MISSION ROCK

DESIGN CONTROLS

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MISSION ROCK
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INTRODUCTION **04**
Mission Rock Design Documents 04
Chapter Summary 06
Design Controls User Guide 08

LAND USE **09**
01 Land Use 10

PUBLIC REALM **15**
02 Public Realm 17
03 Open Space 43
04 Streets 77

BUILDINGS **121**
05 Ground Floor 123
06 Building Form 149
07 Building Design 165

APPENDIX **184**
A Summary of Block Standards 186
B Glossary of Terms 200
C Land Use Chart 204

MISSION ROCK DESIGN DOCUMENTS

The Design Controls (DC) comprise the second document in a set of five documents which together describe the requirements for the development of Mission Rock.

MISSION ROCK VISION AND DESIGN INTENT

This document contains the big picture thinking and aspirations that will guide the process for the design and implementation of Mission Rock.

CHAPTERS:

1. Vision
2. Context
3. Design Intent
4. Frameworks

MISSION ROCK DESIGN CONTROLS (DC)

This document guides the development of the open spaces, streets, and buildings at Mission Rock. The DC ensures that the site will be developed in a way that is consistent with the project vision.

CHAPTERS:

1. Land Use
2. Public Realm
3. Streets
4. Open Spaces
5. Ground Floor
6. Building Form
7. Building Design

MISSION ROCK SUSTAINABILITY STRATEGY

This document outlines targets for site-wide performance and explains how the infrastructure, buildings, and community will work together to achieve these targets, in a way that is consistent with the DC.

CHAPTERS:

1. Adaptability & Resilience
2. Water
3. Energy
4. Transportation
5. Waste Reduction
6. Health & Wellness
7. Sustainable Materials
8. Habitat & Ecosystem Function
9. Community Identity
10. GHG Emission Assessment

MISSION ROCK INFRASTRUCTURE PLAN

This document regulates the complex coordination of streets, utilities, and services at Mission Rock. It ensures a holistic and integrated approach with the design of the landscape, buildings, and sustainability strategies.

CHAPTERS:

1. Introduction
2. Sustainability
3. Environmental Remediation
4. Site Demolition
5. Site Resiliency
6. Geotechnical Condition
7. Site Grading
8. Street And Transportation Infrastructure
9. Open Space & Parks
10. Utility Layout And Separations
11. Low Pressure Water System
12. Sanitary Sewer System
13. Storm Drain System
14. Auxiliary Water Supply System
15. Central Utility District Infrastructure
16. Stormwater Management System
17. Dry Utility Systems

MISSION ROCK TRANSPORTATION PLAN

This document describes the ways in which the site will be designed to support the mobility choices of all users, with a special emphasis on safe and comfortable conditions for pedestrians and cyclists.

CHAPTERS:

1. Introduction
2. Project Context
3. Getting Around at Mission Rock
4. Transportation Demand Management
5. Event Management

CHAPTER SUMMARY

LAND USE

01 LAND USE

The first chapter of these Design Controls (DC) explains the permitted land uses at Mission Rock, and how the district will achieve a diverse, balanced mix of uses that activate the site around the clock.

PUBLIC REALM

02 PUBLIC REALM

This chapter identifies key site-wide concepts and requirements that will govern the interconnected network of open spaces and streets at Mission Rock. Founded on the Mission Rock Vision, these controls frequently reference the Mission Rock Infrastructure and Transportation Plans and the Sustainability Strategy. All open spaces, shared streets, and streetscapes must satisfy the requirements of this chapter in addition to the specific requirements described in Chapters 3 and 4.

03 OPEN SPACE

This chapter describes the open space relationships, qualities, and functions that are essential to creating a unique, vibrant, urban open space network. The parks, plazas, and paths at Mission Rock will provide a comprehensive variety of recreational opportunities to the district, city, and region. This chapter also governs kiosks and park structures. Each open space in this chapter must satisfy its specific requirements, as well as the Public Realm requirements described in Chapter 2.

04 STREETS

This chapter describes the requirements for streets that will prioritize pedestrians and cyclists. This chapter, together with the ground-floor controls, describe the character and design of the urban experience at Mission Rock's unique shared streets, paseos, and lively, walkable neighborhood streets. Each street in this chapter must satisfy its specific requirements, as well as the Public Realm requirements described in Chapter 2.

BUILDINGS

05 GROUND FLOOR

This chapter contains the set of standards and guidelines which control the design of the ground floor of all blocks. The ground floor of each building will be designed in coordination with the design development of the streets, open spaces and adjacencies, so as to describe the way that each ground floor engages with the street or open space within Mission Rock. It also describes the controls for the day-to-day servicing and loading functions of buildings at Mission Rock.

06 BUILDING DESIGN

Chapter 8 describes the design requirements for buildings above the ground floor. This chapter is rich with reference images to illustrate and support the standards and guidelines, and convey the level of quality and attention for both residential and commercial buildings which Mission Rock aims to achieve.

07 BUILDING FORM

This chapter controls the look of each building which is defined as having two parts: the Base Building and the Upper Building. It describes the requirements for maintaining the streetwall at the base building, and for shaping the upper building. It also describes height requirements for both the base and the upper building.

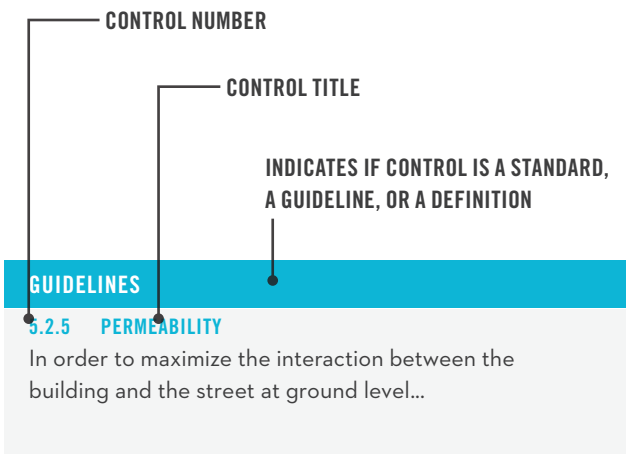
APPENDIX

A APPENDIX: BLOCK CONTROLS

This appendix has been provided as a summary of controls for each block. While this summary is meant to be a helpful tool, satisfying only the controls described in the Block Standards alone does not constitute compliance with this DC.

DESIGN CONTROLS (DC) USER GUIDE

This Design Controls (DC) document describes the comprehensive set of design criteria of Mission Rock for developers, designers, and permitting agencies.



ABOVE: A sample guideline. Throughout the document, each control item is listed under a subheading which indicates that it is a Standard or a Guideline. All of the controls are numbered by Chapter number first, and have a title which explains the subject of the control.

All of the design controls contained in this document are made up of two levels of regulation: Standards and Guidelines.

Standards are typically quantifiable so that compliance can be measured and easily demonstrated. In some cases Standards are not quantifiable but are nonetheless mandatory. Any deviation from Standards requires discretionary approval from the appropriate public agency, as detailed in the Special Use District and transactional approval documents.

Guidelines are also mandatory, but are generally more qualitative or performance-based, and can be more difficult to measure. As applied to a specific development proposal, one Guideline might potentially be in conflict with another or there may be a circumstance or compliance strategy that was not contemplated when the Guidelines were drafted. Alternatively, the sponsor may find an appropriate, alternative approach that meets the intent of the Design Controls, or, for example, may establish that deviation results on a better design or more sustainable development. Each development submittal is expected to comply with Guidelines unless the project sponsor can establish that there is a justification for a deviation based on the application of the Guidelines to a specific project, and that with the deviation, the project will continue to meet the intent of the Design Controls and Vision Document.

Embedded in every set of controls is an explanation of the purpose or intent, so that a developer, designer, or reviewing agency will be able to understand the goal behind each standard or guideline.

In addition to standards and guidelines, there are also definitions included in some chapters. These definitions are specific to Mission Rock, and give further clarification to the standards and guidelines to which they apply.

In every case, the Mission Rock Vision and Design Intent acts as the foundation for all design decisions at Mission Rock. The development of any space or building designed for this site should hold the pursuit of Mission Rock's vision as it's central objective.

The Land Use chapter explains the permitted land uses at Mission Rock, and how the district will achieve a diverse, balanced mix of uses that activate the site around the clock.

01

LAND USE

1.1 Land Use Plan 10
1.2 Land Use Categories 12
1.3 Land Use Controls 14

Land Use controls for the Mission Rock neighborhood are intended to allow for an intense mix of uses on individual blocks and throughout the site.

Office buildings will bring people who occupy the site's streets and parks during the daytime, while residences will bring a vital population who continually inhabit the site into the evenings and on weekends. Space for production will allow for the past uses of the working waterfront to continue on in place.

Each street shall be lined with uses specifically chosen to bring interest, activity and variety to the pedestrian realm, including shops, cafes, entertainment venues, community spaces, and working waterfront uses. The result will be an urban neighborhood that is rich with the diversity of people that it serves and variety of experiences it creates.

The requirements for creating an active ground floor are explained in their own chapter of this DC - Chapter 5: Ground Floor, which outlines controls for use, size, and design of the Ground Floor of each block and how it fits into a site-wide pedestrian experience.

RELATED CHAPTERS: This chapter is frequently referenced in chapter 5: ground Floor.

1.1 LAND USE PLAN

Primary Uses

Distributing a mix of uses across the site is a key strategy in creating a vibrant, round the clock neighborhood. The land use plan ensures that each open space will be fronted by a mix of uses to create activity from diverse users throughout the day and into the evening.

Figure 1.1 - Land Use Plan indicates the required minimum amount of a primary use for each block. Within each of these blocks, a mix of uses at the ground level is required - incorporating retail, active uses, and production. For guidance on uses specific to ground floor frontages see *Chapter 5: Ground Floor.*

PRIMARY USES

- Residential Mixed Use
- Commercial Mixed Use
- Flex (Residential MU or Commercial MU)
- Active, Production and District-Serving Utility
- Structured Parking
- Open Space

Also see Figure 5.5 - Ground Floor Frontage Zones for land uses required for the ground floor frontage of each block.

FIGURE 1.1 - Land Use Plan

Ground Floor Frontages

The intersection between the public realm and the ground floor of a building defines the street-level experience of the site. Each building frontage at Mission Rock has a role to play in the activation of the streets and open spaces. *Figure 5.5 – Ground Floor Frontages* shows the way that the frontage of each building will participate in the creation of a variety of ground floor experiences throughout Mission Rock, which are directly related to the character of the streets or open spaces they face.

Chapter 5 describes each of these zones in detail, as well as the design elements that support this relationship between the building and the public realm. *Table 5.5 - Ground Floor Frontage Zone Controls* provides a compiled summary of the controls for each zone.

FIGURE 5.5 - Ground Floor Frontages

0 50 100 200

GROUND FLOOR FRONTAGES

- High Retail Zone
- Parkfront Zone
- Working Waterfront Zone
- Neighborhood Street Zone

Zones are illustrative and not to scale; for minimum depth dimensions see Table 5.5 - Ground Floor Frontage Zone Controls.

1.2 LAND USE CATEGORIES

The categories here describe the intent for the various land uses that are permitted at Mission Rock. These land uses and the ways they can combine within the different blocks at Mission Rock are controlled by the Land Use Controls listed in Section 1.3.

The Special Use District for Mission Rock includes additional details regarding Mission Rock Land Uses. In the event of any conflict between the SUD and the Design Controls, the SUD governs, and should be consulted for additional detail. The list of uses described here is for summary purposes only; please see the SUD and the Land Use Chart in Appendix C for a full use of permitted uses.

DEFINITIONS

1.2.1 RESIDENTIAL

All types of residential uses falling under the Residential Use category shall be permitted. This includes dwelling units, group housing, residential hotels, homeless shelters, live/work units, senior housing, single room occupancy units, and student housing.

1.2.2 COMMERCIAL

Commercial Uses include all commercial, non-retail uses (Office, Non-Retail Sales and Services, and Institutional Uses) that are permitted in Mission Rock, except as otherwise excluded in Appendix C and the SUD.

1.2.3 HOTEL

Hotel is considered a subset of Retail Uses within Mission Rock, except as otherwise provided below. It refers to a use which provides tourist accommodations including guest rooms or suites, which are intended or designed to be used, rented, or hired out to guests (transient visitors) intending to occupy the room for less than 32 consecutive days. Hotels shall be designed to include all lobbies, offices and internal circulation to guest rooms and suites within and integral to the same enclosed building or buildings as the guest rooms or suites.

Hotel uses are considered a subset of the Residential use category for purposes of location, building form, building design and design controls, with the exception of the following:

- Hotels shall be exempt from dwelling unit exposure, and usable open space requirements.
- For the purposes of signage, hotels shall be considered a business or commercial use.
- For the purposes of bike parking ratios and showers and lockers requirements, hotels shall be considered a retail use.

Up to 300 keys may be developed at Mission Rock on Blocks where Residential Uses are permitted, and Hotels shall be considered a Residential Use for purposes of calculating the 60%/40% ratios described in Section 1.3.

1.2.4 RETAIL

Retail Uses shall generally include the uses that fall under Retail Sales and Services, and Entertainment, Arts, and Recreation categories, except as otherwise excluded in Appendix C and the SUD.

Retail generally means uses that provide goods and/or services to the general public such as , services, restaurants, bars, and entertainment venues, florists, book stores, car rental, etc. Neighborhood-serving uses which enhance the livability of the neighborhood, such as grocery stores, and self-service laundromats are also strongly encouraged.

Any use that is not generally open to the public, such as a company cafe which is only for employees is not considered a retail use.

Within areas designated for retail use, the following non-retail active uses are allowed:

- Building lobbies are allowed, so long as they do not exceed the maximum dimensions given in Table 5.5 - Ground Floor Frontage Zone Controls.
- Because childcare centers desire adjacency to open space, and spaces at Mission Rock that front directly onto open space are required to be retail uses, child care centers may also be located within retail use zones.

While retail may be required at the ground floor in certain locations, it is also allowed in the floors above.

1.2.5 ACTIVE USES

An "active use" shall mean any use that by its nature does not require non-transparent walls facing a public street or involves the storage of goods or vehicles.

Spaces accessory to residential uses, such as fitness or community rooms, are considered active uses only if they meet the intent of this section and have access directly to the public sidewalk or street.

Building lobbies for other uses are allowed, so long as they do not exceed the maximum dimensions given in *Table 5.5 - Ground Floor Frontage Zone Controls*.

While active uses may be required at the ground floor at certain locations, they are also allowed in the floors above.

1.2.6 PRODUCTION

Production includes Industrial and Agricultural uses, except as otherwise excluded in Appendix C and the SUD. Production shall mean those spaces where goods are produced or fabricated. This can include the creation of handicrafts, art, consumable goods, clothing, furniture, equipment, and so on.

This use zone can also include uses that are accessory to production such as: retail, restaurant, office, and educational uses. Up to 33% of a single user area can be allocated to such accessory uses, subject to meeting the additional accessory use requirements of the SUD and the Planning Code.

The allowance of accessory uses is intended to create an environment where production uses can be public-facing, but are not to be the primary use of the production space. For example, a "winery" which only sells wine and does not produce wine on site is not considered a production use.

Catering, butchery, breweries, and other types of preparation of consumable goods for off-site sale, or limited on-site sale is consistent with the intent of the definition of production.

1.2.7 OPEN SPACE

Open Space blocks at Mission Rock shall be developed as public and publicly accessible open space. This land use can also contain programmatic elements that support recreation and leisure activities. Refer to Chapter 3: Open Space for detailed controls on programming.

A limited number of small structures may be built within Open Space zones, such as food or equipment rental kiosks, for the purpose of activating these spaces. The controls regulating the development locations and design of these kiosks and lightweight structures are outlined in *Section 3.8 - Kiosks and Lightweight Structures*.

Open Space zones may also include temporary uses which directly support public recreation and leisure activities and serve to activate the open space.

See the SUD, DDA and DA for more details on permitted uses, including temporary and interim uses, within areas designated for Open Space use within Mission Rock.

1.2.8 PARKING

Surface parking lots are not permitted at Mission Rock except on a temporary or interim basis, or as an existing use, as described in the SUD, DA and DDA documents.

There are two types of parking structures allowed at Mission Rock:

- Off-street parking spaces are permitted at the Parcel D2 parking garage or a combination of the Parcel D2 parking garage and a below grade parking garage beneath Mission Rock Square (controls are described in *Section 7.7 – Parking Structure*)
- Off-street parking in individual buildings (controls are described in Section *7.6 Off-Street Parking*)

Stand-alone, above grade structured parking is not a permitted use except on Block D2, where the Parking Structure is located.

1.2.9 OTHER USES

Other uses include Community Recycling Center, Open Recreation Area, Passive Outdoor Recreation, Public Transportation Facility, Utility Installation (District-Serving Utility Installation only) and Wireless Telecommunications Services Facility.

District-Serving Utility Installations

A district-serving utility and infrastructure use that includes, but is not limited to a central utility plant or graywater treatment and distribution plant. These uses are described under the category of "Other" permitted uses in Mission Rock in the SUD.

This use must be contained within the envelope of a building, with the exception of cooling or venting structures, which must be properly screened (for screening requirements, see *Section 7.2.4 - Mechanical Equipment* and *Section 7.2.6 - Mechanical Screening*).

Those elements of the system which are located on the roof must comply with the height, screening, and general design requirements for sustainable infrastructure described in *Section 7.2.5 - Roofscapes*.

1.3 LAND USE CONTROLS

Land use at Mission Rock is controlled at the block scale to ensure a minimum mix of uses throughout the site and facing each open space. Residential and commercial buildings take on different forms, and the mix of uses at the site has taken into consideration the form of these different buildings and their ability to add variety to the public realm, the way they combine to frame views to and through the site, and the way they will allow sunlight and views to open space.

While each block is given a primary use (residential or commercial) with a minimum amount of that use required, any number of other uses can combine within the building to create an intensely mixed use district. For example, a Residential Mixed Use building that provides the minimum amount of residential required can also include commercial uses, a central utility plant, retail, and other active uses at the ground floor.

STANDARDS

1.3.1 PERMITTED USES

All use categories listed within these Design Controls are permitted unless expressly excluded.

The intent is that these permitted uses be interpreted broadly, with the intent to allow for uses that might not yet exist but that are consistent with the general classes of uses permitted under each category.

Primary permitted uses are: Residential, Commercial, Retail, Production, and Other Uses as defined in Section 1.2 Land Use Categories and further elaborated in the Land use Chart in Appendix C. Hotel, Active Uses, Open Space, Parking and District-Serving Utility Installation are uses that are described in more detail in Section 1.2 as either (1) subsets of permitted uses within another land use category with unique characteristics, or (2) uses that are permitted within certain Blocks.

1.3.2 GROUND FLOOR USES

The ground floor of every building shall contain a mix of Retail, Production, and/or Active Uses as described in *Chapter 5: Ground Floor*.

1.3.3 RESIDENTIAL MIXED USE

On Blocks primarily designated as Residential Mixed Use, at least 60% of the gross square footage of the Buildings above the ground floor in each Block shall consist of Residential Uses. The minimum 60% requirement shall be considered cumulatively on each subject Block, starting with the first Vertical Improvement on the Block. No Vertical Improvement or change of use may be approved if it causes the gross square footage on the Block as a whole, considering all existing and approved uses on the Block, to fall below 60% Residential Uses. Once the minimum for this primary use is satisfied, any number of additional permitted uses are allowed.

1.3.4 COMMERCIAL MIXED USE

On Blocks primarily designated as Commercial Mixed Use, at least 60% of the gross square footage of the Buildings above the ground floor in each Block shall consist of Non-Residential Uses. The minimum 60% requirement shall be considered cumulatively on each subject Block, starting with the first Vertical Improvement on the Block. No Vertical Improvement or change of use may be approved if it causes the gross square footage on the Block as a whole, considering all existing and approved uses on the Block, to fall below 60% Non-Residential Uses. Once the minimum for this primary use is satisfied, any number of additional permitted uses are allowed.

1.3.5 FLEX USES

Blocks H, I, and J are indicated as “Flex” blocks, which means they can be developed as either Residential Mixed Use or Commercial Mixed Use. Development on these Blocks must follow the appropriate set of Building Design guidelines and standards for whichever land use is applicable, as set out in Chapter 7: Building Design.

1.3.6 TEMPORARY, INTERIM, NON-CONFORMING AND ACCESSORY USES

Temporary, interim, non-conforming and accessory uses are described in the SUD.

PUBLIC REALM

CHAPTER 2: PUBLIC REALM

2.1 An Inclusive Public Realm 18
2.2 Street Typologies 20
2.3 Pedestrian Circulation + Accessibility 22
2.4 Vehicular + Bicycle Circulation 24
2.5 Loading, Servicing, + Parking 26
2.6 Materials: Paving + Site Elements 28
2.7 Urban Forest 30
2.8 Sustainable Water Systems 34
2.9 Lighting + Nighttime Identity 36
2.10 Wayfinding 38
2.11 Public Art 40

CHAPTER 3: OPEN SPACE

3.1 Open Space Network 44
3.2 China Basin Park 46
3.3 Mission Rock Square 48
3.4 Channel Lane 66
3.5 Channel Wharf 68
3.6 Pier 48 Apron 70
3.7 Channel Street 72
3.8 Kiosks + Small Park Structures 74

CHAPTER 4: STREETS

4.1 Street Controls 78
4.2 Shared Public Way 80
4.3 Terry A Francois Boulevard 90
4.4 Bridgeview Street 98
4.5 Exposition Street 104
4.6 Long Bridge Street 108
4.7 3rd Street 112
4.8 Mission Rock Street 116

THE VARIETY STORE

The public realm of Mission Rock will be a vital link in San Francisco's waterfront open space, a dynamic addition to the Mission Bay neighborhood, and a foundational aspect of the new district. The public realm, land use, and building strategies will work in concert to create a safe, inviting, and sustainable landscape, providing a diversity of experiences that will enrich the city at multiple scales.

02

PUBLIC REALM

The public realm will be a network of special, distinct open spaces and lively, pedestrian-oriented streets. A unique component of the plan will be the introduction of more intimate spaces across the site to support active and vital streetlife. The integrated combination of public realm experiences and active ground-floor building design and uses will create an inviting and memorable urban district.

The key public realm features of Mission Rock will be China Basin Park, situated on China Basin at the mouth of Mission Creek as it enters the Bay; Mission Rock Square, the heart of the neighborhood; the Shared Public Way, an active retail spine that will connect through the neighborhood to the waterfront; Channel Lane, an intimate open space that will link Mission Rock Square to the Bay edge; Channel Wharf, which will serve active maritime use and public access to the bay; and the Working Waterfront (Terry A Francois Boulevard), a unique urban waterfront experience that will encompass the actively used piers and provide pedestrian and bicycle waterfront access via the Blue Greenway. These features will be connected by generous pedestrian and bicycle circulation. Chapter 2 describes how these places and experiences will be unified at Mission Rock.

2.1 An Inclusive Public Realm 18
2.2 Street Typologies 20
2.3 Pedestrian Circulation + Accessibility 22
2.4 Vehicular + Bicycle Circulation 24
2.5 Loading, Servicing, + Parking 26
2.6 Materials: Paving + Site Elements 28
2.7 Urban Forest 30
2.8 Sustainable Water Systems 34
2.9 Lighting + Nighttime Identity 36
2.10 Wayfinding 38
2.11 Public Art 40

RELATED CHAPTERS: The design of each open space and street described in Chapters 3 and 4 must satisfy the requirements of this chapter. This chapter should be read with Chapter 5: Ground Floor to describe intended integration of the public realm and vertical development. These controls occasionally refer to Chapter 7: Building Design.

2.1 AN INCLUSIVE PUBLIC REALM

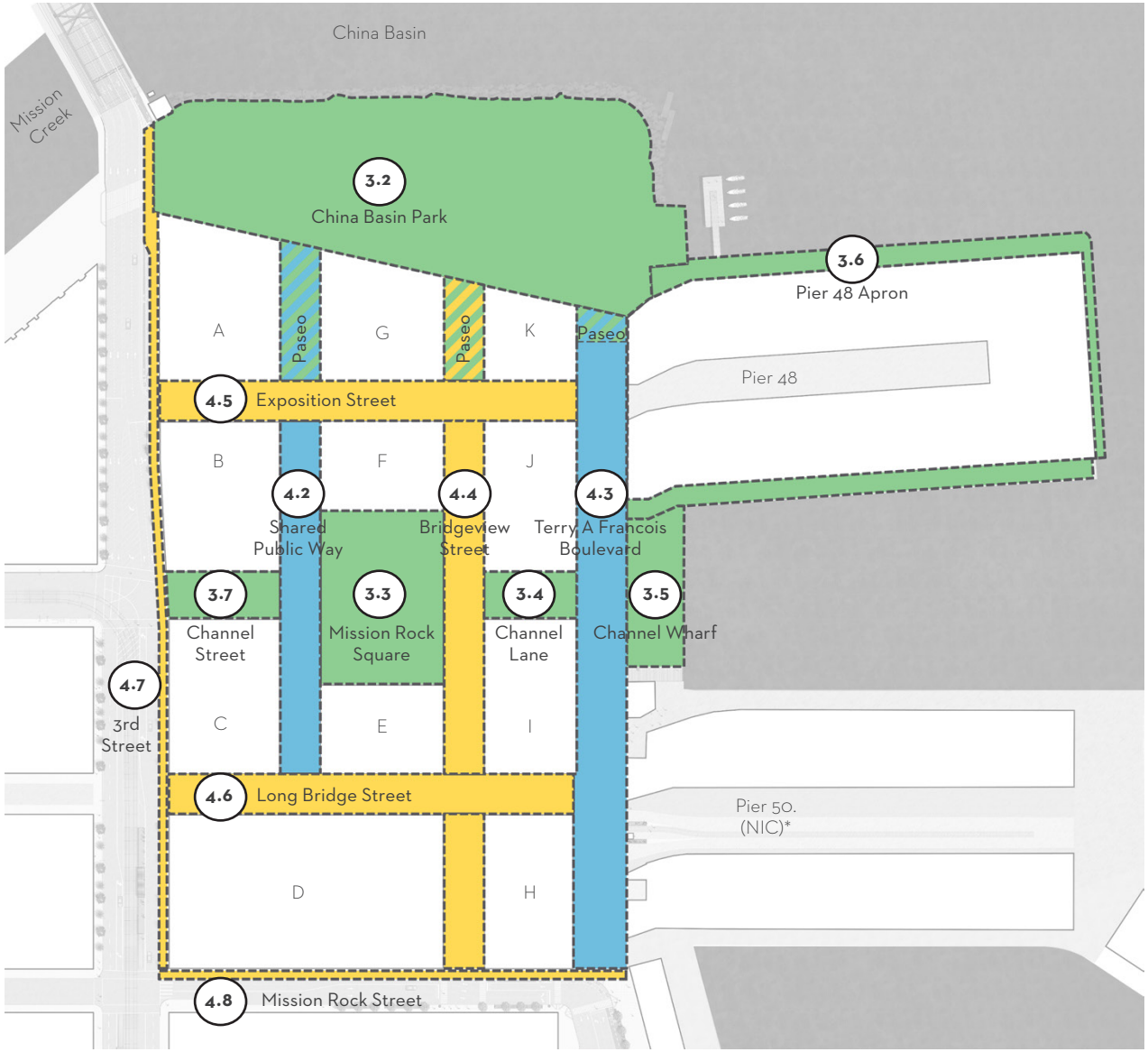
Together, Mission Rock's open spaces and streets will create a unique neighborhood comprised of varied places and landscape types -- an inclusive, urban, and active district that welcomes and facilitates a variety of uses and activities.

The Chapter 2 Public Realm controls prescribe and characterize elements that must be coordinated across the entire network of streets and open spaces. These elements include the various aspects of a vibrant public realm—paving and site elements, the urban forest, stormwater management, wayfinding, lighting, and public art—that will characterize Mission Rock's public spaces.

Each open space, shared street, and neighborhood street must satisfy the controls in Chapter 2 to comply with the Mission Rock DC document and with the project's goals for the public realm.

The public realm will function socially, programmatically, and ecologically, with consideration for climate responsiveness, resiliency, and resource conservation. Suitable plant species will be selected and sustainable maintenance regimes devised to maintain the ecological health and aesthetic integrity of the public realm network.

Please note: illustrative material in this document does not represent a design proposal. All illustrative material is included to demonstrate one potential application of the controls herein.



KEY PUBLIC REALM LOCATIONS AND CORRESPONDING DC CHAPTERS:

- Chapter 3: Open Space
- Chapter 4: Shared Streets
- Chapter 4: Streets
- Chapter 4: Paseos

FIGURE 2.1.1 Location Plan of Public Realm streets and open spaces and their chapter locations in this DC document.

**NIC = Not In Contract. Please refer to Glossary.*

2.2 STREET TYPOLOGIES

While anchored by its open spaces, the public realm at Mission Rock will be activated by social life that will occur as much in its streets as in its parks.

Mission Rock will include several complementary street typologies that create a variety of different experiences for different visitors, from residents and workers to families visiting on a weekend afternoon to ballpark event crowds. These varied street types facilitate different speeds of moving, from an afternoon stroll to a morning bicycle ride to work.

Streets at Mission Rock will be pedestrian- and bicycle-friendly, with generous sidewalks, narrow vehicular travel lanes, and no on-street parking, to discourage unnecessary vehicular traffic and to create a feeling of pedestrian priority. Street types and designs will conform to the intent of the Better Streets Plan.

Every opportunity will be taken in the public realm to create moments that support varied social interactions, especially in each street's Streetlife Zone. This area will add to Mission Rock's civic vitality and retail activity. "Street Rooms" - intimate social spaces within streetscapes that are characterized by their small scale and special materials - as well as stormwater gardens that have both aesthetic value as small urban gardens and ecological value as stormwater treatment facilities, will provide a fine grain to the street network as places for people.

STANDARDS

2.2.1 STREET TYPOLOGIES

Several unique street types with distinctive character, planting, traffic speed, and streetlife elements shall comprise the Mission Rock street network. See Figure 2.2.1 for the distribution of these typologies across the site.

A) Definitions

- **Shared Public Way:** Pedestrian-oriented, shared street with one-way traffic, curbless.
- **Working Waterfront:** Shared street with two-way traffic that integrates industrial and maritime uses with the Bay Trail/Blue Greenway; flush curbs.
- **Neighborhood Street:** Streets with generous sidewalks, stormwater treatment gardens, and slow traffic; vehicular travelway curb-separated from sidewalk; must include sharrows or standard bicycle lanes.
- **Paseo:** Paseos, or open spaces within the ROW that accommodate emergency vehicles, will be non-vehicular street extensions of the Shared Public Way, Bridgeview Street, and Terry Francois Boulevard adjacent to China Basin Park. See Section 2.4.
- **District Street:** Streets referencing OCII Mission Bay design standards on edge of plan area.

2.2.2 STREETLIFE ZONE: REQUIREMENTS + ELEMENTS

A) Streetlife Elements: Definition

Streetlife Elements, including street rooms, kiosks, stormwater treatment gardens, and social furniture, shall be distributed throughout the public realm and concentrated in streets with the highest pedestrian traffic. Also see Chapter 4 and refer to the Glossary.

B) Streetlife Elements: Consistency

Streetlife elements shall have related character, scale, and intention along the length of a single street or within an Open Space, but are not required to be identical unless noted within the controls for that particular place.

C) Stormwater Garden Activation

Stormwater Gardens on the Shared Public Way, Bridgeview Street, Exposition Street, and Long Bridge Street shall contain or be adjacent to seating.

D) Temporary Kiosks

Kiosks located within Streets or Open Spaces, except in the locations noted in Section 3.8, shall be temporary. Refer to Standard 1.1.6 for allowed Open Space Uses.

D) Bicycle Parking

Bicycle parking shall be located within or adjacent to all open spaces. On streets, bicycle parking shall be located within the Streetlife Zone per 4.1.6, with consideration given to maximizing permeability and facilitating pedestrian movement.

2.2.3 PEDESTRIAN-PRIVILEGED ENVIRONMENT

Creating a safe, accessible, and comfortable pedestrian experience will be a priority on all streets at Mission Rock.

A) Open Space Connections

Safe pedestrian street crossings and connections to Open Spaces shall be provided per Section 2.4.

B) Microclimate Comfort

Spaces that provide opportunities for gathering and lingering, especially those associated with Streetlife Elements, shall be protected from wind. See Section 2.7.

GUIDELINES

2.2.4 PRIORITY PEDESTRIAN ROUTES

The Shared Public Way, Terry A Francois Boulevard, Channel Street, and Channel Lane should be considered priority pedestrian routes connecting significant site anchors.

2.2.5 SPECIAL LIGHTING

Special lighting for streets, and at specific streetlife elements such at street rooms, should be considered as a vital part of Mission Rock's nighttime identity. See Section 2.9 and Chapter 4.

LEGEND: STREET TYPOLOGIES

- Shared Public Way (one-way traffic)
- Working Waterfront (two-way traffic)
- Neighborhood Streets (two-way traffic)
- Paseos (Pedestrian-only street extension)
- District Street
- Open Space

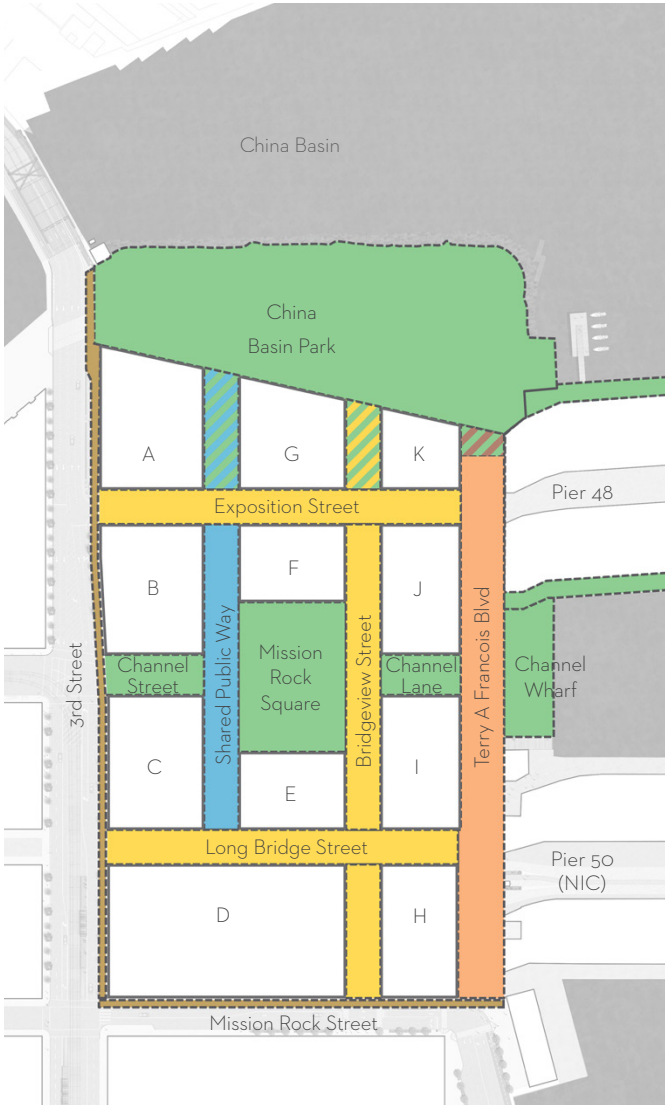


FIGURE 2.2.1 Street Typologies diagram illustrating how the five street typologies defined in 2.2.1 are distributed across the site. These typologies are described in Chapter 4 in the controls for each street.

2.3 PEDESTRIAN CIRCULATION + ACCESSIBILITY

As a pedestrian-priority development, Mission Rock's street network will provide safe and easy access to open spaces, building entrances, and retail, with unique street types designed to the scale and speed of the pedestrian experience. A combination of traffic calming strategies will discourage accessing the site by vehicle. The public realm will be tightly integrated with the design and scale of the ground floor of Mission Rock's buildings.

Mission Rock's three north-south streets will have either reduced-height or flush curbs separating the pedestrian realm from the vehicular travelway. In addition to privileging pedestrian access, this strategy will facilitate paratransit vehicle access that can serve all of Mission Rock's blocks and open spaces.

Passenger loading and building servicing strategies, described in Sections 2.5 and 5.3 and in the Transportation Plan, will be designed to minimize conflicts between pedestrians and vehicles, and to maximize the special streetlife elements that create a rich public experience.

Concept Rendering of Waterfront Promenade in China Basin Park

STANDARDS

2.3.1 PEDESTRIAN THROUGHWAY

On all sidewalks and major pedestrian routes to and within Open Spaces, a pedestrian throughway that is 6'-0"-minimum width shall be identified and maintained. This throughway shall be a universally accessible path of travel that does not exceed 5% maximum longitudinal slope. See Chapters 3 and 4 for mandated minimum widths of pedestrian throughway and circulation routes in specific open spaces and streets.

2.3.2 UNIVERSAL ACCESS TO OPEN SPACES

Universal access to open spaces shall be provided from the significant pedestrian connections that are identified on Figure 2.3.1.

2.3.3 ACCESSIBLE LOADING AND UNLOADING

Loading zones for vehicular and paratransit loading and unloading shall be provided.

A) Location of Loading Zones

These shall be located along frontages indicated in Figure 2.3.1, distributed to enable access to all blocks and open spaces.

B) Curb Conditions

Refer to Infrastructure Plan for loading stall configurations at standard and non-standard curb conditions.

2.3.4 RAISED INTERSECTIONS

Raised or flush intersections shall be provided along the Shared Public Way, Terry A Francois Boulevard, and Bridgeview Street. Refer to Chapter 4 and to the Infrastructure Plan for more information.

A) Intersection Markings at Pedestrian Throughway

At raised intersections, pedestrian throughway across the intersection shall be indicated with crosswalks.

2.3.5 DECORATIVE CROSSWALK TREATMENTS

Where proposed, decorative crosswalk treatments shall comply with City and MUTCD standards and required review. Proposed decorative treatments shall meet ADA standards for slip-resistance.

An example of a raised intersection with decorative treatment and delineated crosswalks.

SOURCE: GOOGLE STREET VIEW

LEGEND: PEDESTRIAN CIRCULATION + ACCESSIBILITY

- Sidewalks + Major Pedestrian Routes
- Accessible Loading Locations
- Significant Pedestrian Connection: Shared Street with Flush Curbs
- Significant Pedestrian Connection: Neighborhood Street with Reduced-Height Curb
- Crosswalks (off-site)
- Interior Accessible Drop-Off/Parking Stalls
- MUNI Metro stop

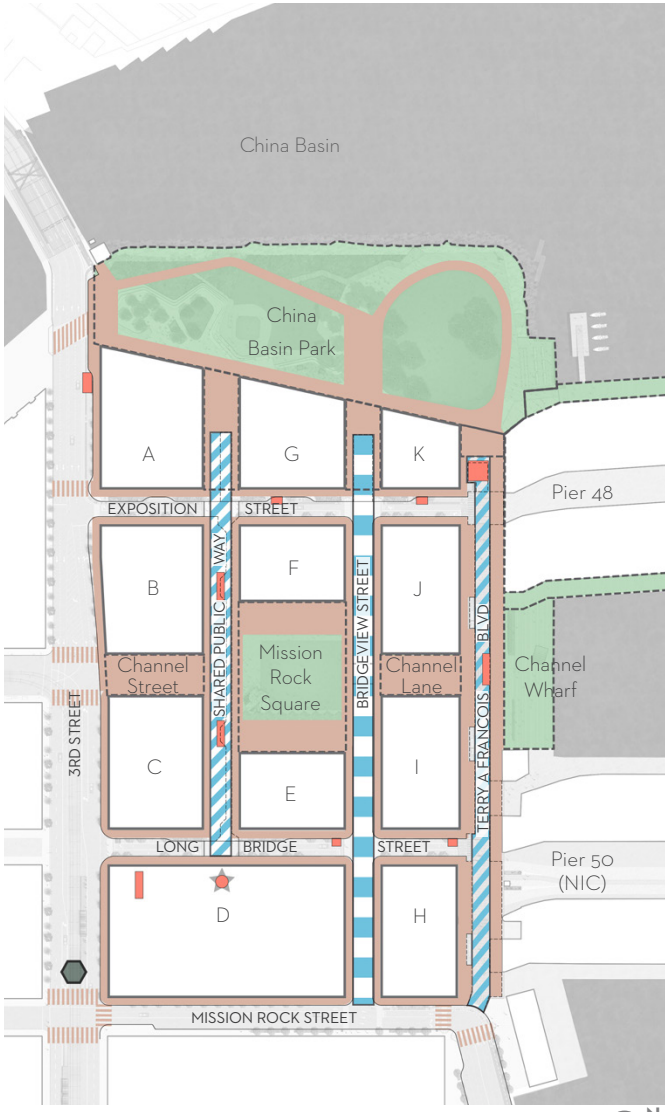


FIGURE 2.3.1 Pedestrian Circulation + Accessibility diagram illustrating pedestrian routes and access, significant connections, and accessible loading zone locations in the public realm. See Chapters 3 and 4 for open space and street details.

2.4 VEHICULAR + BICYCLE CIRCULATION

Mission Rock's street network will be comprised of short, walkable blocks that connect directly to existing Mission Bay streets adjacent to the project.

Through careful consideration of the pedestrian and bicyclist experience, transit connections, traffic calming measures, and a centralized site parking facility instead of on-street parking, the project will discourage accessing the buildings, streets, and open spaces at Mission Rock by vehicle.

The bicycle network at Mission Rock will provide an important link for the district and the Bay Trail, connecting the Blue Greenway to the Embarcadero. Within the site, a variety of bike facilities will provide choices for cyclists of all ages and skill levels to access Mission Rock's open spaces and buildings. These facilities will be integral to the unique character of Mission Rock's streets.

STANDARDS

2.4.1 VEHICULAR CIRCULATION

All streets at Mission Rock shall have two-way, low-speed, low-volume traffic circulation, with the exception of the Shared Public Way, which shall have one-way traffic in the northbound direction only. Refer to Figure 2.4.1.

2.4.2 PASEOS

Paseos are proposed at the terminus of the Shared Public Way, Bridgeview Street, and Terry A Francois Boulevard at China Basin Park. Refer to Chapter 4 for additional specific street controls.

A) Emergency Vehicle Access

Paseos shall accommodate Emergency Vehicle Access for a maximum distance of 150' from the Exposition Street ROW. The terminus of this access shall be clearly marked by permanent site furnishings, including bollards or equivalent, or street trees.

B) Prohibiting Vehicular Access

At Exposition Street, paseos shall include signage and design cues that prohibit access for unauthorized vehicular traffic.

2.4.3 BICYCLE CIRCULATION

Bicycle facilities or sharrows shall be provided on all streets at Mission Rock. Figure 2.4.2 indicates the Conceptual Strategy for these facilities at a network scale. See Chapter 4 for controls defining specific facilities on each street.

2.4.4 INTERSECTIONS

All stop-controlled and signalized intersections shall adhere to City standards for signage and street markings. Refer to Figure 2.4.1 and to the Infrastructure Plan.

A) Uncontrolled Intersections

Where crosswalks at uncontrolled intersections are proposed at Open Space connections, an appropriate combination of traffic control strategies, including crosswalk markings, shall be employed to maximize visibility and safe pedestrian crossing. See Standard 2.3.3.

LEGEND: VEHICULAR CIRCULATION NETWORK (L)

- Open Space
- Shared Street (No Street Parking)
- 2-Way Street (No Street Parking)
- Paseo
- Direction of 1-Way Traffic
- Direction of Through Traffic
- Shared Site Parking Location
- Access to Below-Grade Parking (if provided)
- Stop Sign: All-Way Stop
- Stop Sign at Through Streets
- Existing Signalized Intersection
- Proposed Signalized Intersection

LEGEND: BICYCLE CIRCULATION NETWORK (R)

- Bay Trail/Blue Greenway: China Basin Park *(Primary N-S Bicycle Connection; Multi-Use Trail)*
- Protected Cycle Track: Bridgeview + Mission Rock Streets *(Primary N-S Bicycle Connection)*
- Bay Trail/Blue Greenway: Terry A Francois Blvd and China Basin Park *(Multi-Use Trail)*
- Class II Bike Lane
- Sharrows / Shared Travelway
- Open Space

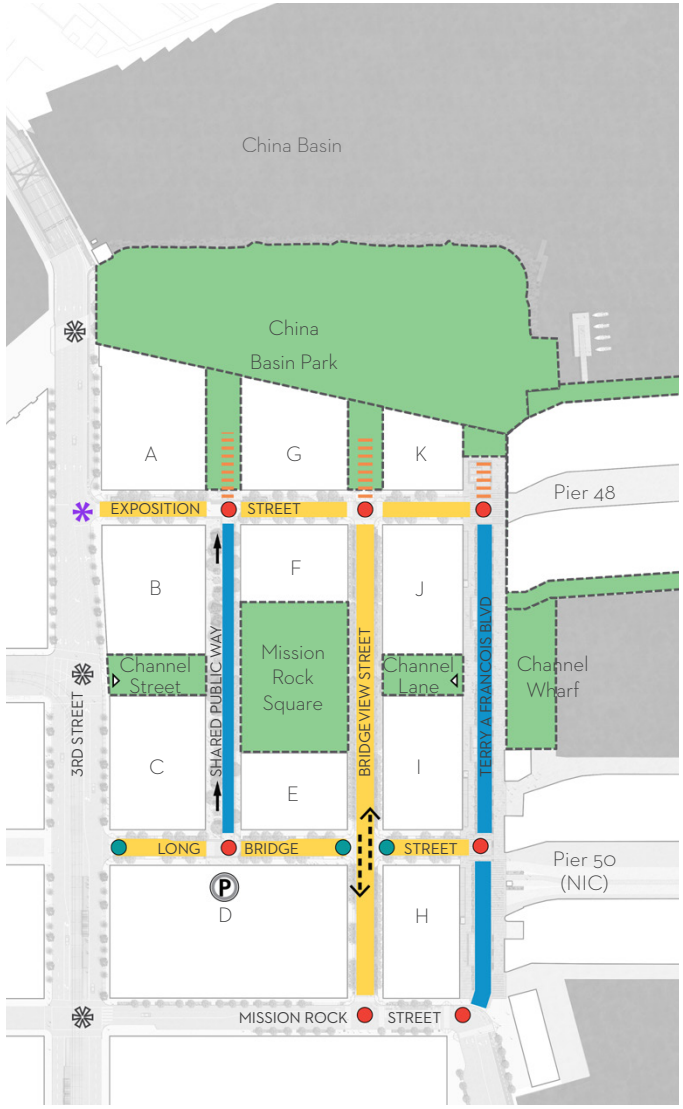


FIGURE 2.4.1 Vehicular Circulation Network Diagram illustrating vehicular movements, paseos, traffic signals, and stop control across the site. Refer to Chapter 4 for specific street controls, and to the Infrastructure Plan and Transportation Plan for details.

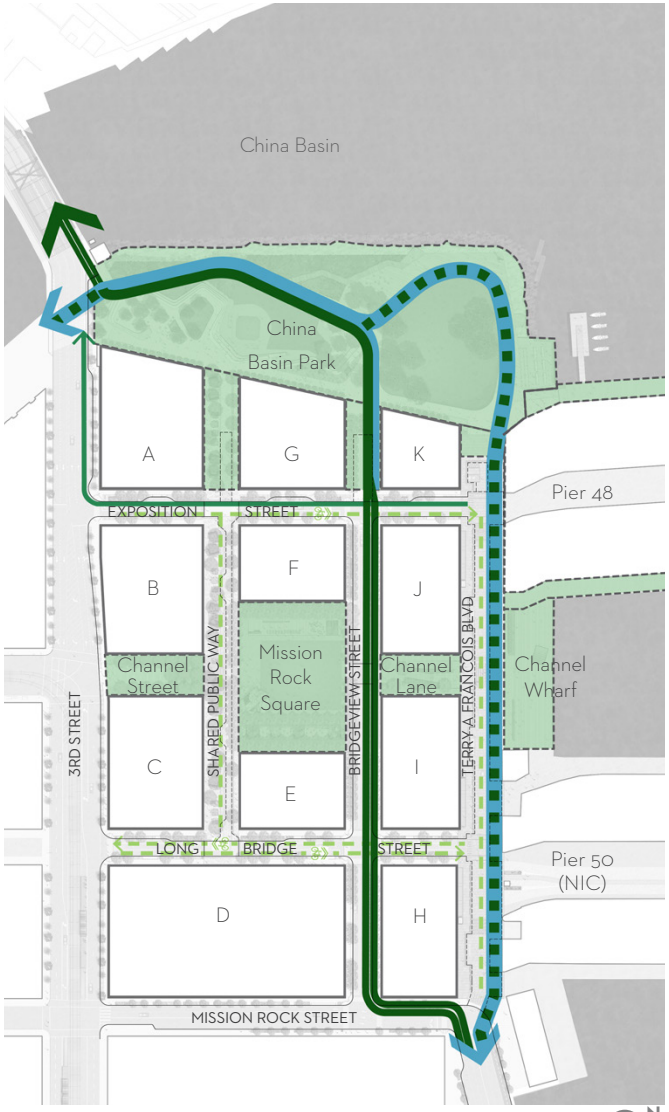


FIGURE 2.4.2 Bicycle Circulation Network Diagram illustrating hierarchy and connections among the different types of bicycle facilities across the site. These facilities are described in Chapters 3 and 4 for each open space and street.

2.5 LOADING, SERVICING, + PARKING

Loading, servicing, and parking at Mission Rock will be distributed to minimize impact on the public realm pedestrian experience. While no permanent street parking will be provided, passenger loading across the site will be accommodated in dedicated spaces - this strategy is described in the Transportation Plan.

Servicing needs for all of Mission Rock's blocks will be accommodated on Exposition Street and Long Bridge Street in dedicated zones. Additional commercial vehicle access will be provided on Terry A Francois Boulevard, to serve the Piers and Working Waterfront tenants. See also Section 5.3: Building Access.

STANDARDS

2.5.1 DEFINITIONS: LOADING AND SERVICING

A) Loading

Loading in this document refers specifically to passenger loading. Figure 2.5.1 defines where loading zones are distributed in dedicated areas for the public realm; refer to the Transportation Plan for more detailed information. Accessible loading zones are described in Section 2.3.

B) Servicing and Commercial Loading

Servicing refers to dedicated zones for commercial deliveries, freight loading, and building servicing. Figure 2.5.1 defines where servicing may occur within the public realm; refer to the Transportation Plan and Infrastructure Plan for more information on how these zones are dedicated to specific block and land use needs.

2.5.2 STREET PARKING

No street parking will be provided at Mission Rock.

2.5.3 PASSENGER LOADING + SERVICING ZONES

Dedicated zones to accommodate spaces for passenger loading and building servicing for all Blocks shall be provided on Exposition and Long Bridge Streets. Refer to Section 2.3 for accessible loading stall controls, Chapter 4 for street controls, and see Infrastructure Plan for more details.

2.5.4 LARGE VEHICLE ACCESS TO PIER 48 AND PIER 50

Access for large trucks that are a maximum size of WB-67 shall be maintained to the valley of Pier 48. Access for large trucks that are a maximum size of WB-50 shall be maintained at Pier 50. Refer to Infrastructure Plan for access studies.

2.5.5 COMMERCIAL VEHICLE ACCESS: STREETS

A) Internal Circulation

Exposition and Long Bridge Streets and Terry A Francois Boulevard shall accommodate commercial vehicle circulation in dedicated loading zones. Refer to Infrastructure Plan and Transportation Plan.

B) Loading Zones: Working Waterfront

Commercial vehicle loading zones for trucks that are a maximum size of SU-30 shall be accommodated on Terry A Francois Boulevard at Blocks H, I, and J for Working Waterfront uses. Refer to Infrastructure Plan for design vehicle access studies and to Chapter 5 for Working Waterfront uses.

2.5.6 DRIVEWAYS

If provided, driveways to access off street parking on all blocks except D are only permitted on Exposition Street and Long Bridge Street in accordance with Section 7.7. Driveways for the shared parking facility at Block D shall be provided on Bridgeview Street and Mission Rock Street. Potential locations are noted in Figure 2.5.1. Refer to Sections 5.3 and 7.7 for block driveway controls, and see Infrastructure Plan for information regarding placement of driveways relative to streetscape elements.

LEGEND: LOADING, SERVICING, + PARKING

- Service Street
- Shared Street (Flush Curb)
- Commercial Loading + Servicing Zones
- Accessible Loading (See Section 2.3)
- Time-Limited Commercial Delivery Zone (Accessible Loading All Other Times)
- Open Space
- Large Truck/Vehicle Access Points
- Potential Driveway Location (if provided)
- Shared Parking Facility
- Access to Below-Grade Parking (if provided)

FIGURE 2.5.1 Loading, Servicing, + Parking Diagram illustrating passenger and commercial loading locations and dimensions, shared streets, and large vehicle access points in the public realm. Loading dimensions are noted in italics next to each zone. Refer to Infrastructure Plan and Transportation Plan for more information.

2.6 MATERIALS: PAVING + SITE ELEMENTS

Paving will be a key component that defines the character, connectivity, and identity of Mission Rock's varied streets and open spaces. Paving strategies should be considered as an interconnected site-wide system that activates the public realm and contributes to the overall pedestrian, bicycle, and vehicular circulation on the site. All paving in areas with high pedestrian traffic will facilitate universal accessibility. Paving connections to surrounding streets should be carefully considered for their impact on the larger Mission Bay neighborhood.

STANDARDS

2.6.1 PEDESTRIAN THROUGHWAY MATERIALS

The Pedestrian Throughway, defined in Standard 2.3.1, shall be an accessible path of travel that is unobstructed by non-ADA-compliant paving or material treatments.

2.6.1 MATERIAL QUALITY AND CONSISTENCY

Paving and built-in site elements shall be comprised of high-quality materials and finishes. All materials shall be durable to withstand high-intensity use in the Bay environment. All material textures in designated clear path of travel and accessible use areas shall be ADA-compliant.

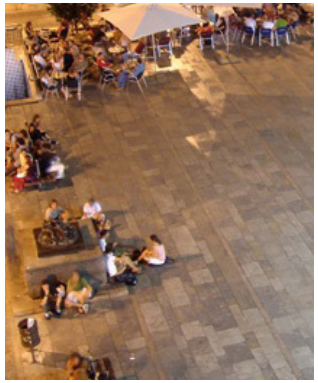
2.6.2 SURFACING AT TREE PLANTING

A) Trees in Paving

Where trees are planted in paving, surfacing material shall allow air and water to reach tree roots. Tree grates or stabilized crushed stone are permitted in the Streetlife Zone and in Open Spaces outside of dedicated Pedestrian Throughways per 2.3.1.

B) Trees in Planting

Where trees are planted in planting areas on streets, finish grade shall be within 2" of adjacent pedestrian paving.



Varied paving textures and integral lighting create nighttime identity and an intimate character

(L) © LAMENTABLE.ORG / (R) LOS-80S-Y-ALGO-MAS.BLOGSPOT.COM

Light-hued paving reduces heat island effect. SOURCE: CMG

GUIDELINES

2.6.4 PAVING ZONES

Paving should be a key component that defines the character, connectivity, and extent of Mission Rock's varied public realm. The following Paving Zones suggest relationships and common paving identities among different streets and open spaces; also see Figure 2.6.1.

- **Street Room + Special Paving:**
  Contrasting, high-quality paving that distinguishes street rooms and kiosk areas as places to linger; refer to Sections 3.2, 3.3, and 4.2 and to Glossary.
- **Mission Rock Square + Channel St Paving:**
  Paving material with rich texture and urban character; may have integral lighting
- **Open Spaces - Waterfront Paving:**
  Paving material that is commonly recognizable on waterfronts; should be comfortable to walk and run on; must be durable to withstand coastal conditions
- **Pedestrian-Scale Paving:**
  Detailed paving, consistent across the entire right-of-way, that is a maximum of 12 inches in at least one horizontal dimension and visually interesting at the speed of walking.
- **Working Waterfront Paving:**
  Utilitarian paving, consistent across the entire right-of-way, with a large module or pattern that is visually interesting at the speed of walking; must be durable for truck traffic.
- **Sidewalks:**
  Cast-in-place concrete with pedestrian unit pavers at Streetlife Zones.

2.6.5 PAVING: URBAN HEAT ISLAND EFFECT

Where possible, reduce urban heat island effect by using pavement with a Solar Reflectance Index (SRI) of 29 or higher in areas that are predominantly un-shaded by tree canopy or buildings.

2.6.6 PAVING: CHARACTER AND VARIATION

Paving contrast may be introduced through color or geometric variation, textural variation within a single paving module, integral lights, or juxtaposition of scale or material.

Paving variation within a single paving module provides color and texture contrast. SOURCE: CMG

LEGEND: CONCEPTUAL PAVING ZONES

- Street Room + Special Paving
- Open Space: Mission Rock Square
- Open Space: Waterfront Paving
- Pedestrian-Scale Paving
- Working Waterfront Paving
- Sidewalks
- Right-of-Way/Boundary

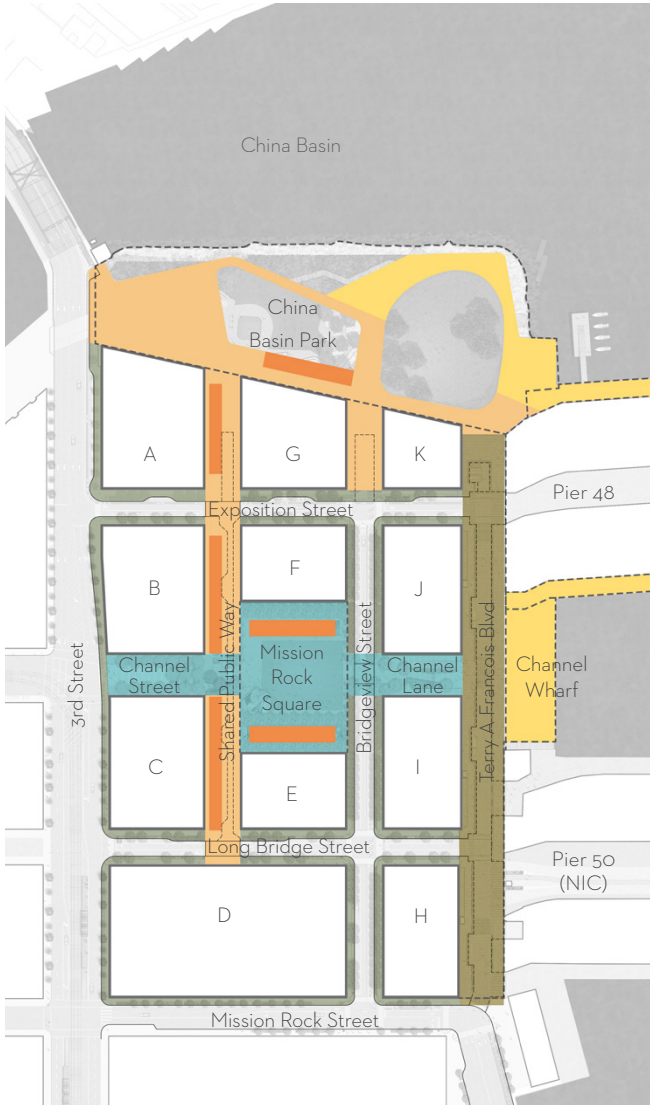


FIGURE 2.6.1 Conceptual Paving Zones diagram illustrating the relationships among paving zones defined in Guideline 2.6.4. Paving details and conformance with City standards are defined in the Infrastructure Plan.

2.7 URBAN FOREST

Planting at Mission Rock will function ecologically to help achieve the project's goals for sustainability and contribute to a healthy environment. Composition and distribution of a diverse, adapted urban forest, stormwater gardens, and planted areas will create a resilient ecological framework to shape varied sensory experiences across the site and provide waterfront and urban habitat.

Trees will be used to block and mitigate wind, provide shade and reduce urban heat island effect, and to provide shelter for birds. Native or climate appropriate grasses, shrubs, and ground cover will provide as much species diversity as feasible in Mission Rock's planting areas, as well as function in stormwater treatment gardens.

Upon construction, maintenance and management of tree and understory planting, soils, and irrigation will be essential to the successful function of the site's urban ecological systems.

STANDARDS

2.7.1 URBAN FOREST COMPOSITION

Suggested species diversity in Figure 2.7.1 is a baseline; species selected for specific areas shall conform to this general distribution and diversity for the Mission Rock urban forest.

2.7.2 TREE SPECIES AND ALTERNATIVE SPECIES SELECTION

Tree species shall be considered for their aesthetic and ecological benefits. Tree species suggested for each component of the Public Realm network have been selected in consultation with a certified arborist. If alternative species are chosen, they shall conform to the aesthetic and performance requirements outlined in Figure 2.7.2 and to the irrigation requirements described in Section 2.8.

2.7.3 WIND MITIGATION

Tree selection and maintenance will be vital to maintaining a comfortable public realm experience in both streets and open spaces. Trees shall be sited with consideration given to wind conditions at the neighborhood and local scale. Mandatory wind tolerances have been noted under the design criteria for tree species selection; see Figure 2.7.2.

A) Wind Mitigation in Open Spaces

Trees in all open spaces shall be wind-tolerant and shall function as a windbreak for significant program areas in each open space. See Chapter 3 for Open Space design controls.

2.7.4 TREE SPECIES INSTALLATION AND ESTABLISHMENT

A) Soil Volume

Trees shall receive adequate soil volume to sustain long-term health; see Guideline 2.7.7 for volume ranges.

B) Minimum Installation Size

Large and medium-size trees shall be installed at a minimum size of 48"-box; small trees shall be installed at a minimum size of 36" box. Refer to Figure 2.7.2 for tree size and corresponding minimum size at installation.

C) Clear Trunk Requirements

To meet functional requirements in both streets and open spaces, clear trunk requirements shall be achieved within five years of installation. Branches shall not interfere with pedestrian throughway (minimum 84" clearance measured from ground surface) or mandated fire truck vertical clearance of 13'-6" minimum (measured from roadway surface) at any time.

D) Establishment Period

Trees shall receive adequate irrigation and monitoring during a three-year establishment period. See Section 2.8 for irrigation controls.

2.7.5 OCII MISSION BAY STANDARD TREE SPECIES

Tree species on 3rd Street and Mission Rock Street shall adhere to OCII Mission Bay streetscape standards.

GUIDELINES

2.7.6 TREE MAINTENANCE AND MANAGEMENT

A) Pruning

Trees in the Public Realm should be pruned yearly to sustain long-term health and to maintain desired growth habit.

B) Water Application

Determine appropriate water application after establishment (three years) in consultation with a certified arborist's comprehensive review of tree health on the site. Monitor water application per Standard 2.8.3.

2.7.7 RECOMMENDED SOIL VOLUME FOR TREES

Trees in the public realm should have adequate soil volume and infiltration, particularly trees planted in paving. Large tree species require 1500-2000 cubic feet of soil volume per tree; Medium tree species require 1000-1500 cubic feet of soil per tree; Small tree species require 800-1000 cubic feet of soil per tree. Tree species sizes are noted in Figure 2.7.2.

A) Minimum clearance at On-Structure Conditions

Where trees are planted in on-structure conditions, at least four feet of soil depth, and a continuous 6-12"- depth gravel drainage layer, should be maintained.

2.7.8 CHANNEL LANE AND CHANNEL STREET TREE SELECTION

Tree species selected for Channel Lane and Channel Street should be selected from any of the following spaces' species criteria and suggested palettes: Mission Rock Square, Neighborhood Street: Upright, or Neighborhood Street: Arching, or alternative species per 2.7.2. Selected species may differ for Channel Lane and Channel Street. See Figure 2.7.2.

LEGEND: URBAN FOREST DIVERSITY

- China Basin Park
- China Basin Park Promenade Tree
- Mission Rock Square
- Shared Public Way
- Neighborhood Street: Arching
- Neighborhood Street: Upright
- Channel Street + Channel Lane
- 3rd Street & Mission Rock Street
  (See OCII Mission Bay standards)
- Right-of-Way/Boundary

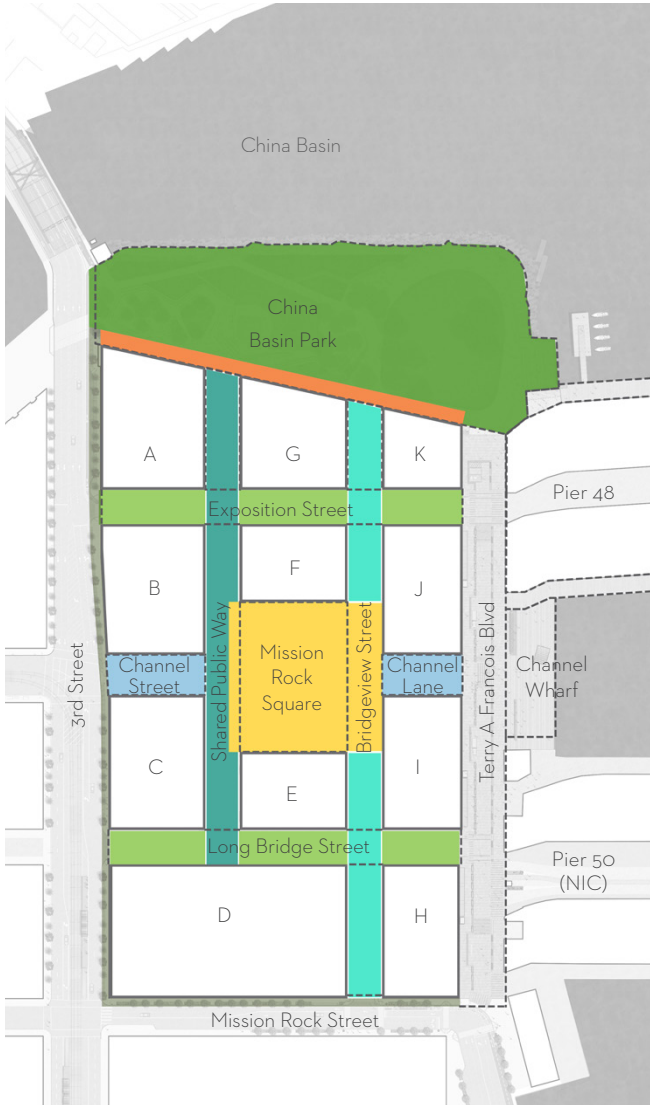


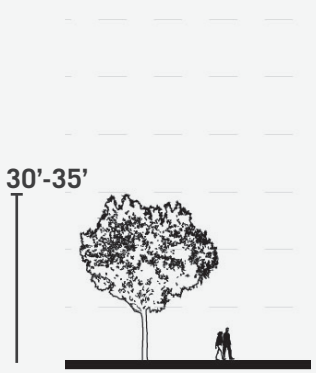
FIGURE 2.7.1 Urban Forest Diversity Diagram illustrating the general distribution of tree species across the public realm. See Figure 2.7.2 for performance & aesthetic requirements and suggested palettes.

GUIDELINES

CHINA BASIN PARK

- Large-canopy evergreen tree (to 60'+ at maturity)
- Minimum 48"-box at installation
- Iconic character; picturesque, sculptural form
- Windbreak and specimen tree
- Tolerances: High wind tolerance; tolerant of coastal environment; healthy in paving and/or lawn (select as appropriate for design concept); tolerant of high pedestrian traffic
- Low water use
- Minimal root disruption when planted in paving
- **Recommended species**:
  Monterey Cypress *[Cupressus macrocarpa]*;
  New Zealand Christmas Tree *[Metrosiderous excelsa]*;
  Red-Flowering Gum [Corymbia ficifolia]

CHINA BASIN PARK: PARK PROMENADE

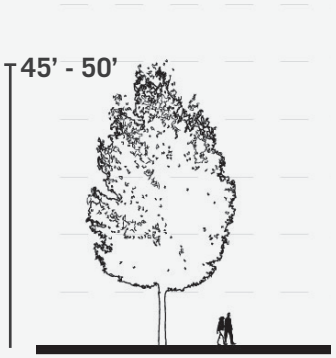


- Small to Medium Evergreen or Deciduous tree (30-35' tall at maturity)
- Minimum 36"-box at installation
- Scaled to intimate walking/seating experience, with notable ornamental leaf or flower; showy bark
- Native or naturalized species
- Tolerances: high wind tolerance; tolerant of deep shade; tolerant of coastal environment; healthy in paving
- Low water use
- **Recommended species**:
  Red Oak cultivar *[Quercus rubra 'Crimson Spire']*;
  Melaleuca *[Melaleuca quinquenervia]*

**Expected size at maturity.*

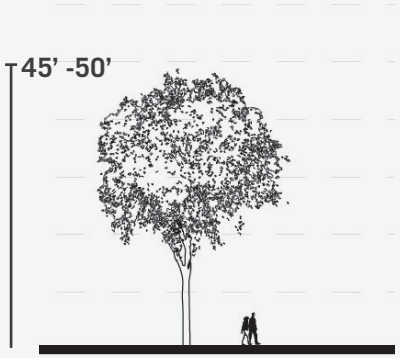
FIGURE 2.7.2 Urban Forest Guidelines

MISSION ROCK SQUARE



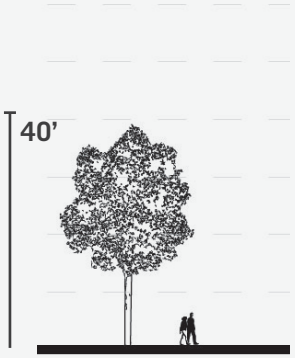
- Large Deciduous or Evergreen tree (45-50' tall at maturity)
- Minimum 48"-box at installation
- Upright form with winter and summer interest; Iconic seasonal ornamental character in leaf or flower
- Delicate leaf; medium-fine textured canopy
- As uniform as possible; close spacing
- Tolerances: medium wind tolerance; tolerant of part-shade conditions; healthy in paving, with minimal root disruption at plaza paving
- Low water use
- **Recommended species**: Freeman Maple *[Acer x. freemanii]*; Ginkgo *[Ginkgo biloba sterile cultivar]*

SHARED PUBLIC WAY



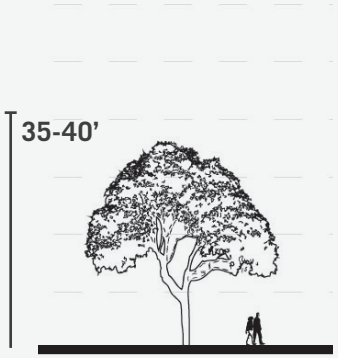
- Large, Semi-Deciduous or Evergreen tree; Deciduous acceptable if other requirements are satisfied (40-50' tall at maturity)
- Minimum 48"-box at installation
- Arching form, but more vertical than spreading; fine-textured canopy; textured, showy bark
- Close spacing
- Tolerances: medium wind tolerance; tolerant of part-shade conditions; healthy in paving, with minimal root disruption of paving
- Low water use
- **Recommended species**: Chinese Elm *[Ulmus parvifolia]*; Strawberry Tree *[Arbutus 'Marina']*; Southern Live Oak *[Quercus virginiana]*

NEIGHBORHOOD STREET: UPRIGHT



- Medium to large Evergreen or Deciduous tree (to 40' tall at maturity)
- Minimum 48"-box at installation
- Upright/Narrow Form
- Tolerances: high wind tolerance; tolerant of part- to full-shade; healthy in paving, with minimal root disruption at sidewalk
- Low water use
- **Recommended species**: Brisbane Box *[Lophostemon confertus]*, Red Oak cultivar *[Quercus rubra 'Crimson Spire']*

NEIGHBORHOOD STREET: ARCHING



- Medium to large Evergreen tree (35-40' tall at maturity)
- Minimum 48"-box at installation
- Arching, graceful form, with special ornamental character if possible
- Tolerances: medium wind tolerance; tolerant of part- to full-shade; healthy in paving, with minimal root disruption at sidewalk
- Low water use
- **Recommended species**: Victorian Box *[Pittosporum undulatum]*, California Pepper *[Schinus molle]*, Cork Oak *[Quercus suber]*

2.8 SUSTAINABLE WATER SYSTEMS

Mission Rock's landscapes and building systems will work together and be designed to conserve, re-use, and filter water.

Site hydrology will be intertwined with daily life at Mission Rock in a unique and systematic way, with stormwater treatment gardens that are a part of the public realm experience in every streetscape and open space, building-integrated recycled water systems, and advanced greywater reuse strategies.

Irrigation is an essential element of plant health and should be considered as part of the site hydrology strategy.

An example of a Stormwater Treatment Garden with integral seating. SOURCE: CMG

STANDARDS

2.8.1 STORMWATER MANAGEMENT

A) Requirements

The Public Realm at Mission Rock shall include Stormwater Quality Treatment for impervious areas within the Public ROW and Open Space Networks. Refer to Infrastructure Plan for technical requirements and applicable regulatory standards.

B) Conceptual Treatment Strategy

Stormwater treatment shall be handled through a combination of treatment within specific streets, and in large feature stormwater gardens in China Basin Park, along the Shared Public Way, and in Mission Rock Square to which runoff is conveyed by gravity or force main for treatment. See specific spaces in Chapters 3-4 for design controls for stormwater treatment gardens.

2.8.2 SITE IRRIGATION

A) Irrigation During Plant Establishment Period

All plant species shall receive establishment irrigation for a minimum of two years. Tree species shall receive establishment irrigation for three years or as deemed necessary for long-term health by a certified arborist. Refer to Mission Rock Sustainability Strategy for guidance about water usage.

B) Plant Species Hydrozones

Planting design shall optimize irrigation efficacy by grouping plants with similar water needs into efficient irrigation hydrozones. Permanent irrigation infrastructure shall be provided for all trees, understory planting, stormwater treatment gardens, and lawn areas.

C) Irrigation Efficiency

Use efficient irrigation systems; utilize drip irrigation except in lawn areas, where spray irrigation is acceptable. Refer to Local Model Water Efficient Landscape Ordinance for regulatory guidance.

D) Alternative Irrigation Water Sources

Recycled water shall be used for irrigation to minimize potable water use. This use shall conform to applicable public health standards; edible plants and play areas shall not be irrigated with non-potable water. Minimum water quality thresholds are to be coordinated with the on-site provider for the centralized water treatment system at each phase of development. See Sustainability Strategy for information on the district's recycled water resources

E) Monitoring

Install irrigation flow meters for all irrigation hydrozones to record and monitor water use across the site.

2.8.3 SITE TREE WATER RECORDS AND AUDITS

Watering records for all site trees shall be kept, and a yearly water audit performed to track the amount of water applied.

2.8.4 STORMWATER TREATMENT AREA REQUIREMENTS

Mission Rock's stormwater treatment strategy combines localized treatment within street right-of-ways and large feature stormwater gardens.

A) Localized Treatment

If treatment of stormwater is not possible as indicated in Figure 2.8.1, required treatment volume for each street and open space shall still be accommodated and shall be located as close to the source as possible.

B) Minimum Treatment Footprint Area and Performance Requirements

Minimum stormwater treatment footprint areas noted in the Infrastructure Plan shall be provided for treatment of impervious surfaces in each street and open space, as well as watershed-scale treatment in large feature gardens in China Basin Park and Mission Rock Square. Stormwater facilities shall conform to applicable performance and area requirements per the Infrastructure Plan.

LEGEND: SITE STORMWATER TREATMENT CONCEPT

- Localized Treatment within ROW
- Centralized Treatment: China Basin Park
- Centralized Treatment: Mission Rock Square
- Large Feature Stormwater Gardens

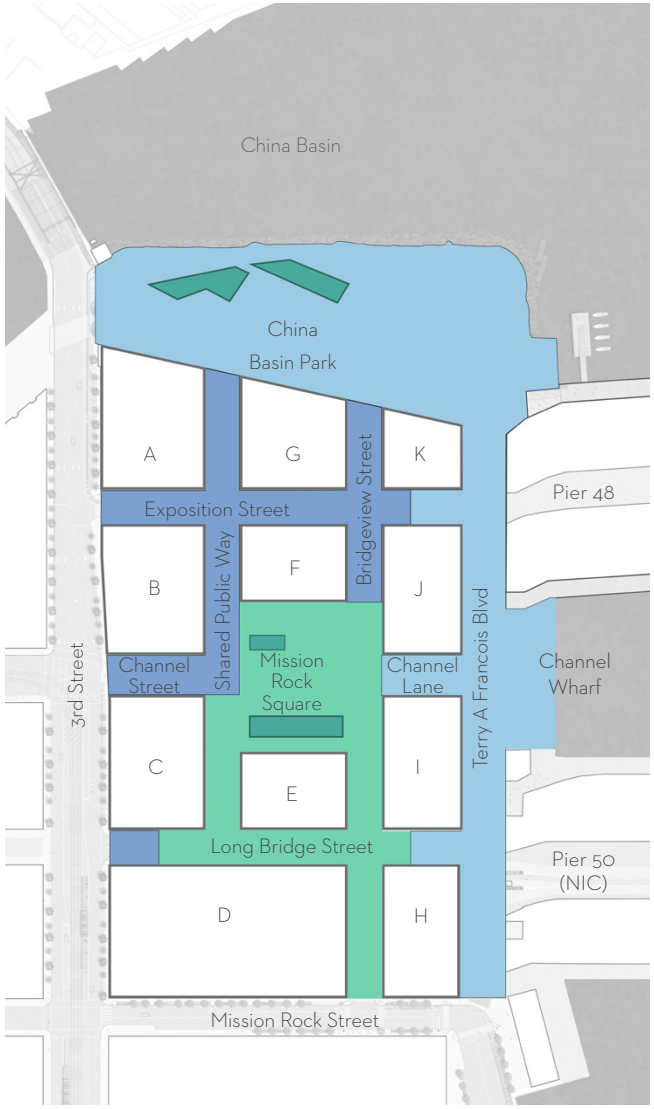


FIGURE 2.8.1 Site Stormwater Treatment Concept Diagram illustrating watersheds, localized treatment areas, and feature stormwater treatment gardens in the public realm. Refer to Infrastructure Plan for technical requirements.

2.9 LIGHTING + NIGHTTIME IDENTITY

Read in conjunction with Section 7.6: Building Lighting.

Lighting will be an important component of nighttime identity, experience, and safety at Mission Rock. Lighting of special, unique character should reinforce key pedestrian routes in open spaces and along the Shared Public Way and Channel Lane and Channel Street. Where possible, a variety of lighting types should work together to create a warm, inviting, and safe nighttime environment.

Lighting across the site will be scaled to the pedestrian and bicycle experience. Lighting strategies will also take care to protect site residents by minimizing light pollution. Lighting along the waterfront will operate on a gradient of intensity, from a well-lit Promenade at the buildings and piers to a more uniformly diffused, minimal character along the water that will not disrupt the ecology of the Bay edge.

Feature overhead lighting activates a small plaza. SOURCE: CMG

STANDARDS

2.9.1 LIGHT POLLUTION, TRESPASS, AND GLARE

Lighting strategies shall minimize glare, light trespass outside the development, and light pollution in areas adjacent to residential buildings and along the waterfront. Also see Standard 7.6.5: Minimizing Light Trespass. Reference applicable regulatory standards.

2.9.2 ENERGY-EFFICIENT LIGHTING FIXTURES

Lighting fixtures and bulbs shall meet or exceed applicable energy-efficiency standards; reference applicable regulatory standards and refer to the Sustainability Strategy.

2.9.3 VISUAL ACUITY AND SAFETY

Lighting shall be designed to allow facial recognition along paths of travel. Lighting shall not create glare or "hot spots" that would inhibit visual acuity, and shall facilitate sight lines and perception of safety across the public realm.

2.9.4 LIGHTING INTENTION

Lighting uniformity ranges in open spaces shall allow for variation in light levels to create hierarchy and a range of experiences. Lighting shall reinforce key pedestrian circulation routes and connections. See Figures 2.9.1-2.9.2.

2.9.5 PEDESTRIAN-SCALE LIGHTING

Lighting shall be scaled to the pedestrian and bicycle experience across the public realm; glare shall not be created at eye level. Prevent unnecessary vertical transmittance of light.

GUIDELINES

2.9.6 VARIETY OF LIGHT TYPES

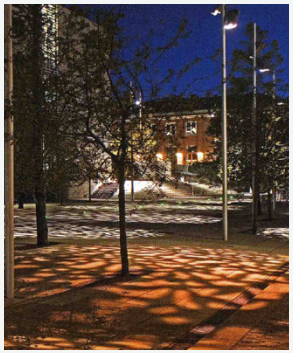
Lighting strategies should incorporate varied fixture types and ambient light from buildings, particularly in high-active retail zones where retail spaces will provide ample ambient light for pedestrian paths. Consider a variety of lighting types, scaled to reinforce active streetlife and open space experiences.

2.9.7 PROJECTED LIGHT

Projected light through a tree canopy ("moonlighting") and through special filters on light fixtures may be used to highlight special places or experiences.

2.9.8 SUGGESTED LIGHT ZONES, LEVELS, AND UNIFORMITY RATIOS

The following light levels and uniformity levels for the public realm, described in Figure 2.9.1, are grouped in six zones that suggest relationships of different light levels and lighting identities among places and uses; also see Figure 2.9.2:



Two examples of utilizing projected and feature lighting to activate spaces at night. (R) SOURCE: CMG

PROJECT LIGHTING ZONE	PEDESTRIAN LIGHT LEVEL (FOOTCANDLES)*	ROADWAY MINIMUM MAINTAINED AVERAGE LIGHT LEVEL (FC)*	UNIFORMITY RATIO, AVERAGE/ MINIMUM*
Zone 1: Waterfront Open Space. Light levels should be brightest at the buildings, and less bright at the water's edge to minimize impact on that sensitive ecosystem.			
China Basin Park: Non-Waterfront Paths	1 fc average	n/a	10:1
China Basin Park: Planting/Lawn Areas	0.5-0.8 fc average	n/a	40:1
China Basin Park & Channel Wharf: Plaza/Wharf Areas	0.8-1 fc average	n/a	20:1
China Basin Park & Pier 48 Apron: Waterfront Paths	0.5-0.8 fc average	n/a	5:1
Zone 2: High Retail Zone. Opportunity for feature lighting; variety of light types encouraged; contributing ambient light from ground-floor uses.			
Mission Rock Square	0.5-0.8 fc average	n/a	40:1
Shared Public Way	1 fc average	0.4 to 1 fc	4 to 6
Zone 3: Working Waterfront. Iconic lighting with highly visible intersections.			
Terry A Francois Boulevard	1 fc average	0.4 to 1.7 fc 1.8 fc at intersections	3 to 6
Zone 4: Neighborhood Streets. Some contributing light from ground-floor uses, especially on Bridgeview Street; intersections should be highly visible.			
Bridgeview and Exposition Streets	0.5-0.8 fc average	0.4 to 1.2 fc intersections: 1.4-1.8 fc	4 to 6
Long Bridge Street	1 fc average	0.4 to 1.7 fc intersections: 1.4-1.8 fc	3 to 6
Zone 5: Gateways. Opportunity for overhead lighting.			
Channel Street	1-1.2 fc average	n/a	10:1
Channel Lane	1-1.2 fc average	n/a	10:1
Zone 6: Mission Bay District Streets: 3rd & Mission Rock Streets. Refer to OCII Mission Bay controls.			

FIGURE 2.9.1 Lighting Zones Chart

*Source: Better Streets Plan <www.sfbetterstreets.org/find-project-types/streetscape-elements/street-lighting/>

LEGEND: LIGHTING ZONES DIAGRAM

- Zone 1: Waterfront
- Zone 2: High Retail Zone
- Zone 3: Working Waterfront
- Right-of-Way/Boundary
- Zone 4: Neighborhood Streets
- Zone 5: Gateways
- Zone 6: District Streets

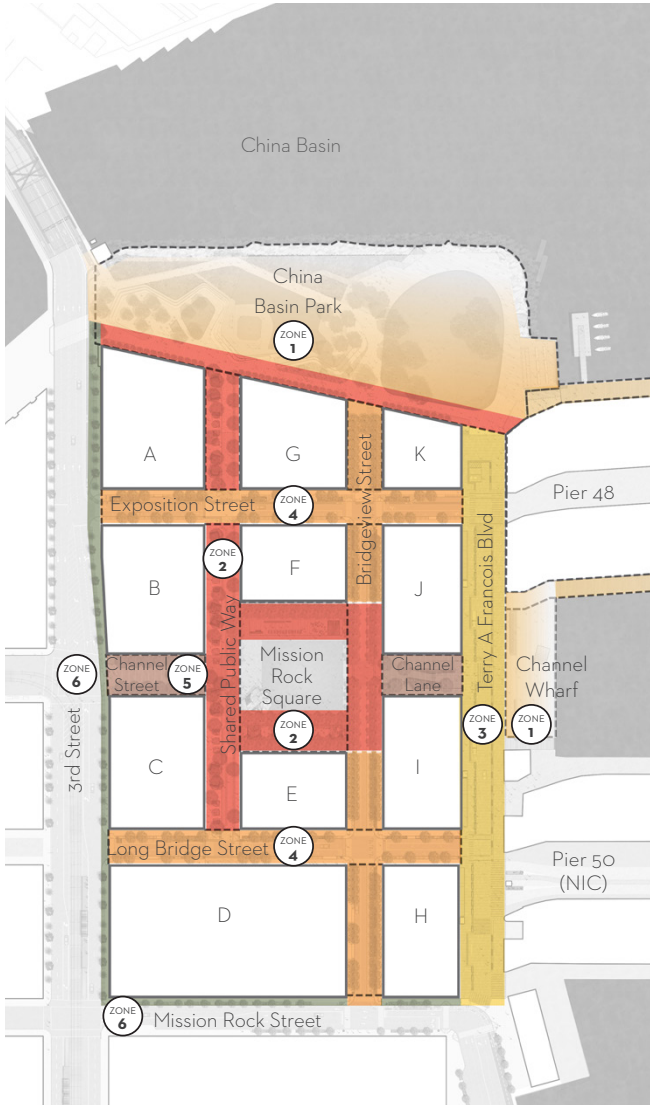


FIGURE 2.9.2 Lighting Zones Diagram illustrating the distribution of lighting zones described in Figure 2.9.1. These zones suggest relationships of different light levels and lighting identities among places and uses in the public realm.

2.10 WAYFINDING AND SIGNAGE

Wayfinding and signage at Mission Rock will reinforce the varied and special character of Mission Rock's public realm, while connecting to broader initiatives such as the Blue Greenway. All wayfinding will facilitate intuitive navigation to key site anchors and safe circulation in shared zones. Signage will be secondary to the design cues within unified open spaces or streetscapes.

Wayfinding and signage will have multiple components related to the variety of uses in the public realm. Pedestrian, bicycle-oriented, and vehicular wayfinding and signage will be integrated, especially along multi-modal routes such as the Shared Public Way, and Multi-Use Trail areas in China Basin Park and Terry A Francois Boulevard. Along the Bay Trail/Blue Greenway, China Basin Park and Terry A Francois Boulevard will integrate Port signage standards, while signage and wayfinding for the interior of the site could have a unique character.

Wayfinding elements may be considered an opportunity for Public Art (see Section 2.11). A future signage master plan will further develop these controls and concepts.

STANDARDS

2.10.1 WAYFINDING COMPONENTS

Wayfinding strategies shall include a combination of design cues, signage, maps, and public art. Design cues are also incorporated into the Open Spaces and Streetscape controls described in this document.

2.10.2 PORT SIGNAGE STANDARDS: BLUE GREENWAY

Proposed wayfinding along Bay Trail / Blue Greenway multi-use trail connections shall integrate Port standards.

2.10.3 ICONIC CHARACTER

Signage shall be simple, clear, and evocative of Mission Rock's character.

2.10.4 MAJOR SITE ENTRANCES

Major site entrances at Lefty O'Doul Bridge, Channel Street, and Mission Rock Street/Terry A Francois Boulevard shall have unique signs that provide basic wayfinding to key site anchors.

2.10.5 SHARED USE ZONE SIGNAGE: MULTI-USE TRAILS

In addition to fulfilling Standard 2.10.2, Multi-Use Trails in China Basin Park and Terry A Francois Boulevard shall include signage indicating this is a shared-use area and shall be readable at pedestrian and bicycle eye level and speed.

2.10.6 SHARED USE ZONE SIGNAGE: SHARED STREETS

The Shared Public Way and Terry A Francois Boulevard shall have signage indicating that shared zones are multi-modal pedestrian, vehicular, and bicycle circulation areas where the pedestrian has the right-of-way.

This destination wayfinding/signage feature marks a major site entrance. SOURCE: CMG

Two examples of signage for Multi-Use Trails. SOURCE: (L-R) : DANNYSULLIVAN / FLICKR; CMG

GUIDELINES

2.10.7 PLACE-BASED WAYFINDING AND GRAPHICS

Maps and signs should graphically represent the unique character of Mission Rock's open spaces and identify key landscape and public art elements in the public realm.

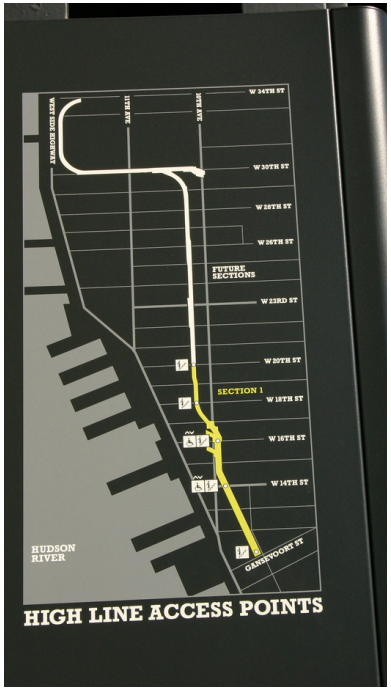
2.10.8 GRAPHIC CONSISTENCY

Signage and wayfinding at Mission Rock that is not required to adhere to City or Port standards should be comprehensively designed for the site and should include a range of signage types that correlate graphically.

2.10.9 MATERIAL PALETTE

Signage and wayfinding at Mission Rock should utilize a durable, consistent material and color palette.

SOURCE: M_KE / FLICKR



An example of an iconic family of signage and place-based wayfinding types ,at the High Line. SOURCE: MARCIN WICHARY / FLICKR

2.11 PUBLIC ART

The Public Art program at Mission Rock will identify key locations for interactive art and recreational amenities that act as interpretive elements for Mission Rock's unique history and pioneering sustainability goals.

Public art of scale can contribute significantly to the urban design of Mission Rock when placed at key locations, such as the terminus of a view corridor, to draw visitors through the public realm to a point of destination. Public art can also contribute to wayfinding by acting as a landmark and memorable feature within the public realm network.

STANDARDS

2.11.1 PUBLIC ART SITES

Permanent Public Art pieces shall be located in China Basin Park, Mission Rock Square, and Channel Wharf. Locations within these open spaces are suggested in Figure 2.11.1. Temporary public art may be located in any open space or in Streetlife Zones defined in Chapter 4, and shall comply with all controls for those spaces.

Permanent Art: Rock Outcropping at Sugar Beach in Toronto is an example of public art with a programmatic function, as an amphitheater and vantage point. SOURCE: CHRISTYLERTO / FLICKR

GUIDELINES

2.11.3 PUBLIC ART INTERPRETIVE ELEMENTS

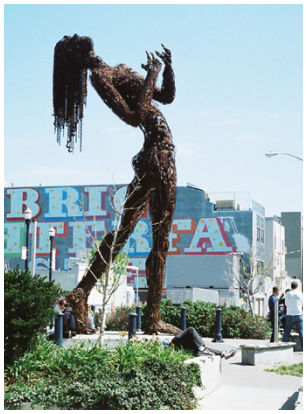
Public art installations may relate to, describe, or otherwise engage the layered history of the site. Public art installations may also engage or make visible the unique climatic conditions and water flows of the site.

2.11.4 PUBLIC ART: SUGGESTED SITES

Key site locations for permanent public art installations are suggested in Figure 2.11.1. Temporary installations may be located in Streetlife Zones, especially along the Shared Public Way.

