenlines (less than one percent in each case), the Project Variant's contribution to this significant impact would **not be considerable**. No mitigation is required.

The remaining subcorridors and screenlines operate below the 85 percent threshold in the AM peak hour without the Project Variant, resulting in a **less-than-significant** cumulative impact. As a result, the cumulative transit capacity impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, at these subcorridors and screenlines would also be **less-than-significant**.

TABLE 6-9: CUMULATIVE MUNI DOWNTOWN SCREENLINE CAPACITY UTILIZATION - PROJECT VARIANT					
Screenline	Cumulative			Project Contribution to Screenline	
	Peak Hour[1] Ridership	Peak Hour[1] Capacity	Peak Hour[1] Capacity Utilization	Project Trips	Project Contribution to Ridership
AM Peak Hour					
Kearny/Stockton[2]	7,394	9,473	78%	12	0.2%
Other lines[3]	758	1,785	42%	5	0.7%
Northeast Screenline Total	*8,152*	*11,258*	*72%*	*17*	*0.2%*
Geary[4]	2,673	3,763	71%	9	0.3%
California[5]	1,989	2,306	**86%**	7	0.4%
Sutter/Clement[6]	581	756	77%	7	1.2%
Fulton/Hayes[7]	1,962	1,977	**99%**	5	0.3%
Balboa[8]	690	1,008	68%	5	0.7%
Northwest Screenline Total	*7,895*	*9,810*	*80%*	*33*	*0.4%*
Third Street[9]	2,442	5,712	43%	15	0.6%
Mission[10]	3,117	3,008	**104%**	0	0.0%
San Bruno/Bayshore[11]	1,952	2,197	**89%**	4	0.2%
Other lines[12]	1,795	2,027	**89%**	9	0.5%
Southeast Screenline Total	*9,286*	*12,944*	*72%*	*28*	*0.3%*
Subway lines[13]	6,314	7,020	**90%**	2	0.0%
Haight/Noriega[14]	1,415	1,596	**89%**	4	0.3%
Other lines[15]	175	560	31%	0	0.0%
Southwest Screenline Total	*7,904*	*9,176*	***86%***	*6*	*0.1%*
PM Peak Hour					
Kearny/Stockton[2]	6,295	8,329	76%	15	0.2%
Other lines[3]	1,229	2,065	60%	6	0.5%
Northeast Screenline Total	*7,524*	*10,394*	*72%*	*21*	*0.3%*
Geary[4]	2,996	3,621	83%	11	0.4%
California[5]	2,766	2,021	**137%**	8	0.3%
Sutter/Clement[6]	749	756	**99%**	8	1.1%
Fulton/Hayes[7]	2,762	1,878	**147%**	6	0.2%
Balboa[8]	776	974	80%	6	0.8%
Northwest Screenline Total	*8,049*	*9,250*	***87%***	*39*	*0.5%*
Third Street[9]	2,300	5,712	40%	21	0.9%
Mission[10]	2,673	3,008	**89%**	0	0.0%
San Bruno/Bayshore[11]	1,817	2,134	**85%**	5	0.3%
Other lines[12]	1,582	1,927	82%	11	0.7%
Southeast Screenline Total	*8,372*	*12,781*	*66%*	*37*	*0.5%*
Subway lines[13]	5,692	6,804	84%	2	0.0%
Haight/Noriega[14]	1,265	1,596	79%	5	0.4%
Other lines[15]	380	840	45%	0	0.0%
Southwest Screenline Total	*7,337*	*9,240*	*79%*	*7*	*0.1%*

Notes:
Bold indicates capacity utilization of 85 percent or greater
1. AM Peak hour as inbound (i.e. toward Downtown) only; PM peak hour as outbound (i.e. away from Downtown) only
2. 8 Bayshore, 30 Stockton, 30X Marina Express, 41 Union, 45 Union-Stockton
3. F Market & Wharves, 10 Townsend, 12 Folsom/Pacific

4. 38 Geary, 38R Geary Rapid, 38AX Geary 'A' Express, 38BX Geary 'B' Express
5. 1 California, 1AX California 'A' Express, 1AX California 'B' Express
6. 2 Sutter, 3 Clement
7. 5 Fulton, 21 Hayes
8. 31 Balboa, 31AX Balboa 'A' Express, 31BX Balboa 'B' Express
9. T Third Street
10. 14 Mission, 14R Mission Rapid, 14X Mission Express, 49 Van Ness-Mission
11. 8AX Bayshore 'A' Express, 8BX Bayshore 'B' Express, 8 Bayshore, 9 San Bruno, 9L San Bruno Limited
12. J Church, 10 Townsend, 12 Folsom/Pacific, 19 Polk, 27 Bryant
13. KT Ingleside/Third Street, L Taraval, M Ocean View, N Judah
14. 6 Haight-Parnassus, 7/7R Haight-Noriega/Rapid, 7X Noriega Express, NX Judah Express
15. F Market & Wharves

Source: San Francisco Planning Department, May 2015; Fehr & Peers, 2015, see **Appendix E** for transit line capacity calculations

6.4.2.4 Regional Transit

As noted previously, the Project Variant would add approximately 245 new AM transit trips and 281 new PM transit trips to regional transit providers. In the AM, this includes 54 transit trips to the East Bay, 182 transit trips to the South Bay[70], and nine transit trips to the North Bay. In the PM, this includes 64 transit trips to the East Bay, 206 transit trips to the South Bay, and 10 transit trips to the North Bay (see **Table 6-10**). Under the Cumulative Scenario, BART would operate at higher occupancies than the established capacity utilization threshold (100 percent) resulting in a **significant cumulative impact**. Because the Project Variant is estimated to contribute a negligible amount of riders to these screenlines (around 0.1 percent in each case), the Project Variant's contribution to this significant impact would **not be considerable**. No mitigation is required. As a result, the contribution to the **significant cumulative impact** from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would be **not considerable**.

[70] Because there are no proposed direct transit links to nearby Caltrain stations, transit passengers traveling to and from the South Bay are expected to utilize first/last mile services such as taxi, TNCs, or bicycling to access Caltrain.

TABLE 6-10: REGIONAL TRANSIT SCREENLINES – CUMULATIVE PLUS PROJECT VARIANT					
Screenline	**Cumulative 2040**			**Cumulative Plus Project Variant**	
	Peak Hour Ridership	**Peak Hourly Capacity**	**Capacity Utilization**	**Project Trips**	**Project Contribution to Ridership**
AM Peak Hour					
East Bay					
BART	38,000	32,100	**118.4%**	54	0.1%
AC Transit	7,000	12,000	58.3%	0	0.0%
Ferries	4,682	5,940	78.8%	0	0.0%
Screenline Subtotal	*49,682*	*50,040*	*99.3%*	*54*	*0.1%*
North Bay					
Golden Gate Transit Bus	1,990	2,543	78.3%	7	0.4%
Ferries	1,619	1,959	82.6%	2	0.1%
Screenline Subtotal	*3,609*	*4,502*	*80.2%*	*9*	*0.2%*
South Bay					
BART	21,000	28,808	72.9%	55	0.4%
Caltrain	2,310	3,600	64.2%	127	5.5%
SamTrans	271	520	52.1%	0	0.0%
Ferries	59	200	29.5%	0	0.0%
Screenline Subtotal	*23,640*	*33,128*	*71.4%*	*182*	*0.8%*
Regional Subtotal	*76,931*	*87,670*	*87.8%*	*245*	*0.3%*
PM Peak Hour					
East Bay					
BART	36,000	32,100	**112.1%**	64	0.2%
AC Transit	7,000	12,000	58.3%	0	0.0%
Ferries	5,319	5,940	89.5%	0	0.0%
Screenline Subtotal	*48,319*	*50,040*	*96.6%*	*64*	*0.1%*
North Bay					
Golden Gate Transit Bus	2,070	2,817	73.5%	8	0.4%
Ferries	1,619	1,959	82.6%	3	0.2%
Screenline Subtotal	*3,689*	*4,776*	*77.2%*	*11*	*0.3%*
South Bay					
BART	20,000	28,808	69.4%	62	0.3%
Caltrain	2,529	3,600	70.3%	144	5.7%
SamTrans	150	320	46.9%	0	0.0%
Ferries	59	200	29.5%	0	0.0%
Screenline Subtotal	*22,738*	*32,928*	*69.1%*	*206*	*0.9%*
Regional Subtotal	*74,746*	*87,744*	*85.2%*	*281*	*0.4%*

Source: San Francisco Planning Department, "Transit Data for Transportation Impact Studies," May 2015. San Francisco Planning Department, "Updated BART Regional Screenlines – Revised," October 17, 2016; Fehr & Peers 2016.

6.5 CUMULATIVE TRANSIT DELAY IMPACTS

The transit service changes planned for the area were developed as part of the CPHPS Transportation Plan and are assumed as part of the Cumulative Scenario for India Basin. The planned transit network changes include the 48 Quintara operating along Evans Avenue, Middle Point Road, and Innes Avenue, to be joined by the 44 O'Shaughnessy and the HPX Hunters Point Express along Innes Avenue adjacent to the Project Site (see **Figure 10**).

6.5.1 Traffic Performance

The Proposed Project and Project Variant would have an effect on cumulative condition traffic operations by adding at least 1,800 vehicle trips to the surrounding roadway network during the peak commute periods. Traffic conditions along the Hunters Point Boulevard—Innes Avenue corridor (approximately 4,500 feet long) are analyzed by the following metrics: the percentage of demand volume served, average traffic travel time, and queue length as a percentage of available capacity. **Table 6-11** below summarizes these metrics for each Cumulative Scenario. The metrics were developed using the SimTraffic microsimulation modeling platform and results are presented in **Appendix M**.

TABLE 6-11: CUMULATIVE YEAR TRAFFIC PERFORMANCE MEASURES

Scenario	Metric	AM	PM
Eastbound Direction			
C + PP[1]	Demand Served (%)[2]	80%	82%
	Travel Time (min:sec)[3]	2:53	3:12
	Queue Length (%)[4]	17%	22%
C + PV	Demand Served (%)	65%	86%
	Travel Time (min:sec)	3:02	4:05
	Queue Length (%)	22%	34%
Westbound Direction			
C + PP	Demand Served (%)	84%	63%
	Travel Time (min:sec)	10:28	15:46
	Queue Length (%)	78%	100%
C + PV	Demand Served (%)	83%	53%
	Travel Time (min:sec)	11:42	15:34
	Queue Length (%)	81%	100%

Notes:
1. C = Cumulative, PP = Proposed Project, PV = Project Variant.
2. Demand served as percentage of input volume served.
3. Travel time is between Jennings Street and Donahue Avenue for non-transit vehicles.
4. Queue length is percentage of capacity as measured by the distance between each intersection. The sum of average queue length in the eastbound through and westbound through direction at each intersection was used.

Source: Fehr & Peers, 2017.

In general, the Cumulative Plus Proposed Project tends to operate better than the Cumulative Plus Project Variant during both the AM and PM peak hour. Compared to the Project Variant, the Proposed Project Scenario tends to have a higher percentage of demand served, a lower travel time, and a lower percentage of queue capacity utilized, which indicates better corridor performance due to lower project volumes overall and more balanced project volumes in each direction.

Eastbound: In the eastbound direction, the percentage of demand served was generally high, in the range of 80 to 85 percent, with the exception of the Project Variant AM. The traffic demand is not fully served in the eastbound direction because eastbound traffic is constrained due to the assumed implementation of CPHPS transit-only lanes along Evans Avenue, which reduces lane capacity from two lanes in each direction (as exists today) to one lane. Travel times are low, in the range of three to four minutes, because between Jennings Street and Donahue Avenue there are two travel lanes in each direction. Queue length as a percentage of capacity would be in the range of 20 to 30 percent (about 800 to 1,200 feet long for the 4,000 foot-long corridor).

Westbound: In the westbound direction, the percentage of demand served is generally high in the AM peak hour, nearly 85 percent in both the Proposed Project and Project Variant Scenario, but generally low in the PM peak hour at approximately 55 to 60 percent. The PM peak period performs more poorly since there is generally a higher level of traffic demand westbound along Innes Avenue (and outbound from the Project driveways) in the PM peak period than in the AM peak period. Demand served is not closer to 100 percent because westbound traffic reaches a bottleneck at the intersection of Jennings Street and Evans Avenue due to the assumed implementation of transit-only lanes between Third Street and Jennings Street, which reduces lane capacity from two lanes (as exists today) to one lane at this intersection. This bottleneck causes a queue to form that reduces demand served and increases travel times. Travel times are generally high: 10 to 12 minutes in the AM peak hour and approximately 16 minutes in the PM peak hour. Queue length as a percentage of capacity is also high, ranging between 80 and 100 percent of capacity (about 3,200 to 4,000 feet long).

6.5.2 Transit Delay Analysis

As stated in Section 5.1, the Project would have a transit impact if it would cause an increase in delay of at least half a headway in the round-trip travel time for a particular transit route adjacent to the Project Site. This significance threshold is based on the need to retain a comparable transit headway to what is planned and approved. The half-headway threshold represents the tipping point at which point investment in an additional vehicle would be required to counterbalance degradation in transit travel times to maintain the same headway. Under Cumulative conditions, the 44 O'Shaughnessy would have the most frequent peak period service (6.5 minutes), so the threshold for significance under this scenario is 3.25 minutes (195 seconds) in both directions. The study area for this corridor analysis is the Evans Avenue–Hunters Point Boulevard–Innes Avenue corridor between Third Street and Donahue Street, which is approximately 1.4 miles long.

The transit operations plan developed as part of the CPHPS Transportation Plan identified the number of net new vehicles required to operate the planned transit service increases. As part of the CPHPS project's approvals, a mitigation measure to provide transit-only lanes along Evans Avenue between Napoleon Street (which is west of Third Street) and Jennings Street was identified; that measure is assumed to be in place in all Cumulative scenarios for this evaluation. Within the transit-only lanes, the travel speed for a transit vehicle is estimated to be 16 miles per hour, which is double the system-wide average Muni bus speed of eight miles per hour.[71, 72] Between Jennings Street and Donahue Street, the average motor vehicle travel speed from the microsimulation analysis was used as buses would travel in mixed flow. In aggregate, these assumptions would result in a bus travel time of about five and a half minutes in each direction (total of approximately 10.75 minutes) between Third Street and Donahue Street under Cumulative No Project conditions, with the transit-only lanes on Evans Avenue in place.

Table 6-12 details the round-trip travel time (and resulting average speed) along the study corridor between Third Street and Donahue Street for the Cumulative Plus Proposed Project and Cumulative Plus Project Variant Scenarios for the AM and PM peak hours, as compared to the Cumulative No Project scenario. Travel times are the sum of both directions because the basis of the impact criteria is the need for an additional bus in order to maintain scheduled headways, and this requirement is based on the round-trip travel time.

The travel times are obtained from the microsimulation results for these scenarios contained within Section 7.5. Compared against the Cumulative No Project scenario, in the AM peak hour, the travel time under the Cumulative Plus Proposed Project Scenario increases by about eight minutes, while under the Cumulative Plus Project Variant Scenario the travel time increases by about 11 minutes. In the PM peak hour, the travel time under the Cumulative Plus Proposed Project Scenario increases by about 15.5 minutes, while under the Cumulative Plus Project Variant Scenario the travel time increases by about 16 minutes. The increase in travel time is higher for the Cumulative Plus Project Variant Scenario due to the additional traffic this scenario generates compares to the Proposed Project Scenario.

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[71] Eight mile per hour average speed as presented in *San Francisco Muni Unique Cost/Operating Environment* presentation given to the SFMTA Board of Directors, September 2007.

[72] The doubling of transit speed in a transit-only lane compared to mixed flow traffic is based off of data from: Kittelson & Associates (2013), Transit Capacity and Quality of Service Manual – Third Edition, TCRP Document 165, Transit Cooperative Research Program, TRB (www.trb.org); at www.trb.org/Main/Blurbs/169437.aspx.

TABLE 6-12: CUMULATIVE TRANSIT TRAVEL TIME ALONG STUDY CORRIDOR						
Scenario	**Travel Time (minutes: seconds)[1]**	**Average Speed (mph)**	**Change from Cumulative No Project (minutes: seconds)**	**Change from Cumulative No Project (mph)**	**Threshold (minutes: seconds)**	**Significant Impact?**
AM Peak Hour						
Cumulative	10:44	16.0	-	-		-
C + PP[2]	18:52	9.1	+8:08	-6.9	+7:30	**Yes**
C + PV	21:42	7.9	+10:58	-8.1		**Yes**
PM Peak Hour						
Cumulative	11:09	15.4	-	-		-
C + PP	26:30	6.5	+15:21	-8.9	+7:30	**Yes**
C + PV	27:23	6.3	+16:14	-9.1		**Yes**

Notes:

1. Travel times are the sum of the eastbound and westbound direction along the Evans Avenue–Hunters Point Boulevard–Innes Avenue corridor between Third Street and Donahue Street. See **Appendix L** for detailed calculation sheets.
2. C = Cumulative, P = Proposed Project, V = Project Variant.

Source: Fehr & Peers, 2017.

In summary, there is a **significant cumulative impact** for both the Proposed Project and Project Variant to transit delay during the AM and PM peak hours due to increased traffic congestion along the corridor. Both the Proposed Project's and the Project Variant's contributions to their respective significant impacts would **be considerable**.

The following mitigation measure is proposed:

Mitigation Measure C-M-TR-3: Implement Transit-Only Lanes

To mitigate a cumulative transit delay impact caused by the Project and the Variant, in combination with other cumulative projects, the SFMTA shall convert one of the two travel lanes in each direction from mixed-flow to transit-only between the intersection of Evans Avenue/Jennings Street/Middle Point Road, along Hunters Point Boulevard, Innes Avenue, Donahue Street, to the intersection of Donahue Street/Robinson Street. The transit-only lanes shall be located in the lane nearest to the curb for each direction, similar to those identified as part of the CPHPS Phase II Redevelopment Plan EIR for Evans Avenue between Third Street and Jennings Street.

For the proposed project, the threshold of significance for transit delay would be exceeded sometime after full buildout of the proposed project, even when assuming background construction of the Shipyard development per the latest construction schedule. For the variant, however, the threshold of significance for transit delay would be exceeded before buildout of the project, assuming background construction of the Shipyard development per the latest construction schedule. Based on the vehicle-trip estimates for the variant, the significance threshold would be exceeded with occupancy of aggregate land uses generating 1,193 inbound vehicle-trips during the weekday a.m. peak hour or 1,606 outbound vehicle-trips during the weekday p.m. peak hour, whichever comes first. Therefore, the Project Sponsors shall fund, and the SFMTA shall implement, this measure prior to the time the Project or Variant that would result in an increase in transit travel time to 18 minutes, 14 seconds in the AM peak hour or 18 minutes, 39 seconds in the PM peak hour, whichever comes first. The SFMTA shall monitor transit service and travel time along the corridor to assess when this threshold is met and the Project sponsors shall pay their respective fair share amounts after invoicing by SFMTA.

A conceptual drawing of the mitigation measure is shown in **Figure 17**.

The Project Sponsors would be responsible for making a fair share contribution to funding the implementation of the transit-only lanes based on the relative proportion of vehicle trips that the Project or the Variant contribute to the cumulative traffic conditions that result in the need for mitigation. The fair share was determined by the ratio of the sum of project-added trips across the three 700 Innes-adjacent study intersections to the sum of eastbound and westbound through trips without the Project. Since the impact would occur both in the AM and PM peak period, the higher ratio of the peak periods was conservatively selected as the fair share ratio. For the Proposed Project, the fair share contribution would be 38 percent, while for the Project Variant the fair share contribution would be 50 percent. In addition, between the Project Sponsors of the Project, each of the four parcels that make up the Proposed Project or Project Variant would be responsible for their proportionate share of the Project contribution. In this case, 98 percent of vehicle trips would be generated by the 700 Innes Avenue parcel, one percent of vehicle trips would be generated by the India Basin Shoreline Park parcel, zero percent of vehicle trips would be generated by the 900 Innes Avenue parcel, and one percent of trips would be generated by the India Basin Open Space parcel.

Mitigation Measure C-M-TR-3 would reduce the Proposed Project and Project Variant's contribution to cumulative impacts to transit travel time (transit delay) to acceptable levels and result in a less than significant cumulative impact; however, because SFMTA cannot commit to implementing these improvements, the cumulative transit delay impact is considered **significant and unavoidable with mitigation**. If implemented, the mitigation measure would result in **less-than-significant** pedestrian, bicycle, and parking impacts because the proposed changes are restricted to restriping the mixed-flow travel lanes, and therefore would not result in changes to facilities for other modes. Any temporary sidewalk, parking, or traffic lane closures due to construction of the mitigation measure would be coordinated with City agencies, which would result in a **less-than-significant** impact due to construction. There would also be a **less-than-significant** impact to emergency access. The transit-only lane would be available to emergency vehicles and would therefore provide more rapid emergency access along the corridor.