Permanent Art: Cloud Gate ["The Bean"] is an iconic sculpture and significant attractor for Millennium Park in Chicago. SOURCE: BTAROLI / FLICKR

"Floating Umbrellas" is a temporary overhead installation that activates an alley in Agueda, Portugal. SOURCE: IFINDKARMA / FLICKR



Temporary Art: Ecstasy in Hayes Valley, SF and The Gates in Central Park, NYC are examples of temporary public art of scale.
SOURCE: PHOENIXLILY / FLICKR SOURCE: ROB BOUDON / FLICKR

LEGEND: SUGGESTED PUBLIC ART SITES

Permanent Public Art:

- Mission Rock Square
- Channel Wharf
- Channel Street
- Channel Lane
- China Basin Park at 3rd Street
- China Basin Park Waterfront

Temporary Public Art:

- Streetlife Zones

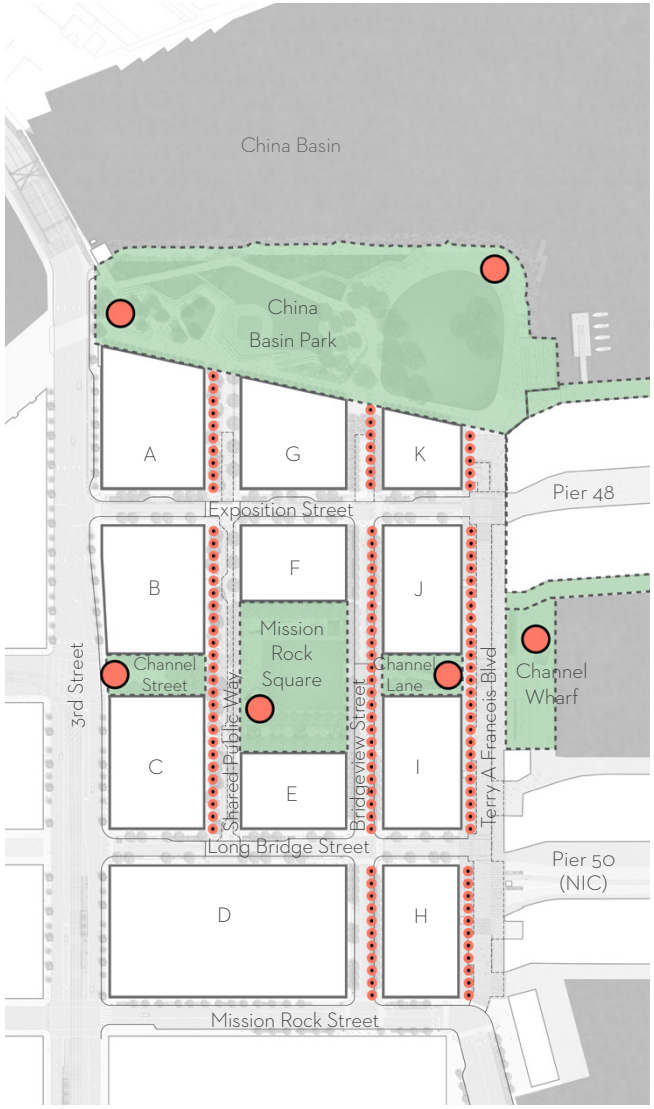


FIGURE 2.11.1 Suggested Public Art Sites Diagram illustrating potential locations of permanent and temporary public art within open spaces and streetlife zones in the public realm. See Chapters 3-4 for related circulation and program controls.

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Mission Rock's open spaces will be integrated with larger open space networks that operate at the scale of the neighborhood, district, city, and regional San Francisco Bay Area. At the largest scale, Mission Rock will contribute to the Bay Trail System, a waterfront network of trails and access ways with the goal of reconnecting communities with the Bay.

03

OPEN SPACE

At the district scale, open spaces will provide public space and recreational amenities for the Mission Bay neighborhood. At the local neighborhood scale, Mission Rock's public open spaces will provide a comprehensive variety of recreational opportunities in parks, plazas, and promenades for the community.

Mission Rock will include waterfront open spaces - China Basin Park, the Pier 48 Apron, and Channel Wharf - and urban open spaces - Mission Rock Square, Channel Street, and Channel Lane. These parks and plazas will be designed to take advantage of views, sunshine, and adjacent active ground-floor uses.

The arrangement of these open spaces will also establish destinations within the neighborhood that anchor the public realm. These destinations will maximize the variety of landscape-based experiences and create landmarks within Mission Rock's pedestrian network.

Chapter 3 controls prescribe key features, values, and relationships that will define the qualities and functions of each open space that are essential to creating a unique, vibrant, urban open space network.

3.1 Open Space Network 44
3.2 China Basin Park 46
3.3 Mission Rock Square 58
3.4 Channel Lane 66
3.5 Channel Wharf 68
3.6 Pier 48 Apron 70
3.7 Channel Street 72
3.8 Kiosks + Small Park Structures 74

RELATED CHAPTERS: Each open space in this chapter must satisfy its specific requirements as well as the Public Realm requirements described in Chapter 2: Public Realm Network. This chapter should be read with Chapter 5: Ground Floor, to understand the intended integration of the public realm and vertical development.

3.1 OPEN SPACE NETWORK

The open space network will be a fundamental part of the urban design and definition of Mission Rock. Six open spaces, located along the waterfront and at the core of Mission Rock, will provide a comprehensive variety of recreational opportunities.

These open spaces will include a waterfront park, a working wharf, a publicly accessible pier and apron; a neighborhood square, a waterfront gateway, and a neighborhood gateway. These diverse places will be carefully integrated with the ground-floor and massing strategies of the blocks and buildings to create delightful, welcoming, active, and unique places.

Open Space at Mission Rock will be consistent with Public Trust Uses, and will conform to State Lands Commission and BCDC requirements where applicable. All open spaces will provide active, unique program to attract visitors and create a lively network of well-loved public spaces for San Francisco's waterfront.

STANDARDS

3.1.1 DEDICATED OPEN SPACE

Only certain uses are permitted as-of-right in the dedicated Open Spaces noted in Figure 3.1.1. Public restrooms, small park structures, retail and food kiosks, and open-air structures in support of public recreation shall be permitted in accordance with Section 3.8: Kiosks and Small Park Structures. Public Art shall be permitted in accordance with Section 2.11: Public Art. No other permanent structures shall be permitted in areas designated as Open Space.

3.1.2 COMFORT AND WIND MITIGATION

Open space designs shall employ trees to block wind and shall consider wind conditions relative to pedestrian and recreational program. Appropriate tree species shall be used at densities that maximize comfort while maintaining important visual connections among uses as noted for specific spaces. See Section 2.7 for urban forest performance criteria.

3.1.3 CLIMATE-RESPONSIVE DESIGN

Open space designs shall be responsive to site and Mission Bay microclimates, particularly wind conditions. This is especially important for the selection of plant species, paving, and furnishing materials.

3.1.4 CLASS II BICYCLE PARKING

Class II bicycle parking shall be provided for open spaces. Bicycle parking shall be concentrated at or proximate to park entries, with priority given to key bicycle circulation routes noted in Section 2.4. Refer to Standard 4.1.6 for locations.

GUIDELINES

3.1.5 ECOLOGY AND HABITAT: LEARNING OPPORTUNITIES

Open Space Designs should maximize opportunities for visible ecological systems that are both beautiful and integral to Mission Rock's ecology.

A) Species Diversity
Selected tree and understory species should have demonstrated habitat value and should be appropriate for their specific open space environment, with consideration given to creating successful plant communities within each open space and around the site.

B) Management Plan
Create a long-term management and maintenance plan, with plant palettes and associated maintenance strategies, that addresses plant health, habitat creation, and climate change resiliency.

C) Learning Opportunities
Find opportunities for incorporating ecological systems with programmatic uses. For example, integrate stormwater treatment gardens with active programmatic uses; incorporate ecological interpretation into open space designs.

OPEN SPACES: KEY PLAN AND CHAPTER LOCATIONS

Section 3.2 China Basin Park

Section 3.3 Mission Rock Square

Section 3.4 Channel Lane

Section 3.5 Channel Wharf

Section 3.6 Pier 48 Apron

Section 3.7 Channel Street

Additional Related Sections :

Section 3.8 Kiosks + Small Park Structures

Section 4.2 Paseo: Shared Public Way

Section 4.3 Paseo: Terry Francois Boulevard

Section 4.4 Paseo: Bridgeview Street

FIGURE 3.1.1 Location Map of Open Spaces at Mission Rock and their chapter locations in this DC document.

3.2 CHINA BASIN PARK

Read in conjunction with Section 3.6: Pier 48 Apron, Section 4.3: Terry A Francois Boulevard, Section 5.1: Active Edges, and Section 5.7: Parkfront Zone. China Basin Park must also satisfy the requirements described in Chapter 2: Public Realm.

China Basin Park will be a vibrant, active waterfront park, and a year-round amenity for the greater San Francisco and regional San Francisco Bay Area community. A waterfront promenade will link a diverse range of activities, creating a dynamic, unique place that will establish a paradigm for resilient 21st-century waterfront parks.

This park will be coupled with the rehabilitated Pier 48 to create a synergistic public open space that integrates industrial, maritime, and recreational uses.

Controls are organized topically in several sub-sections:

- Circulation
- Program and Use Areas
- Resiliency and Sea Level Rise
- Ecology, Habitat, and Management

Conceptual Rendering of the Waterfront Promenade

STANDARDS

3.2.1 PUBLIC TRUST CONSISTENT USES

China Basin Park shall be a regional waterfront destination consistent with the Public Trust that provides increased access to the waterfront, active and unique program to attract visitors, and waterfront ecological amenities.

3.2.2 REQUIRED STRUCTURES

Public Restrooms, Retail, and Food Kiosks are required in China Basin Park. Permanent structures may be located as described in Section 3.8; permanent structures outside this zone will not be permitted as-of-right. See Section 3.8 for location and functional controls.

3.2.3 STORMWATER TREATMENT AREAS

China Basin Park shall include large, feature stormwater treatment gardens. These areas must be functionally and aesthetically integral to the experience of the park. See Guideline 3.2.18 for suggested palette and Section 2.8 for more information about stormwater treatment strategies. Refer to Infrastructure Plan for specific technical requirements.

3.2.4 PROGRAM AREAS: 3 ROOMS + WATERFRONT PROMENADE

China Basin Park shall have three programmatic "rooms" – Plaza, Play Area, and Great Lawn – connected by a Waterfront Promenade as described in Standard 3.2.7 and illustrated in Figure 3.2.1. See Guideline 3.2.10 for functional and spatial relationships within these program areas, and Figure 3.2.6 for the elevation relationships of these program areas.

3.2.5 VISUAL ACCESS

Visual access to the Bay is paramount and views to the water shall be afforded from the Park Promenade across the park. First branching height and spacing of trees shall facilitate these views while complying with Standard 3.1.2.

3.2.6 PARK UTILITIES

Electrical service, potable water, and sewer supply shall be provided at the waterfront side of the Great Lawn, to accommodate varied large-scale events such as movie nights, festivals, concerts, etc.; to serve small park structures; and along the Park Promenade and the Waterfront Promenade, including the Picnic Area. Refer to the Infrastructure Plan for additional information regarding utilities.

SUGGESTED LOCATIONS FOR PARK STRUCTURES:

- S Small Park Structures
- K Kiosks
- R Recreational Structures

FIGURE 3.2.1 Primary Program Elements: This diagram illustrates required program uses in China Basin Park: the 3 "Rooms" required by standard 3.2.4, kiosks and structures required by standard 3.2.2, stormwater gardens required by standard 3.2.3, and visual access to the Bay required by standard 3.2.5.

CIRCULATION

STANDARDS

3.2.7 WATERFRONT CIRCULATION: BAY TRAIL / BLUE GREENWAY

The Waterfront Promenade shall engage the park's Three Rooms, provide varied experiences along its length, and offer Bay access and views.

A) Clear Width of Bay Trail / Blue Greenway

The Waterfront Promenade shall integrate the Bay Trail/ Blue Greenway as a multi-use trail that is a minimum of 16 feet clear width. The Waterfront Promenade is an important segment of the Bay Trail/Blue Greenway.

B) Universal Access: Waterfront Promenade

The Waterfront Promenade shall not exceed a maximum of 5% longitudinal slope or a maximum cross-slope of 2%.

C) Bicycle Connections

The Waterfront Promenade shall clearly connect to bicycle facilities on Bridgeview Street and to the multi-use trail extension of the Bay Trail/Blue Greenway on the east side of the Terry A Francois Boulevard right-of-way. Effective warning cues and controls shall be included in the park to minimize pedestrian and bicycle conflict. See Section 3.6, Section 4.3, and Section 4.4. Figure 3.2.2 illustrates a potential connection to future City bicycle facilities at Lefty O'Doul Bridge.

3.2.8 PARK PROMENADE

There shall be a pedestrian-only promenade located along the south edge of the park in front of buildings on Blocks A, G, and K that is a minimum of 24 feet wide. This area shall include a 12'-wide active edge and a minimum 12'-clear pedestrian throughway. This promenade shall not exceed a maximum of 5% slope in the direction of travel at grade change locations. Width of the promenade shall be coordinated with underground utilities; refer to Infrastructure Plan. Also see 5.7: Parkfront Zone.

3.2.9 CONNECTIONS AMONG KEY PLACES

Circulation shall reinforce important pedestrian and bicycle connections to the Shared Public Way, Mission Rock Square, and Pier 48 per Figure 3.2.3.

An active waterfront promenade that provides seating, bicycle, and pedestrian access. SOURCE: KMF164 / FLICKR

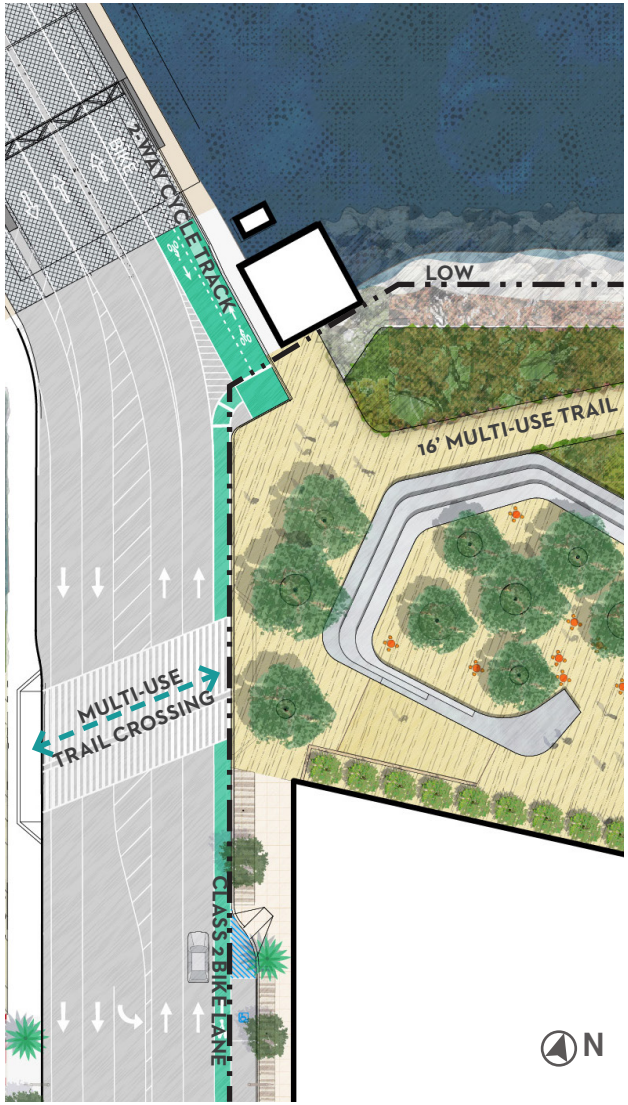


FIGURE 3.2.2 Conceptual diagram of future bicycle connections at Lefty O'Doul Bridge that satisfies the controls herein. This is provided for illustrative purposes only and does not represent a design proposal.

LEGEND: CIRCULATION + CONNECTIONS

- Major Pedestrian Connections (Shared Public Way + Park Promenade)
- Primary Bicycle Route: Multi-Use Trail
- Waterfront Multi-Use Trail Connection
- Bike Lane
- Secondary Path
- Warning Cues: Key Locations

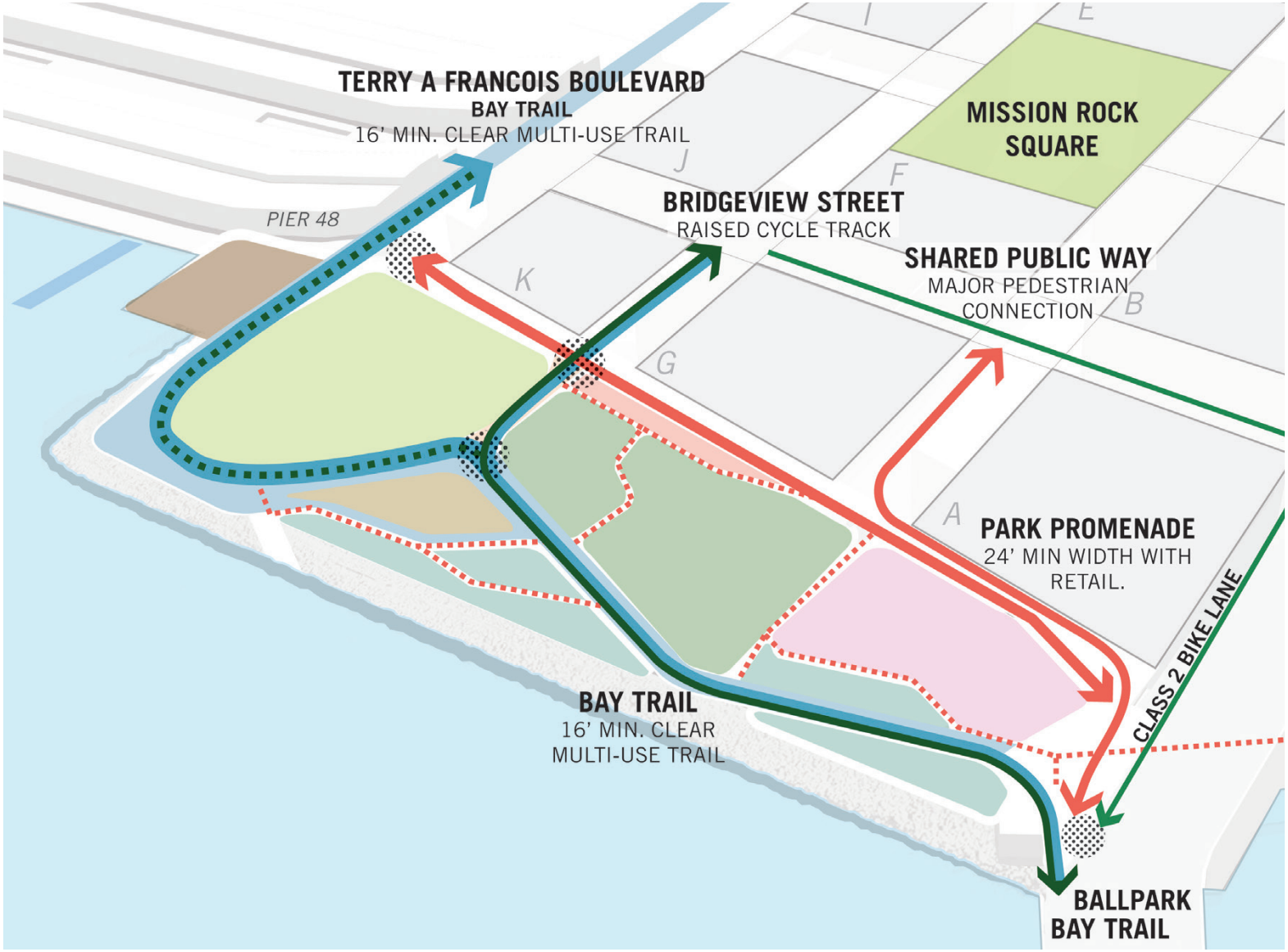


FIGURE 3.2.3 Circulation + Connections: This diagram illustrates the circulation connections described in Standards 3.2.7-3.2.9, including the Bay Trail/Blue Greenway, a major pedestrian and bicycle route; the Park Promenade, a pedestrian-only connection; and secondary, smaller-scale paths. These will connect important site anchors such as Pier 48, the Shared Public Way and Mission Rock Square, and the Ballpark.

PROGRAM

GUIDELINES

3.2.10 PROGRAM AND SPATIAL RELATIONSHIPS

The following relationships are suggested within the Program Areas described in Standard 3.2.4; also see Figure 3.2.4:

A) Entry Plaza
Associated with 3rd Street and Lefty O'Doul Bridge. This gateway to the site is a potential public art location.

B) Upper Plaza
Adjacent to the Entry Plaza, but elevated to create a perch on grade with the Shared Public Way and the Park Promenade. It should be visually connected to a Stormwater Garden, the Play "Room," the Multi-Use Trail, and China Basin.

C) Stormwater Treatment Gardens and Planting Areas
Associated with the Upper Plaza, the Multi-Use Trail, and the Waterfront Promenade. Planting within the rip-rap surrounding treatment areas is encouraged, but should not displace and/or require disposal of existing rip-rap. See Standard 3.2.4 and refer to Infrastructure Plan.

D) Active Recreation
Adjacent to the Upper Plaza and the Multi-Use Trail; should contain recreational lawn areas and a junior-sized baseball field or other organized play field. This area should have visual connectivity to the Park Promenade, the Park Café, the Waterfront Promenade and the Bay, the Great Lawn, and Stormwater Treatment Garden.

E) Family Play
A regional-serving family play zone that is unique in design and regional in nature; should include paved and/or accessible areas that seamlessly incorporate fall zone requirements for play areas. This area should connect visually to the Park Café, the Park Promenade, and the Great Lawn.

F) Food Kiosks
Located along the Park Promenade adjacent to the Family Play Zone. This area should have special paving, unique trees, and distinctive movable furnishings and should be visually connected to the Play "Room", the Park Promenade, the Great Lawn, and the water.

G) Great Lawn
Adjacent to the Waterfront Promenade, the Park Café, the Picnic Area, and the Park Promenade. This area should be visually connected to the water, to Pier 48, and to the Family Play Zone, and should accommodate large events.

H) Park Café
Adjacent to the Play "Room", the Great Lawn, and Stormwater Treatment Gardens. This structure should be visually connected to the Great Lawn, the Family Play Zone, and the Food Kiosks. See Section 3.8: Kiosks and Small Park Structures.

I) Picnic Area
Adjacent to Pier 48, the Waterfront Promenade, and the Great Lawn. This program should not impede access to the Pier 48 Apron; unobstructed Public Access at least 8' wide must be maintained at the perimeter of this area. See Section 3.6.

J) Watercraft Launch + Rental Kiosk
Non-motorized watercraft launch with rental kiosk located at the Pier 48 Apron. See Section 3.6.

PROGRAM PRECEDENT IMAGES

Terraces direct views and provide an informal gathering space. SOURCE: AERIIC / FLICKR

A youth ballfield is an example of Active Recreation.
SOURCE: SFGIANTS

A unique play environment provides space for family play.
SOURCE: WILLIAM LANGDON/BLOGSPOT

An example intimate retail kiosks for the Park Promenade. SOURCE: THERESE SWAN

An example of active waterfront space for sunning.
SOURCE: HENNING-STUBEN_KALVBOD WAVES

A precedent for outdoor dining at the picnic area.
SOURCE: GROUNDSWELL LLC

FIGURE 3.2.4 Program and Spatial Relationships: This diagram illustrates the key relationships, adjacencies, and approximate scale among the program areas described in Guideline 3.2.18.

GUIDELINES

3.2.11 SIGNATURE AMENITY

One park cafe, or a group of up to three associated kiosks located in the 'park cafe' zone, should be located adjacent to the waterfront promenade, Great Lawn, and Family Play Zone. This area should accommodate a signature amenity that will be a significant attractor to China Basin Park. See (H) in Figure 3.2.4, and refer to Section 3.8: Kiosks and Small Park Structures.

3.2.12 OVERLOOKS

Two overlooks may be provided in China Basin Park. These shall be associated with the Waterfront Promenade and key views across the Bay. See Section 3.6: Pier 48 Apron and (10) on Figure 3.2.5. Overlooks must be constructed in a way that does not disturb existing riprap.

A) Industrial Remnants

One of the two overlooks may align with the industrial rail spur remnants at the northeast corner of the site; this is also an opportunity for interpretive signage describing the history of the site and the Bay edge. See (14) on Figure 3.2.5.

A small park cafe with generous outdoor seating is an example of a signature amenity. SOURCE: CMG

A waterfront outlook incorporates shoreline riprap as a design element. SOURCE: AERIIC / FLICKR

The Great Lawn should accommodate large events such as a movie night on the Lawn. SOURCE: CMG

An example of an overlook at the water's edge. SOURCE: (C) VEGAR MOEN

CONCEPTUAL PLAN

1 Entry Plaza
2 Upper Plaza
3 Stormwater Treatment Garden
4 Waterfront Promenade
5 Park Promenade
6 Active Recreation
7 Family Play Zone
8 Great Lawn
9 Park Cafe
10 Overlook
11 Picnic Area
12 Watercraft Launch
13 Rental Kiosk
14 Industrial Remnants
15 Retail Kiosks

FIGURE 3.2.5 Conceptual Plan of China Basin Park that satisfies the controls herein. This is provided for illustrative purposes only and does not represent a design proposal.

DESIGNING A RESILIENT + ADAPTIVE PARK

Sea level rise and climate change are increasingly important issues for San Francisco's waterfront. The Mission Bay neighborhood, sited on filled saltwater marsh, may be vulnerable in future flood events.

China Basin Park will balance maximizing public access to the waterfront with 'living with the Bay' in the face of future sea level rise. Key public access areas will be elevated for protection from future flood events based on current sea level rise projections, while other program areas will accommodate these flood events.

This balance, achieved through grade changes within the park, will create opportunities for unique spatial relationships among program uses and will be an integral aspect of designing a functional, resilient park with ecological and social vitality.

Finish grade elevations in the park will be based on 2100 sea level rise projections, to maintain public access and to help ensure that accessible paths of travel remain free of flood water except in extreme storm events.

STANDARDS

3.2.13 GRADING: DESIGN CRITERIA

The park shall be graded to maximize public access to the waterfront with sea level rise . Park grades shall transition between the design elevation of the development blocks, the Bay Trail/Waterfront Promenade, and existing grade at 3rd Street, Pier 48, and the shoreline. Refer to Infrastructure Plan Chapter 5.

3.2.14 GRADE CHANGE

A) Universal Access

Provide universal access to all spaces as practicable. The Park Promenade and Waterfront Promenade shall not exceed 5% maximum slope in the direction of travel. Comply with applicable accessibility guidance.

B) Design Tactics

Utilize varied tactics for grade changes. These tactics shall provide seating, direct views, and connect spaces and uses in a meaningful way that is integral to the overall programmatic relationships of the park. Tactics may include terraces, bleachers, and sloped lawn areas.

3.2.15 FINISH FLOOR ELEVATION OF OPEN SPACE STRUCTURES

Structures and kiosks permanently located in China Basin Park shall be sited in areas of higher elevation and shall open directly out onto adjacent public space at grade. See 3.2.2: Required Structures and Section 3.8: Kiosks and Small Park Structures.

3.2.16 RELATIONSHIP TO ACTIVE EDGES ON PARK PROMENADE

The Park Promenade described in standard 3.2.8 includes Active Edges along Blocks A, G, and K. To maximize connections between the park, active edges, and ground floor program, ramps are not permitted in this area. Grade change, where required along the Park Promenade, shall be 5% maximum slope in the direction of travel. Also see Section 5.7: Parkfront Zone.

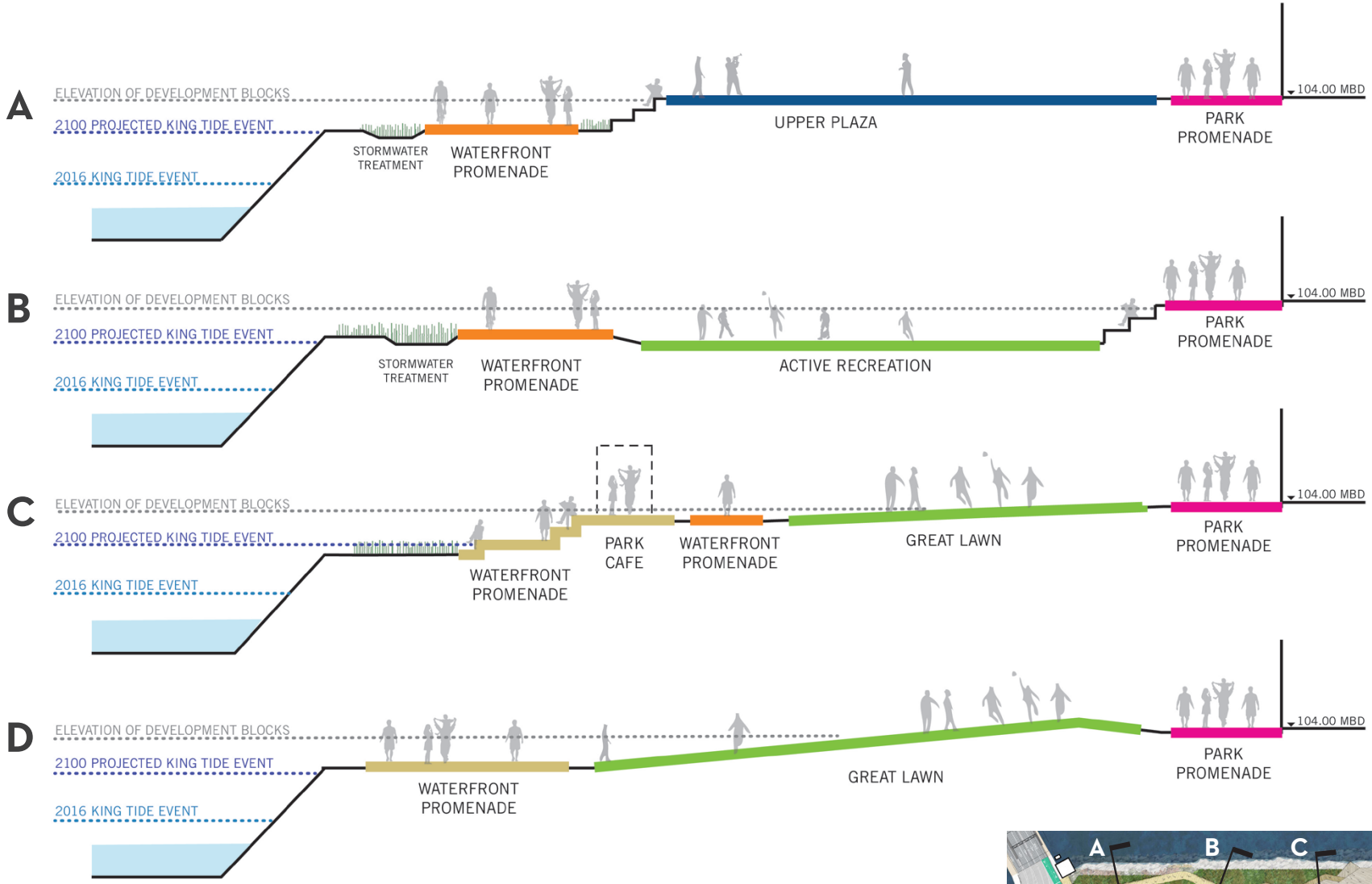
GRADE CHANGE TACTICS AND OPPORTUNITIES

Natural or sculptural elements soften grade changes and provide informal steps.
SOURCE: SAMANTHA CHAPNICK/FLICKR

Incorporating stepped play elements or slides into grade change locations takes advantage of different elevations in the park to provide signature play opportunities.
SOURCE: CMG SOURCE: NO ORIGINAL FOUND

Terraces or bleachers provide an active social space that frames program areas and directs views.
SOURCE: ALLISON MEIER/FLICKR

A sloped lawn enhances views to the water and provides space for large and small gatherings.
SOURCE: THE GOLDEN ETERNITY/FLICKR



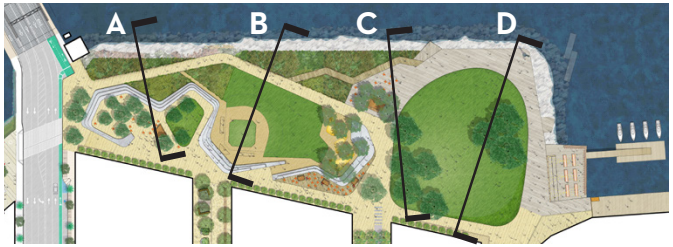


FIGURE 3.2.6 Programmatic Relationships: This diagram illustrates the sectional relationship of program areas described in Guideline 3.2.18, to each other and to key sea level rise elevation benchmarks. While the entire footprint of the park is not elevated, future design concepts will maximize public access by elevating key circulation elements of the park such as the Bay Trail and Park Promenade. *(Note: elevations shown in Mission Bay Datum/MBD.)*

ECOLOGY, HABITAT, + MANAGEMENT

As a regional waterfront park, China Basin Park will be a paradigm for sustainable ecological systems and management over time. Its active programming and location on the Bay will make it a learning environment where visitors will engage not only with each other, but with the plants and animals that thrive in this unique habitat.

China Basin Park's stormwater treatment areas will be integrated with active use of the park, and will be planted with resilient native and naturalized species that perform ecologically and aesthetically; trees will act as windbreaks and provide sheltered gathering spaces. Management over time will ensure that China Basin Park adapts to a changing climate and an evolving city.

STANDARDS

3.2.17 STORMWATER TREATMENT AREA MANAGEMENT

A) Inundation

Stormwater treatment gardens shall be designed with backflow prevention and shall be taken offline in the event of a storm that would inundate them with saline bay water. Plant species should be considered carefully to provide salt-tolerant planting to maintain function in the case of an extreme Bay flood event. See Guideline 3.2.18 and refer to Infrastructure Plan.

B) Plant Species Adaptation

Saline-tolerant plant species shall be included in the maintenance and management strategy of the stormwater gardens to increase resilience of treatment gardens in the case of inundation in a Bay flood event. These species shall meet the functional and aesthetic requirements described in Guidelines 3.2.18 and 3.2.19.

Boardwalk access through a native marsh creates an immersive experience. SOURCE: CMG

Native planting in public spaces, such as the marsh at Crissy Field, can both connect people to their environment and create a landscape that is resilient in flood events. SOURCE: CMG

GUIDELINES

3.2.18 RESILIENT PLANTS

Tree, understory, and stormwater garden plants should contribute functionally and aesthetically to the park's overall design concept and experience. Also see Section 3.1.

A) Site + Program Specificity

Species should be adapted to particular site conditions, microclimate, and programmatic needs of each space, including foot traffic and active and passive recreational uses.

B) Water Use

Specify low-water use plants wherever feasible. Use native or naturalized species.

C) Tree Palette

See Section 2.7 for performance and design criteria.

D) Understory Palette

The stormwater garden palette should be selected to meet the following criteria:

- Select for maximum seasonal and ornamental impact.
- All species should be native, naturalized, or climate-appropriate if non-native.
- All species should thrive in full sun.
- Select species with habitat value.
- Select saline-tolerant species where appropriate.
- Suggested understory palette*:
  Artemisia californica (Coastal Sagebrush)
  Erigonum fasciculatum (California Buckwheat)
  Lupinus albifrons (Silver Bush Lupine)
  Mimulus aurantiacus (Sticky Monkeyflower)
  Mimulus guttatus (Creek Monkeyflower)
  Salvia clevelandii (Cleveland Sage)
  Salvia mellifera (Black Sage)
  Salvia spathacea (Hummingbird Sage)
  Sisyrinchium bellum (Blue-Eyed Grass)
  Tradescantia virginiana (Virginia Spiderwort)
  Vaccinium ovatum (California Huckleberry)

*Source: SFPUC Stormwater Design Guidelines, Appendix D.

3.2.19 ADAPTATION FOR RESILIENCE

Stormwater Treatment Areas should be gradually inter-planted with saline-tolerant species to maintain performance and species richness, based on a Management Plan responsive to sea level rise. See Section 3.1.

A) Evaluation of Species Health

Evaluate the health of trees and understory plants at least once each year.

3.2.20 NON-ALLERGY CAUSING SPECIES

Plant species known to cause common allergies should be avoided.

SOURCE: ED323_WIKIPEDIA

SOURCE: WIKIPEDIA

SOURCE: CMG

Large-canopy, evergreen trees with spreading character are appropriate for the Great Lawn and Upper Plaza.

Small trees with arching character and distinctive bark are appropriate for the Park Promenade. SOURCE: NONE FOUND

3.3 MISSION ROCK SQUARE

Read in conjunction with Section 3.4: Channel Lane, Section 3.7: Channel Street, Section 4.3: Shared Public Way, Section 4.4: Bridgeview Street, and Chapter 5: Ground Floor. Mission Rock Square must also satisfy the requirements described in Chapter 2: Public Realm.

The centrally located Mission Rock Square will be the heart of the Mission Rock project. The civic character of this sunny square, wind-protected and surrounded on all sides by activity, will provide an intimate, welcoming urban moment within the fabric of the developing Mission Bay neighborhood.

This neighborhood square will balance spatial enclosure with connections to the Shared Public Way and the Working Waterfront. Mission Rock Square will be a public "living room" where cafés and outdoor seating will frame an open area large and flexible enough to accommodate temporary uses and events. Public art and a pavilion will be destinations that create identity and attract people and activity to the Square.

An example of a public 'living room' - a movie event at Bryant Park, a large flexible lawn enclosed by trees. SOURCE: ACNATTA/FLICKR

STANDARDS

3.3.1 WIND PROTECTION

Mission Rock Square shall be protected from wind and down-drafts through tree planting. See Sections 2.7 and 3.1.

3.3.2 REQUIRED STRUCTURES

One permanent retail and food structure that includes Public Restrooms is required in Mission Rock Square. The permanent structure may be located as described in Section 3.8; permanent structures outside this zone will not be permitted. Additional temporary kiosks may be permitted.

3.3.3 STORMWATER TREATMENT AREA

Mission Rock Square shall include at least one feature stormwater treatment garden that is functionally and aesthetically integral to the experience of the Square. See Guideline 3.3.13 for parameters and refer to Infrastructure Plan for specific technical requirements.

3.3.4 CIRCULATION: SITE-WIDE ROUTES

Design concepts for Mission Rock Square shall engage priority site circulation routes, including the Shared Public Way; Channel Street and Channel Lane, which connect 3rd Street and Mission Bay to the waterfront; and the dedicated bicycle facilities on Bridgeview Street.

3.3.5 CIRCULATION AND VIEWS WITHIN MISSION ROCK SQUARE

Views and circulation access shall be maintained between the Active Edges at Blocks E and F and the multi-use area at the center of the Square. Universally accessible circulation to the required small park structure shall be provided. See Standard 3.3.2 and Section 3.8.

3.3.6 VISUAL ACCESS

Visual access to the Bay is a significant design consideration in Mission Rock Square. Views to the water shall be maintained through Mission Rock Square from Channel Street; see Figure 3.3.3.

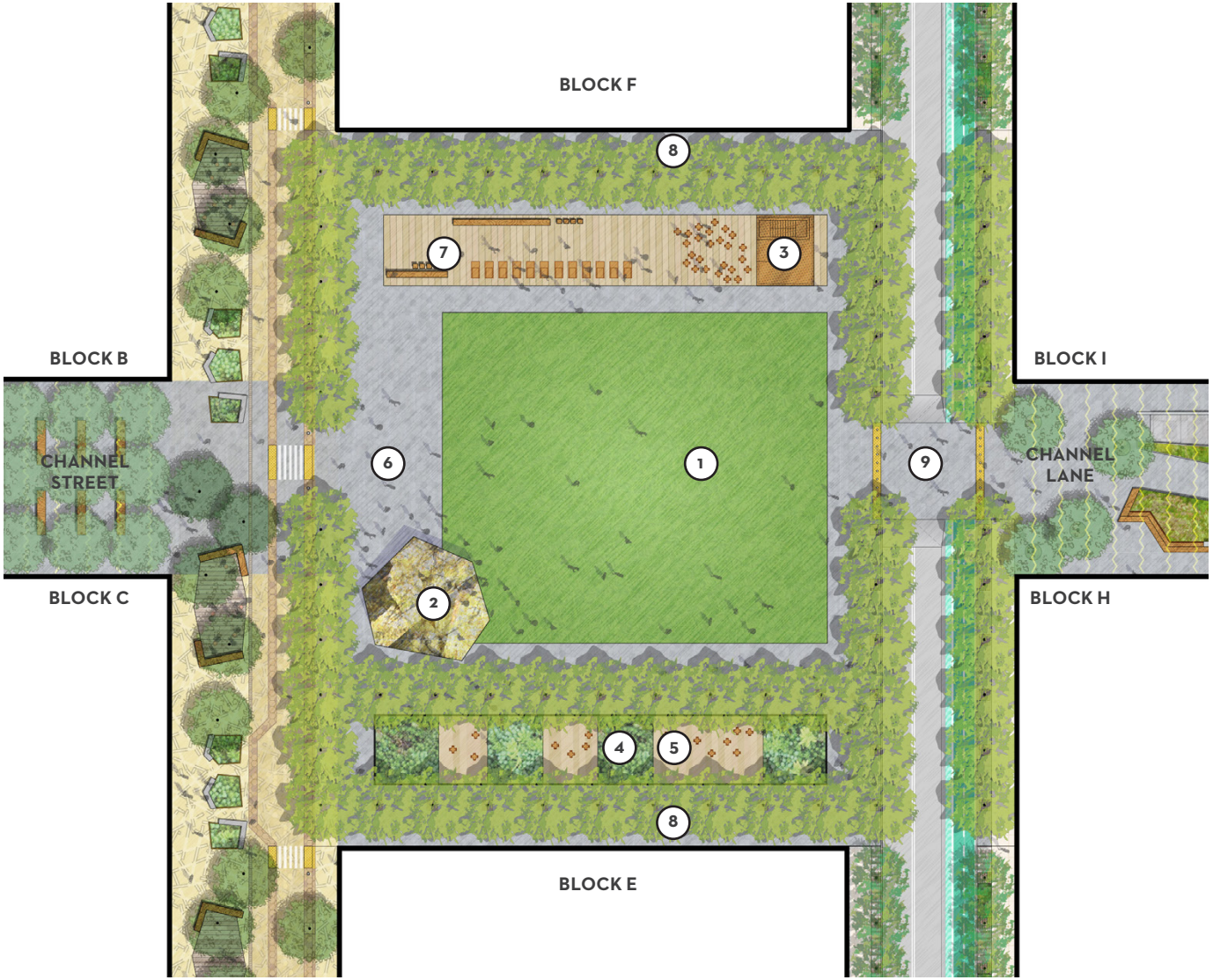


FIGURE 3.3.1 A Conceptual Plan of Mission Rock Square that satisfies the controls herein. This is provided for illustrative purposes only and does not represent a design proposal.

CONCEPTUAL PLAN

1 Central Event Space
2 Iconic Feature
3 Food/Retail Structure with Public Restrooms
4 Stormwater Treatment Garden
5 Boardwalk Crossings/Decks
6 Forecourt at Shared Public Way
7 Large-Scale Feature Furniture
8 Active Edge (see Chapter 5)
9 Raised Pedestrian Crossing

STANDARDS

3.3.7 PROGRAM AREAS

To create a diverse range of active and passive gathering spaces that take advantage of sunny zones and connect to building uses, the following program areas shall be accommodated in Mission Rock Square as described in Figure 3.3.2:

A) Multi-Use Area

A multi-use area at the center of the square shall accommodate large events. See 3.3.14.

B) Tree Grove

The Square shall be enclosed by a grove of trees that is in accordance with Standard 3.3.6. See Standards 3.3.9-12 and Figure 3.3.3.

C) Active Edges

To support the connection between ground-floor Active Edges and the Square, building frontages on Mission Rock Square adjacent to blocks E and F may utilize up to 15 feet horizontal from the block boundaries for outdoor spill-out space, inclusive of a 6'-minimum clear path of travel. See Section 5.6: High-Retail Zone.

D) Thresholds: Stormwater Gardens and Sunning Area

Threshold spaces between program areas A) and B) shall provide intimate, memorable social spaces that connect Active Edges to the center of the Square. Concepts for these program areas shall take advantage of specific microclimate conditions of sun and shade and provide feature seating opportunities. See Figure 3.3.4 and Guidelines 3.3.13 and 3.3.17.

3.3.8 ICONIC FEATURE

An iconic feature, such as a sculpture or small structure, shall create a nexus and meeting spot in Mission Rock Square and reflect a fundamental aspect of Mission Rock's identity. See Guideline 3.3.16 for suggestions.

This iconic feature may be distinct from the permanent structure described in Standard 3.3.2, or may be considered integral to this structure. Weight and placement shall be coordinated with geotechnical considerations; refer to Infrastructure Plan.

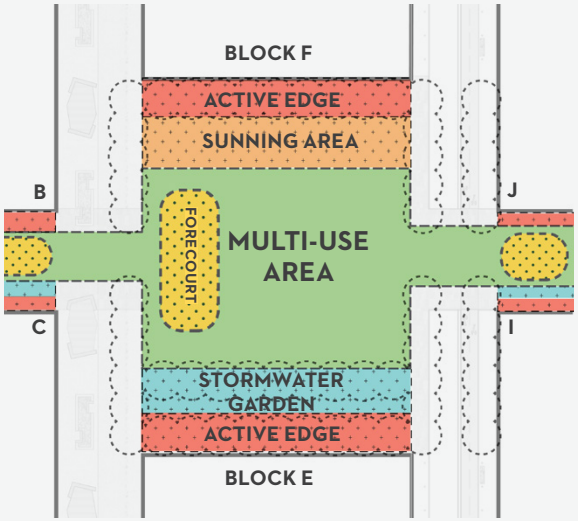


FIGURE 3.3.2 Program Areas. This diagram illustrates the key relationships and adjacencies among the program areas described in Standard 3.3.7,

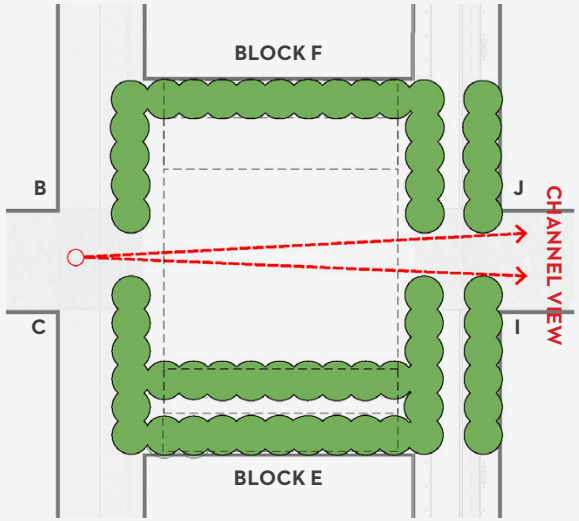


FIGURE 3.3.3 Tree Grove. This diagram illustrates the required degree of enclosure for the Square and the visual access that must be maintained per Standard 3.3.6.

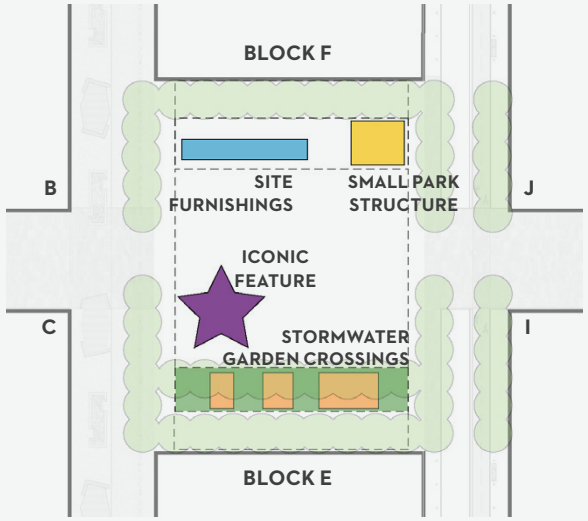


FIGURE 3.3.4 Elements. This diagram illustrates potential locations of program elements: iconic feature, park structure, stormwater gardens with occupiable crossings, and site furnishings.

STANDARDS

3.3.9 TREES: ENCLOSURE AND VIEWS

Design concepts for Mission Rock Square shall create a strong sense of enclosure with trees, but maintain views into and out of the square, most significantly to the Bay through Channel Lane. See Figure 3.3.3, and see Section 2.7 for aesthetic and performance requirements and recommended species.

3.3.10 TREES: SEASONAL DISPLAY

Tree species selected for Mission Rock Square shall have a singular seasonal display that creates a special, highly unique seasonal identity and programmatic opportunity; for example, festivals that coincide with a fall foliage or spring flower display. See Section 2.7.

3.3.11 MINIMUM SOIL DEPTH AT TREE AND UNDERSTORY PLANTING

If lightweight fill is utilized to accommodate geotechnical considerations, the following controls shall apply. Refer to Infrastructure Plan for geotechnical information.

A) Tree Planting

Four feet minimum soil depth and a continuous and contiguous 6-12"-depth drainage layer under tree planting areas shall be provided. See Section 2.7 for recommended soil volume ranges for trees,

B) Understory Planting

A minimum of 18 inches of soil depth and adequate drainage at understory planting areas that do not include trees shall be provided. See Section 2.8 and refer to Infrastructure Plan for technical requirements for stormwater treatment gardens.

GUIDELINES

3.3.12 TREE PLANTING: OUTER AND INNER GROVE

To create a strong sense of enclosure, use a single uniform species for the outer grove illustrated in Figure 3.3.6. This grove should extend across Bridgeview Street. See Section 2.7 and Figure 3.3.6.

A) Spacing

Spacing of trees in the outer grove should be a minimum of 12 feet on center to a maximum of 22 feet on center, as approved in consultation with a certified arborist.

B) Clear Trunk at Maturity

At maturity, first branching height of the outer grove in Mission Rock Square should be 8 feet minimum and should create a consistent ceiling.

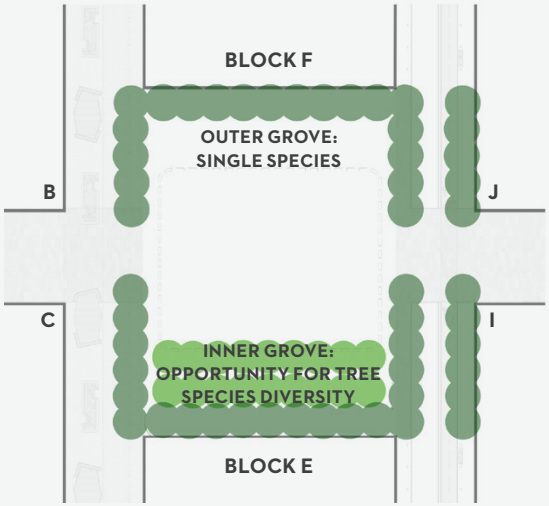


FIGURE 3.3.6 Tree Planting in Mission Rock Square should include an outer grove comprised of a single species in accordance with Guideline 3.3.12; additional tree species may be varied.

FIGURE 3.3.5 Artist's rendering of Mission Rock Square from the Shared Public Way.

GUIDELINES

3.3.13 FEATURE STORMWATER TREATMENT GARDENS

Stormwater treatment gardens will provide an opportunity to integrate lush understory planting and habitat with program, use, and engagement.

A) Crossings for Active Edges

Crossings should be included in stormwater treatment gardens to allow Ground Floor Uses in Block E to spill out into this area. These should not compromise the functionality of this treatment facility. See Figure 3.3.4.

B) Food Service at Crossings

Facilities for outdoor seating, such as a wait service station and/or ABC rails, are permitted and should be accommodated.

C) Program and Use

Maximize opportunities to interact with, cross, and occupy the garden, and maximize connection and views to the central multi-use area and the adjacent Active Edge. Include temporary or permanent seating in this area.

D) Suggested Understory Palette

Plant palette selection criteria should include:

- Maximum seasonal and ornamental impact
- Species should be native, naturalized, or climate-appropriate if non-native
- Species should tolerate shade
- Select species with habitat value
- Suggested species that meet this criteria*:
  Adiantum jordanii (CA Maidenhair Fern)
  Dicentra formosa (Pacific Bleeding Heart)
  Dryopteris expansa (Spreading Wood Fern)
  Ribes sanguineum (Red-Flowering Currant)
  Rosa californica (California Wild Rose)
  Rubus ursinus (California Blackberry)
  Solanum umbelliferum (Nightshade)
  Vaccinium ovatum (California Huckleberry)
  Woodwardia fimbriata (Giant Chain Fern)

**From SFPUC Stormwater Design Guidelines, Appendix D*

A precedent 3.3.13-B), for food service within an intimate grove of trees. SOURCE: CMG

An example of seating integral to a stormwater treatment garden that promotes engagement with this key infrastructural element. SOURCE: CMG

GUIDELINES

3.3.14 CENTRAL MULTI-USE AREA

The central multi-use area should be designed with circulation, crowds, and maintenance in mind. If the best programmatic and experiential choice for this multi-use area is determined to be lawn, consider a paved forecourt at the Shared Public Way to accommodate heavy foot traffic. See Figure 3.3.2.

3.3.15 FLEXIBLE USE AND PROGRAMMING

Events in Mission Rock Square will be a mix of active, retail, and passive recreational and social uses.

A) Large-Scale Events

The Square should be designed to accommodate large-scale events, including a large event tent (100'x100', up to 100'x200'); outdoor movie nights; and active program such as tai chi, dancing, and yoga in a central multi-use space. (Image A)

B) Medium-Scale Events

The Square should comfortably accommodate small concerts and festivals, game-day parties and gatherings, and active program such as roller skating and pick-up games. (Image B)

C) Small-Scale Events

The Square should be designed to accommodate intimate, small activities ranging from game tables (fixed or temporary), picnicking, and frisbee; outdoor dining and happy hours; and sunning/lounging areas in sunny zones. (Image C)

(A) This event tent, at Mint Plaza, is an example of a large-scale event that should be accommodated in the Square. SOURCE: CMG

(B) This small concert at Mint Plaza, facilitated by flexible seating on a multi-use plaza, is an example how a medium-scale event could be accommodated in the Square. SOURCE: CMG

(C) The Square should comfortably facilitate small-scale events or activities, such as this permanent game table. SOURCE: BOBBY WILLIAMS / EVGRIEVE.COM

GUIDELINES

3.3.16 SOCIAL OBJECTS

Mission Rock Square will have a highly unique character as Mission Rock's public living room. One aspect of this character is the inclusion of "social objects", distinctive and fun elements that are particular to Mission Rock Square. These social objects should be iconic and recognizable, facilitating different scales of gathering and use. See Figure 3.3.4.

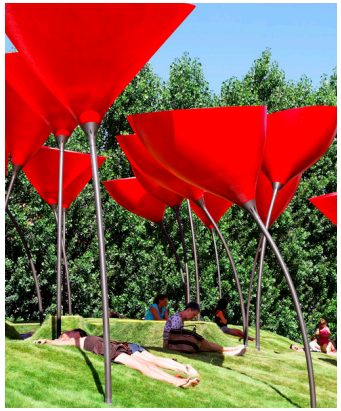
A) Iconic Feature: Meet Me at Mission Rock

The iconic feature in Mission Rock Square could be, but is not limited to, a sculpture or small structure. It should be considered as a central activator for Mission Rock Square. See Standard 3.3.8 and Section 2.11.

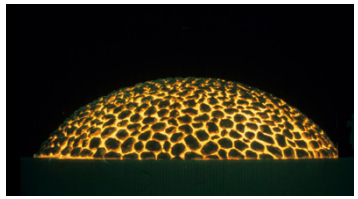
B) Feature/Destination Lighting

Fun, unique feature destination lighting should create a special nighttime identity for Mission Rock Square. See Section 2.9 for suggested footcandle ranges and uniformity ratios.

An rock outcropping is an example of an iconic feature that is integral to the design and social function of an open space in Toronto. SOURCE: KATHLEEN COREY / FLICKR



Iconic lights create a special night-time identity. SOURCE: INDIANADINOS / FLICKR



These sculptural rock outcroppings are precedents for the iconic feature in the Square: for example, Meet Me at Mission Rock! (L) © PWP LANDSCAPE ARCHITECTURE / (R) SOURCE: CHRIS TYLERTO / FLICKR

GUIDELINES

3.3.17 SITE FURNISHINGS

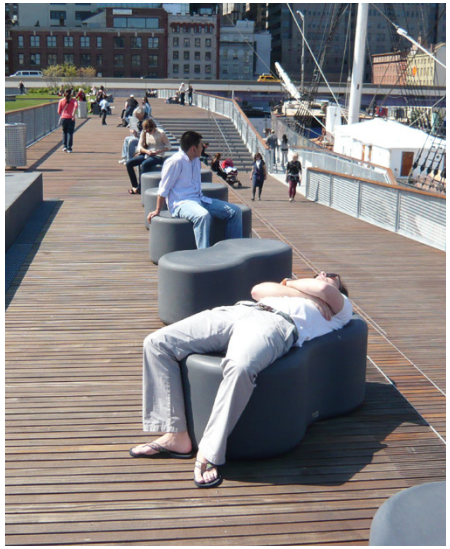
Site furnishings should be a mix of small-scale permanent seating, movable seating, and large-scale permanent seating. Also see Figure 3.3.4, Standard 3.3.7, Section 5.1: Active Edges, and Section 5.6: High Retail Zone.

A) Small Scale Permanent and Movable Seating

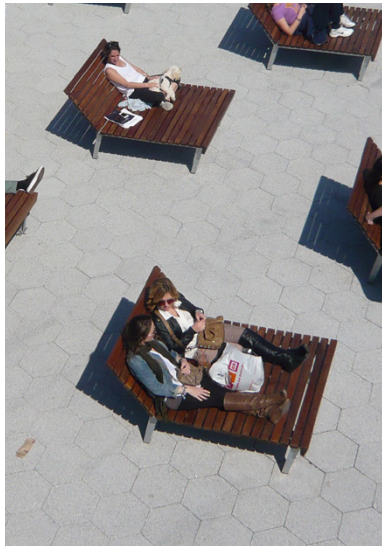
Small-scale permanent and movable seating should have a highly unique, identifiable character and should comfortably accommodate individuals and small groups.

B) Large-Scale Feature Furniture

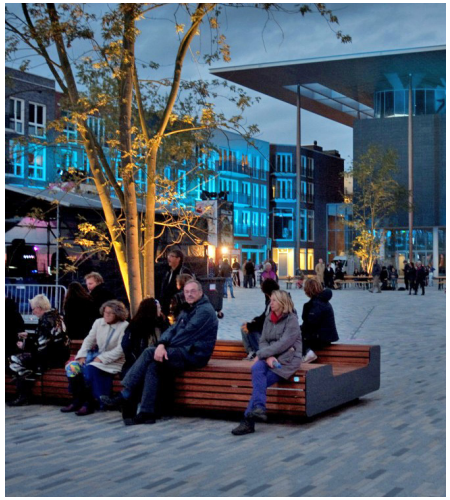
Use large-scale feature furniture to create opportunities for larger social gatherings; for example, a large communal table is a singular experience that could engage the active retail/dining edges of the Square.



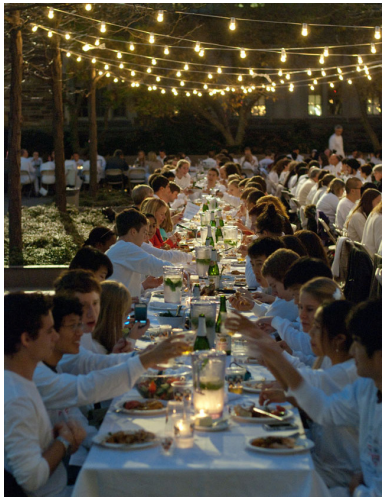
This example of special small-scale permanent seating accommodates a range of small gatherings. SOURCE: CMG



These examples of unique flexible seating can be re-configured and occupied in a variety of ways, by individuals or small groups. (L) SOURCE: YOUNG SOK KUN / FLICKR / (R) SOURCE: C MG



These examples of large-scale permanent feature furniture provide a vantage point and respite in busy public spaces, and facilitate larger social gatherings. (L) SOURCE: LAURENSAAIJ / (R) SOURCE: JOEVARA/FLICKR



A large-scale communal table could be a signature program element; see Figure 3.3.4. © JOHN O'NEILL/PRINCETON PAW

3.4 CHANNEL LANE

Read in conjunction with Section 3.3: Mission Rock Square, Section 4.3: Terry A Francois Boulevard, Section 4.4: Bridgeview Street, and Section 5.1: Active Edges.

Channel Lane will be an important view corridor and connection between Mission Rock Square and the waterfront; a place to linger and a place to move through, connected to Mission Rock Square and across Terry A Francois Boulevard to Channel Wharf. Because it will be protected, shaded, and not accessible by vehicle, Channel Lane will be a potential site for unique features such as overhead lighting, special paving, and shade-tolerant plant species. The site-wide strategy to elevate the center of the Mission Rock site for sea level rise resiliency offers a programmatic opportunity for Channel Lane, which accommodates this grade transition.

An example of a small plaza activated by ground floor program, grade change, and overhead feature lighting. SOURCE: CMG

STANDARDS

3.4.1 PROGRAM AREAS

A) Active Edges

10' Active Edges along Blocks I and J shall be provided. If Elevated Walkways are provided on block frontages along Terry A Francois Boulevard, this area is an opportunity to directly connect to those public walkways.

B) Plaza with Pedestrian Throughway

A 50'-maximum width plaza at grade with Bridgeview Street shall be provided, measured east-west, with 12'-minimum pedestrian throughway shall be provided. Tree Planting that meets the design criteria noted in 3.4.4 and 3.4.5 shall be included in this area.

C) Waterfront Passage

A generous connection to Terry A Francois Boulevard with 12'-minimum pedestrian throughway shall be provided, with grade changes in compliance with 3.4.2.

D) Planting Areas

Understory planting shall be provided adjacent to the Waterfront Passage at grade changes.

E) Below-Grade Parking Garage Access (if provided)

If provided, ramp access to a below-grade parking garage shall be a maximum of 23' wide, located adjacent to the Active Edge at Block I, and screened by shade-tolerant planting.

3.4.2 WATERFRONT PASSAGE: GRADE CHANGE RESTRICTIONS

The Waterfront Passage described in 3.4.1 shall include a 6'-minimum width sloped walk with 5%-maximum longitudinal slope, and a 6'-minimum width stair. Exceeding this minimum requirement is encouraged to create a generous pedestrian connection.

3.4.3 PROTECTED PEDESTRIAN AREA

Vehicular traffic shall not be permitted on Channel Lane. Bollards or equivalent vehicular barrier shall be located along Terry A Francois Boulevard to indicate that Channel Lane is a pedestrian-only open space.

GUIDELINES

3.4.4 ENCLOSURE AND VIEWS

A view corridor from the Pedestrian Throughway should be maintained through Channel Lane from Mission Rock Square to the water; this should not be obstructed by permanent furnishings, trees, or landscape structures.

3.4.5 TREE PLANTING

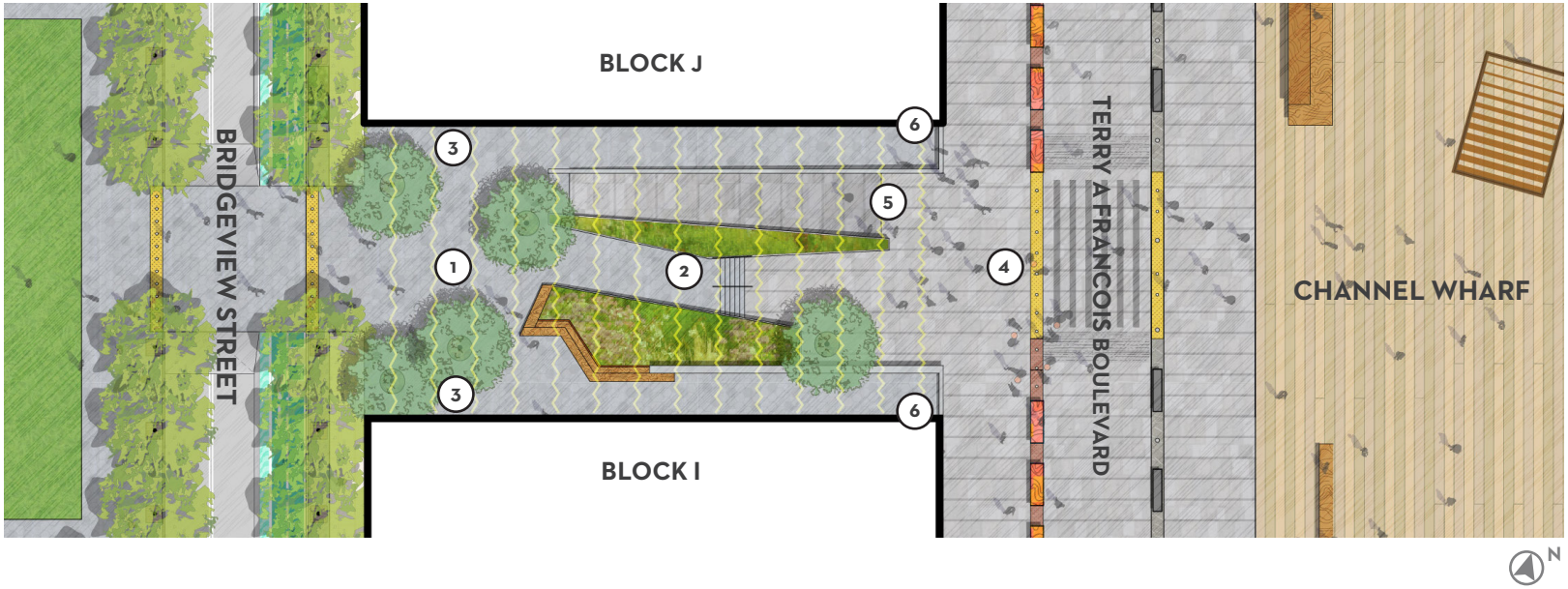
If trees are included in the design concept for Channel Lane, first branching height should maintain views between Mission Rock Square and Channel Wharf, out to the Bay. See Guideline 3.4.4.

3.4.6 SITE FURNISHINGS

Flexible seating should be substantial enough to withstand wind load. Fixed seating may be included at the waterfront passage grade change.

3.4.7 GATEWAY FEATURE: OVERHEAD LIGHTING

Channel Lane is a unique opportunity to integrate an overhead feature, ideally one that incorporates special lighting. This feature should be an attractor for passage to the waterfront from Mission Rock Square, but should not obstruct nor detract from the Bay view per Guideline 3.4.4.



CHANNEL LANE CONCEPTUAL PLAN

1 Plaza with Pedestrian Throughway
2 Waterfront Passage
3 Active Edges
4 Vehicular Barrier
5 Gateway Feature: Overhead Lighting
6 Connection to Elevated Walkway

FIGURE 3.4.1 Conceptual Plan of Channel Lane that satisfies the controls herein. This is provided for illustrative purposes only and does not represent a design proposal.

3.5 CHANNEL WHARF

Read in conjunction with Section 3.6: Pier 48 Apron, Section 4.3: Terry A Francois Boulevard, and Section 5.8: Working Waterfront Zone. Channel Wharf must also satisfy the requirements described in Chapter 2: Public Realm.

Situated between Piers 48 and 50, Channel Wharf will celebrate San Francisco's working industrial waterfront. It will continue to serve as a functioning wharf while providing public access and views of active maritime vessels, marine uses at the Pier 50, the Bay, and shipping cranes in the distance as well as public art and seating. This plaza will be a unique destination for local residents and office workers, and a waypoint for explorers of the Bay Trail/Blue Greenway.

This waterfront plaza should be designed with special consideration for Terry A Francois Boulevard, which will border its entire west extent, and should also be considered as a grand waterfront terminus of Channel Street—a key connection to the Mission Bay neighborhood.

This public space at the Marseilles Waterfront, with utilitarian character and materials that are compatible with maritime uses, is a precedent for Channel Wharf. . © NICKCREW66 / FLICKR

STANDARDS

3.5.1 FUNCTIONALITY AND WORKING NATURE

Channel Wharf shall accommodate maritime use as a laydown area for temporary storage of off-loaded materials. This use shall not compromise public access to Channel Wharf or to the Pier 48 Apron. Channel Wharf shall be predominantly coplanar with the Pier 48 Apron and Terry A Francois Boulevard. See Standard 3.6.5.

3.5.2 MARITIME + INDUSTRIAL CHARACTER

Site furnishings, lighting, and paving shall reinforce and support the maritime and industrial character of Piers 48 and 50 and Terry A Francois Boulevard. Materials shall be durable and appropriate for maritime and industrial use.

3.5.3 PUBLIC ART

One piece of Public Art, defined as a "Large-Scale Feature" per Guideline 3.5.5, shall be permitted on Channel Wharf.

3.5.4 TREES

Tree planting is not technically or functionally feasible on Channel Wharf and shall not be permitted.

GUIDELINES

3.5.5 LARGE-SCALE FEATURE

Per Standard 3.5.3, Channel Wharf should include a large-scale industrial object or other feature that serves as a destination point. This object could be a viewing tower located to provide a public privileged view of the water and to further evoke the industrial and maritime character of the site. This is a public art opportunity. See Section 2.11.

3.5.6 PLANTING

Channel Wharf is envisioned as a paved Open Space and should be considered a wharf landscape. If planting is proposed, it should conform to the character and functional standards of this space and its maritime and industrial environs. Any proposed excavation for planting should be coordinated with the existing seawall. If necessary, a stormwater treatment garden can be utilized to address localized stormwater runoff. Refer to Infrastructure Plan.

3.5.7 PAVING

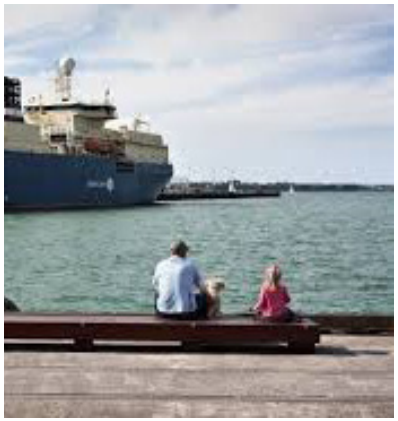
To support maritime operations per Standard 3.5.1, paving should have a utilitarian character that is suitable for the maritime context and Bay environment, at a scale that engages pedestrians.

3.5.8 SITE FURNISHINGS

Permanent seating should be provided in Channel Wharf and should support the maritime and industrial character of the open space. Low seating or a bull rail at the water's edge is encouraged. Furniture locations should not impede the functionality described in Standard 3.5.1.

The crane in this public waterfront space is an example of a large-scale feature that marks a destination point.
SOURCE: FLICKR / ISLAND HOME

Utilitarian paving at a waterfront open space in Barcelona that is suitable for a marine environment. © LANDEZINE



These seating examples at the water's edge have unique maritime character and are sturdy enough to withstand the industrial and environmental context of Channel Wharf. (L) © SIMON DEVITT / (R) © OCULUS LANDSCAPE ARCHITECTURE

CONCEPT PLAN

1 Pedestrian Crossing
2 Utilitarian Paving
3 Large-Scale Feature
4 Bull Rail at Water's Edge
5 Seating

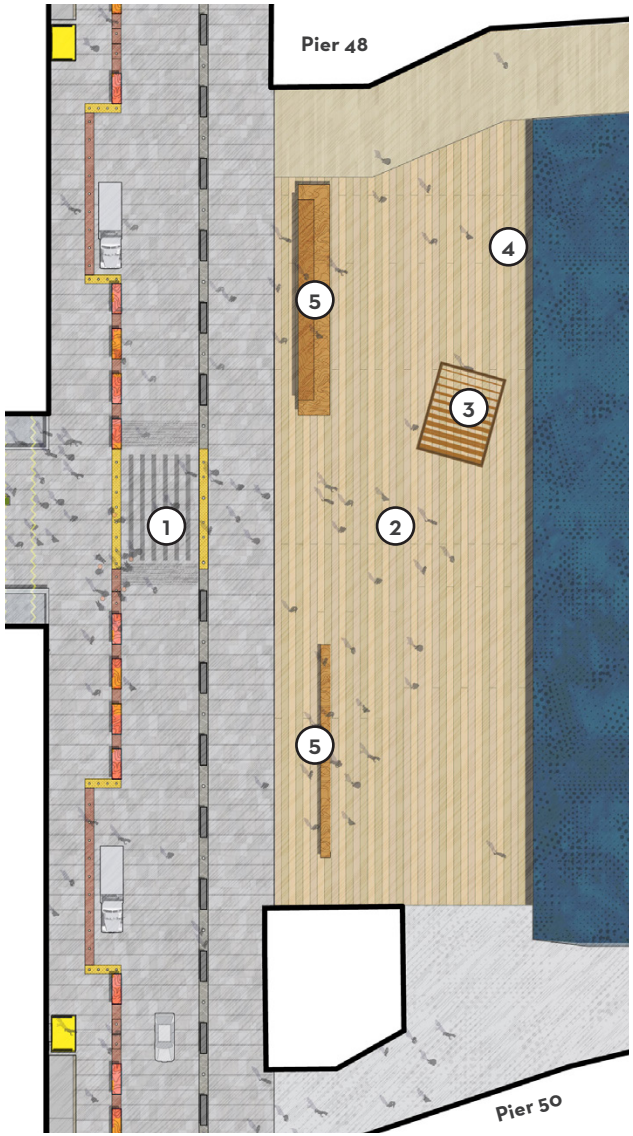


FIGURE 3.5.1 Conceptual Plan of Channel Wharf that satisfies the controls herein. This is provided for illustrative purposes only and does not represent a design proposal.

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3.6 PIER 48 APRON

Read in conjunction with Section 3.2: China Basin Park, Section 3.5: Channel Wharf, Section 4.3: Terry A Francois Boulevard, Section 5.7: Parkfront Zone, and Section 5.8: Working Waterfront Zone. The Pier 48 Apron must also satisfy the relevant requirements described in Chapter 2: Public Realm.

The Pier 48 Apron will be rehabilitated to provide public access and berthing capabilities. This maritime and industrial activity will bring new life to Mission Rock and Mission Bay and provide a waterside approach to the site, anchoring this historic pier as a key element in the transformation of the central waterfront.

An adjacent paseo at the terminus of Terry A Francois Boulevard will facilitate park and water-oriented pier access, and a publicly accessible picnic area will connect Pier 48 to China Basin Park. A non-motorized watercraft launch located close to this picnicking area will take advantage of calm waters for the launch of small watercraft.

STANDARDS

3.6.1 PIER 48 APRON: USES

The Pier 48 Apron shall accommodate maritime berthing and public access on the pier aprons, and other viable uses consistent with the public trust.

3.6.2 APRON FUNCTIONALITY

When redeveloped, the Pier 48 Apron shall be a functional component of operations on Pier 48. It may be closed to the public at times to support these operations, but will be open as much as practicable.

3.6.3 DESIGN STANDARDS

Pier 48 is identified as a contributory resource to the Embarcadero Waterfront National Register Historic District. Modifications to the Pier 48 Apron shall meet Port of San Francisco criteria for Design and Access and for the National Register of Historic Places (NHRP) per the following documents:

- Waterfront Design and Access Element:
  Chapter 3 Historic Resources
  Chapter 4 Pier 48 – 54 Design Criteria
  [http://www.sfport.com/ftp/uploadedfiles/about_us/divisions/planning_development/WDesAcc.pdf]
- Embarcadero Historic District National Register Nomination, May 2006. *[http://sfport.com/embarcadero-historic-district]*
- Port of San Francisco Historic Preservation Review Guidelines for Pier and Bulkhead Wharf Substructures *[http://sfport.com/embarcadero-historic-district]*
- The Secretary of the Interior's Standards for Rehabilitation: *[http://www.nps.gov/tps/standards/rehabilitation/rehab/index.htm]*

3.6.4 PUBLIC ACCESS TO NORTH APRON AT CHINA BASIN PARK

Public Access with a minimum 8'-0"-width pedestrian throughway shall be maintained from China Basin Park to the north apron at the Pier 48 pier shed. See Figures 3.6.1-3.6.2 and refer to Section 3.2.

3.6.5 PUBLIC ACCESS TO SOUTH APRON AT CHANNEL WHARF

Public Access with a minimum 6'-0"-width pedestrian throughway shall be maintained on the south apron at the Pier 48 pier shed. This access shall not be impeded adjacent to Channel Wharf. See Figure 3.6.2.

3.6.6 WATER ACCESS

A non-motorized watercraft launch and kiosk shall be provided between China Basin Park and Pier 48.

3.6.7 INTERFACE WITH ADJACENT OPEN SPACES

Refer to Section 4.3 for applicable controls at the intersection of the Pier 48 Apron with Terry A Francois Boulevard, Section 3.2 for China Basin Park, and Section 3.5 for Channel Wharf.

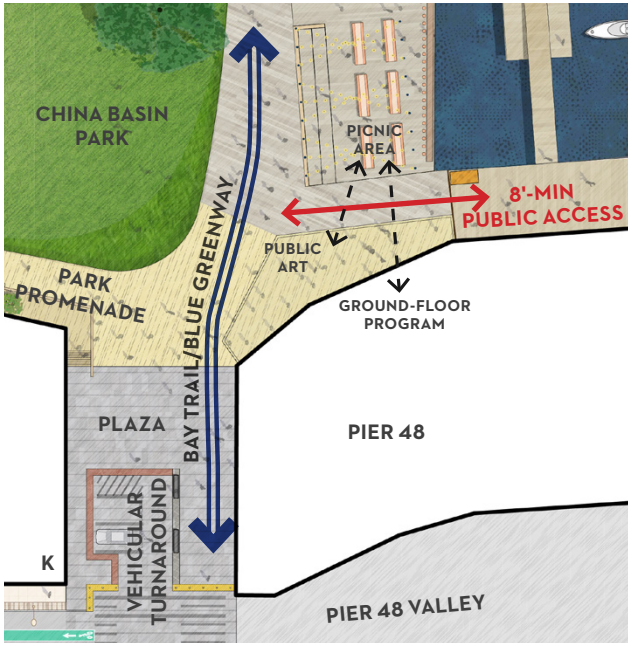

FIGURE 3.6.1 Diagram of the interface of Pier 48, China Basin Park, and Terry A Francois Boulevard. Also see Section 4.3 and 3.2.

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CONCEPT PLAN

1 Pier 48 Apron: North Apron

2 Publicly accessible picnic area (See 3.2)

3 Kiosk and non-motorized watercraft launch

4 Paseo (See 4.3)

5 Pier 48 Apron: South Apron

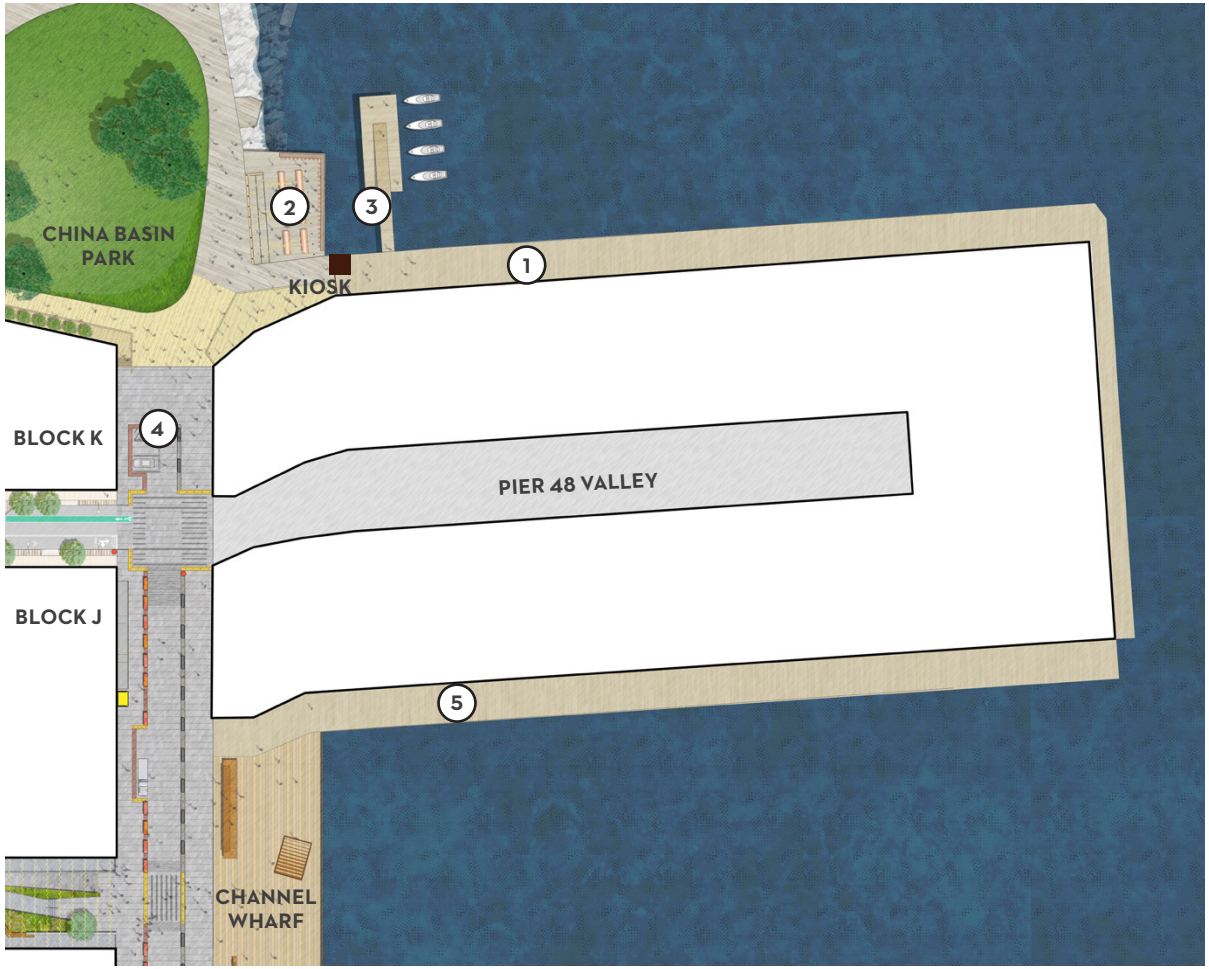

FIGURE 3.6.2 Conceptual Plan of the Pier 48 Apron that satisfies the controls herein. This is provided for illustrative purposes only and does not represent a design proposal.

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3.7 CHANNEL STREET

Read in conjunction with Section 3.3: Mission Rock Square, Section 4.2: Shared Public Way, Section 5.3: Active Edges, and Section 5.10: Neighborhood Street Zone: Non-Residential.

Channel Street will be an important pedestrian gateway to Mission Rock, a key connection from the Mission Bay district through to the waterfront at Channel Wharf.

In addition to its role as a gateway to Mission Rock, Channel Street is an important location for mitigating the impact of strong east-west winds on the Shared Public Way and Mission Rock Square.

STANDARDS

3.7.1 PROGRAM AREAS

A) Active Edges
10' Active Edges along Blocks B and C shall be provided.

B) Plaza with Pedestrian Throughway
12'-minimum pedestrian throughway shall be provided within a 50'-maximum width plaza. Tree Planting and stormwater treatment facilities shall be included in this area.

C) Tree Grove with Pedestrian Throughway
Between the plaza and the Shared Public Way, a grove of trees shall be provided and shall accommodate a 12'-minimum pedestrian throughway.

D) Below-Grade Parking Garage Access (if provided)
If provided, ramp access to a below-grade parking garage shall be accommodated within the Plaza program area described in B) and screened with shade-tolerant planting. Ramp access and ingress/egress lanes shall have a maximum overall width of 38'.

3.7.2 GRADE CHANGE RESTRICTIONS

Slopes shall not exceed 5% longitudinal slope or maximum 2% cross-slope. Grading at Active Edges shall be coordinated with adjacent ground-floor uses.

3.7.3 TREE PLANTING: REQUIREMENTS

First branching height shall be 10' clear, to facilitate views from 3rd Street toward Mission Rock Square while providing enclosure and wind protection. At least 50% of the total area of Channel Street shall have canopy cover at tree maturity.

3.7.4 PROTECTED PEDESTRIAN AREA

Vehicular traffic shall not be permitted on Channel Street. Bollards or equivalent vehicular barrier shall be located along 3rd Street to indicate that Channel Street is a pedestrian-only open space.

GUIDELINES

3.7.5 WIND LOAD ON MOVABLE FURNITURE

Movable furniture, if deployed, should be sturdy enough to withstand wind loads on Channel Street.

3.7.6 SITE FURNISHINGS

Built-in seating should be included in the Tree Grove.

3.7.7 GATEWAY FEATURE: LIGHTING OR ART

Channel Street is an opportunity for facade-mounted or overhead feature lighting or art, to enliven the space and provide identity at night for this key entrance to Mission Rock. See Section 2.9.

An dense tree grove creates an intimate, wind-protected social space and provides wind mitigation for the larger public realm. SOURCE: FLICKR / NOVARTIS AG

This grove of trees with high first branching height facilitates views while providing enclosure for a small public space. SOURCE: ARD HESSELINK / FLICKR

Overhead lights at Larimer Square in Denver create a unique nighttime identity and destination. SOURCE: FLICKR/ AMY ALETHEIA CAHILL

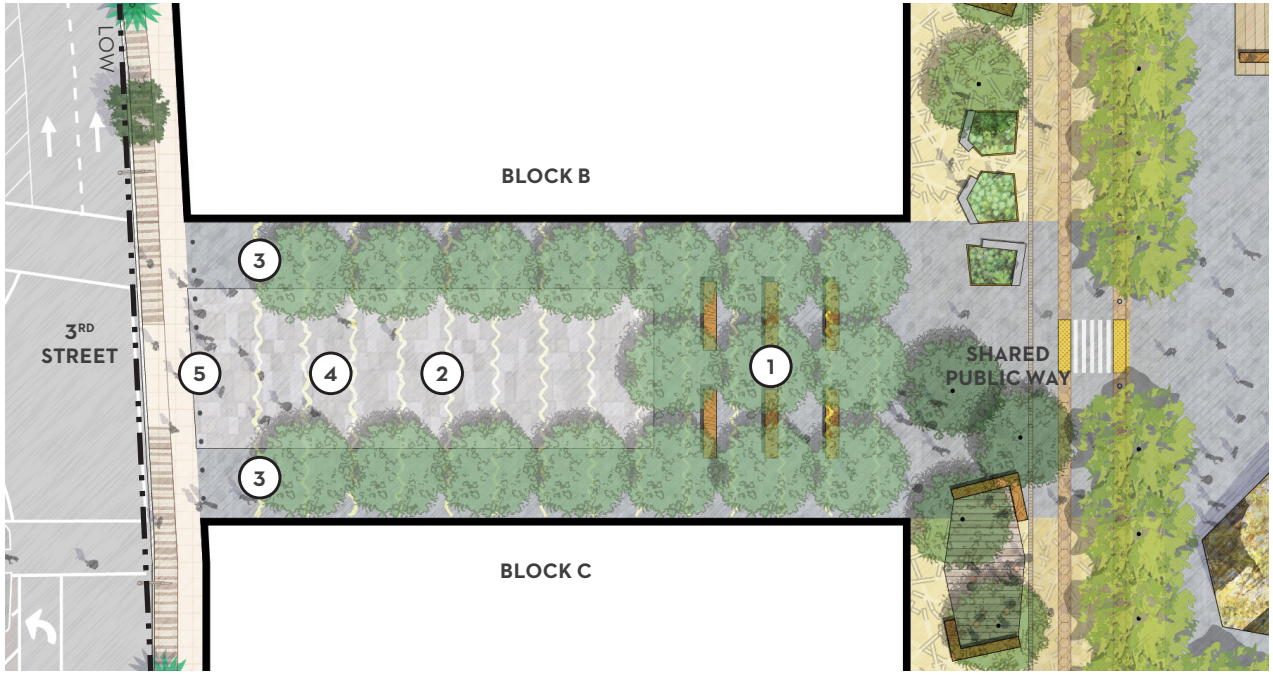

FIGURE 3.7.1 Conceptual Plan of Channel Street that satisfies the controls herein. This is provided for illustrative purposes only and does not represent a design proposal.

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CHANNEL STREET CONCEPTUAL PLAN

1 Tree Grove with Seating

2 Plaza with Pedestrian Throughway

3 Active Edge

4 Gateway Feature: Lighting or Art

5 Vehicular Barrier

3.8 KIOSKS + SMALL PARK STRUCTURES

Read in conjunction with Section 3.2: China Basin Park, Section 3.3: Mission Rock Square, and Section 3.6: Pier 48 Apron.

Kiosks and small park structures will be important programming elements of Open Spaces at Mission Rock. These structures should be designed to maximize indoor-outdoor connections and enhance the experience of the public realm through food or retail uses, performance capabilities, and special programming.

This small pavilion, open to a plaza and transparent on several sides, is a precedent for small park structures. © CLEMENT GUILLAUME

STANDARDS

3.8.1 DEFINITIONS

A) Small Park Structures

The Park Cafe and Upper Plaza Structure in China Basin Park and the Neighborhood Square Structure in Mission Rock Square shall be lightweight structures. These may include food service facilities. Total footprint area shall not exceed 1,500 square feet. Where public restrooms per 3.8.1 D) are provided, total footprint area shall not exceed 3,000 square feet. See Figure 3.8.1 for locations.

B) Kiosks

Kiosks shall be small structures with footprint area not to exceed 200 square feet. Public restrooms are not required in kiosks.

C) Recreational Structures

Open-air structures in support of public recreation shall be permitted in Open Spaces.

D) Public Restrooms

Public Restrooms shall be provided within small park structures. In China Basin Park, where there are multiple permitted structures, only one location for public restroom facilities is required.

This example of outdoor seating for adjacent retail is publicly accessible and welcoming. SOURCE: FLICKR / R DE JEU

3.8.2 UTILITIES

All Kiosks and Small Park Structures shall have necessary utilities. Locations indicated in Figure 3.8.1 have been coordinated with site-wide utilities and fire access requirements. Also see Section 3.2.

3.8.3 GROUND-FLOOR RELATIONSHIP TO OPEN SPACES

All Kiosks + Small Park Structures shall have public entrances or large openings at grade on at least two sides, to provide visual connections and access between interior spaces and Open Spaces.

3.8.4 SERVICING

Truck access shall be accommodated to service Kiosks and Small Park Structures.

3.8.5 OUTDOOR SEATING

Each Kiosk and Small Park Structure shall have associated seating areas that are open to the public.

GUIDELINES

3.8.7 FOOD SERVICE

Small Park Structures should be sized to accommodate food service if programmatically desired.

3.8.8 SIGNATURE USES

The Park Cafe and Neighborhood Square Structures should accommodate unique and high-quality uses that will be significant attractions in those open spaces. See China Basin Park and Mission Rock Square controls regarding visual access and Active Edges.

3.8.9 RECREATIONAL STRUCTURES: USES

Recreational structures are encouraged in Mission Rock Square and China Basin Park. These may include, but are not limited to, performance-oriented structures for small or large shows, or structures that support active recreation.

This small performance structure is an example of a recreational structure encouraged in Mission Rock Square and China Basin Park. SOURCE: CMG

LEGEND: LOCATIONS

Kiosks or Small Park Structures should be located in these areas:

SMALL PARK STRUCTURES:

- Park Cafe Structure
  - Signature Tenant
  - Food Service
- Neighborhood Square Structure
  - Signature Tenant
  - Food Service or Performance Venue
- Upper Plaza Structure
  - Food Service or Performance Venue

KIOSKS:

- Kayak Equipment Rental Kiosk
- Small Food/Retail Kiosks

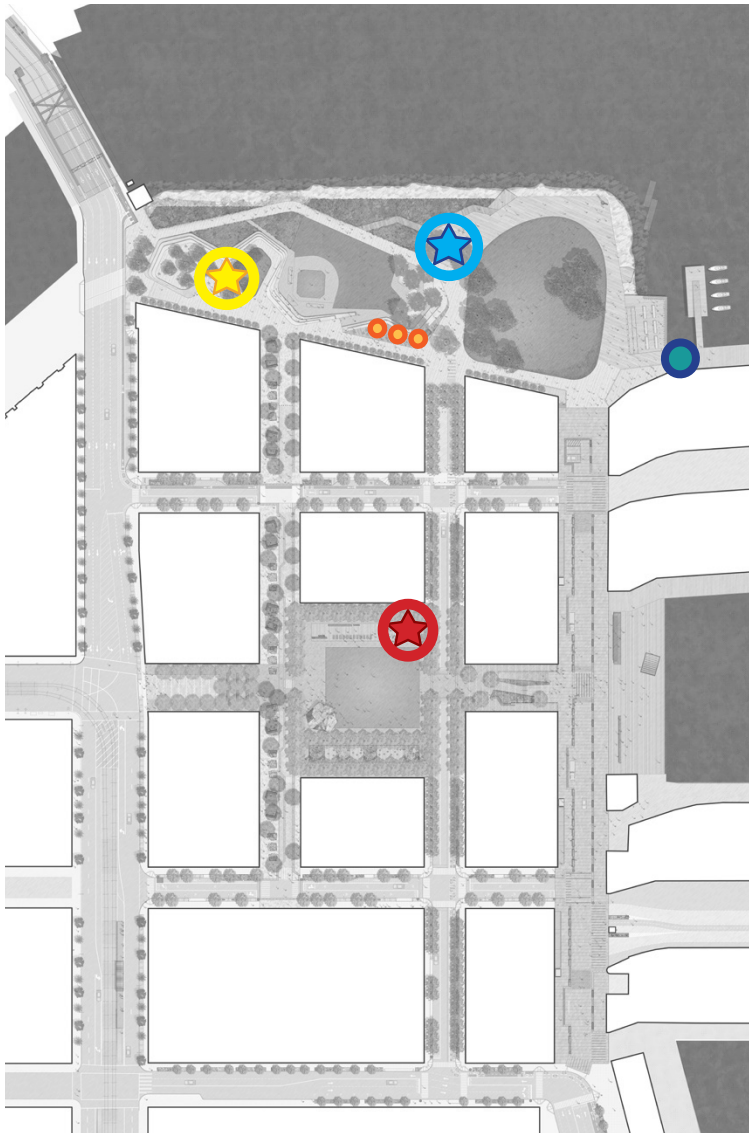


FIGURE 3.8.1 This figure indicates permitted location zones of Kiosks and Small Park Structures in the public realm and corresponds to standard 3.8.1. Also refer to Sections 3.2 and 3.3.

N

burger
coffee
pancakes

Vibrant, pedestrian-oriented and visually interesting streets will be the setting for a lively, urban, social public life at Mission Rock. With generous and active pedestrian areas, traffic calming, and bicycle connections, the street network will be a walkable grid of small blocks that provide a framework for safe and enjoyable movement through the site for Mission Rock residents, tenants, and visitors.

04

STREETS

Because an active and inclusive pedestrian and bicycle experience will be prioritized, the incentive to access the site by vehicle will be diminished.

Shared streets—the Shared Public Way and Terry A Francois Boulevard—will comprise the major north-south pedestrian connections on the site. These streets will be flush across the entire right-of-way, with a shared zone where vehicles will be permitted at very low speeds. Designed to create a vibrant pedestrian experience, retail edges along the two shared streets will activate the public realm, blurring the line between outdoor and indoor life at Mission Rock. Streetlife zones, characterized by Street Rooms—social areas that include planting, fixed and movable furnishings, and kiosks—will complement and support retail spaces of varying sizes.

Neighborhood streets at Mission Rock will be socially and ecologically sustainable; conceived as Complete Streets, they will prioritize safety, multi-modal mobility, and community vitality. These streets will be pedestrian- and bicycle oriented and also accommodate loading and servicing. They will provide a vehicular loop internal to the Mission Rock, as well as primary vehicular connections to and from neighboring streets in Mission Bay. 3rd Street and Mission Rock Street, designed to OCII Mission Bay standards, will be important site gateways for pedestrian, bicycle, and vehicular circulation.

Designed with generous sidewalks, stormwater gardens, and a consistent tree canopy, each street will be integrated with active ground-floor uses across the site. The streets will be urban ecological corridors that filter and convey stormwater and contribute to the city's urban forest.

4.1 Street Controls 78
4.2 Shared Public Way 80
4.3 Terry A Francois Boulevard 90
4.4 Bridgeview Street 98
4.5 Exposition Street 104
4.6 Long Bridge Street 108
4.7 3rd Street 112
4.8 Mission Rock Street 116

RELATED CHAPTERS: This chapter is integral to Chapter 5: Ground Floor; together, these chapters describe the character and quality of urban experience at Mission Rock. Each streetscape in this chapter must satisfy its specific requirements as well as the Public Realm requirements described in Chapter 2: Public Realm Network.

4.1 STREET CONTROLS

The streets will contribute to a varied public realm while satisfying above- and under-ground infrastructure needs at Mission Rock. The controls in this chapter establish street zones based on the designations in the Better Streets Plan and the 2015 Subdivision Regulations. Mission Rock's streets will synthesize several aspects of streetlife and street safety:

Pedestrian Experience:

Ground-floor activation will be a key aspect of the pedestrian experience. To ensure interconnection between buildings and the public realm, frontage zone and pedestrian throughway dimensions are coordinated with the Active Edge controls defined in Chapter 5. All streets will include generous pedestrian throughways and high-visibility crosswalks. Street furnishings, planting, and lighting will shape opportunities for public space in the Streetlife Zone, and passenger loading and building servicing will be aggregated to minimize curb cuts and driveways.

Bicycle Safety:

Facilities for cyclists of all ages and skill levels will be provided: protected bicycle facilities, painted bicycle lanes, sharrows, and multi-use trails. Bicycle parking will be located on all streets at building and park entries. Typical conflict points at driveways will be restricted, and street parking is not permitted.

Traffic Calming:

Narrow vehicular lanes will slow traffic, and raised intersections at the Shared Public Way and Bridgeview Street are proposed to prioritize pedestrian and bicycle visibility. Bulb-outs on Exposition Street will create designated loading and servicing areas.

STANDARDS

4.1.1 PUBLIC RIGHT-OF-WAY (ROW)

The public right-of-way must be open to the sky, with the exception of permitted landscape and street-wall encroachments per Sections 3.8 and 6.3.5, and publicly accessible at all times unless subject to maintenance, operations, security and safety rights, or closure by Master Developer for events.

4.1.2 DEFINITIONS: SIDEWALK ZONES

These definitions apply to all streets.

- **Frontage Zone:**
  A zone along building frontages for Active Edge uses such as seating, signage, and merchandizing, as defined in Chapter 5. Refer to Chapter 5 and Glossary of Terms.
- **Pedestrian Throughway:**
  An unobstructed accessible path of travel for pedestrians as defined in Standard 2.3.1.
- **Streetlife Zone:**
  A zone within the sidewalk, equivalent to a Furnishing Zone, that houses elements such as trees, lighting, furnishings, and stormwater treatment gardens.

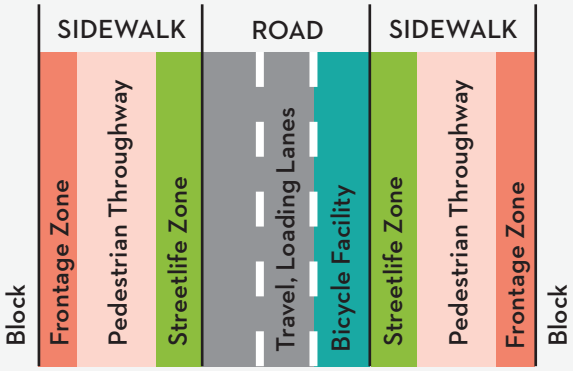


FIGURE 4.1.1 Neighborhood Streets: Standard Zones

4.1.3 SHARED STREETS: UNIFIED RIGHT-OF-WAY

The entire length and width of a Shared Street right-of-way (ROW) shall read as a single, unified space, with a comprehensive paving strategy that encourages safe pedestrian movement across the entire right-of-way. Shared Streets shall be designed in accordance with applicable accessibility codes and guidance, incorporating design and spatial cues as well as material and visual/tactile detection strategies to ensure pedestrian safety.

4.1.4 STREET MARKINGS AND SIGNAGE

Street markings and signage shall be in accordance with City and Port standards for street and intersection markings. See Sections 2.3, 2.4, and 2.10 and refer to Infrastructure and Transportation Plans.

4.1.5 ABOVE-GRADE UTILITY COORDINATION

Whenever possible, utilities shall not be visible above-ground in the public realm, and their location shall be coordinated with tree and streetscape element spacing. Refer to Infrastructure Plan.

4.1.6 BICYCLE PARKING: LOCATIONS

Class II bicycle parking shall be distributed across the site, provided in publicly accessible interior locations and throughout the public realm. In the public realm, bicycle parking shall be provided at building and park entries within the Streetlife Zone, in Paseos, and in Open Spaces as delineated in Figure 4.1.1, with priority given to key bicycle circulation routes noted in Section 2.4. Bicycle parking locations in the public realm shall be highly visible and well-lit.

GUIDELINES

4.1.7 TREE PLANTING: WIND MITIGATION

Trees should be adapted to the particular microclimate and shade conditions of each street, and sited with consideration of localized wind effects. See Section 2.7 for urban forest controls and species criteria.

4.1.8 VISUAL PERMEABILITY ON SHARED STREETS

Streetscape design on curbless shared streets should allow visual permeability and regular east-west pedestrian connections across the entire right-of-way.

4.1.9 STREET FURNISHINGS: PERFORMANCE CRITERIA

Street furnishings, located in the Streetlife Zone, should be a mix of fixed and movable elements in accordance with specific standards and guidelines for each street. These elements should contribute to wayfinding and identity. The performance criteria below are provided in lieu of a specific palette; also see Section 2.6.

A) Seating

Seating should be an inviting element allowing visual permeability and social use. Special street furnishings are encouraged to emphasize each street's unique character.

B) Accessibility

Street furnishings should be universally accessible, or modifiable to meet or exceed minimum accessibility requirements.

C) Trash Receptacles

Trash receptacles should be standardized across the site. Location of selected receptacles should not impede visual access or mobility.

D) Bicycle Racks

Bicycle racks should be standardized on all internal site streets, with the exception of Bridgeview Street per Section 4.4.

This oversize bench is an example of inviting seating that allows for social use and visual permeability.

SOURCE: CMG

LEGEND: STREETS LOCATION MAP

- Shared Streets
- Neighborhood Streets
- Paseos
- Open Spaces
- 4.x Chapter 4 Section

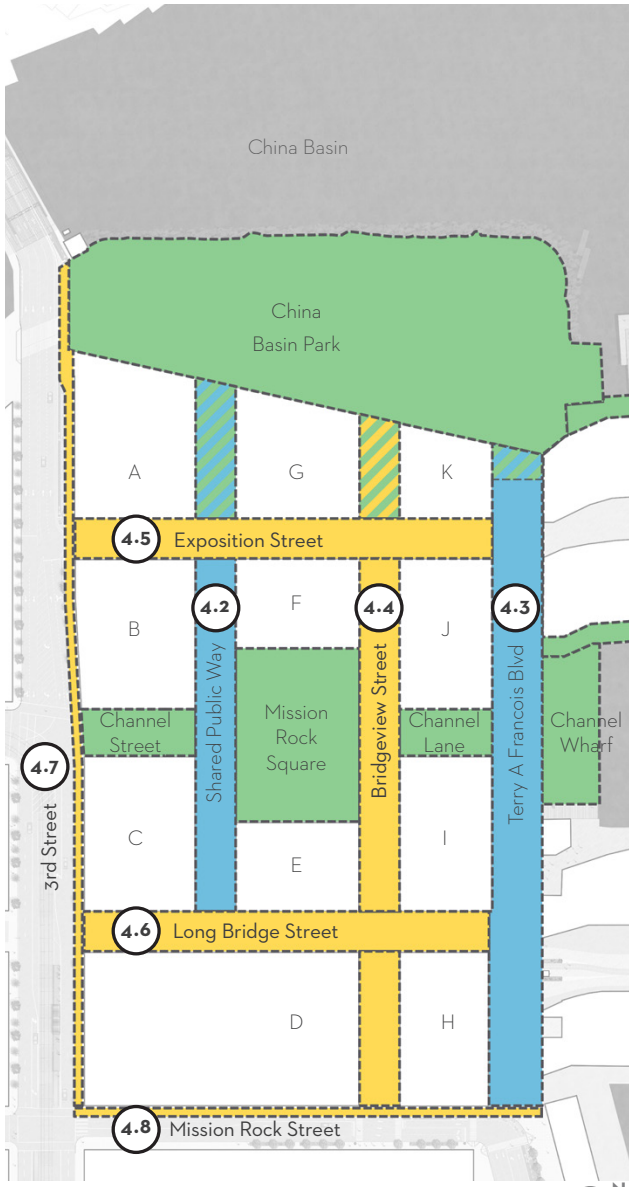


FIGURE 4.1.2 Location Map of streets and section numbers.

4.2 SHARED PUBLIC WAY

Read in conjunction with Section 5.1: Active Edges and Section 5.6: High Retail Zone. The Shared Public Way must also satisfy the requirements described in Chapter 2: Public Realm.

The Shared Public Way will be a promenade linking important site anchors such as Mission Rock Square and China Basin Park to site arrival points for MUNI, vehicles, and bicycles, as well as the main site parking garage on Block D.

Shared public ways are curbless streets that privilege pedestrian movement, following traditional street planning approaches in Europe and other pedestrian-friendly urban centers. The Shared Public Way at Mission Rock will be a dynamic space with active ground-floor retail, street rooms, stormwater gardens, and tree groves that will create a lively and unique environment. These design elements will also serve as cues to differentiate pedestrian-dedicated areas from the shared pedestrian/vehicular zone.

Ground-floor retail along the Shared Public Way will be diverse in design and program, enlivening the street with storefronts, restaurants, and cafes that will spill out onto the street in generous dedicated Active Edges. Vehicles on the Shared Public Way will be limited to northbound travel for drop-off, pickup, and deliveries.

STANDARDS

4.2.1 ACTIVE EDGES

Active Edges shall be located along the retail frontages on both sides of the Shared Public Way. Uses are defined in Sections 5.1 and 5.6. Active Edges shall include the following zones:

A) Pedestrian Throughway
An unobstructed, 6'-minimum clear width path of travel for pedestrians shall be maintained within the Active Edges on both sides of the right-of-way as noted.

B) Furnishing Zone
A 6'-0" maximum zone for furniture, signage, and merchandizing with tree planting shall be included in the 12' active edge on the east side of the ROW.

C) Frontage Zone
On the west side of the street, a 2'-0" zone shall be maintained along building frontages for Active Edges uses described in Chapter 5. .

4.2.2 STREETLIFE ZONE

The Streetlife Zone will be a 20'-maximum width zone located along the Shared Zone for its entire length. This zone will provide for safe east-west connections across the ROW. This zone shall include:

A) Street Rooms
Special landscape areas with unique paving, built-in furniture, and ample space for flexible seating, small newsstands, and kiosks.

B) Tree Groves
Finely textured tree groves that provide dappled shade and enclosure along the entire Shared Public Way. See 4.2.12 and 4.2.14, as well as Section 2.7 for tree performance and design criteria.

C) Stormwater Treatment Gardens
Stormwater treatment infrastructure that functions ecologically, aesthetically, and programmatically, designed to maximize permeability of movement and view and to encourage lingering. Integrated seating intimate enough for quiet contemplation shall be included.

4.2.3 SHARED ZONE

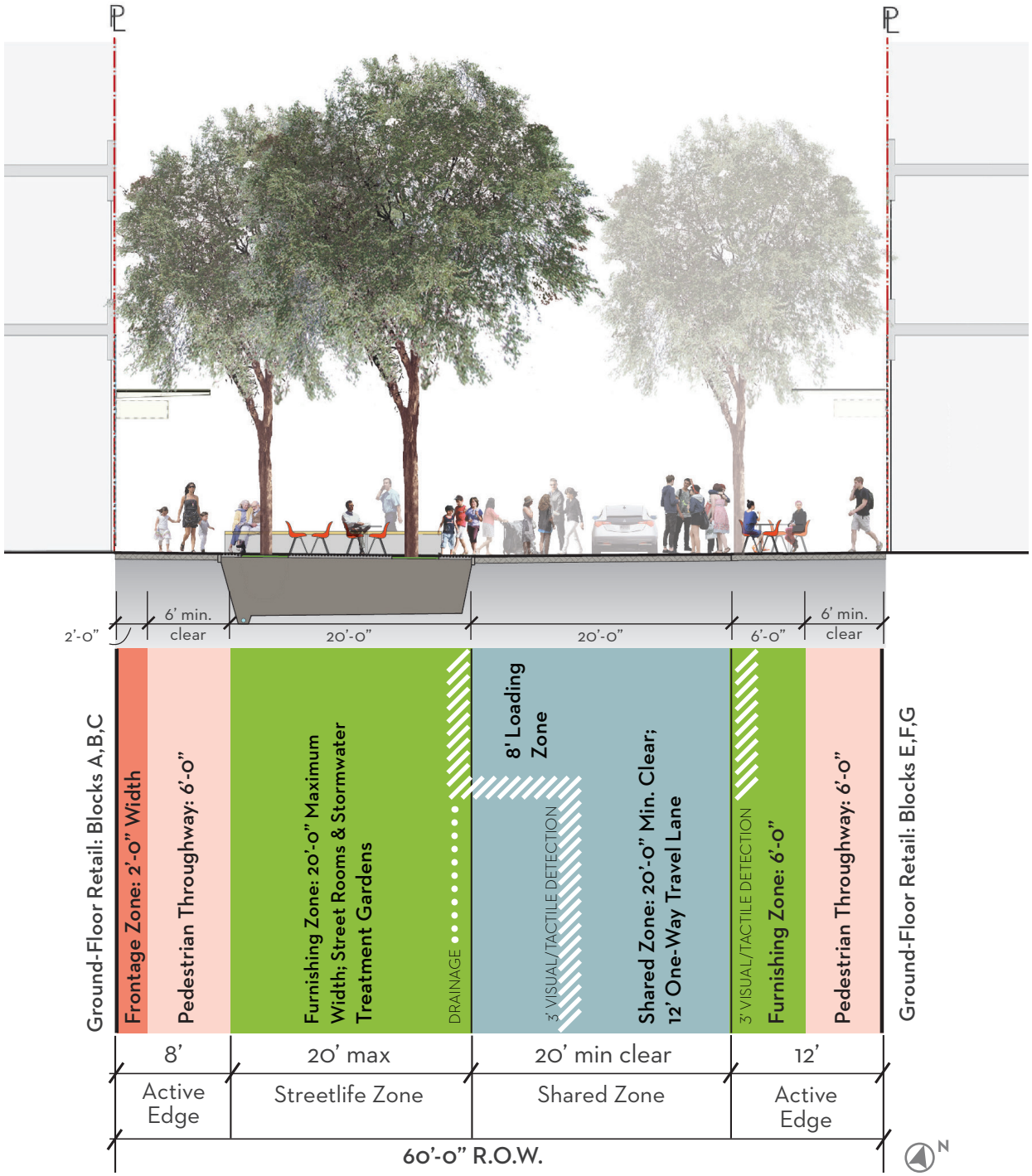
The Shared Zone shall be a 20'-minimum clear zone shared by pedestrians and vehicles. It shall include a non-meandering 12' travel lane and will be separated from dedicated pedestrian-only areas with visual and tactile detection cues per 4.2.5. Crosswalks shall be marked at regular intervals. This zone shall include:

A) One-way Traffic
Vehicular traffic for drop-off and loading only shall be permitted one-way northbound, from Long Bridge Street to Exposition Street. North of Exposition Street, the street becomes a paseo; emergency vehicle access shall be permitted on the paseo between Blocks A and G. No vehicular access is permitted to or from Channel Street. The Shared Public Way may be closed to vehicular traffic during special events.

B) Delineated Loading Areas
Paving and demarcation of 8'-wide loading zones shall be distinct from the 12'-wide vehicular travel lane.

4.2.4 VEHICULAR INTERSECTIONS

Raised intersections with visual/tactile detection marking the pedestrian route shall be provided at Exposition and Long Bridge Streets and will comply with applicable accessibility guidance.



SHARED PUBLIC WAY

- Frontage Zone
- Furnishing Zone
- Pedestrian Throughway
- Shared Zone

FIGURE 4.2.1 Shared Public Way Section and Zones Diagram

STANDARDS

4.2.5 VISUAL/TACTILE DETECTION CUES

Visual/tactile detection cues shall differentiate the Shared Zone travel lane and loading zones from dedicated pedestrian areas; these shall be coordinated in consultation with applicable codes and accessibility guidance and include the following:

A) Paving Strategies

Material tactics, including contrasting paving color, texture, or material type, shall ensure safe pedestrian connections across the Shared Zone. These cues shall delineate the shared zone for its entire length. See (C) in Figure 4.2.2. Also see Guidelines 4.2.10 and 4.2.11 and Section 2.6.

B) Spatial Cues

Incorporate design and spatial cues such as a 'gateway' to the Shared Zone from Long Bridge Street—a constricted vehicular entry point with physical elements that will provide a visual/physical cue for drivers to slow down.

4.2.6 STREETLIFE ZONE PERMEABILITY

Maintain a minimum distance of 16' between street rooms and stormwater gardens, and 20' minimum spacing between tree trunks, within the Streetlife Zone. See Figure 4.2.2.

4.2.7 QUALITY OF MATERIALS

The Shared Public Way shall be constructed with high-quality paving, lighting, and built-in street furnishings.

GUIDELINES

4.2.8 STREET ROOMS

A) Permanent/Built-In Furnishings

Street rooms should contain high-quality built-in furnishings that encourage lingering; these elements should not be a barrier to movement across the right-of-way.

B) Allowable Uses

Encouraged uses include but are not limited to flexible seating, small newsstands and kiosks, outdoor dining areas, and small events or performances.

4.2.9 VARIETY OF STREET FURNISHINGS

The Shared Public Way should have a variety of seating types and scales across zones. Active Edges at building frontages should provide opportunities for outdoor seating curated by individual businesses along the Shared Public Way. A minimum of 6' pedestrian clearance must be maintained at all times at Active Edges. Also see Sections 5.1 and 5.6.

4.2.10 PAVING : A SINGLE FIELD

The Shared Public Way design concept should include a single, coplanar field of paving between building facades. Tactics to differentiate shared zones from dedicated pedestrian zones could include, but are not limited to, shifts in color, texture, or paver size within the same language of the overall field. See Figure 4.2.2 for one example of differentiation within a single field.

4.2.11 PAVING : DELINEATION DETAILS

Highly detailed paving should scale the Shared Public Way and create an urbane character without interrupting the feeling of a unified space.

A) Separation of Shared Zone from Streetlife Zone

The Streetlife Zone should be delineated from the Shared Zone by a trench drain or similar linear drainage element. See (A) in Figure 4.2.2.

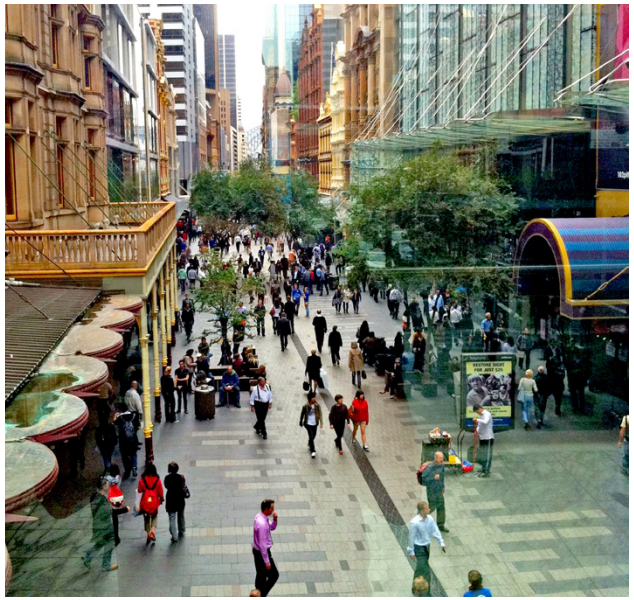
B) Street Room Paving

Street rooms should have special materials and paving, such as wood or decomposed granite, to delineate their unique use. See Figure 4.2.7 Diagrammatic View at Block E and (B) in Figure 4.2.2.

C) Separation of Shared Zone from Active Edge

A 3'-minimum width buffer should be defined within the Active Edge on the east side of the street. This buffer should include contrasting paving, lights, and trees to delineate the Active Edge from the Shared Zone. See 4.2.5-A.

This publicly accessible flexible seating at retail is a precedent for the Shared Public Way's generous Active Edges and Street Rooms. SOURCE: CMG



A single field of paving across the right-of-way creates a unified space. SOURCE: ONITSUKAMAN / COMMONS.WIKIMEDIA.ORG

A special trench drain delineates uses or zones within a single field of paving. SOURCE: NEWTOWN GRAFFITI / FLICKR

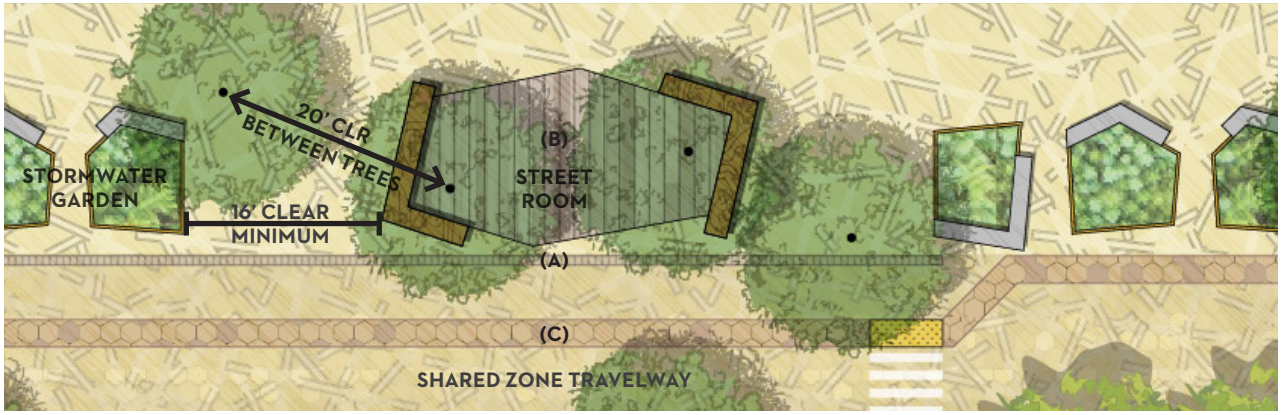


FIGURE 4.2.2 Enlargement plan showing minimum clearances for Streetlife Elements as defined in Standard 4.2.6, and paving relationships and delineation details as described in Guideline 4.2.11.

An example of a street room with high-quality permanent furnishings. © TONY CARO ARCHITECTURE

STANDARDS

4.2.12 SHARED PUBLIC WAY TREE PLANTING

A) Minimum Tree Size
Trees shall be minimum 48" box size at installation.

B) Minimum Tree Quantity
There shall be a minimum of 35 trees planted on the Shared Public Way.

C) Minimum Clear Trunk Height at Shared Zone
Trees adjacent to the Shared Zone shall have a minimum of 13'-6" clearance, measured from the finished grade of the travelway, where branches overhang the Shared Zone.

D) Minimum Spacing
Trees shall have 20'-minimum clear between trunks. See Figure 4.2.2.

GUIDELINES

4.2.13 LIGHTING

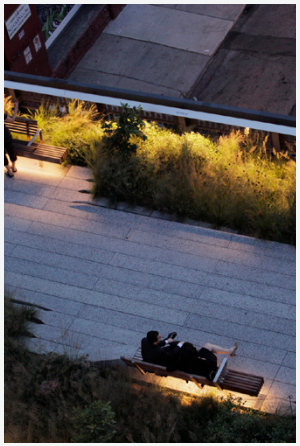
Lighting is a key component for safety and the character of a space at night. The Shared Public Way should have a range of lighting strategies that work together to create an intimate and dynamic nighttime identity. These strategies may include Facade-Mounted Feature Lighting, Integral Lighting in Furniture or Paving, Ground-Level Ambient Lighting, and 'Moonlighting' through the tree canopy. See Section 2.9 for suggested footcandle ranges and uniformity guidelines.

4.2.14 TREE PLANTING DESIGN CRITERIA

Trees on the Shared Public Way should be a single species of finely textured tree with minimum clear trunk of 10 feet, or 13'-6" where branches overhang the Shared Zone. Trees should be arrayed in a staggered layout that creates a grove within the Street Room Use Zone and within the buffer separating the east side Active Edge and the Shared Zone. See 4.2.12 and Section 2.7 for further performance, design, and species selection criteria.

A range of lighting types should be used on the Shared Public Way.

Facade-Mounted Lighting
SOURCE: CMG



Integral Lighting: Furniture
SOURCE: WIKIPEDIA / EMILE DUBUISSON

Moonlighting
SOURCE: CMG

Ground-Level Ambient Lighting
SOURCE: CMG

GUIDELINES

4.2.15 STORMWATER GARDEN CRITERIA AND SUGGESTED PALETTE

Each garden should be considered for its aesthetic and ecological function. Stormwater gardens should not include trees.

A) Species Performance Criteria

Plant species should meet the following performance criteria:

- Tolerant of drought and periodic inundation
- Seasonal and ornamental impact
- Native, or climate-appropriate if non-native
- Partial shade-tolerant
- High habitat value

B) Visual and Spatial Permeability

Species should be less than 30" in height to maximize visual and spatial permeability.

C) Suggested Palette

The suggested palette in Figure 4.2.9 satisfies these criteria. Species with (*) indicate plants with high habitat value.

Source: SFPUC Stormwater Design Guidelines, Appendix D

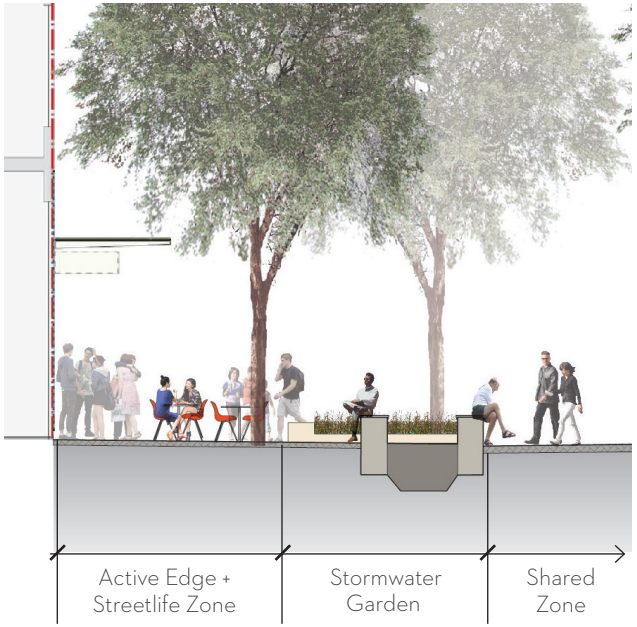


FIGURE 4.2.3 Section at Stormwater Garden

Suggested Stormwater Garden Palette

*Carex praegracilis**
Clustered Field Sedge

*Carex tumulicola**
Berkeley Sedge

*Festuca rubra**
Creeping Red Fescue

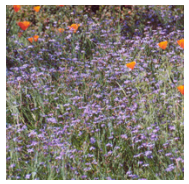
Fragaria chiloensis
Coastal Strawberry

*Mimulus aurantiacus**
Sticky Monkeyflower

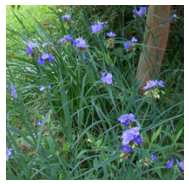
*Mimulus guttatus**
Creek Monkeyflower

*Rhamnus californica (prostrate cultivar)**
Dwarf Coffeeberry

*Salvia spathacea**
Hummingbird Sage



Sisyrinchium bellum
Blue-Eyed Grass



Tradescantia virginiana
Virginia Spiderwort

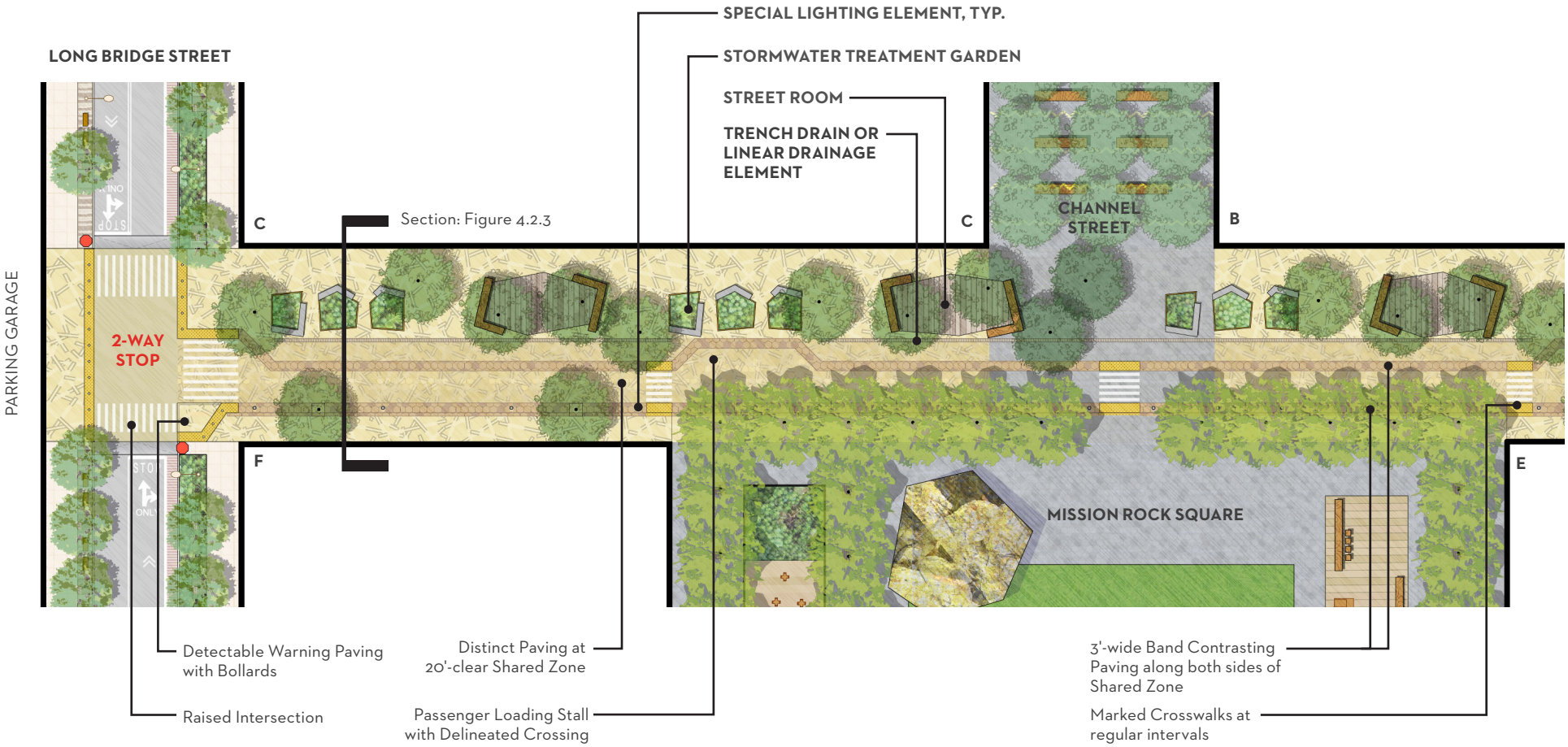
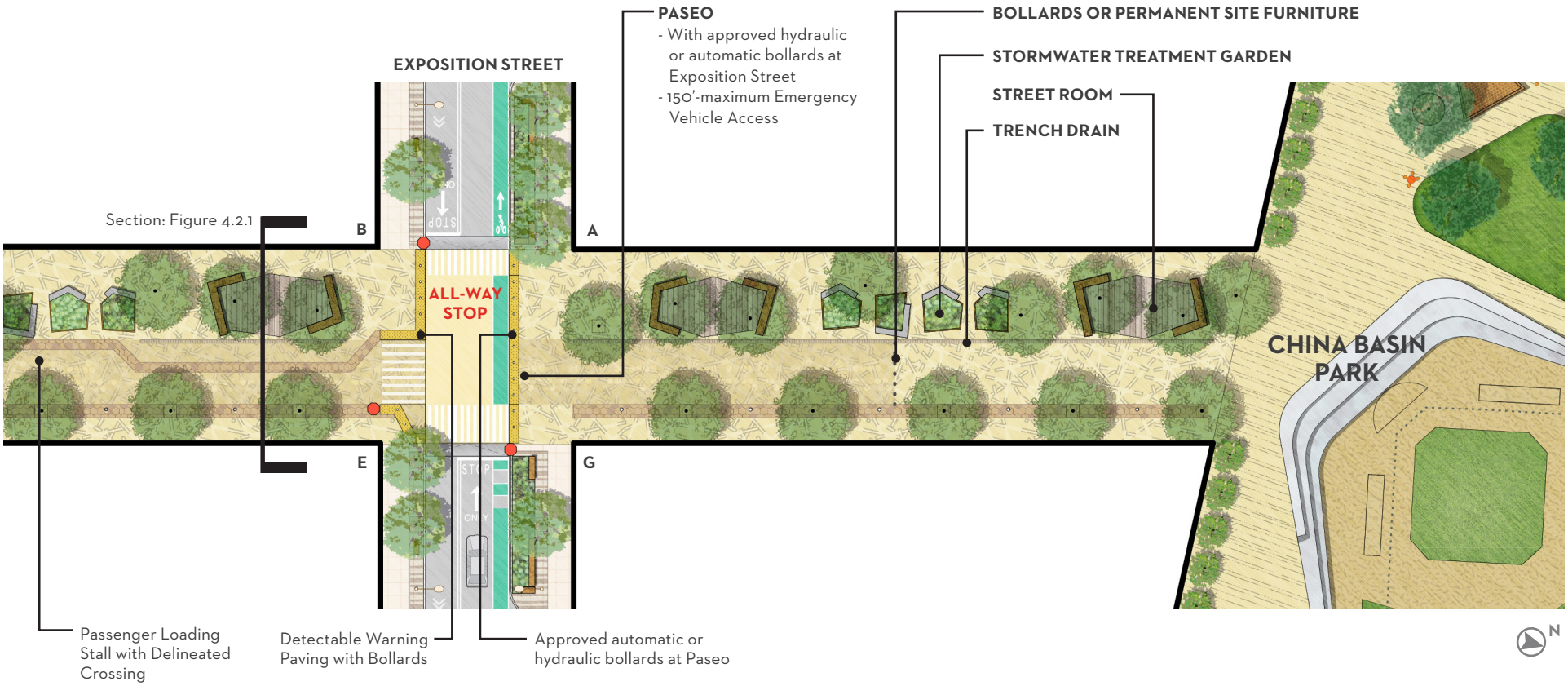


FIGURE 4.2.4 Shared Public Way Conceptual Plan that satisfies the controls herein. This is provided for illustrative purposes only and does not represent a design proposal. Refer to Chapter 8 of the Infrastructure Plan for key dimensions, intersection analysis, and fire access information.


EXPOSITION STREET
PASEO
- With approved hydraulic or automatic bollards at Exposition Street
- 150'-maximum Emergency Vehicle Access
BOLLARDS OR PERMANENT SITE FURNITURE
STORMWATER TREATMENT GARDEN
STREET ROOM
TRENCH DRAIN
Section: Figure 4.2.1
B
A
E
G
ALL-WAY STOP
CHINA BASIN PARK
Passenger Loading Stall with Delineated Crossing
Detectable Warning Paving with Bollards
Approved automatic or hydraulic bollards at Paseo
N

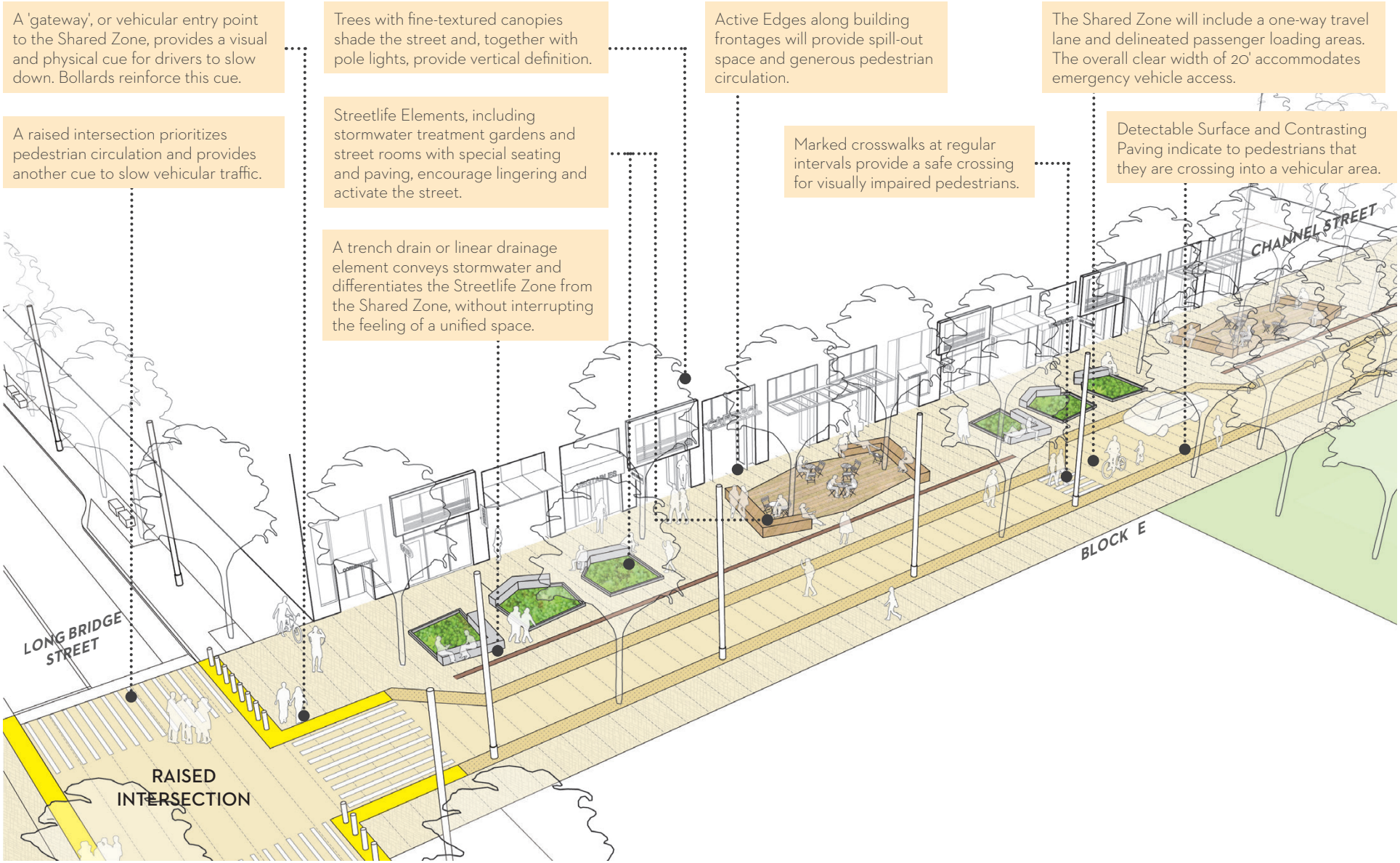


FIGURE 4.2.5 Conceptual diagram of Shared Public Way at Block C.

STREETLIFE ZONE

- Street rooms contain both built-in and movable seating
- Temporary newsstands + kiosks permitted within street rooms
- Special, high-quality paving and details create an urbane character and pedestrian scale

SHARED ZONE

- Single field of paving between building facades privileges pedestrian experience and unifies the right-of-way
- Vehicular area defined by slot drain and slight tonal shift in paving color
- Trees and special streetlights provide vertical definition and identity

ACTIVE EDGES

- Movable seating, signage, and other temporary uses curated by individual businesses
- Refer to Chapter 5 for specific Active Edge controls

FIGURE 4.2.6 Diagrammatic rendering of conceptual plan at Blocks C/E looking north to China Basin Park. This is provided for illustrative purposes only and does not represent a design proposal.

4.3 TERRY A FRANCOIS BOULEVARD

Read in conjunction with Section 3.5: Channel Wharf, Section 3.6: Pier 48 Apron, & Section 5.8: Working Waterfront Zone. Terry A Francois Boulevard must also satisfy the requirements described in Chapter 2: Public Realm.

Terry A Francois Boulevard will be a unique Working Waterfront that celebrates and supports active maritime, industrial, and production uses on the waterfront. Terry A Francois Boulevard will also connect the Bay Trail and Blue Greenway to China Basin Park and the Embarcadero to contribute to uninterrupted public access along San Francisco's eastern waterfront.

Connecting the Mission Rock development to its active and historical maritime context, the expression of craft and industrial character along Terry A Francois Boulevard will be central to the personality and experience of this working waterfront.

The public realm and ground floor controls along Terry A Francois Boulevard are tightly coordinated to maximize access and to strengthen the relationship among waterfront public use and working waterfront activities.

This promenade, with zones delineated by contrasting paving color and texture and generous benches, is a precedent for the Buffer/Furnishing Zones. © SIMON DEVITT

STANDARDS

4.3.1 WATERFRONT ZONE

Located adjacent to Pier 48, Pier 50, and Channel Wharf, the Waterfront Zone shall include the following zones within a minimum cumulative width of 22 feet, measured from Pier 50:

A) Bay Trail / Blue Greenway
A shared trail located along the east side of the entire Terry A Francois Boulevard ROW, with a 16'-minimum clear path of travel for bikes and pedestrians.

B) Buffer/Furnishing Zone
A 3'-minimum width buffer comprised of furnishings and iconic lighting, located along the entire length of the Shared Zone. This zone will have contrasting paving and other cues to be coordinated with applicable accessibility codes and guidance.

4.3.2 SHARED ZONE

The Shared Zone will be a 26'-minimum width zone shared by pedestrians and vehicles from Mission Rock Street to Exposition Street. The Shared Zone will be separated from the Waterfront Zone and the Building-Front Zone with flush curbs, and with buffers per 4.3.1-B and 4.3.3-B.

4.3.3 BUILDING-FRONT ZONE

The Building-Front Zone shall be contained within a maximum width of 24' adjacent to Blocks H, I, and J. See 4.3.4 for controls adjacent to Block K. The Building-Front Zone will include:

A) Pedestrian Throughway
12'-minimum width pedestrian circulation with 6' minimum pedestrian throughway at street grade along Blocks H, I, and J. Where Elevated Walkways are provided as described in Chapter 5, accessible circulation and a dock lift or similar apparatus at the building face shall be provided within this zone as encroachments in the ROW.

B) Buffer/Furnishing Zone
A 3'-minimum width buffer comprised of furnishings, located along the entire length of the Shared Zone. This zone will have contrasting paving and other visual/tactile detection cues for pedestrians, to be coordinated with applicable accessibility codes and guidance.

C) Loading Area
A 9'-wide loading area that accommodates a maximum truck size of SU-30, located adjacent to the Shared Zone at Blocks H, I, and J.

D) Streetlife Zone
A 9'-wide spill-out space, located adjacent to the Pedestrian Throughway.

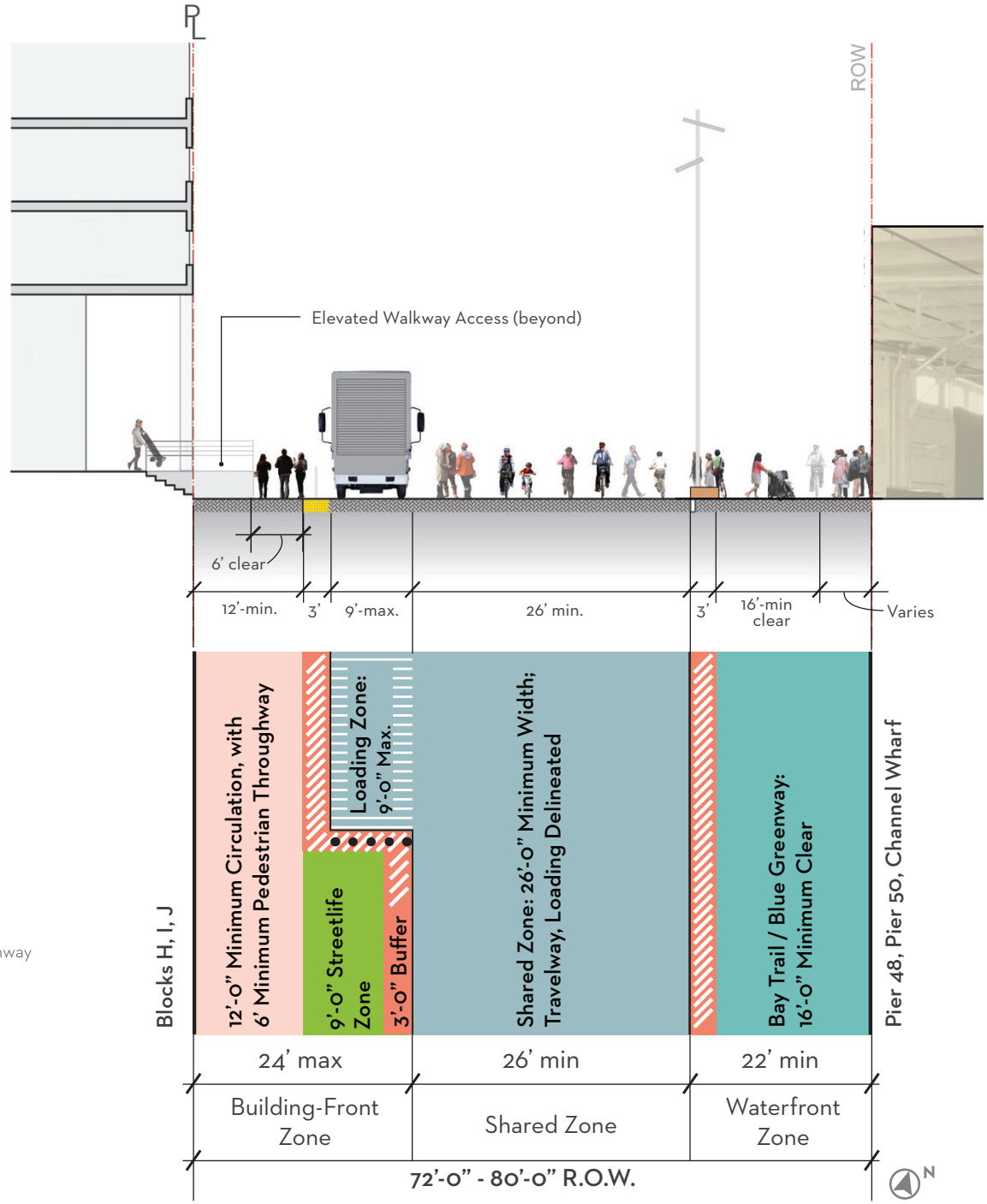
4.3.4 PASEO NORTH OF EXPOSITION STREET

Between Block K and Pier 48, Terry A Francois Boulevard will become a paseo that will accommodate emergency vehicle access for up to 150' of its length and include the following zones:

A) Waterfront Zone at Pier 48
A 28'-wide zone, located adjacent to the Pier 48 bulkhead, shall accommodate the Bay Trail / Blue Greenway per 4.3.1-A and additional public space for Pier 48.

B) Vehicular Turnaround + Loading Spaces
A vehicular turnaround with one loading space, accessed from the Shared Zone.

C) Pedestrian Throughway
A 6'-minimum clear path of travel for pedestrians, located at Block K.



TERRY A FRANCOIS BOULEVARD

- Buffer
- Streetlife Zone
- Circulation + Pedestrian Throughway
- Blue Greenway
- Shared Zone

FIGURE 4.3.1 Terry A Francois Boulevard Section and Zones Diagram

STANDARDS

4.3.5 STREETSCAPE ELEMENTS: REFERENCE STANDARDS

Streetscape elements are an important aspect of experience and character of Terry A Francois Boulevard. In addition to these standards, refer to Port standards per Standard 2.10.2, and 4.3.8.

A) Placement

Streetscape elements shall be placed within the Buffer Zones described in Standards 4.3.1 and 4.3.3 at regular intervals as determined by applicable accessibility guidance. Additional permanent streetscape elements in the Waterfront or Building-Front Zones, if desired, shall not block throughway areas or impede circulation along Terry A Francois Boulevard.

B) Expression of Production Character

Street furnishings, especially benches, along Terry A Francois Boulevard shall express the industrial character of the Working Waterfront Typology. Industrial and salvaged materials are strongly encouraged for these elements. Also see 4.3.6.

C) Consistency of Elements

Trash receptacles and bicycle racks shall be consistent for the length of this streetscape. Benches may be varied.

4.3.6 FACILITATING A PRODUCTION ENVIRONMENT

Design concepts shall facilitate and celebrate the production aspects of the Working Waterfront Typology. This includes functional requirements, including durable paving materials per 4.3.7 and Section 2.2, truck turning operations, and aspects of character expressed through the design of streetscape elements per 4.3.5 and 4.3.8.

4.3.7 PAVING

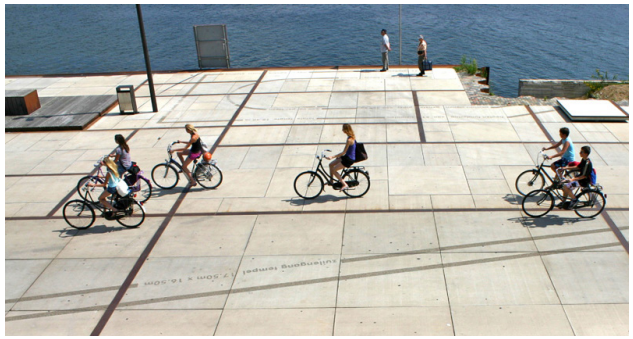
Terry A Francois Boulevard paving shall be predominantly a consistent field that emphasizes the coplanar condition of the right-of-way and unites the three zones identified in Figure 4.3.1.

A) Shared Zone Differentiation

Tactics to differentiate the shared zone could include shifts in color, texture, or paving module within the same language of the overall field. Paving shall be durable for truck traffic and enhance the industrial character of the street.

B) Intersection and Crosswalk Detectable Surface Paving

Intersection and crosswalk treatments, including aural warning pavement and special treatments, shall be incorporated to increase pedestrian visibility and provide warning cues for approaching traffic. These shall comply with Sections 2.3 and 2.4 and shall be ADA-compliant if proposed within the pedestrian throughway.



This example of a consistent field of paving is a precedent for the wharf character of the Working Waterfront. SOURCE:BURO LUBBERS

Special intersection treatments increase visibility and provide an opportunity for additional wayfinding. SOURCE: SOUTHOFSOUTH.ORG/BEN ELLIOTT

Aural/'noise' paving: integrated 'rumble strips' provide an aural warning cue for approaching traffic at intersections and turns. NO SOURCE FOUND

GUIDELINES

4.3.8 STREET FURNISHINGS

A) Permanent Street Furnishings

Permanent street furnishings should be unique to Terry A Francois Boulevard, designed specifically for this space as an artists' competition or by the designer. Legibility and continuity of street furnishings along the entire length of Terry A Francois Boulevard is strongly encouraged, but these elements may be sited to create variety and rhythm among blocks. Industrial and/or salvaged materials are strongly encouraged for street furnishing elements. See 4.3.5.

B) Temporary Street Furnishings

Temporary Furnishings may be located anywhere within the Waterfront or Building-Front Zones as long as minimum clearances are maintained and truck turning operations are not impeded. Refer to Infrastructure Plan.

4.3.9 PUBLIC SPACE AT BUILDING FRONTAGES

An elevated walkway, where it occurs, should create a unique interface with the public realm. Design concepts should consider integrating seating at this grade change.

4.3.10 LIGHTING

Lighting should be a mast light or distinctive pole that is unique to Terry A Francois Boulevard. This fixture should not contribute to light pollution. See Section 2.9 for suggested footcandle ranges and uniformity.

4.3.11 OVERHEAD ENCLOSURE

Canopies shading the public realm are allowed along Terry A Francois Boulevard within the Building-Front Zone. Trellises, if provided, should not interfere with functional requirements and clearances in the Building-Front Zone. Trees are not permitted on Terry A Francois Boulevard.

This loading dock provides public seating along a building frontage. SOURCE: CMG

An example of Permanent street furniture with industrial character and scale. © SIMON DEVITT

This outdoor workshop is an example of a permitted use in the Streetlife Zone or Elevated Walkway. © MICHAEL VAN VALKENBURG ASSOCIATES, INC.

An example of distinctive feature pole lights along a waterfront promenade. © WWW.SELUX.COM

A cast-iron bench expresses industrial character. SOURCE: CMG

A theatrical overhead enclosure provides shade and spectacle. © NIGEL YOUNG

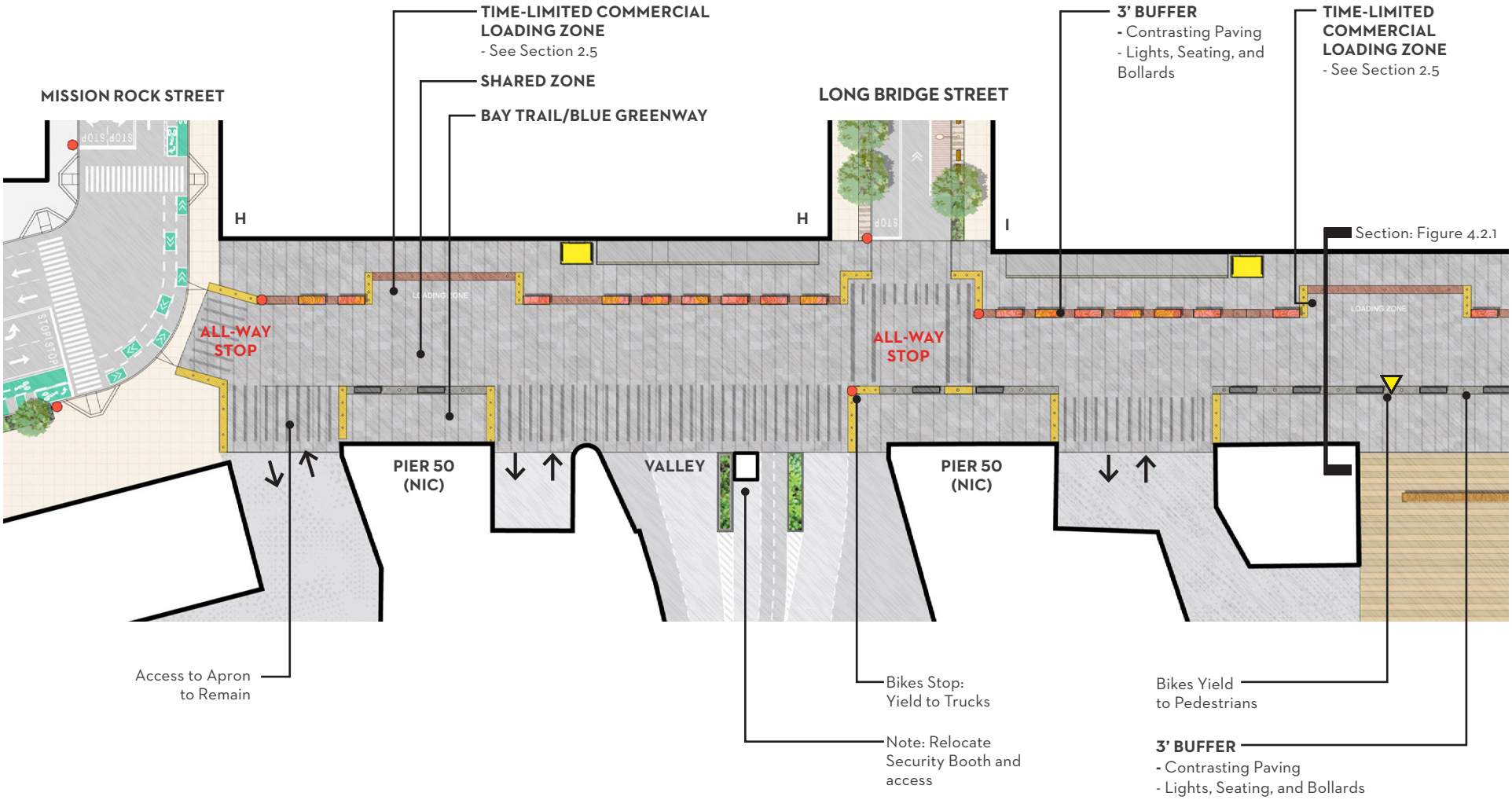
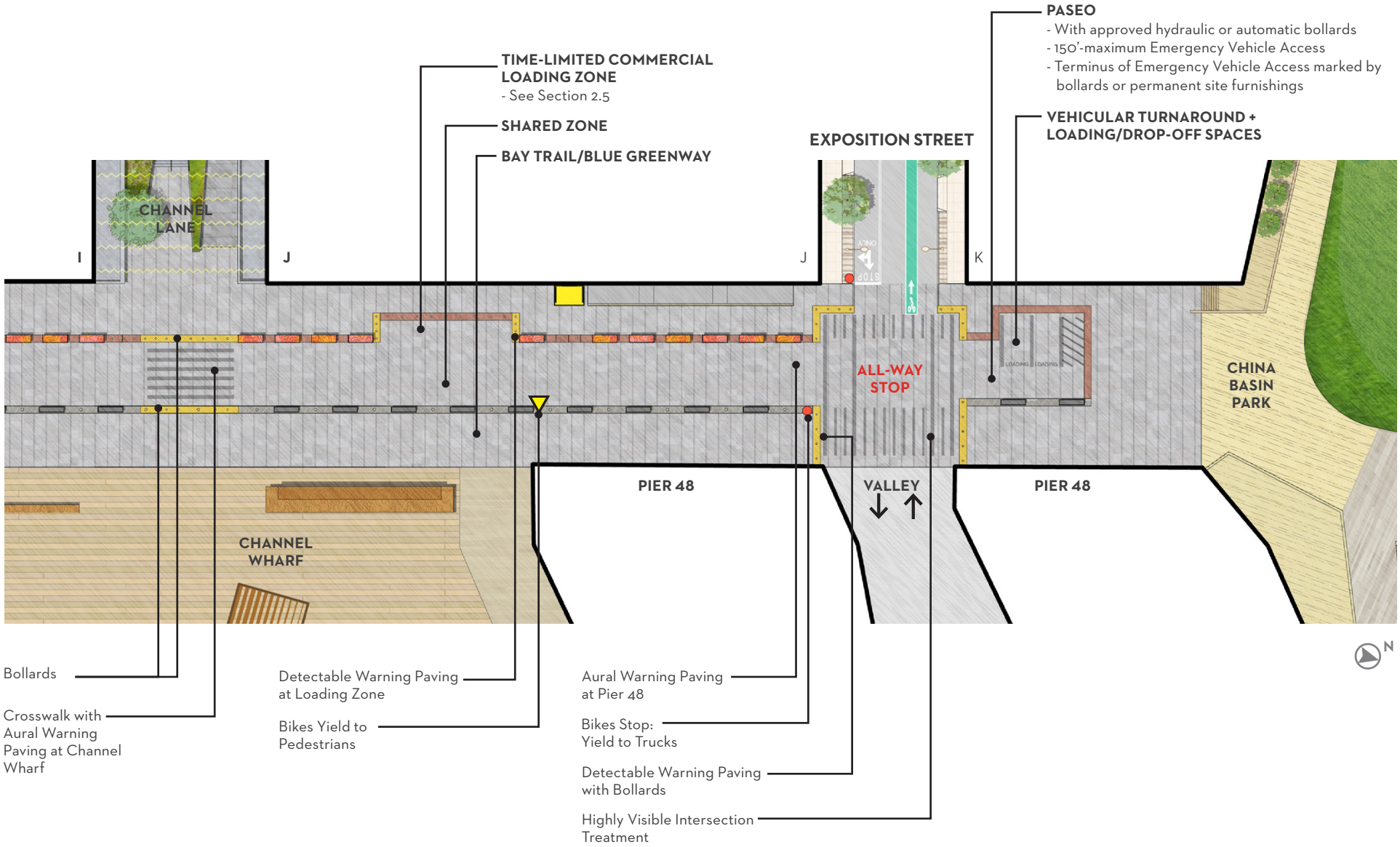


FIGURE 4.3.2 Conceptual Plan of Terry A Francois Boulevard. This is provided for illustrative purposes only & does not represent a design proposal. Refer to Chapter 8 of the Infrastructure Plan for key dimensions, intersection analysis, and fire access information.


PASEO
- With approved hydraulic or automatic bollards
- 150'-maximum Emergency Vehicle Access
- Terminus of Emergency Vehicle Access marked by bollards or permanent site furnishings
TIME-LIMITED COMMERCIAL LOADING ZONE
- See Section 2.5
SHARED ZONE
BAY TRAIL/BLUE GREENWAY
EXPOSITION STREET
VEHICULAR TURNAROUND + LOADING/DROP-OFF SPACES
CHANNEL LANE
I
J
J
K
ALL-WAY STOP
CHINA BASIN PARK
PIER 48
VALLEY
PIER 48
CHANNEL WHARF
N
Bollards
Crosswalk with Aural Warning Paving at Channel Wharf
Detectable Warning Paving at Loading Zone
Bikes Yield to Pedestrians
Aural Warning Paving at Pier 48
Bikes Stop: Yield to Trucks
Detectable Warning Paving with Bollards
Highly Visible Intersection Treatment

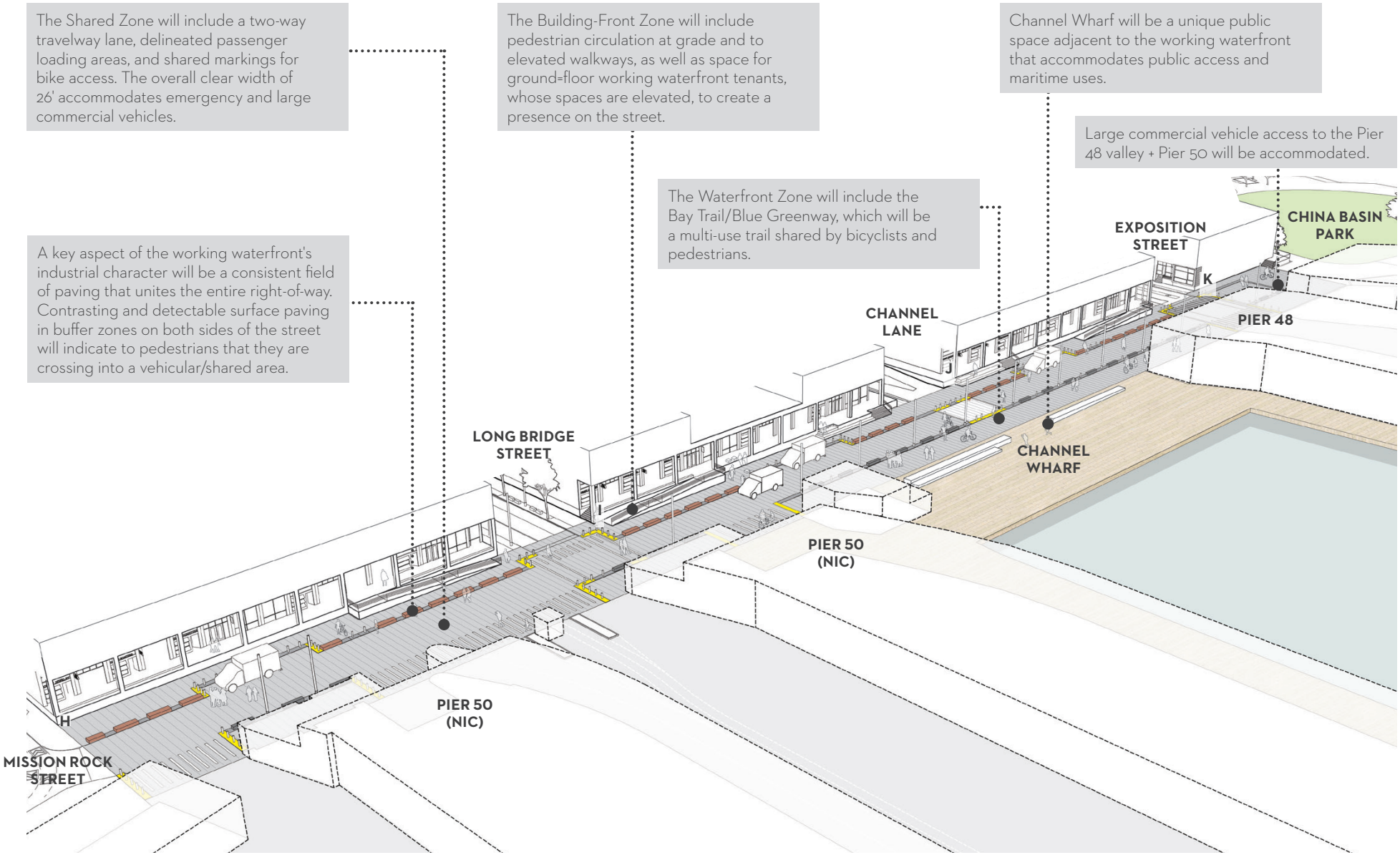


FIGURE 4.3.3 Conceptual axonometric diagram of the Terry A Francois Boulevard, the Working Waterfront.

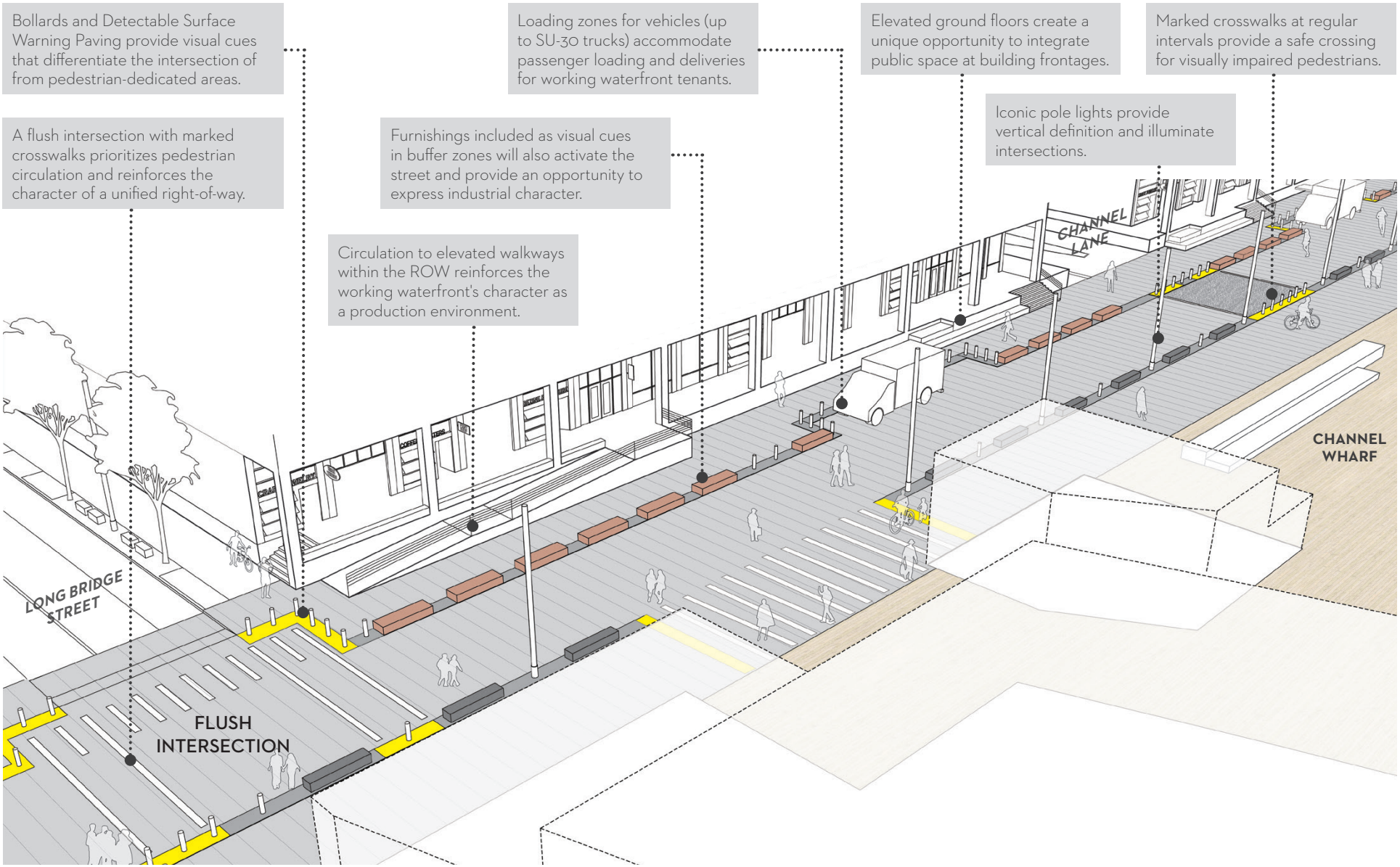


FIGURE 4.3.4 Conceptual diagram of Terry A Francois Boulevard at Block I.

4.4 BRIDGEVIEW STREET

Read in conjunction with Section 3.3: Mission Rock Square, Section 5.2: Ground Floor, and Sections 5.9-10: Neighborhood Street Zone. Bridgeview Street must also satisfy the requirements described in Chapter 2: Public Realm.

Bridgeview Street will be a Complete Street with world-class bicycle infrastructure, active sidewalks, stormwater treatment gardens, and slow vehicular traffic. A north-south bicycle connection from China Basin Park to Mission Bay, Bridgeview Street will provide an important link for bicycle facilities within and connecting to Mission Rock and the Bay Trail.

STANDARDS

4.4.1 SIDEWALK ZONES

Sidewalks on Bridgeview Street shall be 14'-wide along the east side of the street, and 12' along the west side. The sidewalk shall include:

A) Frontage Zone
A 2'-maximum width zone shall be maintained along building frontages for Active Edges as described in Chapter 5.

B) Pedestrian Throughway
An unobstructed, 6'-minimum clear width path of travel for pedestrians with width as noted in Figure 4.4.1 shall be maintained between the Frontage Zone and the Streetlife Zone.

C) Streetlife Zone
A zone between the curb and pedestrian throughway with width as noted on Figure 4.4.1. This zone shall include trees, lighting, and furnishings that shall be consistent for the entire length of the street. Stormwater treatment gardens shall be included in the Streetlife Zone. Refer to Infrastructure Plan for technical requirements.

D) Driveway Restrictions
Driveways shall not be permitted, except at the Block D parking garage.

4.4.2 ROADWAY ZONES

The 34'-wide roadway will accommodate two-way vehicular traffic from Exposition Street to Mission Rock Street and shall include:

A) Bicycle Facility
A two-way Class 1 cycle track on the east side of the right-of-way with total width of 13'-0" inclusive of a 3'-wide horizontal buffer, flush with the cycle track surface, that will separate and protect the facility from vehicular traffic.

B) Raised Cycle Track
A raised facility shall be provided that is grade-separated from adjacent travel lanes with a mountable curb located within the 3' buffer described in 4.4.2 A). All material transitions shall be completely flush with the cycle track.

C) Travel Lanes
Two 10'-6"-wide travel lanes shall be provided to accommodate two-way traffic.

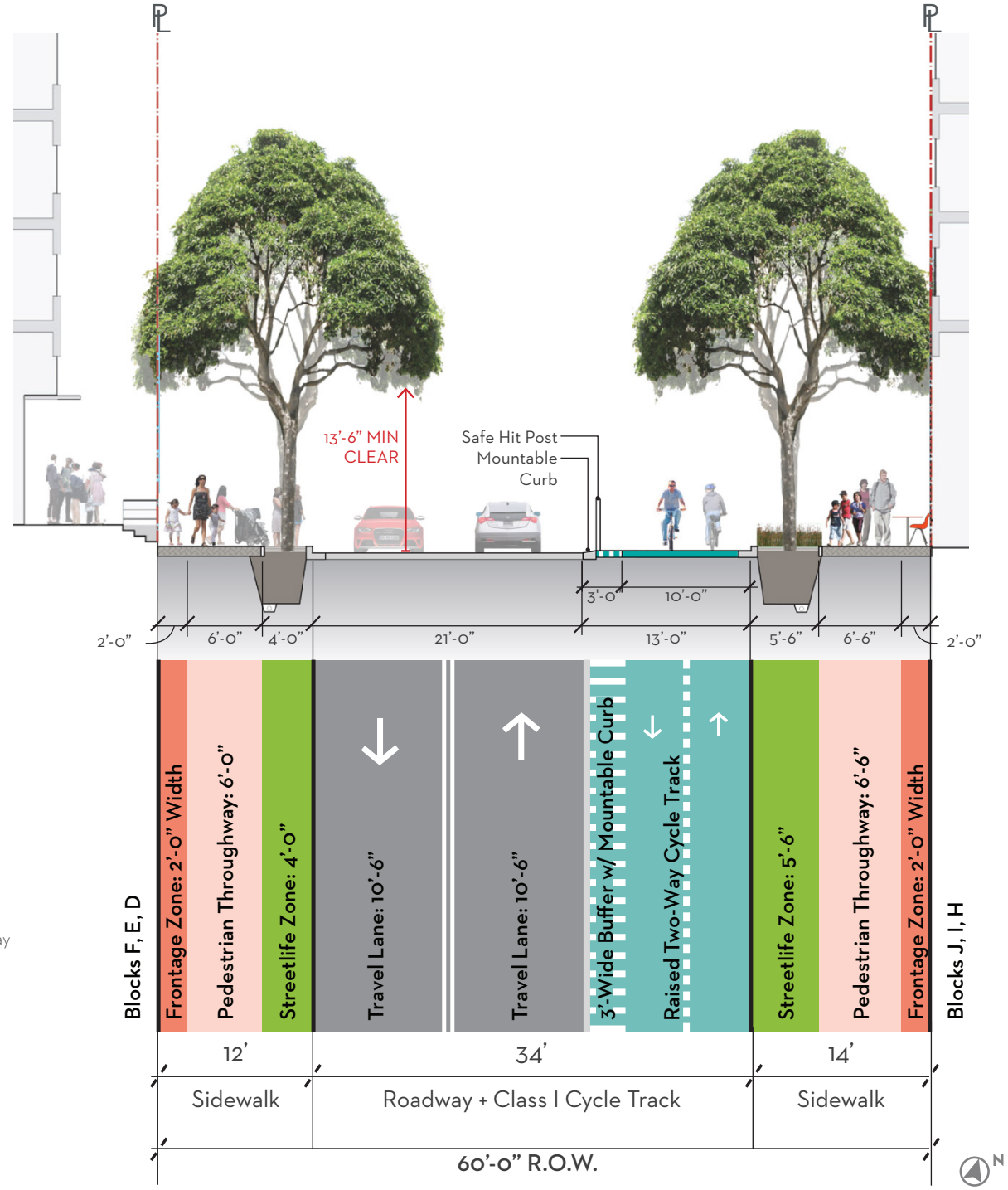
4.4.3 TRAFFIC CONTROL AND CALMING MEASURES

A) Intersections
The intersections of Bridgeview Street with Mission Rock and Exposition Streets shall have full stop control. The intersection at Long Bridge Street shall be a raised intersection at cycle track grade with no stop control for Bridgeview Street bicycle or vehicular traffic. See Section 2.4 and refer to Infrastructure Plan.

B) Pedestrian Crossing at Channel Lane
A mid-block crossing at the intersection of Bridgeview Street, Mission Rock Square, and Channel Lane shall be included at this major pedestrian crossing. Bicycle facility treatment shall continue across the intersection, with signage to yield to pedestrians.

C) Cycle Track Warning Cues
Before all intersections and at the northern paseo portion of Bridgeview Street, the cycle track shall include paved and signed warning cues for pedestrian crossings.

D) Cycle Track Intersections
Cycle track demarcation shall continue across intersections at Exposition and Long Bridge Streets to indicate that cyclists have the right-of-way. Signs should indicate that vehicles must yield to cyclists. See Section 2.4 and refer to Infrastructure and Transportation Plans.



BRIDGEVIEW STREET

- Frontage Zone
- Pedestrian Throughway
- Streetlife Zone
- Bicycle Facility
- Roadway

FIGURE 4.4.1 Bridgeview Street Section and Zones.

STANDARDS

4.4.4 PASEO NORTH OF EXPOSITION STREET

Between Block G and Block K, Bridgeview Street will become a paseo that will accommodate emergency vehicle access and include the following zones:

A) Multi-Use Trail Connection

A 16'-minimum clear multi-use trail shall connect China Basin Park to the bicycle facility described in 4.4.2. This connection shall include paving and signage delineating this shared use path on the east side of the right-of-way, and warning cues for pedestrians and cyclists at crossings. Refer to Section 2.10.

B) Emergency Vehicle Clear Access Width

A 20'-minimum clear zone shall accommodate emergency vehicle access for up to 150', measured from the Exposition Street ROW. See Standard 2.4.2.

C) Pedestrian Throughway

A 6'-minimum clear path of travel for pedestrians on each side of the right-of-way.

GUIDELINES

4.4.5 BICYCLE FACILITY SIGNAGE AND WAYFINDING

Bicycle Signage and Wayfinding should refer to City, Port, and NACTO (National Association of City Transportation Officials) Urban Bikeway Standards. Signage should be mounted at the curb edge of the Streetlife Zone, or inset in bicycle facility paving.

4.4.6 BICYCLE PARKING CHARACTER

Bicycle parking should be a playful streetscape element that contributes to the unique identity of Bridgeview Street.

4.4.7 SEATING

Seating elements, including fixed benches, tables and chairs, should be social and two-sided, designed to activate the Streetlife Zone and engage the street's bicycle facilities.

4.4.8 STREET TREE ALIGNMENT

Street trees should align across the street and be planted at a consistent on-center spacing on both sides of Bridgeview Street. Trees should not be planted within stormwater treatment gardens.

4.4.9 STORMWATER TREATMENT GARDENS

Placement of stormwater treatment gardens should allow for seating under trees and between gardens. Each garden should not exceed 18' continuous linear feet in length and should be spaced to leave a minimum of 4' clear between gardens.

4.4.10 LIGHTING

Lighting fixtures should be pole lights scaled to the pedestrian experience. See Section 2.9.

A fun bicycle parking rack doubles as a play element.
SOURCE: HTTP://LOVEASPOTOFTEA.BLOGSPOT.COM/

Utilizing pedestrian-scaled lighting to illuminate sidewalks creates a special, intimate character. © HTTP://WWW.SELUX.FR/

FIGURE 4.4.2 Diagrammatic View of Bridgeview St at Blocks J and F, looking north. This is provided for illustrative purposes only.

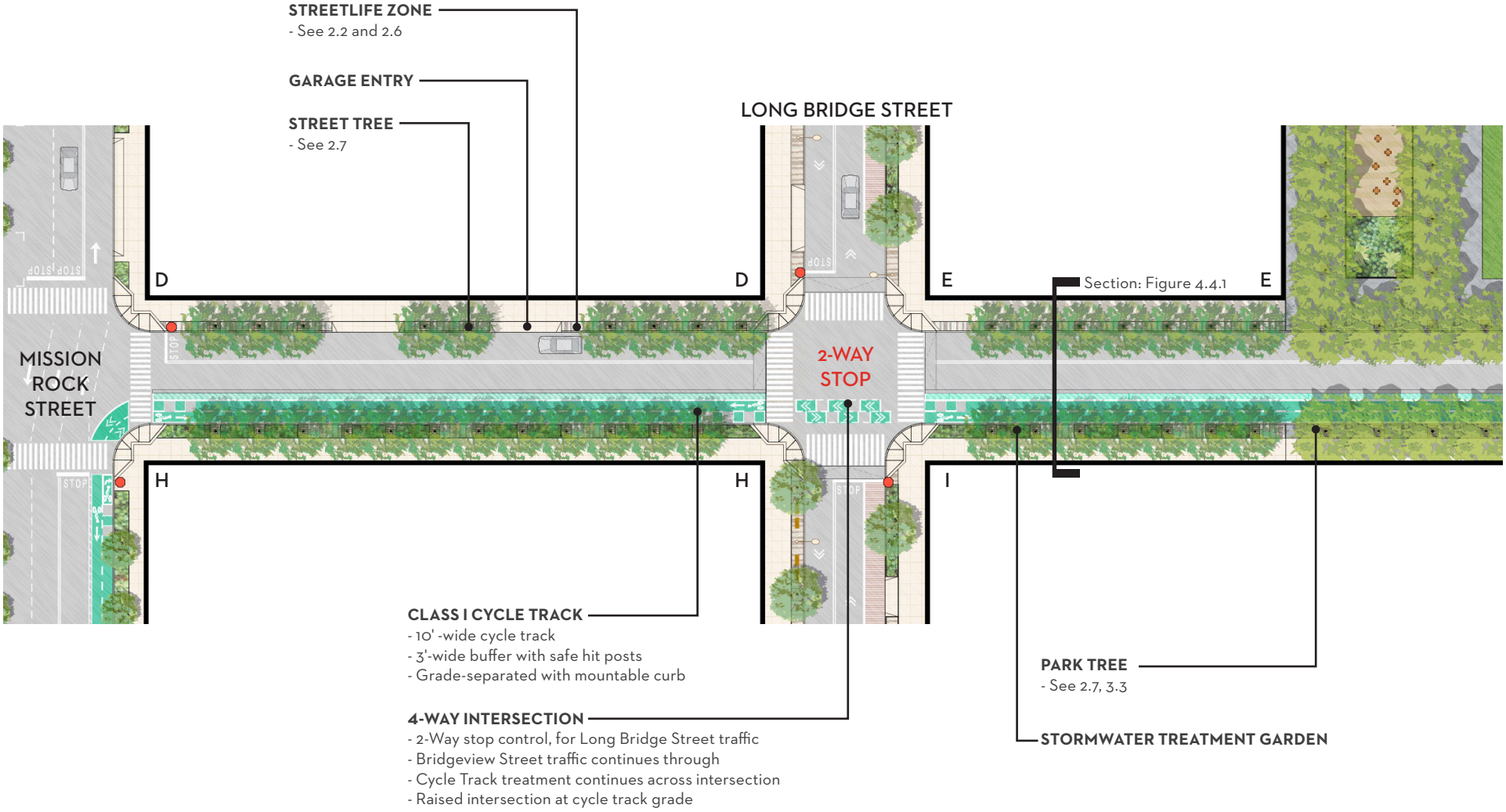
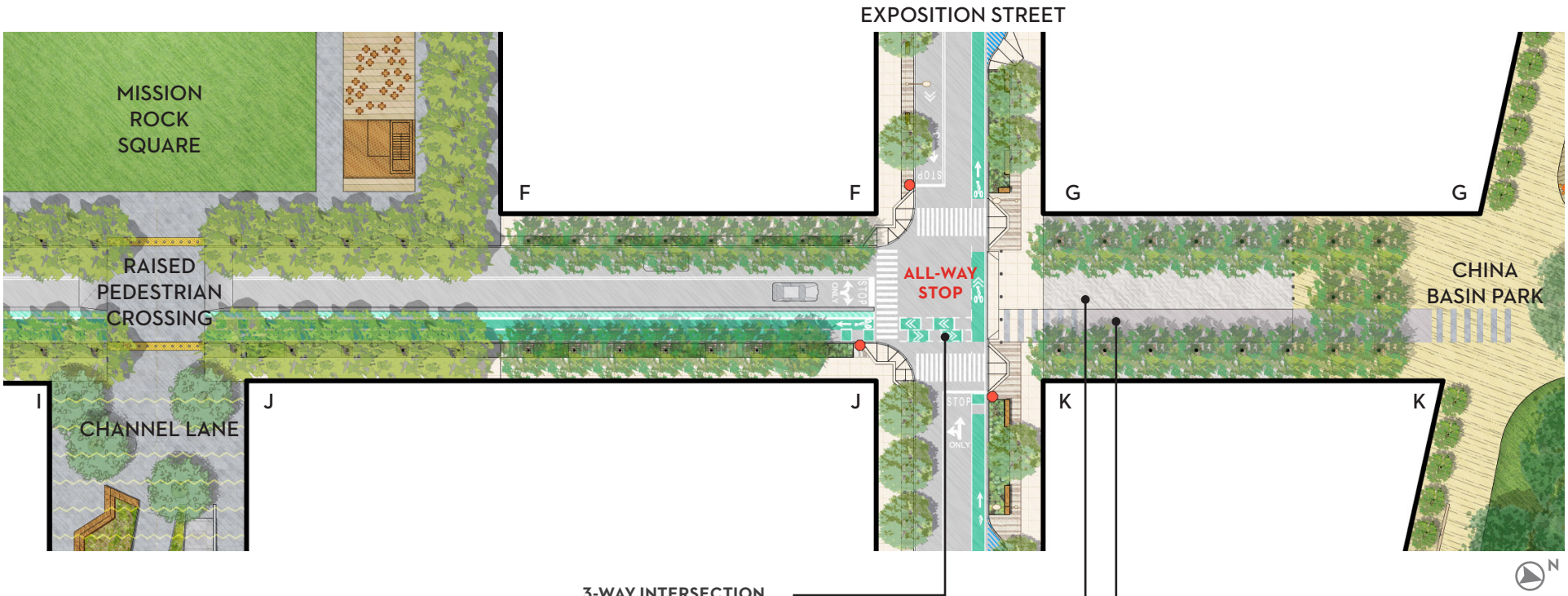


FIGURE 4.4.3 Bridgeview Street Conceptual Plan. This is provided for illustrative purposes only & does not represent a design proposal. Refer to Chapter 8 of the Infrastructure Plan for key dimensions, intersection analysis, and fire access information.



3-WAY INTERSECTION
- Full stop control for vehicles and bicycles in all directions
- Cycle Track paving continues across intersection

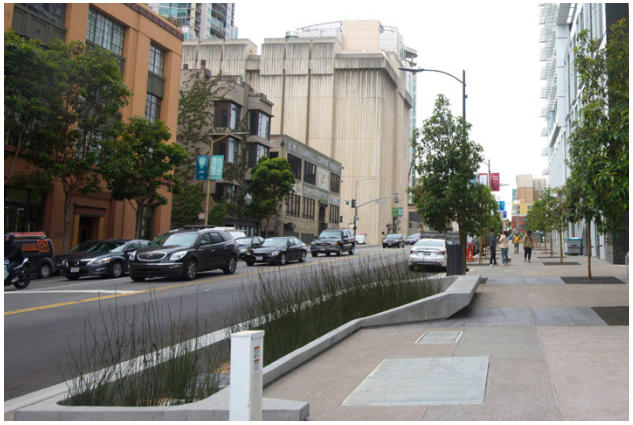
MULTI-USE TRAIL CONNECTION

PASEO
- With approved hydraulic or automatic bollards at Exposition Street
- 150'-maximum Emergency Vehicle Access per Standard 4.4.4 and Section 2.4.
- Terminus of Emergency Vehicle Access marked by street trees, bollards, or permanent site furnishings.

4.5 EXPOSITION STREET

Read in conjunction with Section 4.2: Shared Public Way, Section 4.3: Terry A Francois Boulevard, Section 5.2: Ground Floor, and Sections 5.9-10: Neighborhood Street Zone. Exposition Street must also satisfy the requirements described in Chapter 2: Public Realm.

Exposition Street is designed to calm traffic and create a lush pedestrian connection with bulb-out gardens that will treat stormwater and provide seating. It will also accommodate service and loading demands for Blocks A, B, F, G, J, and K.



A large stormwater treatment garden on Folsom Street provides generous public seating and activates the sidewalk. SOURCE: CMG

STANDARDS

4.5.1 SIDEWALK ZONES

Sidewalks on Exposition Street shall be 14'-wide along the south side of the street, and 20' along the north side, with inset loading zones for passenger loading and servicing access. The sidewalk shall include:

A) Frontage Zone
A 2'-maximum width zone shall be maintained along building frontages for Active Edges as described in Chapter 5.

B) Pedestrian Throughway
An unobstructed, 6'-minimum clear width path of travel for pedestrians shall be maintained between the Frontage Zone and the Streetlife Zone.

C) Streetlife Zone
A zone between the curb and pedestrian throughway with width as noted on Figure 4.5.1. This zone shall include trees, lighting, stormwater treatment gardens, and furnishings that shall be consistent for the entire length of the street.

D) Stormwater Zone
An 8'-wide zone between the Streetlife Zone and Roadway on the north side of the right-of-way, at grade with the sidewalk, shall include large stormwater treatment gardens with unique integral seating located at the southeast and southwest corners of Blocks A, G, and K.

4.5.2 ROADWAY ZONES

The 26'-wide roadway will accommodate two-way vehicular traffic from 3rd Street to Terry A Francois Boulevard, and shall include:

A) Bicycle Facilities
A 5'-wide painted Class II bike lane in the west-bound direction, separated from vehicular traffic with a 6"-wide solid white line. Minimize utility covers and material transitions in this area. East-bound sharrows shall be provided.

B) Loading Zone
An 8'-wide zone shall be provided at grade with the roadway, located between stormwater treatment gardens described in 4.5.1, to provide passenger loading and servicing access per Section 2.5.

C) Travel Lanes
Two 10'-0"-wide travel lanes shall be provided to accommodate two-way traffic.

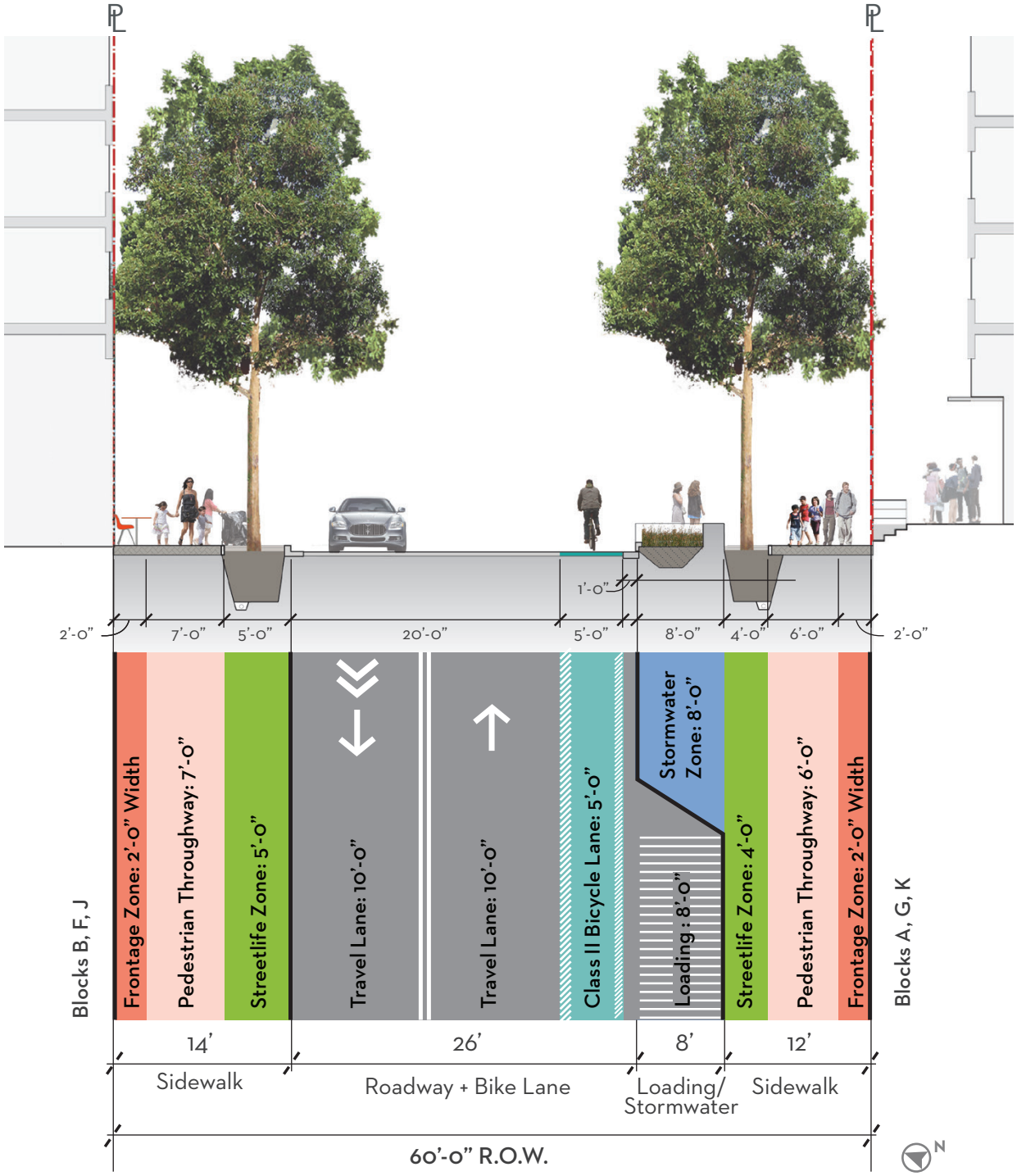
4.5.3 TRAFFIC CONTROL AND CALMING MEASURES

A) **Intersection Control**
The intersection of Exposition Street with Bridgeview Street shall have full stop control for bicyclists and vehicles. At the Shared Public Way and Terry A Francois Boulevard, there shall be stop-controlled raised intersections with pedestrian throughway clearly delineated. See Sections 2.3, 2.4, 4.2, 4.3, and 4.4 and refer to Infrastructure Plan.