With respect to VMT, the Planning Department has identified screening criteria to identify types, characteristics, or locations of projects and a list of transportation project types that would not result in significant transportation impacts under the VMT metric. These screening criteria are consistent with CEQA Section 21099 and the screening criteria recommended by OPR. If a project falls within certain types of transportation projects, then a detailed VMT analysis is not required for a project. Since the implementation of a transit-only lane would fall within the definition of an "active transportation, rightsizing (aka road diet), and transit project" or "other minor transportation project", a detailed VMT analysis is not required. Therefore, the impact to VMT would be **less-than-significant**.

Mitigation Measure Timing

Between 2018 and 2040, the following changes will affect transit delay in the corridor: phased construction of CPHPS land uses, phased implementation of CPHPS transportation improvements, and phased construction of the India Basin project. A quantitative assessment of transit delay over time has been undertaken for the period between 2018 and 2040 to determine the approximate year or level of development at which a significant transit delay would be triggered. The Mitigation Measure should be implemented no later than the year in which the threshold is triggered.

As part of this analysis the transit delay from an interim year of 2022 was assessed, which assumes full buildout of India Basin plus completion and occupancy of Hunters Point Shipyard Phase I and Major Phase 1 of the remaining Hunters Point Shipyard Phase 2 development including approximately 1,000 housing units and approximately two million square feet of research and development, retail, and other nonresidential uses.

For the Proposed Project, the threshold of significance for transit delay would be exceeded sometime after full buildout of the Proposed Project, even when assuming background construction of Shipyard per the latest construction schedule. However, for the Project Variant, the threshold of significance for transit delay would be exceeded prior to buildout of the Project, assuming background construction of Shipyard per the latest construction schedule.

The construction of the Proposed Project (plus the background construction of CPHPS Major Phase 1) would not create a significant transit delay impact in Year 2022. Project-added transit delay along the Innes Avenue corridor would be just slightly more than three minutes and forty-five seconds in both the AM and PM peak hours, and the expected threshold (based on transit service frequencies) would be 7.5 minutes. However, in the subsequent year 2023, the Proposed Project’s transit delay would constitute a significant impact, with peak-hour bus headways along the corridor expected to decrease to 7.5 minutes, moving the threshold to 3 minutes and 45 seconds.

The construction of the Project Variant (plus the background construction of CPHPS Major Phase 1) would create a significant transit delay impact in both the AM and PM peak hours. This is because the Project Variant’s land use program would generate more vehicle trips overall, and especially in the “peak direction”, which is inbound in the AM and outbound in the PM, in each peak hour. Assuming a linear relationship between the number of “peak direction” project vehicle trips and the amount of project added transit delay, the AM peak hour transit delay impact would occur when land uses generating 1,193 inbound vehicle trips in the AM peak hour would be occupied. The PM peak hour transit delay impact would occur when land uses generating 1,606 outbound vehicle trips in the PM peak hour would be occupied. **Table 7-8** details the vehicle trip generation rates for each land use in both the Proposed Project and the Project Variant, which can be used to calculate whether any particular development would trigger this threshold.

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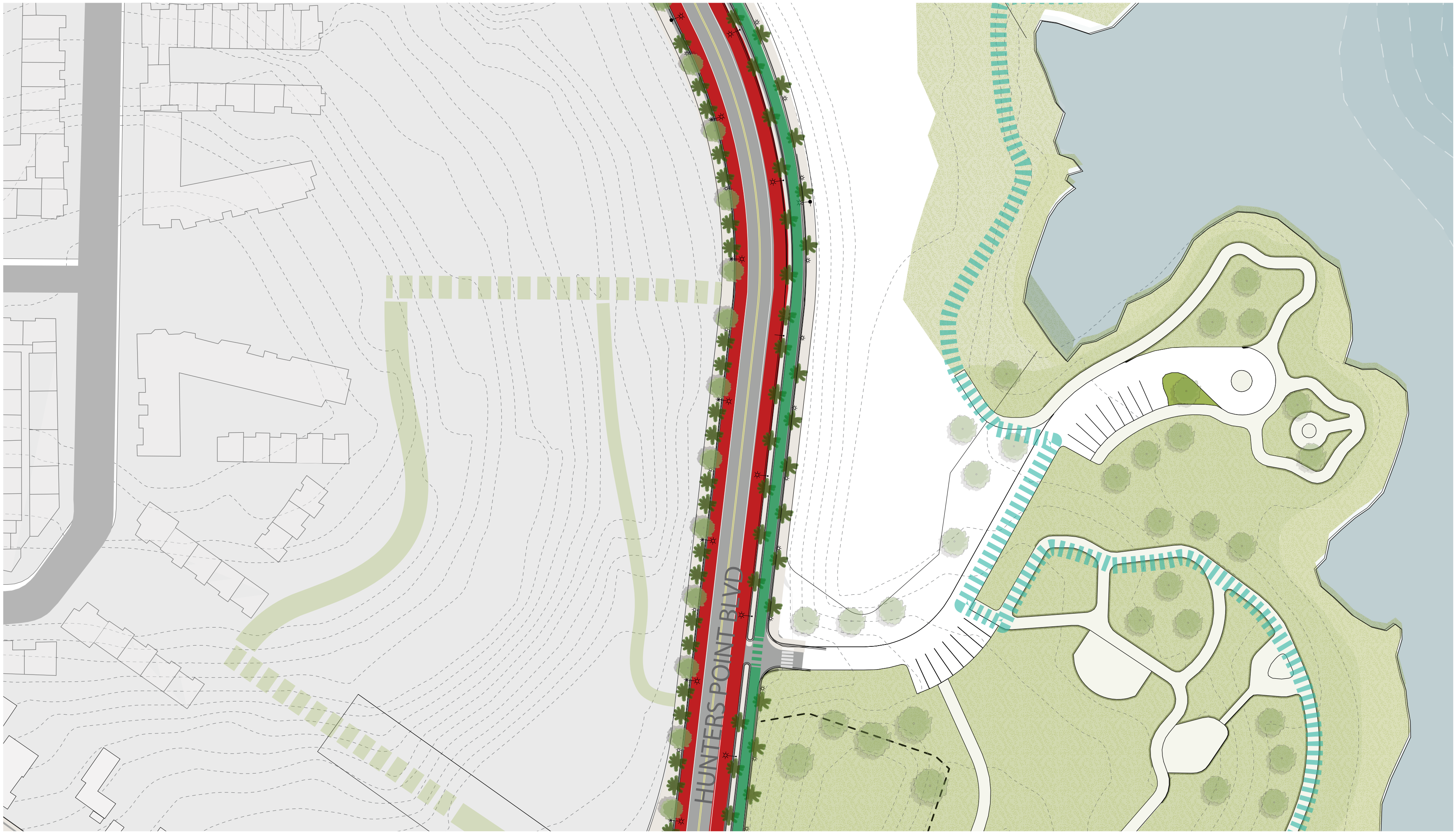
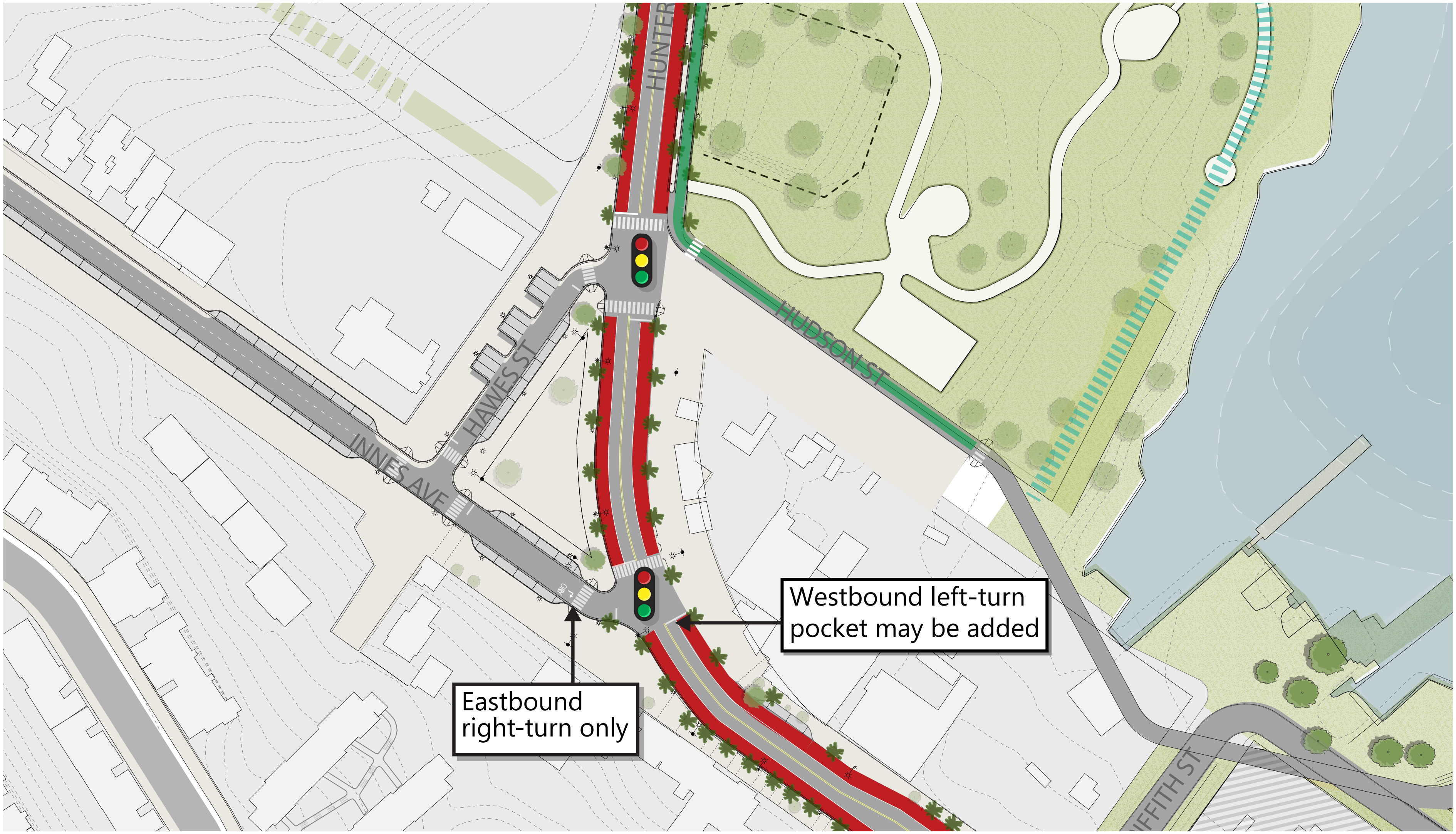


NOT TO SCALE
CONCEPTUAL DRAWING ONLY
DETAILED DESIGN MUST BE COMPLETED
PRIOR TO CONSTRUCTION

Figure 17A

Streetscape Concept
Bus Lane Mitigation Measure - A



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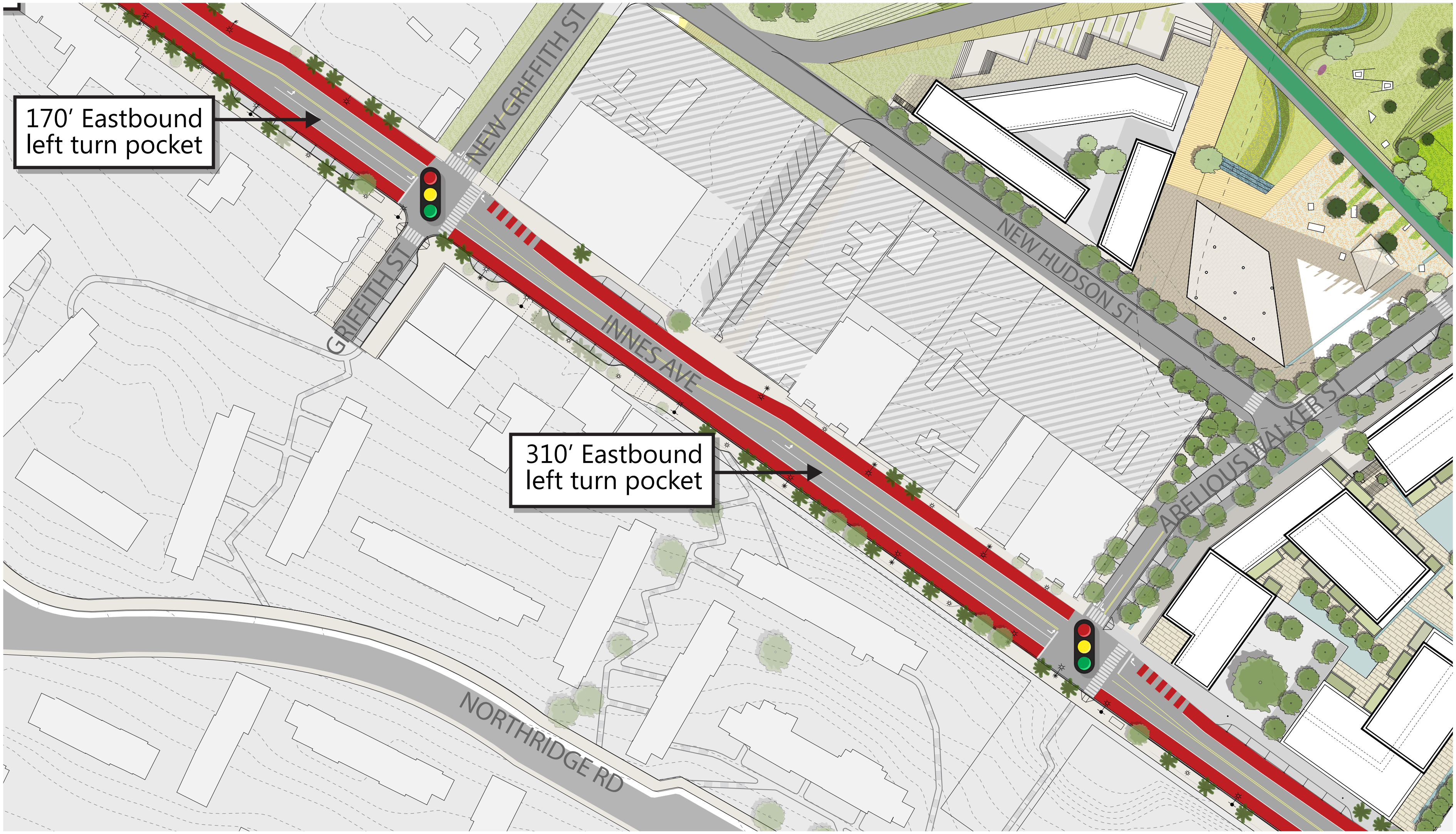
CONCEPTUAL DRAWING ONLY
DETAILED DESIGN MUST BE COMPLETED PRIOR TO CONSTRUCTION

Figure 17B

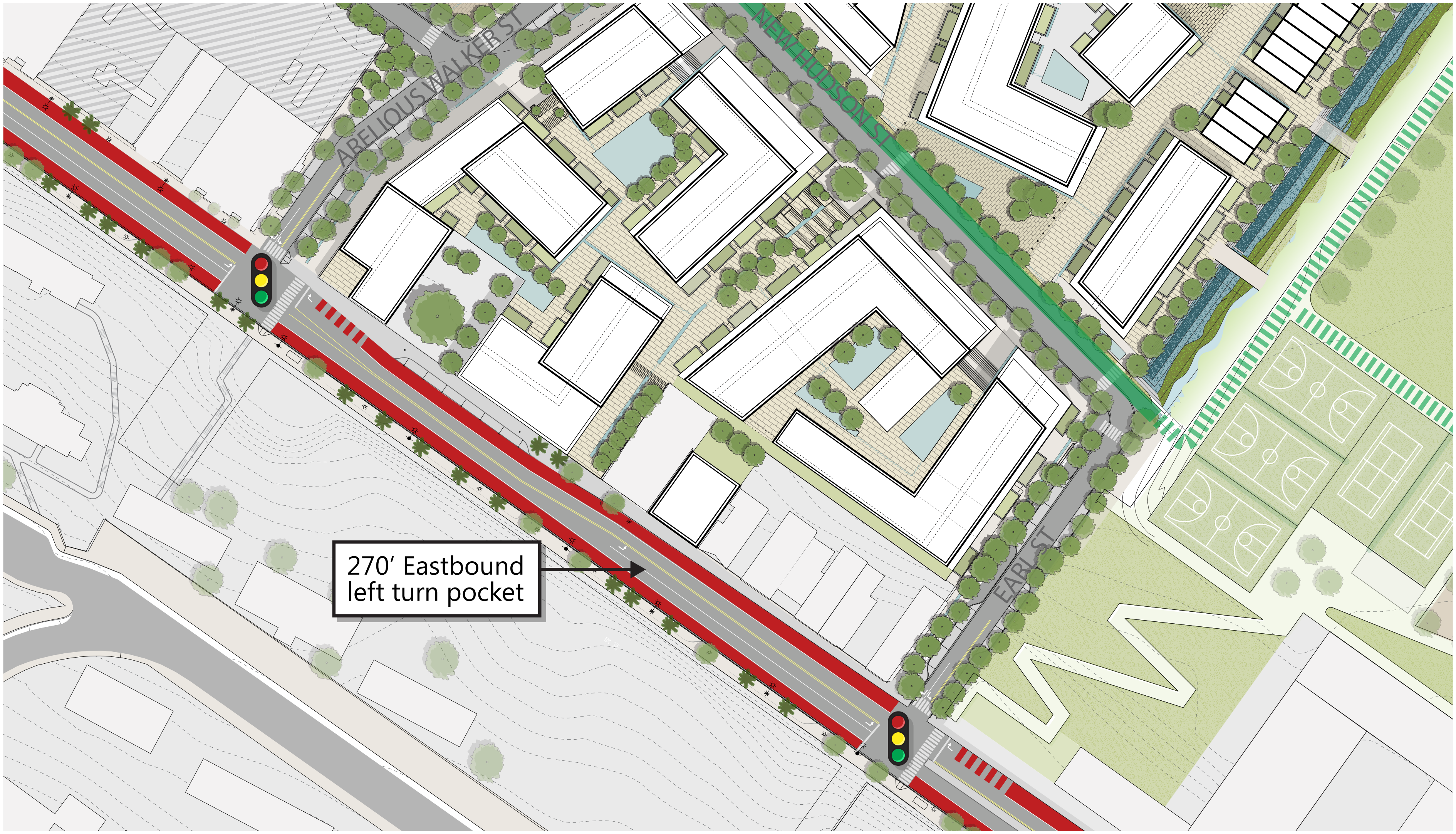
Streetscape Concept
Bus Lane Mitigation Measure - B



NOT TO SCALE
CONCEPTUAL DRAWING ONLY
DETAILED DESIGN MUST BE COMPLETED
PRIOR TO CONSTRUCTION

Figure 17C

Streetscape Concept
Bus Lane Mitigation Measure - C



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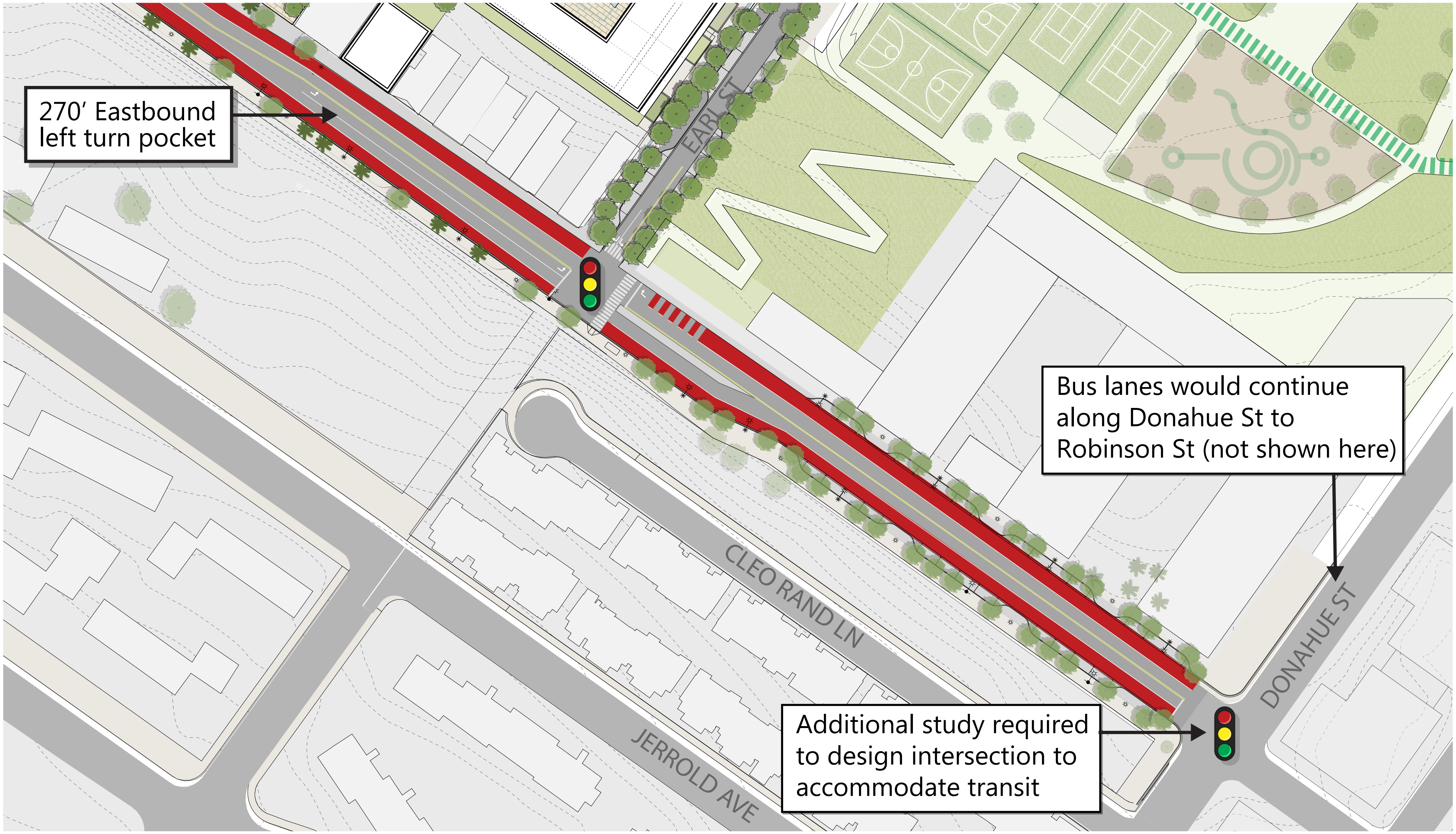
CONCEPTUAL DRAWING ONLY
DETAILED DESIGN MUST BE COMPLETED
PRIOR TO CONSTRUCTION