B) Bicycle Treatment at Intersections
Bike lane demarcation shall continue across intersections at Bridgeview Street and the Shared Public Way. See Section 2.4 and Infrastructure Plan.

4.5.4 LARGE VEHICLE CIRCULATION

Large vehicle circulation to and from Terry A Francois Boulevard and Pier 48 shall be accommodated on the roadway between Blocks K and J. See Section 2.4 and refer to Infrastructure and Transportation Plans.



EXPOSITION STREET

- Frontage Zone
- Pedestrian Throughway
- Streetlife Zone
- Stormwater Zone
- Bicycle Facility
- Roadway

FIGURE 4.5.1 Exposition Street Section and Zones Diagram

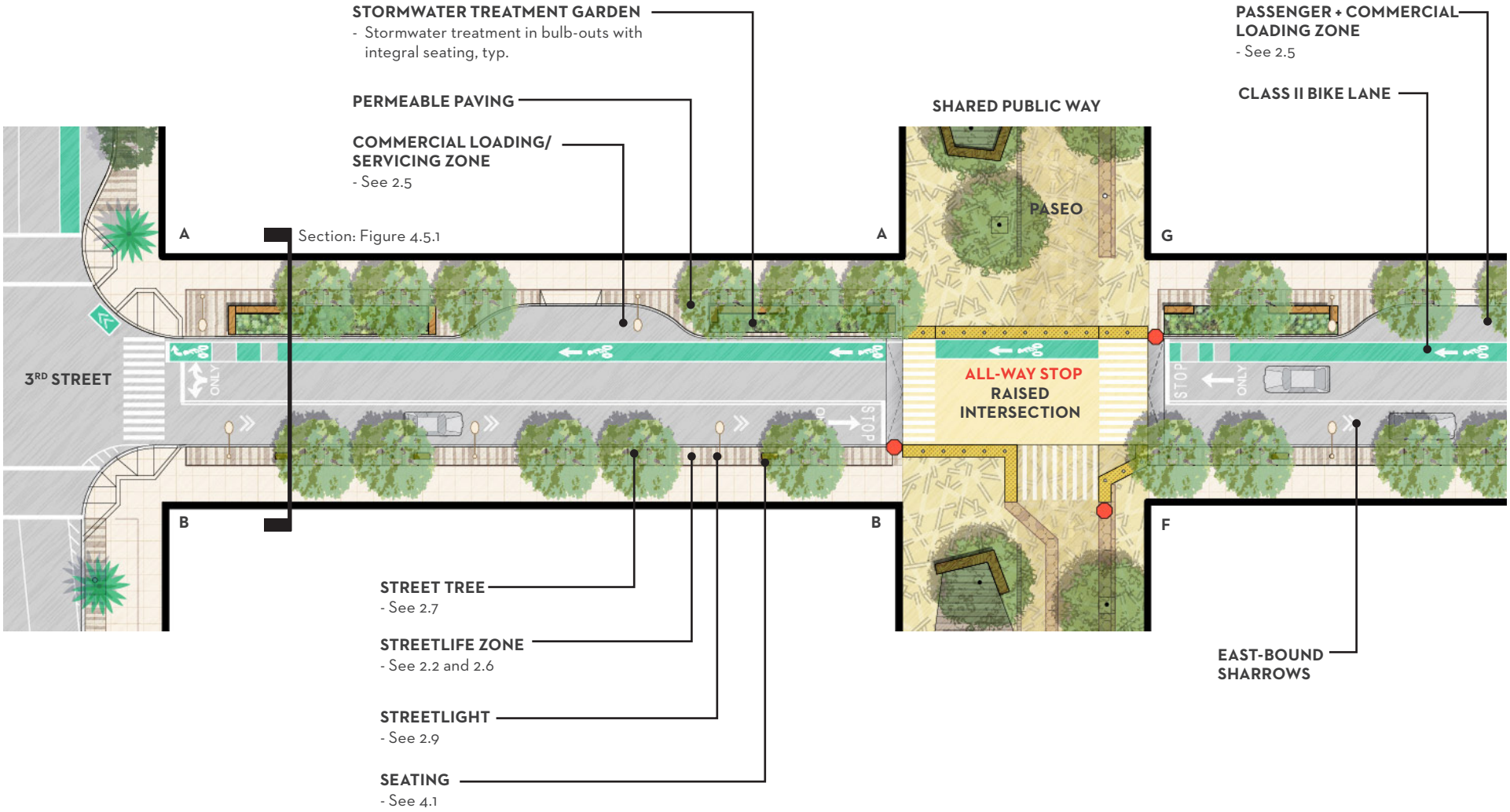
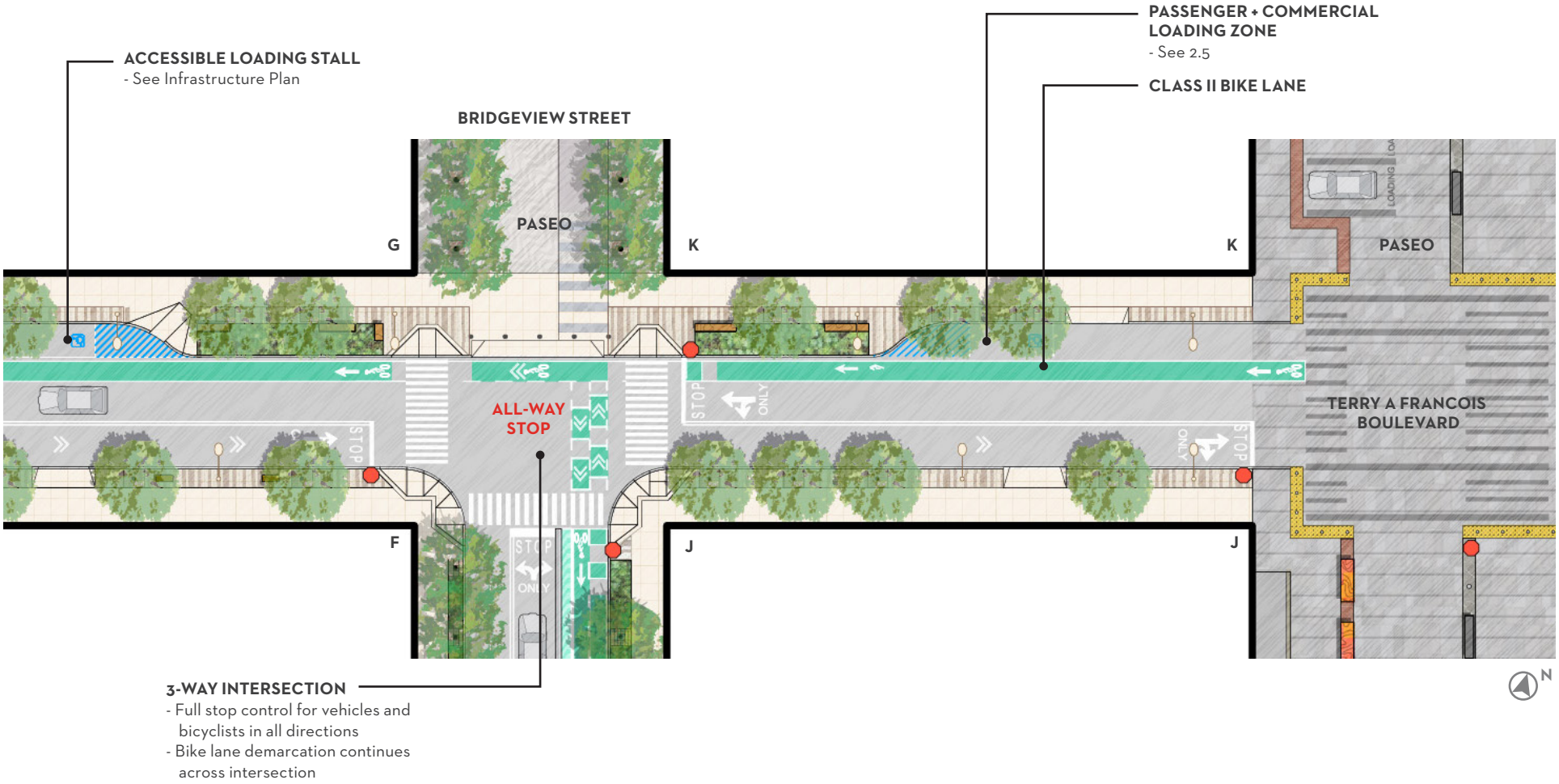


FIGURE 4.5.2 Exposition Street Conceptual Plan. This is provided for illustrative purposes only & does not represent a design proposal. Refer to Chapter 8 of the Infrastructure Plan for key dimensions, intersection analysis, and fire access information.


ACCESSIBLE LOADING STALL
- See Infrastructure Plan
BRIDGEVIEW STREET
PASEO
G
K
K
PASSENGER + COMMERCIAL LOADING ZONE
- See 2.5
CLASS II BIKE LANE
PASEO
ALL-WAY STOP
STOP
ONLY
TERRY A FRANCOIS BOULEVARD
F
J
J
3-WAY INTERSECTION
- Full stop control for vehicles and bicyclists in all directions
- Bike lane demarcation continues across intersection
N

4.6 LONG BRIDGE STREET

Read in conjunction with Section 4.2: Shared Public Way, Section 4.3: Terry A Francois Boulevard, Section 4.7: 3rd Street, Section 5.2: Ground Floor, Sections 5.9-10: Neighborhood Street Zone, and Section 7.8: Parking Structure (Block D2). Long Bridge Street must also satisfy the requirements described in Chapter 2: Public Realm.

Long Bridge Street will be an important pedestrian entry point to the site from MUNI. It is designed with wide throughways, shade trees, ample street furniture opportunities, and compact linear stormwater gardens.

Long Bridge Street will accommodate service and loading demands for Blocks D, C, E, H, and I and will be the vehicular entry point for the Shared Public Way.

STANDARDS

4.6.1 SIDEWALK ZONES

Sidewalks on Long Bridge Street shall be 15'-wide on both sides of the right-of-way. The sidewalk shall include:

A) Frontage Zone
A 2'-maximum width zone shall be maintained along building frontages for Active Edges as described in Chapter 5.

B) Pedestrian Throughway
An unobstructed, 6'-minimum clear width path of travel for pedestrians with width as noted on Figure 4.6.1 shall be maintained between the Frontage Zone and the Streetlife Zone.

C) Streetlife Zone
A zone between the curb and pedestrian throughway with width as noted on Figure 4.6.1. This zone shall include trees, lighting, stormwater treatment gardens, and furnishings that shall be consistent for the entire length of the street.

D) Bulb-Out with Stormwater Treatment
A 4'-maximum width bulb-out that includes stormwater treatment gardens shall be provided on the north side of Long Bridge Street, on either side of the Shared Public Way intersection. Refer to Infrastructure Plan.

4.6.2 ROADWAY ZONES

The 30'-wide roadway will accommodate two-way vehicular traffic from 3rd Street to Terry A Francois Boulevard, and shall include:

A) Loading Zone
An 8'-wide loading zone shall be provided at grade with the roadway on the north side of the right-of-way, to provide passenger loading and servicing access per Section 2.5. This zone shall be painted with a unique surface treatment that differentiates it from the travel lanes. This zone shall not interfere with fire truck access or turning movements at intersections. Refer to Transportation Plan.

B) Travel Lanes
Two 11'-wide travel lanes shall be provided to accommodate two-way traffic.

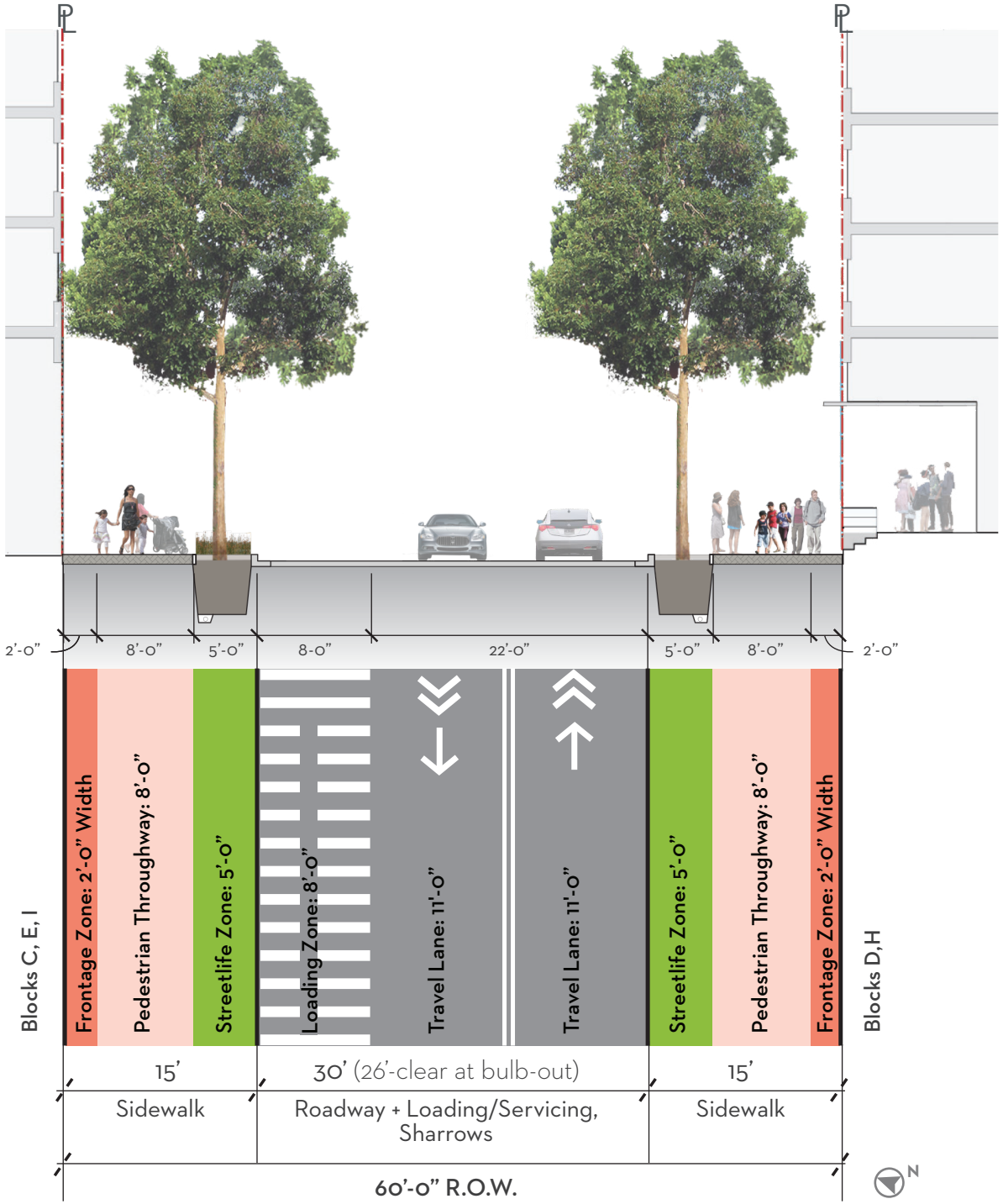
C) Bicycle Markings
East- and west-bound sharrows shall be provided.

4.6.3 TRAFFIC CONTROL AND CALMING MEASURES

A) Intersection Control
The intersection of Long Bridge Street with Bridgeview Street shall have stop control for all Long Bridge Street traffic only. At the Shared Public Way and Terry A Francois Boulevard, there shall be stop-controlled raised intersections with pedestrian throughway clearly delineated. See Sections 2.3, 2.4, 4.2, 4.3, and 4.4 and refer to Infrastructure Plan.

4.6.4 DRIVEWAYS AT BLOCK D PARKING FACILITY

Driveways shall be provided at Block D to accommodate parking facility ingress and egress. Refer to Section 2.4, Transportation Plan, and Infrastructure Plan.



LONG BRIDGE STREET

- Frontage Zone
- Pedestrian Throughway
- Streetlife Zone
- Roadway

FIGURE 4.6.1 Long Bridge Street Section and Street Zones Diagram

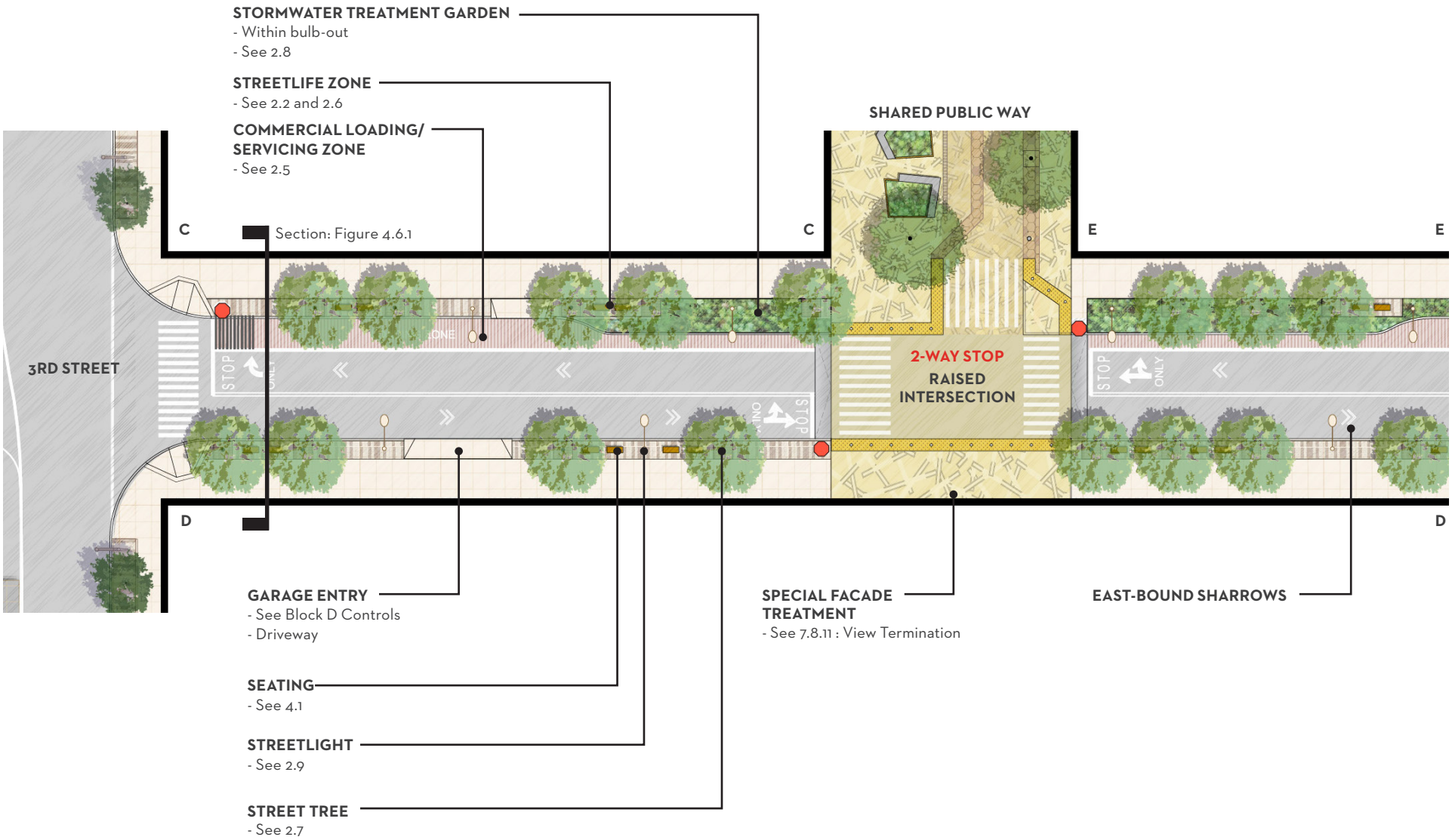
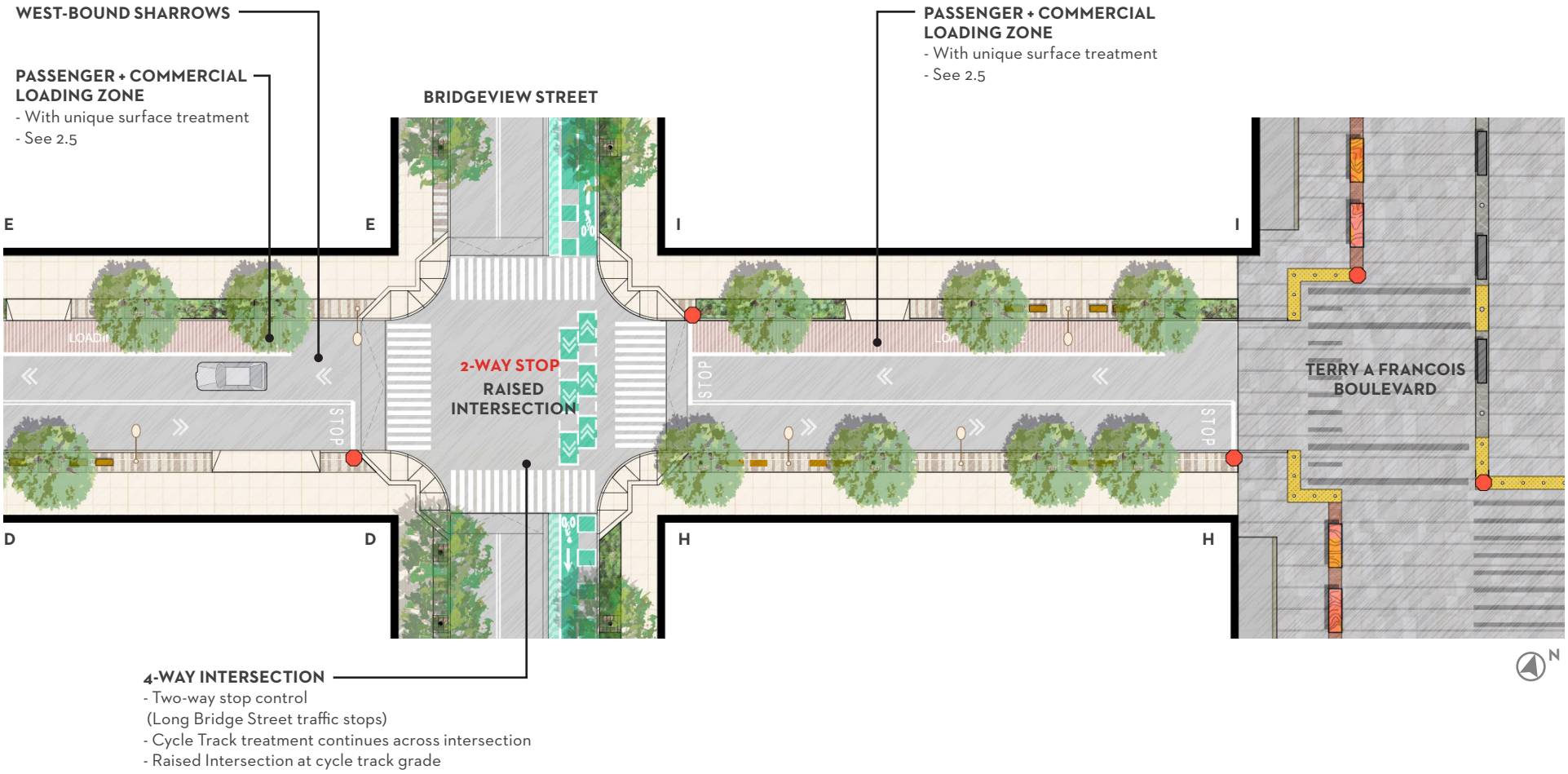


FIGURE 4.6.2 Long Bridge Street Conceptual Plan. This is provided for illustrative purposes only & does not represent a design proposal. Refer to Chapter 8 of the Infrastructure Plan for key dimensions, intersection analysis, and fire access information.


WEST-BOUND SHARROWS
PASSENGER + COMMERCIAL LOADING ZONE
- With unique surface treatment
- See 2.5
BRIDGEVIEW STREET
PASSENGER + COMMERCIAL LOADING ZONE
- With unique surface treatment
- See 2.5
E
E
I
I
LOADING
STOP
2-WAY STOP
RAISED INTERSECTION
STOP
STOP
TERRY A FRANCOIS BOULEVARD
D
D
H
H
N
4-WAY INTERSECTION
- Two-way stop control
(Long Bridge Street traffic stops)
- Cycle Track treatment continues across intersection
- Raised Intersection at cycle track grade

4.7 3RD STREET

Read in conjunction with Section 4.5: Exposition Street, Section 4.6: Long Bridge Street, Section 5.2: Ground Floor, and Sections 5.9-10: Neighborhood Street Zone. 3rd Street must also satisfy the requirements described in Chapter 2: Public Realm.

3rd Street is Mission Rock's primary face to Mission Bay. A wide multi-modal street, its character is fundamentally different from the interior streets of Mission Rock. South of Long Bridge Street, the sidewalk is a key threshold into Mission Rock from the MUNI station at Mission Rock Street. 3rd Street will primarily adhere to approved San Francisco Office of Community Investment and Infrastructure (OCII) Mission Bay standards for materials, trees, and lighting.

Conceptual rendering of 3rd Street MUNI stop

STANDARDS

4.7.1 SIDEWALK ZONES

Sidewalk improvements on 3rd Street shall be 12'-wide, on the east side of the right-of-way. The sidewalk shall include:

A) Pedestrian Throughway
An unobstructed, 6'-minimum clear width path of travel for pedestrians shall be maintained between the building frontage and the Streetlife Zone.

B) Streetlife Zone
A zone between the curb and pedestrian throughway with width as noted on Figure 4.7.1. This zone shall include trees, lighting, and furnishings that are consistent for the entire length of the street. Refer to OCII Mission Bay Standards.

4.7.2 ROADWAY ZONES

At Block A only, the following shall be provided per Figure 4.7.3:

A) Loading Zone
An 8'-wide zone shall be provided at grade with the roadway to provide passenger and commercial loading per Section 2.5.

B) Bicycle Facility
A 5'-wide painted Class II bike lane in the north-bound direction, separated from vehicular traffic with a 6"-wide solid white line. See Section 2.4 and 3.2.

4.7.3 EMERGENCY VEHICLE ACCESS RADII

Vehicular turning radii from Long Bridge Street and Exposition Street onto 3rd St have minimum requirements for emergency vehicle access. Refer to Infrastructure Plan.

GUIDELINES

4.7.4 PAVING IN STREETLIFE ZONE

Refer to OCII Mission Bay and 3rd Street Standards.

4.7.5 LIGHTING

Refer to OCII Mission Bay and 3rd Street Standards. Lighting should be coordinated with improvements across 3rd Street.

4.7.6 TREE PLANTING

Refer to Mission Bay and 3rd Street Standards for Tree Palette. Species selection should be coordinated with improvements across 3rd Street.

3RD STREET

- Pedestrian Throughway
- Streetlife Zone
- Roadway
- (E) Sidewalk

FIGURE 4.7.1 3rd Street Section and Zones Diagram

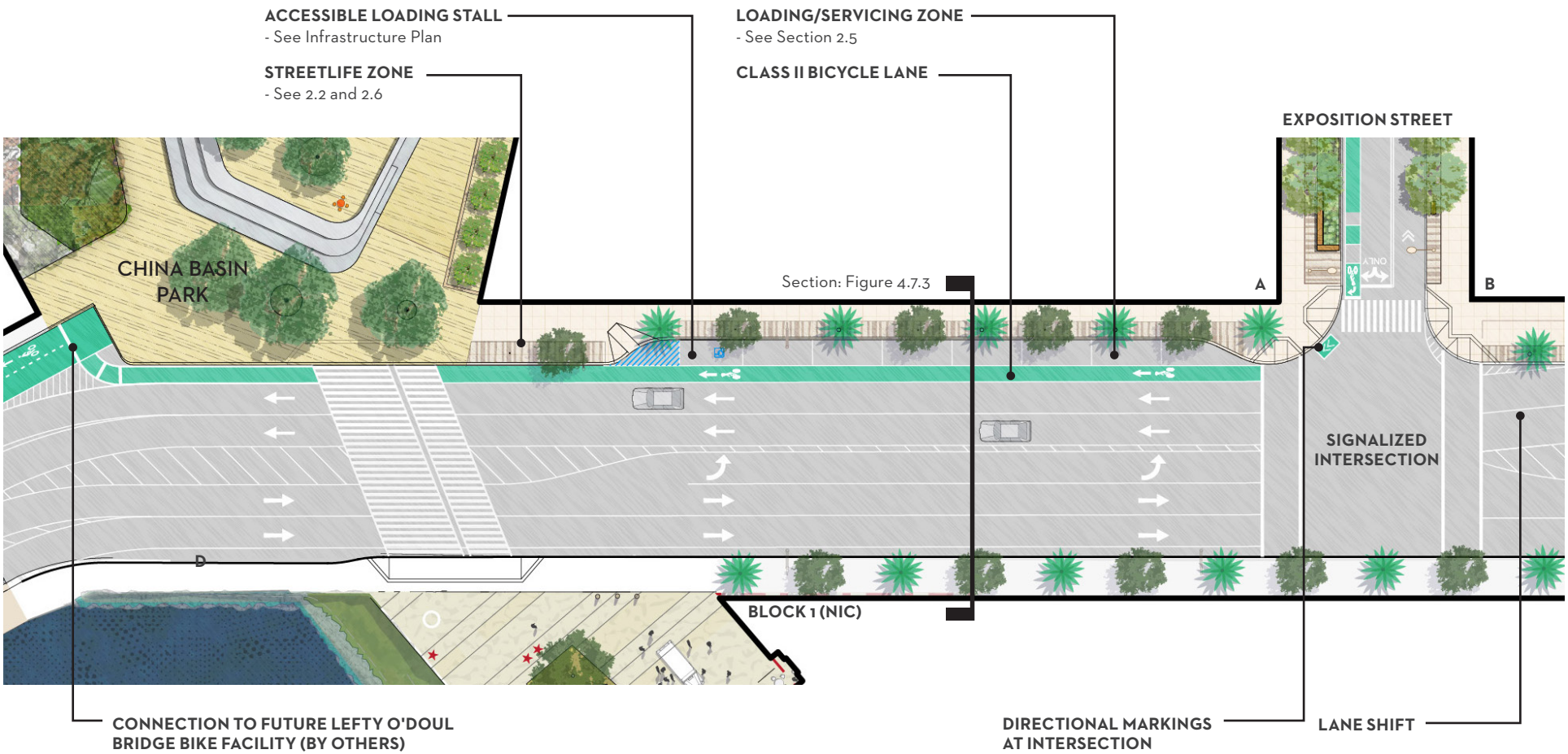
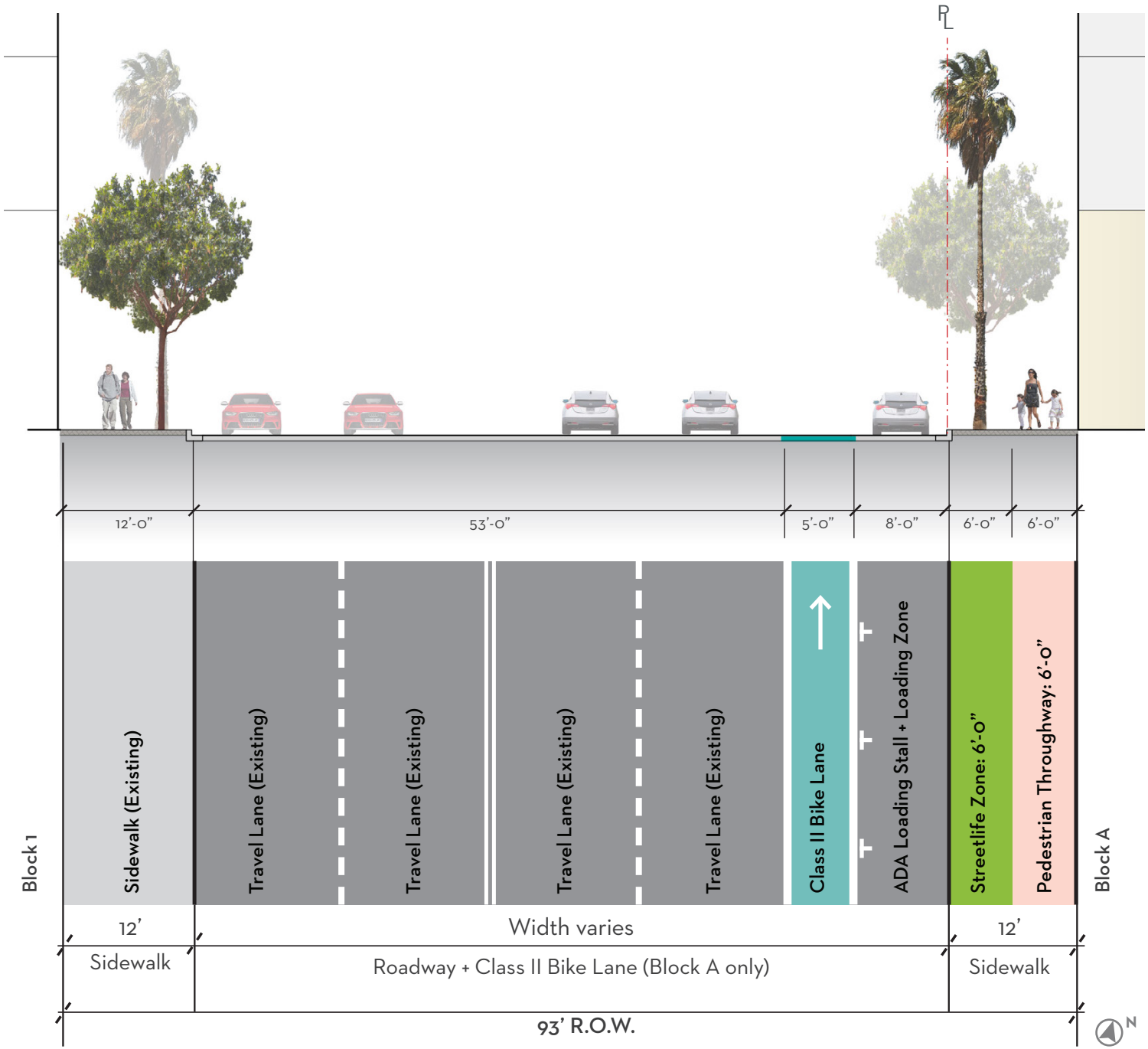


FIGURE 4.7.2 3rd Street Conceptual Plan at Block A. This is provided for illustrative purposes only & does not represent a design proposal. Refer to Chapter 8 of the Infrastructure Plan for key dimensions, intersection analysis, and fire access information.



3RD STREET

- Pedestrian Throughway
- Streetlife Zone
- Bicycle Facility
- Roadway
- (E) Sidewalk

FIGURE 4.7.3 3rd Street Section and Zones Diagram at Block A

4.8 MISSION ROCK STREET

Read in conjunction with Section 4.3: Terry A Francois Boulevard, Section 4.4: Bridgeview Street, Section 5.2: Ground Floor, and Sections 5.9-10: Neighborhood Street Zone. Mission Rock Street must also satisfy the requirements described in Chapter 2: Public Realm.

Mission Rock Street will provide an important link to the Bay Trail/Blue Greenway at the terminus of Bridgeview Street. South of Block H, a contraflow Class 1 cycle track will connect cyclists from Bridgeview Street to Terry A Francois Boulevard's Blue Greenway infrastructure.

Mission Rock Street will primarily adhere to approved San Francisco Office of Community Investment and Infrastructure (OCII) Mission Bay standards for materials, trees, and lighting.

STANDARDS

4.7.1 SIDEWALK ZONES

Sidewalk improvements on Mission Rock Street shall be 12'-wide, on the north side of the right-of-way. The sidewalk shall include:

A) Frontage Zone

A 2'-maximum width zone shall be maintained along building frontages for Active Edges as described in Chapter 5.

B) Pedestrian Throughway

An unobstructed, 6'-minimum clear width path of travel for pedestrians shall be maintained between the building frontage and the Streetlife Zone.

C) Streetlife Zone

A zone between the curb and pedestrian throughway with width as noted on Figure 4.8.1. This zone shall include trees, lighting, and furnishings that are consistent for the entire length of the street. Refer to OCII Mission Bay Standards.

D) Driveways

Driveways shall be permitted at the Block D parking garage.

4.8.2 CONFORMANCE TO EXISTING STANDARDS

Mission Rock Street shall conform to OCII Mission Bay Design Standards for paving and streetscape elements. Tree species should match trees installed across Mission Rock Street.

4.8.3 BICYCLE CONNECTION

A) Bicycle Facility

A two-way Class 1 cycle track that is 10'-0" wide, measured from the face of curb, shall be provided on the north side of the right-of-way from Bridgeview Street to Terry A Francois Boulevard. This facility shall be protected from vehicular traffic with a 15"-minimum width buffer with 6" vertical curb, segmented to facilitate drainage, and a 46"-high permanent vertical barrier.

B) Raised Cycle Track

If a raised facility is provided, it shall be grade-separated from adjacent travel lanes with a vertical curb. All material transitions shall be completely flush with the cycle track.

C) Cycle Track Warning Cues

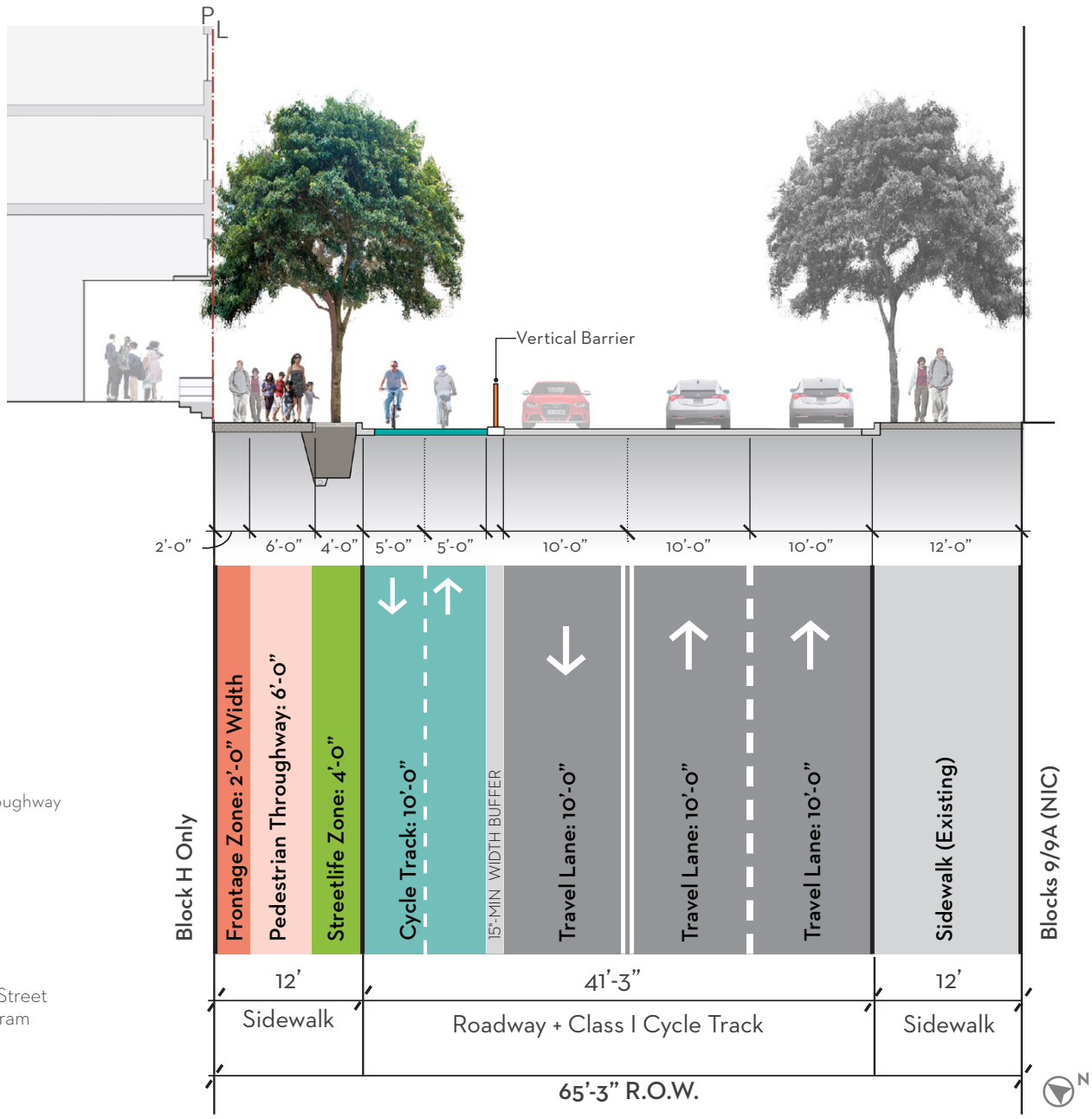
At intersections, the cycle track shall include paved and signed warning cues indicating pedestrian crossings and vehicular intersections.

D) Cycle Track Intersections

Cycle track demarcation shall continue across intersections at Bridgeview Street and Terry A Francois Boulevard to indicate the primary bicycle route. See Section 2.4 and Infrastructure Plan.

4.8.4 INTERSECTION CONTROL

At the intersections of Mission Rock Street with Bridgeview Street and Terry A Francois Boulevard, there shall be full stop control for bicycles and vehicles. Refer to Infrastructure Plan.



MISSION ROCK STREET

- Frontage Zone
- Pedestrian Throughway
- Streetlife Zone
- Bicycle Facility
- Roadway
- (E) Sidewalk

FIGURE 4.8.1 Mission Rock Street Section and Zones Diagram

GUIDELINES

4.8.5 CYCLE TRACK VERTICAL BARRIER AT BUFFER

The 46"-high vertical barrier for the cycle track is a wayfinding and signage opportunity for the south entry to Mission Rock. The design of the barrier should be considered with other site furnishing elements and should enhance the streetscape.

An example of a permanent vertical barrier that enhances the streetscape. SOURCE: DAVID Q MAY

An example of signage that could be incorporated into the cycle track buffer. SOURCE: WIKIMEDIA

A San Francisco example of directional markings that aid navigation and wayfinding at intersections. SOURCE: SFMTA LIVABLE STREETS

A San Francisco example of an intersection approach treatment that alerts cyclists and drivers to upcoming stop signs and conflict points. SOURCE: SFMTA LIVABLE STREETS

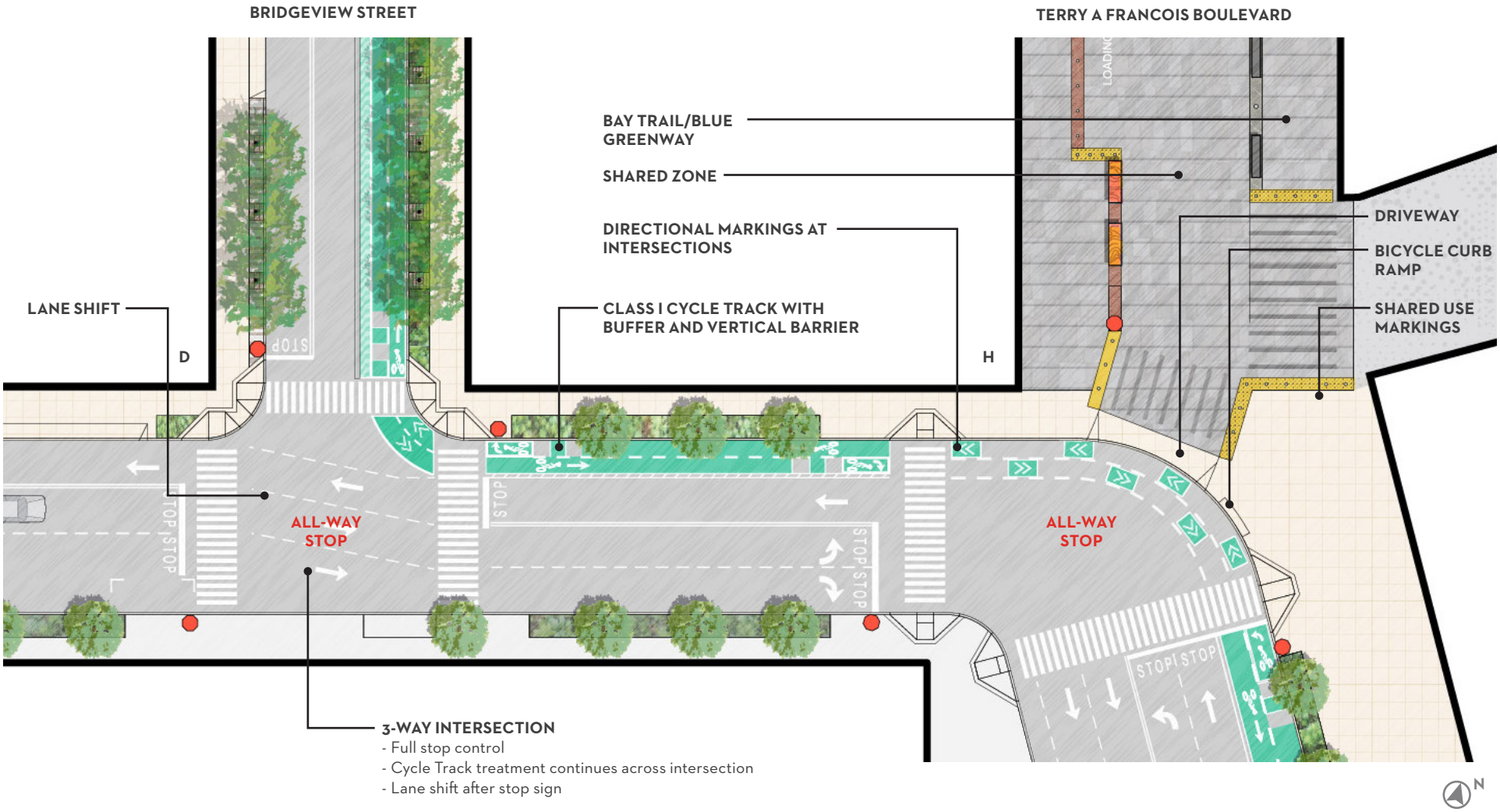


FIGURE 4.8.2 Mission Rock Street Conceptual Plan. This is provided for illustrative purposes only.

PARK
Dignity Health.
charles SCHWAB
CSN
LEVI'S LANDING
VISA
Bank of America
Adobe
See's CANDIES

BUILDINGS

CHAPTER 5: GROUND FLOOR

5.1 Designing for Environmental Change 124
5.2 Building Servicing 126
5.3 Active Edges 128
5.4 Ground Floor Controls 130
5.5 Ground Floor Frontage Zones 134
5.6 High Retail Zone 136
5.7 Parkfront Zone 148
5.8 Working Waterfront Zone 140
5.9 Neighborhood Street Zone: Residential 144
5.10 Neighborhood Street Zone: Non-Residential 146

CHAPTER 6: BUILDING FORM

6.1 Building Envelope 150
6.2 Building Height 151
6.3 Base Building 153
6.4 Upper Building 157
6.5 Design of Taller Buildings 161
6.6 Environmental Comfort 164

CHAPTER 7: BUILDING DESIGN

7.1 Sustainable Buildings 166
7.2 Building Design 178
7.3 Color and Materials 172
7.4 Signage 174
7.5 Lighting 175
7.6 Off-Street Parking 177
7.7 Parking Structure (Block D2) 179

ER·48 · SHED·A

The ground floor is the place where the activity of a building meets the parks and streets, and therefore plays the greatest role in shaping the pedestrian experience. A vibrant ground floor experience is dependent upon many different types of uses, mixed together at a fine grain, and designed at a pedestrian scale.

05

GROUND FLOOR

The controls for the ground floor of Mission Rock are closely coordinated with the Public Realm controls outlined in Chapters 2 through 4 to ensure that the programmatic use, building design, open spaces and streets will work together to support the vision of a neighborhood rich in public life.

Along the Shared Public Way, Mission Rock Square and China Basin Park, the landscape and building design will work together to create opportunities for many small shops and restaurants to spill out onto the sidewalks and occupy street rooms and park edges.

Terry A Francois Boulevard will become a Working Waterfront street where the landscape and building design combine to create a public realm that enables production uses, facilitates the movement of trucks, as well as providing a wonderful pedestrian experience next to the attraction of waterfront industry.

3rd Street is recognized as a citywide transportation corridor, as well as a front door for Mission Rock. For this and all of the neighborhood streets, the combination of landscape and building design will ensure that these streets will be inviting, safe places where people will enjoy walking and cycling.

5.1 Designing for Environmental Change 124
5.2 Building Servicing 126
5.3 Active Edges 128
5.4 Ground Floor Controls 130
5.5 Ground Floor Frontage Zones 134
5.6 High Retail Zone 136
5.7 Parkfront Zone 138
5.8 Working Waterfront Zone 140
5.9 Neighborhood Street Zone: Residential 144
5.10 Neighborhood Street Zone: Non-Residential 146

RELATED CHAPTERS: The Ground Floor guidelines shall also be read in conjunction with *Chapter 6: Building Form* and *Chapter 7: Building Design*. Ground Floor controls shall also be viewed in conjunction with Appendix: Block Standards. Finally, this chapter refers to *Chapter 2: Public Realm*, describing integration of the ground floor and the public realm.

5.1 DESIGNING FOR ENVIRONMENTAL CHANGE

Mission Rock is a unique site due to its history as reclaimed land constructed on fill, and also for its future as a waterfront site which must plan for sea level rise.

Because of Mission Bay's unique geological context as a neighborhood constructed on fill, both new buildings and streets at Mission Rock will be pile-supported so as to minimize differential settlement between the streets and the buildings.

Furthermore, proposed new development at Mission Rock has been planned in anticipation of 66" of sea level rise by the year 2100. A comprehensive site-wide approach to sea level rise is reflected in the Public Realm chapters of the DC, and thoroughly addressed in the Mission Rock Infrastructure Plan.

Designers are encouraged to take advantage of this unique set of constraints in interesting ways that enhance each building's site-specific design.

Note that finished floor heights shown in this section are for illustrative purposes only. For exact required finished floor heights and grading, refer to the Mission Rock Infrastructure Plan.

SITE GRADE CHANGE (DIAGRAMMATIC)

- Existing Grade
- Transitional Grade
- Elevated Grade (roughly 4 feet higher)

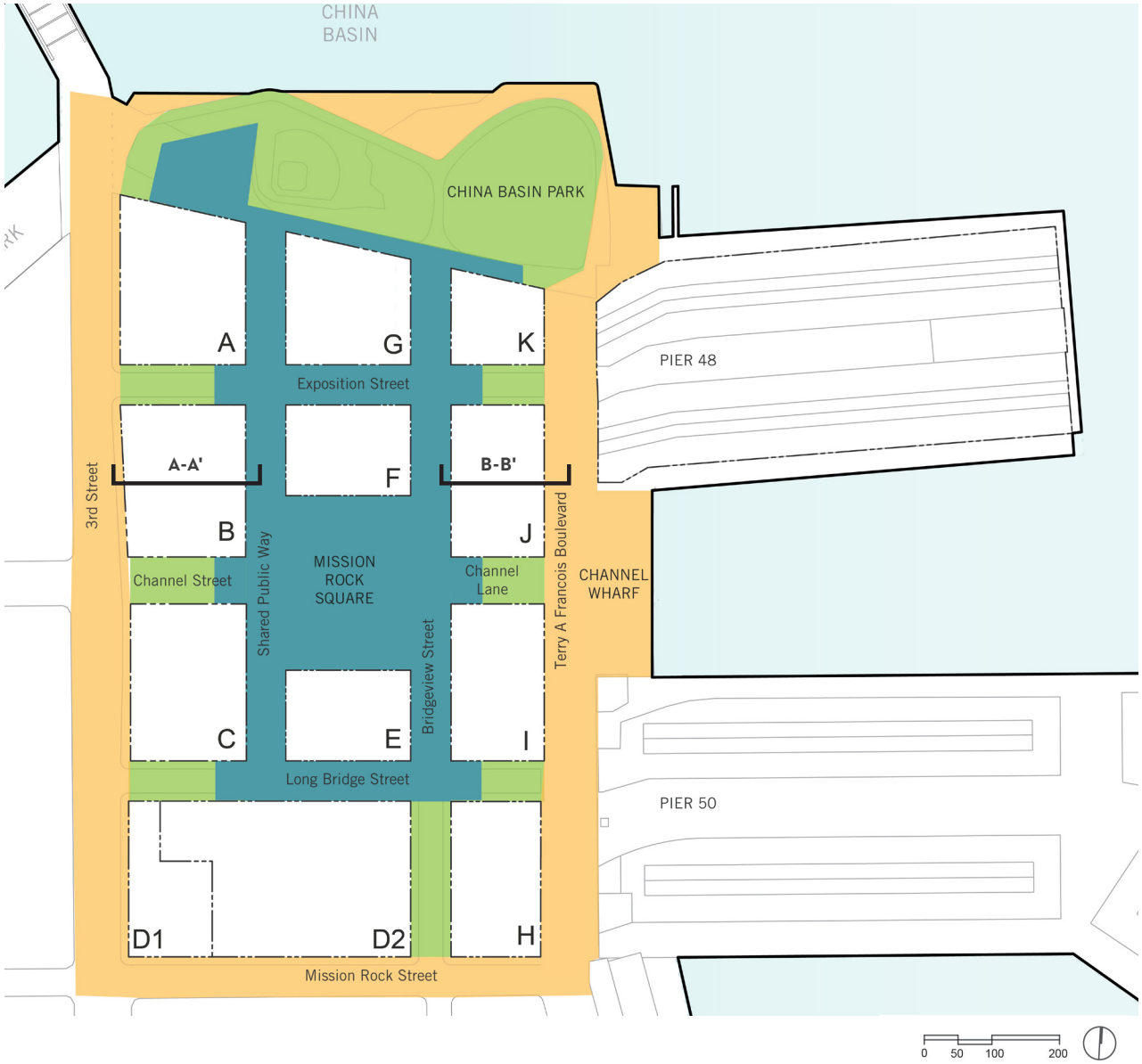


FIGURE 5.1 - Site Grade Change (diagrammatic)

GUIDELINES

5.1.1 ELEVATION CHANGES

As described in the Public Realm controls and the Mission Rock Infrastructure Plan, and conceptually diagrammed in *Figure 5.1 - Site Grade Change*, the site grading will be designed to create areas of higher elevation within the site in anticipation of sea level rise. In addition to responding to sea level rise, this provides opportunities for buildings to take advantage of the elevation changes across the site to create interesting relationships between uses within the buildings, and between the buildings to the streets.

Some examples of ways to address this elevation change are:

1. A step slab (see *Figure 5.1.1a - Step Slab*), where a step in the ground floor slab transitions between finished floor heights across the block.
2. An elevated walkway (see *Figure 5.1.1b - Elevated Walkways*). Particularly appropriate to Production uses; the slab is carried out to the edge of the street as a Elevated Walkway creating a loading dock type condition. (See also *Section 5.8.2 - Elevated Walkways*.)
3. Residential stoops which create an intermediate semi-private space for residents at a comfortable social distance from the public sidewalk.
4. Creativity in addressing how the building responds to site grading is encouraged; especially in ways that support the specific Ground Floor Zone prescribed for each frontage (see *Figure 5.5 - Ground Floor Frontage Zones*).

5.1.2 DIFFERENTIAL SETTLEMENT: 3RD ST. & MISSION ROCK ST.

Mission Rock, similar to the rest of Mission Bay, is a landfill site underlaid by bay mud. Buildings need to be constructed on piles in order to minimize settlement of the buildings due to consolidation of the bay mud. Adjacent internal streets at Mission Rock will also be pile-supported, to ensure that there is no differential settlement between buildings and adjacent sidewalks.

Building edges and entries at 3rd Street and Mission Rock Street should be designed to take into account this special configuration of adjacencies to structured streets. Some examples of ways to address this condition is:

1. Inset entries which allow for an approach slab between the entry door and the sidewalk.
2. In the Working Waterfront Zone elevated walkways provide a structured, elevated frontage that can be used by all tenant entries, limiting points for management of differential settlement to the stairs and ramps that connect the street level to the elevated walkway level (see *Section 5.8 - Working Waterfront Zone* for guidance on elevated walkways).
3. In the Neighborhood Street Zone: Residential, landscaping in the active edge can be raised or lowered and replanted as levels between the building and sidewalk may change (see *Section 5.9 - Neighborhood Street Zone: Residential* for guidance on landscaping in the active edge).

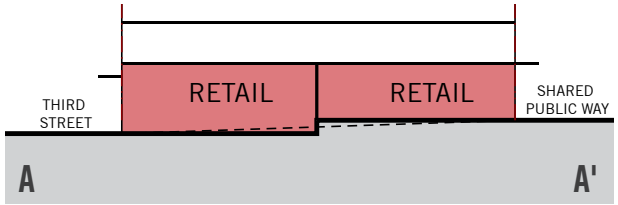


FIGURE 5.1.1A - Section A-A' - Step Slab

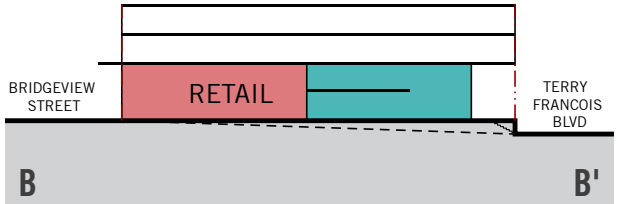


FIGURE 5.1.1B - Section B-B' - Elevated Sidewalk

5.2 BUILDING SERVICING

The experience at the various entry points of a building contributes greatly to how people experience a building and how it relates to its context.

For the everyday "back of house" operations of buildings, easy and convenient servicing for deliveries and maintenance is an important part of the functioning of a building. However, it can also negatively impact the pedestrian experience if frontages are dominated by servicing activities.

Exact locations of building servicing areas should be coordinated with the public realm—especially regarding street trees and stormwater treatment gardens. Read in conjunction with Chapters 2 and 4, and the Mission Rock Infrastructure Plan. Also see specific street guidelines for more detail.

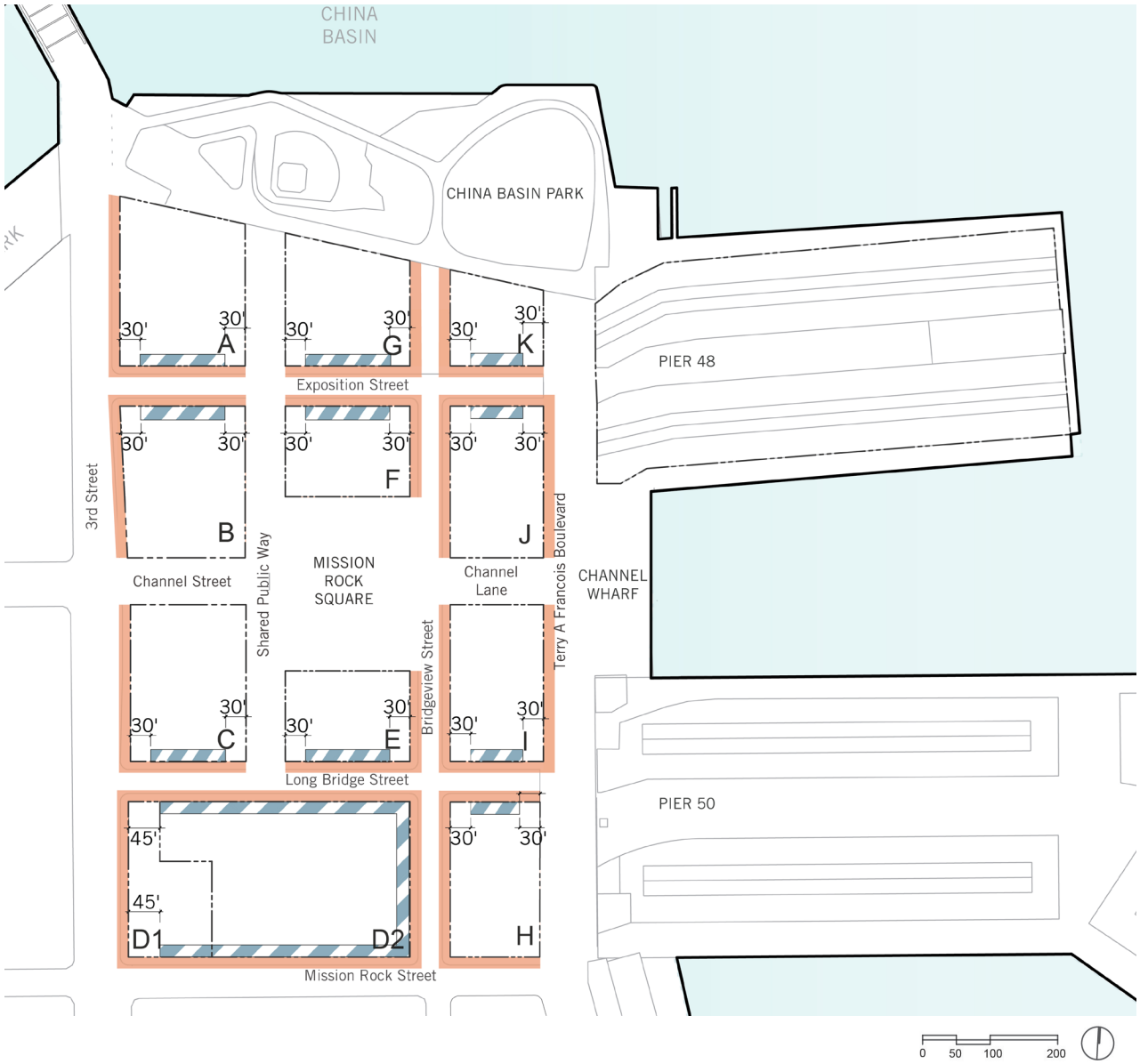


FIGURE 5.2 - Building Servicing

BUILDING SERVICING

- Building Servicing Zone
- Fire Department Connection (FDC) Frontages

STANDARDS

5.2.1 BUILDING SERVICING ZONE

To minimize the visual impact of servicing along building frontages, any building servicing entry must be located within the building servicing zones indicated in *Figure 5.2 - Building Servicing*.

This zone refers to the locations where servicing activities may be provided. Each servicing activity is given a maximum dimension within this zone, as defined in *5.2.2 - Building Servicing Entries*.

All building servicing, where it is built, must be held back 30 feet from all corners of blocks as described in *Section 5.2.6 - Corner Zone*.

Off-street loading is not required in any building.

5.2.2 BUILDING SERVICING ENTRIES

The building frontage allowed for servicing activities may not exceed the following dimensions along any given frontage for each type of servicing, as listed below:

- Loading bays, trash rooms, or other internal building servicing entries are limited to a total of 20 horizontal feet of frontage.
- Access entries to transformers are limited to a total of 12 horizontal feet of building frontage.
- Parking entries are limited to a total of 16 horizontal feet of building frontage, with the exception of Parcel D2. For podium parking controls see *Section 7.6 - Off-Street Parking*.

Loading bays, where they occur, should be designed to have direct access to the building's freight elevator.

5.2.3 COMBINE BUILDING SERVICING ENTRIES

Wherever possible, servicing entries shall be combined, such as combining a parking entry with a loading dock, or transformers accessed through doors internal to a loading dock.

5.2.4 COORDINATE SERVICING FRONTAGES WITH PUBLIC REALM

Location, design, and length of servicing frontages shall be coordinated with sidewalk design, particularly regarding placement and dimensions of stormwater gardens, street trees, and pedestrian paths.

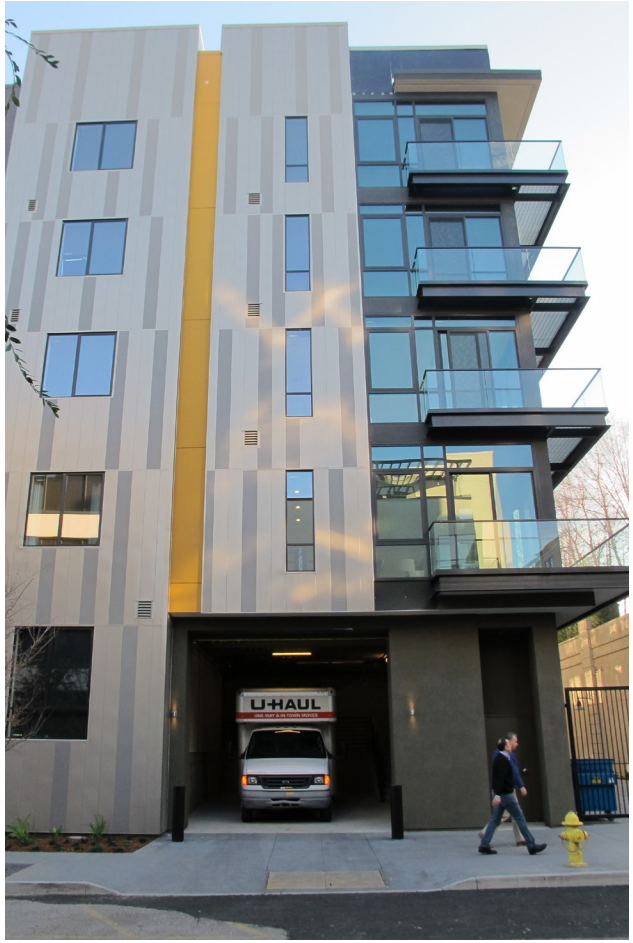
5.2.5 CORNER ZONE

To minimize pedestrian, bike, and vehicular conflicts with servicing activities, servicing entries may not be located within 30 horizontal feet of a block corner. Block D2 is exempt from this requirement.

5.2.6 FIRE DEPARTMENT CONNECTION (FDC) FRONTAGES

The configuration of streets, loading zones, stormwater BMPs and various other pedestrian and streetscape elements make some streets more ideal for fire department connections. Those frontages are indicated on Figure 5.2 - Building Servicing.

FDC frontages are shown here as information to be used by architects and engineers when designing the buildings. It is not necessary to demonstrate compliance with these frontages in a planning application.



Loading docks and parking entries and exits should be designed so as to minimize the frontage they occupy.

PHOTO: PERKINS+WILL

5.3 ACTIVE EDGES

Mission Rock will have vibrant streets where restaurants, cafes, and shops spill out to animate the sidewalks and create a rich public realm experience.

Each building is permitted and encouraged to utilize a portion of the public realm within the right of way or open space for spill-out space, called the Active Edge, to enliven the street through outdoor seating, signage, and merchandising.

The following controls guide the character of the Active Edge in coordination with the Public Realm controls.

ACTIVE EDGES (WITHIN ROW OR OPEN SPACE)

- 15 feet
- 12 feet
- 12 feet (Inclusive of pedestrian throughway)*
- 8 feet (Inclusive of pedestrian throughway)*
- 10 feet
- 2 feet
- Encroachment Zone for vertical circulation to access Elevated Walkway (depth of 6 feet) See also *Section 5.8.2 - Elevated Walkways*

**Along the Shared Public Way, the Active Edges must include a 6 foot pedestrian throughway for public access. Along Terry A Francois Boulevard, the Active Edges must include a 4 foot pedestrian throughway for public access. The throughway is included in this dimension to allow for the active edge to meander within the total active edge dimension so that the furnishing zone can shift to be against the building face or away from the building face.*

Note: While there is no Active Edge along 3rd Street, the ground floor will still be required to have active uses which visually and physically engage the sidewalk, and any insets along the frontage can be used for movable furnishings and other features that may occur within the active edge.

FIGURE 5.3 - Active Edges

STANDARDS

5.3.1 ACTIVE EDGE DIMENSION

The active edge is the portion of the public realm beyond the property line which can be occupied as spill-out space in front of a building for activities like seating, display of goods, and so on. This area allows for the activities within the building to spill over into the sidewalk, and contribute to the life and activity of the public realm.

The active edge area is given a maximum perpendicular dimension from the property line, into the adjacent right of way. Dimensions for each zone are given in the description for each zone and summarized in *Table 5.5 - Ground Floor Frontage Zone Controls*.

Note that along the Shared Public Way, the pedestrian throughway is included in the Active Edge dimension (as noted in *Figure 5.3 - Active Edge*). This is intended to allow for the activity that spills out of buildings to have the flexibility to occur against the building face, or to shift away from the building frontage into the street, thereby allowing the pedestrian throughway to meander between active edge activities.

5.3.2 CLEAR PATH OF TRAVEL

For shared ways, the area between the property line and the vehicular zone must maintain a minimum of 6 feet of continuous pedestrian throughway that is free of all obstacles.

Placement of objects on the sidewalk must not in any way interfere with curb ramps, access to the building, driveways, or access to any fire escape or fire hydrant. (See *Section 2.3.1 - Pedestrian Throughway*)

5.3.3 PLANTING IN THE ACTIVE EDGE

The active edge area may not be used for permanent planting, except in the Neighborhood Street Zone: Residential, where this area can be used for planting that will help create a comfortable social distance between stoops and the street.

Potted plants and other movable plantings are allowed in the active edge zone.

5.3.4 DIVERTERS

Placement of tables and chairs on sidewalks must include the use of movable diverters at each end to guide pedestrians away from any occupied area of the sidewalk. Diverters must conform to the following design guidelines:

- Diverters must be sturdy, stable and have sufficient weight so that they cannot be tipped or blow away by the wind.
- Diverters must be at least 30 inches high and must be solid within 24 inches of the ground.

5.3.5 FURNITURE

Temporary and permanent furniture such as tables, chairs, benches, planters, heaters, signage, and merchandizing stands is allowed in any active edge, except in two-feet-wide active edges where only temporary furniture is allowed.

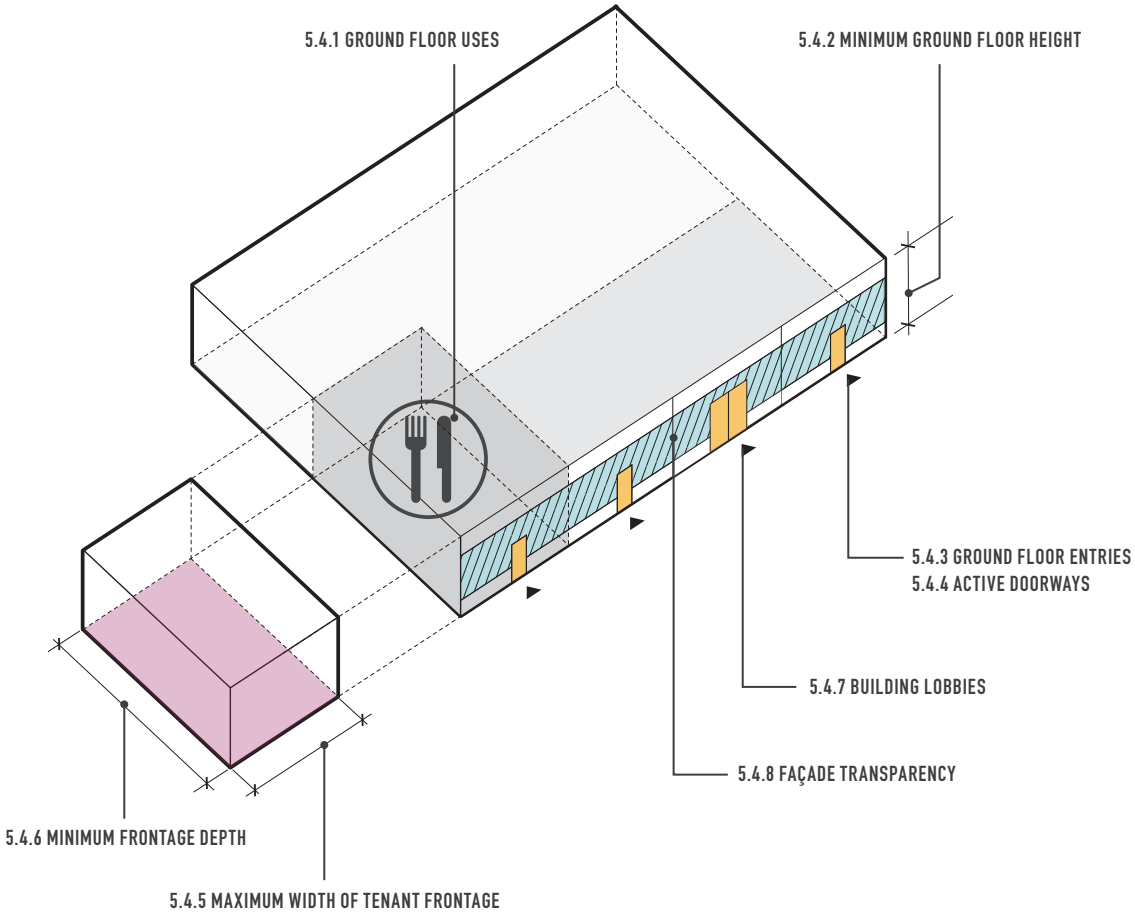
Active edges allow for indoor uses to spill out and activate the public realm. PHOTO: SAN FRANCISCO GIANTS

Active edges provide space for tables and chairs that extend the interior life of the building into the street. PHOTO: PERKINS+WILL

5.4 GROUND FLOOR CONTROLS

Each of the different types of ground floor frontage will have a unique character that is specific to the streets and open spaces they frame. The following standards, definitions, and guidelines apply to all of the frontages in varying ways, as described in *Table 5.5 - Ground Floor Frontage Zone Controls*.

For guidelines on color and material, lighting and signage, refer to Chapter 6: Building Design.



DEFINITIONS (ALSO SEE TABLE 5.5)

5.4.1 ALLOWED GROUND FLOOR USES

Read in conjunction with *1.2 - Land Use Categories*.

Permitted land uses for each ground floor frontage zone are give in *Table 5.5 - Ground Floor Frontage Zone Controls*. Any and all land uses listed as "allowed" in this table are permitted in a given ground floor frontage zone. Note that child care centers may also be located within retail use zones see section 1.2.4.

Building entries and lobbies to residential or commercial uses of upper floors are permitted in the ground floor, even if residential or commercial use is not permitted in a given zone. Lobbies are limited to dimensions as listed in *Table 5.5 - Ground Floor Frontage Zone Controls*.

For the Neighborhood Street Zone, any frontage is allowed to be residential or non-residential; the ground floor use is not tied to the land use of the block. For example, a residential building is allowed to have non-residential uses at the ground floor; in which case the frontage would be controlled by the standards in the Neighborhood Street Zone: Non-Residential Zone. A block can also have a mix of these uses at the ground floor.

5.4.2 MINIMUM GROUND FLOOR HEIGHT

The minimum clear height for the ground floor is the distance between the finished floor and finished ceiling, before the addition of a mezzanine. This height applies to the minimum frontage depth. See *Table 5.5 - Ground Floor Frontage Zone Controls* for required minimum heights and minimum frontage depths.

DEFINITIONS (ALSO SEE TABLE 5.5 - GROUND FLOOR FRONTAGE ZONE CONTROLS)

5.4.3 GROUND FLOOR ENTRIES

Entries may be required to be flush at-grade or elevated as with a stoop or an elevated sidewalk. See *Table 5.5 - Ground Floor Frontage Zone Controls* for controls guiding the relationship of entries into different types of uses to the adjacent sidewalk.

5.4.4 ACTIVE DOORWAYS

An active doorway is the main public entry into a tenant space, such as a building lobby, the main entry to a storefront, or front door of a residential unit. The requirement for a minimum number of active doorways is intended to establish a minimum level of variety and pedestrian activity along each frontage. See *Table 5.5 - Ground Floor Frontage Zone Controls* for active doorway requirements for each frontage zone.

Additional entries into buildings or tenant spaces are allowed, but do not count toward the Active Doorways requirement. The purpose of the Active Doorways requirement is to create a greater number and variety of tenants, not to simply add more doorways.

Active doorways shall be calculated based on the linear frontage of the building that qualifies as streetwall under *Section 6.3.2 - Streetwall Area Calculation*. All active doorway numbers shall be rounded up to the nearest whole number. For example a calculation yielding 2.1 active doorways shall be rounded up to 3 active doorways.

Building lobbies, residential stoops, and public passages through buildings are counted as active doorways. A corner entry counts as an active doorway on only one frontage. Loading bays, servicing areas, parking garage entries, transformer doors, and emergency exit doors do not count as Active Doorways and where they exist, the length of their frontage is subtracted from the required calculation of active doorways. See *Figure 5.4.4* for an example of how this is calculated.

Where there is more than one frontage zone along a frontage (as in Blocks I and J) calculate the number of active doorways required relative to the length of each frontage type.

In the Neighborhood Street Zone, where there may be a mix of residential and non-residential uses along a frontage, calculate the number of doorways relative to the corresponding frontage requirements for each use type. See *Figure 5.4.4 - Active Doorways Calculation* for an example of how this is calculated.

5.4.5 MAXIMUM WIDTH OF SINGLE USE FRONTAGE

In order to ensure an appropriate scale and variety of storefronts along a frontage, each type of frontage prescribes a limit on the linear frontage that a single use or establishment can occupy. *Table 5.5 - Ground Floor Frontage Zone Controls* provides a summary of maximum frontage dimensions.

5.4.6 MINIMUM FRONTAGE DEPTH

Each frontage zone is given a minimum depth into the building for which prescribed uses shall be accommodated. These depths are determined to ensure a minimum feasible depth for appropriate uses. Table 5.5 - Summary of Ground Floor Controls describes the minimum frontage depth for each type of frontage. Individual establishments may have a depth that is less than the minimum as long as the total depth minimum is maintained among multiple establishments. For example a minimum frontage depth of 40 feet could be subdivided between a tenant with a 15 foot depth and another tenant that wraps around in an L-shape configuration providing the additional 25 foot depth.

5.4.7 MAXIMUM LOBBY DIMENSION

All building lobbies, regardless of use, are limited a maximum frontage dimension. See *Table 5.5 - Ground Floor Frontage Zone Controls* for maximum frontage dimensions.

5.4.8 FAÇADE TRANSPARENCY

To contribute to the safety and activation of the street, ground floor facades are required to be designed to a minimum percentage of transparency at pedestrian eye-level, as defined in *Table 5.5 - Ground Floor Frontage Zone Controls*.

5.4.9 LINES OF SIGHT

The interiors of non-residential ground floor spaces must create lines of sight between the public realm and ground floor spaces, allowing people inside and outside the building to see one another.

Where lines of sight are required, the area within 4 feet from the surface of the window glass must be at least 75% open to perpendicular view at a height between 4 feet and 8 feet above sidewalk grade. See *Figure 5.4.9 - Lines of Sight* for a diagram explaining dimensions.

Rolling or sliding security gates shall consist of open grillwork rather than solid material, so as to provide visual interest to pedestrians when the gates are closed, and to permit light to pass through mostly unobstructed. Gates, when both open and folded or rolled as well as the gate

DEFINITIONS (ALSO SEE TABLE 5.5)

mechanism, shall be recessed within, or laid flush with, the building facade.

5.4.10 AWNINGS AND CANOPIES

Awnings and canopies may project up to 8 feet into the public right-of-way at a minimum height of 12 feet above sidewalk grade. Awnings and canopies must be coordinated with tree planting so as not to interfere with tree cover.

GUIDELINES

5.4.11 PUBLIC PASSAGES

Public passages connecting between sidewalks, open spaces, mid-block courtyards, laneways, or covered, interior public connections are allowed and encouraged.

5.4.12 INDIVIDUALIZED STOREFRONTS

Storefronts should be designed so as to be individually customizable for each tenant to create a fine grain of variety along each street frontage. Change of facade material, varied awning height and design, unique signage and different kinds of doorways and windows are examples of ways to differentiate storefronts.

5.4.13 PERMEABILITY

In order to maximize the interaction between the uses at the ground floor of buildings and the public realm, retail frontages are encouraged to be designed so that they can be opened up to the street. Examples include but are not limited to: concertina doors, large pivot doors, roll up doors, and large operable windows.

These spaces also provide an opportunity to activate the street, animate building frontages, and increase 'eyes on the street' for neighborhood safety.

5.4.14 FACADE ARTICULATION

Storefronts should not be designed to have continuous, uninterrupted glass facades. They should be designed with texture and structure provided by architectural detailing as with columns or piers, bays, bulkheads, and recessed entries.

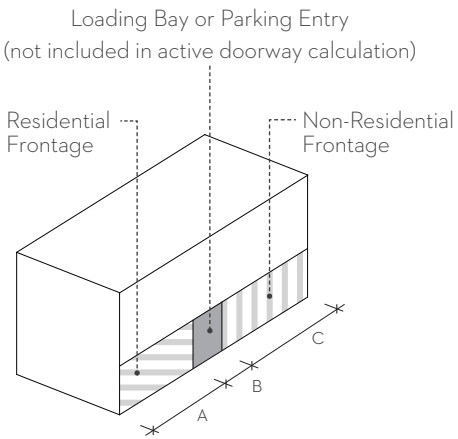
5.4.15 PEDESTRIAN FIELD OF VISION

A pedestrian's experience of the street is largely framed by the first and second floor of buildings, because this the part of the building most immediately within a pedestrian's range of vision.

To create a more varied and rich street level experience, there should be a higher degree of detailing and quality of design at the first and second floor of the building. These levels should be differentiated by a change in material, increase in transparency, a band course, or set back a few feet under an overhang.

5.4.16 COORDINATE ENTRIES

Coordinate the design of entries with the design of sidewalks so that slopes at entryways do not exceed 5% in any direction.



$$\text{Total Number of Active Doorways} = \frac{\text{Length of A}}{\text{Min. requirement for Residential Stoops}} + \frac{\text{Length of C}}{\text{Min. requirement for Non-Residential Active Doorways}}$$

FIGURE 5.4.4 - Active Doorways Calculation (also see *Section 5.4.4 - Active Doorways*)

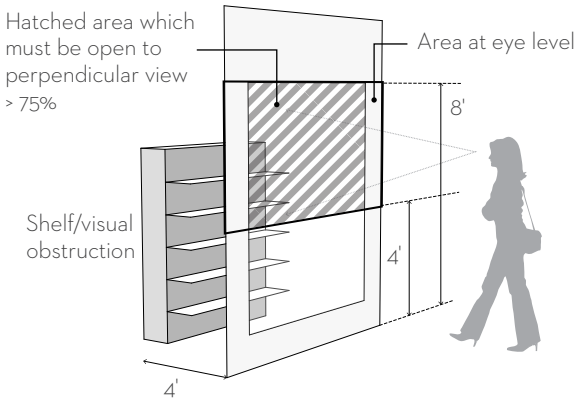


FIGURE 5.4.9 – Lines of Sight

The ability for each retail tenant to individualize their own storefront contributes to a more varied and interesting pedestrian experience. PHOTO: PERKINS+WILL

Opportunities to open up retail frontages with sliding or folding doors and windows creates more interaction between those inside and outside the building. PHOTO: PERKINS+WILL

Active uses at the second and third levels of the building also contribute to an enhanced pedestrian experience. PHOTO: PERKINS+WILL

The ground floor of buildings should be designed to create enjoyable and human-scaled experiences. PHOTO: PERKINS+WILL

5.5 GROUND FLOOR FRONTAGE ZONES

The intersection between the public realm and the ground floor of a building defines the street-level experience of the site. Each building frontage at Mission Rock has a role to play in the activation of the streets and open spaces. *Figure 5.5 – Ground Floor Frontages* shows the way that the frontage of each building will participate in the creation of a variety of ground floor experiences throughout Mission Rock, which are directly related to the character of the streets or open spaces they face.

The following pages describe each zone in detail, as well as the design elements that support this relationship between the building and the public realm. *Table 5.5 – Ground Floor Frontage Zone Controls* provides a compiled summary of the controls for each zone.

For controls regarding Color and Materials, Signage, and Lighting, see *Chapter 6: Building Design*.

GROUND FLOOR FRONTAGES

- High Retail Zone
- Parkfront Zone
- Working Waterfront Zone
- Neighborhood Street Zone

Zones are illustrative and not to scale; for minimum depth dimensions see Table 5.5 - Ground Floor Frontage Zone Controls.

FIGURE 5.5 - Ground Floor Frontages

STANDARDS (READ IN CONJUNCTION WITH SECTION 5.4 - GROUND FLOOR CONTROLS)

TABLE 5.5 - GROUND FLOOR FRONTAGE ZONE CONTROLS

This table summarizes the controls that together guide the character of the four different ground floor frontage zones. Each of the controls listed here is defined in *Section 5.4 - Ground Floor Controls*.

GROUND FLOOR FRONTAGE ZONE	5.6 HIGH RETAIL ZONE	5.7 PARKFRONT ZONE	5.8 WORKING WATERFRONT ZONE	5.9 NEIGHBORHOOD STREET ZONE: RESIDENTIAL*	5.10 NEIGHBORHOOD STREET ZONE: NON-RESIDENTIAL*
5.4.1 ALLOWED GROUND FLOOR USES (Read with *Section 1.2 - Land Use Categories*)	Retail	Retail	Production and/or Retail** **See *Section 5.8* for minimums and maximums	Residential	Retail, Active Uses, and/or Production Parking (only on Parcel D2)
5.4.2 MINIMUM GROUND FLOOR HEIGHT	17.4 feet clear from floor to ceiling	17.4 feet clear from floor to ceiling	17.4 feet clear from floor to ceiling	9 feet clear from floor to ceiling	17.4 feet clear from floor to ceiling
5.4.3 GROUND FLOOR ENTRIES	Entries must be flush at sidewalk grade	Entries must be flush at sidewalk grade	Entries must be flush at grade with the Elevated Sidewalk as described in *Section 5.8*	Entries must be raised above sidewalk grade, as with stoops; see Section 5.9 for guidelines	Entries must be flush at sidewalk grade
5.4.4 ACTIVE DOORWAYS	Minimum of 6 active doorways per 200 linear feet	Minimum of 4 active doorways per 200 linear feet	Minimum of 4 active doorways per 200 linear feet	Minimum of 1 Residential Stoop or Entry per 30 linear feet	Minimum of 1 active doorway per 100 linear feet
5.4.5 MAXIMUM WIDTH OF TENANT FRONTAGE	60 linear feet per tenant per block	80 linear feet per tenant per block	80 linear feet per Production tenant per block; 60 linear feet per Retail tenant per block	30 linear feet per unit per block	100 linear feet per tenant per block
5.4.6 MINIMUM FRONTAGE DEPTH	40 feet minimum	40 feet minimum	40 feet minimum	20 feet minimum	
5.4.7 MAXIMUM LOBBY DIMENSION	15 linear feet per lobby per building	30 linear feet per lobby per building	30 linear feet per lobby per building	40 linear feet per lobby per building; or 60 feet if combined with a Retail use (such as a coffee shop)	
5.4.8 FAÇADE TRANSPARENCY	65% transparent between 2 feet and 12 feet vertical above street level	65% transparent between 2 feet and 12 feet vertical above street level	50% transparent between 0 feet and 12 feet vertical above finished floor height	Minimum as required by building code	65% transparent between 2 feet and 12 feet vertical above street level

**For the Neighborhood Street Zone, any frontage is allowed to be residential or non-residential; the ground floor use is not tied to the land use of the block. For example, a residential building is allowed to have non-residential uses at the ground floor; in which case the frontage would be controlled by the standards in the Neighborhood Street Zone: Non-Residential Zone. A block can also have a mix of these uses at the ground floor. (Also see Section 5.4.1 - Allowed Ground Floor Uses).*

5.6 HIGH RETAIL ZONE

Read in conjunction with Section 5.4 – Ground Floor Controls, Section 4.2 - Shared Public Way, and Section 3.3 - Mission Rock Square.

The High Retail Zone represents the highest level of intensity of shops, cafes, and retail at Mission Rock. It is concentrated along the Shared Public Way and Mission Rock Square, creating the main focal point of retail activity for Mission Rock, and activating these important public places.

This zone is designed to accommodate many small shopfronts, with a few larger anchor stores and restaurants. As such, this zone has the greatest frequency of activity along the ground floor by pedestrian use and the smallest width of tenant frontages.

The frontages for inclusion in the High Retail Zone are indicated in *Figure 5.5 – Ground Floor Frontages*. The requirements of the High Retail Zone are summarized in *Table 5.5 - Ground Floor Frontage Zone Controls*.

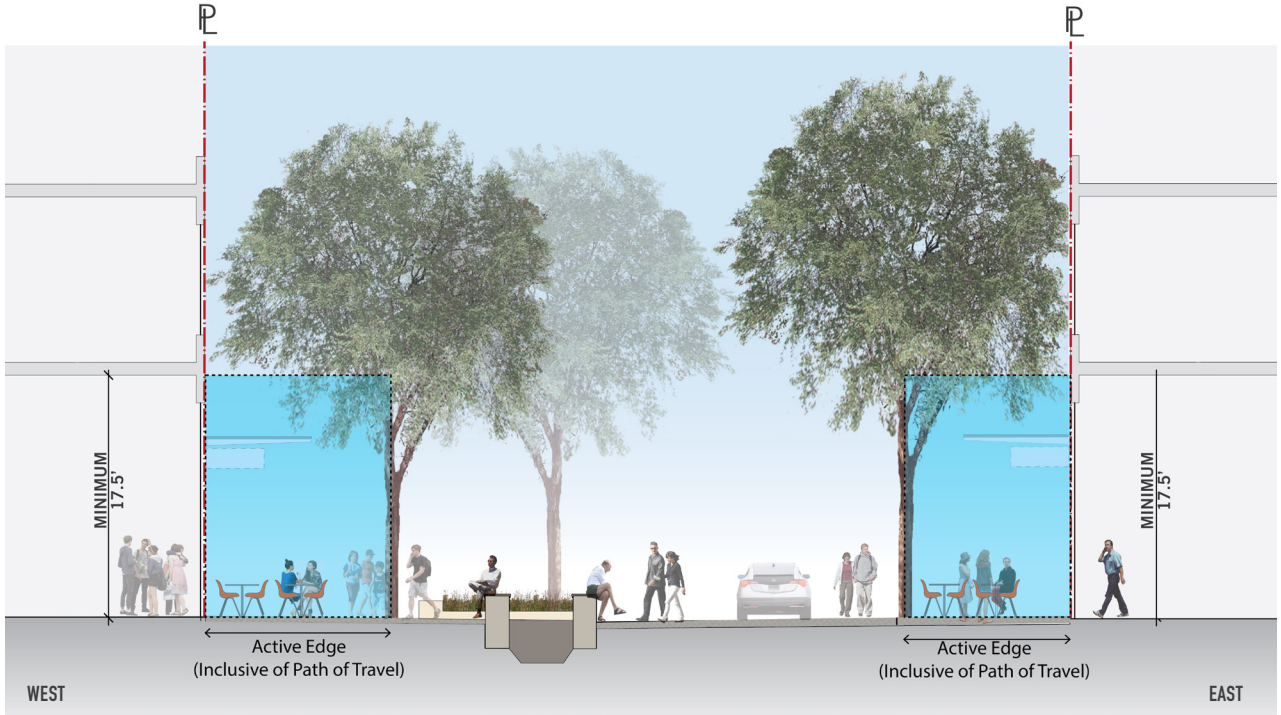
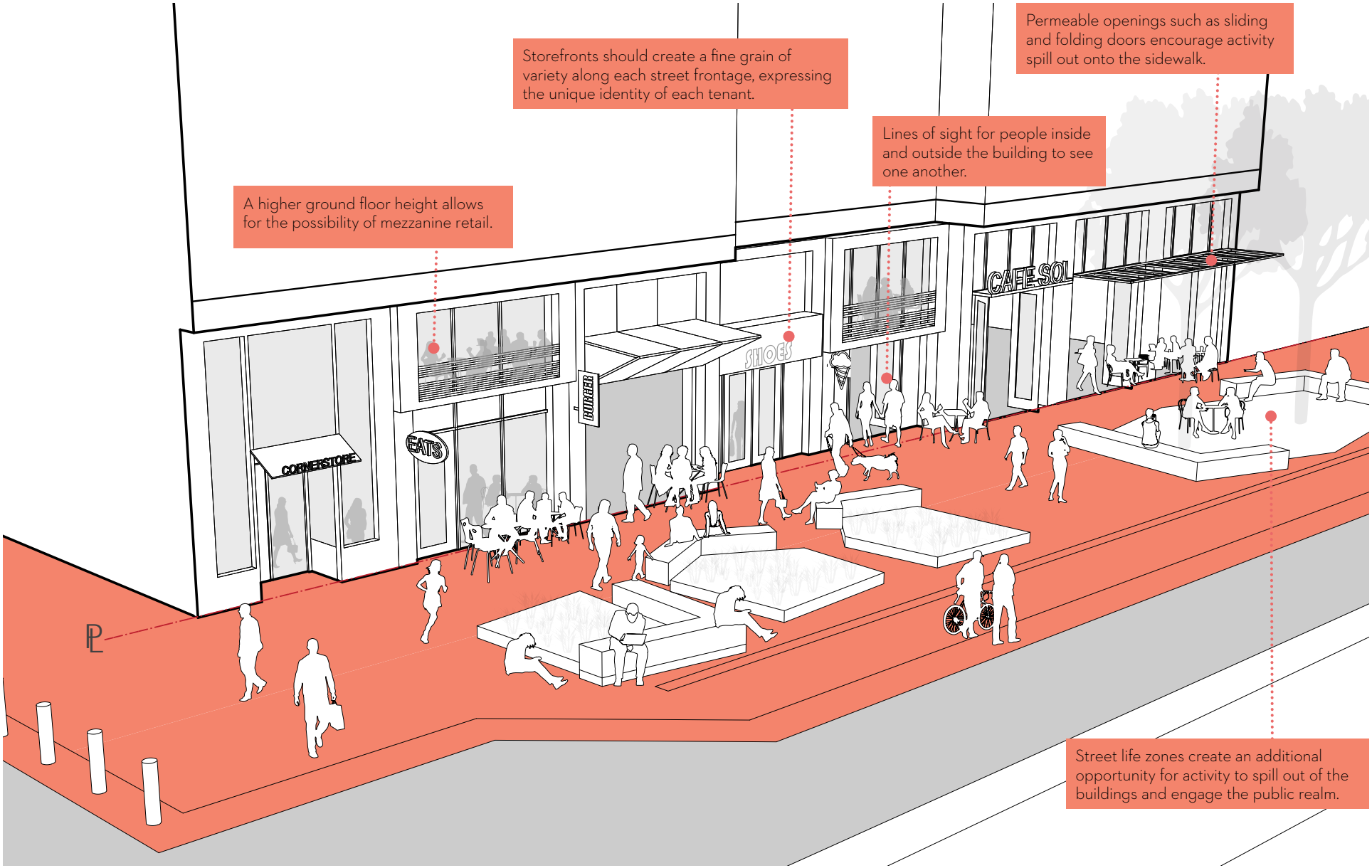


FIGURE 5.6 - High Retail Zone: Section across the Shared Public Way

Active Edge against the building frontage allows indoor life to spill out into the streets. PHOTO: SAN FRANCISCO GIANTS

Permeability creates opportunities for more interaction at the building's edges. PHOTO: PERKINS+WILL



Above is a diagrammatic representation of one way a building frontage in the High Retail Zone could be designed to achieve the goals of vibrant ground floor uses which spill out and activate the public realm.

5.7 PARKFRONT ZONE

Read in conjunction with Section 3.2 - China Basin Park.

The Parkfront Zone represents a high level of activity designed for retail, cafes, restaurants, and entertainment venues, that enliven the Promenade along the built edge of China Basin Park. Uses along this frontage will be excellent locations for outdoor dining, pre-game events, and backdrop for activities at China Basin Park.

The ground floor along the park has the opportunity to spill out into the Park Promenade, activating this edge, and taking advantage of views of the Bay and Ballpark.

The proximity to regional scale events at the Ballpark and China Basin Park mean that food and entertainment uses along this frontage should be designed to anticipate larger crowds of pedestrians.

The frontages for inclusion in the Parkfront Zone are indicated in Figure 5.5 – Ground Floor Frontages. The requirements of the Parkfront Zone are summarized in *Table 5.5 - Ground Floor Frontage Zone Controls*.

GUIDELINES

5.7.1 UPPER LEVEL ACTIVATION

The inclusion of balconies and terraces are encouraged along the streetwall above the ground floor in the Parkfront Zone to take advantage of views to the Bay and Ballpark, and to allow greater programmatic and visual connection between uses in the buildings and the China Basin Park.

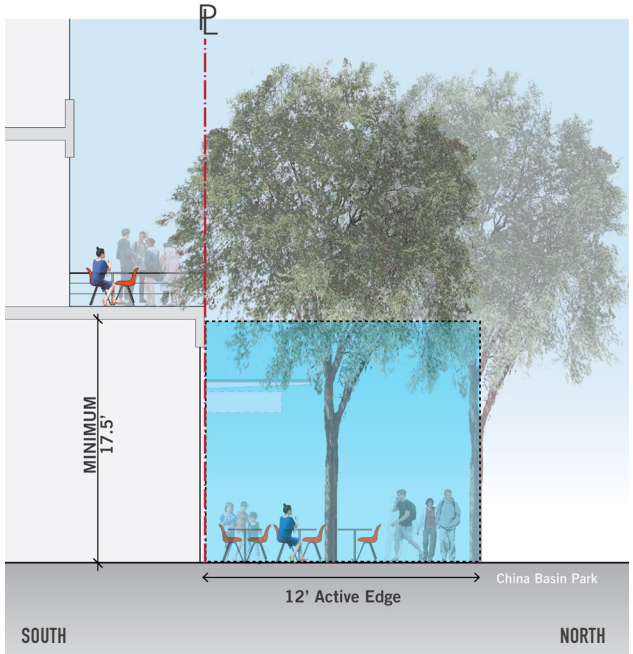
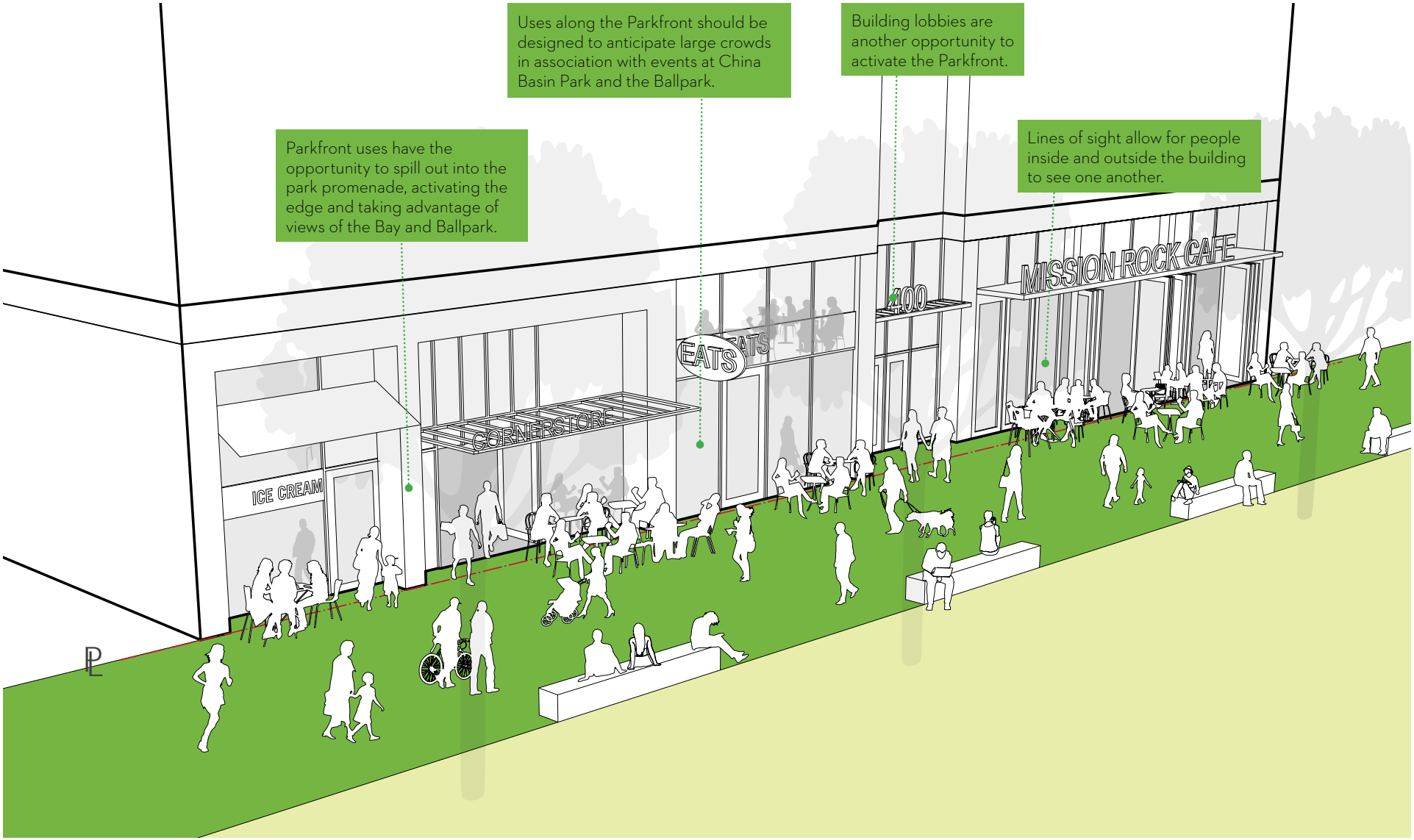


FIGURE 5.7 - Parkfront Zone

Building frontages along the Parkfront should engage the park in interesting and dynamic ways. PHOTO: SAN FRANCISCO GIANTS

Building uses should spill out and activate the promenade.
PHOTO: SAN FRANCISCO GIANTS



Above is a diagrammatic representation of one way a building frontage in the Parkfront Zone could be designed to achieve the goals of vibrant ground floor uses which spill out and activate the public realm.

5.8 WORKING WATERFRONT ZONE

Read in conjunction with Section 4.3 - Terry A Francois Boulevard.

The Working Waterfront Zone is intended to support maritime and production uses, which will benefit by being located near other production uses along Terry Francois Boulevard.

Uses in this zone include but are not limited to light industrial, production, fabrication, manufacturing, and studios for crafts people and artists. It is the goal that this zone creates a flexible framework for a broad variety of uses, and as such the requirements for this zone are intentionally broad.

The frontages for inclusion in the Working Waterfront Zone are indicated in *Figure 5.5 – Ground Floor Frontages*. The requirements of the Working Waterfront Zone are summarized in *Table 5.5 - Ground Floor Frontage Zone Controls*.

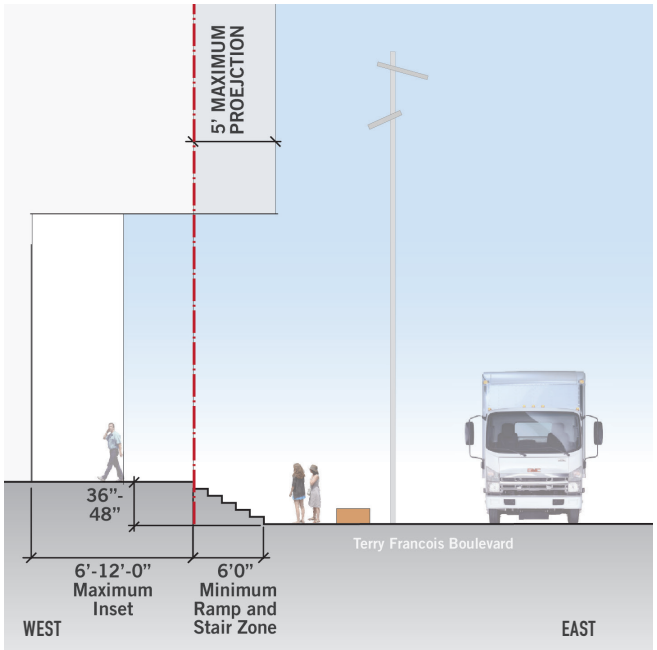
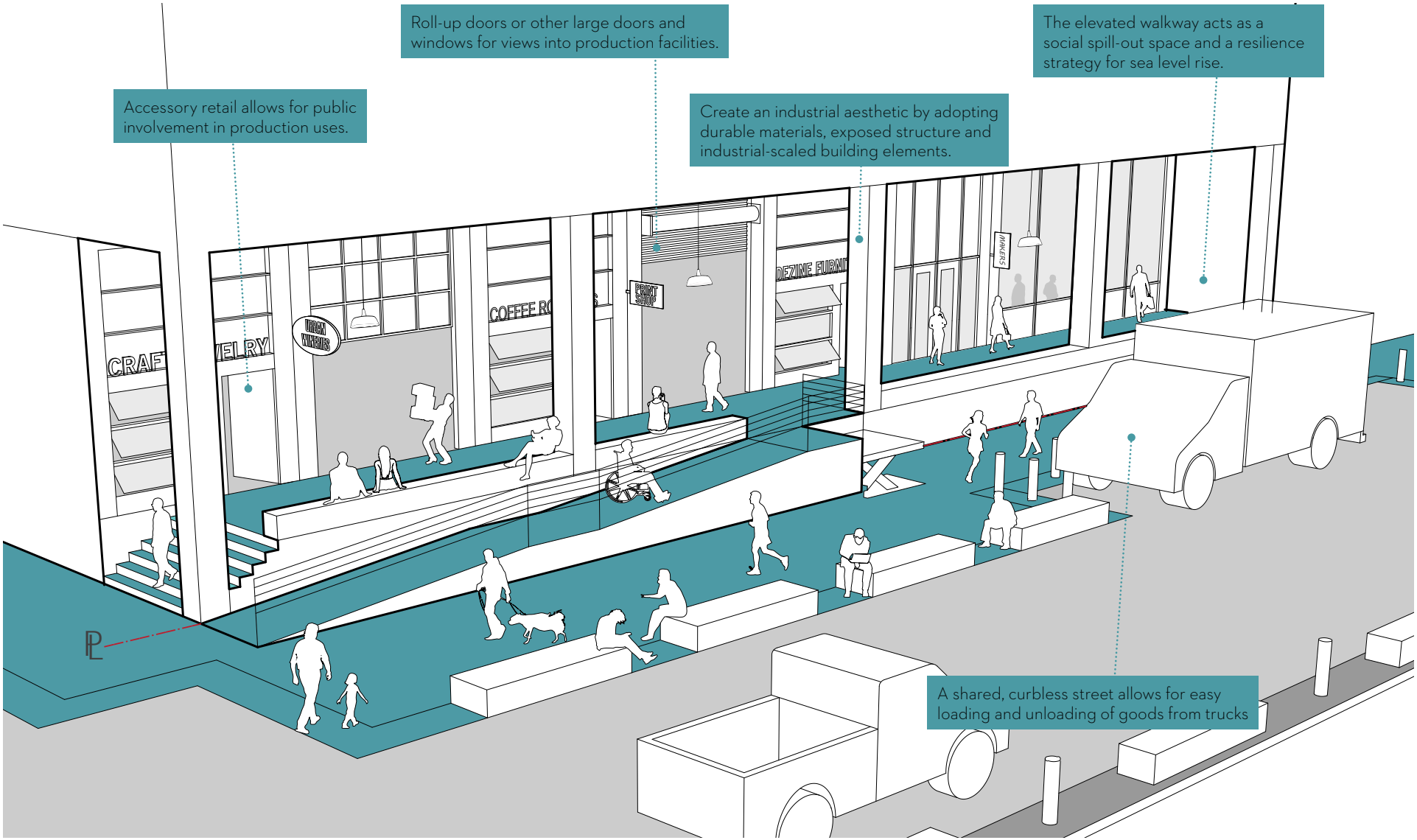


FIGURE 5.8 - Working Waterfront Zone - Elevated Walkway condition

This coffee roastery also sells coffee directly to customers.
CREDIT: SF MADE

Elevated sidewalks support loading activities and also create opportunities for casual interaction. PHOTO: PERKINS+WILL

High ground floor heights and roll-up doors enable production uses. PHOTO: PERKINS+WILL



Above is a diagrammatic representation of one way a building frontage along Terry A Francois Boulevard could be designed to achieve the goals of the working waterfront with an elevated walkway allowing production uses to spill out and activate the public realm.

STANDARDS

5.8.1 GROUND FLOOR USES IN THE WORKING WATERFRONT ZONE

The intent of the working waterfront zone is to create an environment for production uses alongside the waterfront which will support an active industrial area, as well as enlivening the pedestrian experience by providing access to public-facing ground floor uses beyond retail.

To create a vibrant street experience which encourages activities later into the evenings, a mix of uses is allowed in the Working Waterfront at the following ratios:

- Production is intended to be the primary use of the ground floor in the Working Waterfront Zone (which includes accessory retail as described in *Section 1.2.6 - Production*)
- Up to 60 horizontal feet of each block frontage is allowed be occupied by Active Uses which are not accessory to Production Uses.

5.8.2 ELEVATED WALKWAYS

Read in conjunction with *4.3 - Terry A Francois Boulevard*.

The presence of production uses along Terry Francois Boulevard creates an opportunity for the Working Waterfront Zone along Blocks H,I, and J to become a functional area for shared servicing needs. An Elevated Walkway condition will be designed to serve several functions:

- A lift gate incorporated at one end of the Elevated Walkway will allow easy movement of goods off-loaded from trucks, lifted by the shared lift gate, onto the Elevated Walkway and moved easily into storefronts.
- This Elevated Walkway will also act as a social spill-out space for users and visitors to Production storefronts and usable display or working area for the Production uses.
- In the event of sea level rise, this Elevated Walkway ensures that these frontages are at an elevation where they will be protected from flooding.

The height of the Elevated Walkway shall be between 36 inches and 48 inches in height vertical above grade (See *Figure 5.8 - Working Waterfront Zone - Elevated Walkway Condition*).

Elevated Walkways shall be designed to allow for a continuous 6 foot wide pedestrian throughway within the property line, along the building frontage, facilitating shared loading facilities for production uses, as well as providing the opportunity for entry and service of other uses in the building.

Freight lifts must be incorporated into the Elevated Walkway design to enable the vertical movement of large loads.

Ramps and stairs up to 6 feet in width for enhanced access to loading docks are allowed to be built as an encroachment within the public right of way, as described in *Section 4.3 - Terry A Francois Boulevard*.

Each block shall provide at least three points of access to the Elevated Walkway, one of which must be ADA compliant.

GUIDELINES

5.8.3 PRODUCTION TENANT NEEDS

Table 5.8.3 - Production Tenant Needs provides a basic understanding of design specifications for different user types. This is not an exhaustive list, but is meant to illustrate the difference in the needs of a production tenant as opposed to other, more common ground floor land uses.

This table is provided as information for designers and developers. It is not necessary to show compliance with this table in a planning application.

5.8.4 INDUSTRIAL AESTHETIC

To create an industrial aesthetic, the use of durable materials, exposed structure, and industrial-scaled building elements are encouraged.

5.8.5 LARGE DOORS

Roll-up doors or other large doors that provide a large opening are preferred. They help facilitate loading and allow for lines of sight into production facilities for passers-by. Where possible these doors should have translucent or vision panels incorporated to reinforce the visual connection between the production space and the public realm. (*See also Section 5.7.7 Lines of Sight*)

GUIDELINES

TABLE 5.8.3 PRODUCTION TENANT NEEDS

Based on a study by SF Made, this table outlines the general needs of different kinds of industrial tenants. A large majority of users fall into the first category of needs, with fairly minimal needs above and beyond the typical retail or commercial space. (This table is presented here as information for designer and developers. It is not necessary to show compliance with this table in a planning application.)

USER TYPE	CRAFT JEWELRY, PRINT SHOPS, CLOTHING & APPAREL MAKERS	ARTISAN FOOD PRODUCERS & COMMERCIAL KITCHENS	FURNITURE / PROTOTYPING & ADVANCED MANUFACTURERS	URBAN WINERIES	COFFEE ROASTERS
TYPICAL PROGRAM AREA (sq ft)	500 sf to 2,500 sf	500 sf to 3,000 sf	5,000 sf to 20,000 sf	5,000 sf to 20,000 sf	5,000 sf to 20,000 sf
MINIMUM CLEAR CEILING HEIGHT	17.4 feet and above	17.4 feet and above	17.4 feet and above	17.4 feet and above, 30 feet or higher preferred for stacking	17.4 feet and above
MINIMUM POWER NEEDS	100a - 200a at 120/240V 3PH	200a - 800a at 120/240V 3PH	300a - 1,000a at 120/240V 3PH (200a - 400a at 480V preferred)	200a - 400a at 120/240V 3PH	400a at 120/240V 3PH (400a at 480V preferred)
MINIMUM GAS NEEDS	1"	2"	1.5"	None	2"
MINIMUM VENTING NEEDS	Equipment based - side venting with charcoal filters / scrubbers as needed	Grease hood exhaust vent 250 CFM / lineal foot of hood General exhaust for storage	Equipment based - side venting OK with charcoal filters / scrubbers	None	12" vertical vent, afterburner (must be upblast)
MINIMUM WATER NEEDS	1.5" main line minimum (Example: slop sink)	1.5" main line (separate from fire water)	2" main line	2" main line with water filtration; both hot and cold water	2" main line
MINIMUM DRAIN / SEWER NEEDS	Typical sink drain	6" Main line	Floor drains (on occasion)	Area drains and trench drains (tenant fit-out preferred)	Floor drains throughout
MINIMUM HVAC NEEDS	HVAC preferred, not required	Make up air 90% hood exhaust CFM	Preferred, not required	Climate controlled	Climate controlled
MINIMUM SHIPPING / RECEIVING NEEDS	Ground delivery roll up doors preferred	Gate level	Grade level* roll up doors, palette jack with freight lift	Grade level* roll up doors, palette jack with freight lift	Grade level* roll up doors, palette jack with freight lift
ACCESSORY RETAIL	Highly preferred, can be shared	Highly preferred, can be shared	Highly preferred, can be shared	Highly preferred on site	Highly preferred on site

*In the case of Mission Rock, "grade level" here refers to the elevated sidewalk condition which can be accessed via freight lift or ramp.

5.9 NEIGHBORHOOD STREET ZONE: RESIDENTIAL

Read in conjunction with Chapter 4: Streets.

The Neighborhood Street Zone applies to frontages which have a lower intensity of activity, generally front onto streets that are quieter in character, and serve to make up the neighborhood feeling at Mission Rock.

Individual residential entries and stoops are an effective way to activate the street and create greater opportunity for social interaction. At the same time, they should provide a sense of privacy and comfortable social distance from the sidewalk.

The frontages for inclusion in the Neighborhood Street Zone are indicated in *Figure 5.5 – Ground Floor Frontages*. The requirements of the Neighborhood Street Zone are summarized in *Table 5.5 - Ground Floor Frontage Zone Controls*.

STANDARDS

5.9.1 GROUND FLOOR ENTRIES

Ground floor residential units shall have entries with direct, individual access onto a public right of way, open space, or easement. Residential units are required to provide a stoop to create a social distance from the street; home office units are not required to have stoops and may be entered at grade.

5.9.2 GROUND FLOOR DESIGN

In the neighborhood street zone, ground floor residential shall be designed in compliance with the City of San Francisco's Guidelines for Ground Floor Residential Design (published on 09/2016, available at http://default.sfplanning.org/publications_reports/Guidelines_for_Groundfloor_Residential_Design.pdf)

5.9.3 PLANTING IN THE ACTIVE EDGE

Permanent planting that does not impede a clear path of travel is allowed in the Active Edge of the Neighborhood Street Zone.

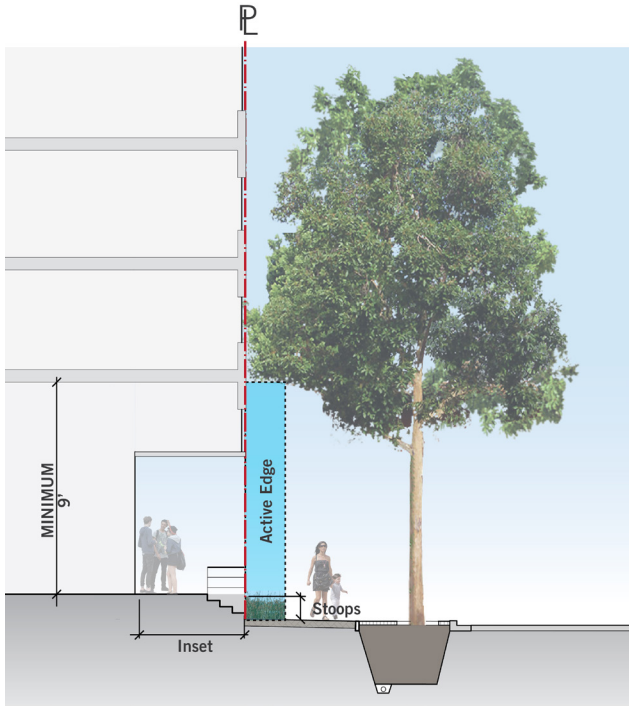
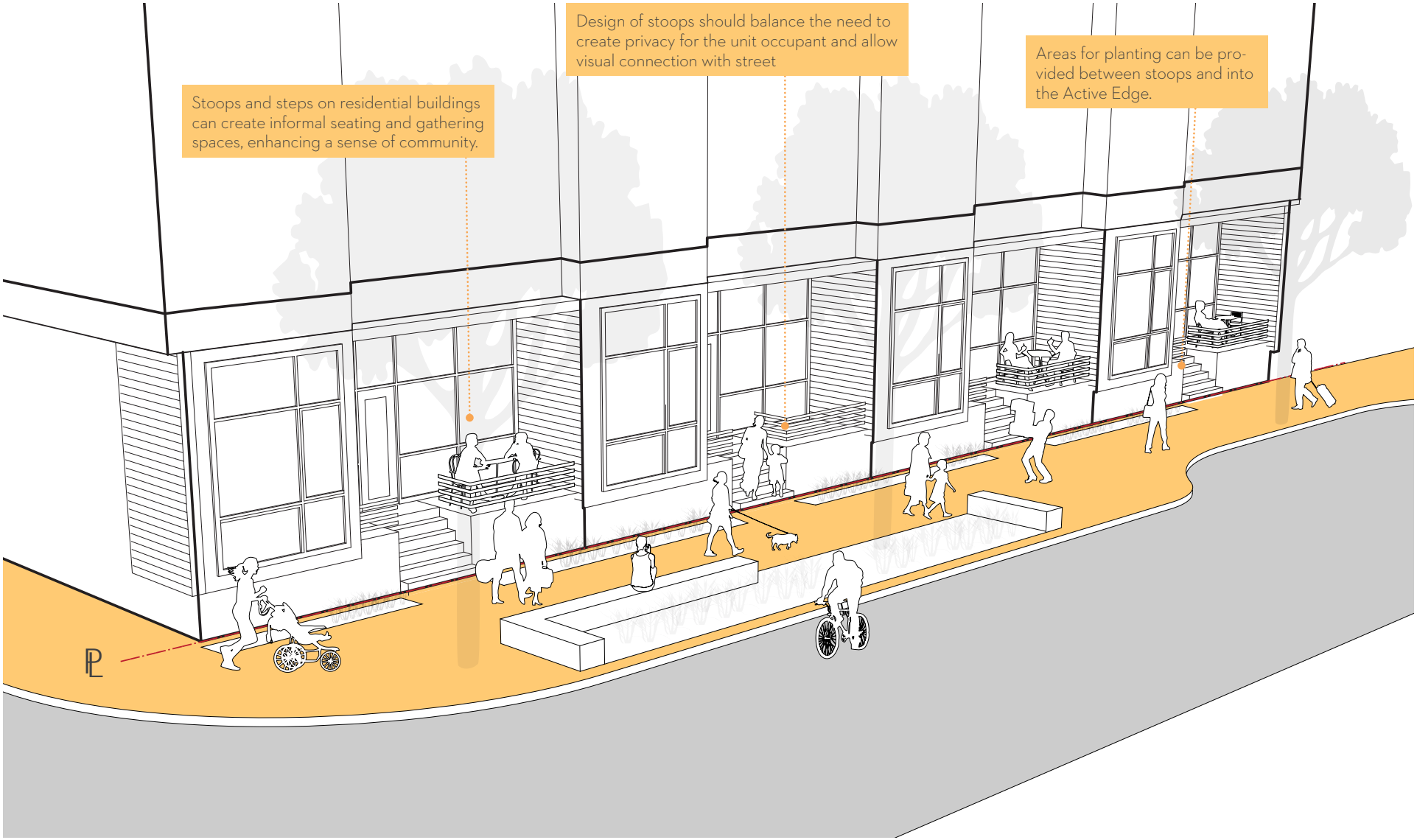


FIGURE 5.9 - Neighborhood Street Zone Section showing a residential stoop.

Stoops with a slightly raised and inset entry create a comfortable social distance between the unit and the street. PHOTO: PERKINS+WILL



Above is a diagrammatic representation of one way a building frontage in the Neighborhood Street Zone: Residential could be designed to achieve the goals of habitable stoops which are a comfortable social distance from the activity of a neighborhood street.

5.10 NEIGHBORHOOD STREET ZONE: NON-RESIDENTIAL

Read in conjunction with Chapter 4 - Streets.

The Neighborhood Street Zone applies to frontages which have a lower intensity of activity, generally front onto streets that are quieter in character, and serve to make up the neighborhood feeling at Mission Rock.

There are many different uses allowed in the neighborhood street zone. Ground floor frontages of commercial buildings should provide active uses which create variety and interest for the pedestrian realm, and contribute eyes on the street.

The frontages for inclusion in the Neighborhood Street Zone are indicated in *Figure 5.5 – Ground Floor Frontages*. The requirements of the Neighborhood Street Zone are summarized in *Table 5.5 - Ground Floor Frontage Zone Controls*.

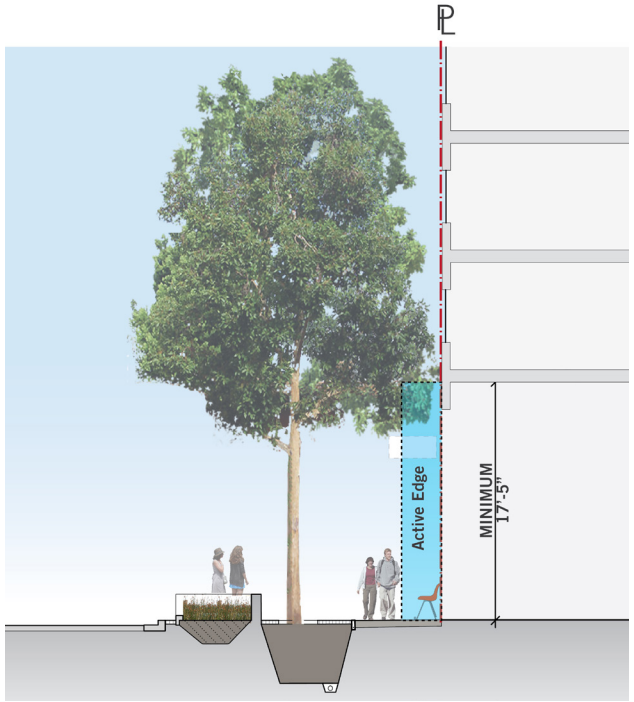
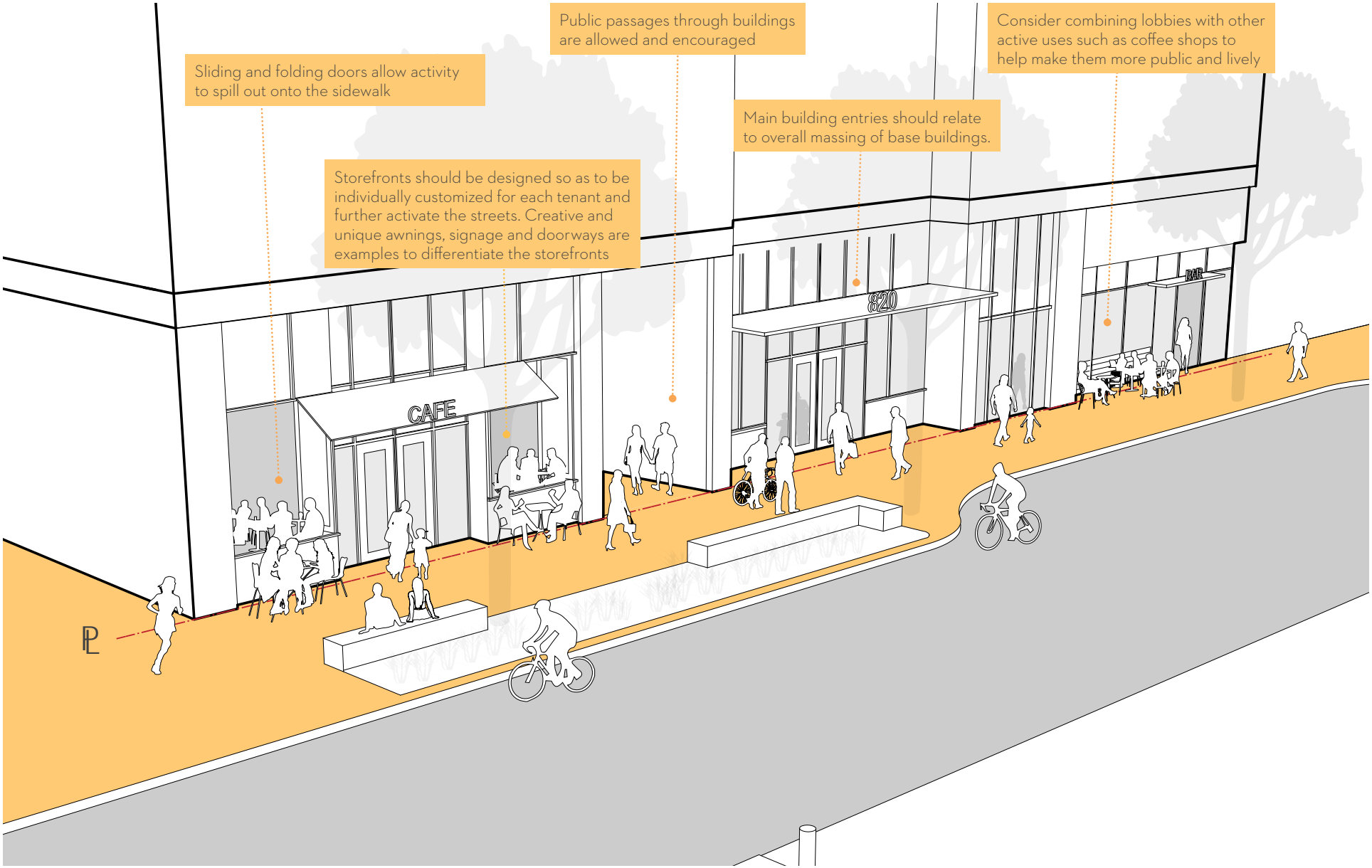


FIGURE 5.10 - Neighborhood Street Zone Section showing a non-residential frontage.

Small shops such as this coffee kiosk can also help to activate neighborhood streets. CREDIT: LIVABLE CITY

Neighborhood-serving amenities such as grocery stores and dry cleaning are used by workers and residents alike. CREDIT: WHOLE FOODS

Cafeterias, gyms and other amenities are good options to activate the lower floors of commercial buildings. CREDIT: FLY WHEEL



Above is a diagrammatic representation of one way a building frontage in the Neighborhood Street Zone: Non-Residential could be designed with a variety of ground floor uses—from commercial lobbies to retail—to activate and enliven neighborhood streets.

06

BUILDING FORM

Chapter 6, "Building Form" expands upon the Mission Rock strategy of shaping buildings to define and enhance a walkable pedestrian experience, by putting parameters around the height and scale of buildings, and setting aspirations for how these buildings will contribute to the character of San Francisco's cityscape.

A building "envelope" is the result of a set of three-dimensional controls within which buildings will be designed. The envelopes have been set in relationship to sun, shadow, wind, views, and framing the public realm.

The urban form of Mission Rock works to create a varied urban composition of well-designed buildings that enrich and enliven the city, orient the user, provide a sense of direction and distinguish Mission Rock as a neighborhood which defines the north-east corner of Mission Bay.

This chapter addresses controls for the building envelope, building height, base buildings, upper buildings, design intent for taller buildings, and environmental comfort.

6.1 Building Envelope 150
6.2 Building Height 151
6.3 Base Building 153
6.4 Upper Building 157
6.5 Design of Taller Buildings 161
6.6 Environmental Comfort 164

RELATED CHAPTERS: The Ground Floor guidelines shall also be read in conjunction with *Chapter 6: Building Form* and *Chapter 7: Building Design*. Ground Floor controls shall also be viewed in conjunction with Appendix: Block Standards. This chapter refers to *Chapter 2: Public Realm*, describing integration of the ground floor and the public realm.

6.1 BUILDING ENVELOPE

Mission Rock will be a neighborhood with a mix of building types and a variety of building heights. The establishment of specific building envelopes set out maximum development dimensions for each block. These three-dimensional building envelopes, which constrain the shape of buildings, are quite specific. The envelopes balance the following goals:

- Create comfortable urban spaces;
- Bring an appropriate intensity of uses alongside parks and transit;
- Craft an appealing urban form on the city skyline;
- Allow views across the site to the San Francisco Bay;
- Ensure that open spaces have ample sunlight and reduce the impact of wind on the public realm;
- Set building sizes and dimensions that are economically viable; and
- Promote a diversity of building form that invites a diversity of building uses and users.

At Mission Rock, the building envelope is broken into two parts: the Base Building and the Upper Building, as illustrated in *Figure 6.1 - Components of the Building Envelope*. Due to the critical nature of how buildings meet the public realm, the ground floor has been given its own chapter in these guidelines (see *Chapter 5: Ground Floor*).

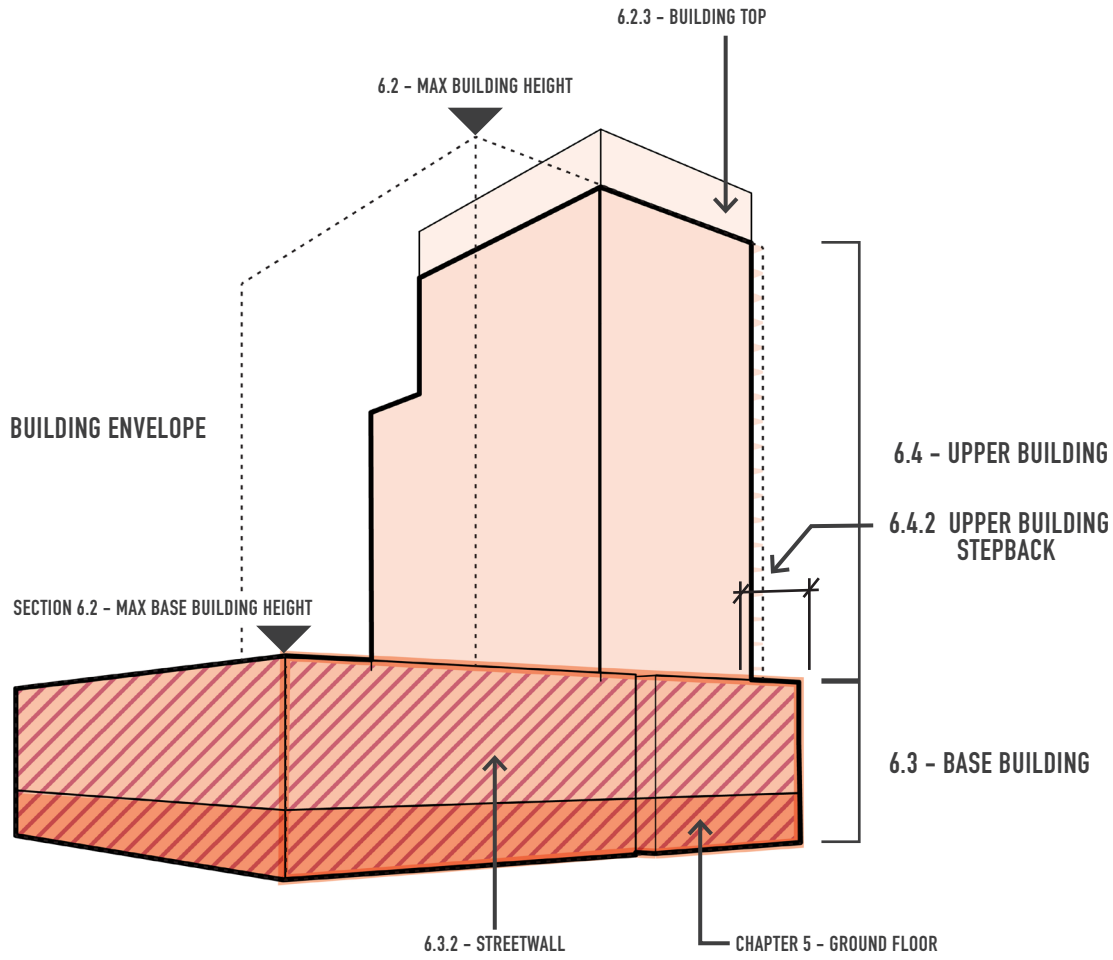


FIGURE 6.1 - Components of the Building Envelope

6.2 BUILDING HEIGHT

Building height controls indicate the maximum height that can be built on each block. The height controls for the base building set the range of allowable heights for the streetwall, while the maximum building heights set the maximum height for each upper building.

MAXIMUM HEIGHT

- 40' Maximum Base Building Height
- 60' Maximum Base Building Height
- 90' Maximum Base Building Height
- 100' Maximum Base Building Height
- Maximum Building Height Zone
- 120' Maximum Building Height
- *90'/120' For Flex Blocks: Maximum Building Height is 90 feet if Commercial or 120 feet if Residential.
- X Minimum Stepback Required

Note that solid colors refer to the base buildings and diagonal hatches refer to upper buildings.

Refer to Section 6.2.2 for building height measurement.

Detailed block plans can be found in the Appendix.

FIGURE 6.2 - Maximum Height Plan

STANDARDS

6.2.1 MAXIMUM HEIGHT

The height of buildings shall not exceed the applicable maximum height as shown on *Figure 6.2 - Maximum Height Plan*.

Note that *Figure 6.2 - Maximum Height Plan* controls the maximum height of the building, as well as the specific heights for the base buildings. Read in conjunction with *Section 6.1 - Building Envelope*. Also see *Appendix A* for three dimensional drawings of envelopes.

6.2.2 MEASURING HEIGHT

Because the majority of the site will be elevated to adapt to sea level rise, the finished grade for portions of Mission Rock will be set at a higher elevation than pre-development grade, as determined by the Mission Rock Infrastructure Plan.

Maximum **building** heights are to be measured from the highest point of finished grade (referenced above) along the property line, up to the highest point of the uppermost structural slab in the case of a flat roof; up to the average height of the rise in the case of a pitched or stepped roof, or similarly sculptured roof form.

Maximum **base building** heights are to be measured from highest point of finished grade (referenced above) along the property line to the highest point on the uppermost structural slab of the base building in the case of a flat roof, and the average height of the rise in the case of a pitched or stepped roof, or similarly sculptured roof form of the base building.

6.2.3 BUILDING TOPS

For base buildings, wall plane extensions or parapets may extend up to 5 feet vertically above the maximum base building height.

The unoccupied tops of upper buildings may extend up to 20 feet vertically above the maximum building height, except on Block F, where the building top may extend up to 40 feet vertically above the maximum building height.

See *Table 6.4 Upper Building Bulk Controls*. Read in conjunction with *Section 6.5 - Design of Taller Buildings*.

6.2.4 ROOFTOP ELEMENTS

The below listed rooftop elements may project above the maximum building height limit, with the condition that:

- On base building: Must step back at a minimum ratio of 1.2 feet in a horizontal dimension from the streetwall for every 1 foot that they exceed the maximum height limit.
- On upper building: Must be screened or enclosed within the building top.

The following rooftop elements are allowed to project above given height limits:

- On upper building, mechanical enclosures and sustainable infrastructure such as photovoltaic panels, windmills, or fog catchers and greenhouses (up to 20 feet).
- On base building mechanical enclosures and sustainable infrastructure such as photovoltaic panels, windmills, or fog catchers (up to 20 feet) and common use structures (up to 20 feet) including, but not limited to: community rooms and kitchens, recreational facilities, and greenhouses. Common use structures may not exceed 25% of the roof area.
- Non-occupied architectural features on the upper building may extend up to 20 feet vertically above the maximum permitted building height, except on Block F, where the building may extend up to 40 feet vertically above the maximum permitted building height.
- Railings, planters and visually permeable building elements no greater than 48 inches above the roof are exempt from step-back requirements.

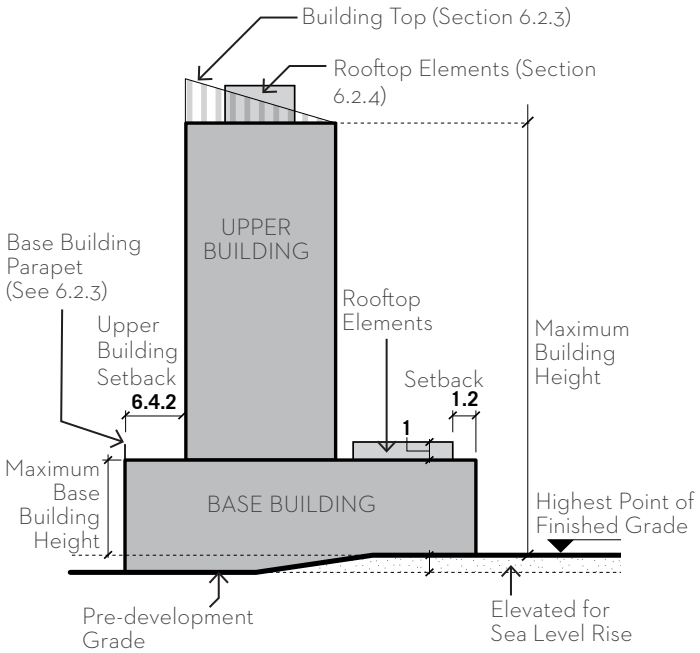
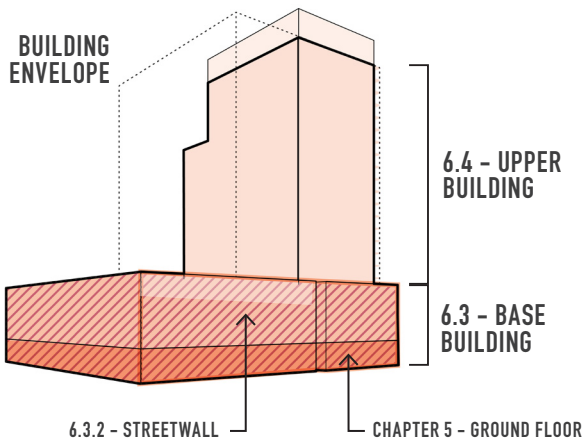


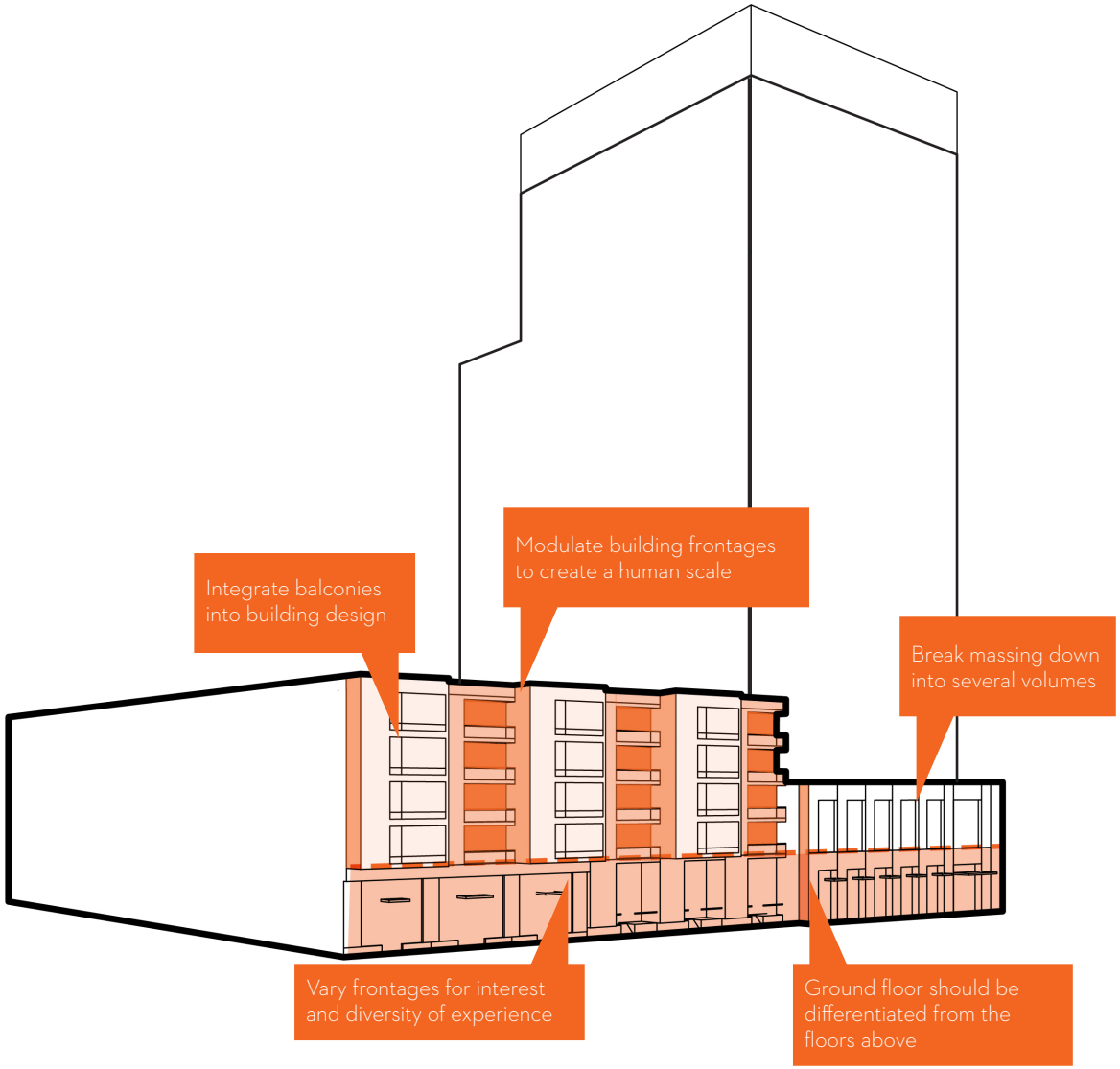
FIGURE 6.2.2 - Measuring Height

6.3 BASE BUILDING

Base buildings influence the individual character of the streets and open spaces which they frame. The streets and squares at Mission Rock are envisaged as a series of 'urban rooms' defined by streetwalls that create a sense of enclosure supporting the activity and life within these spaces. Each building should be designed with the pedestrian experience foremost, paying specific attention to the way the building meets the ground so as to support the design approach described above, and as detailed in *Chapter 5: Ground Floor.*

This section is to be read in conjunction with *Chapter 5: Ground Floor* which outlines the design approach to the ground floor of all buildings.





STANDARDS

6.3.1 BASE BUILDING MASSING

The base building is the lower portion of the envelope that creates the streetwall, which defines and enlivens the pedestrian experience of the street and frames comfortable urban streets.

This area is taken as the property line extended upwards to the maximum base building height limit as described in *Figure 6.2 – Maximum Height Plan*.

6.3.2 STREETWALL AREA CALCULATION

The streetwall is defined as that portion of the building envelope which directly fronts onto either a public right-of-way or abutting open space. Streetwall standards and calculations apply to all sides of a building that front onto a public right of way or open space.

A building's actual streetwall area is calculated as a percentage of the sum of the total area of those portions of the building, from grade up to the full height of the base building that are built to the property line, divided by the total area of property frontage from grade up to the full height of the base building. See also *Figure 6.3.2 - Streetwall Area Calculation*.

A) Minimum Streetwall Area

The minimum streetwall requirement for all building frontages at Mission Rock is 70%. The remainder of the frontage can be set back at any distance from the property line.

B) Minor Streetwall Variations

Minor variations along the streetwall are encouraged and count towards the streetwall area calculation. Minor variations include:

- Recessed building entries up to two habitable floors in height;
- Recessed balconies and seating areas;
- Vertical recesses, notches, or massing reveals up to 3 feet deep

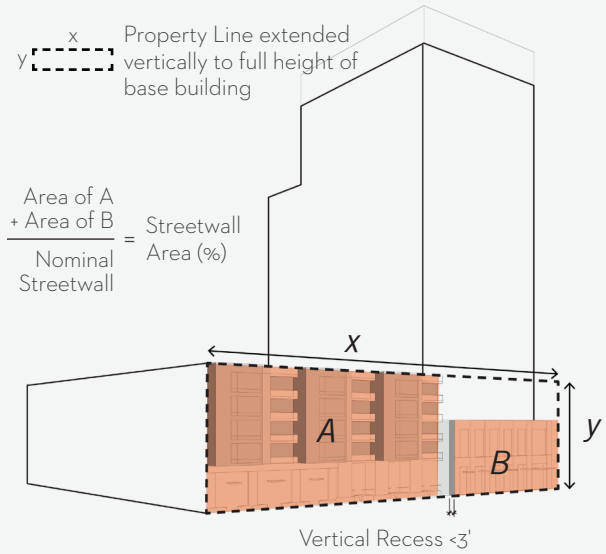


FIGURE 6.3.2 - Streetwall Area Calculation

6.3.3 STREETWALL ENCROACHMENT

At the second floor and above, enclosed or unenclosed building area may encroach into the public right-of-way up to a maximum of 5 feet from the property line on frontages facing Terry A Francois Blvd and China Basin Park, and up to 3 feet on all other frontages.

Encroachments may cover a maximum aggregate of 40% of the area of each streetwall frontage.

For unenclosed encroachments such as balconies, the encroachment area shall be calculated as that area which is less than 75% transparent or permeable. For example, the slab edge of a balcony counts toward the calculation of encroachment area, but a glass or metal picket balustrade does not. See also *Figure 6.3.3 - Streetwall Encroachments*.

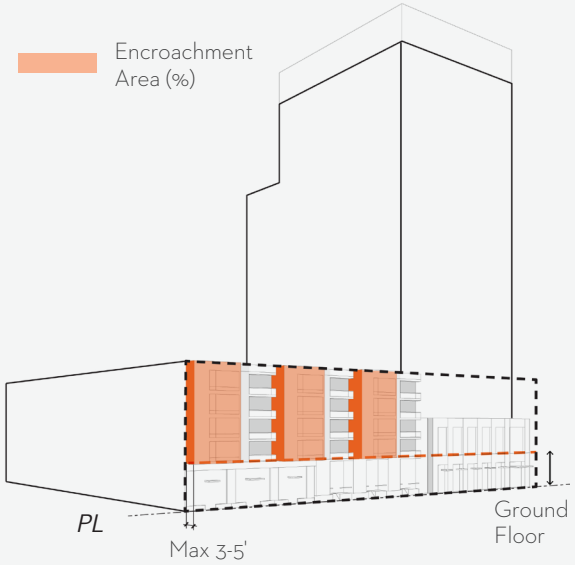
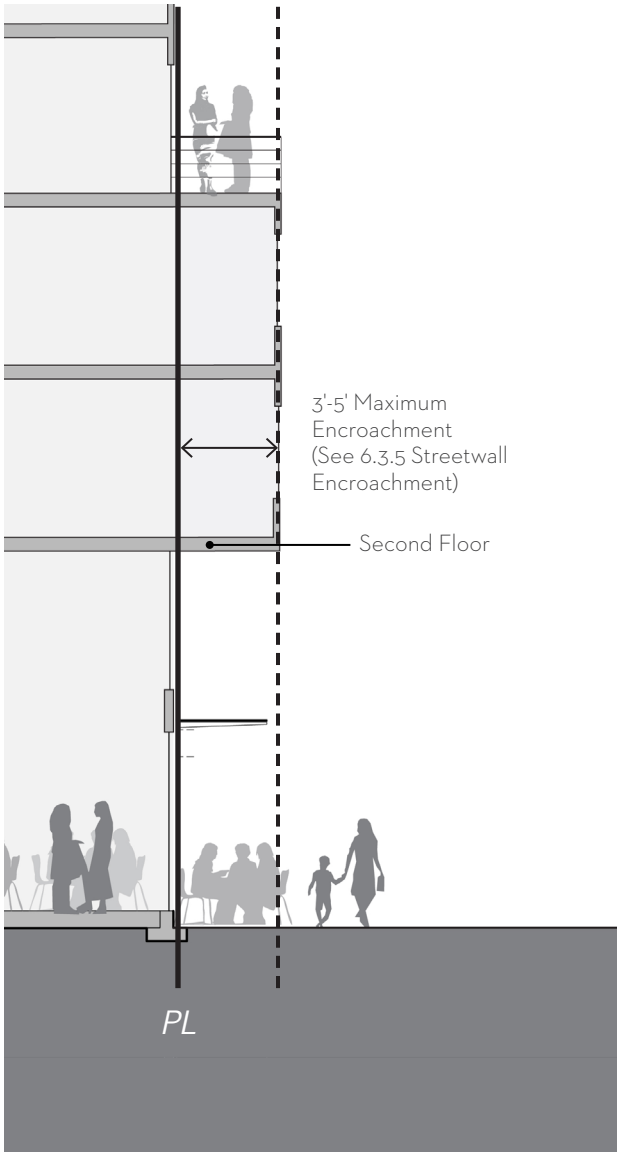


FIGURE 6.3.3 - Streetwall Encroachment



On typical streets, an encroachment of up to 3 feet is allowed, starting at the second floor and above.

Above is an example of how to calculate the encroachment area with a variety of bays and balconies, demonstrating both enclosed and unenclosed encroachments. Shaded faces would be included in encroachment area calculation. PHOTO: PERKINS+WILL

GUIDELINES

6.3.4 BASE BUILDING MODULATION

The mass of the base building should be broken down into several smaller masses. These massing moves should relate to the overall building design, design of the upper building, and to other prominent building elements such as fenestration patterns and building entries.

Requirements for base building modulation are further described in *Section 7.2.1 – Residential Building Modulation* and *7.3.1 - Commercial Building Modulation*.

6.3.5 STREETWALL CHARACTER

The length of each streetwall should be varied and articulated to create interest and diversity of experiences, forms and materials along public ways. Variety is purposely sought in order to avoid repetitive or over-sized buildings and provide visual interest.

6.3.6 VERTICAL CONTINUITY

There should be a relationship between the upper and base building which gives a sense of the upper building coming to the ground. A similar palette of materials, colors, and fenestration should continue from upper building to base building, so as to create a unified composition. Care should be taken to create a pedestrian scale at the base. Read in conjunction with *Section 6.4.2 - Stepback of Upper Building*.

6.3.7 KEY CORNERS

The Northwest corner of Block A and the Southeast corner of Block H are highly visible on approach to the site, and should have special architectural detailing which is appropriate to their prominent locations.

Building streetwalls should be broken down into discrete masses which create variety and interest. CREDIT: JEMS ARCHITEKCI

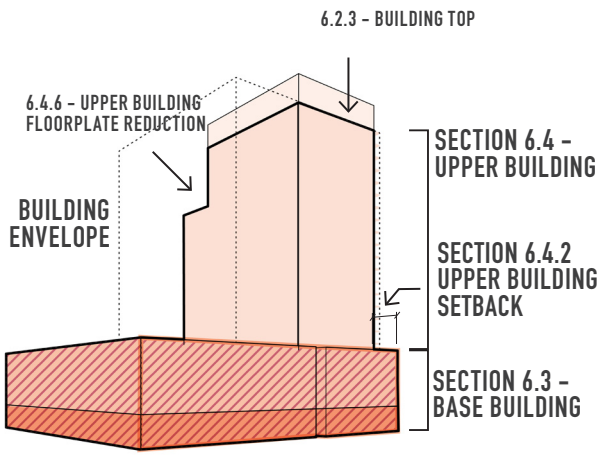
Key corners at Mission Rock should be marked with special massing and design features. PHOTO: PERKINS+WILL

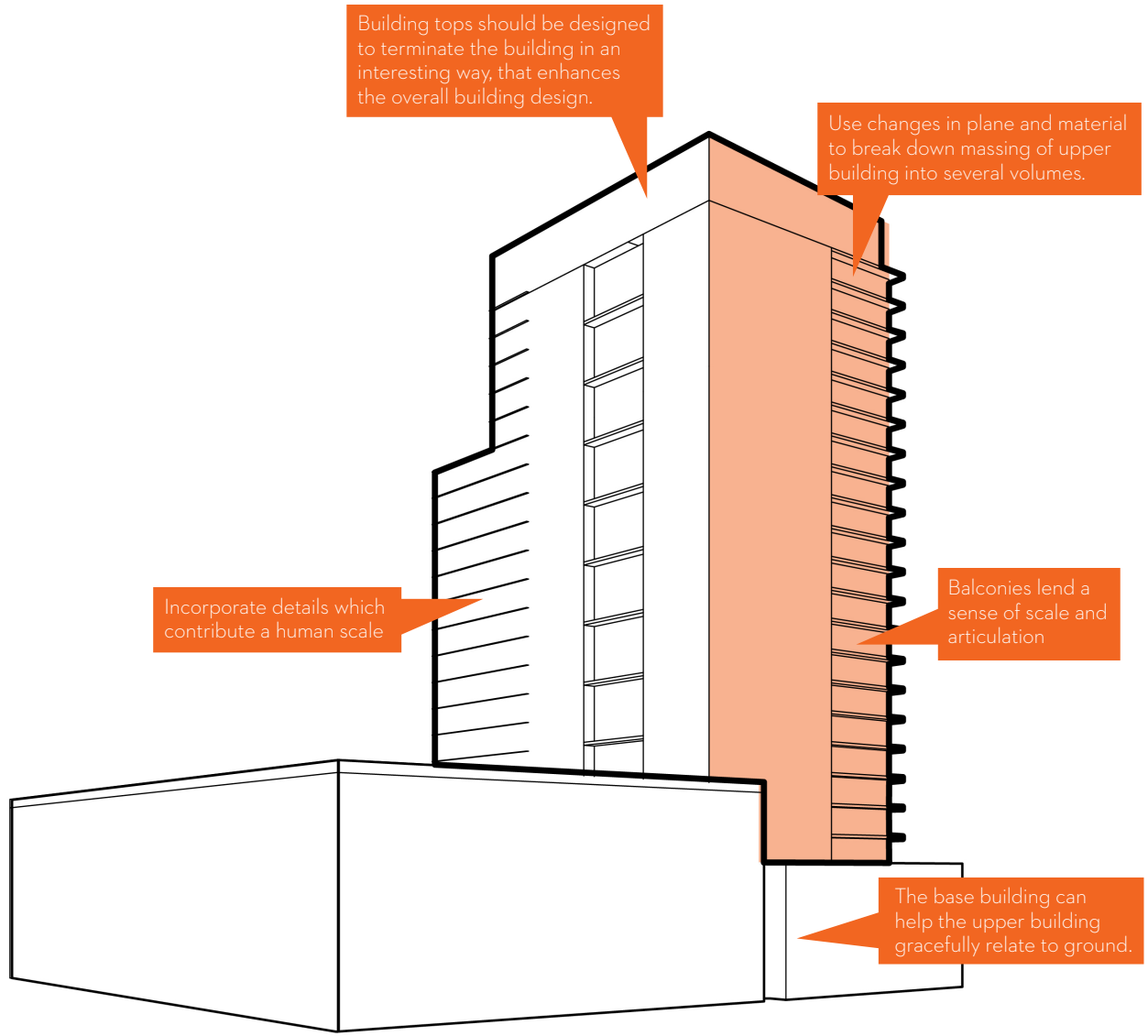
This image depicts a single building, the massing of which has been broken down with vertical recesses, projections, different kinds of balconies (inset and projecting), and changes in material so that it looks like several smaller buildings. PHOTO: PERKINS+WILL

6.4 UPPER BUILDING

The upper building is the portion of the building which rises above the base building. In many cases this part of the building envelope steps back from the property line to reduce the presence of a building's full height on the street, reinforce the streetwall at a discernible height, and in some cases to reduce or mitigate the impact of wind to ensure a more comfortable sidewalk experience.

Within the upper building envelope, the bulk of the building is constrained by controls for maximum floorplate sizes, and maximum diagonal and plan dimensions, while building tops sculpt the form of the building and contribute to a unique skyline. Controls for each of these elements are found in this section.





STANDARDS

6.4.1 UPPER BUILDING MASSING

The upper building is defined as the portion of the building which rises above the maximum base building height, up to the total building height.

The upper building massing must be located within the hatched zone indicated on *Figure 6.2 – Maximum Height Plan*, and constrained by the given stepback dimensions as well as the bulk controls in *Table 6.4 – Upper Building Bulk Controls*.

6.4.2 STEPBACK OF UPPER BUILDING

In various places, the upper building is required to be stepped back from the streetwall for the purposes of mitigating wind, and visually reinforcing the streetwall along these frontages. The minimum stepback is indicated in *Figure 6.2 - Maximum Height Plan*

On 3rd Street the stepback requirement for the upper building can be reduced to 5' where the design meets the following criteria:

- Does not measurably increase the amount of wind on the adjacent public realm, including impacts on surrounding building frontages, AND;
- Visually reinforces the streetwall through a change in material, transparency, or change in plane at or below the maximum base building height.

6.4.3 UPPER BUILDING MAXIMUM AVERAGE FLOORPLATE

The maximum average floorplate size for the upper building is defined as the maximum size of the sum of all the upper building floorplates, divided by the number of floors in the upper building.

This calculation excludes those floors which are required to be reduced as described in *6.4.6 - Floorplate Reduction*.

The maximum average floorplates are given for each block in *Table 6.4 – Upper Building Bulk Controls*.

6.4.4 UPPER BUILDING MAXIMUM PLAN DIMENSION (RESIDENTIAL ONLY)

The maximum plan dimension of a residential upper building is the greatest plan dimension parallel to the longest side of the building at any given level of the upper building as illustrated in *Figure 6.4.4 - Maximum Plan Length and Diagonal Length*.

Maximum plan dimensions are given for each block in *Table 6.4 – Upper Building Bulk Controls*.

6.4.5 UPPER BUILDING MAXIMUM DIAGONAL DIMENSION (RESIDENTIAL ONLY)

The maximum diagonal dimension of a building or structure is the greatest horizontal distance between two opposing points at any level of the upper building as illustrated in *Figure 6.4.4 - Maximum Plan Length and Diagonal Length*.

Maximum diagonal dimensions are given for each block in *Table 6.4 – Upper Building Bulk Controls*.

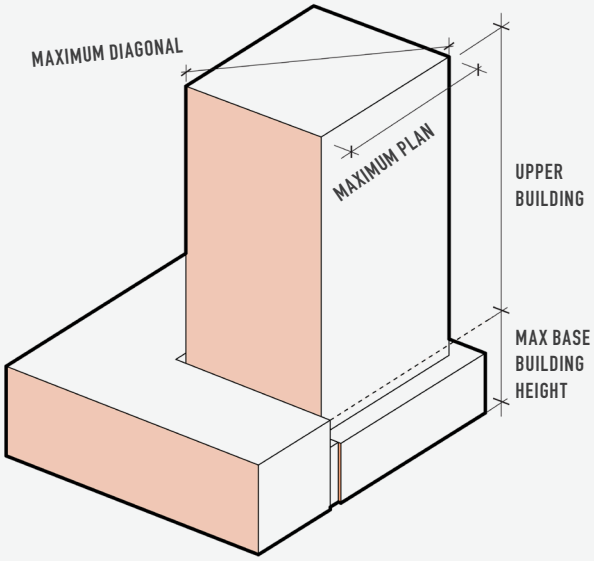


FIGURE 6.4.4 - Maximum Plan Length and Diagonal Length

STANDARDS

6.4.6 UPPER BUILDING FLOORPLATE REDUCTION

For buildings over 160 feet in height, sculpting of the upper building helps to create visually pleasing, elegant forms that reduce in bulk as they rise toward the sky.

Requirements for reducing the floorplate of the upper building are identified in *Table 6.4 – Upper Building Bulk Controls* and illustrated in *Figure 6.4.6 - Floorplate Reduction*.

The percentage reduction is calculated as the average of all of the reduced floorplates divided by the average of all the floorplates without a reduction.

For example, Block A is required to reduce the uppermost five floors by 25%. Taking the maximum average floorplate of 12,000 square feet, the five uppermost floors will be 9,000 square feet each, or the equivalent of 45,000 square feet spread across the uppermost five floors.

While the floorplate reduction is diagrammed here as a step in the building massing, the reduction can take any form, including but not limited to: a single step, several steps, tapering, and so on.

Floorplate reductions shall result in a reduction in the maximum building diagonal for the subject floors, and may not be achieved by means of inset or notching such that the diagonal is not reduced. *Figure 6.4.7 - Examples of Floorplate Reduction* show acceptable and unacceptable ways of applying the guidelines.

For buildings above 200 feet in total height, no tapering of the upper building is necessary if the average floorplate of the entire upper building is 11,000 square feet or less.

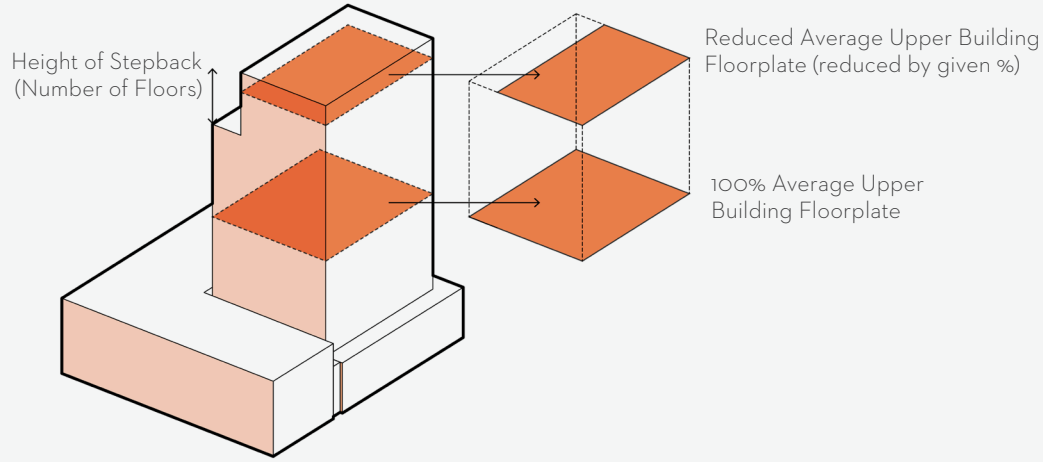


FIGURE 6.4.6 – Floorplate Reduction

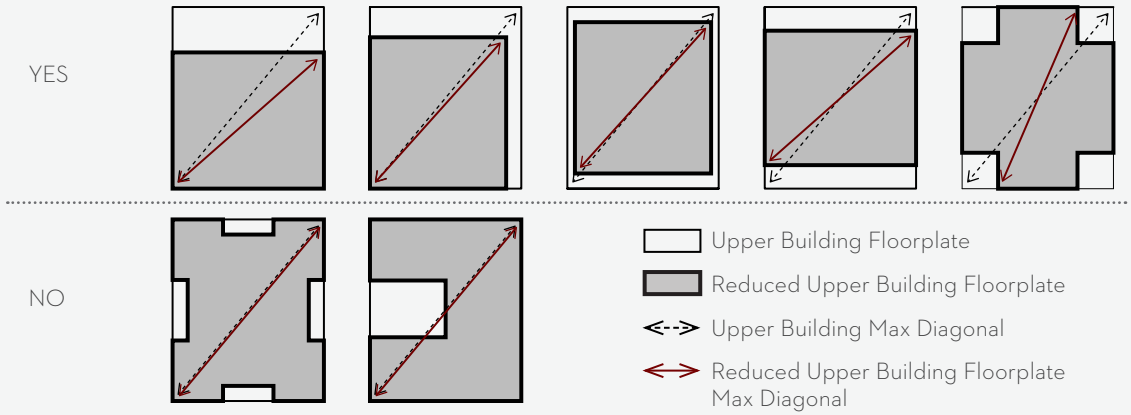


FIGURE 6.4.7 – Examples of Floorplate Reduction

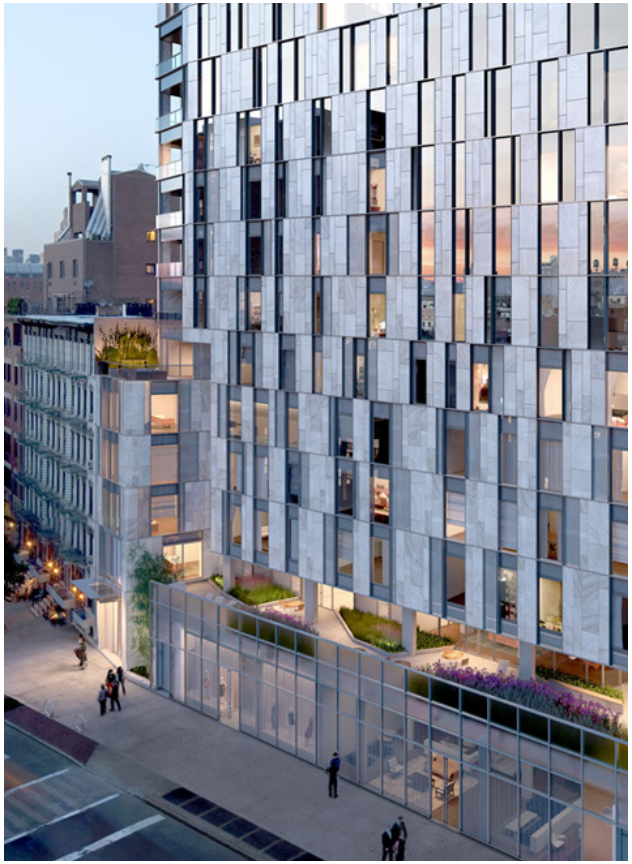
STANDARDS

TABLE 6.4 UPPER BUILDING BULK CONTROLS

BLOCK	LAND USE (SECTION 1.1)	UPPER BUILDING MAX PLAN DIMENSION	UPPER BUILDING MAX DIAGONAL DIMENSION	HEIGHT OF BUILDING TOP	UPPER BUILDING MAX AVERAGE FLOORPLATE	% REDUCTION OF MAX AVG FLOORPLATE	HEIGHT OF STEPBACK
BLOCK A	Residential	140 feet	160 feet	20 feet	11,001 - 12,000 square feet	25%	Uppermost 5 floors
					11,000 square feet or less	None Required	Not Applicable
BLOCK B	Commercial	NA	NA	20 feet	25,000 square feet	None Required	Not Applicable
BLOCK C	Commercial	NA	NA	20 feet	20,000 square feet	10%	Uppermost 2 floors
BLOCK D	Residential	140 feet	160 feet	20 feet	12,000 square feet	None Required	Not Applicable
BLOCK E	Commercial	NA	NA	20 feet	NA	None Required	Not Applicable
BLOCK F	Residential	140 feet	160 feet	40 feet	11,001 - 12,000 square feet	25%	Uppermost 5 floors
					11,000 square feet or less	None Required	Not Applicable
BLOCK G	Commercial	NA	NA	20 feet	20,000 square feet	10%	Uppermost 2 floors
BLOCK H (FLEX)	If Residential	115 feet	150 feet	20 feet	10,000 square feet	None Required	Not Applicable
	If Commercial	NA	NA	20 feet	20,000 square feet	None Required	Not Applicable
BLOCK I (FLEX)	If Residential	115 feet	150 feet	20 feet	10,000 square feet	None Required	Not Applicable
	If Commercial	NA	NA	20 feet	20,000 square feet	None Required	Not Applicable
BLOCK J (FLEX)	If Residential	115 feet	150 feet	20 feet	10,000 square feet	None Required	Not Applicable
	If Commercial	NA	NA	20 feet	20,000 square feet	None Required	Not Applicable
BLOCK K	Residential	115 feet	150 feet	20 feet	10,000 square feet	None Required	Not Applicable

6.5 DESIGN OF TALLER BUILDINGS

The three taller buildings, Blocks A, D1, and F are located on transit street or open spaces, and act as landmarks for these important public places. These buildings are each situated in a unique place and context within the site and should each be designed to respond to their specific location.



ABOVE: A notch, combined with a change in material and a change in height breaks the mass of this building into three distinct forms. CREDIT: BKSK ARCHITECTS

GUIDELINES

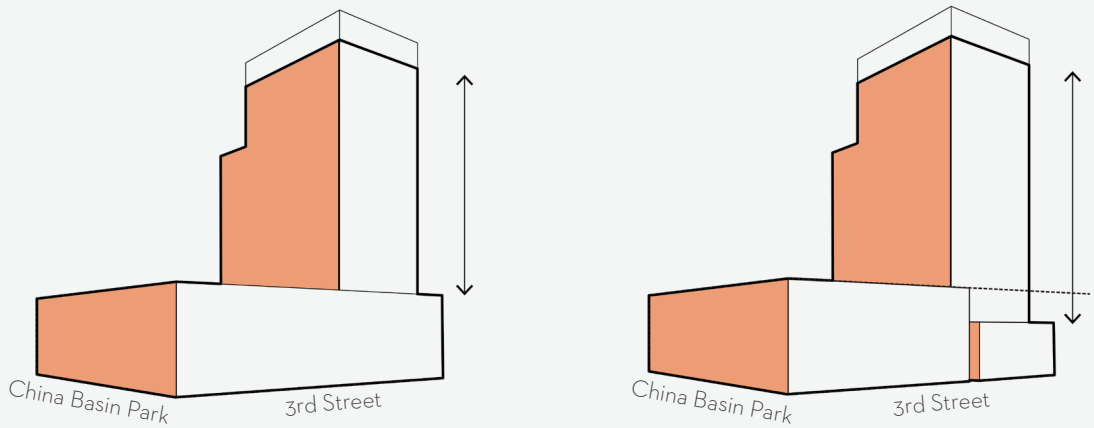
6.5.1 DESIGN INTENT: BLOCK A

Block A, located at the acute corner of 3rd Street and China Basin Park acts as the 'prow of the ship,' visible at a distance on approach to the Lefty O'Doul Bridge south along 3rd Street. The north side streetwall of this block frames China Basin Park, while its west side is one of the longer streetwalls on the site. The design of Block A should respond to this specific context with the following approaches:

Break down the China Basin Park and 3rd Street streetwall of Block A into several smaller masses, each with different materials and/or fenestration. If the block is developed as one building, the breaking down of the massing can be achieved using different façade designs to look like separate buildings, or by using a variation on the same façade concept which differentiate masses through setbacks or notches combined with contrasting transparency, color, or material.

Vary the base building height along 3rd Street so that the base building steps down to approximately 40 feet in height at the base of the upper building to give greater height to the form of the upper building. This strategy, combined with the changes in the streetwall will give the impression of the block as an assembly of masses, rather than a single, monolithic block.

Consider orienting the taper of the upper building so that it steps back from the eastern side of the building - creating a more generous taper when viewed from the north and south and a greater presence on the 3rd Street frontage.



ABOVE: The diagram on the left shows a base building with no notch or change in base building height, while the diagram on the right shows how adding a notch and lowering the base building in front of the upper building makes it appear more slender.

GUIDELINES

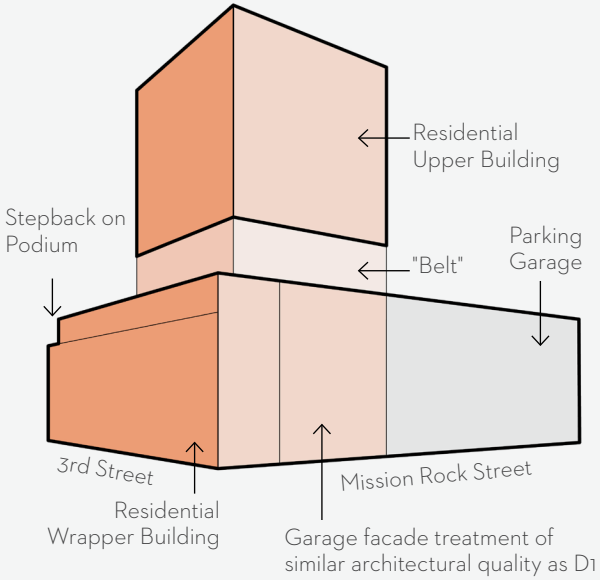
6.5.2 DESIGN INTENT: BLOCK D1

Block D1 marks the Mission Rock MUNI Metro Station along 3rd Street, and is particularly visible from the southern approach to the site. This building has constraints on its design because its structure could be combined with the parking garage on Block D2. Unlike the upper buildings on Blocks A and F, the upper building of Block D1 sits atop a higher streetwall, forming a 100-foot-tall wrap to the parking garage. This, combined with its location across Mission Rock Street from the Public Safety Building suggests a mass and form which can stand up to the robust scale of its surroundings. Due to its context, this building should consider the following design approaches:

Alternative A: Create a band course of greater transparency at the base of the upper building. Such a 'belt' on the building, along with a differentiated façade concept, can give the appearance of the upper building as a truly distinct form, appearing to float above the base building.

Alternative B: Conversely; consider using a similar strategy for visually breaking up the podium as described on Block A, with a portion of the streetwall which is expressed as a lower height, combined with a notch between these massing elements. Use a change in the materials, massing, or unit layout of the upper levels of the residential base building along 3rd Street to reinforce a lower scale streetwall. An example of this is using a window-wall façade on floors 1-8, and then transitioning with a small stepback to a curtain-wall façade for the two upper levels, designed as two-level town homes.

In all cases the portion of the garage directly below the mass of the tower along Mission Rock Street should have a facade treatment of similar architectural quality to the residential building on D1. In no instance can parking be visible on the 3rd Street frontage.



A transparent "belt" separates upper and lower masses. CREDIT: MIR

An example of a tall residential building connected to a large parking garage. R CREDIT: OBIN HILL / ARQUITECTONICA

Stepping back the uppermost floors of a podium building creates the effect of a lower streetwall. PHOTO: PERKINS+WILL

6.5.3 DESIGN INTENT: BLOCK F

Block F is located on the northern side of Mission Rock Square and acts as a landmark identifying Mission Rock's community heart. Because of its prominence at this important open space location in the center of the site and its position on the skyline, the building will impact the identity of the site both from the ground level experience as well as from distant views.

It should be designed as a landmark building that is compelling in design and relates to Mission Rock Square through the design of the base building, the way the tower comes to ground, and through the ground level activity it supports.

The form of this building should be simple and elegant, expressing a compelling design concept that is well-scaled, interesting, and carefully detailed. The top of this building may be shaped with wall plane extensions or other non-habitable elements up to 40 feet above the maximum building height to allow for greater differentiation and architectural expression (see Table 6.4 - Upper Building Bulk Controls).

CREDIT: ADRIAN SMITH + GORDON GILL ARCHITECTURE

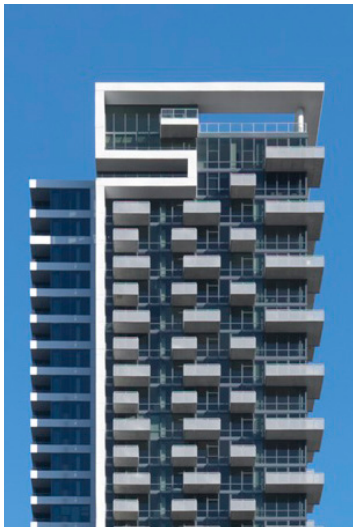
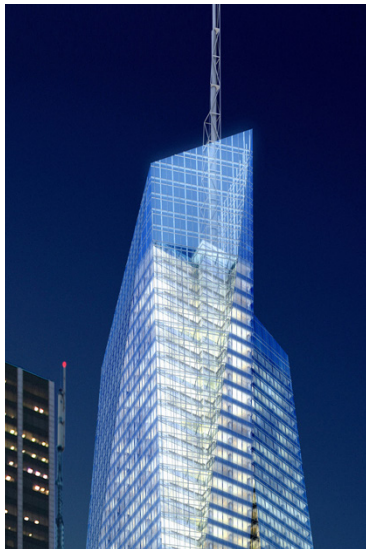
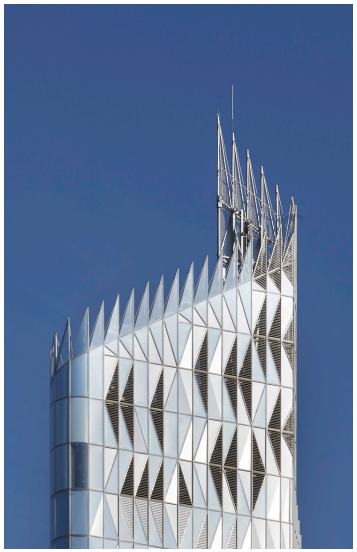


PHOTO: PERKINS+WILL





ABOVE: The four images above illustrate many different ways to terminate towers in visually interesting ways. CREDIT: LEFT - COOK + FOX ARCHITECTS / RIGHT - KOHN PEDERSON FOX

Block F should be designed to embrace and enhance the experience of Mission Rock Square. CREDIT: PERKINS + WILL

6.6 ENVIRONMENTAL COMFORT

Because of San Francisco's mild climate, outdoor spaces can be enjoyed all year round. However, even on warm days, sunny open spaces will become cold and uncomfortable if they are windy.

Mission Bay can experience stronger winds than other parts of San Francisco, with winds generally coming from the West, and highest wind speeds most often occurring during summer afternoons.

The massing of the buildings at Mission Rock have been designed with a stepback above the streetwall which serves to stop much of the wind from coming to ground, ensuring a comfortable pedestrian experience.

Beyond this, the following architectural features can be used to further minimize the impact of wind on the public realm.

GUIDELINES

6.6.1 DESIGN AND ORIENTATION OF TALL BUILDINGS

Design and orient tall buildings to promote air circulation and natural ventilation, yet minimize adverse wind conditions on adjacent streets, parks, and open space, at building entrances, and in public and private outdoor amenity areas.

The stepback of upper buildings as required by the location of Upper Building Zones will help to reduce the amount of wind that comes to ground. See *Figure 6.2 - Maximum Height Plan.*

6.6.2 WIND BAFFLES AND AWNINGS

Wind baffles and randomized balconies help to delaminate wind from the face of the building, thereby reducing the speed of the wind that may come to ground.

Ensure weather protection elements, such as overhangs and canopies, are well-integrated into the building design, carefully designed and scaled for the street, and positioned to maximize function and pedestrian comfort.

Large awnings and canopies can be effective when coupled with other wind reduction strategies.

6.6.3 LANDSCAPE STRATEGIES

Landscape can be a highly effective way to reduce or mitigate wind in the public realm. For guidance on species selection see *Section 2.7 - Urban Forest.*

Generous awnings can minimize the impact of wind at entries and sidewalks. PHOTO: PERKINS+WILL

This chapter guides the development of high-quality, high-performance buildings at Mission Rock and encourages the design of well-scaled, attractive architecture.

07

BUILDING DESIGN

The building envelope massing established in Chapter 6 provides for an order of form related to streetwall and building height. The design of the buildings within the constraints of these envelopes provides the opportunity to introduce variation and diversity of architecture.

To that end, these standards and guidelines encourage each building to have its own unique character, while playing a role in the creation of a coherent overall image of Mission Rock as a lively, appealing and inviting neighborhood.

7.1 Sustainable Buildings 166
7.2 Building Design 168
7.3 Color and Materials 172
7.4 Signage 174
7.5 Lighting 175
7.6 Off-Street Parking 177
7.7 Parking Structure (Block D2) 179

7.1 SUSTAINABLE BUILDINGS

Performance targets and sustainable design strategies for buildings at Mission Rock are outlined in the Mission Rock Sustainability Strategy, to be read in conjunction with this document. Guidelines given here with regard to sustainability are intended to support buildings in achieving the targets identified in the Mission Rock Sustainability Strategy - a 'living document' with targets that can be updated as technology improves.

Enhancing long-term sustainability is one of the key principles guiding these Design Controls, and Mission Rock's architectural design has been envisioned with this goal in mind. Mission Rock will be a Type 1 Eco-District, as defined by the City of San Francisco, allowing buildings to take advantage of sustainable resource management at the district scale. Buildings will tie into Eco-District infrastructure which will supply district-wide heating and cooling, and centralized water re-use.

This centralized infrastructure will make it easier for buildings at Mission Rock to achieve high energy targets. High performance means not simply taking advantage of the district-wide resources, but also reducing demand through efficient building design and community education and advocacy.

The following standards and guidelines allow for many different sustainable design approaches. It is up to the architect to design a building that will meet the performance criteria outlined in the Mission Rock Sustainability Strategy while also meeting the design criteria outlined herein.

STANDARDS

7.1.1 SUSTAINABILITY PERFORMANCE

All buildings shall meet or exceed the requirements of the Mission Rock Sustainability Checklists in the DA/DDA.

Also refer to the Sustainability Strategy for performance targets and strategies for achieving these targets.

7.1.2 PARTICIPATION IN TYPE 1 ECO-DISTRICT

The sustainability performance of buildings at Mission Rock is a critical part of achieving the goals of the Eco-District. Buildings shall be designed to connect into district-wide systems as described in the Mission Rock Sustainability Strategy and defined in the Mission Rock Infrastructure Plan.

7.1.3 SHOWERS AND LOCKERS

Subject uses shall provide shower and clothes locker facilities for short-term use of the tenants or Employees in that building. Facilities shall be calculated based on the total square footage of the building. Facilities shall be provided at the ratios given below or by code, whichever is higher.

For Commercial uses, showers and lockers shall be provided at the following ratio:

- 1 shower and 6 lockers where the occupied floor area exceeds 10,000 square feet but is no greater than 20,000 square feet,
- 2 showers and 12 lockers where the occupied floor area exceeds 20,000 square feet but is no greater than 50,000 square feet,
- 4 showers and 24 lockers are required where the occupied floor area exceeds 50,000 square feet.

For Retail and Production uses, showers and lockers shall be provided at the following ratio:

- 1 shower and 6 lockers where the occupied floor area exceeds 25,000 square feet but is no greater than 50,000 square feet,
- 2 showers and 12 lockers where the occupied floor area exceeds 50,000 square feet.

GUIDELINES

7.1.4 MINIMIZE HEAT GAIN

West- and South-facing facades should be designed to balance solar access with the need to control heat gain.

7.1.5 DAYLIGHTING AND NATURAL VENTILATION

Buildings should be designed to maximize the use of daylighting and natural ventilation for all interior spaces in order to provide a high quality indoor environment and reduce overall energy consumption.

Operable widows are strongly encouraged to allow residents access to fresh air, and as a resilient strategy for passive cooling.

7.1.6 VEGETATED & COOL ROOFS

Where building roofs are free of solar panels or other sustainability infrastructure, they should be designed to include systems such as vegetated roof covers, plants and roofing materials with high albedo surfaces in order to reduce heat island effect and slow rainwater runoff. Read in conjunction with *Section 7.2.6 - Residential Roofscapes* and *Section 7.3.4 - Commercial Roofscapes*.

7.1.7 GREEN DESIGN

Whenever possible, incorporate visible elements of sustainability – such as green roofs, shading devices, or photovoltaic panels – into the fabric of the building, and especially seen at the ground level so as to make visible the building's energy saving features. Larger elements in particular should be incorporated into the design concept of the building and site design.

7.1.8 INTERPRETIVE SIGNAGE

Provide interpretive signage to explain the features of the building which promote sustainability, and to educate visitors and occupants how their behavior can make an impact on overall building performance.

7.1.9 REGIONALLY APPROPRIATE VEGETATION

All vegetation on buildings, where it occurs, shall be regionally appropriate and not require permanent irrigation for landscaping in outdoor planted areas, rooftops and green walls.

Sustainable timber used as a visible green design element.
CREDIT: TLA & MARIE-CAROLINE LUCAT

Green roofs are a high-performing amenity. PHOTO: PERKINS+WILL

7.2 BUILDING DESIGN

Mission Rock will be a neighborhood that has a diversity of building sizes and heights which are tied together by a consistent commitment to high quality, human-scale design throughout.

Residential buildings at Mission Rock should be designed to promote social interaction amongst residents and develop a sense of community and safety by engaging the base of residential buildings with the adjoining public realm. Design should ensure a relatable human scale and rhythm of architecture, particularly at the base building. These buildings should reinforce a residential read and character, and convey a sense of life within by enlivening the exterior walls with balconies and appropriately scaled fenestration.

Commercial buildings at Mission Rock play an important role in adding diversity of program, form, materials, and activity to the neighborhood. They should be architecturally interesting, well-proportioned and reinforce the pedestrian qualities of the neighborhood. Companies are encouraged to express their individuality and values through the design of their buildings. Commercial building design should contribute to the overall urban qualities of Mission Rock by providing public-facing amenities and active uses on the second and third level facing the public realm. These buildings should strive to create healthy workplaces with plenty of daylight and fresh air.

All buildings should create visual contrast and interest by using a variety of material and changes of textures and colors that celebrate the richness and diversity of building forms at Mission Rock.

STANDARDS

7.2.1 BASE BUILDING MODULATION

Architectural modulation adds visual interest and provides relief by breaking down the façade of the building. To avoid long expanses of un-modulated building facades, building base frontages are to be modulated at an interval of at least every 90 feet as described below. This modulation requirement does not apply to building frontages less than 90 linear feet.

- A notch of at least 2 feet deep and 4 feet wide; OR
- A change in plane of least 1 foot, combined with a change in color, material, or fenestration.

See *Figure 7.2.1 - Base Building Modulation*

Exterior modulation should correspond to the delineations between individual units while corresponding to entries, porches, or setbacks along the sidewalk.

7.2.2 OPAQUE SURFACES

Long expanses of blank walls deaden the sidewalk experience and don't allow for "eyes on the street." Continuous opaque surfaces the full height of a floor or higher shall be no greater than 12 linear feet on any façade facing onto a public right of way, public easement, or park.

7.2.3 USABLE OPEN SPACE

Usable open space is defined as outdoor area designed for outdoor living, recreation or landscaping, including such areas on the ground and on decks, balconies, terrace, porches and roofs, which are safe and suitably surfaced and screened, and are on the same lot as the dwelling units they serve.