Figure 17D

Streetscape Concept
Bus Lane Mitigation Measure - D



NOT TO SCALE
CONCEPTUAL DRAWING ONLY
DETAILED DESIGN MUST BE COMPLETED PRIOR TO CONSTRUCTION

Figure 17E

Streetscape Concept
Bus Lane Mitigation Measure - E

TABLE 6-13: MITIGATED CUMULATIVE TRANSIT TRAVEL TIME ALONG STUDY CORRIDOR

Scenario	Travel time (minutes: seconds)[1]	Average Speed (mph)	Change from Cumulative No Project (minutes: seconds)	Change from Cumulative No Project (mph)	Threshold (minutes: seconds)	Exceeds Threshold?
AM Peak Hour						
Cumulative	10:44	16.0	-	-		-
C + P	18:52	9.1	+8:08	-6.9		**Yes**
C + P (mitigated)	10:44	16.0	-	-	+7:30	No
C + V	21:42	7.9	+10:58	-8.1		**Yes**
C + V (mitigated)	10:44	16.0	-	-		No
PM Peak Hour						
Cumulative	11:09	15.4	-	-		-
C + P	26:30	6.5	+15:21	-8.9		**Yes**
C + P (mitigated)	10:44[2]	16.0[2]	-0:25	+0.6	+7:30	No
C + V	27:23	6.3	+16:14	-9.1		**Yes**
C + V (mitigated)	10:44[2]	16.0[2]	-0:25	+0.6		No

Notes:

1. Travel times are the sum of the eastbound and westbound direction along the Evans Avenue–Hunters Point Boulevard–Innes Avenue corridor between Third Street and Donahue Street. See **Appendix L** for detailed calculation sheets.
2. With the addition of the transit-only lane along the Evans Avenue-Hunters Point Boulevard-Innes Avenue corridor, the average bus speed would increase to 16 mph, which is slightly higher than Cumulative No Project conditions (when it would operate in mixed-flow traffic). This higher speed results is a slightly lower travel time.

Source: Fehr & Peers, 2017.

6.5.3 Traffic Performance With Mitigation Measure

The implementation of Mitigation Measure C-M-TR-3 (transit-only lanes along Innes Avenue) to address the significant transit impact under both scenarios is expected to affect traffic operations since a mixed-flow travel lane in each direction would be converted to a transit-only lane, thereby reducing the vehicular capacity of the Innes Avenue corridor. In this section, the changes to traffic conditions along the Evans Avenue—Hunters Point Boulevard—Innes Avenue corridor with the implementation of the transit-only lanes is presented.

TABLE 6-14: CUMULATIVE YEAR TRAFFIC PERFORMANCE MEASURES					
Scenario	**Metric**	**AM**	**AM with C-M-TR-3**	**PM**	**PM with C-M-TR-3**
Eastbound Direction					
C + PP[1]	Demand Served (%)[2]	80%	59%	82%	65%
	Travel Time (min:sec)[3]	2:53	5:47	3:12	6:11
	Queue Length (%)[4]	17%	61%	22%	64%
C + PV	Demand Served (%)	65%	49%	86%	66%
	Travel Time (min:sec)	3:02	5:36	4:05	5:49
	Queue Length (%)	22%	62%	34%	65%
Westbound Direction					
C + PP	Demand Served (%)	84%	69%	63%	54%
	Travel Time (min:sec)	10:28	8:13	15:46	12:12
	Queue Length (%)	78%	63%	100%	62%
C + PV	Demand Served (%)	83%	68%	53%	41%
	Travel Time (min:sec)	11:42	10:16	15:34	11:25
	Queue Length (%)	81%	58%	100%	60%

Notes:

1. C = Cumulative, PP = Proposed Project, PV = Project Variant.
2. Demand served as percentage of input volume served.
3. Travel time is between Jennings Street and Donahue Avenue for non-transit vehicles.
4. Queue length is percentage of capacity as measured by the distance between each intersection. The sum of average queue length in the eastbound through and westbound through direction at each intersection was used.

Source: Fehr & Peers, 2017.

In general, the implementation of Mitigation Measure C-M-TR-3 would result in more traffic congestion (less demand served) which would increase travel times and queue lengths for non-transit vehicles along the corridor.

<u>Eastbound:</u> With the implementation of Mitigation Measure C-M-TR-3, the traffic operations of the corridor deteriorate for non-transit vehicles. The percentage of demand served drops to 50-70 percent (a decrease of 10 to 35 percent) under the Proposed Project and Project Variant Scenarios in the eastbound direction. This is because capacity is constrained along Innes Avenue between Jennings Street and Donahue Avenue since one of the two travel lanes is designated transit-only. As a result, travel times increase to around six minutes for all scenarios, an increase of two to three minutes from previous conditions. Queue lengths also increase to approximately 60 to 65 percent of capacity (about 2,400 to 2,600 feet), an increase of 30 to 45 percent.

<u>Westbound:</u> With the implementation of Mitigation Measure C-M-TR-3, the traffic operations of the corridor deteriorate for non-transit vehicles. The percentage of demand served drops to approximately 70 percent in the AM peak hour (a decrease of 15 percent) and to between 40 to 55 percent in the PM peak hour (a decrease of about 10 to 20 percent). This is because capacity is constrained along Innes Avenue between Jennings Street and Donahue Avenue since one of the two travel lanes is designated transit-only. Travel times decrease to between eight and ten minutes during the AM peak period (a decrease of two to four minutes). While this initially appears to be a counter-intuitive outcome, it is an artifact of the modeling

process. Because capacity is constrained upstream at the intersection of Donahue Street and Innes Avenue, the traffic that does get served travels slightly faster within the corridor, because less traffic is served. Prior to entering the study corridor, travel times are very high as queuing occurs upstream of the bottleneck, but as it is outside of the study segment, it is not considered in the travel time statistics presented. A similar effect occurs in the PM peak hour, with travel times decreasing to between 11 to 12 minutes, a decrease of four to five minutes. As another result of the lower proportion of traffic served, queue lengths decrease to approximately 60 percent (about 2,400 feet) in both the AM and PM peak hours, a decrease of approximately 20 to 40 percent.

6.5.4 Model Limitations

The above transit delay impact analysis is based primarily on microsimulation of traffic flow conducted using SimTraffic software. A limitation of this modeling approach is that vehicle travel demand is not responsive to changing levels of congestion along the corridor. The addition of a transit lane along the entire Evans Avenue–Hunters Point Boulevard–Innes Avenue corridor could result in an increase in transit mode share for work trips. An estimation of this mode shift is presented in **Appendix N**.

6.6 CUMULATIVE BICYCLE IMPACTS

A cumulative bicycle impact would occur if the Proposed Project or Project Variant, in combination with other cumulative changes to land use and transportation infrastructure, would create potentially hazardous conditions for bicyclists, or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.

The addition of the Proposed Project or Project Variant would contribute to bicycle volumes (101 new AM peak trips and 103 new PM peak trips for the Proposed Project; 138 new AM peak trips and 131 new PM peak trips for the Project Variant). Additional bicycle trips would occur due to the completion of CPHPS and background population and job growth. Vehicle volumes in the Project area would also increase in the Cumulative Scenario, due both to background growth, the full completion of CPHPS, and the addition of the Proposed Project or Project Variant.

In the Cumulative Scenario, CPHPS would be completed and either the CPHPS Transportation Plan streetscape improvements or IBTAP streetscape would be constructed. Thus, there would be high-quality bicycle facilities throughout the Project area. The Proposed Project includes new bicycle facilities including a new Class IV bicycle corridor parallel to and north of Innes Avenue, connected with other bicycle facilities in the Project area including the regional Blue Greenway/Bay Trail bicycle/pedestrian network.

Due to the provision of new Class IV bicycle infrastructure, the installation of bicycle infrastructure on roadways including Innes Avenue, and the less-than-significant cumulative traffic hazard impacts, the Proposed Project or Project Variant, in combination with past, present, and reasonably foreseeable development in San Francisco, would not create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility. Therefore, the Proposed Project or Project Variant, in combination with past, present, and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative impacts on bicyclists for the Cumulative Scenario. Given that the IBTAP would retain or improve bicycle circulation compared to the CPHPS Streetscape Cumulative scenario, the Proposed Project or Project Variant, in combination with past, present and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative impacts on bicyclists for the IBTAP scenarios.

As a result, the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, each in combination with past, present and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative impacts on bicyclists for the Cumulative scenario and IBTAP scenarios.

6.7 CUMULATIVE PEDESTRIAN IMPACTS

As indicated in Section 5.7, the Proposed Project and Project Variant would generate between 461 and 1,013 pedestrian trips during the AM and PM peak hours. The Proposed Project would improve pedestrian circulation adjacent to the Project Site by creating new sidewalks and adding to the Blue Greenway. All internal site roadways would have continuous sidewalks. Curb extensions are planned at key locations on corners and mid-block locations wherever feasible in order to increase pedestrian visibility, shorten crossing distance, and decrease vehicle speeds. New crosswalks are included as part of the Proposed Project, aiding pedestrian circulation. Although the CPHPS project to the east could contribute to demand for the surrounding pedestrian network, it would provide new facilities in the vicinity which would improve the overall pedestrian network. Additionally, CPHPS is not located close enough to the Proposed Project such that generated walking trips would frequently overlap and overcrowd the adjacent facilities.

For the above reasons, the Proposed Project, in combination with past, present and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative impacts on pedestrians for the Cumulative Scenario. Given that the IBTAP would retain or improve pedestrian circulation compared to the CPHPS Streetscape Cumulative Scenario, the Proposed Project, in combination with past, present and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative impacts on bicyclists for the IBTAP scenarios.

6.8 CUMULATIVE LOADING IMPACTS

Loading impacts are by their nature localized and site-specific, and they would not contribute to impacts from other development projects near the Project Site. While this is not true every time a proposed project aims to meet loading demand in the public right-of-way in a densely developed area, it applies to the Proposed Project and Project Variant given the site conditions and conditions across the street (steep hillside without development). The Proposed Project and the Project Variant are both expected to provide adequate loading facilities for the anticipated demand. In addition, there are some existing businesses along Innes Avenue that will be retained with construction of the Proposed Project. These businesses currently load off-street or in on-street parking spaces, and this arrangement is expected to continue upon construction of the Proposed Project. Therefore, the Proposed Project and Project Variant, in combination with past, present and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative loading impacts. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

6.9 CUMULATIVE EMERGENCY ACCESS IMPACTS

In this section, the impacts for the Project Variant would be the same as for the Proposed Project.

While there would be a general increase in vehicle traffic that is expected through the future scenario, the Proposed Project would not create potentially hazardous conditions for emergency vehicles, or otherwise interfere with emergency vehicle accessibility to the site and adjoining areas. For the above reasons, either the Proposed Project, in combination with past, present and reasonably foreseeable development in San

Francisco, would have **less-than-significant** cumulative emergency access impacts. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

6.10 CUMULATIVE CONSTRUCTION IMPACTS

In this section, the impacts for the Project Variant would be the same as for the Proposed Project.

The construction of the Proposed Project may overlap with the construction of other projects listed in Section 6.1.1. Since the Shipyard development project will be under construction for the next several years and it would also take several years for the Proposed Project to be constructed, it is likely that construction activities for these two projects would occur simultaneously and over a long period of time. Localized cumulative construction-related transportation effects could occur as a result of cumulative projects that generate increased traffic at the same time and on the same roads as the Proposed Project in close proximity to one another.

Improvement Measure I-TR-3, Construction Management (discussed in Section 5.10), would apply to the Proposed Project. The construction manager for each project will work with the various departments of the City and develop a coordinated plan to address construction vehicle routing, traffic control, and pedestrian movement adjacent to the construction area for the duration of any overlap in construction activity. As mentioned, because of the size of the Project Site, much of the construction activity can be completed on-site. In addition to any formal transportation construction management plan, the Proposed Project's construction would comply with the SFMTA *Regulations For Working In San Francisco Streets*, also known as the "Blue Book," and all other applicable City regulations.

Construction activities for the SFPUC Southeast Treatment Plant Biosolids and Headworks replacement projects would likely overlap with construction of the Proposed Project. These two projects may result in construction staging activity at Piers 94 and 96 near the Project Site. Trips between this staging site and the PUC Project Site would occur along Evans Avenue, as the PUC Project Site is located east of the Caltrain right-of-way between Evans Avenue and Jerrold Avenue. Construction for the SFPUC Southeast Treatment Plan Biosolids project would occur from August 2018 through May 2024. There would be 60 daily delivery truck trips and 142 construction truck trips daily during the peak month of construction. The SFPUC would prepare and implement a Traffic Control Plan to minimize impacts on local streets.[73] Construction for the Headworks replacement project will occur between August 2017 and December 2023. The number of daily truck trips will vary based on the phase of construction, and the maximum number of daily trips will be 24 daily truck trips during the improvements to the Bruce Flynn Pump Station, occurring between January 2018 and January 2019.[74] The PUC construction site is 0.7 miles northwest of the India Basin Project Site.

The Proposed Project's contribution to cumulative construction impact would not be cumulatively considerable as the construction would be of temporary duration, and the Project Sponsor would coordinate with various City departments such as SFMTA and DPW through the Transportation Advisory Staff Committee (TASC) to develop coordinated plans that would address construction-related vehicle routing and pedestrian movements adjacent to the construction area for the duration of construction

[73] *Biosolids Digester Facilities Project: Draft Environmental Impact Report – Volume 1*. May 2017. San Francisco Planning Department Case No. 2015-000644ENV.

[74] *Southeast Plan Headworks Replacement Project: Preliminary Mitigated Negative Declaration*. November 2016. San Francisco Planning Department Case No. 2015-006224ENV

overlap. Therefore, for the above reasons, the Proposed Project, in combination with past, present and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative construction-related transportation impacts. As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant**.

6.11 CUMULATIVE PARKING IMPACTS

In this section, the impacts for the Project Variant would be the same as for the Proposed Project.

The area under consideration for cumulative parking impacts is the portion of the street network within a 5 to 10 minute walk from the Project Site (approximately 1,300 to 2,600 feet). This is also the area used for data collection for existing parking conditions.

The parking conditions for Cumulative Plus Project are the same as the Baseline Plus Project scenario, with 218 on-street spaces in the area under consideration. The IBTAP Scenarios Plus Project and would reduce parking by 127 on-street spaces in the portion of the street network under consideration, compared with Cumulative Plus Project conditions. While IBTAP Subvariant B would also remove a parking lane on Jennings Street between Cargo Way and Evans Avenue resulting in the loss of approximately 45 spaces, this is outside of the parking area under consideration. Both of these IBTAP scenarios would reduce the total parking spaces to 91 in the Cumulative Plus Project condition. **Table 6-15** summarizes the on-street parking supply adjacent to and internal to the Project Site under each scenario.

Because the Proposed Project represents the only substantial new development in this area and its TDM measures would reduce parking demand associated with new project residents and employees, and because existing parking demand was not in excess of supply, the Proposed Project would not result in a substantial parking deficit for on-street and off-street parking . Therefore, cumulative impacts related to parking would be **less-than-significant** under the Cumulative Scenario. Even with the comparatively fewer on-street parking spaces, cumulative impacts related to parking would be **less-than-significant** under the IBTAP scenarios.

As a result, the impacts from the individual parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would also be **less-than-significant** under the Cumulative, IBTAP scenarios.

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TABLE 6-15: ON-STREET PARKING SUPPLY							
	Innes Avenue				Internal		
From:	Hunters Point Boulevard[1]	Griffith Street	Arelious Walker Drive	Earl Street	Build Property	RPD Property	*Total*
To:	Griffith Street	Arelious Walker Drive	Earl Street	Donahue Street			
Existing Conditions	37	56	57	59	95	18	*322*
Baseline	37	56	57	59	95	18	*322*
Baseline Plus Project	33	46	48	46	20	25	*218*
Cumulative Scenario Plus Project	33	46	48	46	20	25	*218*
IBTAP Scenarios	8	7	6	25	20	25	*91*

Notes:
1. Hunters Point Boulevard does not contain any on-street parking spaces in any scenario.

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7 INTERSECTION OPERATIONS

In this chapter, the operating characteristics of seven study intersections are evaluated, for informational purposes, using the concept of Level of Service ("LOS"). LOS is a quantitative description of an intersection's performance based on the average delay per vehicle. Intersection levels of service range from LOS A, which indicates free flow or excellent vehicle flow conditions with short delays, to LOS F, which indicates congested or overloaded vehicle flow conditions with extremely long delays. LOS is a generally-accepted metric to classify vehicle delay. In San Francisco, LOS is sometimes used to communicate levels of congestion. The intersections were evaluated using the 2000 Highway Capacity Manual (HCM) methodology. For signalized intersections, this methodology determines the capacity for each lane group approaching the intersection. The LOS is based on average delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average delay and LOS is presented for the intersection. **Appendix O** presents more detailed level of service descriptions for the study intersections.

Traffic operations at signalized intersections are evaluated using the LOS method described in Chapter 16 of the HCM. A signalized intersection's LOS is based on the weighted average control delay measured in seconds per vehicle and includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. **Table 7-1** summarizes the relationship between the control delay and LOS for signalized intersections.

TABLE 7-1: SIGNALIZED INTERSECTION LEVEL OF SERVICE CRITERIA

Level of Service	Description	Average Control Delay (seconds per vehicle)
A	Operations with very low delay occurring with favorable traffic signal progression and/or short cycle lengths.	< 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 to 20
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20 to 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35 to 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 to 80
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80

Source: *Highway Capacity Manual, Transportation Research Board,* 2000.

Traffic conditions at unsignalized intersections are evaluated using the method in Chapter 17 of the HCM. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. For all-way stop-controlled intersections, the average control delay is calculated for the intersection as a whole. At two-way or side street-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left turn movement from the major street, and the entire intersection, though only the delay for the worst movement is reported. **Table 7-2** summarizes the relationship between delay and LOS for unsignalized intersections.

TABLE 7-2: UNSIGNALIZED INTERSECTION LEVEL OF SERVICE CRITERIA

Level of Service	Description	Average Control Delay (seconds per vehicle)
A	Little or no delays	< 10
B	Short traffic delays	> 10 to 15
C	Average traffic delays	> 15 to 25
D	Long traffic delays	> 25 to 35
E	Very long traffic delays	> 35 to 50
F	Extreme traffic delays with intersection capacity exceeded	> 50

Source: *Highway Capacity Manual, Transportation Research Board*, 2000.

7.1 EXISTING CONDITIONS

The traffic analysis evaluates the existing operational characteristics during the weekday AM and PM peak hours without the introduction of project-generated vehicle trips. The AM and PM peak hours occur within the peak periods of 7:00 AM to 9:00 AM and 4:00 to 6:00 PM, respectively. The selection of the seven intersections was made primarily to assess the effect of Project traffic on intersections near the Project Site through which Muni operates bus and light rail service. These intersections were selected based on consultation with City staff.

1. Evans Avenue/Third Street
2. Evans Avenue/Jennings Street
3. Hunters Point Boulevard/Hudson Avenue/Hawes Street
4. Innes Avenue/Hunters Point Boulevard
5. Innes Avenue/Griffith Street
6. Innes Avenue/Arelious Walker Drive
7. Innes Avenue/Earl Street

Figure 18 displays the existing AM and PM peak hour traffic volumes for the seven study intersections, obtained from peak period traffic counts collected in May 2015 and August 2016. Counts were not taken at Intersection #3 or Intersection #5 because side-streets are currently very minor streets with negligible traffic volumes. Instead, the analysis assumes through volumes balance with traffic at adjacent intersections and that side-streets have five vehicles entering and exiting to/from each direction, estimated based on observations. This figure also displays the lane configurations and traffic controls (signals, stop signs, etc.) at each intersection. Traffic volume and intersection turning movement count summary sheets are provided in **Appendix P**.