Usable open space must be provided in residential buildings. Requirements shall either be met by providing common usable open space or private usable open space for each dwelling unit at the following ratios:

A) Common Usable Open Space

Common usable open space is defined as an area or areas designed for use jointly by two or more dwelling units.

Courtyards, rooftop terraces, and public passages shall count towards the provision of usable open space, and shall be provided at a ratio of 48 square feet per dwelling unit with a minimum dimension of 6 feet in any direction. Common open space shall be provided in a common area of the building or lot, or easily and independently accessible from each dwelling unit.

B) Private Usable Open Space

Private usable open space is defined as area that is private to and designed for use by only one dwelling unit.

- Private setback areas, balconies and decks shall count towards the provision of usable open space, and shall be provided at a ratio of 36 square feet per dwelling unit with a minimum dimension of 4 feet in any direction. Private open space shall be directly accessible from the dwelling unit it serves.

In addition to the important role in the provision of private usable open space, balconies also help residential buildings convey a sense of life within by providing an opportunity for residents to inhabit and enliven the exterior walls. Balconies add livability and sense of relatable human scale to a streetwall while at the same time expressing a readable residential character.

7.2.4 MECHANICAL EQUIPMENT

Mechanical ducts or vents must not be located adjacent

to areas designated for courtyards or terraces. Where used, fresh air intake grills must be incorporated into wall cladding or fenestration design or screened with landscape such that they are not visible.

Venting for ground floor activities must be exhausted through the roof of the building.

7.2.5 ROOFSCAPES

Rooftops of buildings that may be overlooked by others will be considered as a "fifth façade" and shall be carefully designed to be viewed from taller buildings.

Rooftop mechanical equipment greater than 4 feet in height shall be screened. Screening shall be incorporated into overall architectural character of the building and be at least of equal height to the mechanical equipment that it screens.

Base buildings which are overlooked by upper buildings shall have all mechanical and other normally rooftop mounted equipment contained in an enclosure that is screened from above. Any light source located on roofs shall be full cutoff type.

7.2.6 DWELLING UNIT EXPOSURE

All dwelling units shall face onto a public or private right-of-way, or onto an open area. Refer to the SUD for dimensions and further definition of the following open areas:

- A Public street, alley or mid-block passage
- An interior courtyard
- An exterior courtyard or terrace that is open to a public street, alley or mid-block passage
- Undeveloped airspace over rooftops of adjacent buildings

Base building modulation CREDIT: SJB ARCHITECTS

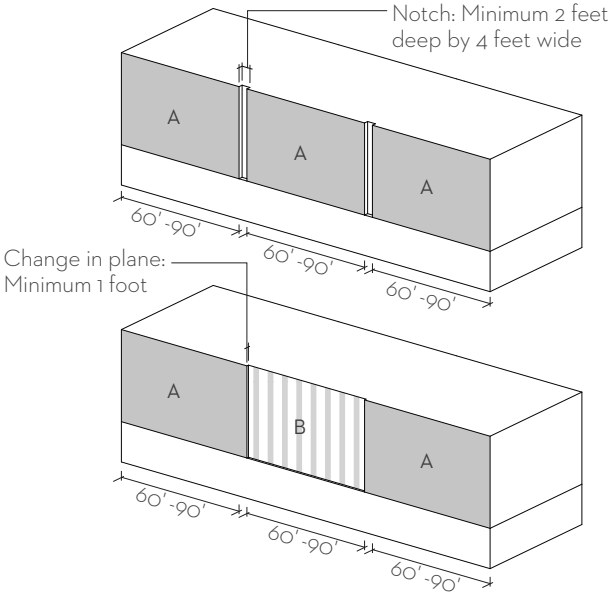
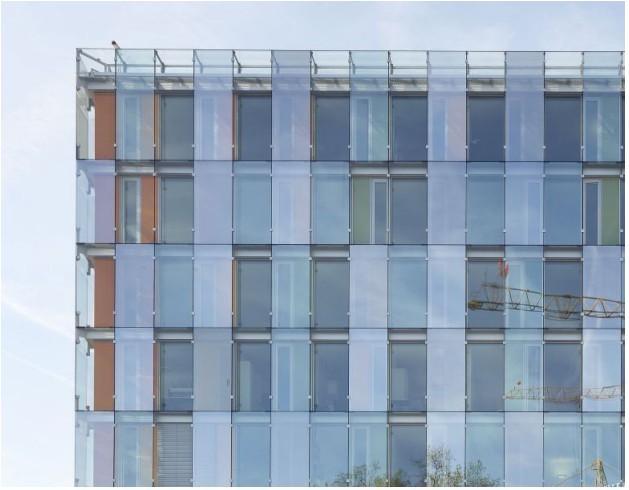


FIGURE 7.2.1 - Base Building Modulation



Use of color at the corner reveals special interior uses. CREDIT: GROUP8, PHOTO BY RÉGIS GOLAY

Facade pattern can contrast solid to opaque, light to dark

CREDIT: CRISTIÁN FERNÁNDEZ ARQUITECTOS

Contrast of solid and void, light and dark, opaque and transparent. CREDIT: AMELLER, DUBOIS & ASSOCIÉS ARCHITECTES

A residential roofscape should be considered a "fifth facade" PHOTO: PERKINS+WILL

The base of the building should be articulated into smaller massing components. CREDIT: BEHNISCH ARCHITEKTEN, PHOTO BY ANTON GRASSL/ESTO

Balconies are used together here with floorplate expression to express the residential scale of the building. PHOTO: PERKINS+WILL

GUIDELINES

7.2.6 MECHANICAL SCREENING

All mechanical equipment or outdoor storage areas should be screened with architectural detailing equivalent to that of the rest of the building.

Space for the location of ducts, vents, and other appurtenances associated with commercial and ground floor uses should be integrated into the building design.

Where used, fresh air intake grills must be incorporated into wall cladding or fenestration design or screened with landscape such they are not recognizable.

Similarly, exhaust ducts where complying with the conditions noted above must also be incorporated into wall cladding or fenestration and shall not be recognizable.

All other mechanical equipment or outdoor storage areas must be screened with architectural detailing equivalent to that of the rest of the building.

7.2.7 RESIDENTIAL SCALE

The following Guidelines should be read in conjunction with the Modulation called for in *Section 7.2.1 - Base Building Modulation* and *Chapter 6: Building Form*.

Residential buildings should be finely detailed to relate to a knowable, human scale. For example, when a pedestrian sees a chair on a balcony, they can understand the height of the balcony, because they know the scale of a chair. Similarly, building elements that begin close to the street level and repeat vertically up the façade of a building are knowable, because the observer can relate to the scale of the element that is close to them. As a district with both residential and commercial buildings, the residential

buildings bring a finer grained, human scale to the neighborhood experience to Mission Rock.

The design of the façade should consider the relationship of solid to void, bays and recesses and the creative use of contrasting colors, textures, and patterns.

A residential scale and proportion may be achieved using the following design measures:

- Balconies, projections, and changes in plane can be used to break up the massing of both the streetwall and upper building;
- Varied rooflines along the streetwall help to differentiate residential buildings from commercial buildings;
- Express the scale and proportion of individual residential units through the use of balconies, vertical notches or projections, and contrasting materials or changes in fenestration;
- Floorplates should be visually expressed on building facades to convey the height and configuration of the residential unit within. For example, a change from single-height to double-height unit should be made visible from a change in floorplate expression.

7.2.8 COMMERCIAL SCALE

The following Guidelines should be read in conjunction with the Modulation called for in *Section 7.2.1 - Base Building Modulation* and *Chapter 6: Building Form*.

The design of commercial facades should consider the relationship of solid to void, bays and recesses and the creative use of contrasting colors, textures, and patterns.

A commercial scale and proportion may be achieved using the following design measures:

- Break the façade up into smaller massing components toward the base (street level), with fewer, larger moves toward the top of the building;
- Projections and changes in plane can be used to break up the massing of both the streetwall and upper building;
- The longer the façade, the more significant the changes in plane, color, or material should be;
- Express the scale and proportion of interior programmatic uses through the use of vertical notches or projections and contrasting materials or changes in fenestration.

7.2.9 CONTRAST

Contrast is an important consideration that contributes to visual variety and interest in a building's design. It captures the viewer's attention and directs the eye to focus on important elements such as entry ways and design themes. Some ways to use contrast to increase visual interest are:

- Contrast of light and shadow, as with the surface of a projection which catches the sun against the shadow of a recess;
- Contrast of two different materials side by side, as with brick next to concrete;
- Contrast of opaque and transparent, as with window to wall, or window to spandrel panel;
- Contrast of scales, as with the small scaled pattern of tile next to a large pane of glass;
- Contrast of simple and complex, as with a simple fenestration pattern against a complex fenestration pattern;
- Use contrasts in light, material, opacity, or scale to reinforce a residential or commercial scale.

7.2.10 FENESTRATION

Fenestration is one of the most important elements in establishing the scale and detailing of a building. It is also the visual link between the inside private space and the outdoor public space.

Fenestration should be proportionate to the scale of the building. Fully glazed curtainwall should not be used as the predominant design material. For example, where curtain wall systems are used, spandrel panels should be used help create a visual contrast of solid material and transparent glass.

Windows should be transparent instead of tinted or reflective so that the internal life of the building can be seen from the outside, allowing streets and parks to benefit from the interior activity that buildings can visually bring to the public realm.

7.2.11 OUTDOOR AMENITY AREA

Buildings should provide generous common spaces including habitable rooftops or podium courtyards that invite use by residents or employees. Courtyards should be designed as welcoming common spaces, incorporating the individual patios of adjacent podium level units, or common indoor amenities where appropriate. Such courtyards should feature both paved and planted areas.

7.3 COLOR AND MATERIALS

The following Standards and Guidelines are intended to support simple and elegant designs that provide a clear expression of the structure and function of each building. Note that these guidelines apply to all parts of the building, including ground floor, streetwall, base building, and upper building.

STANDARDS

7.3.1 BIRD-SAFE BUILDINGS

Where applicable, buildings shall comply with the City of San Francisco's Bird-Safe Building Standards.

7.3.2 MATERIAL CONTINUITY

In order to create material continuity, façade materials that turn the corner should extend a minimum of 5 feet.

GUIDELINES

7.3.3 COLOR

Materials and glazing selected for buildings should not be dark in color. They should be low-reflectance and "naturally" colored, utilizing the inherent and integral qualities authentic to the chosen material.

7.3.4 GROUND FLOOR MATERIALS

Ground level facades shall be designed with higher quality materials that offer color, variety, wear-resistance, and visual interest to the pedestrian. Examples include wood, stone, tile masonry, brick or terracotta.

Materials shall be proportioned to relate to the pedestrian scale, contributing to a more inviting, vibrant, and enlivened public realm.

Ground floor facades shall be finished with more than one material and be unique to the individual program or building.

7.3.5 ENVIRONMENTALLY-APPROPRIATE MATERIALS

Due to the marine environment of Mission Rock, materials selected shall demonstrate superior performance related to moisture protection, corrosion, durability, ultraviolet resistance, and low maintenance requirements.

7.3.6 QUALITY AND DURABILITY

Exterior finishes should have the qualities of permanence and durability. Materials should be low maintenance and well-suited to the specific maritime micro-climate of the Mission Rock neighborhood.

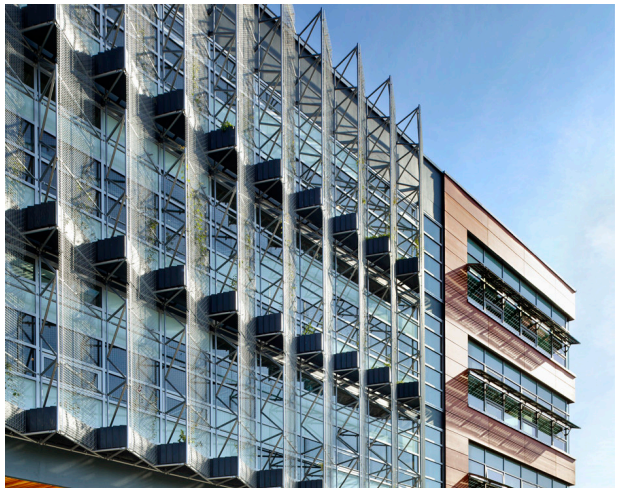
GUIDELINES

7.3.7 LOCALLY SOURCED

The use of locally sourced and sustainable building materials is encouraged.

7.3.8 FUNCTIONAL AESTHETIC

Buildings should be designed to celebrate the industrial and maritime heritage of the site. Exterior materials and colors should be simple, undecorated and expose functional details as a symbolic association to the unique history of Mission Rock and the surrounding context.



Rainscreens are decorative yet functional features. PHOTO: PERKINS+WILL

Materials can be naturally rich in color. PHOTO: PERKINS+WILL

Use higher quality materials at the ground floor. CREDIT: MGAU, PHOTO BY TAKUJI SHIMMURA

Materials should express their natural qualities. CREDIT: PERKINS + WILL

7.4 SIGNAGE

Buildings are encouraged to use signage in innovative and engaging ways with the aim of making the public realm more attractive and legible. All signs will be integrated into the building design and be compatible with their surroundings

Mission Rock signage is intended to recognize and enhance the unique character and location of this development relative to the adjacent Ballpark and the national exposure that this brings to this site.

The standards established by this Section 7.4 are not intended to in any way to preclude further design refinements, subject to review by the City, as to additional aspects such as material, color, graphics, types of representations, relationship of signs to one another and to architectural building features or general design quality.

STANDARDS

7.4.1 GENERAL ADVERTISING SIGNS

All exterior or publicly visible building and parking garage signage (interior wayfinding signage is exempt) within Mission Rock shall be in compliance with the provisions of Planning Code Article 6 that apply in the C-3 District. The signage review process is set forth in the DDA.

GUIDELINES

7.4.14 UNIQUE IDENTITY

Signage helps to highlight the image of a business or residential building while enhancing the appearance of the streetscape. The design of building signage should be of a creative nature that conveys a unique identity.

7.4.15 PEDESTRIAN SCALE

Signage should primarily address the pedestrian level and should typically not be located above the ground level.

7.4.16 HIGH QUALITY MATERIALS

High quality materials and detailing are encouraged in building signs. Where window signs are used, they should maintain a high degree of transparency.

An example of a conforming business sign.

PHOTO: PERKINS+WILL

An example of a conforming wall sign.

PHOTO: PERKINS+WILL

An example of a conforming projecting sign

PHOTO: PERKINS+WILL

7.5 LIGHTING

Building designs are encouraged to use lighting in innovative and engaging ways with the aim of making Mission Rock more attractive and secure, both during the day and at night.

The following standards and guidelines apply to all retail, residential, and commercial building lighting

STANDARDS

7.5.1. ENERGY EFFICIENCY

Refer to Sustainability Strategy for additional information on energy efficiency standards for target lighting power density, lighting control, equipment efficiency, and equipment controls.

7.5.2 LIGHT TRESPASS

At a minimum, all exterior lighting must be suitable for a given "Lighting Zone" as defined by USGBC and IESNA. It is expected that most of the Mission Rock development area will be LZ3. Lighting zones are defined as follows:

LZ3: Medium (Commercial/Industrial, High Density Residential). No more than 0.20 horizontal and vertical footcandles at the site boundary and 0.10 horizontal foot-candles 10 feet beyond the site boundary. Also, 5% of total initial luminaire lumens are emitted at an angle of 90 degrees above nadir or greater.

Maximum candela values for photometric distributions of interior luminaires shall fall within the building (i.e. Not through skylights, windows or other building fenestration).

Each photometric for every luminaire type shall be reviewed for compliance to standards.

7.5.3 LIGHT POLLUTION

All lighting must be shielded to prevent glare to private and public uses, especially residential units. The angle of maximum candela from each interior luminaire as located in the building shall intersect opaque building interior surfaces and not exit out through the windows.

All new site lighting shall incorporate cut-off control as well as the "Lighting Zone" credit requirements found in the U.S. Green Building Council's LEED v4 for New Construction. All luminaires shall be at least semi-cutoff with non-cutoff types only as permitted subject to review and approval.

Definitions of cutoff control are as follows:

- *Full cutoff: Zero candela intensity occurs at an angle of 90 degrees above nadir, or greater. Additionally, no more than 10% candela intensity occurs at an angle greater than 80 degrees above nadir.*
- *Cutoff: No more than 2.5% candela intensity occurs at an angle greater than 90 degrees above nadir, and 10% at an angle greater than 80 degrees above nadir.*
- *Semi-Cutoff: No more than 5% candela intensity occurs at an angle greater than 90 degrees above nadir, and 20% at an angle greater than 80 degrees above nadir.*
- *Non-Cutoff: No candela limitation.*

Lighting Power Allowance (LPA) shall comply with the current Title 24 or ASHRAE 90.1 standard, whichever is more stringent.

GUIDELINES

7.5.4 WELL-LIT ENTRIES

Doorways and addresses of buildings should be well-lit and visible.

7.5.5 MINIMIZING LIGHT TRESPASS

Lighting of walls, soffits and other surfaces should be applied strategically. It is also encouraged that all such surfaces that are visible to the exterior be studied for luminance ratios and glare, since illuminated surfaces rather than the light source itself can often be the major source of glare from a building.

All lighting adjacent to the Bay should be designed and oriented so that lighting projects away from the shoreline, thus minimizing light trespass into adjacent waters.

7.5.6 LUMINAIRE RATINGS AND EFFICIENCY

Luminaires should be selected with rating considerations as determining factors and should demonstrate at least 60-80 lumens per watt source efficacy.

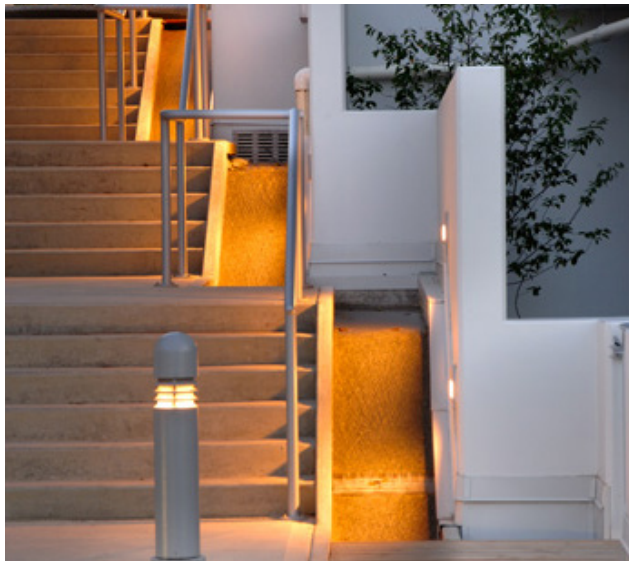
The following codes should apply to lighting installations:

- ASHRAE 90.1
- California Title 24
- IESNA Recommended light levels

If alternate or equal fixtures are suggested during the submittal process, they should have efficiency equal to or greater than the originally specified products.

Lighting Power Allowance (LPA) shall comply with the current Title 24 or ASHRAE 90.1 standard, whichever is more stringent.

Light projected onto surfaces reduces light pollution.
PHOTO: PERKINS+WILL



Well-lit entry that reduces light pollution PHOTO: PERKINS+WILL

7.6 OFF-STREET PARKING

In addition to the Parking structures at Block D2 and below Mission Rock Square, off-street parking is permitted within buildings on all blocks at Mission Rock. For guidelines on parking entries into buildings, refer to *Section 6.7* for design of ground floor servicing areas.

FIGURE 7.6 - Off-Street Parking

OFF-STREET PARKING LOCATIONS

- Off-Street Bicycle Parking
- Blocks permitting Basement or Podium Vehicle Parking
- Vehicle Parking Ingress/Egress Frontages

STANDARDS

7.6.1 OFF-STREET PARKING

There is no minimum parking requirement for any use. Podium or basement parking is permitted in all blocks at Mission Rock and below grade at Mission Rock Square.

A maximum of total 100 off-street parking spaces is allowed within buildings at Mission Rock in aggregate across the whole site (excluding Block D2 and the Mission Rock Square garages), which can be accommodated in any combination in any of the buildings on any blocks.

For Blocks A, B, F, G, J and K, off-street parking shall be accessed via Exposition Street. For Blocks C, E, H, and I, off-street parking shall be accessed via Long Bridge Street. Access requirements for these entries is described in *Section 5.2 - Building Servicing* and in *Section 7.6.4 - Vehicular Entry and Exit*.

Standards and guidelines for these off-street parking locations do not apply to the parking structure on Block D2, which has its own specific set of controls. See 7.7 - Parking Structure (Block D2).

7.6.2 UNBUNDLED PARKING

All off-street vehicle parking spaces shall be leased or sold individually and not tied to the rental or purchase of any property at Mission Rock.

7.6.3 CAR SHARE PARKING

A minimum of 31 off-street car share parking spaces are required at Mission Rock in aggregate across the whole site at buildout (including Block D2), which can be accommodated in any combination in any of the buildings on any blocks.

7.6.4 BIKE PARKING

Secure, Class I bicycle parking shall be provided at the following minimum ratios, or as required by code, whichever is higher:

- One per dwelling unit, one per 2,500 sqft of office, and one per 3,750 sqft of retail.

Class I bike parking should be located along desire lines through buildings and in parking garages to make it as convenient and easy to use as possible. Examples include access via building lobbies, service corridors, or with an exterior door on the ground floor.

7.6.5 VEHICULAR ENTRY AND EXIT

Where vehicle parking is provided, there shall be a maximum of one vehicle entry lane and exit lane per Block (for a total of two lanes). They must be combined into one point of access to be located in the Servicing Zone as indicated in *Figure 6.7 - Addressing and Servicing*.

The maximum dimension of a single parking entry/exit lane shall not exceed 12.5 feet in width, and the total opening for a parking entry/exit point can occupy a maximum of 16 horizontal feet of frontage, if combined with a shared loading bay, the loading bay and parking entry/exit point combined may only occupy a maximum of 35 horizontal feet of frontage.

Coordinate the dimensions and design of parking entry/exit points with the requirements for stormwater gardens, street trees, and pedestrian paths.

7.6.6 PARKING WRAP

Where provided, parking must be fully concealed. Half-level openings or ventilation grill work is not permitted to be visible on building exteriors. Exposed structured parking at or above the street level is not permitted on any façade facing a public right-of-way or open space.

All above-grade parking shall be lined by usable building space that is a minimum of 20 feet deep from the building face. Usable building space shall include any allowed use, plus access stairs and elevators.

Above standards to not apply to Block D2 which has its own specific set of controls. See 7.7 - Parking Structure (Block D2).

GUIDELINES

7.6.7 VISUALLY TRANSPARENT GATES

Gates for parking garages should be visually transparent for an increased sense of safety brought by higher visibility between the street level and the interior parking garage.

7.6.8 PEDESTRIAN ENTRIES

Parking entries and stairways linking parking structures to public ways should be attractive, well-lit, and secure. If provided, the below grade parking garage should have entries designed to be integrated with park kiosks or adjacent buildings.

7.6.9 AUDIBLE WARNING

Audible warning of vehicles exiting off-street parking should comply with the City of San Francisco and ADA standards

Parking garage gates should be visually transparent. PHOTO: PERKINS+WILL

7.7 PARKING STRUCTURE (BLOCK D2)

The parking structure at Mission Rock will be built to accommodate the current parking on Lot A, which serves the Ballpark on game day events. This building will also provide parking for people who live and work at Mission Rock through optional parking leases.

Locating parking in a centralized facility and unbundling parking leases from development are two important strategies in reducing car-dependence at Mission Rock. The parking Structure at Mission Rock may also house the sustainable infrastructure that will support Mission Rock as a Type 1 Eco-District.

This building also has an opportunity to serve as an intermodal facility that links drivers coming into the city with the many other modes that service this area such as MUNI, Caltrain, bike share, car share, water taxis and ferries.

The ground floor of the building will contain retail uses, including a possible transit concierge to help visitors orient themselves to the various transit opportunities in the area, and a bike commuter facility with lockers, showers, and bike repair services.

STANDARDS

7.7.1 PARKING MAXIMUMS

A maximum of total 3,000 off-street parking spaces are allowed in Block D2. There are no minimum parking requirements for the Block D2 Parking Structure.

7.7.2 ACTIVE GROUND FLOOR

The parking structure is required to provide a minimum of 10,000 square feet of active uses, and/or transit related services at the ground floor.

7.7.3 UNBUNDLED PARKING

All off-street vehicle parking spaces shall be leased or sold individually and not tied to the rental or purchase of any property at Mission Rock.

7.7.4 MODULATION

Architectural modulation adds visual interest and provides relief by breaking down the facade of the building. To avoid long expanses of un-modulated building facade, every 60-90 linear feet, the façade of the parking structure shall have a change in plane of at least 1 foot, combined with a change in material.

7.7.5 BLANK WALLS

Solid, undifferentiated walls on the parking structure shall be no greater than 12 feet wide on any given façade.

7.7.6 VISUAL CONNECTIVITY

The ground floor of the parking structure shall be at least 75% visually transparent or physically permeable to allow for lines of sight into the parking area where there is no retail or active uses.

7.7.7 FAÇADE SCREENING

The parking structure shall be architecturally or artistically screened and designed with attention to detail compatible with the adjacent surrounding buildings.

7.7.8 ROOF SCREENING

The roof of the parking garage will be overlooked by other buildings and will be considered as a "fifth façade" that shall be carefully designed to be viewed from taller buildings and surrounding hills. Rooftop parking, where it occurs, shall be visually screened via shading devices, trellises, canopies, or photovoltaic solar panels.

All mechanical and other normally rooftop mounted equipment shall be contained in an enclosure that is screened from above. Any light source located on the roof shall be full cutoff type.

7.7.9 FLAT FLOOR SLABS

Floor slabs that are set at a slope, such as speed ramps, shall not be expressed at the façade of the parking structure.

GUIDELINES

7.7.10 ARTICULATION

Façade design should be integrated with the design of the overall building massing. Express the massing of the parking structure as several volumes with the use of vertical recesses, changes in materiality, and stepping in and out of the façade.

The two long faces of the building, facing on Long Bridge Street and Mission Rock Street, should have a higher level of articulation and refinement.

7.7.11 VIEW TERMINATION

Special treatment should be given to the portion of the façade that terminates the view along the Shared Public Way.

7.7.12 MATERIALS

Higher quality building materials should be emphasized in the façade design, at the ground floor, pedestrian touch points, and circulation areas.

7.7.13 MINIMIZE HEAT GAIN

The use of planting or high-albedo materials are encouraged to minimize heat gain.

7.7.14 LIGHTING

Light spillage from the parking structure should be minimized. Indirect lighting should be used to light interior areas of the garage visible to the exterior.

All lighting for parking areas must have a low cut-off angle in order to prevent light from casting beyond the parking area boundary. Read in conjunction with *Section 7.4 - Lighting*.

7.7.15 LIGHT TRESPASS

Parapet edges of the parking trays, including the roof, must be higher than vehicle headlights to screen adjacent properties.

7.7.16 WAYFINDING

Take opportunities to be playful and creative with wayfinding and environmental graphics.

7.7.17 PUBLIC ART

The parking structure should incorporate public art wherever possible into the façade design and design of pedestrian touch points and circulation areas.

Places that would particularly benefit from the integration of Public Art are: the ground floor of the building, the facade facing the Shared Public Way, and pedestrian entry points.

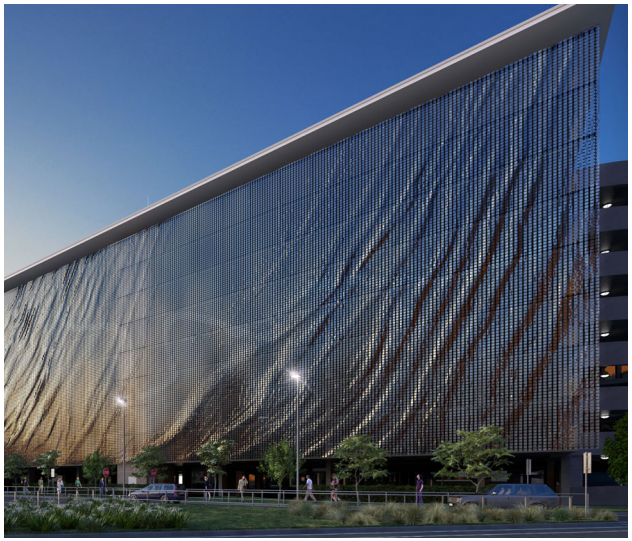
7.7.18 BICYCLE COMMUTER SUPPORT

The parking structure should incorporate uses at or around the ground floor that support commuter cyclists such as bike share facilities, changing rooms and showers, a bike repair shop, and other contextually appropriate uses, especially relevant to its location along the Blue Greenway.

7.7.19 MULTIMODAL INFORMATION

Near pedestrian circulation areas such as stairs, entries, and vertical circulation points, incorporate real-time information dashboards and route maps about the various modes of transit available near the garage, including but not limited to: MUNI, Caltrain, water taxi and bike share.

This garage is a good example of how graphic wayfinding and roof screening can add interest. CREDIT: NBJ ARCHITECTS AND PHOTOS BY PAUL KOZLOWSKI



This parking garage is covered with an artistic, kinetic screen that ripples in the wind. CREDIT: NED KAHN / UAP

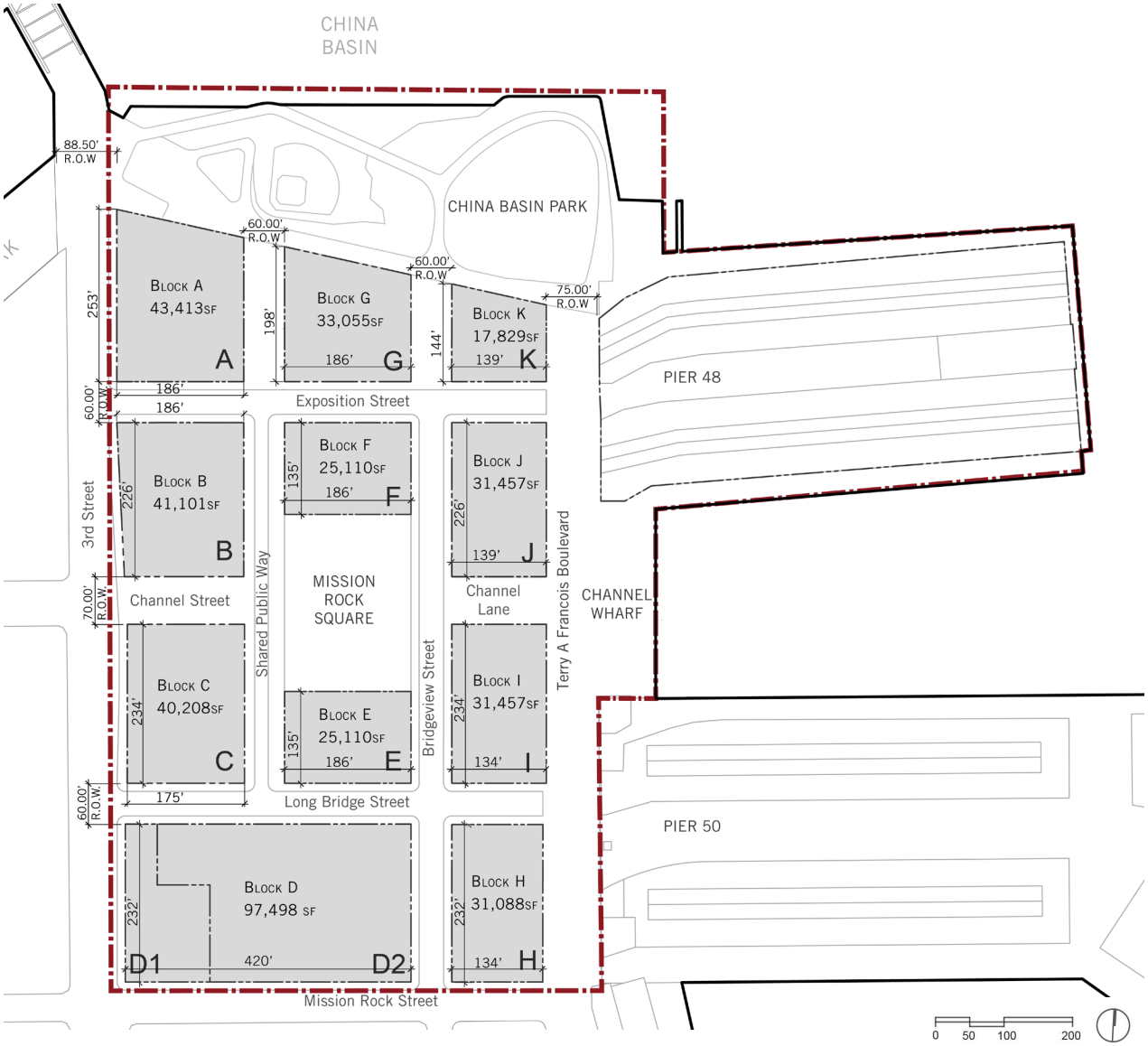
This building is not a parking garage, but is a good example for how the frontage of a mostly windowless building can be given depth and articulate a finer building scale. CREDIT: WOODS BAGOT

A

APPENDIX

Summary of Block Standards

This appendix has been provided as a summary of baseline standards for each Block. While this summary is meant to be a helpful tool, satisfying the standards described in the Block Standards alone does not constitute compliance with these Design Controls.



BLOCK PLAN

Note: All dimensions shown are for illustrative purposes only. Actual parcel and street R.O.W. dimensions to be per the Tentative and Final Parcel Maps.

BLOCK STANDARDS AND GUIDELINES USER GUIDE

The following pages provide a summary of baseline standards for each Block. While this summary is meant to be a helpful tool, satisfying the standards described in the Block Standards alone does not constitute compliance with these Design Controls. Below is a description of the notations used for each Block.

Property Line

The legal boundary of each Block.

Dimension control

The legal dimension of the Block and building envelope controls. Refer to *Chapter 7: Building Form* for the full set of building envelope controls.

Upper Building

The line of the upper building envelope above the base building. Refer to *Chapter 7: Building Form* for upper building envelope controls.

Corner Zone

The dimension to which Corner Zone controls apply. Refer to *Section 5.2.3 - Corner Zone* for definition and controls.

Servicing Zone

The zone in which servicing may be located on each Block. Refer to *Section 5.3 - Building Access* for controls.

XXX.X' **Maximum Building Height**

The maximum envelope height for both the base and upper building. Refer to *Section 6.2 - Maximum Height Plan* for controls regulating building height.

Ground Floor Activation Zone

The minimum required depth and height of ground floor uses on each Block. Refer to *Chapter 5: Ground Floor* for the full set of ground floor controls.

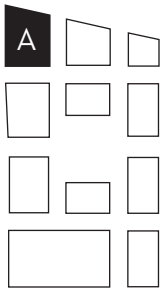
"Active" **Ground Floor Active Doorways**

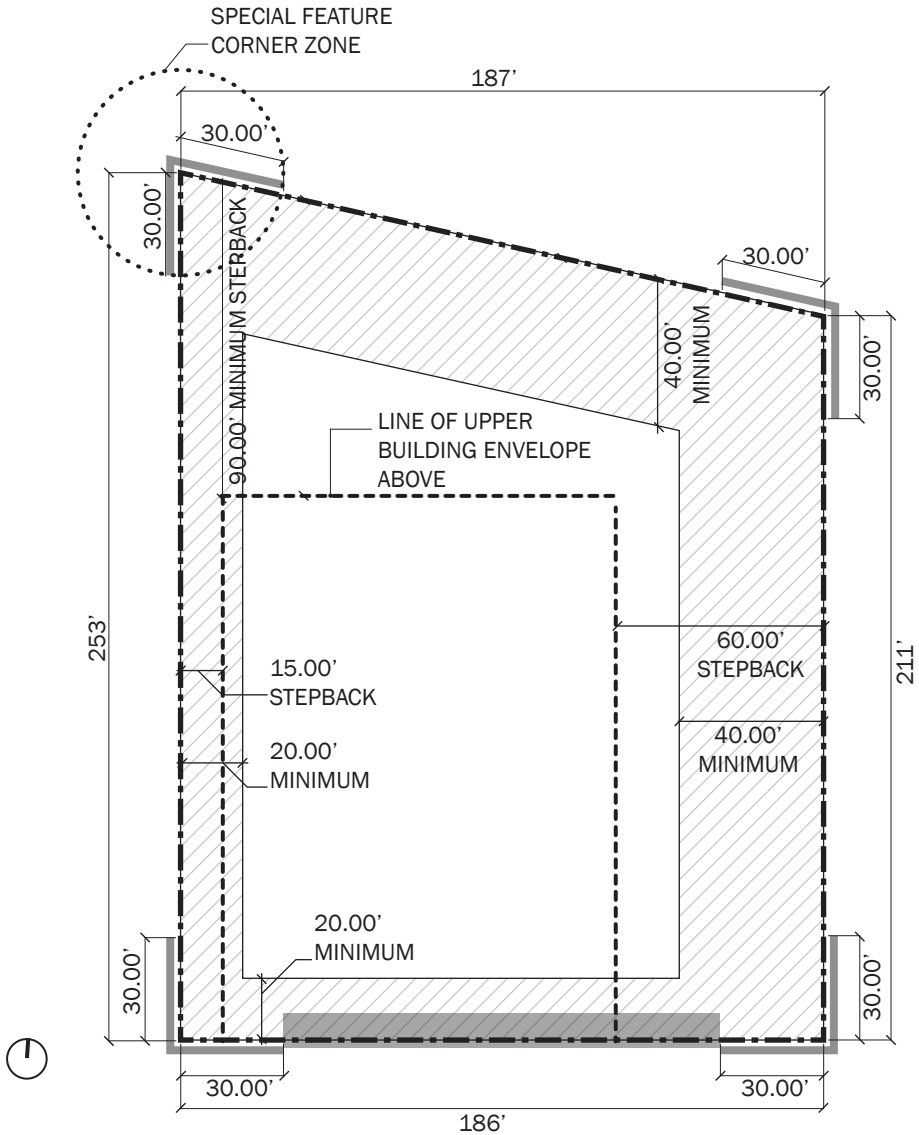
Indicates the minimum number of active doorways required for each ground floor frontage. Refer to *Section 5.4.4 - Active Doorways* for the definition of Active Doorways. See *Chapter 6: Ground Floor* for the application of active doorway controls to each type of ground floor zone.

Key Corners

Specific block corners where additional design attention is required. Refer to *Section 6.3.9 - Key Corners* for definition and controls.

SUMMARY OF BLOCK STANDARDS
BLOCK A





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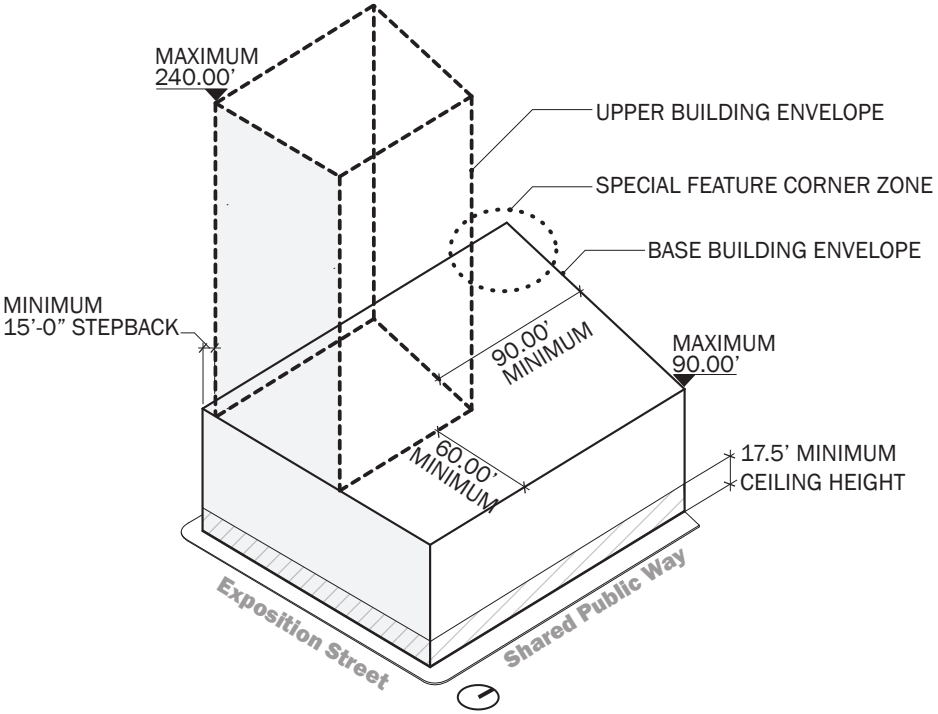

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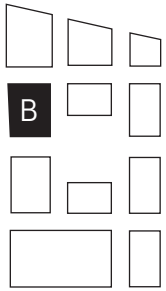

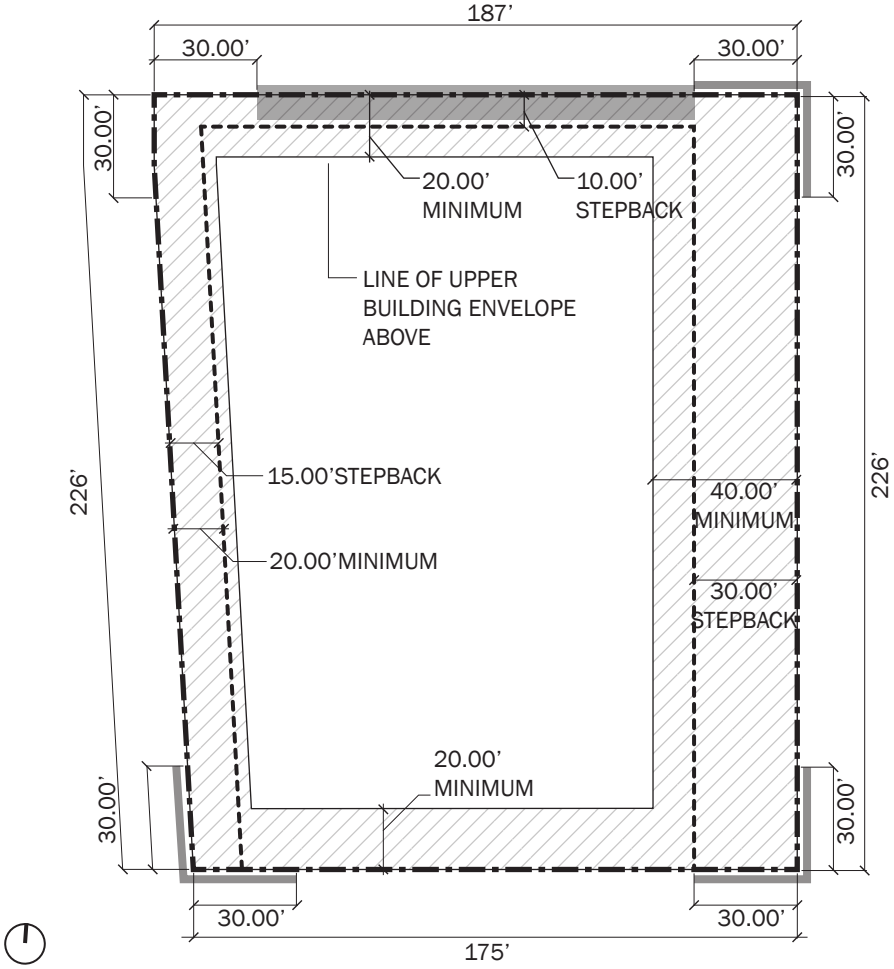

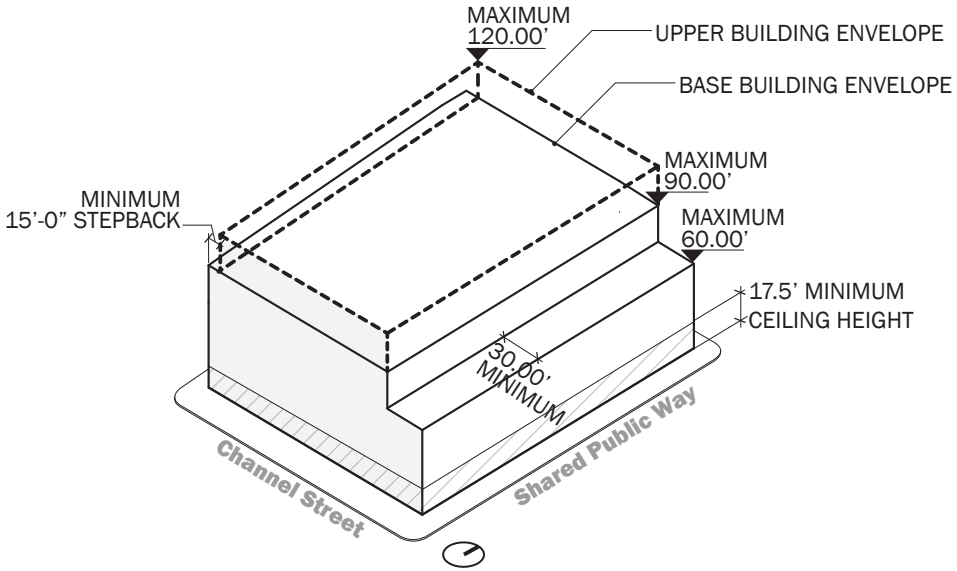

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SUMMARY OF BLOCK STANDARDS
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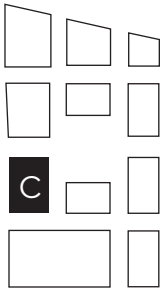

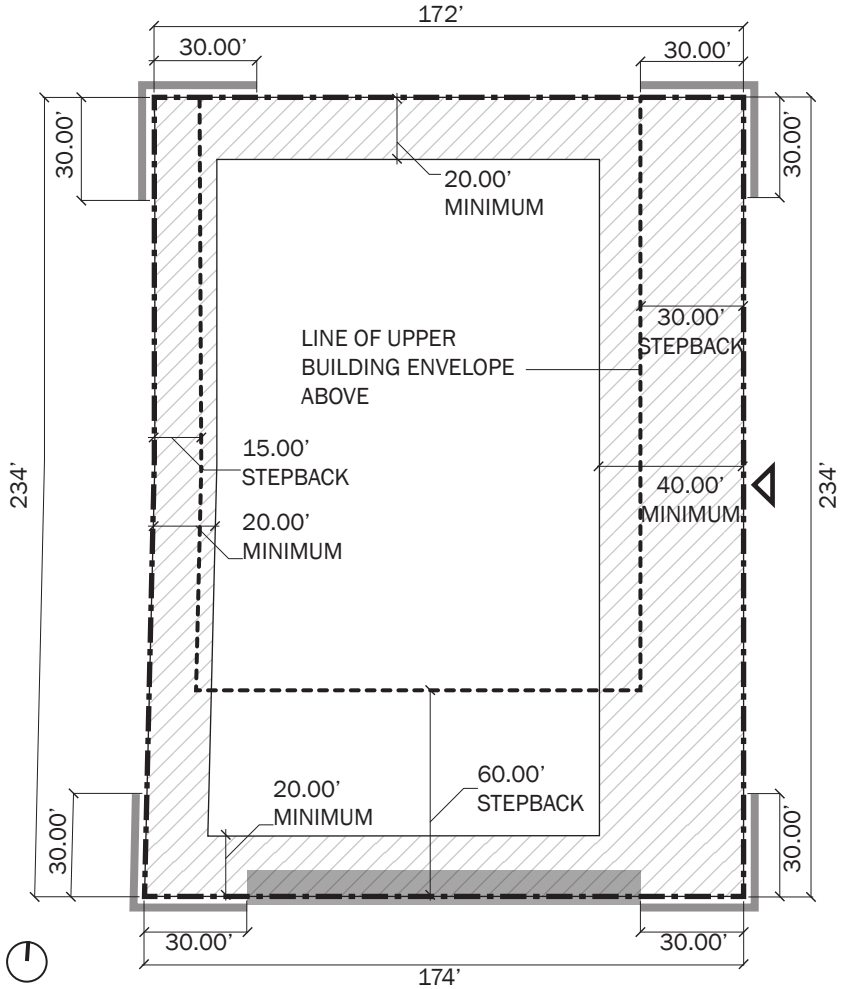

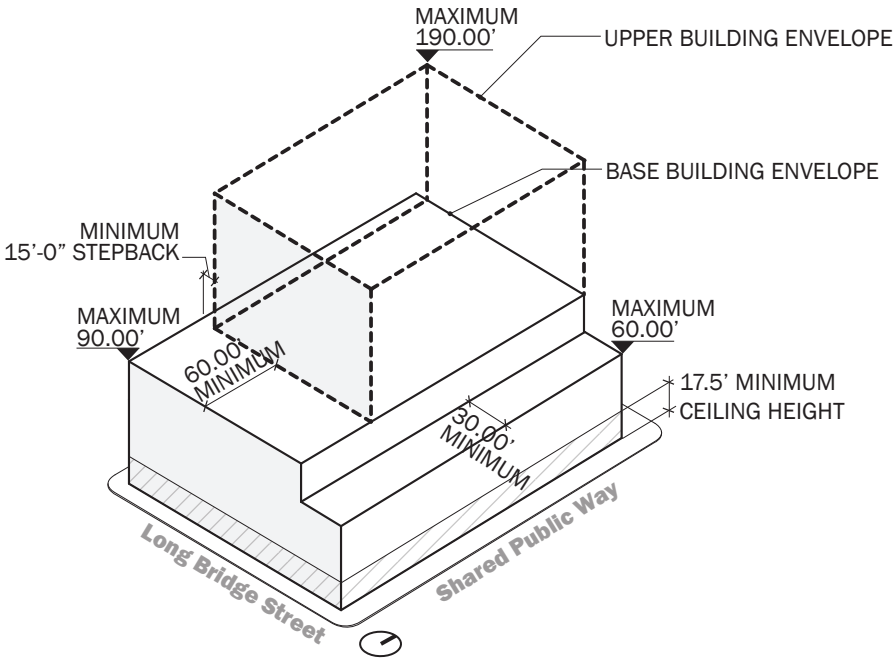

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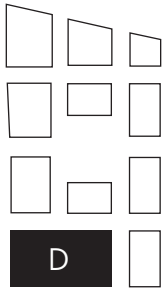
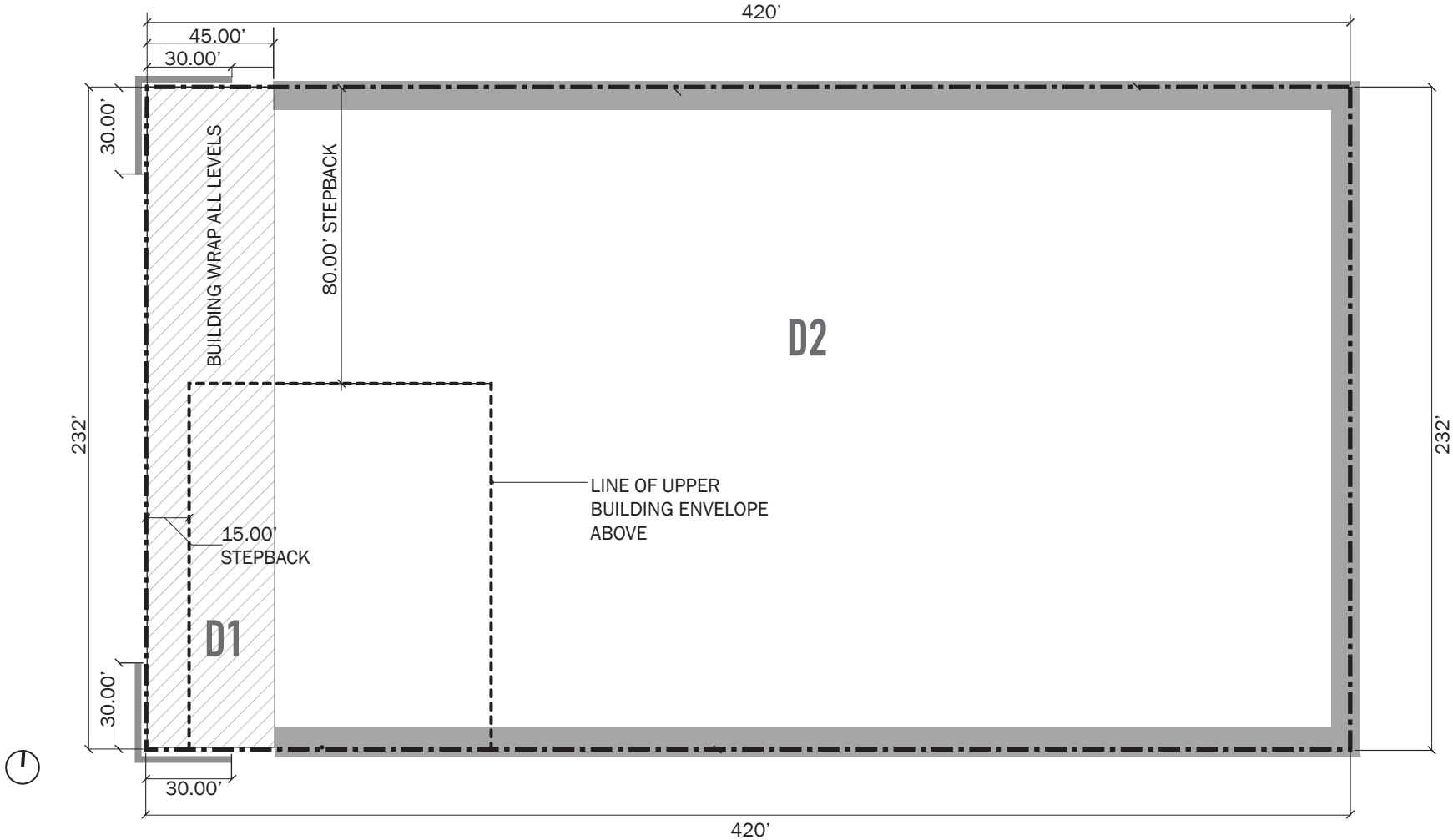
BLOCK D





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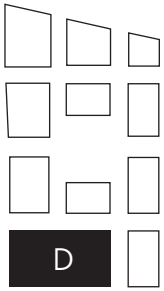
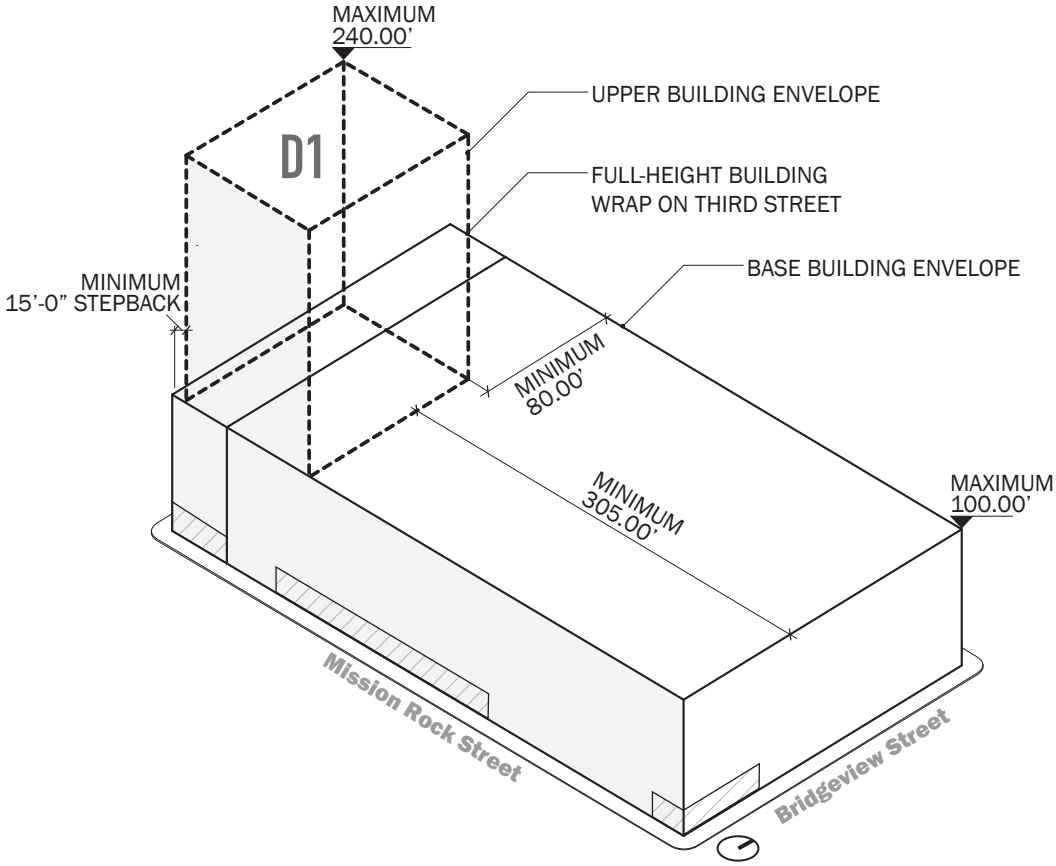
SUMMARY OF BLOCK STANDARDS
BLOCK D





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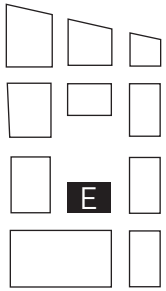

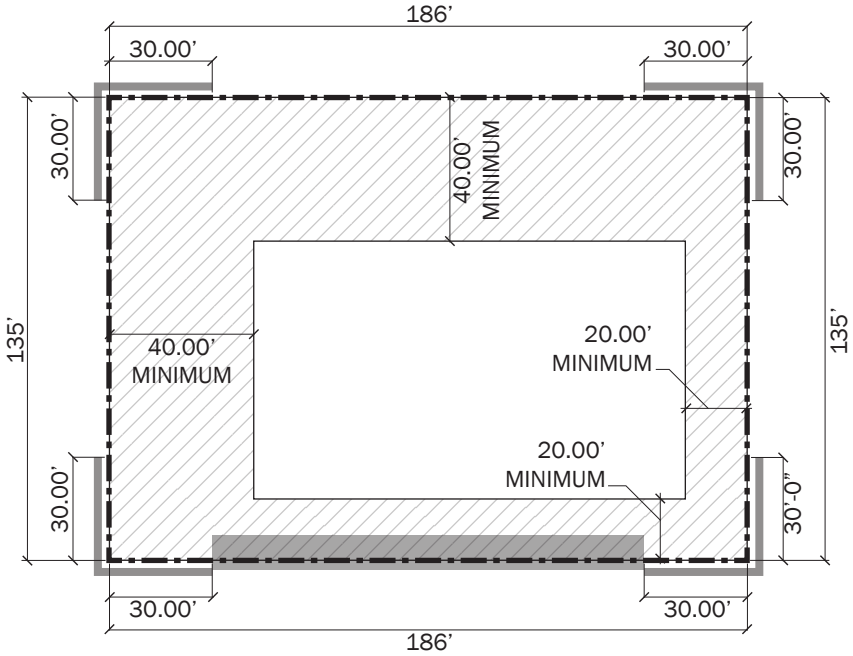

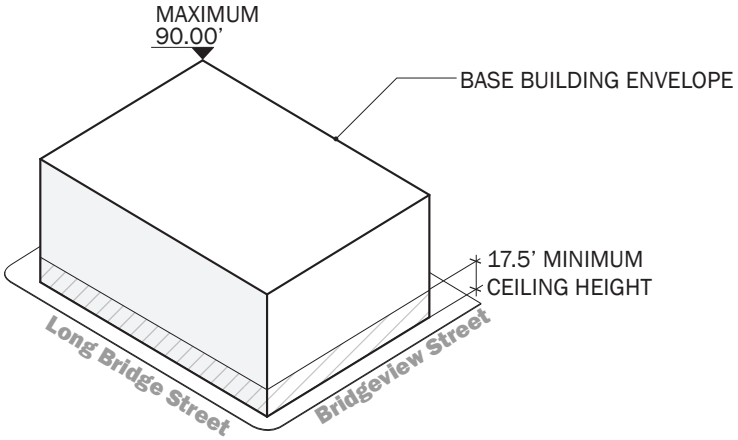

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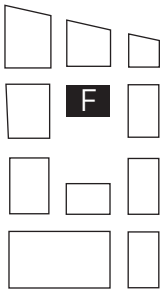

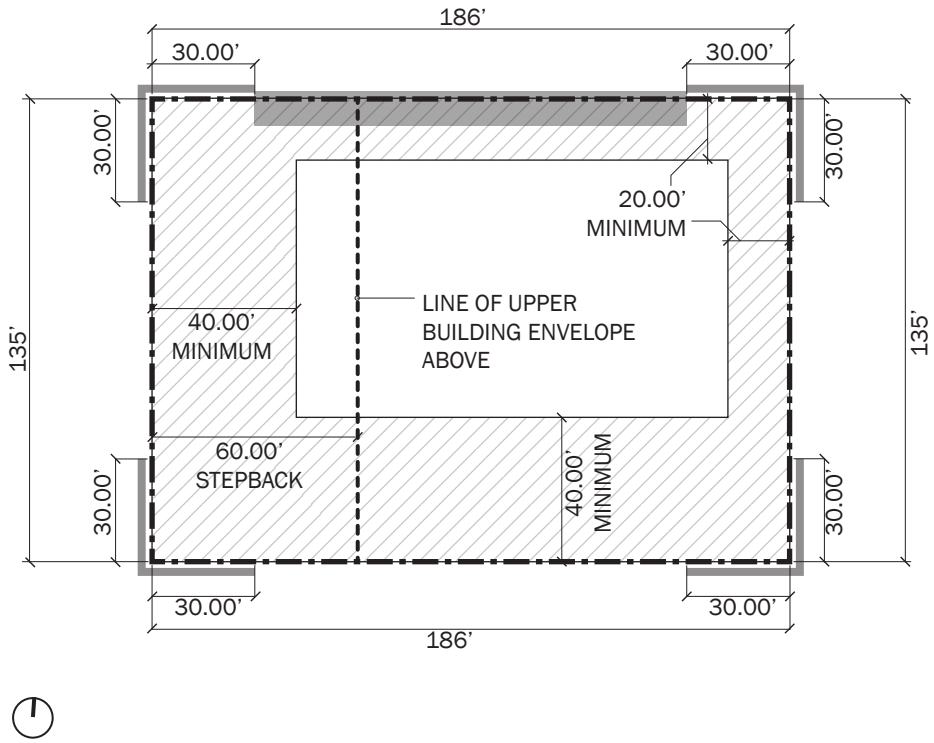

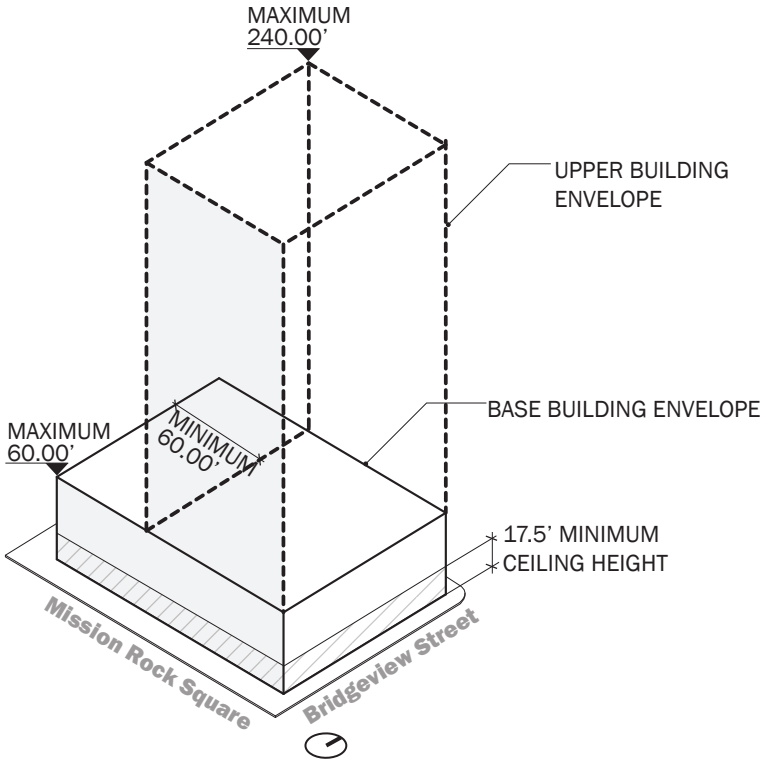

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SUMMARY OF BLOCK STANDARDS
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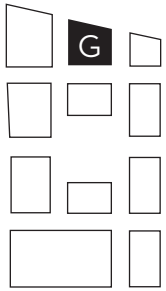

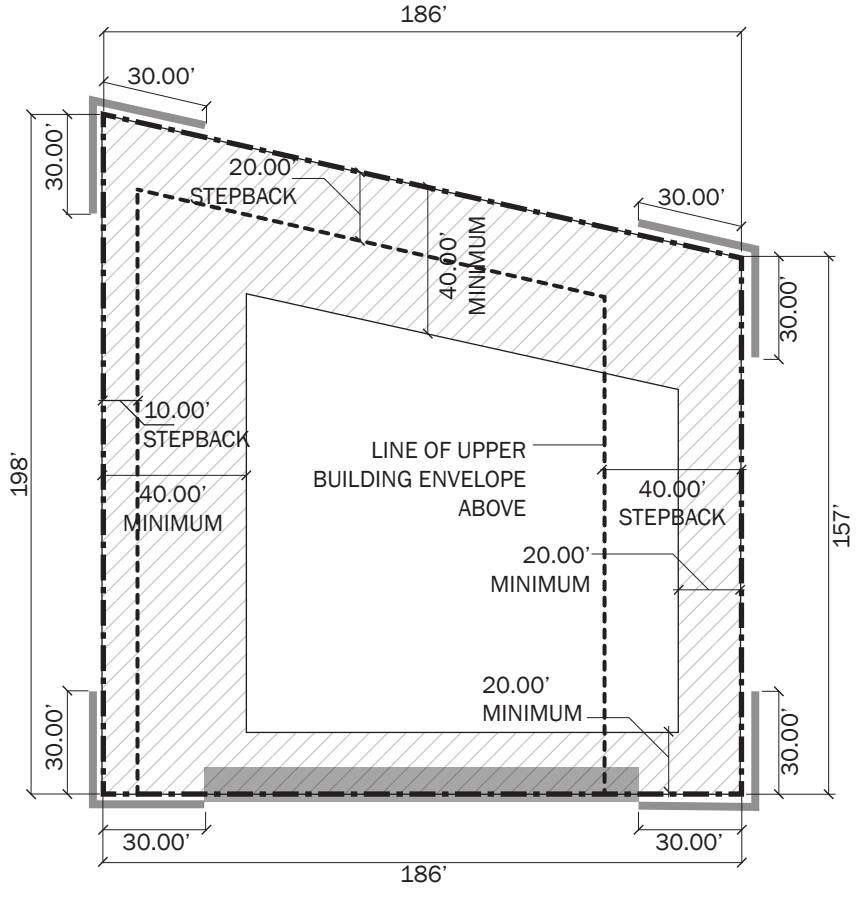

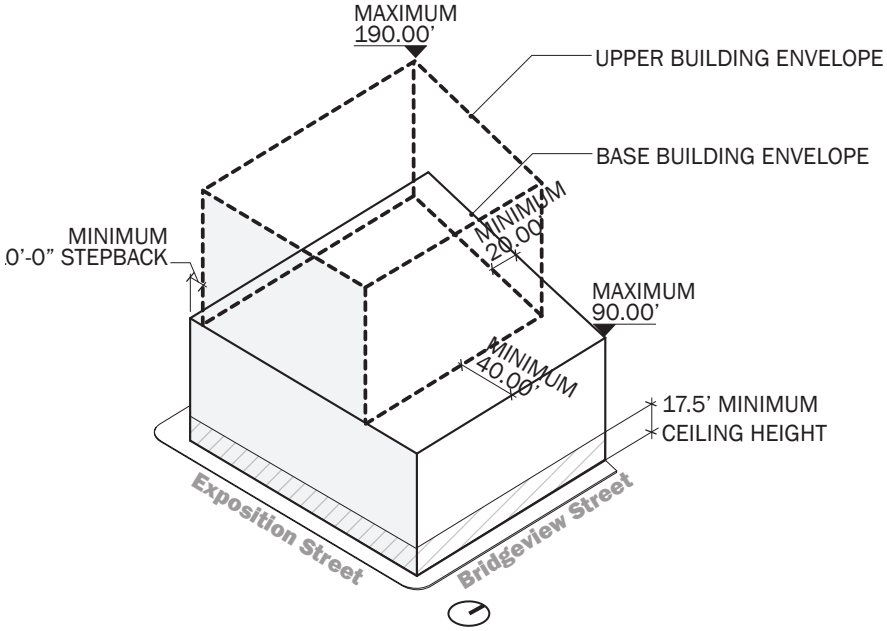

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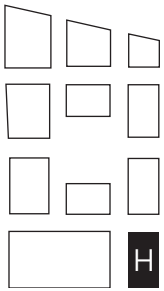

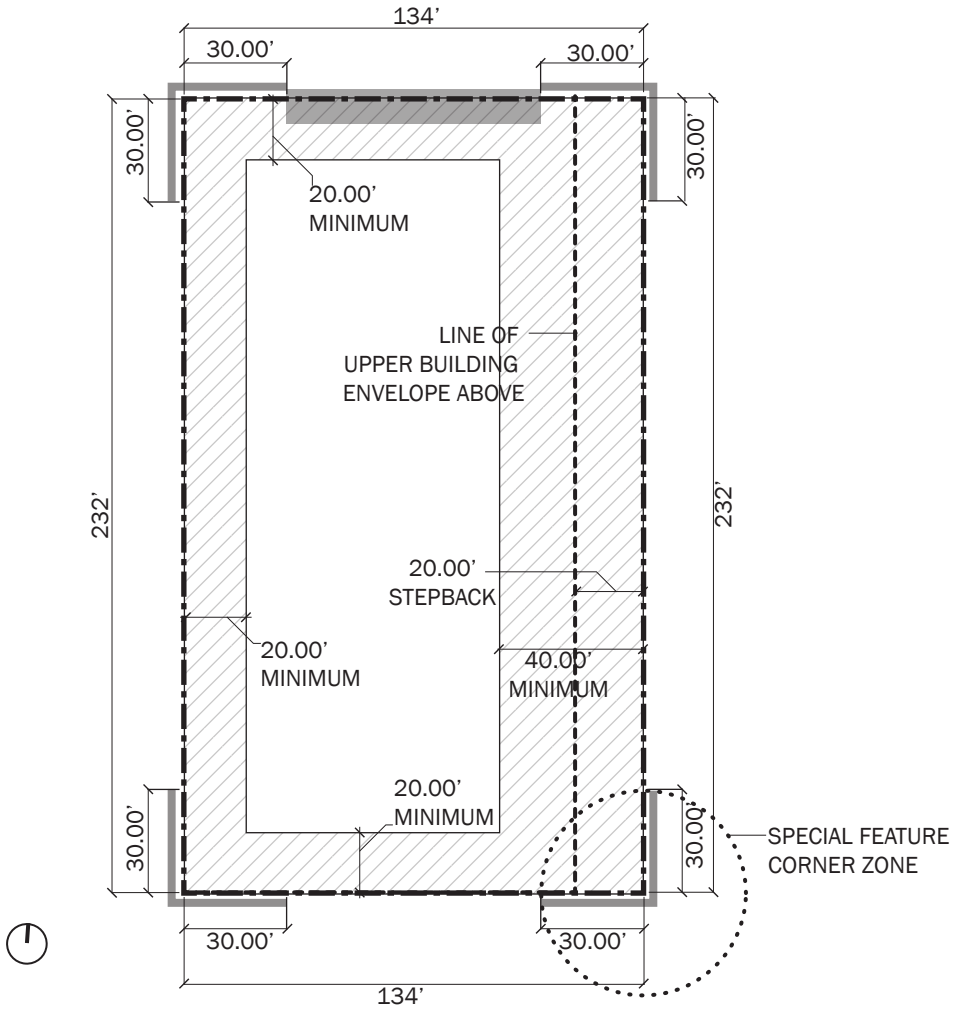

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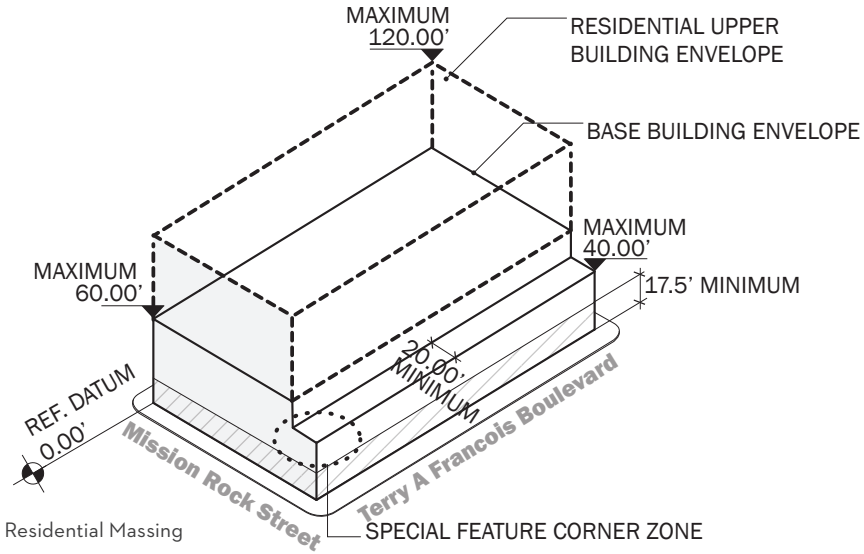

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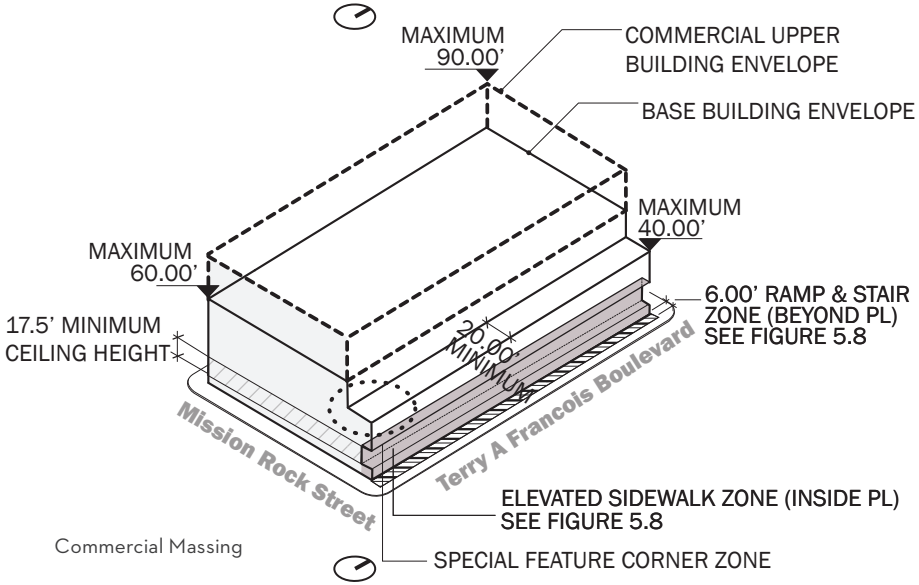
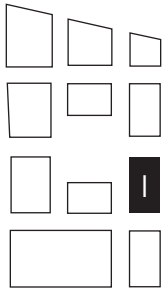
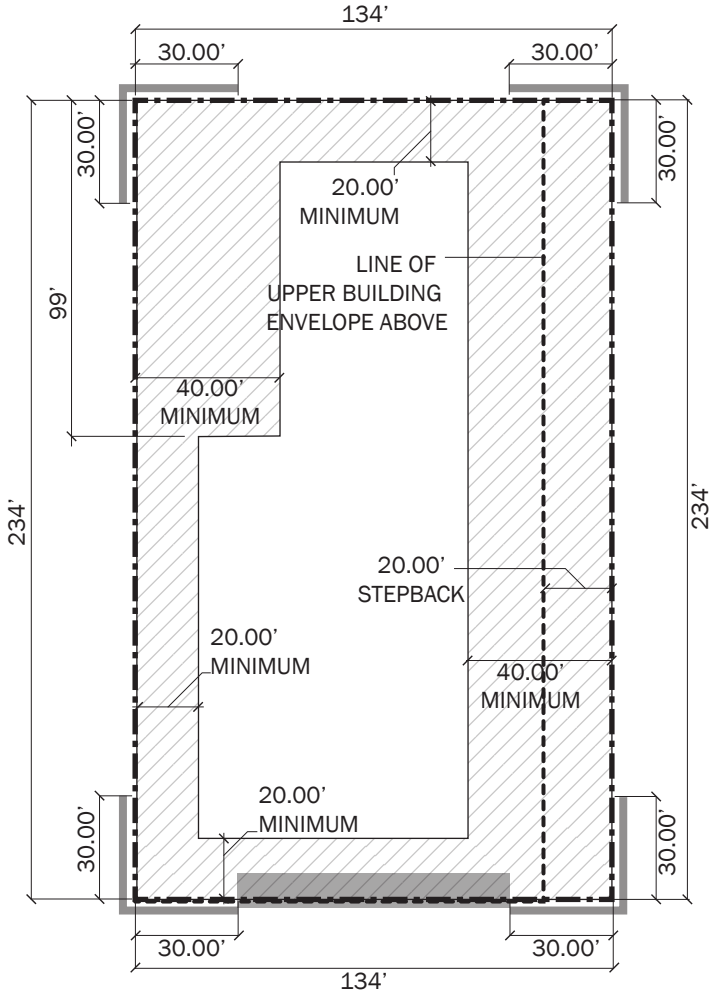


Commercial Massing

SUMMARY OF BLOCK STANDARDS
BLOCK I





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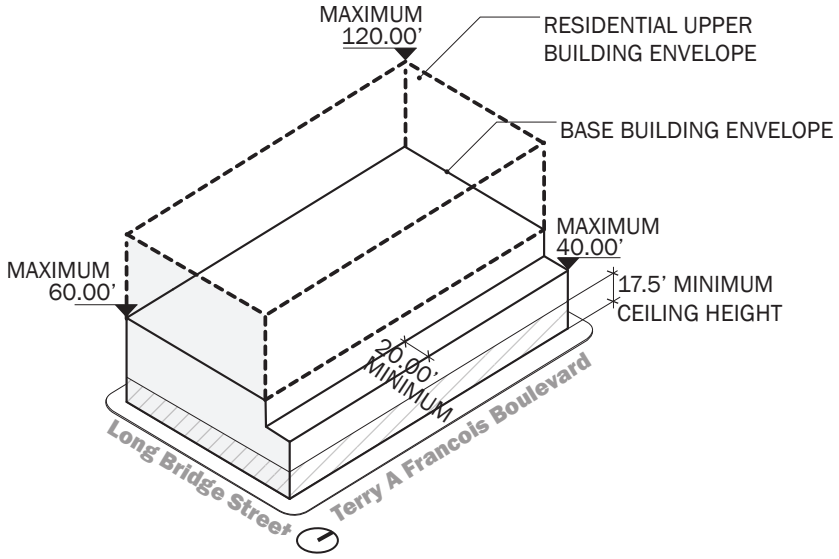

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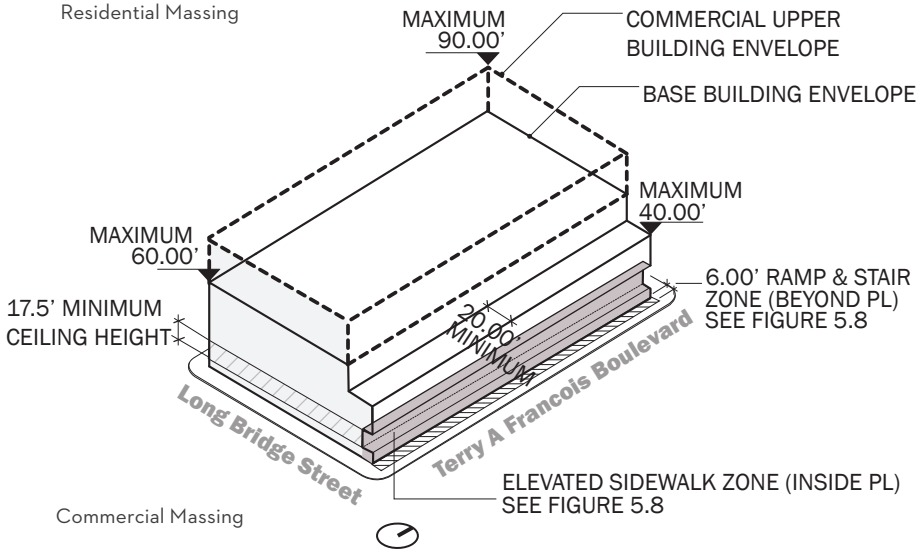
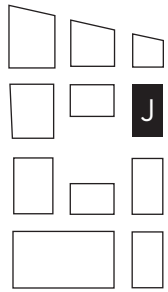
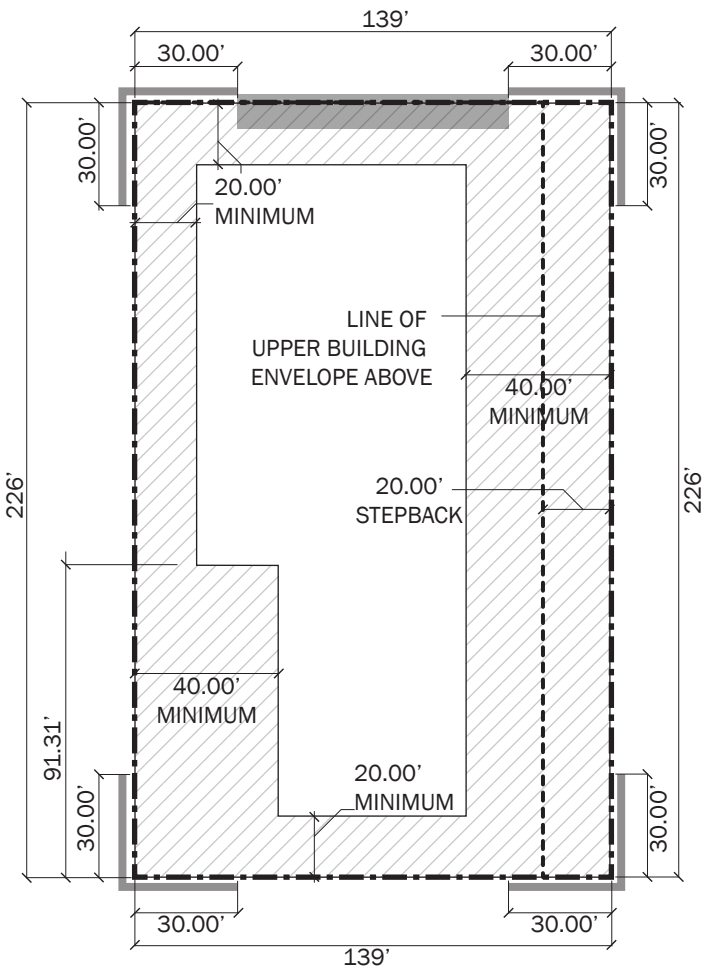


Commercial Massing

SUMMARY OF BLOCK STANDARDS
BLOCK J





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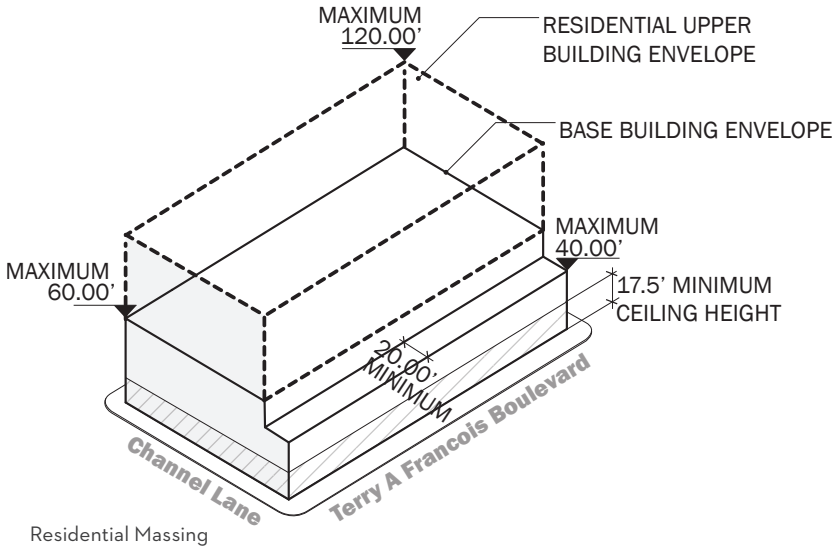
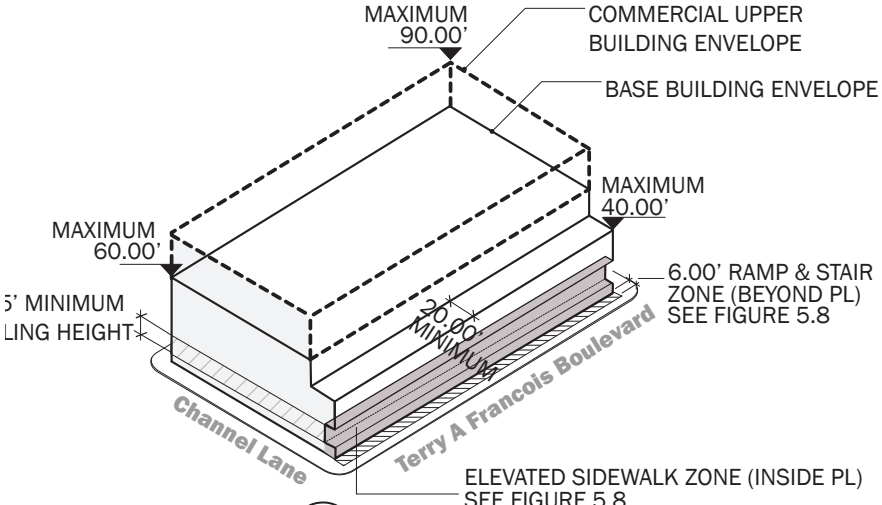
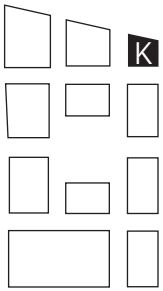


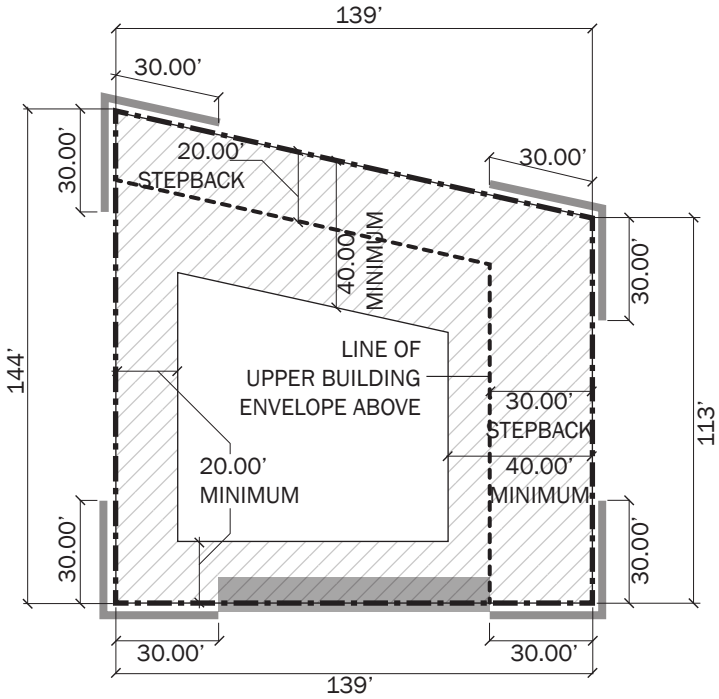
Residential Massing

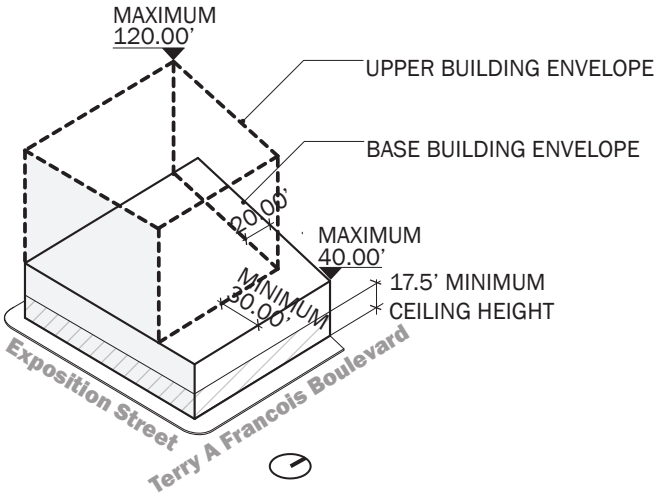


Commercial Massing

SUMMARY OF BLOCK STANDARDS
BLOCK K







Note: Parcel dimensions shown are for illustrative purposes.

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B

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Active Doorway

The main public-serving entry for a ground floor tenant.

Active Edge

A portion of a public right of way or public open space that a user of a building is allowed to occupy and create opportunities to enliven the street through furniture, signage, and merchandizing.

Articulation

Minor variations in the massing, setback, height, fenestration, or entrances to a building, which express a change across the elevation or facades of a building. Articulation may be expressed, among other things, as bay windows, porches, building modules, entrances, or eaves.

Approach Slab

An architectural detail that provides transition between the building slab and sidewalk or driveway, commonly used where differential settlement is likely to occur. On end the approach slab is directly supported on, but not anchored to, the building foundation structure, allowing the slab to hinge in reaction to the settling of the sidewalk. This detail allows for the hinged edge to effectively bridge the changing grade between the building's finished floor and the sidewalk.

Base Building

The Base Building is the lower portion of the envelope that creates the streetwall.

Block Boundary

An area of land designated to contain a specific building type or land use within a development block.

Building Envelope

The maximum dimensions of width, depth, height and bulk—within which building may exist on a given site.

Building Top

Defined as the portion of the building above the roof of the uppermost habitable floor.

Concertina Doors

A door with hinged sections that can be folded flat against one another when opened.

Controls

A set of guidelines and standards that established conceptual frameworks for land use, urban form, streets and public spaces in the Project Area.

Cycletrack

A grade-separated track for cyclists only. A contraflow cycle track runs counter to vehicular traffic.

Design Guidelines

See Guideline.

Design Standard

See Standard.

Development Block

Bounded areas defined for the purpose of site organization, establishing standards and guidelines and guiding physical development.

Diverters

A solid object at least 30 inches high and within 24 inches of the ground that guides pedestrians away from an occupied area of the sidewalk. Diverters must be flush with the building at approximately 90 degrees.

Elevated Walkway

Raised platform designed to allow for continuous pedestrian movement along the building frontage, facilitating shared loading facilities for production uses

Finished Grade

Because the majority of the site will be elevated to adapt to sea level rise, the finished grade for portions of Mission Rock will be set at a higher elevation than pre-development grade, as determined by the Mission Rock Infrastructure Plan.

Flexible Blocks

Specific Blocks on the site that are zoned for either commercial or residential.

Frontage

The portion of a development block or lot facing a street, park or other publicly accessible open space. Includes the facade of the building as well as the program or activities contained within the building that front on the public realm.

Frontage Zone

A zone along building frontages for Active Edge uses such as seating, signage, and merchandizing.

Ground Floor Setbacks

Space between the property line and the ground floor façade, measured perpendicular to the property line.

Guideline

Descriptions of building features or qualities to be considered in project designs, often requiring subjective analysis and demonstration of compliance with intent.

High Retail Zone

Zone that represents the highest level of intensity of shops, cafes, and retail.

Horizontal Development

Horizontal improvements, including infrastructure, streetscape and open space improvements that the master horizontal developer is responsible to construct.

Insets

A minor setback parallel to the property line along an entire frontage that applies only to the ground floor.

Kiosk

A small, flexible structure that contains food service and/or other retail components, with total footprint area not to exceed 200 SF (square feet) in size.

Lightweight Structure

A structure such as retail kiosks or public restrooms that do not exceed 600 GSF (gross square feet) in size.

Loading

Loading in this document refers to dedicated zones for passenger loading.

Loading Dock

A covered area within the building footprint where loading and unloading of goods may occur. Other building services such as trash compactors, dumpsters, maintenance, and storage areas may also be located here.

Massing

The exterior shape of a building or structure.

Maximum Plan Dimension

The maximum linear horizontal dimension of a building or structure at a given level, between the outside surfaces of its exterior walls.

Modification

An approved allowance for variations to certain development controls when a set of specific design guidelines are met.

Modulation

Major variation in the massing, height, or setback of a building (as a means of breaking up a structure's perceived bulk).

NIC

"Not in Contract" - indicates an area out of the scope of the project.

Parapet

A portion of a wall that projects above a roof.

Pedestrian Scale

The quality of the physical environment which reflects a sympathetic proportional relationship to human dimensions and which contributes to the pedestrian's perception and comprehension of the size, scale, height, bulk and/or massing of buildings or other features of the built environment.

Permeability

Extent of retail frontages designed to be opened up to the public realm.

Projections

Enclosed and unenclosed building area above the ground floor that encroach into the public right-of-way, such as a bay, column, cornice, or window molding.