LOS was calculated at each study intersection for the weekday AM and PM peak hours. Table **7-3Table 7-3** presents the resulting LOS and corresponding delay at each study intersection. As shown in the table, all seven study intersections currently operate at LOS D or better during the AM and PM peak hours. The highest delay occurs at Evans Avenue/Third Street with LOS D during the PM peak hour.

Signal warrant analysis for unsignalized study intersections shows that none of the four unsignalized intersections currently meets peak hour warrants for signalization under existing conditions.[75]

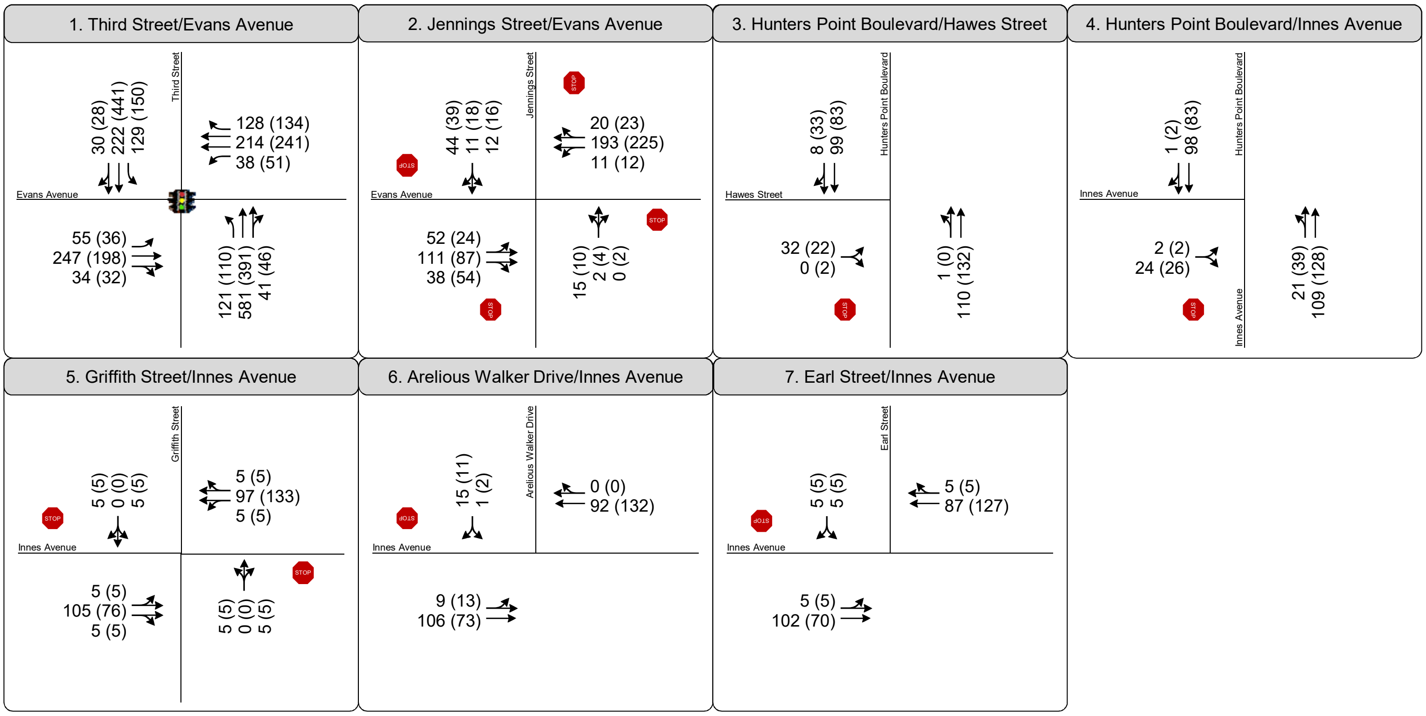
TABLE 7-3: PEAK HOUR INTERSECTION LEVELS OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Average Delay[1]	LOS[2]	Average Delay[1]	LOS[2]
1. Evans Ave /Third St	Signal	38	D	36	D
2. Evans Ave/Jennings St	AWSC	<10	A	<10	A
3. Hudson Avenue/Hunters Point Boulevard/Hawes Street	SSSC	<10 (EB)	A	<10 (EB)	A
4. Innes Avenue/Hunters Point Boulevard	SSSC	<10 (EB)	A	<10 (EB)	A
5. Innes Ave/Griffith St	SSSC	12 (SB[3])	A	12 (SB)	B
6. Innes Ave/Arelious Walker Drive	SSSC	<10 (SB)	A	10 (SB)	A
7. Innes Ave/Earl St	SSSC	10 (SB)	B	11 (SB)	B

Notes:
1. Delay reported as seconds per vehicle.
2. For signalized intersections, LOS based on average intersection delay, based on the methodology in the Highway Capacity Manual, 2000. For unsignalized intersection, LOS is based on the worst approach which is indicated in parentheses. For signalized intersections operating at LOS F, volume-to-capacity (v/c) ratio is also presented.
3. Southbound approach represents private driveway which was observed during site visit to have some trips entering and exiting.

Source: Fehr & Peers, 2016.

[75] Note that meeting the peak hour signal warrant criteria is not necessarily indicative of the need for a traffic signal. A number of additional factors such as hourly traffic variation, traffic safety, and pedestrian volumes should be considered and the ultimate decision made by the City Traffic Engineer (and Caltrans where the intersection is ramp junction to a Caltrans facility). However, it is a reasonable indication of whether a signal may be worth investigating further and is presented here for informational purposes only.



Turn Lane

AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 18

Peak Hour Traffic Volumes and Lane Configuration - Existing

7.2 BASELINE CONDITIONS

Figure 19 displays the Baseline No Project peak hour traffic volumes for the peak periods studied, lane configurations and traffic controls (signal or stop) at each study intersection. These volumes reflect the only nearby project that has either been approved, is under construction, or has been built since the counts were collected: Hunters Point Shipyard Phase I.

Table 7-4 presents the results of the Baseline Conditions intersection LOS analysis and corresponding delay at each study intersection for the study weekday peak periods. The intersection of Evans Avenue/Jennings Street is assumed to be signalized in the Baseline Scenario as this is a measure approved and funded as part of the Shipyard project.

As shown in the table, all of the study intersections would operate at LOS D or better during the AM and PM peak hours. Intersection level of service calculation sheets are provided in **Appendix O**.

None of the three unsignalized intersections meet peak hour warrants for signalization under baseline conditions.[76]

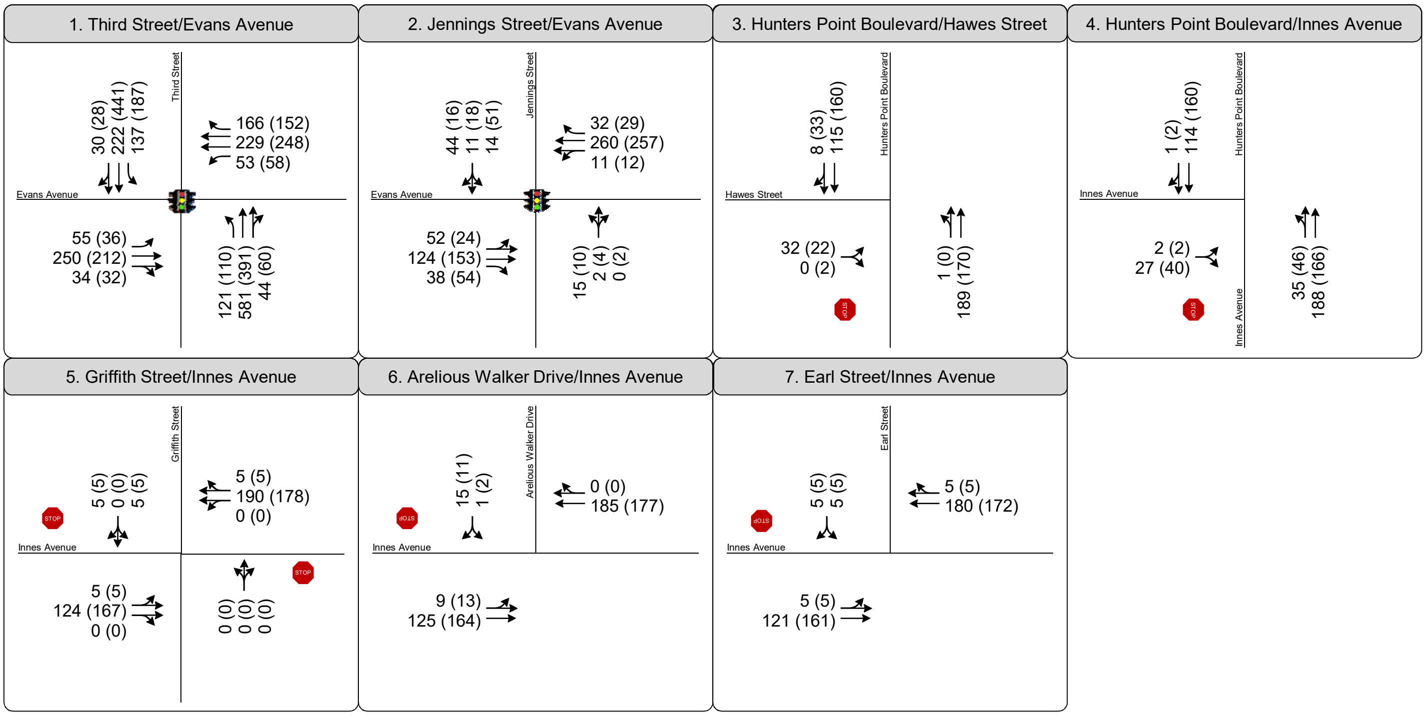
TABLE 7-4: PEAK HOUR INTERSECTION LEVELS OF SERVICE – BASELINE CONDITIONS

Intersection	Traffic Control	Existing				Baseline			
		AM		PM		AM		PM	
		Avg. Delay[1]	LOS[2]	Avg. Delay[1]	LOS[2]	Avg. Delay[1]	LOS[2]	Avg. Delay[1]	LOS[2]
1. Evans Ave/Third St	Signal	38	D	36	D	39	D	39	D
2. Evans Ave/Jennings St	***Signal***[3]	<10	A	<10	A	10	B	11	B
3. Hudson Avenue/ Hunters Point Boulevard/ Hawes Street	SSSC	<10 (EB)	A	<10 (EB)	A	10 (EB)	B	11 (EB)	B
4. Innes Avenue/ Hunters Point Boulevard	SSSC	<10 (EB)	A	<10 (EB)	A	<10 (EB)	A	<10 (EB)	A
5. Innes Ave/Griffith St	SSSC	12 (SB[3])	B	12 (SB)	B	13 (SB)	B	13 (SB)	B
6. Innes Ave/Arelious Walker Dr	SSSC	<10 (SB)	A	10 (SB)	A	10 (SB)	B	10 (SB)	B
7. Innes Ave/Earl St	SSSC	10 (SB)	B	11 (SB)	B	11 (SB)	B	11 (SB)	B

Notes:
Bold and italics indicates traffic control type change for Baseline compared to Existing.

1. Delay reported as seconds per vehicle. For unsignalized intersections, delay at worst case approach is shown.
2. LOS = Level of Service. For signalized intersections, LOS based on average intersection delay, based on the methodology in the *Highway Capacity Manual*, 2000.
3. Signalization of this intersection is a mitigation measure that FivePoint is committed to implementing as part of the Shipyard project.

[76] *ibid*.



Turn Lane

AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 19

Peak Hour Traffic Volumes and Lane Configuration - Baseline

7.3 INNES AVENUE INTERSECTION DESIGN

The Project Site is located next to Innes Avenue adjacent to the existing unsignalized intersections at Griffith Street, Arelious Walker Drive, and Earl Street. The Proposed Project would add a fourth leg to the existing intersection at Griffith Street; the new leg to the north of Innes Avenue would also be named Griffith Street. These three intersections (#5 Griffith Street, #6 Arelious Walker Drive, and #7 Earl Street) would provide access to the site. Although the Innes Avenue corridor has been studied for several years, and plans have generally anticipated development at India Basin, no specific details regarding the India Basin project's travel demand or roadway configurations had been developed. Thus, prior studies were not able to account for the specifics of the Proposed Project. In this study, designs for the three intersections (#5 Griffith Street, #6 Arelious Walker Drive, and #7 Earl Street) have been developed using a microsimulation analysis and volume forecasts from the Cumulative Scenario, which includes full buildout of the Proposed Project and the Shipyard. The cumulative project scenarios were chosen because they reflect the ultimate volumes that the intersections would be required to handle beyond the Proposed Project buildout. The chosen designs are consistent with what is feasible within the existing right-of-way along Innes Avenue.

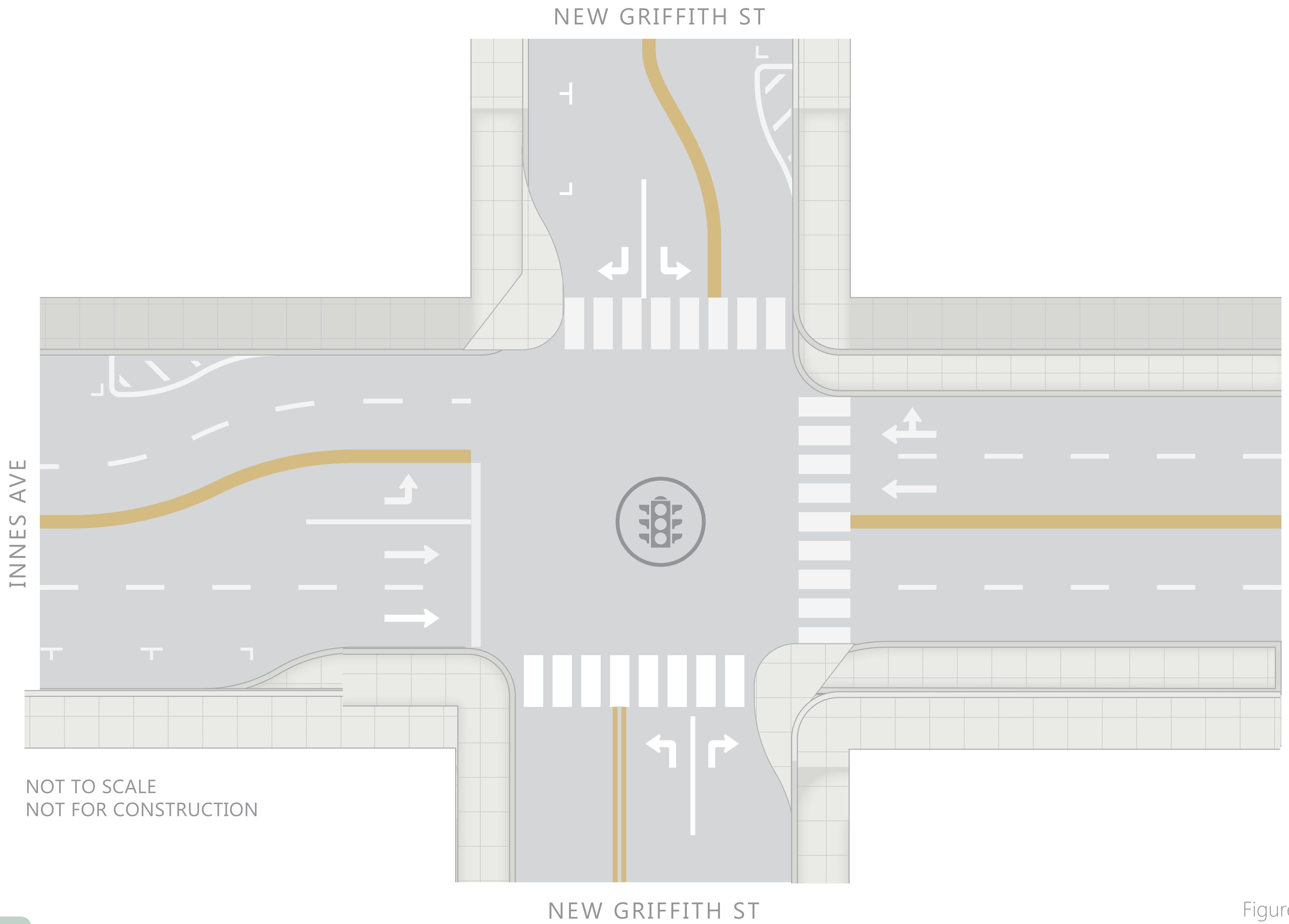
The microsimulation software used, SimTraffic, captures the effects of nearby intersections since the movement of individual vehicles is modeled through the network. Because the three intersections are spaced closely together and there is a high volume of traffic expected in the future, the microsimulation approach provides the ability to tailor a design that works optimally with future traffic conditions accounting for the ways in which closely-spaced intersections affect each other and operate as a single system.

Thus, the Plus Project information presented later in this chapter include the proposed intersection designs, whose features are as follows, and whose conceptual designs are shown in **Figure 20A**, **20B**, and **20C**, below:

  - o All three intersections are signalized with a cycle length capped at 100 seconds. Signals are coordinated for traffic along Innes Avenue (eastbound and westbound).[77]
  - o Eastbound left turn pocket at all three intersections. Pocket length varies.
  - o Southbound left turn pocket at all three intersections. Pocket length varies.
  - o At the intersection of Innes Avenue/Arelious Walker Drive, the southbound right turn movement would have an overlap phase with the eastbound left turn phase.
  - o Crosswalks on the north and east legs of the intersections, but not on the west leg.

- Project Variant Only:
  - o In addition to the above, at the intersections of Innes Avenue/Griffith Street and Innes Avenue/Earl Street, the southbound right turn movement would have an overlap phase with the eastbound left turn phase.

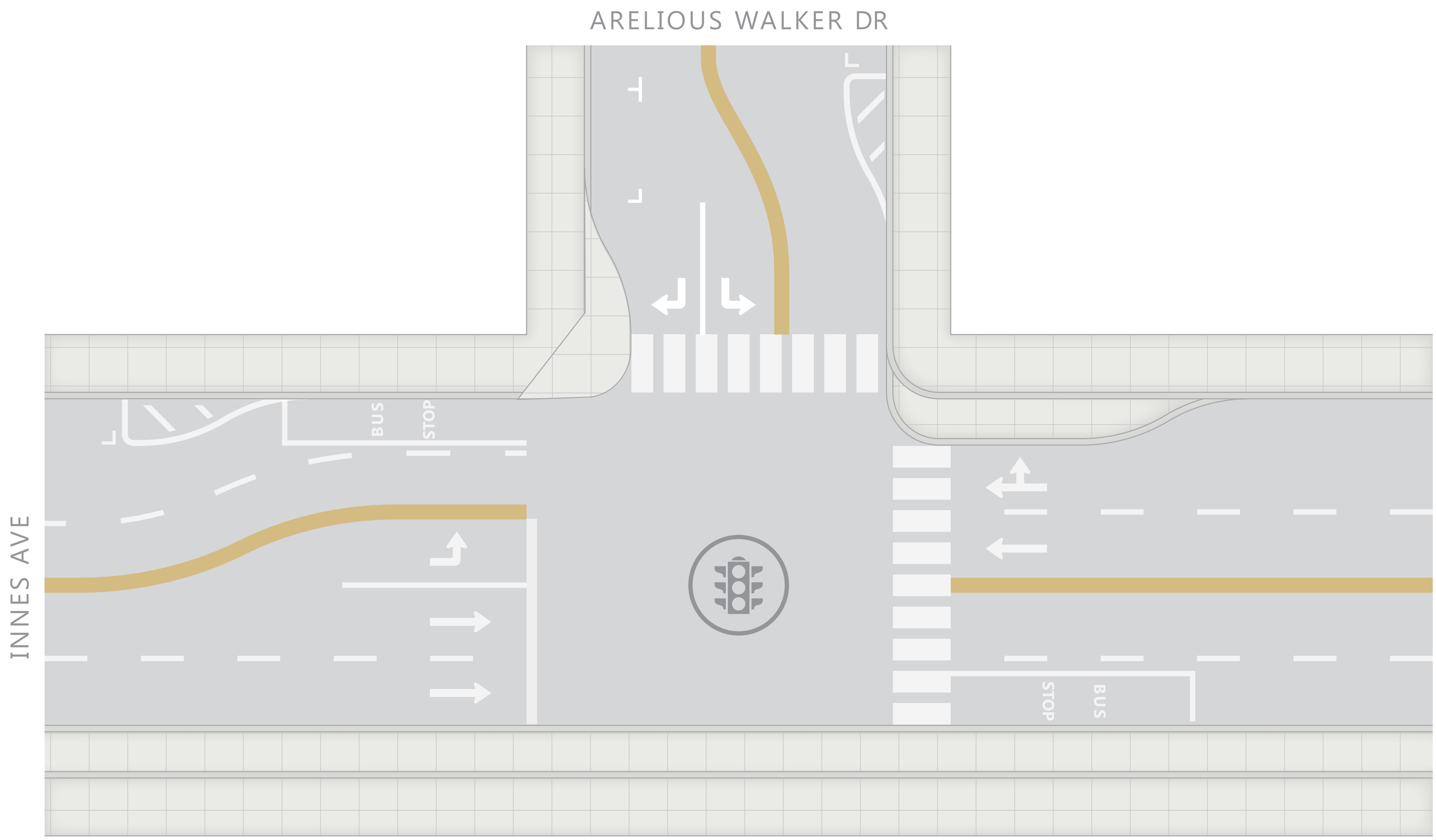
[77] It is noted that SFMTA would need to coordinate these three traffic signals on Innes Avenue with the two proposed signals at Hunters Point Blvd/Hawes Street/Hudson Avenue and Innes Avenue/Hunters Point Boulevard.



NOT TO SCALE
NOT FOR CONSTRUCTION

Figure 20A

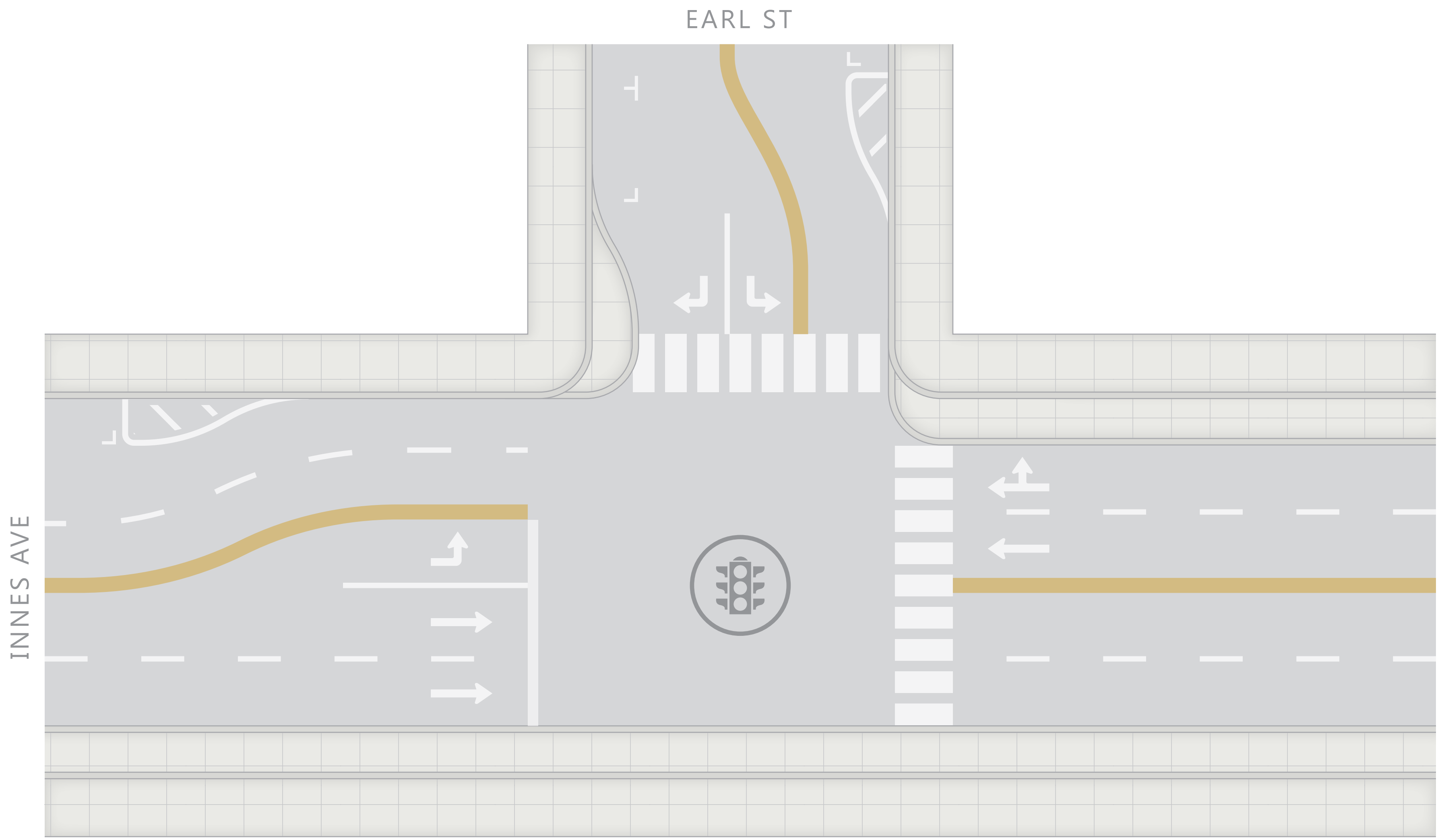
Innes Avenue Intersection Designs:
Innes Avenue/New Griffith Street



NOT TO SCALE
NOT FOR CONSTRUCTION

Figure 20B

Innes Avenue Intersection Designs: Innes Avenue/Arelious Walker Drive



NOT TO SCALE
NOT FOR CONSTRUCTION

Figure 20C

Innes Avenue Intersection Designs:
Innes Avenue/Earl Street

The design process was iterative, with the delay and queuing results used to guide configuration decisions. The Project will include eastbound-left turn pockets and signalization at all three intersections to facilitate site access. The Project will also include southbound left turn pockets at each intersection, to provide the flexibility to implement a southbound right turn overlap phase with the eastbound left turn movement in order to better serve traffic outbound from the site while maintaining efficient operations for Innes Avenue. Since the Cumulative condition contains traffic conditions which are more congested than under Baseline, the project vehicles entering and exiting the site were slightly redistributed compared to project volumes presented in the Baseline plus Proposed Project and Baseline plus Project Variant sections in order to approximate long run equilibrium approach delays across the three streets.

The delay and LOS results for the proposed design scenarios are shown in **Table 7-5** below. These results are intended for informational purposes with the intent of comparing the overall traffic operations of the two scenarios.

As shown in the table, traffic operations under the Proposed Project Scenario are generally better than under the Project Variant Scenario, with lower delays along Innes Avenue and at the side-street movements. This is primarily because the Proposed Project Scenario has a mix of land uses that provides for a more balanced flow of traffic into and out of the Project Site during both peak hours. In contrast, the Project Variant Scenario has significantly more office and R&D space which results in an unbalanced flow of traffic into the site in the morning and leaving the site in the afternoon (as well as a higher overall amount of vehicle trip generation).

In general, both scenarios operate at LOS D or better during the AM peak period, while the PM peak period experiences more congested conditions. During the PM peak, the westbound through and southbound movements (i.e. traffic exiting the Project Site) typically operate at LOS E or F at the intersections of Innes Avenue/Arelious Walker Drive and Innes Avenue/Earl Street. This is due to the high volume of demand to exit the site and travel westbound combined with the traffic from other developments already forecasted to travel westbound along Innes Avenue from Hunters Point. While the signals would be coordinated for traffic traveling along Innes Avenue, there is an additional tradeoff made in the decision of how to allocate green time between conflicting movements. This analysis assumes signal timing decisions would be made primarily to favor traffic and transit flows along Innes Avenue at the expense of additional side street delay. Despite this, the splits could be modified to further prioritize Innes Avenue, which would come at the expense of additional, severe delay on the project-internal side streets.

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TABLE 7-5: SIMTRAFFIC DELAY RESULTS FOR INTERSECTIONS ADJACENT TO THE PROJECT

Movement	Griffith Street/Innes Avenue		Arelious Walker/Innes Avenue		Earl Street/Innes Avenue	
	AM	PM	AM	PM	AM	PM
Cumulative No Project						
EBT	<10 / A	<10 / A	<10 / A	12 / B	<10 / A	12 / B
EBL	12 / B	22 / C	13 / B	26 / C	13 / B	25 / C
WBT	<10 / A	<10 / A	<10 / A	<10 / A	<10 / A	<10 / A
SBR	<10 / A	<10 / A	<10 / A	12 / B	<10 / A	<10 / A
SBL	12 / B	13 / B	13 / B	16 / B	15 / B	16 / B
Intersection Average	*<10 / A*	*<10 / A*	*<10 / A*	*<10 / A*	*<10 / A*	*11 / B*
Cumulative Plus Proposed Project						
EBT	<10 / A	<10 / A	<10 / A	<10 / A	<10 / A	<10 / A
EBL	46 / D	42 / D	47 / D	48 / D	40 / D	23 / C
WBT	13 / B	29 / C	21 / C	73 / E	19 / B	86 / F
SBR	27 / C	240 / F	19 / B	49 / D	19 / B	160 / F
SBL	32 / C	186 / F	35 / D	57 / E	28 / C	146 / F
Intersection Average	*13 / B*	*40 / D*	*19 / B*	*48 / D*	*19 / B*	*70 / E*
Cumulative Plus Project Variant						
EBT	<10 / A	<10 / A	<10 / A	<10 / A	<10 / A	<10 / A
EBL	32 / C	67 / E	34 / C	44 / D	34 / C	19 / B
WBT	15 / B	28 / C	17 / B	87 / F	23 / C	229 / F
SBR	18 / B	300 / F	19 / B	295 / F	12 / B	198 / F
SBL	34 / C	275 / F	34 / C	301 / F	33 / C	206 / F
Intersection Average	*14 / B*	*56 / E*	*16 / B*	*100 / F*	*19 / B*	*138 / F*

Source: Fehr & Peers, 2016

7.3.1.1 Figure Intersection Queuing

In developing the proposed design, the turn pocket storage lengths were generally designed to accommodate the average and 95th-percentile queues, where possible. However, in some cases, such as at the intersections of Innes Avenue/Griffith Street and Innes Avenue/Arelious Walker Drive, the storage length was curtailed because the turn pocket could only be extended as far as the adjacent upstream intersection. Due to the constrained right-of-way available along Innes Avenue and the side streets, the inclusion of turn pockets would require the removal of some on-street parking spaces as shown in Section 5.11.2. **Table 7-6** below presents the design storage length, estimated number of parking spaces removed along Innes Avenue to accommodate the turn pocket (for informational purposes), and average and 95th-percentile queuing results for the Plus Proposed Project and Plus Project Variant Scenarios. Figures showing the 95th-percentile queue lengths at each intersection for the Plus Proposed Project and Plus Project Variant Scenarios are provided in **Appendix Q**.

In almost all cases, the average queue lengths along Innes Avenue are accommodated by the storage length provided. The exception is the westbound approach at Innes Avenue/Earl Street in the PM for the Cumulative Plus Project Variant Scenario. In all cases, the average southbound side-street queues exceed storage length. Eastbound-left 95th percentile queues along Innes Avenue are generally accommodated by the turn pockets, with three exceptions where they exceed slightly (Griffith Street for both scenarios).

TABLE 7-6: PEAK HOUR INTERSECTION QUEUE RESULTS (CUMULATIVE PLUS PROPOSED PROJECT)					
Intersection	**Movement**	**Storage Length (feet)**	**Parking Spaces Removed Along Innes**	**Queue Length (feet)**	
				Average[1]	**95th Percentile[1]**
Cumulative No Project					
(#5) Innes Avenue / Griffith Street	EBT/L	190	N/A	100	180
	WBT/R	375		100	190
	SBL/R	200[2]		10	40
(#6) Innes Avenue / Arelious Walker Drive	EBT/L	375	N/A	130	210
	WBT/R	630		90	180
	SBL/R	190[2]		20	50
(#7) Innes Avenue / Earl Street	EBT/L	630	N/A	140	220
	WBT/R	600		160	300
	SBL/R	160		20	40
Cumulative Plus Proposed Project					
(#5) Innes Avenue / Griffith Street	EBL	160[2]	4	110	**170**
	EBT	190	-	140	**220**
	WBT/R	375	-	310	**420**
	SBL	200[2]		70	**230**
	SBR	200[2]		**580**	**1,020**
(#6) Innes Avenue / Arelious Walker Drive	EBL	350	9	220	310
	EBT	375	-	80	180
	WBT/R	630	-	570	**720**
	SBL	180		60	180
	SBR	190[2]		**250**	**440**
(#7) Innes Avenue / Earl Street	EBL	390	7	170	270
	EBT	630	-	100	170
	WBT/R	600	-	480	**780**
	SBL	160		60	**190**
	SBR	290[2]		**490**	**1,030**

Cumulative Plus Project Variant					
(#5) Innes Avenue / Griffith Street	EBL	160[2]	4	150	**210**
	EBT	190	-	170	**280**
	WBT/R	375	-	320	**410**
	SBL	200[2]		60	**210**
	SBR	200[2]		**960**	**1,410**
(#6) Innes Avenue / Arelious Walker Drive	EBL	280	7	170	260
	EBT	375	-	80	170
	WBT/R	630	-	610	**650**
	SBL	190		100	**250**
	SBR	190[2]		**1,320**	**1,360**
(#7) Innes Avenue / Earl Street	EBL	330	6	200	310
	EBT	630	-	90	190
	WBT/R	600	-	**630**	**650**
	SBL	210		70	**230**
	SBR	290[2]		**1,180**	**1,760**

Notes:
1. **Bold** indicates queue lengths that extend beyond the available storage. Queues reported are the worst case across AM and PM peak hours.
2. The storage length for this movement indicates the maximum possible storage before queues spillback into the adjacent upstream intersection.

Source: Fehr & Peers, 2016

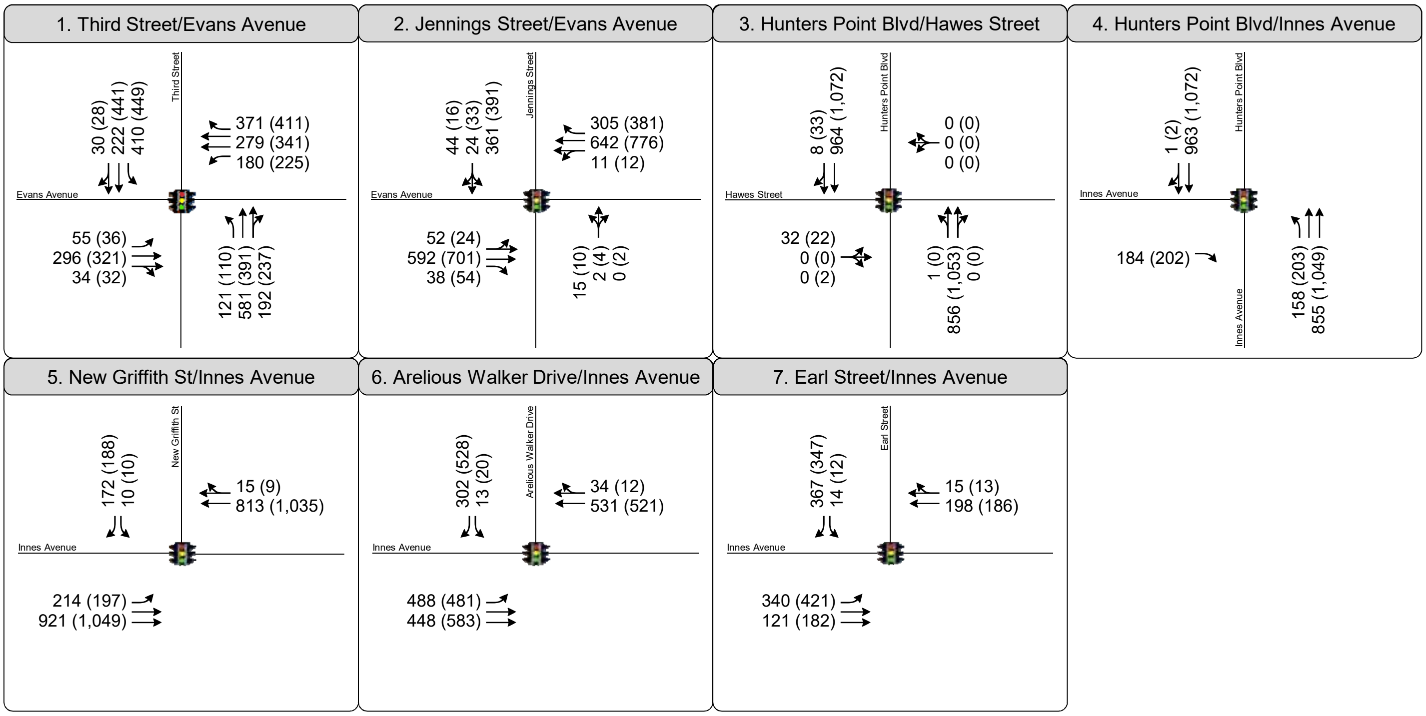
7.4 BASELINE PLUS PROJECT TRAFFIC OPERATIONS

In this section, Baseline Scenario traffic operations for the two project scenarios are presented. Each of the study intersections was chosen partly based on its overall importance to transit operations in the vicinity of the Project. An assessment of the Project's impacts on transit delays at each intersection is presented after the level of service assessment.

7.4.1 Intersection Effects

The trip generation for the Proposed Project is detailed in **Table 4-12**, and the trip generation for the Project Variant is detailed in **Table 4-13**. All Project-generated vehicle trips were assigned to and from the streets entering the Project Site (see **Figure 11** for directional distribution of vehicle trips). The resulting Baseline Plus Proposed Project and Plus Project Variant traffic volumes for the study intersections are presented in **Figure 21** and **Figure 22** respectively.

Table 7-7 presents the Baseline Plus Project intersection levels of service for the weekday AM and PM peak hour. It shows a summary of the intersection operations results for both Project and Variant scenarios. The Proposed Project causes the intersection operation at one intersection (Evans Avenue/Third Street) to deteriorate from LOS D to LOS F in both peak periods. The Project Variant causes the operation at two intersections to deteriorate to LOS F in both peak periods (Evans Avenue/Third Street and Evans Avenue/Jennings Street in the AM and Evans Avenue/Third Street and Innes Avenue/Arelious Walker Drive in the PM). At one intersection (Evans Avenue/Jennings Street), an improvement measure, described below, is proposed improve operations and reduce vehicle delay. For informational purposes, the following sections detail each intersection where intersection operations deteriorate to LOS F under any scenario.



Turn Lane

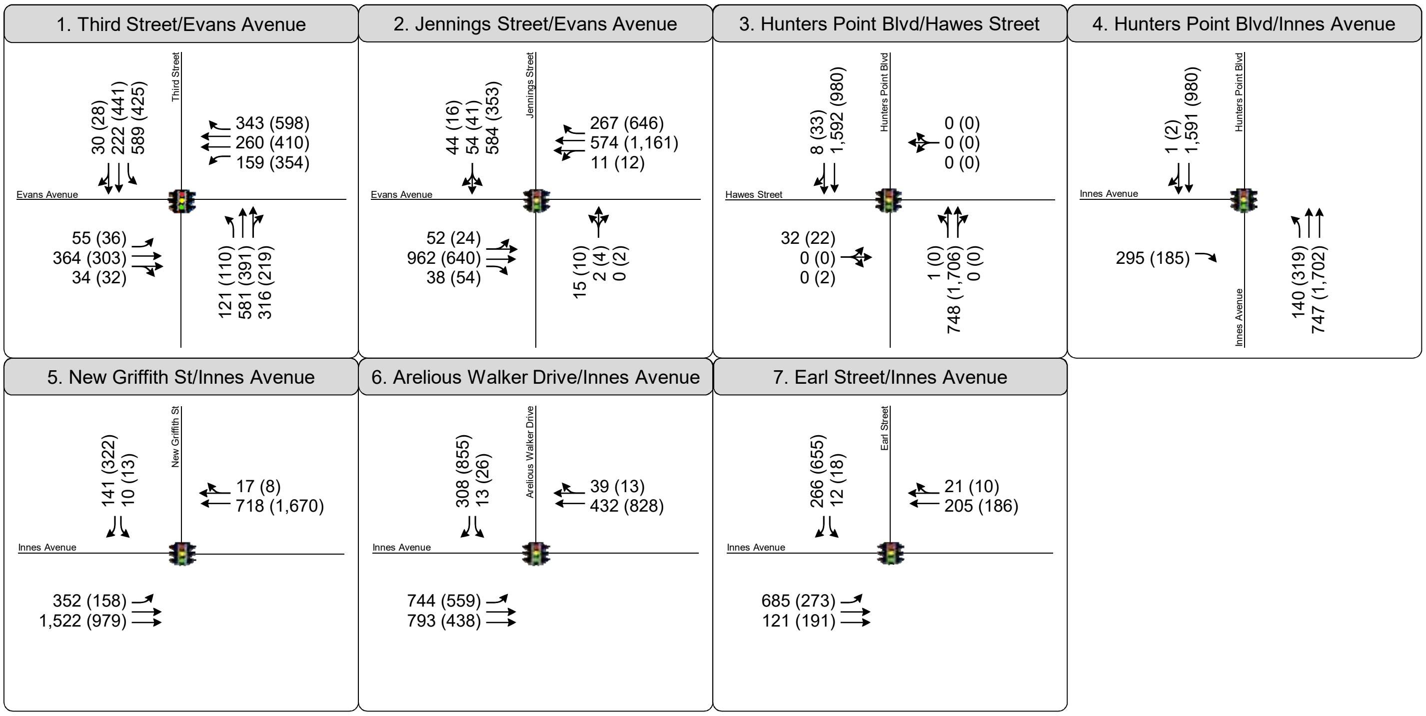
AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 21

Peak Hour Traffic Volumes and Lane Configurations - Baseline Plus Project



Turn Lane

AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 22

Peak Hour Traffic Volumes and Lane Configurations - Baseline Plus Project Variant

TABLE 7-7: PEAK HOUR INTERSECTION LEVELS OF SERVICE - BASELINE PLUS PROPOSED PROJECT AND PROJECT VARIANT					
Intersection	Traffic Control	Delay[1], Automobile LOS[2]			
		Existing	Baseline	Baseline Plus Proposed Project	Baseline Plus Project Variant
AM Peak Hour					
1. Evans Ave/Third St	Signal	38, D	36, D	>80, F (v/c =0.94)	>80, F (v/c =1.15)
2. Evans Ave/Jennings St	Signal[3]	<10, A	10, B	21, C	>80, F (v/c =1.28)
3. Hudson Avenue/ Hunters Point Boulevard/ Hawes St	***Signal***	<10 (EB), A	10 (EB), B	11, B	40, D
4. Innes Avenue/ Hunters Point Boulevard	***Signal***	<10 (EB), A	<10 (EB), A	<10, A	25, C
5. Innes Ave/Griffith St	***Signal***	12 (SB), B	13 (SB), B	<10, A	<10, A
6. Innes Ave/Arelious Walker Dr	***Signal***	<10 (SB), A	10 (SB), B	13, B	23, C
7. Innes Ave/Earl St	***Signal***	10 (SB), B	11 (SB), B	19, B	15, B
PM Peak Hour					
1. Evans Ave/Third St	Signal	36, D	39, D	>80, F (v/c =1.03)	>80, F (v/c =1.27)
2. Evans Ave/Jennings St	Signal[3]	<10, A	11, B	24, C	28, C
3. Hudson Avenue/ Hunters Point Boulevard/ Hawes St	***Signal***	<10 (EB), A	11 (EB), B	14, B	79, E
4. Innes Avenue/ Hunters Point Boulevard	***Signal***	<10 (EB), A	<10 (EB), A	10, B	31, C
5. Innes Ave/Griffith St	***Signal***	12 (SB), B	13 (SB), B	<10, A	26, C
6. Innes Ave/Arelious Walker Dr	***Signal***	<10 (SB), A	10 (SB), B	27, C	>80, F (v/c =1.41)
7. Innes Ave/Earl St	***Signal***	10 (SB), B	11 (SB), B	18, B	56, E

Notes:
Bold and italics indicates traffic control type change. AWSC = all-way stop control. SSSC = side-street stop control.