Public Trust

The Public Trust Doctrine protects sovereign lands for the benefit, use and enjoyment of the public. Trust lands belong to the public and are to be used to promote publicly beneficial uses that connect the public to the water.

Raised Intersection

A traffic calming device whereby the intersection of two streets is raised above the level of the roadway.

Resilient

A district protected by effective defenses, adapted to mitigate climate impacts, and able to recover more quickly when those defenses are occasionally breached.

Sea Level Rise Benchmarks

MHW: (Mean High Water): the elevation benchmark used by BCDC to determine the 100' Shoreline Band. For Mission Rock, the 2016 MHW elevation is 94.3 Mission Bay Datum (MBD), and 5.7 NAVD 88.

BFE: The Base Flood Elevation, as determined by FEMA, which is the minimum elevation at which structures must be elevated or flood-proofed in compliance with FEMA/National Flood Insurance Program (NFIP) regulations to protect from the 1% annual flood event (100-year event). For the site vicinity, this elevation is 98.4 MBD, or 9.7 NAVD 88.

Servicing

Servicing refers to dedicated zones for commercial deliveries, freight loading, and building servicing; the design of these zones will be coordinated with specific blocks and land uses.

Stepback

The required distance between the vertical edge of a building above a specified height, or between the vertical edge of a building and the property line at a specific height.

Shared Public Way

Right-of-way that is designed as a single surface with no grade differentiation between street and sidewalk areas, and where roadway space is shared between pedestrians and slow-moving vehicles (SF Better Streets Plan).

Shared Street

See Shared Public Way.

Small Park Structure

A lightweight structure with total footprint area not to exceed 1,500 square feet. Where public restrooms are provided, total footprint area is not to exceed 3,000 square feet.

Social Object

Distinctive, fun, and iconic sculpture, building or landscape elements, recognizable to a particular place, that identify varied scales of gathering and use.

Standard

Mandatory and measurable design specifications applicable to all new construction.

Setback

A setback of the upper floors of a building which is greater than the adjacent setback of the lower floors.

Stoop

An outdoor entryway into residential units raised above the sidewalk level. Stoops may include steps leading to a small porch or landing at the level of the first floor of the unit.

Storefront

The facade of a retail space between the sidewalk grade and the ceiling of the first floor.

Street Room

Intimate social spaces within a street right-of-way characterized by small scale, special materials such as planting, paving, lighting, and fixed and movable furnishings, and/or program, such as retail kiosks.

Streetlife

The creation of social spaces and uses with special character and intimate scale within street right-of-ways.

Streetlife Zone

A zone within the sidewalk adjacent to the curb that houses streetscape elements such as trees, lighting, benches, and stormwater rain gardens. Equivalent to a Furnishing Zone as defined in the 2015 Subdivision Regulations.

Streetscape

The distinguishing elements and character of a particular street as created by its width, paving materials, design of the street furniture, pedestrian amenities and setback and form of surrounding buildings.

Streetwall

The aggregate effect of the façade of buildings along a property line adjacent to a public street or open space. The typical context for this term is in defining the public realm and framing or engaging the street.

Special Use District (SUD)

A Special Use District (SUD) is adopted by ordinance into the planning code and describes zoning controls such as land use, height and bulk, parking ratios, exposure, and so on. The Mission Rock SUD adopts the Mission Rock Design Controls as the document which guides the development of Mission Rock.

Sustainable Design

A multi-disciplinary design approach to balance environmental responsiveness, resource efficiency, and community context.

Tabletop Intersection

A traffic calming device whereby the intersection of two streets is raised to the level of the adjacent sidewalk.

Terrace

A raised, flat platform associated with and providing egress from a building [usually residential].

Throughway

An unobstructed path of travel for pedestrians.

Transparency

The degree of visibility through a building façade; OR

A characteristic of clear facade materials, such as glass, that provide an unhindered visual connection between the sidewalk and internal areas of the building.

Upper Building

The Upper Building is the portion of the building which rises above the Base Building.

Urban Forest

The site-wide composition of a diverse tree palette with ecological, aesthetic, and functional benefits.

Wayfinding

Tools which orient users of an area to ensure the ability to navigate through an area. Tools include signs, graphic communications, spatial markers, streetscape elements, building design, and the street network.

Working Waterfront

A street/public realm typology that prioritizes production uses and acknowledges the industrial and maritime heritage of the waterfront where it is located.

C

LAND USE CHART

The following uses are permitted uses within Mission Rock. The list is intended to be read in conjunction with Chapter 1, which includes permitted uses by Block, and Chapter 5, which described ground floor required/ permitted uses. Please also see the SUD, which governs in the event of any inconsistency with this Appendix C. Unless otherwise defined in the SUD or these Design Controls, the definitions in the Planning Code apply in determining the nature and scope of these uses.

PERMITTED LAND USES

SEE FIGURE 1.1 LAND USE PLAN

MISSION ROCK PARCELS	RESIDENTIAL USES	PRODUCTION USES	COMMERCIAL USES	RETAIL USES	PARKING GARAGES (3)	OTHER USES
A (RESIDENTIAL MIXED USE)	P	P	P	P	NP	P
B (COMMERCIAL MIXED USE)	P	P	P	P	NP	P
C (COMMERCIAL MIXED USE)	P	P	P	P	NP	P
D1 (RESIDENTIAL MIXED USE)	P	P	P	P	NP	P
D2	NP	NP	NP	NP	P	NP
E (COMMERCIAL MIXED USE)	P	P	P	P	NP	P
F (RESIDENTIAL MIXED USE)	P	P	P	P	NP	P
G (COMMERCIAL MIXED USE)	P	P	P	P	NP	P
H (FLEX COMMERCIAL OR RESIDENTIAL MIXED USE)	P	P	P	P	NP	P
I (FLEX COMMERCIAL OR RESIDENTIAL MIXED USE)	P	P	P	P	NP	P
J (FLEX COMMERCIAL OR RESIDENTIAL MIXED USE)	P	P	P	P	NP	P
K (RESIDENTIAL MIXED USE)	P	P	P	P	NP	P
PIER 48	NP	P	NP	NP	NP	P

LAND USE CHART

COMMERCIAL

AUTOMOTIVE
Parking Garage, Private*

INSTITUTIONAL
Education

Post-Secondary Institution

School

Trade School

Healthcare

Medical Cannabis Dispensary

Residential Care Facility

Community

Child Care Facility

Community Facility

Community Facility, Private

Job Training

Philanthropic Administrative Services

Public Facility

Religious Institutions

Social Service or Philanthropic Facility

SALES AND SERVICES
Catering

Design Professional

Laboratory

Life Sciences

Office, General

Philanthropic Administrative Services

Services, Administration

Services, Business

Services, Non-Retail Professional

Trade Office

PRODUCTION

AGRICULTURAL
Agriculture, Neighborhood

Greenhouse

INDUSTRIAL
Automotive Assembly

Food, Fiber, & Beverage Processing, 1

Grain Elevator

Live Stock Processing 1

Live Stock Processing 2

Manufacturing, Heavy 1 (woodworking mill only)**

Manufacturing, Heavy 2 (rendering or reduction of fat, bones, or other animal material only)**

Manufacturing, Heavy 3 (Manufacture, refining, distillation, or treatment of any of the following only: candles (from tallow), dye, enamel, lacquer, perfume, printing ink, refuse mash, refuse grain, or soap)**

Manufacturing, Light

Metal Working

Sales, Wholesale**

Storage, Wholesale**

RESIDENTIAL

Dwelling Unit

Group Housing

Homeless Shelters

Hotel, Residential

Live/Work Unit

Senior Housing

Single Room Occupancy Unit

Student Housing

RETAIL

AUTOMOTIVE

Automotive Repair***

Automotive Wash***

Parking Garage, Public*

ENTERTAINMENT, ARTS AND RECREATION

Arts Activities

Entertainment, General

Entertainment, Nighttime

Entertainment, Outdoor

Movie T heater

SALES AND SERVICES

Animal Hospital

Bar

Cat Boarding

Gift Store, Tourist-Oriented

Grocery Store, General

Grocery Store, Specialty

Gym

Hotel****

Jewelry Store

Kennel

Liquor Store

Massage Establishment

Massage, Chair and Food

Mobile Food Facility

Mortuary

Non-Automobile Vehicle Sales/Rental

Pharmacy

Restaurant

Restaurant, Limited

Retail Sales and Services, General

Services, Financial

Services, Health

Services, Limited Financial

Services, Personal

Services, Retail Professional

Take-Out Food

Tobacco Paraphernalia Store

Trade Shop

Walk-Up Facility

OTHER USES

Community Recycling Center

Open Recreation Area

Passive Outdoor Recreation

Public Transportation Facility

Utility Installation, District Serving Utility Installation only

Wireless Telecommunications Services Facility

*Only permitted on Block D2 and on other Blocks as provided in the DA and DDA.

**Only permitted as accessory to a Production Use.

***Only permitted as accessory to a Parking Garage.

****Up to 300 hotel rooms.

MISSION ROCK

PERKINS + WILL

CMG

MISSION ROCK

SUSTAINABILITY STRATEGY

MISSION ROCK

SUSTAINABILITY STRATEGY

INTRODUCTION 04
Executive Summary 04
Mission Rock Design Documents 06
Document Overview 08

TARGETS 10
01 Adaptability & Resilience 10
02 Water 16
03 Energy 24
04 Transportation 34
05 Resource Conservation 38
06 Health & Wellness 42
07 Sustainable Materials 46
08 Habitat & Ecosystem Function 52
09 Community Identity 56
10 GHG Emission Assessment 60

APPENDIX 67
A1 Ecodistrict Equivalency 68
A2 Glossary 72
A3 Codes & Standards 73
A4 GHG Accounting Methodology 75
A5 Water and Energy: Detailed Background 83

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EXECUTIVE SUMMARY

Mission Rock is one of the most prominent sites and a key gateway development in the Mission Bay neighborhood of San Francisco. It will be developed as a leading example of sustainable design, construction, community, and operations.

The project's ambitious sustainability vision includes a development in which 100% of building operational energy use comes from renewable sources. The project will also target zero water waste, where 100% of non-potable water demands will be met with non-potable sources; a healthy site with high outdoor air quality, active design, and occupant access to daylight and views; and construction materials that will be selected for low environmental impact.

MISSION ROCK PERFORMANCE GOALS
Resilient and Adaptive: Design to be resistant to San Francisco sea level rise projections for the year 2100
Energy: Target 100% operational energy use from renewable sources
Zero water waste: Target 100% of non-potable water to be met with non-potable sources
Transportation: Target 20% reduction in single occupancy vehicle trips
Healthy site: High quality outdoor environment, active design, daylight and views
Low Impact Materials: Encourage manufacturer transparency and select low impact materials through material optimization

SITE-WIDE SYSTEMS

The new infrastructure anticipated as part of the horizontal development will include an elevated site to mitigate future sea level rise, a central energy plant (CEP) with bay source cooling, and a central water treatment plant. These horizontal development features are essential to the district's ability to achieve its ambitious sustainability goals. They also provide a significant benefit to vertical developers by providing an easy connection to carbon-free cooling and a non-potable water source to meet all of the site's non-potable demands.

The Mission Rock Development is participating in the San Francisco Eco-District program. Eco-Districts are neighborhood scale public-private partnerships that strengthen the economy and reduce environmental impacts while creating a stronger sense of place and community. The Mission Rock development is looking to maximize this potential to deliver a sustainable, low-carbon neighborhood.

Mission Rock's Sustainability Strategy provides a comprehensive strategy to achieve Mission Rock's goal of becoming a model for sustainable development in the city. Multiple sustainable site strategies have been evaluated in order to inform the targets and strategies included in the Sustainability Strategy.

It is a critical objective to define strategies that are ambitious but achievable, so that the performance goals remain relevant throughout the project's longer-term delivery time frame (10-15 years) and the overall project lifespan (75-100 years). While due consideration

is given to current code requirements, the impact of future codes can only be evaluated to the point that the information is known.

The specifics of this Sustainability Strategy have been developed in consultation with the SFGiants, the project design team, the Port Planning Department, and Planning Division.

Sustainable development is influenced and defined by a wide array of environmental, economic, and social factors. The key performance areas at Mission Rock are identified as those that will maximize the environmental performance and benefits to the community. The Mission Rock development has the following key performance areas:

- Adaptability & Resilience
- Water
- Energy
- Transport
- Health and Wellness
- Waste Reduction Management
- Sustainable Materials
- Habitat and Ecosystem Function
- Community Identity

These correspond to the focus areas for San Francisco Eco-Districts, of which Mission Rock is a Type-1 Eco-District. Type 1 Eco-districts are 'blank slate' developments, where little or no existing development exists. As a new-build development on an existing parking lot without utility infrastructure connections,

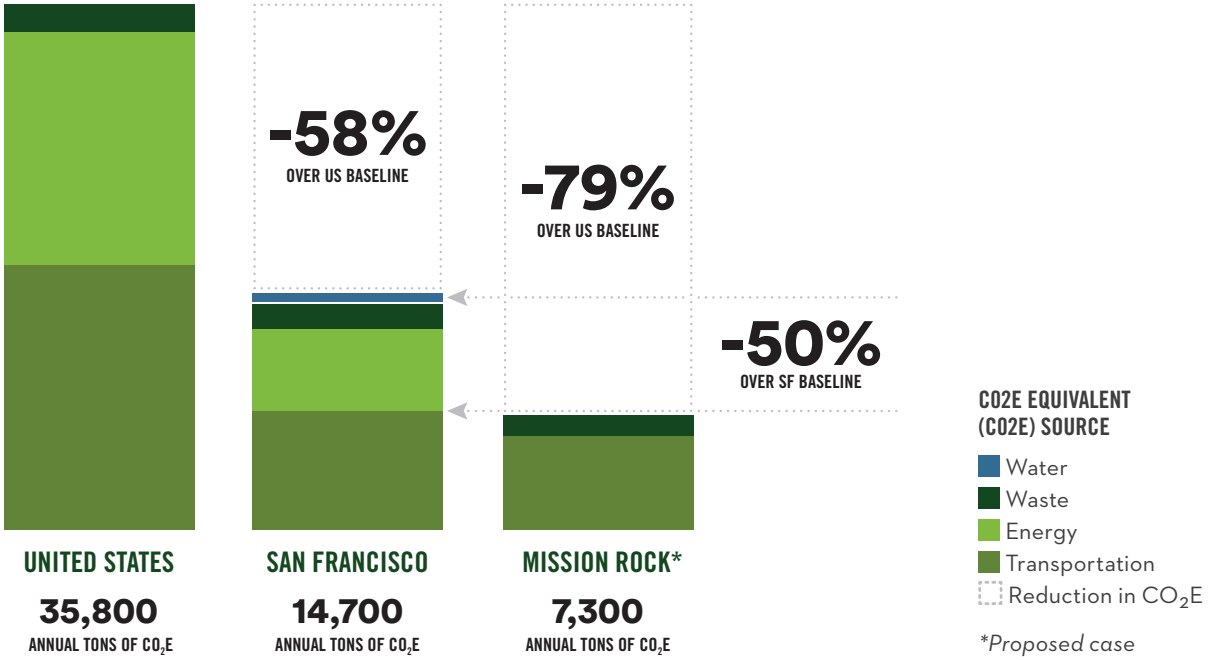


FIGURE 0.1: Site-Wide Greenhouse Gas Emissions

the development is considered to be one of the first Type 1 Eco-districts in San Francisco. The potential environmental performance of a Type 1 Eco-district can be influenced by the delivery of new infrastructure in the ground (horizontal development), new buildings (vertical development), community engagement, and management and participation strategies.

In addition, the greenhouse gas (GHG) impacts of proposed measures for energy, water, transport and waste at Mission Rock have been evaluated The GHG assessment indicates that transport strategies are the overriding driver for GHG emissions on the site. Energy used in the buildings has the second largest influence on total GHG emissions, while water is relatively minor in terms of GHG emissions impacts. Mission Rock intends to minimize its future GHG emissions through an innovative Transportation Demand Management strategy (TDM) and off-site renewables for the operational GHG emissions for the buildings on site.

Other key performance areas, which may not directly impact GHG emissions, should be considered in terms of regional and local impacts, economic costs, and social benefits, both now and into the future.

MISSION ROCK DESIGN DOCUMENTS

The Sustainability Strategy comprises one section of the Mission Rock Design Documents and has been developed in conjunction with the Vision & Design Intent, Design Controls (DCDG), Transportation Plan and the Infrastructure Masterplan. These design documents are part of a larger set of Transaction Documents which make up the Lease Disposition Development Agreement (LDDA). All of these documents contain requirements and recommendations for the project

MISSION ROCK VISION & DESIGN INTENT

This document contains the big picture thinking and aspirations that will guide the process for the design and implementation of Mission Rock.

MISSION ROCK DESIGN CONTROLS (DC)

This document guides the development of the open spaces, streets, and buildings at Mission Rock. The DC ensures that the site will be developed in a way that is consistent with the vision as defined in the Mission Rock Vision and Design Intent document.

MISSION ROCK SUSTAINABILITY STRATEGY

This document identifies the high level sustainability goals for Mission Rock, details the requirements for the horizontal and vertical development and summarizes the anticipated reduction in greenhouse gas (GHG) emissions resulting from the district's approach to sustainable design.

MISSION ROCK INFRASTRUCTURE PLAN

The design of the landscape, buildings, and sustainability strategies will be closely coordinated with the infrastructure planning at Mission Rock. This plan regulates the complex coordination of streets, utilities, and services.

MISSION ROCK TRANSPORTATION PLAN

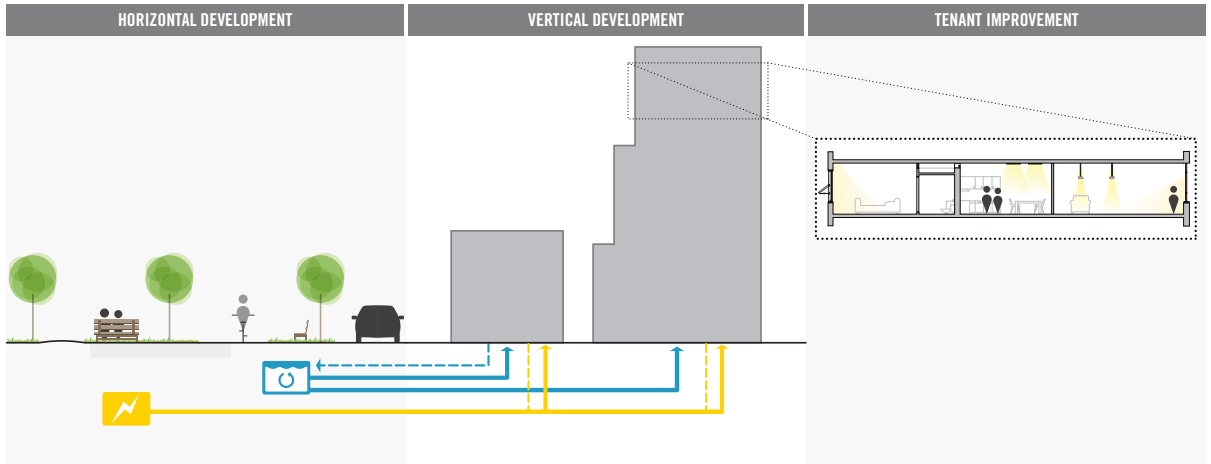
In addition to coordinating the daily circulation of people, bicycles, and vehicles to and around the site, the Transportation Plan describes how access to the site functions during peak event times.

DOCUMENT OVERVIEW

The content in the Sustainability Strategy focuses primarily on the horizontal and vertical development of Mission Rock. Requirements for tenant spaces are limited to water fixture efficiency requirements to ensure that the designed conditions for water reuse align with the assumptions made during the masterplanning phase. However, there are a number of recommendations pertaining to the tenants which should be reviewed and targeted by all project teams.

The diagram to the right shows the different areas of the Mission Rock development addressed by the Sustainability Strategy.

Each section of the Sustainability Strategy follows the same basic structure. The sections starts with an executive summary to provide a high level overview of the goals relevant to that topic. This is followed by a description of the horizontal development and how it supports or enables the district or individual buildings to achieve the targets related to that topic. Certain sections have background information which describe the aspects of each topic that are relevant to the Mission Rock site. Most sections have a series of Requirements & Recommendations.



Horizontal Infrastructure
Central Energy and Water Treatment
Open Space
Transportation Demand Management
Site Materials Selection
Outdoor Environmental Quality

Connection to Centralized Infrastructure
Building Performance
Structural Materials Selection

Water Fixture Performance
Lighting & Equipment Recommendations
Material Selection Recommendations

EXECUTIVE SUMMARY

HORIZONTAL INFRASTRUCTURE BENEFIT & TOPIC BACKGROUND INFORMATION

REQUIREMENTS & RECOMMENDATIONS

VARIETY STORE
NUTS &

ADAPTIVE DISTRICT

Site Elevation Meets 2100 projection for sea level rise

*

01

ADAPTABILITY & RESILIENCE

The overall vision for Mission Rock is to create a resilient and adaptive district that is protected against coastal sea level rise and supports passive survivability and vibrance in a future climate which is hotter, drier, and less predictable.

For the city of San Francisco, changes to climate conditions are expected to manifest in:

- Continuing coastal sea level rise
- Increasing temperatures with a greater number of days over 80°F
- Decreased precipitation rates and continuing regional drought

"Adaptability" is the capacity to withstand changing environmental conditions over the lifespan of the building or system. Mission Rock's approach to adaptability is to find strategies that also provide environmental benefits in terms of reduced resource consumption.

"Resilience" refers to the ability to withstand and recover quickly from an extreme event. In San Francisco, resilience often refers to its ability to protect occupant lives and return to partial or full function after an earthquake.

The enabling work completed as part of Mission Rock's horizontal development addresses the fact that the site is located in a sea rise vulnerability zone and includes a number of adaptive measures as described on the following page.

HORIZONTAL DEVELOPMENT: ADAPTIVE STRATEGIES

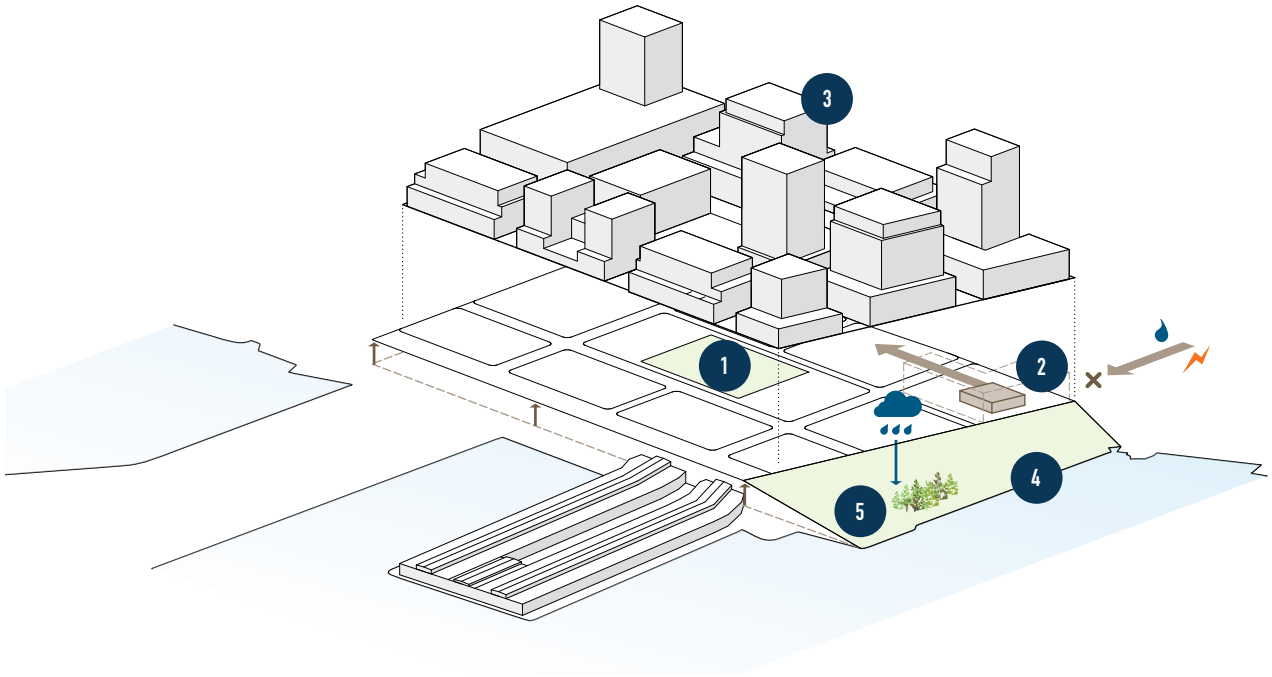
The measures taken by the horizontal development provide vertical developers with an adaptive site condition and alleviate the need for each vertical developer to invest in adaptive measures building by building. The benefits provided to the vertical developer by the horizontal development are described below and highlighted in the diagram to the right.

To protect the Mission Rock development against sea level rise and storm surges, the development blocks will be elevated to 104ft above the Mission Bay Datum (MBD). This elevation accommodates the 2100 sea level rise (SLR) projection of 66 inches above 2000 mean higher high water (MHHW) and the 100-year storm surge. China Basin Park acts as a buffer during storm events, protecting buildings and critical infrastructure. Saline-tolerant native or climate-appropriate plant species shall be included in the stormwater gardens to increase vegetation resilience in the case of a Bay flood event.

Mission Rock will require all vertical developers to connect to Mission Rock's anticipated central thermal energy plant and water treatment plant. These two on-site resources can provide heating, cooling, and recycled water sources, even during failures of local supplies.

In addition, the site pilings provided as part of the horizontal infrastructure reduce liquefaction potential in the event of an earthquake.

All buildings on site will benefit from these strategies to increase resiliency and adaptability. Vertical developers can further increase the district's adaptive ability by designing their buildings with high performance envelopes, and focusing on passive heating and cooling strategies to support passive survivability in the event of a power failure and loss of mechanical conditioning.



1

Development blocks will be elevated to 104ft MBD to accomodate the upper level 2100 SLR projections and the 100-year storm surge.

2

The anticipated central energy and water treatment plants may maintain function during failure of city supplies, and increase resilience in a major event and long term adaptability to drought

3

Recommended building design strategies can increase passive survivability and interior comfort in the event of power failure and comfort for long term climate change

4

China Basin Park provides a buffer on the North side for rising sea level and storm surges between the bay and the buildings and critical site infrastructure

5

Large stormwater treatment area contains saline tolerant planting and can help mitigate storm surges

ADAPTIVE SITE BACKGROUND INFORMATION

SEA LEVEL RISE & FLOOD PROOFING

Increasing sea levels and the greater likelihood of storm surges have influenced site-wide planning decisions for Mission Rock. The district will take the following measures to future proof against rising sea levels:

Development blocks will be elevated to 104 ft MBD to protect against the maximum 2100 Sea Level Rise projection and 100-year storm surge.

China Basin Park is located along the seawall while the commercial and residential buildings on site will be set back from the bay edge. This strategy provides a buffer zone between the Bay and the site's critical infrastructure of roads and buildings.

The largest storm water treatment area for the site will be located along the seawall in China Basin Park. Locating this site amenity here can help protect against storm surges. The DCDG specifies that planting in this treatment area must be salient tolerant and native or climate-appropriate in order to survive a potential storm surge event.

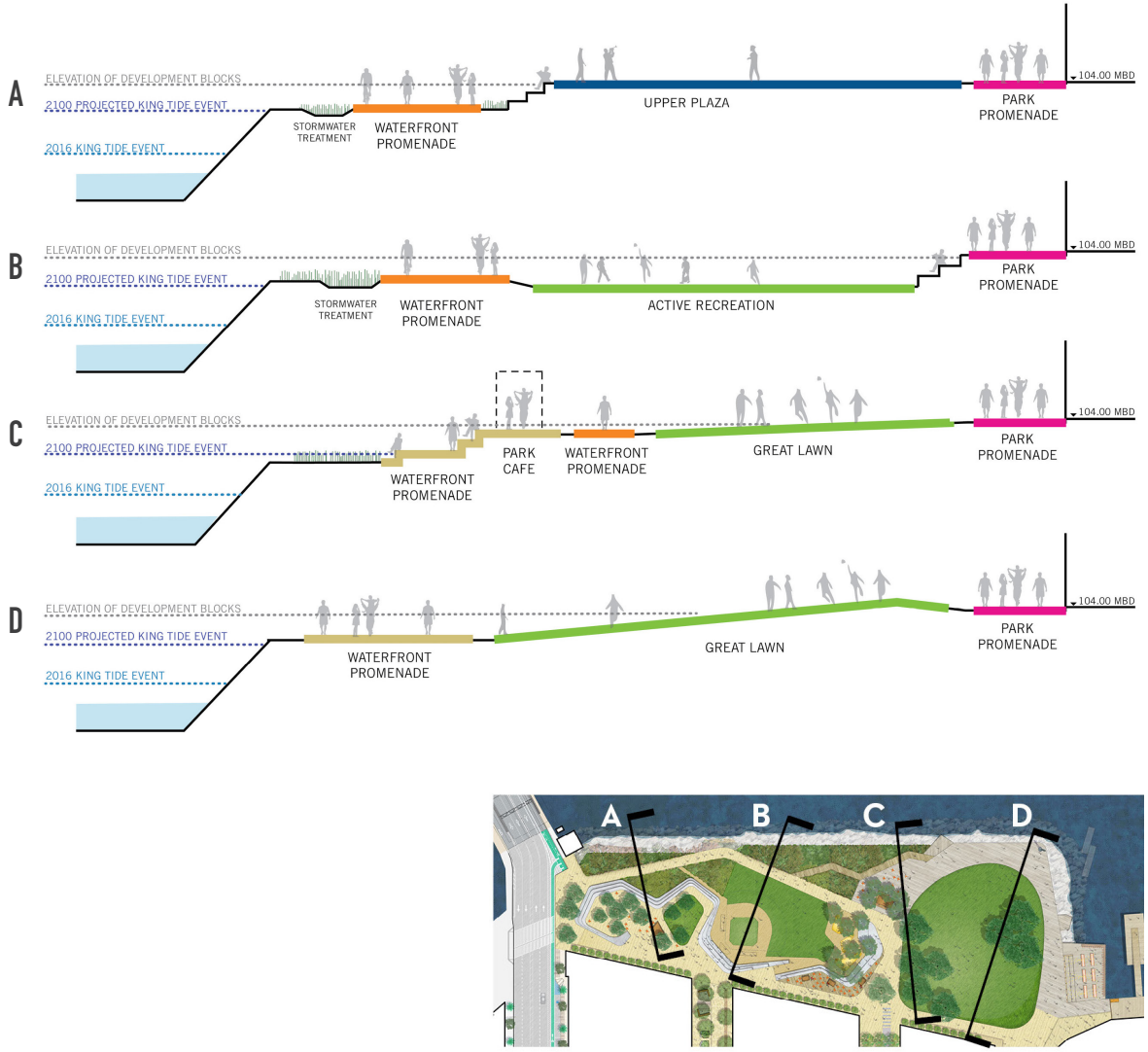
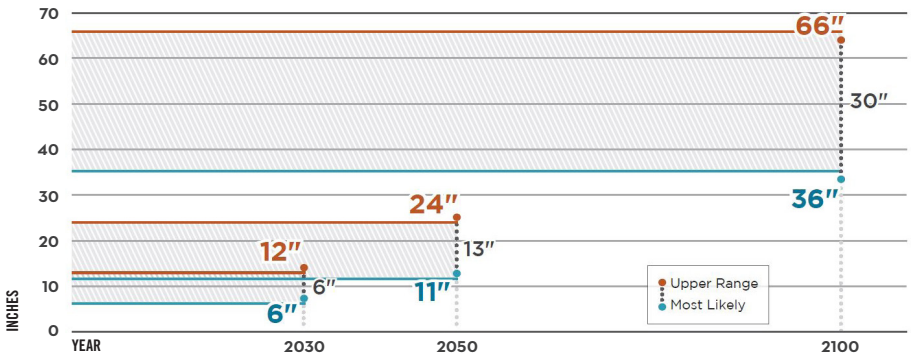


FIGURE 1.1: Programmatic Relationships and Grade Changes

SEA LEVEL RISE PROJECTIONS FOR SAN FRANCISCO RELATIVE TO THE YEAR 2000

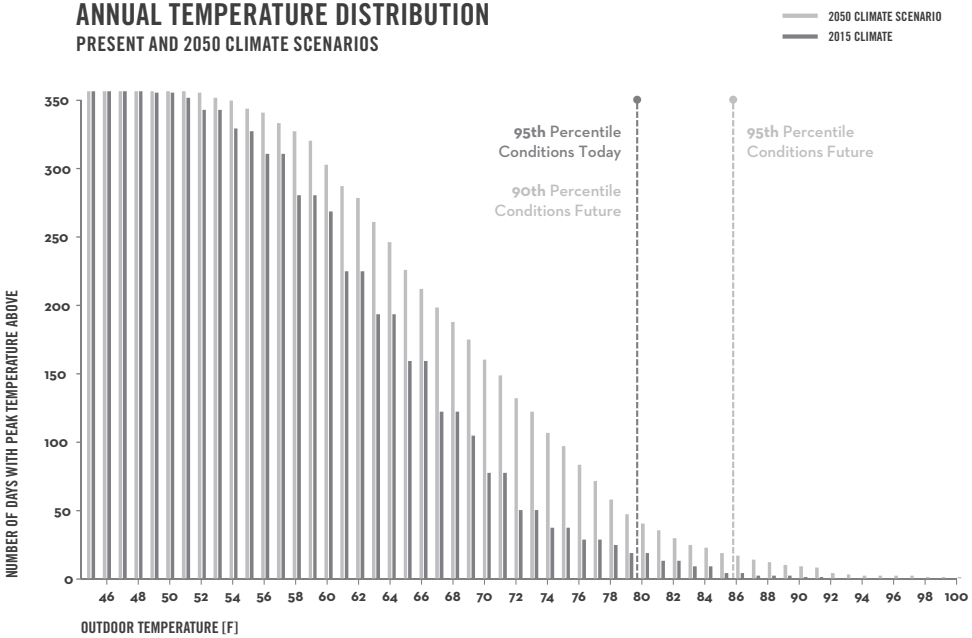


Lower range projections are excluded as they are not recommended for planning purposes.
SOURCE: SAN FRANCISCO SEA LEVEL RISE ACTION PLAN, NRC (2012)

NOTE: These SLR projections do not include extreme tides or coastal storms, which could add up to 41 inches of temporary flooding on top of rising sea levels, for a total of up to 107 inches above today's average high tide.

ANNUAL TEMPERATURE DISTRIBUTION

PRESENT AND 2050 CLIMATE SCENARIOS



PASSIVE SURVIVABILITY IN A FUTURE CLIMATE

Future climate models predict a gradual increase in local annual temperatures over the coming years. These regional temperature escalations are exacerbated by local heat island conditions.

The resulting increase in building cooling demands may contribute to an overburdened energy grid and increase the likelihood of blackouts and brownouts. For this reason and for assurance during disaster events, it is important that buildings on the Mission Rock site can maintain an acceptable indoor environment without heating, cooling or electricity.

REGIONAL DROUGHT AND WATER CONSERVATION

With the regional drought, there is increasing water uncertainty around California's water resources. The Mission Rock site includes over 8 acres of open space, much of which incorporates vegetated space for recreation, provision of native habitat, and gardens. Trees lining the streets provide shade and contribute to a human scale pedestrian environment throughout the site. All vegetation on the Mission Rock site will be irrigated with recycled water from the central graywater treatment facility. The Public Realm guidelines also include recommendations for drought tolerant and low water species. This approach reduces the site's water consumption and ensures that the site's vegetation will remain vibrant even in worsening drought conditions. Additionally, the minimization of on-site cooling towers through use of bay source cooling and graywater reuse for flushing reduces overall site water demand. More information can be found in the following water section.

REQUIREMENTS

SEA LEVEL RISE PROTECTION

All building finished floors to be elevated above 104 ft (MBD) or 15.3 ft (NAVD88). Parking garages and building frontages along the perimeter of the site adjacent to existing grades are exempt from this requirement.

STORM SURGE PROTECTION

Saline-tolerant native or climate appropriate plant species shall be included in the design and maintenance and management strategy of the stormwater gardens to increase resilience of treatment gardens in the case of inundation in a Bay flood event.

PASSIVE SURVIVABILITY

Pursue a central energy plant (CEP) and a centralized graywater treatment plant to increase likely-hood that heating, cooling and non-potable water could be provided during times when City supplies become unavailable. [subject to confirmation of feasibility]

RECOMMENDATIONS

PASSIVE SURVIVABILITY

Vertical Development

- Target 40% window-to-wall ratio (WWR), with a maximum WWR of 60%
- Highly insulated envelope including high performance glazing that abate temperature swings within buildings
- Optimize shading to maximize usable daylight access and minimize solar gains
- Operable windows for natural ventilation
- For residential buildings, provide access to common area drinking water that can be supplied without power

ZERO WATER WASTE

Meet 100% Of Non-Potable Water Demand With Non-Potable Sources

*

02

WATER

The Mission Rock district has established a goal of Zero Water Waste, meaning that 100% of non-potable water demands would be met with recycled water. This goal can be achieved through a combination of a water-efficient central energy plant, water efficient fixtures and landscape, and a centralized graywater treatment system.

At full build out, this combination of strategies is estimated to save roughly 15.5 million gallons of potable water per year over a typical San Francisco development.

The Mission Rock site was a salt marsh and lagoon in the 1880s before it was developed. Given its history, it is only appropriate that the district's most significant water conservation measure comes from maintaining a direct connection to the Bay. The largest water savings come from the elimination of cooling towers through anticipated bay source cooling at the central energy plant or other low energy cooling options. This strategy alone reduces the site's water demand by more than 6 million gallons per year.

The following page describes how the centralized energy and water systems anticipated as part of the horizontal development will contribute to site-wide water conservation; enable vertical developers to meet San Francisco's water reuse ordinance; and assist developers in meeting the SF Green Building Code.

HORIZONTAL DEVELOPMENT: WATER CONSERVATION

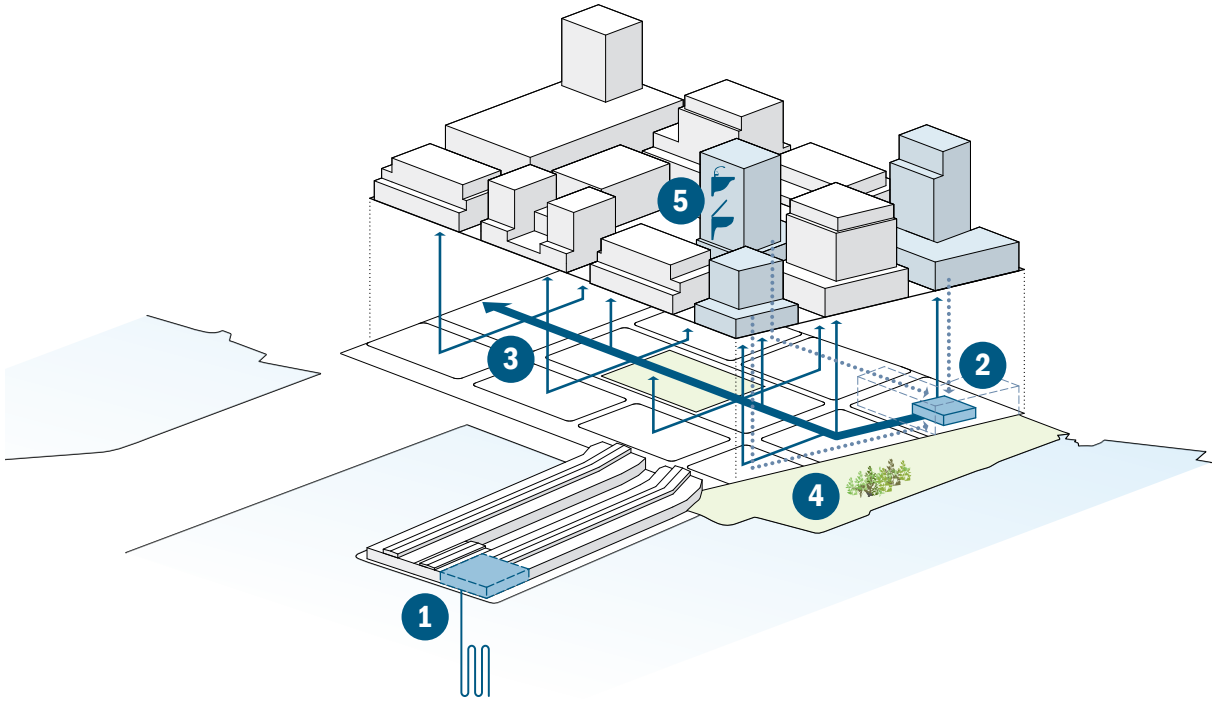
It is anticipated that the horizontal development at Mission Rock will include two critical elements that are key to achieving Zero Water Waste on site: the anticipated bay source cooling connection at the central energy plant and the central graywater treatment system.

All vertical developers are required, by local code, to provide plumbing for recycled water - or "purple pipe" - within their buildings, and to connect to the site-wide purple pipe system. Vertical developers will also be required, by code, to comply with San Francisco's Onsite Water Reuse for Commercial, Multi-family, and Mixed Use Development Ordinance (more commonly known as the Non-potable Water Ordinance), and the water efficiency requirements related to the SF Green Building Code.

Mission Rock's horizontal infrastructure will leverage the diversity of program types within the development to provide recycled water for 100% of the site and buildings' flushing and irrigation demands at each phase of development. Instead of collecting graywater from all buildings, the Sustainability Strategy mandates graywater collection for only buildings A (Phase I), K (Phase I), and F (Phase III). This approach can provide all of the buildings on site with a source of recycled water while minimizing plumbing for graywater collection.

This district approach will eliminate the need for separate graywater treatment systems throughout the site and, in doing so, reduce the spatial needs and maintenance requirements associated with a series of distributed treatment systems. In addition, it provides a path for all vertical developers to comply with SF's Non-potable Water Ordinance.

Each vertical developer will support the site's water conservation approach by installing efficient domestic fixtures and water conserving equipment.



1 The anticipated bay source cooling connection will reduce site-wide water demand by more than 6 million gallons/year

2 Buildings A, K, and F collect graywater and send it to a graywater treatment plant

3 Anticipated central graywater treatment provides recycled water to meet 100% of flushing and irrigation demands of the entire site. Recycled water is distributed to buildings using "purple pipe"

4 Drought tolerant vegetation and efficient irrigation will minimize irrigation demand

5 Efficient fixtures and equipment will reduce domestic and process water demand

WATER BACKGROUND INFORMATION

NON-POTABLE WATER DEMANDS

The anticipated non-potable water demand for each building has been calculated to determine the total recycled water demand on site. The water required for cooling towers would have been one of the largest water demand on the Mission Rock site, but the project is considering cooling strategies that eliminate cooling towers and the associated water demand. This demand would have amounted to more than 6 million gallons per year, as shown by the dashed bars in Figure 2.1.

The projects is considering using centralized bay source cooling, geothermal energy wells, or wastewater heat recovery cooling to reducing cooling tower water demand. In the bay source cooling strategy, water would be drawn from the bay and pumped through the central plant to cool the chillers and then discharged back to the bay without negatively affecting the bay ecosystem. For the geothermal case, several wells would be installed on site. Heat exchangers would transfer heat from the closed loop well system to the district energy system. For the wasterwater energy capture system, it may be possible to use the main trunk sewer line that passes the site as a heat sink for the cooling and heating system. Any of these strategies would effectively reduce water consumption in the central plant cooling towers.

Residential buildings produce far more graywater than they consume, and can export water to the commercial buildings that cannot meet their own demand. Treatment can occur at the individual building level, but a centralized system is more efficient and minimizes required treatment capacity, storage, and infrastructure while delivering the required reclaimed water. Figure 2.3 shows the net supply of graywater and non potable demand for each building.

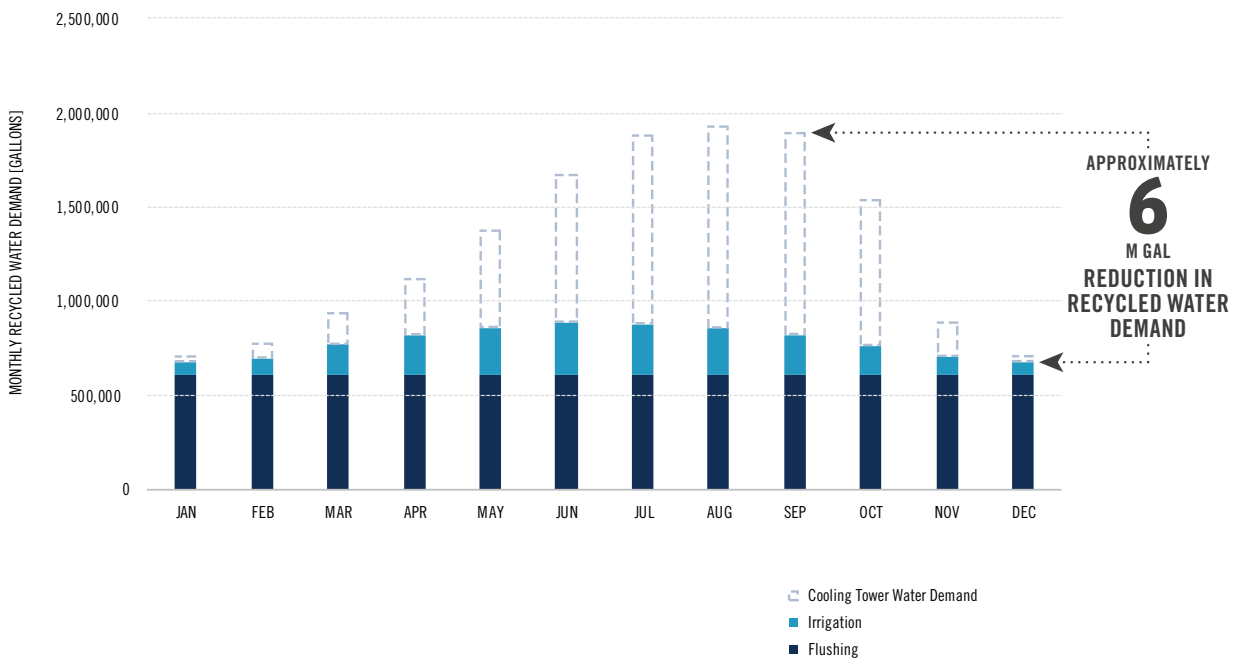


FIGURE 2.1 Monthly Reclaimed Water Demand

INFRASTRUCTURE

Treatment

A centralized water treatment system is intended to provide the buildings on the Mission Rock site with recycled water.

Collection

It is anticipated that graywater would be collected from buildings A and K in Phase I, and from building F in Phase III. The graywater supplied by these residential buildings alone is sufficient to meet the non-potable demand of the project due to the large volume of graywater produced by domestic uses, especially showers.

Distribution

The recycled, or "purple pipe," water distribution will be installed in the street and the project team is working to ensure that they can be charged with the recycled water produced on site. Mission Rock will require each building onsite to connect to this piping network, as shown in the Infrastructure Plan.

San Francisco Recycled Water Ordinance

San Francisco has ambitious regulations in place that limit water consumption and mandate water reuse. The anticipated recycled water system on the Mission Rock site exceeds the current version of San Francisco's Non-potable Water Ordinance, and is expected to meet future revisions. The development will reuse water in all buildings, where current code only require reuse in buildings larger than 250,000 square feet.

FIGURE 2.3: Mission Rock Annual Nonpotable Water Balance

OTHER DEMANDS & SUPPLIES

If the project uses on-site cooling towers to provide site-wide cooling the mechanical water demand is estimated to be more than 6 million of gallons of water per year. A centralized graywater treatment system will not be sufficient to meet this demand, and other sources of non-potable water would need to be considered in order to achieve the project's goal of zero water waste. These sources could include blackwater, rainwater, or other process water sources. If blackwater treatment is included, sewer mining will have to be coordinated with the SFPUC as necessary.

FIGURE 2.4: Graywater Collection and Reclaimed Water Distribution Infrastructure

REQUIREMENTS

WATER EFFICIENCY STANDARDS

Vertical developer must install or implement a tenant lease agreement that requires tenant to install domestic water efficient fixtures that meet or exceed the following performance requirements. All eligible fixtures must be WaterSense or ENERGY STAR labeled.

Commercial

- water closet: 1.1 gpf, WaterSense certified
- urinal: 0.125 gpf, WaterSense certified
- shower: 1.5 gpm, WaterSense certified
- lavatory: 0.5 gpm with sensors, WaterSense certified

Residential

- water closet: 1.1 gpf, WaterSense certified
- shower: 1.5 gpm, WaterSense certified
- lavatory: 1.5 gpm, WaterSense certified
- kitchen sink: 1.5 gpm, WaterSense certified
- clothes washer: 3.7 gal/cycle/ft^3, ENERGY STAR certified
- standard size dishwasher: 3.5 gal/cycle, ENERGY STAR certified
- compact size dishwasher: 3.1 gal/cycle, ENERGY STAR certified

Retail & Restaurant

- commercial clothes washer: 4.5 gal/cycle/ft^3, ENERGY STAR certified
- commercial dishwasher: ENERGY STAR certified
- commercial ice maker: ENERGY STAR certified
- commercial pre-rinse spray valves: 1.6 gpm, WaterSense certified

CENTRAL WATER TREATMENT

Pursue a central water treatment plant that has sufficient capacity to treat, store, and distribute recycled water to all buildings and vegetated open space on site. [subject to confirmation of feasibility]

RECYCLED WATER DISTRIBUTION

All building, vegetated open space, and streetscapes must connect non-potable demands to the recycled water distribution system. This includes toilets, urinals, and irrigation at minimum.

GRAYWATER COLLECTION

- Graywater collection piping should be provided in buildings A, K, and F, or alternative locations that are projected to collect graywater sufficient to meet all non-potable demands on the Mission Rock site. This quantity is currently projected to require collection from all showers, lavatory sinks, and washing machines at a minimum.
- Graywater collection lines shall be provided to facilitate graywater collection.
- Any pumps required to maintain pressurization of the site-wide graywater collection lines will be provided by the vertical developer on a building by building basis.

[Greywater collection will not be required if the site uses a centralized blackwater treatment system or another source of recycled water that is sufficient to meet the SFPUC's Non-potable Water Ordinance]

IRRIGATION AND VEGETATION

- All vegetation on site must use recycled water provided from the non-potable water treatment system to meet 100% of their irrigation demand.

100% RENEWABLE ENERGY

100% of Building Energy Demand Met with Renewable Energy Sources

*

03

ENERGY

Mission Rock has established the ambitious goal of meeting 100% of its building energy demands with renewable energy. This approach will eliminate or offset all of the project's operational greenhouse gas (GHG) emissions.

This vision will be made possible by investing in energy conservation plus on-site and off-site renewable energy generation projects. Mission Rock will require vertical developers to purchase off-site renewable energy equal to the amount of anticipated energy consumption from their buildings.

Mission Rock's energy approach positions the development as a leading example of how California's policy goals may be achieved in a new construction development in a dense urban location. The project's horizontal development includes consolidated critical energy infrastructure, and the Mission Rock district will establish investment structures to allow vertical developers to purchase off-site renewable energy infrastructure to overcome the spatial challenges associated with on-site renewable production.

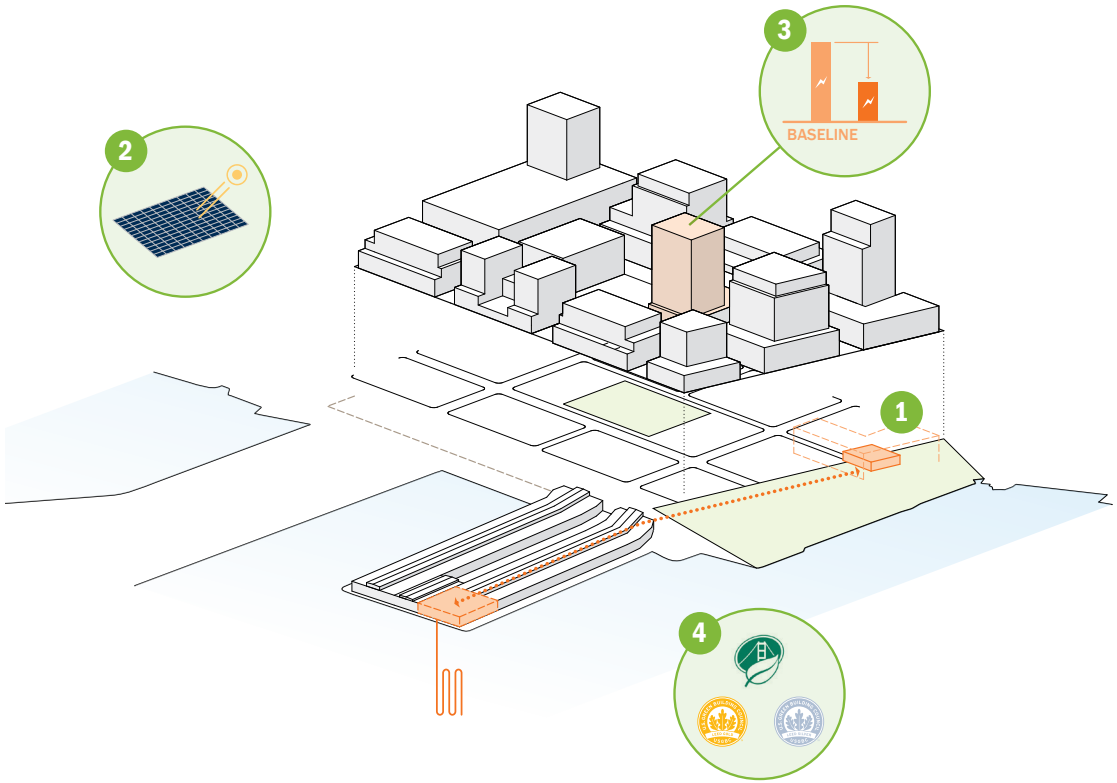
HORIZONTAL DEVELOPMENT: ENERGY RESOURCES

It is anticipated that the Mission Rock horizontal development will include a central energy plant that provides both heating and cooling energy to buildings on site.

The development is considering an array of low-energy central plant options for cooling and heating, including bay source cooling, geothermal energy wells, or wastewater heat recovery. A bay source cooling loop provides cooling by rejecting heat from central plant chillers to the bay water. By using the bay as a heat sink, cooling can be provided using very little energy. For the geothermal wells, heat exchangers would transfer heat from the district energy system to several wells drilled on site. A wastewater heat recovery system would exchange heat with the main trunk sewer line that passes near the site. With any of these strategies, the high volume of water consumed in conventional cooling towers will be eliminated. There may be backup cooling towers for peak capacity or times when the bay source cooling is taken offline for maintenance. Eliminating cooling towers also frees-up roof space that would have been dedicated to mechanical equipment for living roofs, urban agriculture, open space, and renewable energy.

Mission Rock will require all vertical developers to connect their buildings to the anticipated central energy plant. This connection provides vertical developers with an efficient source of cooling energy and frees up space within each of the buildings and on building rooftops that otherwise would have been required for local mechanical systems. In addition, the elimination of cooling towers will remove the largest water demand for each of the buildings saving annual water use and water utility cost.

The Mission Rock team will work with the central plant provider to determine options to purchase renewable power to offset central plant operations.



1

The anticipated central energy plant (CEP) provides heating and cooling to all buildings on site. It is anticipated that the CEP will use bay source cooling to minimize energy and water used to meet the site-wide cooling demand.

2

Vertical developers will purchase off site renewable energy infrastructure to meet their anticipated building energy demand.

3

Requirements for purchasing renewable energy based on building performance incentivize building efficiency.

4

All buildings will have to meet the following:

- T24 State Requirements
- SF Green Building Code

ENERGY BACKGROUND INFORMATION

To reach the site wide goal of 100% power provided by renewable energy, Mission Rock will require vertical developers to purchase off-site renewable energy infrastructure equal to the total energy consumed in the building. This approach incentivizes building developers to purchase energy efficiency measures at the building scale by creating a cost tradeoff between building energy efficiency and the cost of renewable energy.

Plant efficiencies, in combination with efficiency measures at the building scale, will assist each developer in exceeding the energy requirements from the state of California and the SF Green Building Code.

Finally, the purchase structure off-site renewable energy may allow each vertical developer to capitalize on the economy of scale gained from their purchase as part of a larger project. This economy of scale can decrease up front cost and streamline negotiations with local utilities and renewable energy providers.

CALIFORNIA'S 2030 NET ZERO GOAL

California has a goal of reaching net zero for all new construction by 2030, which will be enforced through Title 24, Part 6 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. San Francisco also has a goal of a 50 percent renewable electricity supply by 2020.

Building efficiency is always the first step towards the 100% renewable energy goal, but renewable energy will always be required to make it all the way to zero. It is not possible for high-rise projects with limited roof area in dense urban environments to meet this requirement through efficiency and on-site renewable energy alone.

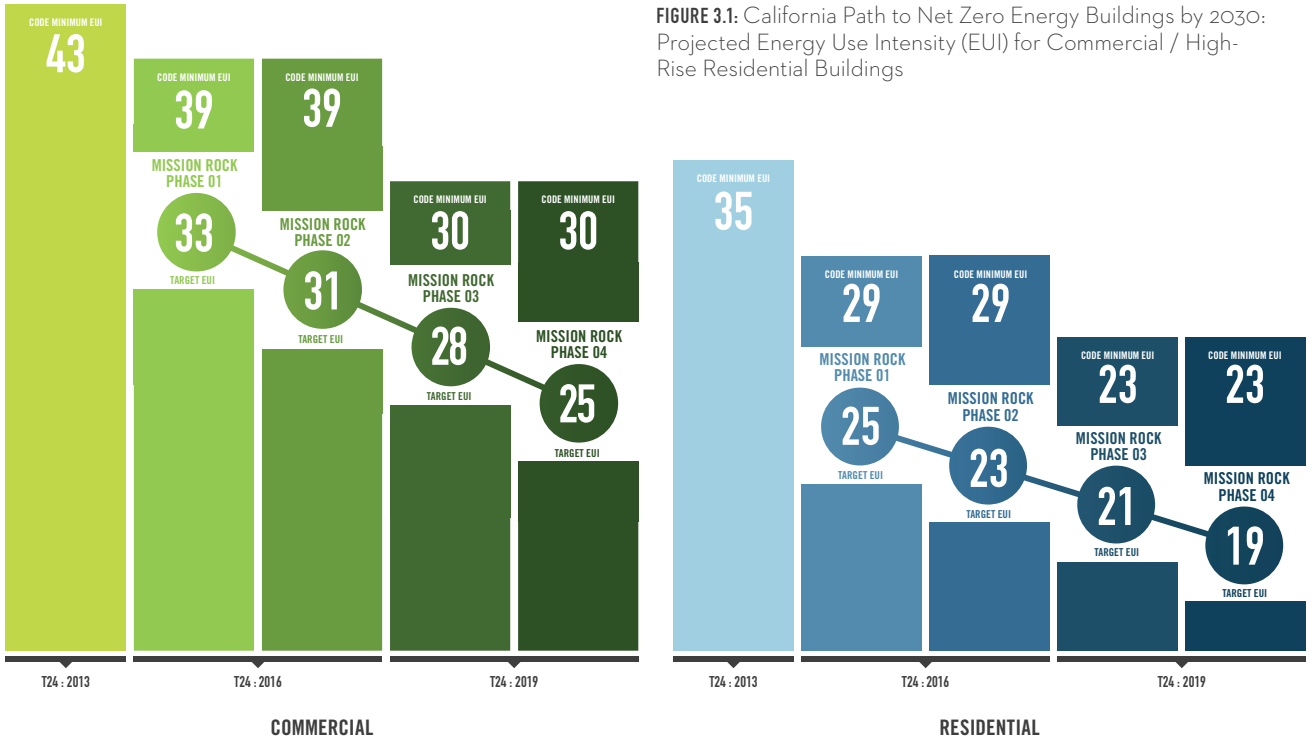


FIGURE 3.1: California Path to Net Zero Energy Buildings by 2030: Projected Energy Use Intensity (EUI) for Commercial / High-Rise Residential Buildings

The San Francisco Green Building Code currently requires that renewable energy be installed on buildings less that 10 stories, but this will be insufficient capacity to meet the 100% renewable energy target for the Mission Rock Development.

The chart in Figure 3.1 shows the decreasing building energy use intensity (EUI) that will be required to meet California's net zero goal. The minimum energy performance of buildings on site are set by the current version of Title 24 and the San Francisco Green Building Ordinance. Efficiency will be sufficient to meet the EUI target for some years to come, but, at some point, the remaining steps towards the net zero goal will have to be made through on-site or off-site renewable energy generation.

The Mission Rock development will be prototyping an approach through building efficiency and off-site renewable energy to meeting a goal of 100% renewable energy for building operations before it will be required in California.

The anticipated energy end use distribution for the building types on site is shown in Figure 3.2 (next page).

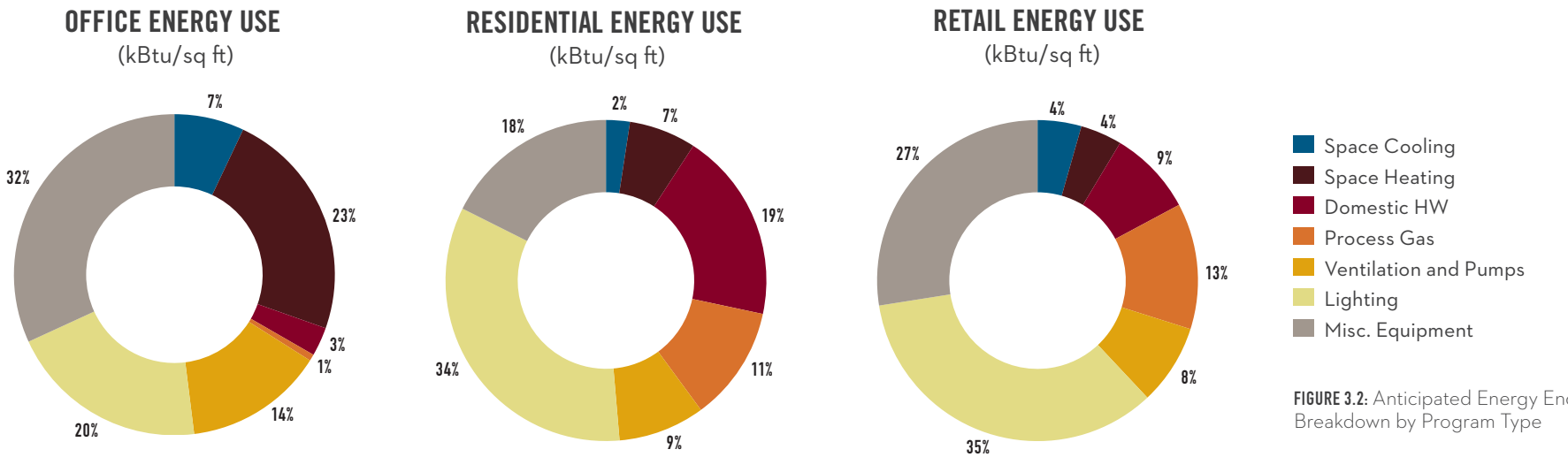


FIGURE 3.2: Anticipated Energy End Use Breakdown by Program Type

OFFICE BUILDING ENERGY SUMMARY

Office energy use is driven primarily by lighting and plug loads (computers, printers, etc.). The energy required for heating and cooling accounts for only a small portion of the annual energy use.

The design of the building envelope can have a significant impact on energy use, as daylight access reduces energy demand for electric lighting. The tenant has the largest ability to impact energy use and associated costs by reducing the electricity used within the building through efficient lighting, extensive lighting controls, and plug load management. Energy efficiency requirements in the tenant guidelines incorporated into the lease agreement can be used to document performance improvements.

RESIDENTIAL BUILDING ENERGY SUMMARY

Residential energy use is driven primarily by space heating, cooling, and domestic hot water consumption, which accounts for around a third of annual energy use. Efficiency improvements in the heating system will have the greatest energy savings.

Beyond the use of a central plant, the tenant and vertical developer have the greatest ability to reduce annual energy cost by minimizing the energy use of appliances such as refrigerators and dishwashers. In this climate, it is recommended that the developer consider eliminating mechanical cooling from all units. This is possible if the building skin includes external shading, high performance glazing to control heat gain, and enough operable windows for effective natural ventilation.

RETAIL & RESTAURANT BUILDING ENERGY SUMMARY

The retail program in the Mission Rock development is a relatively small amount of area when compared to the distribution of office and residential space.

Retail spaces will receive the most significant energy savings benefits through tenant installation of efficient lighting fixtures, as lighting accounts for over half of energy use. This results in energy savings from both decreased electricity for lighting and decreased cooling loads within the space.

Restaurants will receive the most significant energy benefit from installation of efficient, ENERGYSTAR equipment, as more than half of end-use energy comes from equipment and refrigeration.

OFF-SITE RENEWABLE ENERGY

The amount of renewable energy purchased by each developer is determined by the anticipated energy performance of the building and quantified as part of the energy modelling conducted for LEED certification.

As shown in Figure 3.3, the vertical developers will participate in an agreement with a renewable energy developer. The local electrical utility (SFPUC or PG&E) then delivers this energy to the building. The electrical utility which will serve the site is still under discussion. The off-site options will be similar with either utility.

The off-site renewable energy development opportunities, and the legal and metering structure that enables buildings to receive the benefit of the off-site renewable energy will be identified. The following utility and legal structures could be designed as the mechanism for building developers to purchase renewable energy projects:

- Green Tariff Shared Renewables Program (GTSRP): California is implementing a program where utilities will be responsible for billing, administration,

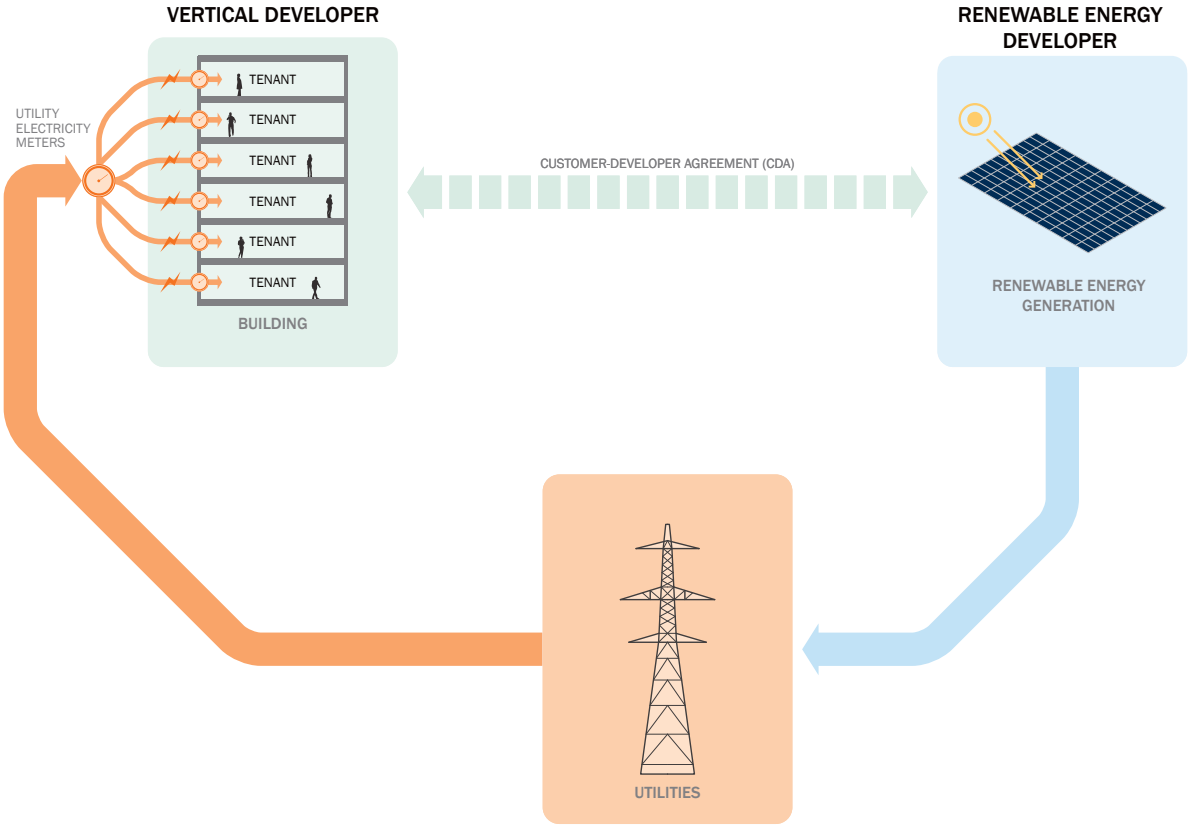


FIGURE 3.3: Off-site Renewable Energy Structure

metering and transmission, but meter owners contract directly with a solar developer to generate and provide renewable energy. The GTSRP program currently has a 2019 closing date and maximum generation cap, but the program cap may be expanded and the timeline extended once reviewed by the CPUC.

- Direct access: In a direct access program, large customers purchase generated energy directly and can negotiate energy purchases from the generation source of their choice. Aggregating all of the service points on the Mission Rock site may make this approach viable, but would have to be negotiated with the utility directly.
- Virtual Direct Access: The development can engage in a power purchase agreement with a renewable energy developer for ongoing power generation. This energy would then be sold back into the grid at wholesale prices on an ongoing basis. The revenue from these sales would then be used to offset the energy costs on site. This acts as a hedge against the increasing cost of power.

The renewable energy program selected will depend on the utility on site and the metering structures available at the time of development.

One of the most important concepts for the renewable energy is the idea of additionality, where the renewable energy purchase creates renewable energy generation that would not have existed and is not counted towards any other goal or standard. California's Renewables Portfolio Standard (RPS) requires that 33% of the energy in California is from renewable sources by 2020 and 50% by 2030, but the Mission Rock purchase would not contribute to this standard.

The SFPUC may be the electricity utility provider on the Mission Rock site. SPFUC power is generated entirely by Hetch Hetchy hydro power, meaning the power consumed on site would be 100% carbon free. However, the Hetch Hetchy power would not meet the additionality requirement for Mission Rock because the generation infrastructure is existing and the project would not be purchasing renewable generation whose benefit could be directly attributed to the projects utility meters.

Renewable energy certificates (RECs) represent the positive environmental attributes of renewable energy generation. These RECs can be unbundled from the actual energy and sold to someone other than the energy purchaser. The renewable energy that the Mission Rock project purchases will generate RECs for the energy produced, but instead of selling these RECs, the RECs will be retired to ensure that the environmental benefits of the renewable energy is attributable to the Mission Rock development.

While it may be considered more favorable to provide renewable energy sources on site, Mission Rock's dense urban location limits opportunities for on-site solar development. By purchasing off-site renewable energy

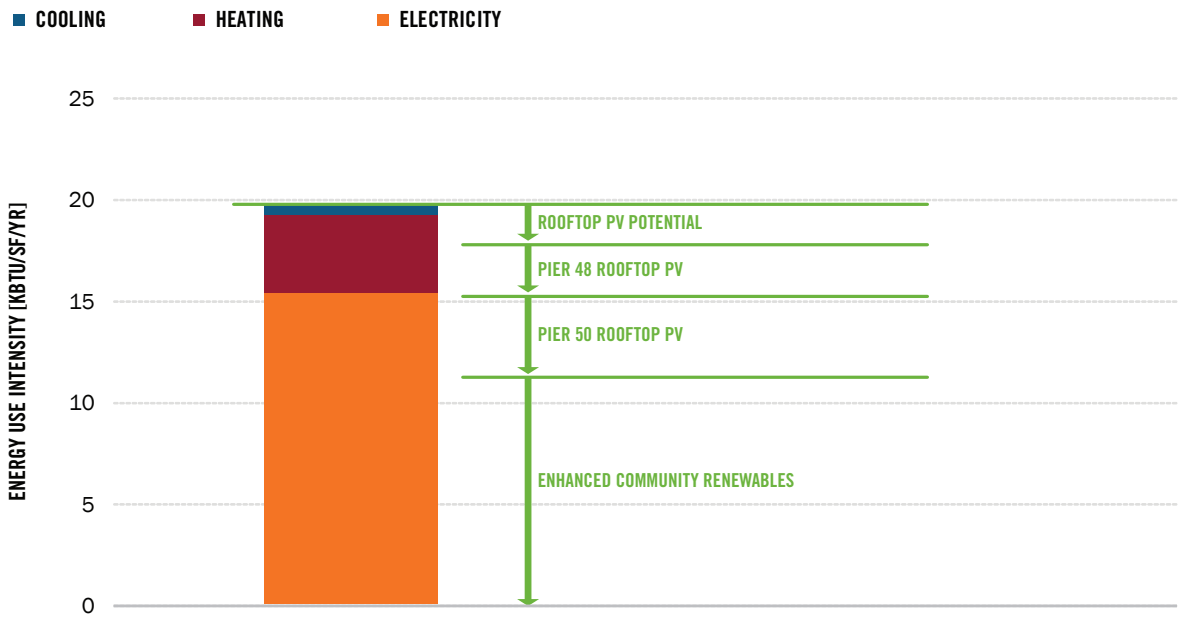


FIGURE 3.4: On-site and Off-site Renewable Potential

sources, the renewable generation for the Mission Rock project can be placed in the optimal location for increased renewable energy generation.

Figure 3.4 shows the potential for on-site renewable energy to meet the energy demand of a typical building on the Mission Rock Site. Renewable potential is broken down into rooftop PV and a proportional share of Pier 48 and adjacent Pier 50. Even with all of these sources, a typical building will be able to meet less than half its annual energy demand with on-site renewable sources.

REQUIREMENTS

CENTRAL ENERGY PLANT

Pursue one or more central utility plants on site that supply chilled water and heating hot water to all buildings on site. The plant shall utilize bay water for heat rejection to increase the efficiency of the energy system. [subject to confirmation of feasibility]

CENTRAL ENERGY PLANT CONNECTION

Connect buildings to central energy plant thermal utilities.

[subject to confirmation of feasibility of central plant]

OFF-SITE RENEWABLE ENERGY

Building developers shall model the anticipated energy demand. Developers will be required to submit the final energy documentation provided for LEED certification along with the GBCI review comments. The anticipated energy use will define the developer's purchase of off-site renewable energy generation.

The GBCI-reviewed LEED energy model shall determine the kWh that must be offset through off-site renewable energy. The developer shall purchase off-site renewable energy through a power purchase agreement.

ENERGY REPORTING

Report energy use for each building on an ongoing basis. At a minimum, energy reporting should be on an annual basis and include all energy types. All vertical developers must enter their modeled energy use in ENERGY STAR Portfolio Manager and use Portfolio Manager to track energy use on an ongoing basis.

RECOMMENDATIONS

RENEWABLE PURCHASE ADJUSTMENT

If measured energy use exceeds anticipated energy use, it is recommended that vertical developers update their renewable energy contribution every two years to match measured energy use.

RECOMMENDATIONS

COMMERCIAL DEVELOPMENT

Lighting Power Density
Target lighting power density (LPD) of less than 0.6 W/ft^2

Plug Load Occupancy Sensors
Install plug load occupancy sensors for non-essential equipment in all spaces. Non-essential equipment includes, but is not limited to:

- desktop computers and lap tops
- monitors
- imaging equipment (copiers, fax machines)
- task lights
- television screens
- projectors
- vending machines

Advanced Lighting Controls
Provide occupant sensors throughout open office, corridors and rest rooms in addition to the locations required by Title 24. Provide daylight dimming and daylight sensors in all spaces with access to daylight. This shall include offices and meeting rooms in addition to the spaces required by Title 24.

Vertical Transportation Optimization
Optimize vertical transportation through:

- regenerative elevators
- destination control elevators
- occupancy sensors on escalators
- reduced elevator fan and lighting energy

RESIDENTIAL DEVELOPMENT

Equipment
Install only ENERGY STAR or equivalent equipment, appliances, lighting, and fixtures (refer to www.energystar.gov and www.aceee.org for latest list of energy-efficiency appliances), including, but not limited to, refrigerators and dishwashers

Domestic Hot Water Demand Reduction
Install showers (1.5gpm) and sinks (1.5gpm aerators) with WaterSense label.

Domestic Hot Water Heating
Employ electric heat pump water heaters for domestic hot water heating loads.

Plug Controls
Provide a "master switch" in all apartments located adjacent to the front door that controls all ambient lighting and switched outlets. Outlets connected to the master switch should be clearly identified.

Advanced Lighting controls
Install daylight dimming and sensors in all common areas with daylight access

Energy Dashboard
Provide each residence with a system which enables tenants to see and understand their energy use in real time, control temperature settings and master switch from a remote location, and create an auto schedule and away settings for temperature and master switch

Natural Ventilation

Eliminate mechanical cooling by providing external shading on glazing to block unwanted heat gain and install operable windows to enable natural ventilation.

RETAIL & RESTAURANT DEVELOPMENT

Lighting Power Density
Target lighting power density (LPD) of less than 1.8 W/ft^{22}

Reduced Exhaust
Install variable flow exhaust hoods with heat recovery in restaurants

Efficient Equipment
Install only ENERGY STAR certified equipment

Hot Water Demand Reduction

- Use rest room flush and flow fixtures that are WaterSense labeled
- Install commercial dishwashers that are ENERGY STAR qualified
- Ensure pre-rinse spray valves have a max flow rate of 1.6 gallons per minute (gpm)

20% Reduction In Transportation-Related Carbon Emissions

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04

TRANSPORTATION

Mission Rock is committed to shifting travel behavior towards more environmentally beneficial transportation modes.

The Mission Rock site is in a prime location for transportation alternatives to single occupancy vehicle trips. The site is close to high quality transit, is located in a developing mixed use area, and will include on-site services that will encourage the use of alternative modes of transportation.

Mission rock will implement a Transportation Demand Management (TDM) Program to increase the use of environmentally friendly transportation modes. The Mission Rock site design and the transportation demand management strategies selected for implementation encourage occupants, employees, and visitors to use alternative modes, with an emphasis on cycling, walking, and shared rides. The strategies implemented on site are estimated to reduce single occupancy vehicle trips by more than 20%.

The Mission Rock Transportation Demand Management Plan contains details of the transportation strategies that will be implemented on site and demonstrates Mission Rocks commitment to sustainability.

SITE CONNECTIVITY

The Mission Rock site is located near many transportation resources.

From a regional standpoint, the San Francisco Caltrain station is less than a 10 minute walk and BART stations are around a mile from the site. These transit services provide regular and rapid service to the greater Bay Area region.

Multiple Muni bus and light rail lines have existing stops within a quarter mile of the site providing transit access to the rest of San Francisco.

The San Francisco Bay Trail, which is planned to circumnavigate the San Francisco Bay, passes through the site. Existing bicycle lanes serve the site.

Site Design

The Mission Rock program mix, street design, and site connectivity further encourage occupants to select alternative modes of transportation including transit services, walking, cycling, and ride sharing.

The pedestrian- and bicycle-friendly street and sidewalk design plays an important role in encouraging the use of non-motorized transportation modes. The site design includes a well connected grid of internal streets, wide sidewalks, pedestrian-safety oriented street design, and designated bike lanes that connect to external infrastructure.

These site features establish a strong foundation for the additional transportation demand management strategies to effectively reduce single occupancy vehicle trips.

TABLE 4.1: Transit Context

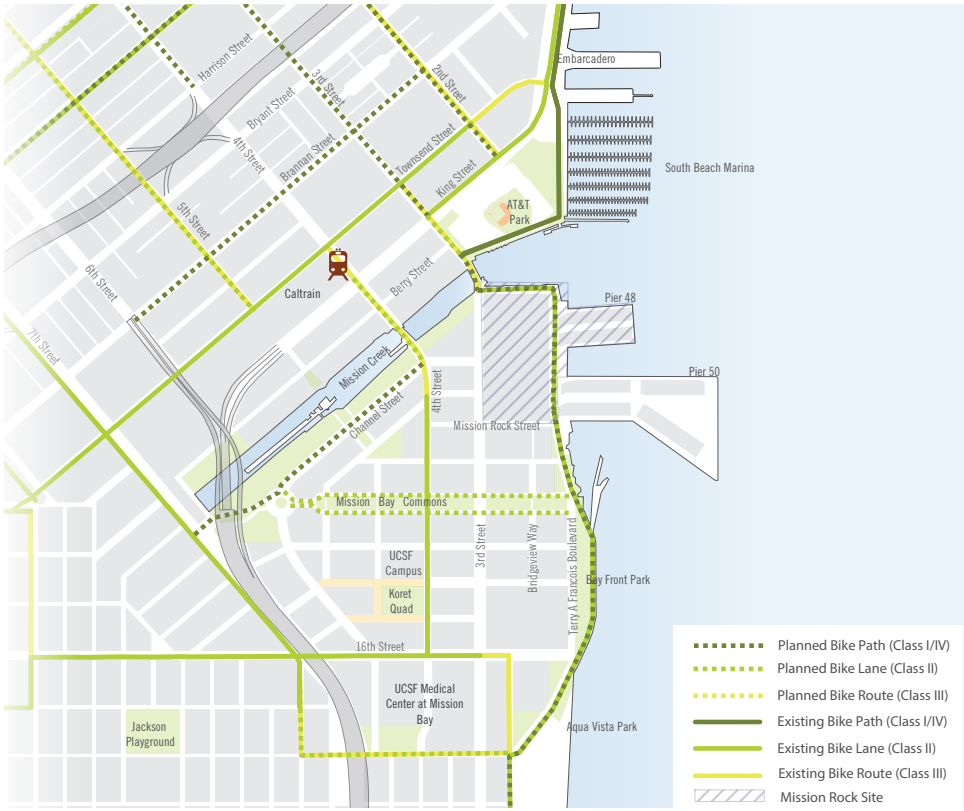

TABLE 4.2: Bike Context

TDM STRATEGIES

The Mission Rock Transportation Plan combines both infrastructure and operational strategies to reduce single occupancy vehicle use. A high level summary of the strategies being considered for the site are summarized in Table 4.3. The effects of these strategies are interactive and supportive of each other and most effective in combination.

TRANSIT
Real-time transit information
Pre-loaded Clipper Cards

BICYCLE
Bike share memberships
On-site bike share stations
Bike event programming
Bicycle resource center
Bicycle parking
Showers and clothes lockers
Bike valet

PERSONALIZED MOTORIZED TRANSPORT
Electric scooter share memberships
On-site shared scooters
On-site car share parking spaces
Car share memberships

TABLE 4.3: Transportation demand management strategies proposed for Mission Rock

In some cases these strategies shift auto trips to other modes of transportation while, in other cases, they eliminate the need for trips altogether. Both cases reduce the overall use of single occupancy vehicles. These strategies are designed to effect a permanent change in transportation decisions by occupants, employees, and visitors.

PARKING
Market-based parking pricing
Real-time parking pricing and availability information
Unbundled parking
Low parking ratio

BUILDING SCALE STRATEGIES
In-building concierge services
Coordinated delivery services
CSA delivery partnerships
Storage space for grocery and package delivery
Childcare services and facilities
Collaborative work space

SITE SCALE STRATEGIES
Mobile-friendly Mission Rock website
Signage and wayfinding across modes
Site-wide transportation staff
Coordination with local Transportation Management Association

The effectiveness of the TDM strategies will be assessed regularly by tracking through occupancy surveys, program utilization studies, and parking occupancy. The results of these studies can be used to refine and the TDM program to increase the effectiveness and better serve occupants.

Further details on each of these strategies can be found in the Mission Rock Transportation Plan.

75% Construction Waste Diversion
Maximize Occupant Source Separation and Resource Recovery

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05

RESOURCE CONSERVATION

San Francisco has committed to achieving zero waste to landfill by 2020. The primary means of achieving this goal are source control (i.e. limiting plastic bags/ Styrofoam) and user education (to properly divert waste), which are all required through mandatory city ordinances.

The city of San Francisco currently diverts 80% of its waste from landfill, one of the highest waste diversion rates in the country. However, over half the material which goes into San Francisco's landfill bins can be recycled or composted. If all materials were sent to the proper bin San Francisco could increase their diversion rate to 90%.

Mission Rock will primarily contribute to waste reduction efforts through construction waste management and user education to increase proper separation of waste and increase in San Francisco's overall diversion rate.

REFUSE BACKGROUND INFORMATION

CONSTRUCTION WASTE

The Mission Rock district will establish site-wide construction waste diversion requirements and recommendations to ensure that the material going to landfills during demolition and construction is minimized.

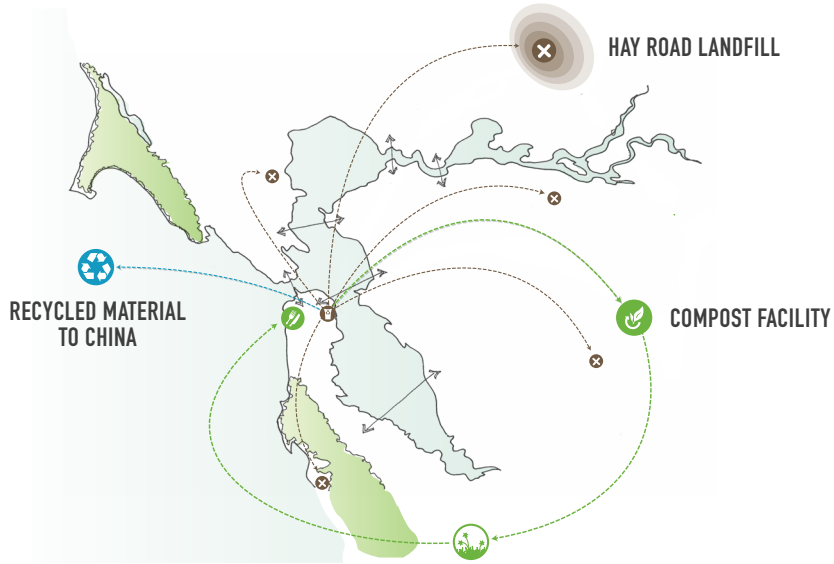
OPERATIONAL WASTE

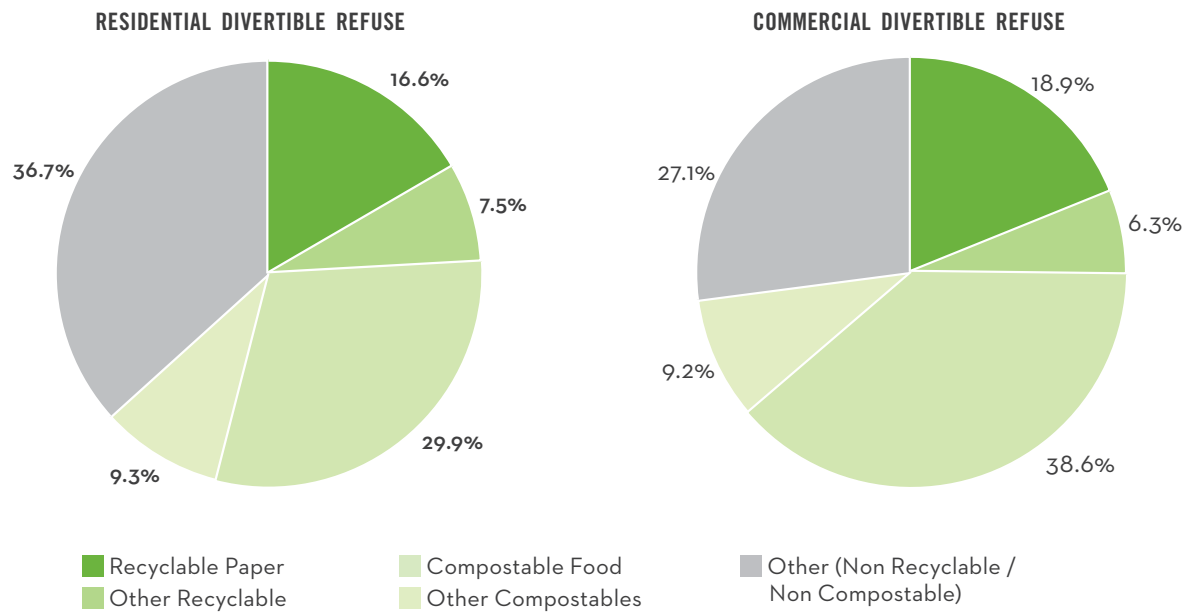
Operational refuse sent to landfill will be reduced in the Mission Rock development primarily through enhanced user education. This will augment the policies and programs the City of San Francisco already has in place.

The pie charts to the right show the typical breakdown of divertible refuse streams. The largest refuse streams in a typical residential building are Other (comprising furniture, goods and electronics) and Compostable Food. The largest refuse stream in a typical commercial building also comes from compostable food. Providing residents with education about San Francisco's composting program and easy access to composting facilities will be critical to minimizing divertible refuse sent to landfill.

Refuse collected in San Francisco is sent to the Hay Road Landfill in Vacaville. Several smaller landfills receive municipal solid waste from the city, but Hay Road receives roughly 90% of non-recovered materials. The diagram to the right shows the destinations which were used to generate the GHG emissions associated with Mission Rock refuse removal.

Nearly all of the compost collected by Recology is processed by Blossom Valley Organics North located in Modesto, and then sold to local farms and city gardens. As of 2006, San Francisco composted roughly 47% of the organic material generated in the city.





REQUIREMENTS

CONSTRUCTION WASTE MANAGEMENT

All construction and demolition projects will be required to achieve a minimum 75% waste diversion rate as defined by the LEED v4 Reference Guide

INFRASTRUCTURE AND REFUSE RECEPTACLES

- Vertical developers will be required to provide adequate and easily accessible space in all buildings for the three primary refuse streams collected in San Francisco: landfill, recycle, and compost.
- If waste chutes are provided, one for each refuse stream will be required.
- All three refuse receptacle types to be provided at any refuse collection point both inside the buildings and throughout the Mission Rock site.
- Work with the SFE Zero Waste Team to design refuse collection on site
- Refuse chutes and receptacles to include pest prevention features

RECOMMENDATIONS

CONSTRUCTION WASTE MANAGEMENT

All construction and demolition projects should target a 95% waste diversion rate as defined by the LEED v4 Reference Guide

INFRASTRUCTURE AND REFUSE RECEPTACLES

Provide adequate refuse collection areas. Allocate sufficient space on site for on-site sorting of refuse stream to meet the Recycling and Composting Ordinance. Coordinate facility design to maximize source separation with the SF Environment Zero Waste Team.

USER EDUCATION PROGRAMS

Increased training and occupant/resident education to improve diversion rate.

SOURCE CONTROL PROGRAMS

Limit purchasing to materials that can be recycled or composed ensures that refuse can be diverted.

Provide Site With High Outdoor Air Quality, Active Design Opportunities, And Daylight & Views

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06

HEALTH & WELLNESS

The Mission Rock development will be committed to delivering a project that protects occupant health, promotes occupant wellness, and prevents environmental harm.

The development will focus on a few key areas of the vertical and horizontal development that result in the most significant benefits with regard to health and wellness. The key topic areas addressed by the Sustainability Strategy are active design, outdoor environmental quality, daylight and views. Active design principles integrated into the street fabric and open space encourage occupants and the public to bike, walk, run, and actively engage with the site. The district will provide 8 acres of public parks and open space, as well as public waterfront access. The open space network will become a starting point for the Blue Greenway, a waterfront trail that will connect to Hunters Point Shipyard. These amenities will establish the site as an active destination for the surrounding neighborhoods. The open spaces and vegetated areas will provide occupants with a connection to nature, improving personal and community health. Details on the green spaces can be found in chapter 08: Habitat and Ecosystem Function.

The Mission Rock development will be built in phases and, as a result, will be an active construction site throughout its early years of development. The Sustainability Strategy focuses on maintaining a high level of outdoor environmental quality both during construction and after project completion.

This section does not directly address tenant fit-out because of the challenges in communicating and enforcing tenant requirements at this level. Many health and wellness controls and improvements for tenant spaces are covered by CALGreen and LEEDv4, which are anticipated to apply to the Mission Rock development.

ACTIVE DESIGN

Active design encourages stair climbing, walking, bicycling, transit use, active recreation, and healthy eating. A growing body of research suggests that evidence-based architectural and urban design strategies can increase occupants' regular physical activity and healthy food choices. Designing the Mission Rock site from a blank slate provides a series of unique opportunities to address physical activity across the entire site and connections to the rest of the city.

The Mission Rock district includes eight new acres of parks and open spaces which include walking and bike trails, as well as programmed open spaces such as Little Giants Field and other sports areas. In addition, the development is adjacent to many existing surrounding recreational opportunities, including parks, playgrounds, boating, and, sports fields.

Site-wide active design strategies are recorded in the DCDG, and include integration with the Blue Greenway that runs along the waterfront, a baseball diamond, multi-use open-space, and water access for recreation. The street design for Mission Rock also encourages many transportation modes and emphasizes walking and cycling. The cycling paths on site connect to the larger citywide cycling network. A bikeshare station will be located on site as part of the existing program.

Vertical developers also play a role in encouraging active use of the site. Designing staircases as a prominently visible, unlocked, and well daylit amenity encourages occupants to use stairs instead of elevators for vertical circulation.

OUTDOOR ENVIRONMENTAL QUALITY

The Mission Rock development will remain an active construction site after the first commercial, retail and residential occupants move onto the site. The Sustainability Strategy focuses on maintaining a high level of environmental quality during construction. Reducing pollution from construction activity minimizes environmental impacts and improves construction side-effects for both workers and local inhabitants.