1. Delay reported as seconds per vehicle.
2. LOS = Level of Service. For signalized intersections, LOS based on average intersection delay, based on the methodology in the *Highway Capacity Manual*, 2000.
3. Signalization of this intersection is a mitigation measure that FivePoint is committed to implementing as part of the Shipyard project.

Source: Fehr & Peers, 2017.

1. Evans Ave/Third Street

Under Baseline conditions, the signalized intersection of Evans Avenue/Third Street operates at LOS D in both the AM and PM peak hour. The addition of Project trips causes the LOS at the intersection to worsen to LOS F in both the AM and PM peak hours under both the Proposed Project and the Project Variant. As a result, this intersection was examined for potential measures to improve operations in both the AM and PM peak hours.

Generally, to improve poor operating conditions of study intersections, additional travel lane capacity would be needed on one or more approaches to the intersection. The provision of additional travel lane capacity would typically require the narrowing of sidewalks, removal of on-street parking, removal of bicycle lanes, and/or the conversion of existing transit-only lanes to mixed-flow lanes. These would generally be inconsistent with the transit, bicycle, and pedestrian environment encouraged by the City's Transit First Policy by removing space dedicated to pedestrians, bicycles, and/or transit and increasing the distances required for pedestrians to cross streets. Furthermore, altering signal timing to better accommodate traffic volumes is not feasible at this intersection due to the signal priority for the T-Third Muni line on Third Street.

Therefore operations at this intersection would remain at LOS F under the Proposed Project or the Project Variant.

2. Evans Avenue/Jennings Street

Under Baseline conditions, the intersection of Jennings Street/Evans Avenue is assumed to be signalized, and it operates at LOS B in both the AM and PM peak hour. The addition of Project Variant trips would cause the LOS at the intersection to worsen to LOS F in the AM peak period. As a result, this intersection was examined for potential measures to improve operations.

Improvement Measure I-TR-4B: Reconfigure Southbound Approach of Jennings Street/Evans Avenue (Project Variant only)

To improve vehicular mobility at the intersection of Jennings Street/Evans Avenue in the Baseline Plus Project Variant Scenario, Improvement Measure I-TR-4B proposes that the intersection of Jennings Street/Evans Avenue be reconfigured. The Project Sponsors should fund this improvement measure under which the SFMTA reconfigures the southbound approach of this intersection to include a 100-foot left turn pocket. Adding this turn pocket would require that the SFMTA restrict parking on the west side of Jennings Street, removing approximately five parking spaces.

For the Project Variant, the Sponsors' responsibility for funding the implementation of the improvement measure would be based on the relative contribution of traffic to the intersection from the four parcels. At this location, 98 percent of vehicle trips would be generated by the 700 Innes Avenue parcel, one percent of vehicle trips would be generated by the India Basin Shoreline Park parcel, zero percent of vehicle trips would be generated by the 900 Innes Avenue parcel, and one percent of trips would be generated by the India Basin Open Space parcel.

Improvement Feasibility

This improvement is feasible. FivePoint has committed to signalizing the intersection as part of the Hunters Point Shipyard project, and implementation of this improvement measure would occur at the same time as signalization. Trips generated from the Build Property comprise 98 percent of the Project Variant Scenario vehicle trips through this intersection during both the AM and PM peak hours. Trips generated from the RPD Property comprise two percent of the Project Variant Scenario vehicle trips through this intersection during both the AM and PM peak hours. Therefore Build would be responsible for 98 percent of the costs, and RPD would be responsible for 2 percent of the costs.

Operations After Improvement Measure

Restriping the southbound approach to include a southbound left turn pocket improves intersection operations to LOS E in the AM peak period and LOS C in the PM peak period.

6. Innes Avenue/Arelious Walker Drive

Under Baseline conditions, the unsignalized intersection of Innes Avenue/Arelious Walker Drive operates at LOS B in the AM and PM peak hour. As part of the Proposed Project, this intersection would be signalized. The addition of Project Variant trips would cause the LOS at the intersection to degrade to LOS F in the PM peak hour. As a result, this intersection was examined for potential measures to improve operations.

Feasible improvements to this intersection have already been incorporated into its design as part of the Proposed Project. Similar to the intersection of Jennings Street/Evans Avenue, additional measures to improve operating conditions at Innes Avenue/Arelious Walker Drive would generally be inconsistent with the City's Transit First policy. Therefore, operations at this intersection would remain at LOS F.

7.4.2 Improvement Measure Implementation

The India Basin development would be constructed in phases, and each improvement measure detailed in the previous sections would become appropriate at a certain level of development. The following section specifies the total number of vehicle trips that would result in LOS E or F intersection operations and the appropriateness of the above improvement. By identifying the number of Project trips that would need to be generated to cause LOS E or LOS F intersection operations, this implementation plan enables the City and the Project Sponsor to determine, in a straightforward manner, when each improvement measure should be implemented according to the level of development completed. This approach provides the desired development flexibility and also ensures that improvement measures are implemented at the appropriate time.

Specifically, this plan is intended to define the improvements required for customized development configurations, within certain bounds, that are not studied in this report. This allows for development flexibility in response to changing market demands over time. The bounds are the maximum amount of residential uses that could be constructed (Proposed Project) on one side, and the maximum amount of commercial uses that could be constructed (Project Variant) on the other.

This plan presents distinct trip generation levels when the appropriate improvement measure would be recommended. In cases where no additional improvement measures are available, a development level at which the Project would contribute a high enough volume of vehicle traffic to an intersection to reduce operations to LOS E or LOS F is identified. **Table 7-8**, which details the vehicle trip generation rates by land use type for both the Proposed Project and the Project Variant, can be used to calculate whether any particular development would reduce operations to LOS E or LOS F.

<table>
<tr><th colspan="7">TABLE 7-8: AUTOMOBILE TRIPS GENERATED BY PROJECT DEVELOPMENT UNDER BASELINE CONDITIONS</th></tr>
<tr><th rowspan="3">Land Use</th><th colspan="6">Project Automobile Trips (Under Baseline Conditions)</th></tr>
<tr><th colspan="3">AM Peak Hour</th><th colspan="3">PM Peak Hour</th></tr>
<tr><th>Rate</th><th>Inbound</th><th>Outbound</th><th>Rate</th><th>Inbound</th><th>Outbound</th></tr>
<tr><td>Open Space</td><td>4.51 per acre</td><td>56%</td><td>44%</td><td>3.52 per acre</td><td>57%</td><td>43%</td></tr>
<tr><td>School</td><td>1.26 per student, plus 0.31 per staff</td><td>72%</td><td>28%</td><td>0.40 per student, plus 0.31 per staff</td><td>30%</td><td>70%</td></tr>
<tr><td colspan="7">Retail</td></tr>
<tr><td>Restaurant</td><td>1.24 per 1000 square feet (KSF)</td><td rowspan="4">64%</td><td rowspan="4">36%</td><td>10.80 per KSF</td><td rowspan="4">48%</td><td rowspan="4">52%</td></tr>
<tr><td>Café</td><td>12.75 per KSF</td><td>10.80 per KSF</td></tr>
<tr><td>Supermarket</td><td>3.36 per KSF</td><td>8.64 per KSF</td></tr>
<tr><td>General Retail</td><td>1.51 per KSF</td><td>5.39 per KSF</td></tr>
<tr><td colspan="7">Office</td></tr>
<tr><td>R&D Lab Area</td><td>0.68 per KSF</td><td rowspan="4">88%</td><td rowspan="4">12%</td><td>0.57 per KSF</td><td rowspan="4">10%</td><td rowspan="4">90%</td></tr>
<tr><td>Clinical Use</td><td>3.59 per KSF</td><td>3.22 per KSF</td></tr>
<tr><td>Administrative</td><td>3.37 per KSF</td><td>3.03 per KSF</td></tr>
<tr><td>General Office</td><td>0.88 per KSF</td><td>0.79 per KSF</td></tr>
<tr><td colspan="7">Residential</td></tr>
<tr><td>Studio</td><td>0.44 per dwelling unit (DU)</td><td rowspan="3">31%</td><td rowspan="3">69%</td><td>0.56 per DU</td><td rowspan="3">64%</td><td rowspan="3">36%</td></tr>
<tr><td>1 Bedroom</td><td>0.46 per DU</td><td>0.54 per DU</td></tr>
<tr><td>2+ Bedrooms</td><td>0.60 per DU</td><td>0.73 per DU</td></tr>
<tr><td colspan="7">Source: Fehr & Peers, 2017.</td></tr>
</table>

Improvement Measure

Table 7-9 details the minimum number of trips generated by the Project that would trigger implementation of the improvement measures identified in the previous section.

TABLE 7-9: IMPROVEMENT MEASURE RECOMMENDED IMPLEMENTATION POINT		
Improvement Measure	**Description**	**AM Peak Hour Project Trips**
Improvement Measure I-TR-4B	Reconfigure Southbound Approach of Jennings Street/Evans Avenue to include a 100-foot left turn pocket.	2,100

Source: Fehr & Peers, 2017.

Intersection Operations

Table 7-10 details the minimum number of trips generated by the Project that would cause the intersections identified below operate at LOS F.

TABLE 7-10: INTERSECTION OPERATIONS LOS F CONDITION		
Intersection	**AM Peak Hour Project Trips**	**PM Peak Hour Project Trips**
1. Evans Avenue/Third Street	650	850
6. Innes Avenue/Arelious Walker Drive	n/a[1]	1,900

Notes:

1. This intersection is expected to operate at LOS D or better in the AM period with full build-out of either the Proposed Project or the Project Variant.

Source: Fehr & Peers, 2017.

7.5 CUMULATIVE PLUS PROJECT TRAFFIC OPERATIONS

7.5.1 Traffic Volumes

Future year 2040 Cumulative traffic volumes were developed in order to assess the long-term cumulative effects of the Proposed Project in combination with projected development within San Francisco and the rest of the Bay Area, as well as implementation of planned transportation infrastructure projects. For the future year, Cumulative intersection traffic volumes were derived from outputs from the San Francisco County Transportation Authority's travel demand forecasting model (SF-CHAMP Model).

The SF-CHAMP model is an activity based travel demand model that has been validated to represent existing and future transportation conditions in San Francisco. The model predicts all person travels for a full day based on total and locations of population, housing units and employment, which are then allocated to different periods throughout the day, using time of day sub-models. The SF-CHAMP model predicts person travel by mode for auto, transit, walk and bicycle trips. The SF-CHAMP model also provides forecasts of vehicular traffic on regional freeways, major arterials and on the local roadway network considering the available roadway capacity, origin-destination demand and travel speeds when assigning the future travel demand to the roadway network.

SF-CHAMP divides San Francisco into 981 geographic areas, known as Traffic Analysis Zones (TAZs). It also includes zones outside of San Francisco, for which it uses the same geography as the current Metropolitan Transportation Commission (MTC) Model: "Travel Model One". For each TAZ, the model estimates the travel demand based on TAZ population and employment assumptions developed by the Association of Bay Area Governments (ABAG). Within San Francisco, the San Francisco Planning Department is responsible for allocating ABAG's countywide growth forecast to each TAZ for the future cumulative year model, based upon existing zoning and approved plans, using an area's potential zoning capacity, and the anticipated extent of redevelopment of existing uses. The current cumulative future year has been used consistently for recent large transportation studies in San Francisco.

Regional travel demand models such as SF-CHAMP are designed to be able to represent city-wide and regional trends and do not represent an intersection level of analysis commensurate with projecting specific turning movements. Instead, the SF-CHAMP model provides traffic volume outputs that can then be adjusted using professional judgment and methodology and then modeled in other traffic modeling software (such as Synchro), to represent intersection and turning movement operations. In addition to the application of a standard methodology, creating forecasts from model output involves engineering judgment, past experience, and knowledge of the transportation characteristics of the surrounding area.

The model run accounts for some growth in the Project TAZ. However, as shown in **Table 7-11**, the amount of traffic growth forecasted by the model for the roadways surrounding the Project Site is considerably less than the traffic growth projected to be generated by either the Proposed Project or Project Variant. The original land use proposed for India Basin was of a smaller scale than the land use currently proposed. Based on the travel demand estimates provided in Chapter 4, the SF-CHAMP model includes just 33 to 46 percent of the Proposed Project or Project Variant growth in the AM peak hour and 48 to 66 percent of the Proposed Project or Project Variant growth in the PM peak hour.

TABLE 7-11: CUMULATIVE VEHICLE TRIP GENERATION COMPARISON

TAZ[1]	Location	2040 CHAMP Output		Project Trips – Proposed Project Scenario		Variant Trips – Project Variant	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
446	India Basin	862	1,300	1,865	1,969	2,612	2,734

Notes:

1. Traffic analysis zone within SF-CHAMP model.

Source: SFCTA; Fehr & Peers, 2016.

Therefore, the modeled trips were manually removed from the TAZ to attain the Cumulative 2040 No Project volume forecasts. Proposed Project trips shown in **Figure 12** and **Figure 13** were then added to the Cumulative 2040 No Project forecasts to create Cumulative 2040 Plus Project intersection turning movement volumes, as shown in **Figure 23** (Proposed Project) and **Figure 24** (Project Variant).

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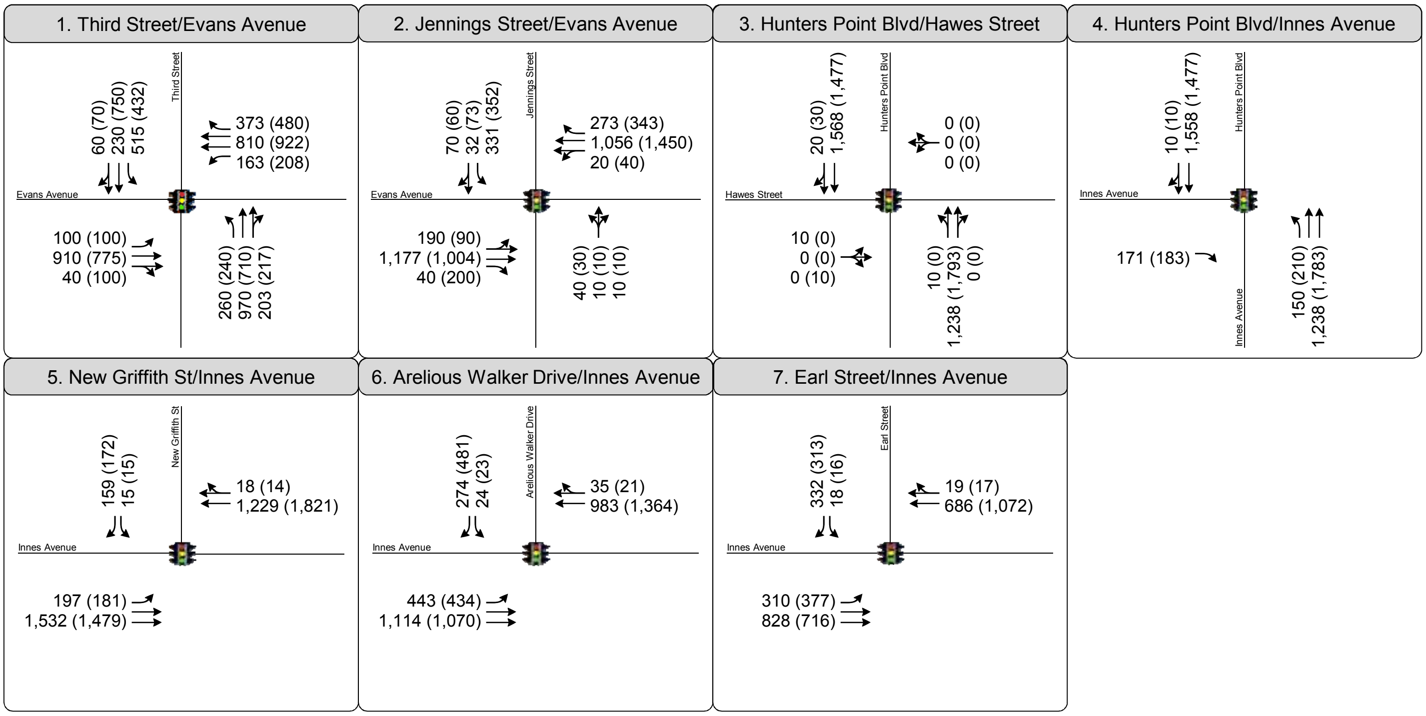


Turn Lane

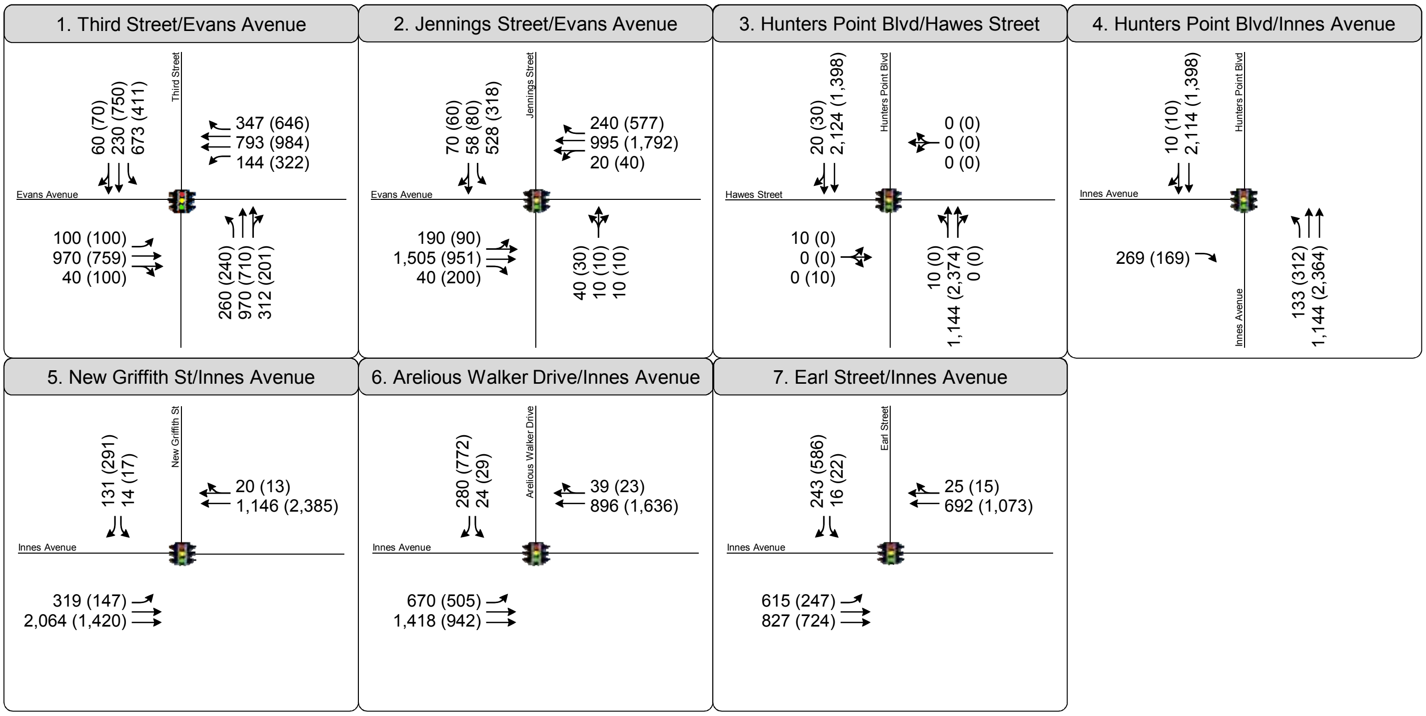
AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Figure 23

Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Project



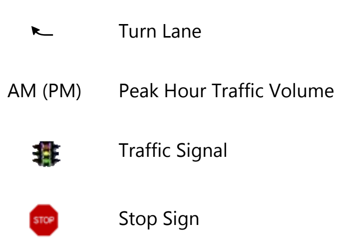


Figure 24

Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Variant

7.5.2 Intersection Effects

Table 7-12 presents the Cumulative intersection levels of service for weekday conditions for the Proposed Project and Project Variant compared to the No Project condition. The design for the three intersections adjacent to the Build property is as discussed in Section 7.3 and microsimulation results are provided for these intersections, which are consistent with the results shown in **Table 7-5**. For Intersections #1 through #4, Synchro results are presented.

TABLE 7-12: PEAK HOUR INTERSECTION LEVELS OF SERVICE – CUMULATIVE CONDITIONS

Intersection	Traffic Control	Delay[1], Automobile LOS[2]					
		Cumulative No Project		Cumulative Plus Proposed Project		Cumulative Plus Project Variant	
		AM	PM	AM	PM	AM	PM
1. Evans Ave /Third St	Signal	80, E	64, E	>80, F (v/c =1.44)	>80, F (v/c =1.34)	>80, F (v/c =1.63)	>80, F (v/c =1.51)
2. Evans Ave/Jennings St	Signal	16, B	14, B	>80, F (v/c =1.28)	49, D	>80, F (v/c =1.68)	57, E
3. Hudson Avenue/ Hunters Point Boulevard/Hawes St	Signal	<10, A	11, B	32, C	61, E	77, E	>80, F (v/c =0.98)
4. Innes Avenue/Hunters Point Boulevard	Signal	<10, A	<10, A	14, B	28, C	46, D	>80, F (v/c =1.22)
5. Innes Ave/Griffith St[2]	Signal	<10, A	<10, A	13, B	40, D	14, B	56, E
6. Innes Ave/Arelious Walker Dr[2]	Signal	<10, A	<10, A	19, B	48, D	16, B	>80, F (v/c =1.38)
7. Innes Ave/Earl St[2]	Signal	<10, A	11, B	19, B	70, E	19, B	>80, F (v/c =1.12)

Notes: Delay reported as seconds per vehicle.

1. LOS = Level of Service. For signalized intersections, LOS based on average intersection delay, based on the methodology in the *Highway Capacity Manual*, 2000.
2. The LOS results from the project driveways are calculated from the SimTraffic files used for the driveway design process detailed in the previous section.

Source: Fehr & Peers, 2016.

The Project causes intersections to operate at LOS E or LOS F during one or both peak periods at four intersections (Evans Avenue/Third Street, Evans Avenue/Jennings Street, Hudson Avenue/Hunters Point Boulevard/Hawes Street, and Innes Avenue/Earl Street), and the Project Variant causes the intersections to operate at LOS E or LOS F in one or both peak periods at all seven intersections. At one intersection (Evans Avenue/Jennings Street), a proposed improvement measure improves operations to improve intersection operations to LOS D or better in both scenarios and both peak periods. The following section details the intersections that operate at LOS E or LOS F under Cumulative Plus Proposed Project and/or Cumulative Plus Project Variant conditions. Intersections #1, #2, #3, and #7 operate at LOS E or LOS F in one or more peak hours and Project/Variant trips account for more than five percent of volume growth at critical movements operating at LOS E or F under Cumulative Plus Proposed Project and Cumulative Plus Project

Variant conditions. Intersections #4, #5, and #6 operate at LOS E or F and Project Variant trips account for more than five percent of volume growth at critical movements operating at LOS E or F in the PM peak hour under Cumulative Plus Project Variant conditions. Measures to improve operating conditions at these intersections would generally be inconsistent with the City's Transit First policy.

2. Jennings Street/Evans Avenue

Under Cumulative Plus Proposed Project and Cumulative Plus Project Variant, the signalized intersection of Jennings Street/Evans Avenue operates at LOS F in the AM peak hour. Under Cumulative Plus Project Variant, it operates at LOS E in the PM peak hour. Therefore, the operations at the intersection of Jennings Street/Evans Avenue merits examination for potential measures to improve operations, as shown below.

Cumulative Improvement Measure C-I-TR-5: Reconfigure Eastbound Approach of Jennings Street/Evans Avenue

To improve vehicular mobility at the intersection in the Cumulative Plus Project and Project Variant Scenario, Cumulative Improvement Measure C-I-TR-5 proposes that the Project Sponsors fund the reconfiguration of the eastbound approach of the intersection of Jennings Street/Evans Avenue by the SFMTA from one shared through/left lane, one through lane, and one 100-foot left turn pocket to have one 100-foot left turn pocket, one through lane, and one shared through/right turn lane. No additional right-of-way would be required to implement this measure. The Project Sponsors will fund their fair share cost of the design and implementation of the new eastbound approach configuration for the intersection of Jennings Street/Evans Avenue.

Responsibility for paying a fair share fee would be based on the relative contribution of traffic to the intersection from the four parcels. At this location, 98 percent of vehicle trips would be generated by the 700 Innes Avenue parcel, one percent of vehicle trips would be generated by the India Basin Shoreline Park parcel, zero percent of vehicle trips would be generated by the 900 Innes Avenue parcel, and one percent of trips would be generated by the India Basin Open Space parcel.

Improvement Measure Feasibility

This improvement is feasible pending endorsement and subsequent funding commitment from the SFMTA. The funding contribution from the Project Sponsors is detailed in Section 0.

Operations After Improvement Measure

Implementing Cumulative Improvement Measure C-I-TR-5 would improve the intersection operation to LOS C in AM peak hour under Cumulative Plus Proposed Project and would result in LOS E intersection operation under Cumulative Plus Project Variant in AM peak hour. Cumulative Improvement Measure C-I-TR-5 would result in LOS D intersection operation in the PM peak hour for both Cumulative Scenarios (Project or Variant). Therefore, Improvement Measure C-I-TR-5 would improve operations under the Cumulative Plus Proposed Project Scenario; no feasible improvement measure has been identified that would improve further the operations at this intersection in the Cumulative

Plus Project Variant Scenario. This improvement measure is a minor capacity increase at a single location. While it would reduce automobile delay at this location in the short run, because the capacity of the corridor as a whole is not being changed, it would result in a negligible change in the level of congestion on the roadway network.

7.5.3 Improvement Measures Implementation

The India Basin development would be constructed in phases, and the fair share cost of implementing the improvement measures detailed in the previous sections would depend on the final land use configuration. To provide the desired development flexibility, this section details a per trip contribution for each measure up to a maximum total project contribution. By establishing a fair share calculation linked to trip generation for each improvement measure, the City and the Project Sponsor would be able to establish the Project Sponsor's contribution for customized development configurations not specifically studied in this report, but generally within the bounds of the Proposed Project and Project Variant.

The following section analyzes each intersection with the proposed improvement measure. It presents the *project contribution*, or the percent of total intersection growth that is due to the Project, for both the Proposed Project and the Project Variant. It then presents a *per trip rate*, or the percent of total intersection growth that each single project trip contributes, for both the Project and the Project Variant. Regardless of the final land configuration, the fair share is equal to the *per trip* rate of the Proposed Project or the Project Variant, whichever is higher, up to the percent of *project contribution to growth* of the Proposed Project or the Project Variant, whichever is higher. The higher of the two variables is selected to estimate the conservative fair share contribution.

Vehicle trip generation rates (presented in **Table 4-1**) for each land use in both the Proposed Project and the Project Variant can then be used to calculate the fair share contribution required from the Project Sponsor for any land use configuration that falls within the "bookends" established by the Proposed Project and the Project Variant.

Cumulative Improvement Measure C-I-TR-5: Reconfigure Eastbound Approach of Jennings Street/Evans Avenue

Under the Cumulative Plus Proposed Project Scenario, the project contribution is 1,329 trips, i.e. 50 percent of the total intersection growth during the AM peak hour, which amounts to a per trip rate of 0.04 percent of the total intersection growth per trip. Under the Cumulative Plus Project Variant Scenario, the variant contribution is 1,786 trips, i.e. 58 percent of the total intersection growth during the AM peak hour, which amounts to a per trip rate of 0.03 percent of the total intersection volume per trip. Therefore, the Project's fair share contribution, regardless of final land use configuration, is 0.04 percent of the total cost per trip up to a maximum of 58 percent of the total cost.

Trips generated from the Build Property comprise 98 percent of the Project Variant Scenario vehicle trips through this intersection during both the AM and PM peak hours. Trips generated from the RPD Property comprise two percent of the Project Variant Scenario vehicle trips through this intersection during both the AM and PM peak hours. Therefore, Build would be responsible for 98 percent of the Project Applicant's share of costs, and RPD would be responsible for 2 percent of the Project Applicant's share of costs.

8 MITIGATION AND IMPROVEMENT MEASURES

This chapter presents the transportation mitigation measures that would be required to reduce the significant impacts of the Proposed Project or Project Variant, and conclusions about the level of impacts after implementation of recommended mitigation measures. In some cases, no significant impact was identified; however, improvement measures were noted that would improve conditions.

A summary table of the applicability of each mitigation measure to the Proposed Project and Project Variant is shown below in **Table 8-1**. A summary table of the applicability of each improvement measure to the Proposed Project and Project Variant is shown below in **Table 8-2**. In this document, mitigation and improvement measures with the suffix "A" apply only to the Proposed Project and those with suffix "B" apply only to the Project Variant. Those without either suffix apply to both.

TABLE 8-1: APPLICABILITY OF EACH MITIGATION MEASURE

Measure	Description	Proposed Project	Project Variant
Mitigation Measure M-TR-1A	Implement Transit Capacity Improvements	X	
Mitigation Measure M-TR-1B	Implement Transit Capacity Improvements		X
Mitigation Measure M-TR-2	School Site Loading	X	X
Cumulative Mitigation Measure C-M-TR-3	Implement Transit-Only Lanes	X	X

TABLE 8-2: APPLICABILITY OF EACH IMPROVEMENT MEASURE

Measure	Description	Proposed Project	Project Variant
Improvement Measure I-TR-1	Queue Abatement	X	X
Improvement Measure I-TR-2	Active Loading Management Plan	X	X
Improvement Measure I-TR-3	Construction Management	X	X
Improvement Measure I-TR-4B	Reconfigure Southbound Approach of Jennings Street/Evans Avenue		X
Cumulative Improvement Measure C-I-TR-5	Reconfigure Eastbound Approach of Jennings Street/Evans Avenue	X	X

8.1 TRAFFIC

No significant environmental impacts have been identified. No mitigation required.

8.2 TRANSIT

There would be a **significant** transit capacity impact for both the Proposed Project and the Project Variant. To mitigate these impacts, separate mitigation measures have been developed for the Proposed Project and Project Variant, as described below:

Mitigation Measure M-TR-1A (Proposed Project): Implement Transit Capacity Improvements

To mitigate significant transit capacity impacts that could occur as a result of Proposed Project transit trips before the transit service improvements that are part of the Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) are in operation, the Project Sponsor of the 700 Innes Avenue property shall fund and/or implement a transit capacity improvement measure as described below. Implementation of one of the two options described would mitigate the transit capacity impact of the Project to less than significant.

Option 1 – Fund Temporary Transit Service Improvements until applicable portion of Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) is in Operation

To mitigate significant transit capacity impacts, the Project Sponsors shall fund, and the SFMTA shall provide, temporary increased frequencies on the 44 O'Shaughnessy from for the period of time until similar improvements required as part of the Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) are in operation. Specifically, the frequency of the transit service shall be increased from 8 minutes to 6.5 minutes in the AM peak period and from 9 minutes to 7.5 minutes in the PM peak period. This increased frequency is set at the level where the project-generated transit trips would no longer result in a significant transit capacity impact. The Project Sponsors' funding contributions would be based on the cost to serve the relative proportion of transit trips generated by each of the four parcels that make up the Proposed Project, and it would include the cost to requisition and operate any additional buses needed to increase the frequencies as specified.

Under Option 1, the increased frequency on the 44 O'Shaughnessy would result in increased passenger capacity along the route (because more buses would be provided per hour), thereby lowering the average passenger load per bus below the 85 percent capacity utilization threshold.

Mitigation Measure M-TR-1A, Option 1 would be implemented prior to the issuance of the building permits for the incremental amount of development at the Project Site (20 transit trips outbound to the Project on the 44 O'Shaughnessy in the AM peak hour or 18 transit trips inbound to the Project on the 44 O'Shaughnessy in the PM peak hour) that would cause the significant impact. This incremental amount of development would be a subset of the first phase of construction.

Option 2 – Implement Temporary Shuttle Service until Applicable Portion of Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) is in Operation

If for any reason the SFMTA determines that the provision of increased transit frequency is not feasible at the time its implementation would be required, the Project Sponsor for the 700 Innes Avenue property shall implement a temporary shuttle service that would supplement existing nearby transit service by providing connections to local and regional rail service. A shuttle service operating at 20-minute headways in the AM and PM peak periods could accommodate the estimated demand, although a minimum frequency of 15 minutes is recommended in order to provide an adequate level of service to urban commuters. The AM peak period is defined as from 7:00 AM to 9:00 AM, and the PM peak period is defined as from 4:00 PM to 6:00 PM. Shuttle operations should extend on either side of these defined periods if necessary to adequately serve the peak period of project travel demand. The shuttle would connect the Project Site with T-Third, Caltrain, and BART stations. The shuttle stop location would either be located on Innes Avenue at Arelious Walker Drive or on New Hudson Street at Innes Avenue. The shuttle would be required to operate during the period of time until improvements required as part of the Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) are in operation. The shuttle would be required to operate within all applicable SFMTA and City of San Francisco regulations and programs. The Project Sponsors shall be required to monitor ridership on the shuttle annually and produce a report to the SFMTA describing the level of service provided and associated ridership. If ridership on the overcrowded Muni route is above 85 percent of overall service capacity as routinely monitored by the SFMTA, additional shuttle frequency shall be provided by the Project Sponsors to reduce occupancy to below 85 percent utilization.

Mitigation Measure M-TR-1A Option 2 would be implemented prior to the issuance of the Temporary Certificates of Occupancy (TCO) for the incremental amount of development at the Project Site (20 transit trips outbound to the Project on the 44 O'Shaughnessy in the AM peak hour or 18 transit trips inbound to the Project on the 44 O'Shaughnessy in the PM peak hour) that would cause the significant impact. This incremental amount of development would be a subset of the first phase of construction.

Effects of Mitigation Measure M-TR-1A

Under Option 1, the increased frequency of the 44 O'Shaughnessy would result in increased passenger capacity along the route (due to the provision of more buses per hour), thereby lowering the average passenger load per bus below the 85 percent capacity utilization threshold.

Under Option 2, the shuttle service would supplement existing transit routes by providing sufficient capacity to accommodate the demand generated by the Project above the 85 percent utilization threshold with a 20 percent factor of safety.

Riders travelling to/from destinations in Downtown San Francisco and the northern neighborhoods of San Francisco could use the shuttle to connect with Muni, Caltrain, or BART. Absent the shuttle, many of these transit trips would be taken using the 19 Polk to get to Downtown or to transfer to the T Third to travel to Mission Bay or Downtown. The shuttle service would provide additional transit capacity along Evans Avenue to access the T Third as well as provide an alternative route to Downtown San Francisco via the connection to BART.

Riders travelling to/from destinations in the southern and western neighborhoods of San Francisco could transfer to the 48 Quintara at the 24th Street Mission BART station or use the shuttle to transfer to BART at 24th Street Mission station to travel to destinations close to other BART stations in the southwest of the City. Absent the shuttle, many of these transit trips would be taken using the 44 O'Shaughnessy. The shuttle would provide an alternate option to the 44 O'Shaughnessy to access the BART network and would provide a quicker connection to BART than the 44 O'Shaughnessy as it would have fewer intermediate stops. It would therefore be an attractive option for these travelers and may attract trips from the 44 O'Shaughnessy, which would alleviate overcrowding on that route. Transit service would be monitored, and the shuttle service would be adjusted, if needed, to reach the capacity utilization threshold.

The shuttle service would be provided only during peak hours, and only until the CPHPS TP Transit Service Improvements are in place.

Mitigation Measure Implementation

If selected, Option 1 of Mitigation Measure M-TR-1A would be implemented prior to the issuance of building permits for the incremental amount of development at the Project Site (20 transit trips outbound to the Project on the 44 O'Shaughnessy in the AM peak hour or 18 transit trips inbound to the Project on the 44 O'Shaughnessy in the PM peak hour) that would cause the significant impact. This incremental amount of development would be a subset of the first phase of construction. If selected, Option 2 of Mitigation Measure M-TR-1A would be implemented prior to occupancy of the incremental amount of development at the Project Site that would cause the significant impact. The funding contribution from the Project Sponsors is detailed in Section 5.4.1.

With the implementation of one of the options under Mitigation Measure M-TR-1A, the Proposed Project's impacts to transit capacity would become **less-than-significant with mitigation**. Because the proposed changes are restricted to providing additional capacity for transit riders, they would not result to changes to pedestrian facilities or bicycle facilities, nor create potentially hazardous conditions or elsewhere interfere with pedestrian or bicycle accessibility. The shuttle service may need to be compliant with the City's Commuter Shuttle Program Policy, which includes measures to minimize effect on pedestrians and bicyclists. The proposed changes would not have an effect on parking provision. Therefore, the mitigation measure would result in **less-than-significant** pedestrian, bicycle, and parking impacts. The mitigation measure would not require any construction, so therefore it would result in a **less-than-significant** impact due to construction. There would also be a **less-than-significant** impact to emergency access since the mitigation measure does not propose to change existing access to the Project Site.

Mitigation Measure M-TR-1B (Project Variant): Implement Transit Capacity Improvements

To mitigate significant transit capacity impacts that could occur as a result of the Project Variant transit trips before the transit service improvements that are part of the Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) are in operation, the Project Sponsors shall fund and/or implement a transit capacity improvement measure as described below.

Option 1 – Fund Temporary Transit Service Improvements until applicable portion of Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) is in Operation

To mitigate significant transit capacity impacts, the Project Sponsors shall fund, and the SFMTA shall provide, temporary increased frequencies on the 44 O'Shaughnessy for the period of time until similar improvements required as part of the Candlestick Point Hunters Point Shipyard

Transportation Plan (CPHPS TP) are in operation. SFMTA shall also increase frequencies to the 48 Quintara for the same time period. The 48 Quintara would replace the 19 Polk that currently travels along Innes Avenue—Hunters Point Boulevard—Evans Avenue. Specifically, frequency for the 44 O'Shaughnessy shall be increased from 8 minutes to 6.5 minutes in the AM and from 9 minutes to 7.5 minutes in the PM peak period, and for the 48 Quintara the frequency shall increase from 15 minutes to 10 minutes in both the AM and PM peak period. These increases frequency are set at the level where the project would no longer have a significant impact. The Project Sponsors' funding contributions would be based on the cost to serve the relative proportion of transit trips generated by each of the four parcels that make up the Proposed Variant, and it would include the cost to requisition and operate any additional buses needed to increase the frequencies as specified.

Option 2 – Implement Temporary Shuttle Service until applicable portion of Candlestick Point Hunters Point Shipyard Transportation Plan (CPHPS TP) is in Operation

If for any reason the SFMTA determines that the provision of increased transit frequency is not feasible at the time its implementation would be required, the Project Sponsors shall implement a temporary shuttle service that would supplement existing nearby transit service by providing connections to local and regional rail service. A shuttle service operating at 20-minute headways in the AM and PM peak periods could accommodate the estimated demand, although a minimum frequency of 15 minutes is recommended in order to provide an adequate level of service to urban commuters. The AM peak period is defined as from 7:00 AM to 9:00 AM, and the PM peak period is defined as from 4:00 PM to 6:00 PM. Shuttle operations should extend on either side of these defined periods if necessary to adequately serve the peak period of project travel demand. The shuttle would connect the Project Site with T-Third, Caltrain, and BART stations. The shuttle stop location would either be located on Innes Avenue at Arelious Walker Drive or on New Hudson Street at Innes Avenue. The shuttle would be required to operate within all applicable SFMTA and City of San Francisco regulations and programs. The Project Sponsors shall be required to monitor ridership on the shuttle annually and produce a report to the SFMTA describing the level of service provided and associated ridership. If ridership on the overcrowded Muni route is above 85 percent of overall service capacity, additional shuttle frequency shall be provided by the Project Sponsors to reduce capacity on the affected transit routes to below 85 percent utilization.

Impacts of Mitigation Measure M-TR-1B

Under Option 1, the increased frequency of the 44 O'Shaughnessy would result in increased passenger capacity along the route (due to the provision of more buses per hour), thereby lowering the average passenger load per bus below the 85 percent capacity utilization threshold.

Under Option 2, the shuttle service would supplement existing transit routes by providing sufficient capacity to accommodate the demand generated by the Project above the 85 percent utilization threshold with a 20 percent factor of safety. Riders travelling to/from destinations in Downtown San Francisco and the northern neighborhoods of San Francisco could use the shuttle to connect with Muni, Caltrain, or BART. Absent the shuttle, many of these transit trips would be taken using the 19 Polk to get to Downtown or to transfer to the T Third to travel to Mission Bay or Downtown. The shuttle service would provide additional transit capacity along Evans Avenue to access the T Third as well as provide an alternative route to Downtown San Francisco via the connection to BART.

Riders travelling to/from destinations in the southern and western neighborhoods of San Francisco could transfer to the 48 Quintara at the 24th Street Mission BART station or use the shuttle to transfer to BART at 24th Street Mission to travel to destinations close to other BART stations in the southwest of the City. Absent the shuttle, many of these transit trips would be taken using the 44 O'Shaughnessy. The shuttle provides an alternate option to the 44 O'Shaughnessy to access the BART network and would provide a quicker connection to BART than the 44 O'Shaughnessy as it would have fewer intermediate stops. It would therefore be an attractive option for these travelers and may attract trips from the 44 O'Shaughnessy, which would alleviate overcrowding on that route.

The shuttle service would be provided only during peak hours, and only until the CPHPS TP Transit Service Improvements are in place.

Mitigation Measure Implementation

If selected, Option 1 of Mitigation Measure M-TR-1B would be implemented prior to the issuance of building permits for the incremental amount of development at the Project Site (187 transit trips inbound to the Project on the 19 Polk in the AM peak hour, 152 transit trips outbound to the Project on the 19 Polk in the PM peak hour, 20 transit trips outbound to the Project on the 44 O'Shaughnessy in the AM peak hour, or 18 transit trips inbound to the Project on the 44 O'Shaughnessy in the PM peak hour) that would cause the significant impact. This incremental amount of development would be a subset of the first phase of construction. If selected, Option 2 of Mitigation Measure M-TR-1B would be implemented prior to the issuance of the Temporary Certificate of Occupancy (TCO) of the incremental amount of development at the Project Site that would cause the significant impact. The funding contribution from the Project Sponsors is detailed in Section 5.4.1.

With the implementation of one of the options under Mitigation Measure M-TR-1B, the Project Variant's impacts to transit capacity would become **less-than-significant with mitigation**. Because the proposed changes are restricted to providing additional capacity for transit riders, they would not result to changes to pedestrian facilities or bicycle facilities, nor create potentially hazardous conditions or elsewhere interfere with pedestrian or bicycle accessibility. The shuttle service may need to be compliant with the City's Commuter Shuttle Program Policy, which includes measures to minimize effect on pedestrians and bicyclists. The proposed changes would not have an effect on parking provision. Therefore, the mitigation measure would result in **less-than-significant** pedestrian, bicycle, and parking impacts. The mitigation measure would not require any construction, so therefore it would result in a **less-than-significant** impact due to construction. There would also be a **less-than-significant** impact to emergency access since the mitigation measure does not propose to change existing access to the Project Site.

8.3 BICYCLE

No significant impacts have been identified in the Baseline Scenario; therefore, no mitigation is required.

8.4 PEDESTRIAN

No significant environmental impacts have been identified; however, an improvement measure has been identified. All of the project's or variant's parking garages would be located on the 700 Innes property; therefore, the Project Sponsor for the 700 Innes property would be solely responsible for implementing this improvement measure:

As an improvement measure to minimize the vehicle queues at the Proposed Project or Variant garage entrances into the public right-of-way, the Proposed Project or Variant would be subject to the Planning Department's vehicle queue abatement Conditions of Approval .

Although each of the four components of the Proposed Project would be subject to the Queue Abatement Conditions of Approval, only the 700 Innes parcel would have parking garages and therefore the measure is applicable to that parcel only.

Improvement Measure I-TR-1: Queue Abatement

It shall be the responsibility of the owner/operator of any off-street parking facility located at the 700 Innes property with more than 20 parking spaces (excluding loading and car-share spaces) to ensure that recurring vehicle queues do not occur on the public right-of-way. A vehicle queue is defined as one or more vehicles (destined to the parking facility) blocking any portion of any public street, alley or sidewalk for a consecutive period of three minutes or longer on a daily or weekly basis.

If a recurring queue occurs, the owner/operator of the parking facility shall employ abatement methods as needed to abate the queue. Appropriate abatement methods will vary depending on the characteristics and causes of the recurring queue, as well as the characteristics of the parking facility, the street(s) to which the facility connects, and the associated land uses (if applicable). Suggested abatement methods include but are not limited to the following: redesign of facility to improve vehicle circulation and/or on-site queue capacity; employment of parking attendants; installation of LOT FULL signs with active management by parking attendants; use of valet parking or other space-efficient parking techniques; use of off-site parking facilities or shared parking with nearby uses; use of parking occupancy sensors and signage directing drivers to available spaces; travel demand management strategies such as additional bicycle parking, customer shuttles, delivery services; and/or parking demand management strategies such as parking time limits, paid parking, time-of-day parking surcharge, or validated parking.

If the Planning Director, or his or her designee, suspects that a recurring queue is present, the Department shall notify the property owner in writing. The Property Owner shall have no less than 45 days to take reasonable measures to abate the queues. If after 45 days, the Planning Director, or his or her designee, reasonably believes, upon further examination that the abatement measures have not been effective, then the Planning Director may suggest additional measures or may request, the owner/operator shall hire a qualified transportation consultant to evaluate the conditions at the site for no less than seven days. The consultant shall prepare a monitoring report to be submitted to the Department for review. If the Department determines that a recurring queue does exist, the facility owner/operator shall have 90 days from the date of the written determination to abate the queue.

8.5 LOADING

While loading supply would be sufficient to meet the anticipated loading demand, the following improvement measure should be implemented to manage loading activity throughout the Project Site:

Improvement Measure I-TR-2: Active Loading Management Plan

If the Project Sponsor for the 700 Innes Avenue Property proposes to provide fewer loading spaces than required under the Special Use District (SUD) for the Project or Variant the Project Sponsors would develop an Active Loading Management Plan for approval by Planning Department to address operational loading actions for City review and approval. The Active Loading Management Plan would facilitate efficient use of loading spaces and may incorporate the following ongoing actions to address potential ongoing loading issues:

- Direct residents and commercial tenants to schedule all move-in and move-out activities and deliveries of large items (e.g., furniture) with management of the respective building(s).
- Direct commercial and retail tenants to schedule deliveries, to the extent feasible.
- Reduce illegal stopping of delivery vehicles by directing the lobby attendants of each building and retail tenants to notify any illegally-stopped delivery personnel (i.e., in the red zones) that delivery vehicles should be parked within the on-street commercial loading spaces.
- Design the loading areas to include sufficient storage space for deliveries to be consolidated for coordinated deliveries internal to project facilities (i.e., retail and residential); and
- Design the loading areas to allow for unassisted delivery systems (i.e., a range of delivery systems that eliminate the need for human intervention at the receiving end), particularly for use when the receiver site (e.g., retail space) is not in operation. Examples could include the receiver site providing a key or electronic fob to loading vehicle operators, which enables the loading vehicle operator to deposit the goods inside the business, or in a secured area that is separated from the business, but is accessible from a public right-of-way.

A Draft Active Loading Management Plan would be included as part of the Design Guidelines and Standards document for the entire Project site. A Final Active Loading Management Plan and all subsequent revisions, if implemented, would be reviewed and approved by the Planning Department. The Final Active Loading Management Plan would be approved prior to receipt of the first certificate of occupancy for the first parking/loading garage.

The Draft and Final Active Loading Management Plan would be evaluated by a qualified transportation professional, retained by the Project Sponsors and approved by the Planning Department, after the combined occupancy of the commercial and residential uses reaches 50 percent occupancy and once a year going forward until such time that the Planning Department determines that the evaluation is no longer necessary or could be done at less frequent intervals. The content of the evaluation report would be determined by Planning Department staff, in consultation with SFMTA, and generally shall include an assessment of on-site and on-street loading conditions, including actual loading demand, loading operation observations, and an assessment of how the project meets this improvement measure.

The Final Active Loading Management Plan evaluation report would be reviewed by Planning Department staff, which shall make the final determination whether there are conflicts associated with loading activities. In the event that the conflicts are occurring, Project Sponsor may propose modifications to the above Final Active Loading Management Plan requirements to reduce conflicts and improve performance under the Plan such as the hour and day restrictions to be included in the Active Loading Management Plan, number of loading vehicle operations permitted during certain hours, etc. to address the circumstances for review and approval by the by Planning Department.

The school site passenger loading impacts are considered **significant**. To ensure adequate operations of the proposed school loading zone, the following mitigation measure is proposed:

Mitigation Measure M-TR-2: School Site Loading Plan

Once school enrollment reaches 22 students, the school will provide and enforce a pick-up/drop-off plan subject to review and approval by the SFMTA to minimize disruptions to traffic, bicycle, and pedestrian circulation associated with school pick-up/drop-off activities and ensure safety of all modes. This plan may include elements such as size and location of loading zone, parking monitors, staggered drop-offs, a number system for cars, one-way circulation, encouragement of car pools/ride-sharing, and a safety education program. The safety education program would be targeted at students, parents, school staff, and residents and businesses near the school site. Informational materials targeted to parents, nearby residents, and nearby employees shall focus on the importance of vehicular safety, locations of school crossings, and school zone speed limits and hours. The school is located on the 700 Innes parcel, and therefore, responsibility for implementing this Mitigation Measure would be on the 700 Innes component of the Proposed Project.

School site passenger loading impacts would be **less-than-significant with mitigation.**

8.6 EMERGENCY ACCESS

No significant environmental impacts have been identified. No mitigation is required.

8.7 CONSTRUCTION

No significant environmental impacts have been identified. No mitigation is required; however, an improvement measure was identified:

Improvement Measure I-TR-3: Construction Management

Each of the four parcels, including 700 Innes, 900 Innes, India Basin Shoreline Park, and India Basin Open Space, would be responsible for developing their own construction management plan.

Traffic Control Plan for Construction – In order to reduce potential conflicts between construction activities and pedestrians, transit and autos during construction activities, the Project applicant will require construction contractor(s) to prepare a traffic control plan for major phases of Project construction (e.g. demolition, construction, or renovation of individual buildings). The Project applicant and their construction contractor(s) will meet with relevant City agencies to coordinate feasible measures to reduce traffic congestion, including temporary transit stop relocations and other measures to reduce potential traffic and transit disruption and pedestrian circulation effects during major phases of construction. For any work within the public right-of-way, the contractor would be required to comply with the City of San Francisco's Regulations for Working in San Francisco Streets, which establish rules and permit requirements so that construction activities can be done safely and with the least possible interference with pedestrians, bicyclists, transit, and vehicular traffic. Additionally, truck movements and deliveries will be limited during peak hours to the extent feasible and commercially reasonable in light of noise regulations, labor and contract requirements, available daylight hours and critical path construction schedule (generally 4:00 to 6:00 PM, or other times, as determined by SFMTA and its Transportation Advisory Staff Committee [TASC]).

In the event that the construction timeframes of the major phases and other development projects adjacent to the Project Site overlap, the Project applicant should coordinate with City Agencies through the TASC and the adjacent developers to minimize the severity of any disruption to adjacent land uses and transportation facilities from overlapping construction transportation impacts. The Project applicant, in conjunction with the adjacent developer(s), shall propose a construction traffic control plan that includes measures to reduce potential construction traffic conflicts to the extent feasible and commercially reasonable in light of noise regulations, labor and contract requirements, available daylight hours and critical path construction schedule, such as coordinated material drop offs, collective worker parking and transit to job site and other measures.

<u>Reduce SOV Mode Share for Construction Workers</u> – In order to minimize parking demand and vehicle trips associated with construction workers, the Project Sponsor will require the construction contractor to include in the Traffic Control Plan for Construction methods to encourage walking, bicycling, carpooling, and transit access to the project sites by construction workers.

<u>Project Construction Updates for Adjacent Residents and Businesses</u> – In order to minimize construction impacts on access for nearby residences, institutions, and businesses, the Project applicant will provide nearby residences and adjacent businesses with regularly-updated information regarding Project construction, including construction activities, peak construction vehicle activities (e.g., concrete pours), travel lane closures, and lane closures via a newsletter and/or website.

8.8 PARKING

No significant environmental impacts have been identified. No mitigation is required.

8.9 CUMULATIVE CONDITIONS

In summary, there is a **significant cumulative impact** for both the Proposed Project and Project Variant to transit delay during the AM and PM peak hours due to increased traffic congestion along the corridor. Both the Proposed Project's and the Project Variant's contributions to their respective significant impacts would **be considerable**.

The following mitigation measure is proposed:

Mitigation Measure C-M-TR-3: Implement Transit-Only Lanes

To mitigate a cumulative transit delay impact caused by the Project and the Variant, in combination with other cumulative projects, the SFMTA shall convert one of the two travel lanes in each direction from mixed-flow to transit-only between the intersection of Evans Avenue/Jennings Street/Middle Point Road, along Hunters Point Boulevard, Innes Avenue, Donahue Street, to the intersection of Donahue Street/Robinson Street. The transit-only lanes shall be located in the lane nearest to the curb for each direction, similar to those identified as part of the CPHPS Phase II Redevelopment Plan EIR for Evans Avenue between Third Street and Jennings Street.

For the proposed project, the threshold of significance for transit delay would be exceeded sometime after full buildout of the proposed project, even when assuming background construction of the Shipyard development per the latest construction schedule. For the variant, however, the threshold of significance for transit delay would be exceeded before buildout of the project, assuming background construction of the Shipyard development per the latest construction schedule. Based on the vehicle-trip estimates for the variant, the significance threshold would be exceeded with occupancy of aggregate land uses generating 1,193 inbound vehicle-trips during the weekday a.m. peak hour or 1,606 outbound vehicle-trips during the weekday p.m. peak hour, whichever comes first. Therefore, the Project Sponsors shall fund, and the SFMTA shall implement, this measure prior to the time the Project or Variant that would result in an increase in transit travel time to 18 minutes, 14 seconds in the AM peak hour or 18 minutes, 39 seconds in the PM peak hour, whichever comes first. The SFMTA shall monitor transit service and travel time along the corridor to assess when this threshold is met and the Project sponsors shall pay their respective fair share amounts after invoicing by SFMTA.

A conceptual drawing of the mitigation measure is shown in **Figure 17**.

The Project Sponsors would be responsible for making a fair share contribution to funding the implementation of the transit-only lanes based on the relative proportion of vehicle trips that the Project or the Variant contribute to the cumulative traffic conditions that result in the need for mitigation. The fair share was determined by the ratio of the sum of project-added trips across the three 700 Innes-adjacent study intersections to the sum of eastbound and westbound through trips without the Project. Since the impact would occur both in the AM and PM peak period, the higher ratio of the peak periods was conservatively selected as the fair share ratio. For the Proposed Project, the fair share contribution would be 38 percent, while for the Project Variant the fair share contribution would be 50 percent. In addition, between the Project Sponsors of the Project, each of the four parcels that make up the Proposed Project or Project Variant would be responsible for their proportionate share of the Project contribution. In this case, 98 percent of vehicle trips would be generated by the 700 Innes Avenue parcel, one percent of vehicle trips would be generated by the India Basin Shoreline Park parcel, zero percent of vehicle trips would be generated by the 900 Innes Avenue parcel, and one percent of trips would be generated by the India Basin Open Space parcel.

Mitigation Measure C-M-TR-3 would reduce the Proposed Project and Project Variant's contribution to cumulative impacts to transit travel time (transit delay) to acceptable levels and result in a less than significant cumulative impact; however, because SFMTA cannot commit to implementing these improvements, the cumulative transit delay impact is considered **significant and unavoidable with mitigation**. If implemented, the mitigation measure would result in **less-than-significant** pedestrian, bicycle, and parking impacts because the proposed changes are restricted to restriping the mixed-flow travel lanes, and therefore would not result in changes to facilities for other modes. Any temporary sidewalk, parking, or traffic lane closures due to construction of the mitigation measure would be coordinated with City agencies, which would result in a **less-than-significant** impact due to construction. There would also be a **less-than-significant** impact to emergency access. The transit-only lane would be available to emergency vehicles and would therefore provide more rapid emergency access along the corridor.

With respect to VMT, the Planning Department has identified screening criteria to identify types, characteristics, or locations of projects and a list of transportation project types that would not result in significant transportation impacts under the VMT metric. These screening criteria are consistent with CEQA Section 21099 and the screening criteria recommended by OPR. If a project falls within certain types of transportation projects, then a detailed VMT analysis is not required for a project. Since the implementation of a transit-only lane would fall within the definition of an "active transportation, rightsizing (aka road diet), and transit project" or "other minor transportation project", a detailed VMT analysis is not required. Therefore, the impact to VMT would be **less-than-significant**.

8.10 TRAFFIC IMPROVEMENT MEASURES

No significant environmental impacts have been identified; however, two improvement measures have been identified:

Improvement Measure I-TR-4B: Reconfigure Southbound Approach of Jennings Street/Evans Avenue (Project Variant only)

To improve vehicular mobility at the intersection of Jennings Street/Evans Avenue in the Baseline Plus Project Variant Scenario, Improvement Measure I-TR-4B proposes that the intersection of Jennings Street/Evans Avenue be reconfigured. The Project Sponsors should fund this improvement measure under which the SFMTA would reconfigure the southbound approach of this intersection to include a 100-foot left turn pocket. Adding this turn pocket would require that the SFMTA restrict parking on the west side of Jennings Street, removing approximately five parking spaces.

For the Project Variant, the Sponsors' responsibility for funding the implementation of the improvement measure would be based on the relative contribution of traffic to the intersection from the four parcels. At this location, 98 percent of vehicle trips would be generated by the 700 Innes Avenue parcel, one percent of vehicle trips would be generated by the India Basin Shoreline Park parcel, zero percent of vehicle trips would be generated by the 900 Innes Avenue parcel, and one percent of trips would be generated by the India Basin Open Space parcel.

Improvement Feasibility

This improvement is feasible. FivePoint has committed to signalizing the intersection as part of the Hunters Point Shipyard project, and implementation of this improvement measure would occur at the same time as signalization. Trips generated from the Build Property comprise 98 percent of the Project Variant Scenario vehicle trips through this intersection during both the AM and PM peak hours. Trips generated from the RPD Property comprise two percent of the Project Variant Scenario vehicle trips through this intersection during both the AM and PM peak hours. Therefore, Build would be responsible for 98 percent of the costs, and RPD would be responsible for 2 percent of the costs.

Operations After Improvement Measure

Restriping the southbound approach to include a southbound left turn pocket improves intersection operations to LOS E in the AM peak period and LOS C in the PM peak period.

Cumulative Improvement Measure C-I-TR-5: Reconfigure Eastbound Approach of Jennings Street/Evans Avenue

To improve vehicular mobility at the intersection in the Cumulative Plus Project and Project Variant Scenario, Cumulative Improvement Measure C-I-TR-5 proposes that the Project Sponsors fund the reconfiguration of the eastbound approach of the intersection of Jennings Street/Evans Avenue by the SFMTA from one shared through/left lane, one through lane, and one 100-foot left turn pocket to have one 100-foot left turn pocket, one through lane, and one shared through/right turn lane. No additional right-of-way would be required to implement this measure. The Project Sponsors will fund their fair share cost of the design and implementation of the new eastbound approach configuration for the intersection of Jennings Street/Evans Avenue.

Responsibility for paying a fair share fee would be based on the relative contribution of traffic to the intersection from the four parcels. At this location, 98 percent of vehicle trips would be generated by the 700 Innes Avenue parcel, one percent of vehicle trips would be generated by the India Basin Shoreline Park parcel, zero percent of vehicle trips would be generated by the 900 Innes Avenue parcel, and one percent of trips would be generated by the India Basin Open Space parcel.

Improvement Measure Feasibility

This improvement is feasible pending endorsement and subsequent funding commitment from the SFMTA. The funding contribution from the Project Sponsors is detailed in Section 0.

Operations After Improvement Measure

Implementing Cumulative Improvement Measure C-I-TR-5 would improve the intersection operation to LOS C in AM peak hour under Cumulative Plus Proposed Project and would result in LOS E intersection operation under Cumulative Plus Project Variant in AM peak hour. Cumulative Improvement Measure C-I-TR-5 would result in LOS D intersection operation in the PM peak hour for both Cumulative Scenarios (Project or Variant). Therefore, Improvement Measure C-I-TR-5 would improve operations under the Cumulative Plus Proposed Project Scenario; no feasible improvement measure has been identified that would improve further the operations at this intersection in the Cumulative Plus Project Variant Scenario. This improvement measure is a minor capacity increase at a single location. While it would reduce automobile delay at this location in the short run, because the capacity of the corridor as a whole is not being changed, it would result in a negligible change in the level of congestion on the roadway network.