Construction pollutants originate from a variety of activities: machines and equipment, building materials, site conditions, and human behavior. All project teams will be expected to develop and implement a construction activity pollution prevention plan (CAPP) that addresses emissions from construction activities, including light pollution, equipment emissions, dust and odor control, and noise control. Pollution should be defined broadly to address a variety of construction-related issues, from airborne particulates to noise control.

For construction lighting, OSHA sets standards to ensure safe working conditions for construction workers. Temporary lighting installed on timers or manual scheduling will reduce light pollution on site. Construction managers and contractors will select energy efficient equipment for temporary lighting, site lighting, and heating, with turn-off power to non-critical equipment and lighting during non-construction hours.

Tier 4 or higher engines and limited truck and equipment idling minimizes emissions on site. Water spraying for dust control, covering powder materials, and capturing dust before it leaves the site will reduce the airborne particulates from site work before they leave the site.

DAYLIGHT AND VIEWS

Access to daylight regulates circadian rhythms and production of serotonin and melatonin, which modulate sleep patterns, energy and psychological moods. Providing views of nature has been associated with reductions in stress through physiological changes in cortisol levels, blood pressure, and heart rates.

For the Mission Rock site, individual buildings will take advantage of the extensive open space on site by maximizing daylight and views out while minimizing the risk of glare for occupants within the buildings. Careful coordination between the daylight and electric lighting strategies will ensure that users maintain a connection to the outdoors through daylit spaces. While improving occupant satisfaction, daylight also reduces electric lighting use during daylight hours, contributing to energy savings in the buildings.

REQUIREMENTS

Provide a construction activity pollution prevention plan (CAPP) that addresses the following issues:

CONSTRUCTION LIGHT POLLUTION

Lighting shall be controlled by timers or scheduled manual switching to turn off the lighting when it is not required.

TEMPORARY LIGHTING EFFICIENCY

LED lighting shall be used for any temporary lighting during and after construction.

CONSTRUCTION EQUIPMENT EMISSIONS

Have a policy in place that limits vehicle and equipment idle time to no more than 5 minutes in any hour long period. All construction equipment on site shall have Tier 4 or higher engines.

DUST AND ODOR CONTROL

Spray down site work, equipment, and vehicles with water for dust control. Cover powdered materials and provide walk-off mats. Recycled water shall be used for all dust control unless it is legally unfeasible to do so.

DUST CONTROL WITH NON-POTABLE WATER

If feasible, the contractor should use on-site recycled water from the Mission Rock graywater treatment facility before using other sources non-potable water.

GENERATOR CONTROLS

Any temporary generators used on site shall have a Tier 4 or higher rating.

RECOMMENDATIONS

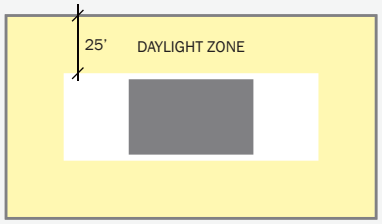
ACCESS TO DAYLIGHT & GLARE CONTROL

Create usable, glare free daylight by designing the building such that at least 50% of the area of the daylight zone achieves a spatial daylight autonomy of 50% (sDA(300/50%))*. Design the building such that the daylight zone (25ft from the perimeter) has an annual sunlight exposure (ASE(1000/250))* of less than 10%.

*As defined in illumination engineering society (IES) LM-83-12

ACCESS TO VIEWS

Provide access to exterior views for 80% of the floor area within the daylight zone.



CONSTRUCTION LIGHT POLLUTION

In addition to timers, consider other lighting controls such as daylight and vacancy sensors. Construction light fixtures shall provide cut-off shielding to prevent uplighting.

SMOKING PROHIBITION

Prohibit smoking or restrict to designated areas on site to reduce impact on other occupants.

ACTIVE CIRCULATION

Provide staircases that allow occupants to easily travel between floors of the building. To ensure basic function, the stairs should remain unlocked and accessible to occupants. The stairs should incorporate features that make them more desirable to use, including daylight, high visibility from the building entrance, lighting equivalent to the rest of the building, and adequate signage.

NATURAL VENTILATION

Provide operable windows in regularly occupied areas to enable natural ventilation when climate conditions allow. Consider eliminating mechanical cooling where possible.

NOISE CONTROL

Identify sensitive areas adjacent to the site and establish construction work schedules to minimize disturbances. Organize construction sites to reduce movement alarms and vehicle traffic.

Encourage Manufacturer Transparency And Selection Of Low Impact Materials

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07

SUSTAINABILITY MATERIALS

As a large development with a progressive sustainability agenda, Mission Rock has the ability to advance efforts in product transparency, and will leverage its position within the building industry to push manufacturers towards full life-cycle and chemical ingredient assessments of their products.

The contemporary definition of "sustainable building products" exceeds conventional notations of recycled content and regional sourcing to encompass the environmental and health impacts of building materials. A critical advancement in today's building industry, furthered by LEED version 4, is the call for manufacturers to publicly disclose information on the chemical content and manufacturing process of their products.

Similar to other sections, the sustainable material requirements for Mission Rock focus on the areas within horizontal and vertical developer control which will have the most significant environmental impact. This means an emphasis on transparency for the largest material packages for horizontal development and core and shell vertical developers: concrete, steel, and insulation. Recommendations have also been included for tenant-selected materials such as interior finishes. The table to the left provides a summary of the certification bodies referenced in the Requirements and Recommendations of this section.

MANUFACTURING PROCESS TRANSPARENCY

Building materials can heavily impact natural resources and the Mission Rock district must consider the full life-cycle of the materials included in its construction. Materials used for the horizontal and vertical core and shell development will account for the majority of the global warming potential associated with on-site materials and, for that reason, Mission Rock's material requirements in the Sustainability Strategy focus on minimizing this impact.

Steel and concrete will contribute to the majority of the global warming potential for the materials used in the horizontal development of site, roads and infrastructure. For vertical development steel and concrete account for over 1/3 of the global warming potential associated with a typical commercial building. An illustration of this breakdown can be seen in the diagram below.

ENVIRONMENTAL PRODUCT DECLARATIONS (EPDS)

Multi-attribute product reports evaluate the full life-cycle environmental, health, and social impacts of a product, from extraction of raw materials and manufacturing processes, to the use disposal methods. They are becoming increasing popular in the sustainable building industry.

An Environmental Product Declaration (EPD) is an intensive product certification based on a full life-cycle assessment of products surveying the global warming potential, ozone depletion and creation, water pollution, and greenhouse gas emissions. EPDs should not be used to compare different categories of products (i.e. steel vs concrete), but may be used to compare different manufacturers or suppliers of the same product (i.e. two different concrete manufacturers).

Mission Rock will prioritize large package products from manufacturers with publicly available EPDs and consider the global warming potential as a criteria alongside quality and cost when selecting a manufacturer. While products with EPDs may be limited, best practices in material selection policies should, at the very least, be followed by contractors on the Mission Rock site to minimized the development's environmental footprint:

- Select building products with high recycled or reuse content, biobased or rapidly renewable materials, FSC certified wood
- Prioritize products extracted, manufactured, and purchased within 100 miles of the site.
- Select products that are durable, easy to maintain, adaptable in use, and are recyclable or retrieved by the vendor after use.

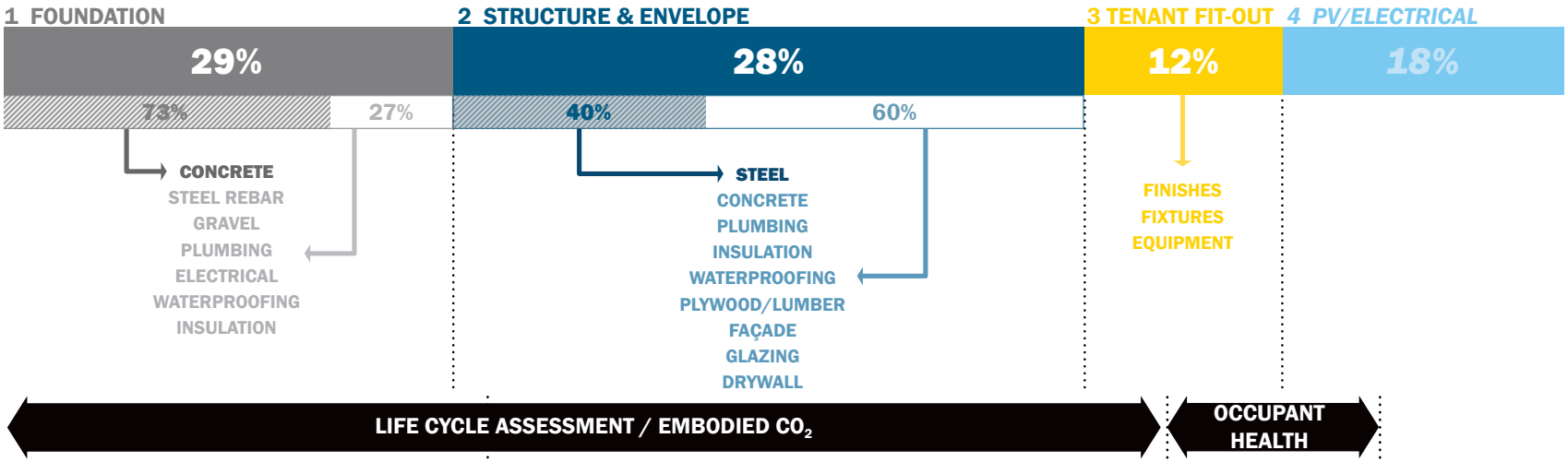

FIGURE 7.1 Lifecycle Global Warming Potential by Building System in a typical U.S. Commercial Building

MATERIAL INGREDIENTS

Only 15% of the 60,000 chemicals in use today have publicly available human health impact data and 65% of chemicals have no publicly available information. Hazardous chemicals can be categorized into various categories depending on the behavior of the compounds: persistent bioaccumulative toxins (PBTs) and volatile organic compounds (VOCs). The prevalence of these hazardous chemicals span across all categories of building products, from structural components to finishes and furnishings, harming both the environment and human health. To curb the manufacturing of products with toxins, leading organizations like the EPA and the Living Building Challenge have published "Red Lists" of hazardous chemicals.

The materials recommendations of the Sustainability Strategy include strategies to encourage increased manufacturer transparency with regard to product ingredients and provide a guideline for vertical developers and tenants to consider when selecting materials and finishes.

REQUIREMENTS

GLOBAL WARMING POTENTIAL: STEEL

- Request EPDs from steel manufacturers

GLOBAL WARMING POTENTIAL: CONCRETE

- Require EPDs from all concrete manufacturers
- Review concrete EPDs and consider lower global warming potential as a criteria in selecting a concrete provider

SUSTAINABLE MATERIAL CERTIFICATION BODIES

- Require contractors to provide subcontractors with list of certification bodies for materials as seen in Figure 7.2: Sustainable Material Certification Bodies

RECOMMENDATIONS

GLOBAL WARMING POTENTIAL

- Require EPDs from all steel manufacturers and consider lower global warming potential as a criteria in selecting a steel provider.
- Complete a Life Cycle Assessment (LCA) for concrete use and confirm at least a 10% reduction in global warming potential.
- Prioritize products with third-party verified Environmental Product Declarations (structural packages) and/or Cradle-to-cradle certifications (interior finishes and furnishings)
- Specify high recycled content and local (within 100 miles of the site) materials, rapidly renewable products, and FSC certified wood

MATERIAL INGREDIENTS

- Request product Health Product Declarations (HPDs) and Prioritize products that disclose material ingredients and hazardous chemicals through Health Product Declarations.
- Prioritize finish products or furnishings with third-party certifications such as Greenguard, Floorscore, Greenlabel, Greenseal, and BIFMA Level Standard.
- Select products that minimize or replace PVCs, CPVCs, and neoprenes. Alternatives include copper, cast iron, HDPE, and ABS.
- Eliminate use of mercury, lead, cadmium and other heavy metals where possible

Certification Bodies	
EPD	**ENVIRONMENTAL PRODUCT DECLARATION** An intensive product certification based on a full life-cycle assessment of products surveying the global warming potential, ozone depletion and creation, water pollution, and greenhouse gas emissions.
cradletocradle	**CRADLE TO CRADLE CERTIFICATION** An tiered product certification assessing five categories: material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness. This certification process is offered by MBDC, a global sustainability consulting and product certification firm.
ECOLOGO	**ECOLOGO** A multi-attribute, life-cycle based environmental certification body for products, services and packaging that assesses materials, energy, manufacturing, health and environment, product performance, use, and innovation.
SMART certified	**SMaRT** Comprehensive sustainable standards established for materials and products, including social impact. These comprehensive standards have been established by the Institute for Market Transformation to Sustainability.
level	**BIFMA LEVEL CERTIFICATION** A third-party certification program for furniture that evaluates the following criteria: energy & atmosphere, human & ecosystem health, and social responsibility for all certified products.
hpd	**HEALTH PRODUCT DECLARATION** A product transparency reporting tool issued by the HPD Collaborative that identifies the associated health effects of product material ingredients.
GREEN SCREEN	**GREENSCREEN** A multilevel certification body that assesses hazardous chemicals within products. GreenScreen publishes the GreenScreen List Translator
GREENGUARD	**GREENGUARD** A performance-based standard to define products and processes with low chemical and particle emissions to achieve high indoor environmental quality indoors.
floor score	**FLOORSCORE** A certifying body for hard-surface flooring and adhesives that meet strict indoor air quality requirements set forth by SCAQMD Rule 1113.
GREEN LABEL +PLUS	**GREEN LABEL / GREEN LABEL PLUS** A certifying body for carpet emissions levels of TVOC, formaldehyde and other substances known to contribute to Sick Building Syndrome
GREEN SEAL CERTIFIED	**GREEN SEAL** A certifying body that evaluates the total environmental impact and health effects of a product, with periodic audits of manufacturing facilities.
Declare.	**DECLARE** A certifying body associated with the Living Building Challenge that reports the chemical ingredients of the product. DECLARE RED LIST has not red list chemicals.

FIGURE 7.2: Sustainable Material Certification Bodies

Provide Ecosystem Services Which Enhance The Outdoor Environment And Benefit Those On Site And Beyond

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08

HABITAT & ECOSYSTEM FUNCTION

The open space design for the Mission Rock district contributes a number of essential ecosystem services to residents and visitors on the site. These include the provision of comfortable microclimates, access to nature and recreation, coastal protection, stormwater mitigation, and promotion of biodiversity.

These services are fundamental to the concept of a sustainable EcoDistrict as they benefit not only those directly on site, but also humans and species on neighboring sites. This is especially critical in a dense, urban environment such as downtown San Francisco.

The guidelines and recommendations for Mission Rock's open spaces have been captured in the Mission Rock Development Controls and Design Guidelines. This section of the Sustainability Strategy highlights the sustainability benefit that is provided by these guidelines.

The Mission Rock development will support and further biophilic design for both the site and buildings. Biophilia is defined as humans' inherent affinity for nature and research increasingly shows that regular access to nature improves health, happiness and performance. Biophilic design principles include a broad variety of physical elements and spatial characteristics found in nature that can be applied in the built environment to elicit positive physiological, psychological and emotional outcomes for humans as well as other species. The strategies implemented on the Mission Rock site align with the City of San Francisco's 0-50-100-Roots framework aimed at protecting urban green spaces and improving San Francisco's urban forest and gardens. Other features of the Mission Rock site are described below.

COMFORTABLE MICROCLIMATES

Mission Rock's vegetated landscape offers a wide array of benefits from lowering heat island effects to creating comfortable areas of respite.

Introducing vegetation throughout the site reduces the heat island effect by shading pervious surfaces, limiting localized discomfort due to overheated concrete. The shading provided by trees creates variable microclimates. In addition, carefully located trees will act as windbreaks and provide sheltered gathering spaces in the open spaces and parks. The building heights, locations, and massing will be optimized to minimize overshadowing the central square and China Basin Park, and allow as much sunlight as possible to reach the open space while reducing exposure to high winds from the Bay.

COASTAL PROTECTION

While all new building sites and infrastructure will be above the predicted 2100 sea level rise, the resilient waterfront park accommodates sea level rise through elevation change. The grade change in the parks and streets around the perimeter of the site acts as a buffer for storm surges and sea level rise. The plantings in the lower areas of the open space areas will be salt tolerant to protect them from potential intermittent seawater inundation.

ACCESS TO NATURE AND RECREATION

As a regional waterfront park, China Basin Park will be a model for sustainable ecological systems and management over time. Its active programming and location on the Bay will make it a learning environment where visitors can engage with the plants and animals that thrive in the local habitat.

The stormwater gardens integrated with the streets bring understory planting and habitat directly to the different program types and site visitors distributed throughout the entire project.

STORMWATER TREATMENT

Mission Rock's landscapes and building systems will work together to detain and filter water to minimize impact on city infrastructure and improve water quality. The stormwater management infrastructure is integrated with the streetscape design and open space and serve as an amenity to site occupants and species. The stormwater gardens areas on site will accommodate treatment for all impervious surfaces within the development.

BIODIVERSITY

The low-maintenance native and regionally appropriate plantings on site will require minimal irrigation. Native or climate appropriate grasses, shrubs, and ground cover will provide as much species diversity as feasible in Mission Rock's planting areas. The rain gardens and bioswales will not only retain and filter rainwater, but provide comfortable and visually appealing outdoor environments for humans and wildlife. The green roofs, which reduce the heat island effect, promote biodiversity by providing both food and habitat for local bird species.

The landscape design and plant selection controls invasive species by limiting the opportunities for undesirable species to establish themselves. Landscaping is Bay-Friendly Rated to minimize opportunities for weed establishment and optimize other environmental benefits.

The San Francisco Plant Finder is a resource published by the City for finding plants adapted to microclimates throughout the city. The can be used to find appropriate and water saving plants for the Mission Rock site.

Create a Unique Identity and Sense of Place for the Mission Rock Development

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09

COMMUNITY IDENTITY

The diverse mix of uses, careful street design, new parks and open space, will create a distinct identity for the Mission Rock development.

Mission Rock has a unique identity within the larger San Francisco context based on the ample open space, human scale oriented streetscapes, and mix of unique uses. A coherent identity contributes to a successful Type One Ecodistrict.

The neighborhood will have a complete set of uses where the commercial and residential areas directly support the businesses, and the services available on site will make Mission Rock a desirable and distinctive place to live and work.

The unique features that contribute to the identity of the Mission Rock development are described in more detail in the Vision and Design Intent and Development Controls and Design Guidelines documents.

EQUITABLE DEVELOPMENT

Mission Rock will be an inclusive and diverse neighborhood with a mix of residential unit sizes, commercial uses, and retail services. The commercial space in the project will allow more businesses to locate in the city, increasing employment. At completion, the site will include around 1,500 residential units. To ensure the residential units will be available to a broad range of people, 40% of the units have been reserved for low and middle income residents.

The working waterfront adjacent to Pier 48 is reserved for production spaces that are struggling to find space along the waterfront in San Francisco. The waterfront zone will mix these production uses with pedestrian access to showcase the waterfront economy.

The retail spaces along the pedestrian streets and square are designed to enable and encourage local business to operate at the Mission Rock site by providing smaller, more affordable spaces. A diverse retail and service mix is critical to a vibrant and successful street culture.

OPEN SPACE

Open space is distributed throughout the site to serve both occupants of the Mission Rock site and visitors from the rest of the city. Mission Rock Square, located in the middle of the site, will be surrounded by active uses to ensure it acts as the focal point of the neighborhood, a community amenity and gathering space. The native and climate appropriate vegetation contributes to creating a sense of place for occupants and visitors.

China Basin Park, located along the north of the site and across McCovey cove, is a large waterfront park capable of accommodating many types and scales of gatherings and uses. The park will connect visitors and residents with the bay and shoreline.

The Mission Rock site fits into the Bay Trail System, linking the waterfront north of the ballpark with the cycling network below Mission Rock Street.

ACTIVE STREETS

The streets in the Mission Rock development are designed as a tight grid of walkable streets to serve as the setting for a vibrant and lively public life.

Sidewalks are generously sized to encourage businesses to spill beyond the building footprint and the diverse mix of retail storefronts, restaurants, and cafes ensure that the square and streets will have visitors throughout the day. The streets will include more smaller public Street Rooms defined by fixed and moveable furniture and plantings in order to foster social interaction. Vehicle access will be limited to prioritize pedestrians and cyclists, further cementing the development's identity as a community oriented project.

The high density retail, with regular access points, permeable storefronts, and transparency guarantee there will be regular "eyes on the street" which ensure the safety of residents and visitors. By creating an active and well-used site, residents are more likely meet and interact, creating resilient social networks.

WORKING WATERFRONT

The Mission Rock development includes a working waterfront along Terry Francois Boulevard for small scale industrial and production-related businesses. These uses are tied to the historic use of the site as a shipping terminal and industrial production site.

The historic Pier 48 will be preserved and upgraded to provide a new home for the expanded Anchor Brewing. Locating all of these production uses together creates the opportunity to share facilities such as loading facilities and truck access.

Target 50% reduction in GHG emissions over a typical San Francisco development

*

10

GHG EMISSION ASSESSMENT

Most of the global climate change over the past 50 years is due to increases in greenhouse gas (GHG) emissions from sources originating from human activity, according to the Intergovernmental Panel on Climate Change (IPCC).

This global average warming causes changes to physical and biological systems that are detrimental to our environment and economic stability. Mission Rock intends to minimize its future GHG emissions through an innovative Transportation Demand Management strategy (TDM) and the purchase of on and off site renewable energy to offset operational GHG emissions for all of the buildings.

The expected greenhouse gas emissions (carbon dioxide equivalents or CO2e) have been assessed for Energy, Water, Transport and Waste for the proposed development at Mission Rock, based on the performance measures that are required by this Sustainability Strategy. These four key performance areas are quantifiable and can be translated to an equivalent impact on greenhouse gas (GHG) emissions.

METHODOLOGY

A methodology for accounting and reporting GHG emissions associated with the Mission Rock development was selected to estimate an equivalent GHG code compliant baseline based on the proposed masterplan and compare potential GHG emission reduction strategies to the GHG baseline in order to track projected GHG emission performance.

This GHG calculation is based on an independent and internationally vetted GHG accounting and reporting protocol, to ensure accuracy and transparency. Atelier Ten evaluated different GHG accounting and reporting protocols and the ICLEI U.S. Community Protocol was determined to be the most appropriate standard to assess the Mission Rock development because it provides guidance on quantifying GHG emissions across a community-wide scope. More information about the accounting methodology can be found in the appendix of this report.

NATIONAL AND LOCAL COMPARISONS

For this assessment, Mission Rock has been compared to a code-compliant equivalent development in San Francisco and also the US national average for greenhouse gas emissions. San Francisco, as a city, has significantly less greenhouse gas emissions per year than the national average. This is predominantly due to state regulations and the renewable component of the local energy supply.

TRANSPORTATION

San Francisco is predominantly a commuter city, so emissions associated with transportation in the City are only marginally different compared to a national case. On average, approximately 86% of national commuters use private vehicles to get to work, while 78% of Bay Area commuters use private vehicles (including carpoolers). The key impact is finding viable alternatives to the use of private vehicles, and by converting private vehicles to lower carbon fuel supply. The Mission Rock development is aiming to be better than a standard San Francisco development and strategies included in the transportation plan are expected to result in at least a 20% reduction in annual carbon emissions associate with transportation.

ENERGY

Due to progressive building codes in California (Title 24, including Part 6,11, and CALGreen) and San Francisco (SF Green Building Code) and local climate conditions, the energy use intensity of new buildings in San Francisco is significantly lower than the national average. In addition, electricity supplied to San Francisco is more than three times cleaner than the average energy supply in the US (due to contributions from renewable and hydroelectric power). This means that carbon emissions associated with energy use in San Francisco are already less than a quarter of the national average. The Mission Rock development looks to improve upon the city's leading emissions performance by requiring all energy used on site to come from 100% renewable sources, eliminating annual carbon emissions associated with operational energy use.

WASTE

Municipal solid waste diversion in San Francisco is about twice the national average, significantly decreasing the GHG emissions associated with landfill waste disposal. As there is still room for improvement in waste diversion, Mission Rock is targeting a further 10% reduction in annual carbon emissions associated with waste by increasing diversion, compared to the current San Francisco diversion rate of 80%

WATER

Water contributes a relatively small percentage of the total GHG emissions both nationwide and in San Francisco. Carbon emissions result from conveyance and treatment. Water conservation is a critical local priority in San Francisco driven by resource scarcity, rather than carbon emissions. However, the exemplar strategies for water conservation and reuse proposed at Mission Rock are expected to result in up to 38% reduction in annual carbon emissions associated with water.

CONCLUSION

For Mission Rock as a whole, the above performance factors combined contribute to an estimated 79% reduction in GHG emissions compared to the US national average. The Mission Rock development will result in an estimated 50% reduction in GHG emissions compared to a San Francisco code compliant development. These carbon emissions reductions may be further improved by the inclusion of the recommended measures detailed in this Sustainability Strategy.

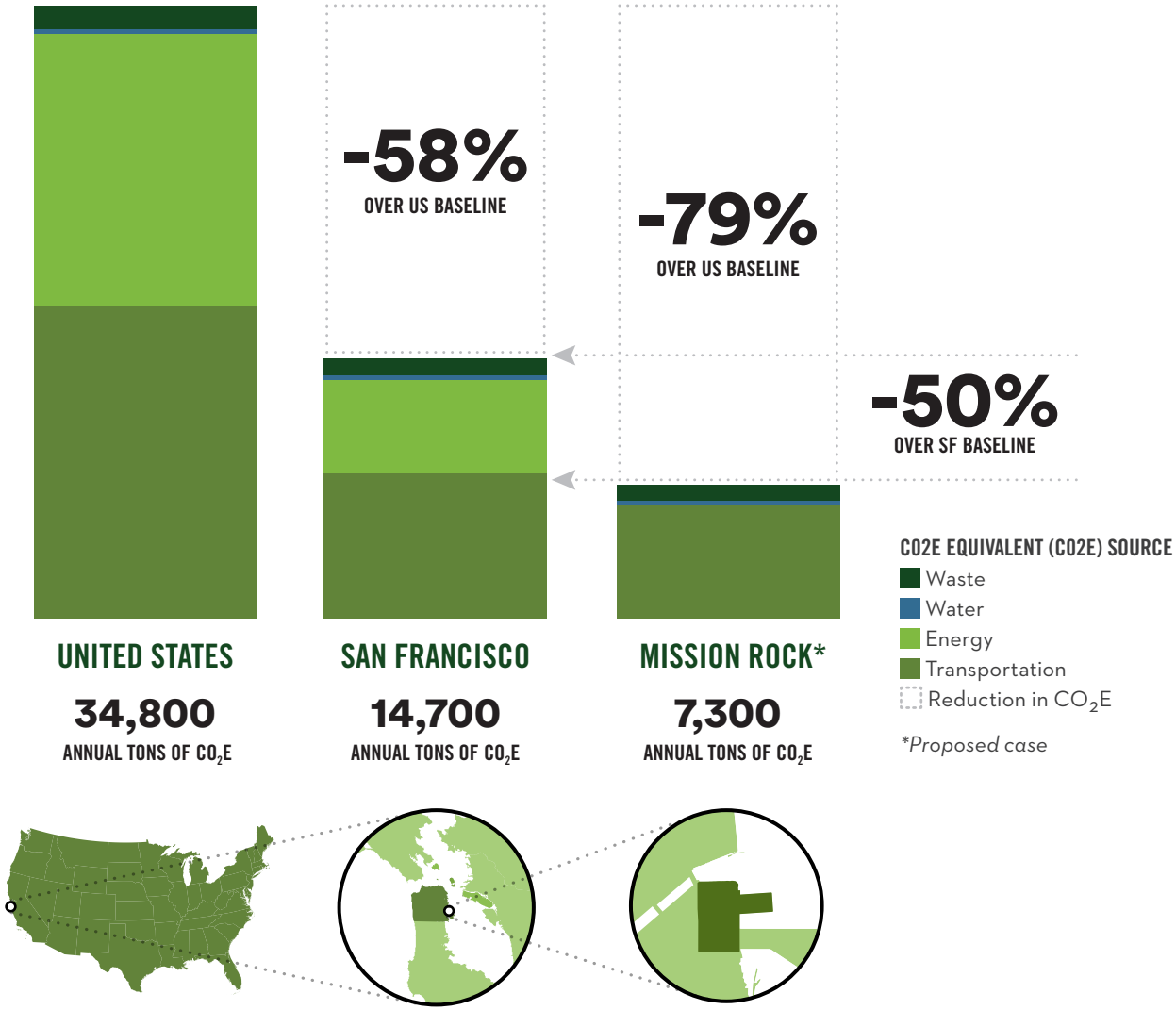


FIGURE 10.1: Site-Wide Carbon Footprint

ENERGY & CARBON

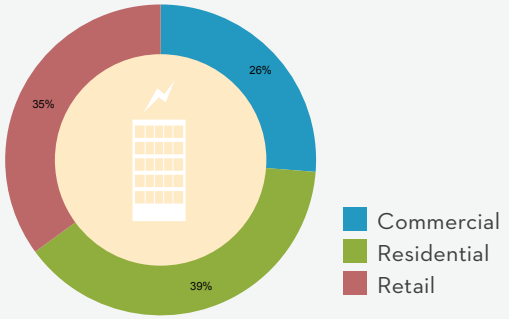
The Mission Rock district has a goal of eliminating all GHG emissions from building operations by requiring that 100% of the site's operational energy demand be met by renewable sources.

Mission Rock requires the central energy plant (CEP) and all buildings on the Mission Rock site to offset their predicted energy use by purchasing on-site or off-site renewable energy infrastructure.

Bay source cooling at the Mission Rock CEP will minimize the energy demand for cooling across the entire site. Mission Rock's requirements for renewable energy investment is based on predicted energy use and will incentivize vertical developers to purchase energy efficiency measures. The Sustainability Strategy also outlines recommendations for tenants to further minimize energy use.

The graph below shows how operations for each building type contribute to carbon emissions before the purchase of renewable energy.

ENERGY CARBON EMISSIONS DISTRIBUTION BY BUILDING TYPE



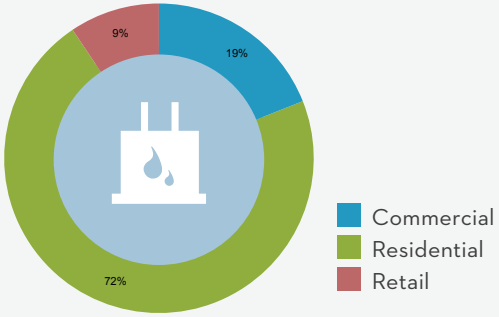
WATER & CARBON

The greenhouse gas (GHG) emissions associated with water primarily originate from the following water processes:

- Supply and conveyance
- Treatment to potable standards
- Municipal distribution
- End-use pumping
- Wastewater collection
- Conventional aerobic treatment

GHG emissions associated with water can be decreased by more than 38% through the use of bay source cooling, centralized graywater reuse, efficient fixtures and water efficient landscape design.

WATER CARBON EMISSIONS DISTRIBUTION BY BUILDING TYPE



TRANSPORTATION & CARBON

The dominant mode of transportation in the area of San Francisco that contains the Mission Rock development is personal automobile. The design of the Mission Rock site is intended to encourage pedestrian use and alternative transportation through smaller city block, MUNI extensions, bicycle lanes, and an enhanced pedestrian realm.

A comprehensive transportation management plan further reduces vehicle miles traveled (VMT) for the site. The combination of the following strategies results in a reduction in carbon emission of 20% or more through reductions in automobile use:

- ease of access to public transit
- on-site bicycle amenities and a safe biking environment
- personal motorized transport
- parking management
- on-site amenities
- site-wide transportation services

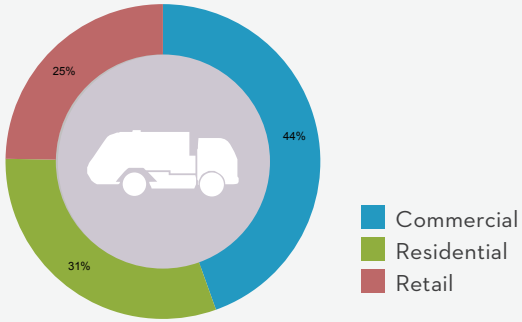
WASTE & CARBON

San Francisco has a goal of zero waste by 2020. Currently San Francisco diverts 80% of its waste from landfill.

However, over half of the material which goes into San Francisco's landfill bins can be recycled or composted. If all materials were sent to the proper bin San Francisco's waste diversion rate could increase to an overall landfill diversion rate of 90%.

Moving from an 80% diversion rate to a 90% diversion rate requires exemplary occupant participation in on-site waste separation. Mission Rock seeks to improve the on-site diversion rate through outreach, education and increased consumer responsibility. Specific measures to achieve this additional 10% reduction are outlined in the Waste section of the Sustainability Strategy.

WASTE CARBON EMISSIONS DISTRIBUTION BY BUILDING TYPE



A

APPENDIX

A1 ECODISTRICT EQUIVALENCY
A2 GLOSSARY
A3 CODES & STANDARDS
A4 GREEN HOUSE GAS ACCOUNTING METHODOLOGY
A5 ASSUMPTIONS & RESOURCES

A1: MISSION ROCK ECO-DISTRICT EQUIVALENCY (TYPE 1: THE BLANK SLATE)

PROSPEROUS DISTRICT

COMMUNITY IDENTITY

COMMUNITY IDENTITY OBJECTIVES	MISSION ROCK APPROACH
To foster resilient communities through social cohesion and partnerships	▸ Outdoor amenity spaces encourage community cohesion ▸ Urban "living room" in the form of central park will proved a shared place for people ▸ "Working waterfront" manufacturing hub
To ensure safe neighborhoods	▸ Activated building streetfronts and pedestrian friendly design encourages neighborhood presence ▸ Adequate site light improves resident security
To incentivize historic preservation	▸ The pier 48 building will be preserved and used by the Anchor Brewing Company

EQUITABLE DEVELOPMENT

EQUITABLE DEVELOPMENT OBJECTIVES	MISSION ROCK APPROACH
To ensure that neighborhood investments provide direct community benefit	▸ Development program mix ensures vibrant community ▸ Small business model for retail ▸ Anchor Brewing to share equipment resources
To provide quality local job opportunities	▸ Employers will be in the newly available commercial real estate ▸ The development will include a mix of both residential and commercial buildings ▸ Construction activities will generate new building industry jobs ▸ Small business manufacturing hub
To promote businesses and investments that protect and enhance the natural environment and grow the green economy	▸ Tenants and residents will be encouraged to live in an environmentally sound manner through incentives and education offered by the Sustainability Management Association

A1: MISSION ROCK ECO-DISTRICT EQUIVALENCY (TYPE 1: THE BLANK SLATE)

EFFICIENT DISTRICT

ENERGY

ENERGY OBJECTIVES	MISSION ROCK APPROACH
To achieve GHG-free, renewable and resilient energy system	▸ 100% renewable energy ▸ Central energy plant with bay sources cooling
To capture all cost effective energy efficiency	▸ Building developers incentivized to invest in energy efficiency before off-site renewable energy
To increase renewable energy generation and procurement	▸ Renewable energy potential (PV and solar thermal) evaluated as part of strategy and recommended for vertical development ▸ Requirement for central energy plant and vertical developer to purchase off-site renewable energy.

WATER

WATER OBJECTIVES	MISSION ROCK APPROACH
To reduce potable water use and increase non-potable water use	▸ Centralized graywater reuse to meet 100% of non-potable demands including flushing and irrigation
To increase water efficiency	▸ Eliminate more than 40 million gallons/yr of water demand through bay source cooling ▸ Efficient fixtures required ▸ Efficient landscape irrigation design with non-potable water
To reduce stormwater runoff	▸ Bioswales will be integrated into the street design ▸ Stormwater treatment wetland will be included on site. Stormwater managed by landscape and supplemented by individual buildings where required. ▸ Green roofs are a potential feature of individual building block design response.

MATERIALS MGMT

MATERIALS OBJECTIVES	MISSION ROCK APPROACH
To achieve zero waste	▸ Mission Rock programs support City of San Francisco programs and zero waste goal through Sustainability Management Association education programs and incentives.
To encourage Adaptive Reuse when possible	▸ Anchor Brewing to occupy the existing pier 48 building

A1: MISSION ROCK ECO-DISTRICT EQUIVALENCY (TYPE 1: THE BLANK SLATE)

BIOPHILIC DISTRICT

HABITAT + ECOSYSTEM FUNCTION

HABITAT + ECOSYSTEM FUNCTION OBJECTIVES	MISSION ROCK APPROACH
To preserve, restore and manage existing open space for habitat and biodiversity	• Vegetated open space on site will be increased
To increase open space and the urban forest to enhance ecosystem services	• Urban trees will be added to the streetscape and parks • Masterplan includes vegetation and bioswales integrated into street design
To create habitat connectivity citywide	• Parks will extend the Mission Bay park system currently exiting along Mission Creek • Waterfront park will expand vegetated accessible waterfront areas in San Francisco

A1: MISSION ROCK ECO-DISTRICT EQUIVALENCY (TYPE 1: THE BLANK SLATE)

CONNECTED DISTRICT

ACCESS + MOBILITY

ACCESS + MOBILITY OBJECTIVES	MISSION ROCK APPROACH
To provide clean, affordable, and reliable transportation options	▸ Adjacent light rail service ▸ Bike and car share programs on site
To reduce vehicle miles traveled and achieve a reduction in single-vehicle occupancy trips	▸ Near regional transit, including Caltrain station and future T-Train extension to BART ▸ Services and retail adjacent to commercial and residential areas to decrease vehicle trips
To ensure streets are accessible, walkable, and safe for pedestrians and non-auto modes of transportation	▸ Pedestrian bulb-outs at pedestrian crossings to increase safety ▸ Pedestrian only street ▸ Separated bicycle routes through site

HEALTH + WELL BEING

HEALTH + WELL BEING	MISSION ROCK APPROACH
To provide access to safe and functional local recreation, parks, and natural areas	▸ Site will include waterfront park, central square and large urban park ▸ Requirements for active building design and visible staircases
To provide access to local, healthy and affordable foods	▸ Farmers market available in central square ▸ Small business retail
To reduce exposure to indoor and outdoor environmental hazards	▸ Construction equipment pollution prevention requirements ▸ Material transparency in material selection ▸ Local natural air filtration will be provided by vegetation on site ▸ Building will employ materials with limited VOC content

A2: GLOSSARY & TERMINOLOGY

WORD / PHRASE	DEFINITION / INFORMATION
CALIFORNIA AB 32	Set into law California State's GHG emissions reductions goals of returning to 1990 levels by 2020, and 80% below 1990 levels by 2050, through the development of discreet early action plans in the following areas: 1) transportation, fuels, and infrastructure, 2) energy generation, transmission and efficiency, 3) waste, 4) water, 5)agriculture, and 6) natural and working lands.
CARBON DIOXIDE	A naturally occurring gas, and also a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes. It is the principal human caused greenhouse gas that affects the Earth's radiative balance. It is the reference gas against which other greenhouse gases are measured and therefore has a Global Warming Potential of 1.
CEP	Central Energy Plant
CO_{2E}	Carbon Dioxide Equivalents: A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP.
EMISSION FACTOR	A representative value that relates the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant

WORD / PHRASE	DEFINITION / INFORMATION
FUGITIVE EMISSION	Emissions of gasses or vapors from pressurized equipment due to leaks and other unintended or irregular releases of gases, mostly from industrial activities
GLOBAL WARMING POTENTIAL (GWP)	A relative measure of how much heat a greenhouse gas traps in the atmosphere as compared to the amount of heat trapped by a similar mass of carbon dioxide. Expressed as a factor of carbon dioxide.
GHG	Greenhouse Gas. Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride.
GREENHOUSE GAS PROTOCOL	The most widely used international accounting tool for government and business. Developed by the World Resource Institute (WRI) and World Business Council for Sustainable Development (WBCSD)

A3: CODES & STANDARDS

CALIFORNIA CODE
California Code of Regulations, Title 24, Green Building Standards Part 6 - California Energy Code Part 11 - California Green Building Standards Code (also referred to as CALGreen)
AB 32: California Global Warming Solutions Act of 2006, Reduce GHG emissions to 1990 levels by 2020

ENTITLEMENTS
Environmental Impact (EIR)
Soil Management Plan (SMP)

STORMWATER & WATER REUSE
San Francisco Stormwater Requirements and Design Guidelines
San Francisco (City and County): Recycled Water Ordinance
San Francisco (City and County): Non-Potable Ordinance
San Francisco Housing Code Chapter 12A Residential Water Conservation Ordinance

GREEN BUILDING CODE
LEED Gold for Buildings or Green Point Rating
San Francisco Building Code, Chapter 13D, Commercial Lighting Efficiency
San Francisco Better Roofs Policy
RESCAPE BAY FRIENDLY LANDSCAPING GUIDELINES

WASTE
San Francisco Environment Code, Chapter 9, Climate Action Plan Solid Waste
San Francisco Mandatory Recycling and Composting Ordinance
San Francisco Building Code, Chapter 13, Section 1302B, Recovery of Construction and Demolition Debris, Construction and Demolition Ordinance
San Francisco Housing Code Chapter 12A Residential Water Conservation Ordinance

TRANSPORTATION
San Francisco Planning Department, Transportation Demand Management Ordinance (Pending, currently scheduled for adoption at the Planning Commission on July 7, 2017.)

A4

GHG ACCOUNTING METHODOLOGY

Most of the global average warming over the past 50 years is extremely likely due to increases in greenhouse gas (GHG) emissions from sources originating from human activity according to the Intergovernmental Panel on Climate Change (IPCC).

This global average warming causes changes to physical and biological systems that are detrimental to our environment and economic stability. In response to these findings, many jurisdictions have developed GHG emission reduction goals. For example, California passed the 2006 Assembly Bill 32: Global Warming Solutions Act (AB 32) and San Francisco developed the 2004 Climate Action Plan for San Francisco. In alliance with these GHG emission reduction goals, Mission Rock intends to minimize its future GHG emissions through reduction strategies.

To determine the most effective GHG emission reduction strategies for the Mission Rock development, Atelier ten developed a tool that evaluates GHG emissions from energy, waste, water, and transportation sources. The purpose of the tool is to 1) define a methodology for accounting and reporting GHG emissions associated with the Mission Rock development, 2) estimate an equivalent CO_2 (CO_2e) baseline based on the proposed masterplan, and 3) compare potential GHG emission reduction strategies to the CO_2e baseline. This tool will be used during development of the Sustainability Strategy to make informed design decisions, track projected GHG emission performance, and demonstrate potential GHG emission reductions on the Mission Rock site.

METHODOLOGY

Atelier Ten have defined a methodology for accounting and reporting GHG emissions specifically associated with the Mission Rock development. This provides an equivalent CO_2 (CO_2e) baseline, which is the concentration of CO_2 that would cause the same effect as a different greenhouse gas. The applied methodology is based on an independent and internationally vetted GHG accounting and reporting protocol to ensure accuracy and transparency. Atelier Ten evaluated ten different GHG accounting and reporting protocols. From this evaluation, Atelier Ten determined that the ICLEI U.S. Community Protocol (Community Protocol) was the best protocol to use to assess the Mission Rock development because it provides guidance on quantifying GHG emissions on a community-wide scope. Unlike the other protocols that assess individual organizations or single projects, the Community Protocol accounts for GHG emissions associated with the sources and activities of an entire community.

To develop the methodology, Atelier Ten adapted the Community Protocol to fit the scope of the Mission Rock development. Atelier Ten did not include the other sectors (agricultural livestock, materials, and consumption-based activities) in the methodology because these sectors are outside the scope of the Mission Rock development or have significant industry-based data gaps. Therefore, the methodology estimates the GHG emissions from the built environment (energy), water, waste, and transportation.

BOUNDARY

Each sector has a different boundary around the Mission Rock site for which associated GHG emissions are included in the CO_2e baseline. For example, the boundary of the built environment is limited to the residential and commercial buildings within the Mission Rock site boundary. The water boundary includes surface water and groundwater supply sources outside of the site boundary. The waste boundary includes landfills and recycling centers within 50 miles of the Mission Rock site. The transportation boundary includes San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Solano, Napa, Sonoma, and Marin counties.

EXCLUSIONS

The results from the assessment presented here exclude carbon emissions associated with the proposed Anchor Brewery development (although a preliminary assessment has been completed). The brewery will naturally increase annual carbon emissions across all four performance areas (adding additional uses generally increases greenhouse gas emissions). However, the brewery also has the unique potential to reduce to not only carbon emissions associated with its own operations but also opportunities to reduce carbon emissions across the Mission Rock site. These opportunities have not yet been fully explored by the project team. Once further developed, these proposals are expected to be included in a future update of the Sustainability Strategy.

COMPARISON ASSUMPTIONS & NOTES

- The energy baseline is linked to ASHRAE 90.1 code compliant EUIs for the San Francisco climate.
- It is expected that all development at Mission Rock will need to follow LEED version 4 (effective 2015) requirements. As LEED certification is a San Francisco requirement for new development, this sets a code-compliant base case of at least 5% energy improvement over ASHRAE 90.1-2010.
- The emission factors for electricity and gas were provided by Pacific Gas & Electric, as also used by the project team in the assessment of the central plant. Alternative emissions factors may be supplemented when more is known of the proposed energy supply to the development.
- The water baseline is based on national average performance by using the LEED baseline assumptions for water use.
- GHG Emissions associated with water are a result of conveyance and treatment.
- The baseline estimated waste GHG emissions estimate is based on current diversion rates and disposal methods in San Francisco. The proposed case includes the expected additional achieved diversion.
- The transportation baseline has been established by the Transport Demand Management Plan and data supplied by Adavant Consulting. This is based on the current transportation mode breakdown for the Mission Rock location. The proposed case shows the expected decrease in vehicle miles traveled based on strategies implemented in the TDM plan and the Sustainability Strategy, which are expected to increase use of alternate modes of travel within and to/from the Mission Rock neighborhood.

- Carbon emissions may change as a result of defining carbon emission factors associated with the proposed central plant, depending on the design of the plant and energy sources.
- Carbon results could also easily change as a result of purchasing lower carbon electricity.
- Grid emissions factors are amended on an annual basis to represent the changing energy supply sources across the US.

ENERGY

The built environment includes the residential and commercial buildings as well as the supporting infrastructure in the Mission Rock development. GHG emissions from the buildings, occupant activities, and operational processes are included in the CO_2e baseline. The CO_2e baseline includes GHG emissions associated with the following energy end-uses:

Electricity:

- Hvac
- Lighting
- Plug loads/miscellaneous

Gas:

- Domestic water heating
- Hydronic/space heating
- Kitchen
- Central utility plant (CUP)

GHG emissions associated with the built environment and related energy use were calculated by applying a variety of EUI factors for energy end-uses to aggregated anticipated land use distribution and multiplying by energy use emission factors.

The EUI for the national baseline was estimated using the ENERGY STAR Portfolio Manager U.S. National Median Reference and Energy Information Administration Residential Energy Consumption Survey. Emissions factors for the U.S. baseline were based on the national averages provided by the Environmental Protection Agency's Emissions & Generation Resource Integrated Database (eGRID).

The anticipate EUI for the San Francisco Baseline was calculated based on a Title 24, 2016 code compliant building for the respective program types.

Electricity emission factors from Pacific Gas and Electric (PG&E) annual emissions data was used to calculate the GHG emissions associated with the San Francisco baseline built environment. However, this emission factor can vary each year based upon available energy sources (coal, nuclear, hydro, wind, and solar).

Natural gas emission factors are also provided by PG&E. The natural gas emission factor does not vary annually because it accounts only for the combustion of the gas, not the extraction and delivery of the gas.

Tables 1 and 2 show a summary of the CO_2e baseline assumptions for the built environment/energy sector.

WATER

Water consumption by Mission Rock's residents and businesses will have a relatively small GHG implications because the source of water, distances and topography associated with conveyance, and treatment processes are favorable. Wastewater treatment also creates process, stationary, and fugitive GHG emissions. The CO_2e estimate includes GHG emissions associated with the following water processes:

Supply and conveyance

Treatment to potable standards

Municipal distribution

End-use pumping

Wastewater collection

Conventional aerobic treatment

These processes emit the majority of GHGs associated with water use by Mission Rock's residents and businesses. However, fugitive GHG emissions from wastewater generation and treatment process are included.

Emissions associated with water consumption and wastewater treatment were calculated by applying a variety of energy use intensity factors to selective processes within each system, and multiplying these values by a representative population and per capita water use figure. These values were drawn from the Community Protocol, Appendix F. Table 3 in the Appendix details the assumptions made in characterizing water and wastewater emission profiles.

TRANSPORTATION

Transportation is one of the largest potential sources of GHG emissions in the Mission Rock development. Combustion of fuel in vehicle engines produces various GHG emissions. Electric vehicles also produce indirect emissions from electricity generation. GHG emissions associated with the movement of people and goods by public transportation and vehicles are estimated in the CO_2e baseline.

Vehicles: Emissions associated with transportation are based on the number of vehicles, vehicle type, distance travelled, and emission factors per vehicle type. On-road vehicle statistics are based upon San Francisco averages interpolated for a site weighted percentage, by applying a population diversity factor. This data comes from the EMFAC database software developed by the California Department of Transportation and California Air Resources Board.

EMFAC database provides aggregated vehicle statistics specific to each county in California including vehicle type miles travelled (vmt), vehicle type distribution/population/age/fuel, vehicle type emissions/vehicle/miles, and number of trips. This data is used to determine the estimated number of miles travelled, ignitions, and minutes idling for each vehicle type and class. Emission factors for ignitions, running, and idling are then multiplied by their respective vehicle type miles, ignitions, and idling time to calculate the associated GHG emissions. These were aggregated to create a typical vehicle for San Francisco.

For the Mission Rock site, the number of vehicle miles traveled (VMT) that can be attributed to the site were calculated for a baseline case without any strategies to reduce car reliance. The VMT multiplied by the emissions per mile determined the total GHG emissions due to transportation. Once the transportation strategies had been identified for the site, the estimated reduction in VMT was calculated with the corresponding reduction in GHG emissions.

WASTE

GHG emissions result from the management and natural decay of solid waste. Management of solid waste results in emissions from the combustion of fossil and/or biological fuel in equipment used to transport and process the waste and from the combustion of the solid waste in incinerators and waste-to-energy technologies. The CO_2e baseline includes emissions from the solid waste generated by the residents and businesses in Mission Rock (regardless of where it is disposed of) and emission from the solid waste disposed of inside the Mission Rock boundary.

San Francisco has aggressive waste disposal policies and high diversion rates (80% commercial / 50% residential), which results in relatively low solid waste levels. GHG emissions associated with the collection, transportation, and landfill disposal are included in the CO_2 baseline. Inputs include a per capita waste generation value, collection and transportation emissions factors, efficiency factors to account for various processes involved in the degradation of solid waste, and a mixed stream factor.

Atelier Ten assumed solid waste was sent to the Altamont Landfill, which is within 50 miles of the Mission Rock site. Reliable data on waste stream characterization (ie % paper, % biodegradable, % fabrics, etc.) of the Mission Rock waste stream is not available; therefore, Atelier Ten assumed a representative mixed solid waste stream, with a single emission factor.

Table 5 in the Appendix lists the assumptions made in calculating CO_2e emissions associated with waste generation and disposal for Mission Rock.

EMISSION FACTOR ASSUMPTIONS		
TERM	VALUE	REFERENCE SOURCE
U.S. Electricity emission factor	1,136 lbs. CO_2e/ MWh	EPA Emissions & Generation Resource Integrated Database (eGRID)
SF Electricity emission factor	431 lbs. CO_2e/ MWh	Pacific gas and Electric (PG&E)
Gas Emission Factor	11.7 lbs. CO_2e/ therm	Pacific gas and Electric (PG&E)

TABLE 1: Energy Emission Factor Assumptions

EUI ASSUMPTIONS		
TERM	VALUE	REFERENCE SOURCE
U.S. Commercial EUI	46.2	Peer Projects, ASHRAE 90.1-2007 Baseline
U.S. Residential EUI	27.5	Peer Projects, ASHRAE 90.1-2007 Baseline
U.S. Retail EUI	81.8	Peer Projects, ASHRAE 90.1-2007 Baseline
SF Commercial EUI	33.0	Peer Projects, T24 Code Complaint
SF Residential EUI	25.1	Peer Projects, T24 Code Complaint
SF Retail EUI	72.7	Peer Projects, T24 Code Complaint

TABLE 2: Energy Use Intensity Assumptions

WATER EMISSIONS ASSUMPTIONS		
TERM	VALUE	REFERENCE SOURCE
U.S. water supply source (self/ground/surface)	14/28.4/57.6 %	Community Protocol, Appendix F
U.S. Groundwater Extraction Energy Intensity	540 kWh/MG	Community Protocol, Appendix F
U.S. Water Conveyance, Treatment, and Distribution EI	110/210/540 kWh/MG	Community Protocol, Appendix F
U.S. Wastewater collection and aerobic treatment EI	280/2300 kWh/MG	Community Protocol, Appendix F
CA Water Supply/Conveyance, Treatment, and Distribution EI	150/100/1200 kWh/MG	Community Protocol, Appendix F
CA Wastewater collection and aerobic treatment EI	2500 kWh/MG	Community Protocol, Appendix F
CA grey water pump, grey water treatment EI	19.03 9 kWh/MG	Atelier Ten Energy Analysis

TABLE 3: Water Use Emission Assumptions

TRANSPORTATION EMISSIONS ASSUMPTIONS		
TERM	VALUE	REFERENCE SOURCE
Commercial Regional VMT	19.1 Daily VMT/capita	Mission Rock Transportation Impact Study
Residential Regional VMT	17.2 Daily VMT/capita	Mission Rock Transportation Impact Study
Retail Regional VMT	14.9 Daily VMT/capita	Mission Rock Transportation Impact Study
Commercial Site VMT	12.1 Daily VMT/capita	Mission Rock Transportation Impact Study
Residential Site VMT	3.5 Daily VMT/capita	Mission Rock Transportation Impact Study
Retail Site VMT	10.4 Daily VMT/capita	Mission Rock Transportation Impact Study
Emissions per Mile Traveled	434 g CO_2e/mile	Calculated Value from EMFCA 2014

TABLE 4: Transportation Emission Assumptions

WASTE ASSUMPTIONS		
TERM	VALUE	REFERENCE SOURCE
Residential per Capita Waste Generation	5.4 lbs/day/person	US EPA, San Francisco value
Commercial Per Employee Waste Generation	1,515 lbs/employee/year	2006 Alameda Waste Characterizatin Study
Commercial Per Employee Waste Generation	2,881 lbs/employee/year	2006 Alameda Waste Characterizatin Study
SF Waste Diversion Rate	51%	Calculated from San Francisco department of public works, municipal refuse collection rates comparative analysis, 2012
US Waste Diversion Rate	35%	EPA, Advancing Sustainable Materials Management: 2013 Fact Sheet
Waste material mass fraction	100% mixed solid waste	
Municipal solid waste emission factor	0.06 mt CH_4 per wet short ton	Community Protocol, Appendix E, Table SW5 (epa data source)
Landfill process emissions factor	0.011 mt CO_2 per wet short ton	Community Protocol, Appendix E (US EPA Municipal Solid Waste publication 2008)
LFG collection Efficiency (on-site landfill gas collection equipment)	0.75	Community Protocol, Appendix E (US EPA Municipal Solid Waste publication 2008)
Collection emissions factor (assumes CNG fueled municipal collection fleet)	0.014 mt CO_2 per wet short ton	Community Protocol, Appendix E , SW6 (US EPA Municipal Solid Waste publication 2008)
Transportation process emissions factor (assumes CNG fueled municipal collection fleet)	0.0001 mt CO_2e per wet short ton/mile	Community Protocol, Appendix E , SW6 (US EPA Municipal Solid Waste publication 2008)
Distance travelled to city landfill	50 miles	

TABLE 4: Waste Emission Assumptions

A5: WATER

The Mission Rock development identified zero water waste, where no potable water is used for non-potable demands, as the primary water goal. This goal minimizes the impact of the development on water systems by aggressively reducing the overall water demand and producing on-site recycled water to meet the site's non-potable demand.

Recycled water distribution piping serving each building is required by the city and is assumed in all of the cases.

Rainwater was excluded from the calculations because the seasonal availability means that it would not be possible to meet the zero water waste goal throughout the summer without huge storage capacity.

REUSE OPTIONS CONSIDERED

Various reuse options were evaluated, including decentralized graywater treatment and reuse, centralized graywater or blackwater treatment and distribution using a variety of buildings as potential sources, and an option to team with adjacent developers to engage a third party recycled water provider. On-site centralized graywater treatment with collection from a limited number of residential buildings was determined to be the most cost effective strategy to meet the zero water waste goal.

The site water demands for irrigation and flushing were calculated to determine the anticipated demand for water. The availability of non-potable water was determined for each option and compared against the non-potable demand to determine if the zero water waste goal could be met.

A detailed description of each of the primary water reuse options that was considered is included below and in Figure A5.1.

CODE MINIMUM DECENTRALIZED TREATMENT

The current version of San Francisco's Mandatory Use of Alternate Water Supplies In New Construction Ordinance No. 109-15 as amended in May 2015 requires water reuse in new buildings larger than 250,000 ft². Currently this only applies to five buildings in the Mission Rock development: A, B, C, F, and G. Future versions of the ordinance may extend this requirement to all buildings.

To minimally meet the code, graywater reuse systems would be required within five buildings, but the remaining buildings on site wouldn't have recycled water, so the option falls short of the zero water waste goal.

1. Code Minimum Centralized Treatment

A centralized graywater treatment system that only collects graywater from the buildings that are required by code to have reuse systems places no additional burden on other buildings in the development. Graywater collection piping would be required in five buildings and the street.

This case, summarized as Option 1 in Figure A5.1 uses a centralized treatment that distributes recycled water to all buildings on site and provides sufficient water to meet the zero water waste goal, however collecting water from office buildings is inefficient because they do not produce much graywater and due to spatial

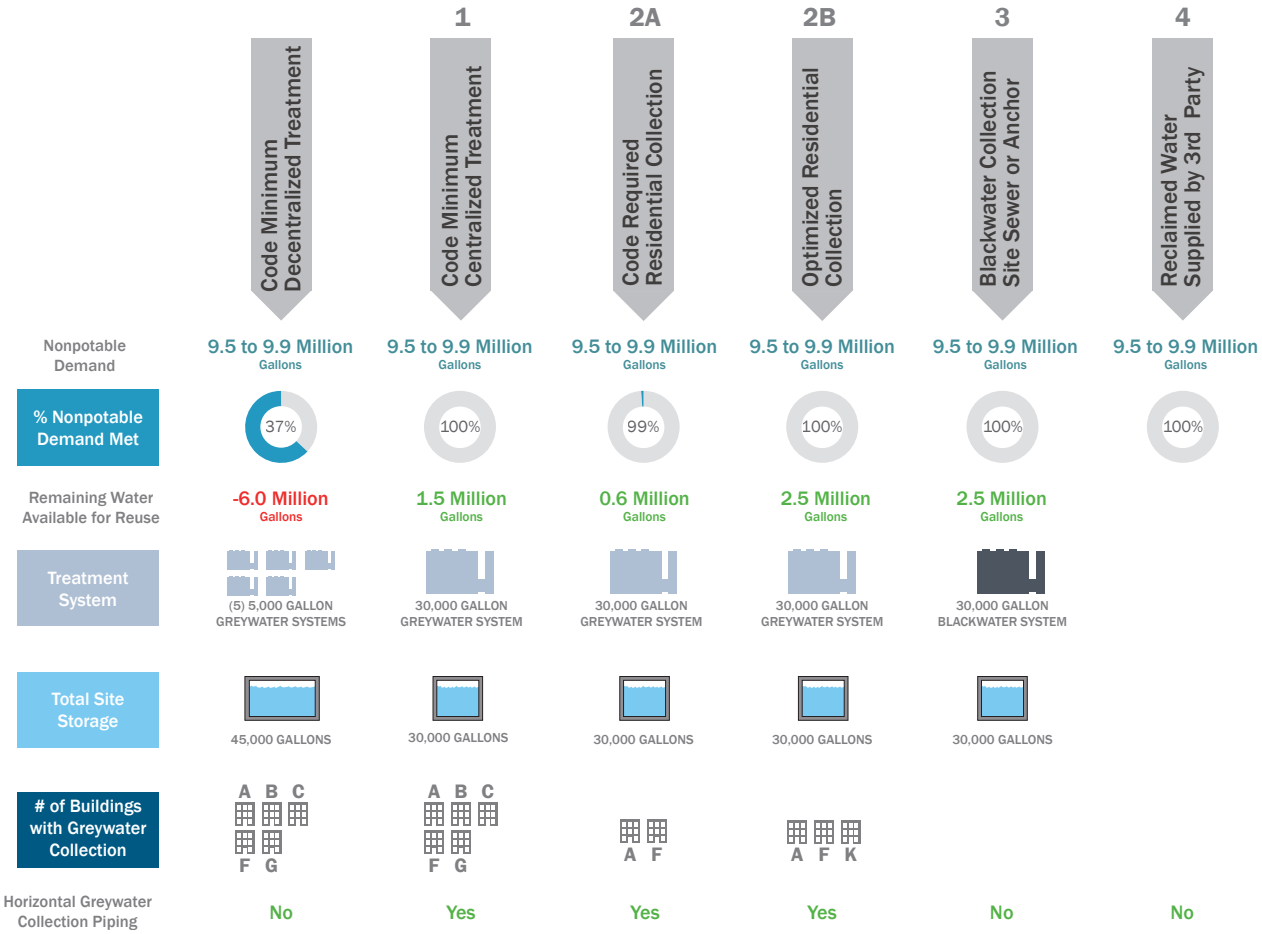


FIGURE A5.1: Recycled Water Options

constraints under certain streets it was not possible to provide the pipes to bring graywater form all of these buildings to a central location.

2A. Code Required Residential Collection
Limiting water collection to residential buildings A and F because they produce substantially more graywater than commercial buildings is more cost and material efficient than case 1, but does not meet the zero water waste goal.

2B. Optimized Residential Collection
To reach the zero water waste goal, including building K in addition to A and F ensures that enough graywater producing buildings are connected to the collection and treatment system. This case was selected for the Mission Rock development because it includes the smallest infrastructure investment while easily meeting the zero water waste goal. The infrastructure requirements in the streets for this scenario are feasible.

3. Blackwater Collection
Blackwater could be withdrawn directly from sewer so no additional collection piping in buildings or the street would be required in a blackwater treatment case. Water quality testing requirements, and cost are substantially more than a graywater treatment system. A blackwater treatment system also requires a larger footprint in the central plant for equipment and water storage. This option could easily meet the zero water waste goal, but has additional operational and infrastructure requirements that make it less desirable than a graywater option.

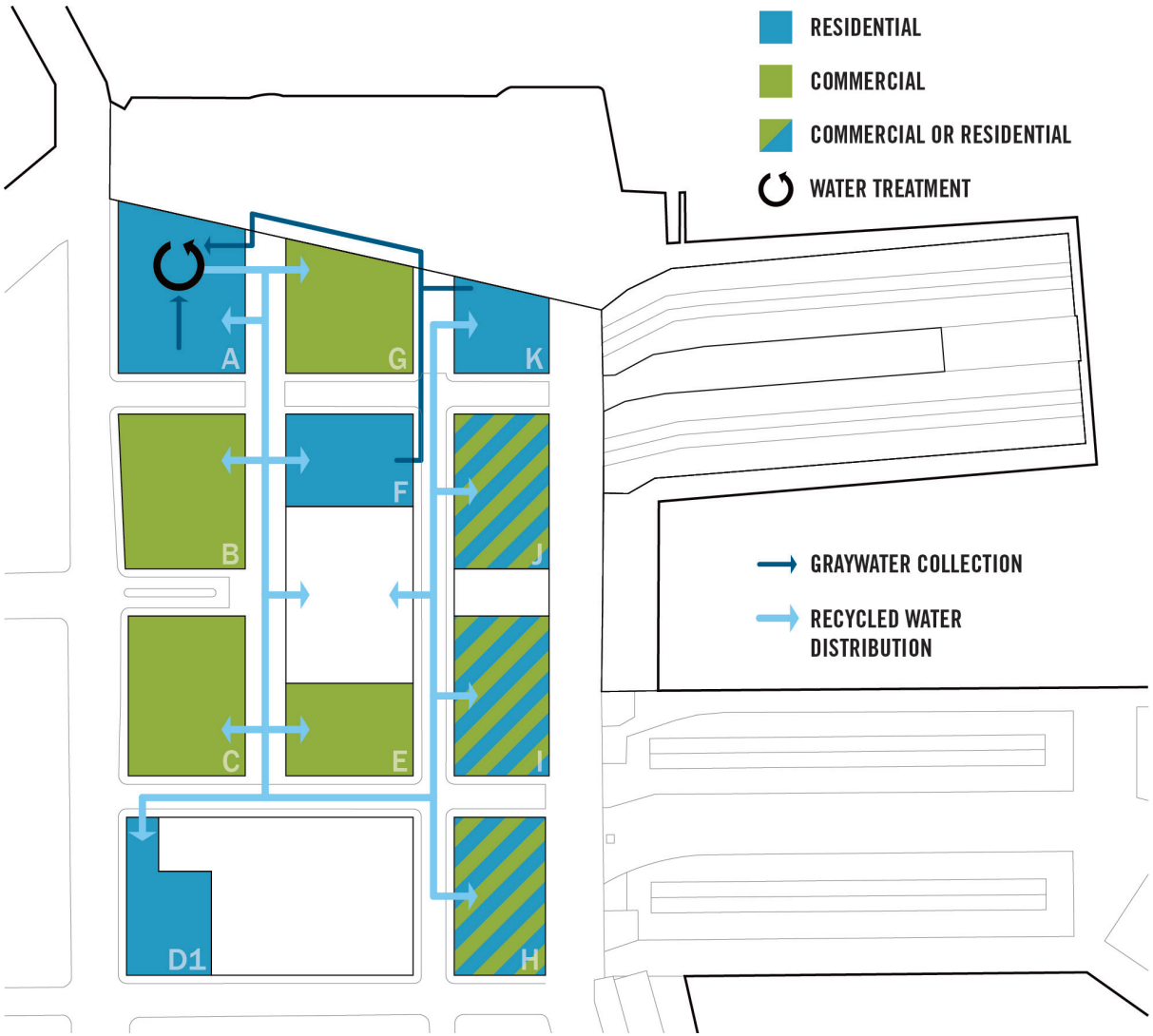


FIGURE A5.2: Graywater collection and recycled water distribution infrastructure

4. Recycled Water Supplied by 3rd Party

A third party supplying recycled water to the site would require the smallest infrastructure investment on site, but due to the operational timeline, is not a viable option for the Mission Rock project. The SFPUC and third party operators have proposed municipal neighborhood scale recycled water supply systems, but these supplies will not be available.

WATER REUSE OPTION PROPOSED

The optimized graywater collection from residential buildings meets all of the project requirements while limiting infrastructure investment. Figure A5.3 shows the anticipated collection and distribution layout. Calculation summary tables are included at the end of this section.

Phasing

Because two residential buildings with graywater collection, A and K, are included in Phase I, there should be a sufficiency supply of treated graywater to meet all flushing and irrigation demands on site until Building F is built in Phase III.

Infrastructure

The central energy plant is currently planned in Building A and will include sufficient space for a graywater treatment and storage system.

Graywater collection from residential buildings is required in buildings A, F, and K. Because of space limitations in the streets, it is anticipated that the collection piping will be routed along the inside of China Basin Park.

SITE INFORMATION

PARCEL	USE	TOTAL GFA [FT²]	Area/Person [sf/person]	Occupants
A	Residential	350,200	500	700
B	Commercial	242,654	250	971
C	Commercial	324,548	250	1,298
D	Residential	238,828	500	478
E	Commercial	125,275	250	501
F	Residential	307,720	500	615
G	Commercial	279,698	250	1,119
H	Commercial	129,914	250	520
I	Commercial	129,634	250	519
J	Commercial	129,458	250	518
K	Residential	121,146	500	242
	Retail	264,777	130	2,037
	TOTAL	2,643,852	3,880	9,517

FIXTURE RATES

USE	WC [gpf]	URINAL [gpf]	LAVATORY [gpm]	KITCHEN FAUCET [gpm]	SHOWER [gpm]	WASHING MACHINE [gpc]
Commercial	1.28	0.125	0.5	1.8	1.5	N/A
Residential	1.28	N/A	1	1.8	1.5	20
Retail	1.28	0.0125	0.5	1.8	1.5	N/A

FIGURE A5.3: Collection and distribution layout

Recycled water distribution piping is required by the city and will serve all of the buildings and park in Mission Rock development. Mission Rock is working with the SFPUC to confirm who will own and maintain these pipe and ensure that they can be charged with recycled water from the central treatment system.

BAY SOURCE COOLING

Bay source cooling is currently anticipated for the project, saving more than 40 million gallons of water a year by eliminating the need for cooling towers and their associated water consumption.

If the bay source cooling is not viable for the project due to regulatory obstacles, cooling towers will be instated in the project to meet the cooling demand. If this is the case the water demand of the cooling towers should be met with non-potable sources. Graywater resources from all buildings on site are insufficient to meet the 40 million gallon anticipated demand. Blackwater harvesting and treatment from both buildings and the brewery wastewater would begin to meet this demand. If cooling towers are introduced to the project, the approach to water conservation and reuse will have to be reassessed.

DAILY END USE DEMAND

PARCEL	USE *Water Input* *Water Output*	WC [gal/day] *Non-potable* *Blackwater*	URINAL [gal/day] *Non-potable* *Blackwater*	LAVATORY [gal/day] *Potable* *Greywater*	KITCHEN FAUCET [gal/day] *Potable* *Blackwater*	SHOWER [gal/day] *Potable* *Greywater*	WASHING MACHINE [gal/day] *Potable* *Greywater*
A	Residential	2,690	-	3,502	5,043	8,405	4,202
B	Commercial	2,485	121	364	437	728	-
C	Commercial	3,323	162	487	584	974	-
D	Residential	1,834	-	2,388	3,439	5,732	2,866
E	Commercial	1,283	63	188	225	376	-
F	Residential	2,363	-	3,077	4,431	7,385	3,693
G	Commercial	2,864	140	420	503	839	-
H	Commercial	1,330	65	195	234	390	-
I	Commercial	1,327	65	194	233	389	-
J	Commercial	1,326	65	194	233	388	-
K	Residential	930	-	1,211	1,745	2,908	1,454
	Retail	1,521	7	216	199	336	-
	TOTAL	**23,277**	**687**	**12,437**	**17,307**	**28,849**	**12,215**

TOTAL ANNUAL SUPPLY & DEMAND

PARCEL	USE *Water Type*	POTABLE DEMAND [gal] *potable*	NON-POTABLE DEMAND [gal] *non-potable*	GREYWATER SUPPLY [gal] *greywater*	BLACKWATER SUPPLY [gal] *Blackwater*
A	Residential	7,720,509	981,681	4,997,879	-
B	Commercial	397,467	677,587	-	-
C	Commercial	531,610	906,268	-	-
D	Residential	5,265,202	669,483	-	-
E	Commercial	205,200	349,818	-	-
F	Residential	6,783,995	862,601	4,391,626	-
G	Commercial	458,145	781,029	-	-
H	Commercial	212,799	362,772	-	-
I	Commercial	212,340	361,990	-	-
J	Commercial	212,052	361,499	-	-
K	Residential	2,670,785	339,596	1,728,935	-
	Retail	274,245	557,716	-	-
	Irrigation	-	2,144,868	-	-
	TOTAL	**24,944,350**	**9,356,906**	**11,118,440**	**-**

A5: ENERGY

The Mission Rock development is focused on reducing the GHG emissions associate with energy consumption. A variety of approaches were analyzed to define the most effective structure for meeting the district's energy requirements. These approaches included Title 24 exceedance, a energy use intensity (EUI) target, and a percentage better than ASHRAE 90.1-2010. Ultimately, a requirement for 100% renewable energy was selected for the Mission Rock development because it eliminates GHG emissions associated with energy consumption on site and encourages efficiency at the building scale.

CONSIDERED APPROACHES

Title 24 Exceedance

Tying the energy performance to Title 24 through a fixed percentage better than code was considered as a method to enforce increased building efficiency. Because of uncertainty in projecting energy code requirements and challenges in demonstrating compliance with current Title 24 modelling software this was not considered an effective approach. The Title 24 energy model also uses a different energy metric and a standardized operational schedule and climate file, so modeled energy performance may differ considerably from actual operational energy consumption.

EUI Target

A ramping EUI target for each of the different building types was also considered. However, understanding how an EUI target would track with code was not feasible because California has not indicated its path to meeting its 2030 Net Zero Energy goals. As a result, establishing an EUI target which continues to be aggressive but achievable relative to code is challenging. An EUI target may substantially over or underestimate code, either becoming meaningless because it is too easy to comply with or excessively difficult, placing a burden on developers.

Also, an EUI target does not accurately reflect differences in operation schedule and occupancy type that might occur within each building type. An office building with late night occupants and lots of equipment would have the same target as an office building that sticks to a strict regular office hours schedule with few computers, even though it would consume substantially more energy, potentially causing unequal burden on different developers.

ASHRAE 90.1 Exceedance

A percentage improvement over ASHRAE 90.1-2010 baseline was also considered as a method for enforcing energy efficiency because it accommodates different occupancies is the industry recognized standard used for LEED compliance. The primary concern is that it does not track with changing energy code in California and will not remain aggressive enough throughout the Mission Rock timeline.

PROPOSED APPROACH

In the end, the team arrived at an approach with that calls for 100% renewable energy to eliminate GHG emissions associated with energy consumption. The program requires developers to purchase off-site renewable energy to offset all of the energy consumption at the building scale. This structure provides incentive for vertical developers to build more efficient buildings by associating up front cost with operational energy cost. Developers can determine the most cost effective path to meeting this requirement through a balance of energy efficiency and renewable investment. A minimum level of building performance is guaranteed by Title 24 energy code, and given the progressive nature of this code, will remain at the cusp of viable energy efficiency.

Off-site Renewable Energy

While on-site renewable would be preferred, there is not enough space on site to meet energy demand with on-site renewable energy generation. Figure A5.6 shows the potential for on-site renewable energy including solar panels installed on the roof and a proportional share of Pier 48 and adjacent Pier 50. Even with all of these sources, a typical building will only be able to meet less than half its annual energy demand with on-site renewable sources. Off-site solar panels installed at a remote site can provide sufficient renewable energy to serve the project. Additionally, solar potential is greater in locations outside of the Bay Area.

Investing directly in new renewable energy generation capacity is central to ensuring the Mission Rock development receives its power from renewable sources. Renewable energy credits (RECS) are not an acceptable source of off-site renewable energy offsets because they cannot be proven to result in direct investment in new renewable sources and so do not meet the additionality requirement for the Mission Rock development. Similarly, the existing renewable energy component of the electric grid is existing and cannot be counted towards the renewable energy requirement on the Mission Rock site.

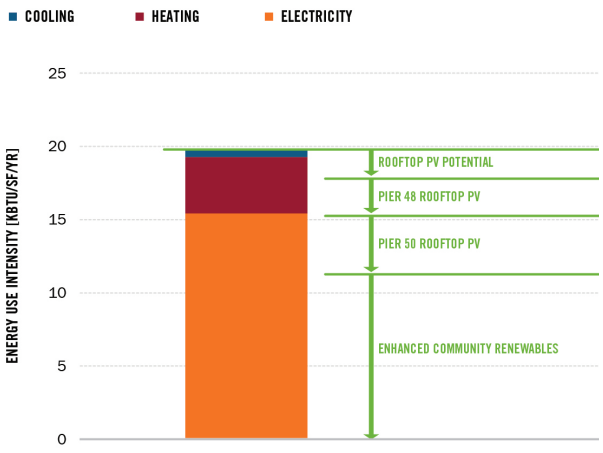


FIGURE A5.6: On-Site Renewable Potential

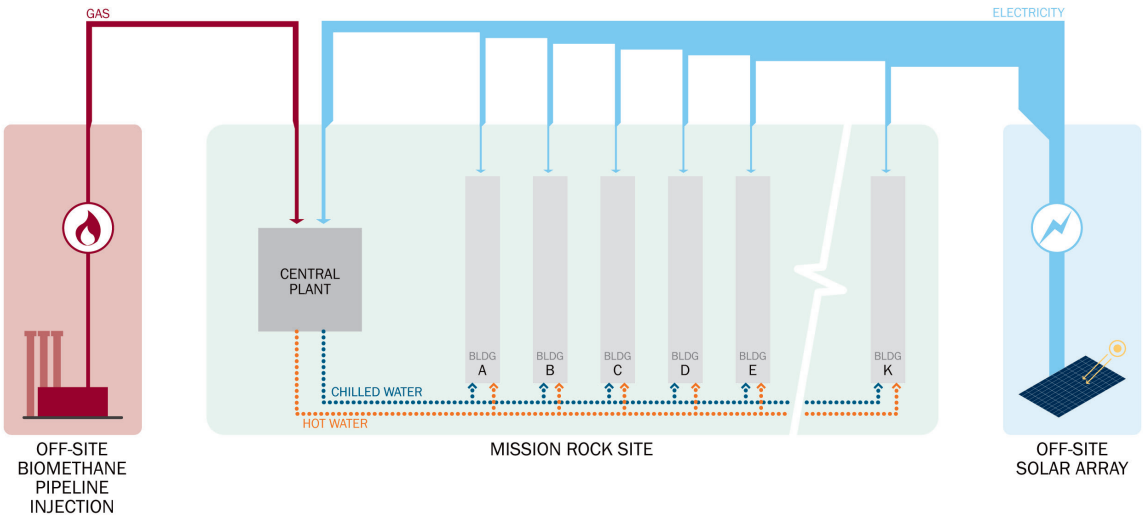


FIGURE A5.7: Off-site Electricity and Biomethane Renewable Energy Offset

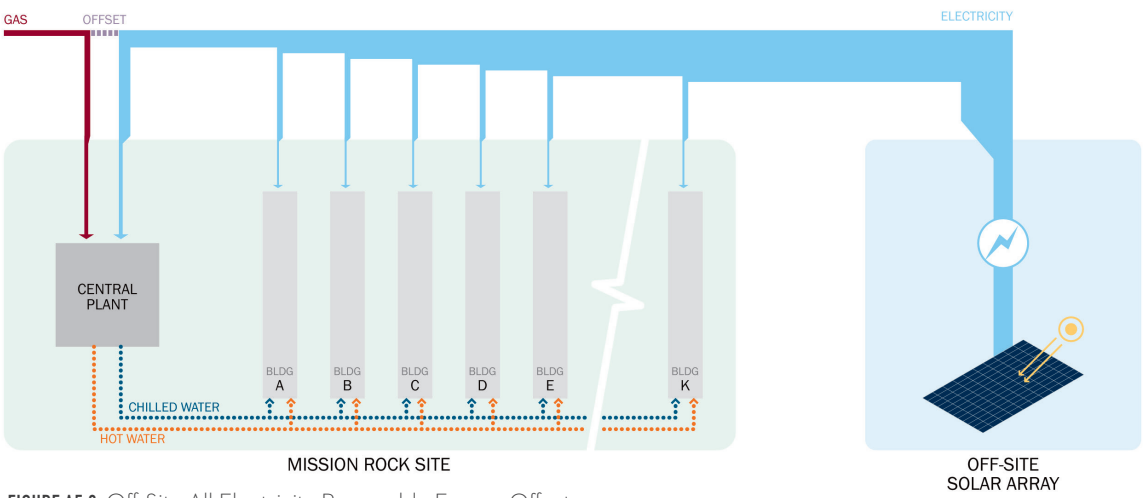


FIGURE A5.8: Off-Site All Electricity Renewable Energy Offset

The anticipated energy demand determined as part of the energy modelling conducted for LEED certification will be used to determine the required renewable energy investment. The energy model will be reviewed by the Green Business Certification Institute (GBCI) and part of LEED certification, placing the technical verification of the energy performance on an impartial third party. The anticipated annual energy use of the building will determine the amount of off-site renewable energy that needs to be purchased. On-site renewable energy can contribute to compliance, but off-site renewable energy will be required to reach 100%.

While vertical developers will primarily control the core and shell of the building, savings in tenant areas of the building can be enforced (and thus reduce the renewable energy requirement) through lease agreements or other legal structures.

There are a variety of factors that have to be clarified to ensure that a program like this will be possible on the Mission Rock site including utility provider, metering requirements, rate structure, how gas consumption at the central plant and individual buildings will be accommodated, and cost of the program.

UTILITY PROVIDER

The exact utility program or metering structure to allow off-site renewable power will be determined as the development progresses. The electricity utility serving the site will either be PG&E or SFPUC Power. Each has different implications for off-site renewable energy.

Precedents for purchasing off-site renewable energy in this manner exist, but Mission Rock will still be providing an innovative and progressive solution to renewably sourcing energy for the development. The goal of 100% renewable energy is an commitment informed by utility limitations, energy markets, and environmental impact.

Pacific Gas & Electric

For PG&E there are a couple of rate structures that may allow offsite renewable energy to server the site.

Direct access: This program allows large customers to purchase energy directly. PG&E still provides administration and delivery for the energy, but the customer can negotiate energy purchases directly from the generation source of their choice. Aggregating all of the service points on the Mission Rock site may make this approach viable. The PG&E direct access program is currently at the maximum annual load cap, although the cap may be expanded or the program changed when the Mission Rock buildings open for occupancy. Direct access is also typically only for commercial accounts, not residential. The expansion of the direct access program is currently being considered by the State Assembly.

Regional Solar Choice: In this program, solar developers build solar farms and negotiates to sell power directly to customers. PG&E is still responsible for billing, administration, metering and transmission. This program is best managed at the building scale, where individual vertical developers engage with solar developers to provide offsite renewable energy for the whole building. The Regional Solar Choice program currently has a 2019 closing date, but the program cap may be expanded and the timeline extended once reviewed by the CPUC. Any renewable energy that falls under this program does not count towards the renewable portfolio standard required in California, which requires 33% renewable energy by 2020 and 50% by 2030. The regional solar program limits system size to 3 MW, which should substantially exceed individual building demand.

Because of the size and regulatory environment of PG&E, the Mission Rock project would probably have to fit into an existing rate structure.

San Francisco Public Utilities Commission

The SFPUC may be the electricity utility provider on the Mission Rock site as the property is owned by the Port of San Francisco. SFPUC serves city properties in San Francisco, but is expanding service to non-city customers, including the Pier 70 development. SPFUC power is generated entirely by Hetch Hetchy hydro power. If the Mission Rock development connects to this power source, the power consumed on site could be considered 100% carbon free, but California does not consider power from large scale hydro projects to be renewable to count towards the renewable portfolio standard. Also this power would not meet the additionality requirement established by the Mission Rock project because the generation infrastructure is existing and the project would not be investing in new renewable generation sources meant solely to serve the project.

If SFPUC is power provider on site, there may be more flexibility to create a program that meets the goals for the site, while meeting metering and regulatory requirements. Arranging this program would require meeting with the SFPUC to determine the both the metering requirements and generation source. This may be easiest to manage at horizontal developer scale, to simplify negotiations. A structure similar to PG&E's Direct Access program or a program where SFPUC operates the generation source, but the Mission Rock development pays for the infrastructure, could work.

If none of these options with either utility meet Mission Rock's requirements, a pure financial transaction "contract for differences" might be a viable alternative. Mission Rock would enter into an agreement with a solar developer to build and operate a renewable energy generation source. The solar developer would then sell this power directly to the utility at wholesale prices. This revenue would then be used to offset the cost of power purchased on the Mission Rock site. A program like this would essentially work as a virtual net metering arrangement at the utility scale. This acts as a hedge against the cost of power increasing.

CENTRAL PLANT OFFSETS

The central plant will also need to offset its energy consumption with a renewable source. The electricity required to operate the chillers and other equipment can be offset the same as the rest of the electricity on site, while the approach to offsetting gas consumption may require a different approach.

Biomethane Pipeline Injection

Biomethane produced from biomass, dairy manure, or other low impact sources can be injected into the grid to offset traditional gas production and consumption. This gas can be purchased remotely by customers to offset gas consumption on a project site. This method of gas offset is very similar to the structure proposed for renewable electricity offsets on the Mission Rock site. There are multiple companies injecting biomethane into the natural gas grid in California. Biomethane grid injection is the preferred energy approach as it is a direct investment in gas This approach is summarized in Figure A5.7.

On-site Biomethane Production

Wastewater, rich in nutrients, from the Anchor Brewery on site can be used to produce biomethane for use in the central plant. The amount of energy produced by this system is difficult to predict without further information from Anchor, but it would probably be insufficient to meet the entire demand of the central plant and the remaining offset would have to be met through other approaches. Furthermore, Anchor may already be planning to install a system to treat their wastewater and produce energy, which would make this source of biomethane unavailable to the Mission Rock central plant.

Electricity Offsets

The natural gas consumption in the central plant and individual buildings can be offset with renewable energy, where the renewable production is equal to the gas consumption of the central plant. A framework for translating gas consumption to electricity is defined in the DOE definition of Net Zero buildings in "A Common Definition for Zero Energy Buildings" which permits the use of renewable energy to offset non-renewable fuel consumption. This approach to gas consumption offsets is summarized in Figure A5.8.

This approach would require the roofspace of Pier 48, the parking garage in Parcel D, or equivalent renewable energy output off-site.

MISSION ROCK

TRANSPORTATION PLAN

burger
coffee
pancakes
toast
cola

MISSION ROCK
TRANSPORTATION PLAN

01 INTRODUCTION **7**
Overview 8
Goals 9
Strategy 10

02 PROJECT CONTEXT **13**
Trends in Policy and Travel Behavior
Nearby Networks 14
Technology-Based Transportation 22

03 GETTING AROUND AT MISSION ROCK **25**
Non-Motorized Circulation 26
Transit Access 31
Vehicular Circulation 32
Conclusions 35

04 TRANSPORTATION DEMAND MANAGEMENT **39**
Planned Strategies 40
Marketing and Communications 50
Conclusions 53

05 EVENT MANAGEMENT **55**
Primary Events 57
Secondary Events 60
On-Site Events 61
Conclusions 64

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MISSION ROCK DESIGN DOCUMENTS

The Transportation Plan comprises the fifth in a set of five documents which together describe the requirements for the development of Mission Rock.

MISSION ROCK VISION & DESIGN INTENT

This document contains the big picture thinking and aspirations that will guide the process for the design and implementation of Mission Rock.

MISSION ROCK DESIGN CONTROLS (DC)

This document guides the development of the open spaces, streets, and buildings at Mission Rock. The DC ensures that the site will be developed in a way that is consistent with the vision as defined in the Mission Rock Vision and Design Intent document.

MISSION ROCK SUSTAINABILITY STRATEGY

This document identifies the high level sustainability goals for Mission Rock, details the requirements for the horizontal and vertical development and summarizes the anticipated reduction in greenhouse gas (GHG) emissions resulting from the district's approach to sustainable design.

MISSION ROCK INFRASTRUCTURE PLAN

The design of the landscape, buildings, and sustainability strategies will be closely coordinated with the infrastructure planning at Mission Rock. This plan regulates the complex coordination of streets, utilities, and services.

MISSION ROCK TRANSPORTATION PLAN

This plan describes the ways in which the site will be designed to support the mobility choices of all users, with a special emphasis on safe and comfortable conditions for pedestrians and cyclists.

01

INTRODUCTION

Located just steps from the center of the Bay Area's transportation system and along one of the premiere bicycle and pedestrian routes in the region, Mission Rock is poised to be a model for sustainable transportation. With a multitude of mobility choices built directly into the site's DNA, it will be one of the first true 21st Century developments in San Francisco.

Small, walkable blocks, wide sidewalks, and a diverse mix of uses will make it easy for those who live or work at Mission Rock to avoid traveling far to eat or shop for everyday necessities. A range of cycling facilities will ensure that cyclists of all ages and skill levels are comfortable navigating the site on two wheels. The opening of the Central Subway will mean frequent, rapid service to Market Street and downtown is just steps away via the T-Third Muni Metro line, and access to the Peninsula and South Bay is just a few minutes further at Caltrain's 4th and King Street terminal. Supplemented by a suite of services and incentives that will make it easy to choose any mode, this wide range of mobility options mean the site will truly be a good fit for any modern lifestyle.

1.1 OVERVIEW

This document details how Mission Rock will achieve this vision. It starts by laying out the elements of the project's context that make it an ideal fit for a moment in which San Franciscans are choosing to accomplish more and more each year by a range of modes (Chapter 2). It walks through plans for the design of the site's internal streets, describing how bikes, pedestrians, and vehicles will circulate through the site and connect to its surroundings (Chapter 3). Mission Rock is committed to a robust set of infrastructure investments and ongoing programs that will make it easy to choose modes like walking, biking, and taking transit, and Chapter 4 details the planned package of transportation demand management (TDM) programs. With AT&T Park just steps away from the site, event-related travel will have an important impact on circulation patterns. Chapter 5 walks through how circulation will be managed around events to help reduce impacts on residents and employees, both on the site and in the surrounding neighborhood.

Note that this document focuses on the site's transportation programs at full build-out. The Infrastructure Plan discusses how the project will be phased and implications for the site's physical infrastructure, including transportation.

The proposed project, aerial view simulation from the northwest

1.2 GOALS

Mission Rock aims to do the following through its transportation program:

1. Facilitate lifestyles low in vehicle miles traveled (VMT) by providing a robust set of sustainable choices for movement to and from the site
2. Create a vibrant, pedestrian-oriented, and visually interesting public realm within the site
3. Connect seamlessly to the site's broader context, including the City's growing bike network, the Mission Bay neighborhood's developing network of streets and sidewalks, and the city and region's transit systems
4. Ensure that the site is adaptable to new transportation technologies and changing travel habits over time
5. Play a productive role in the City's efforts to manage event-related travel

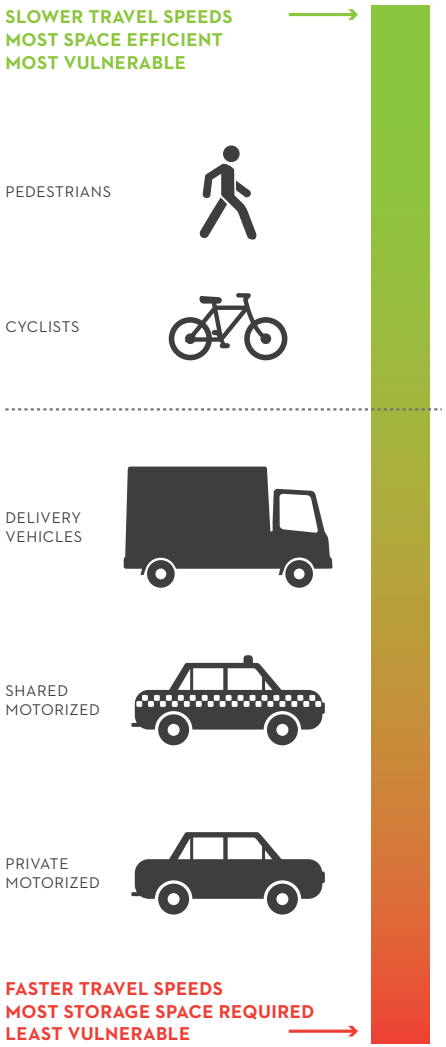
Shared Public Way, the shared street that will serve as the primary north-south pedestrian route through the site

Terry A. Francois Boulevard, another shared street, will have a more maritime-industrial character

1.3 STRATEGIES

The project will accomplish those goals through the following primary strategies:

- Prioritize movement on-site using a modal hierarchy that puts the focus on the most space-efficient and environmentally sustainable modes
- Encourage walking, biking, and taking transit through convenience and meaningful incentives
- Design a highly connective street grid with generous and active pedestrian areas
- Allow for a diverse mix of uses that enables residents and employees to avoid long trips for daily necessities
- Design for safety through smart deployment of traffic calming strategies on internal streets
- Facilitate bike connectivity by adding an important link to City and regional bike networks through the site and providing safe and comfortable routing options for people of all cycling skill levels
- Create generous curb-side loading areas to:
  - Facilitate site access for people with mobility limitations and for families with small children
  - Facilitate the use of taxis and ride hail services, which can help obviate the need to bring a personal automobile to the site
  - Help site users avoid vehicle trips by facilitating convenient delivery of goods
- Actively manage parking to ensure it is used efficiently as part of the larger multimodal network
- Work in concert with neighborhood groups to help in responsibly managing event-related travel



A modal hierarchy for travel through Mission Rock

The figure on this page shows the site's urban street grid and mixed land-use plan. The site plan and approach to circulation are two key ingredients in making the transportation vision come to life.

Residential
Commercial
Flex
Working Waterfront
Structured Parking

02

PROJECT CONTEXT

Mission Rock's location, mix of uses, density, and design approach are all consistent with regional trends in land use and transportation and supportive of Bay Area planning agencies' efforts to direct new housing toward urban infill locations near transit stations.

The site's mix of uses, including residential, commercial, and retail, will make it easy for residents and employees to take care of most needs within a short walk, and the project's location will naturally facilitate the use of transit and other shared modes for longer-distance trips.

This chapter details the context into which Mission Rock fits. It looks at the broader trends and policy context, as well as the array of local transportation resources that will help make the site's sustainable, multimodal vision come to life.

2.1 TRENDS IN POLICY AND TRAVEL BEHAVIOR

Mission Rock fits into a larger context of city, regional, and state policy encouraging transit-oriented mixed-use development, as well as the emergence of new transportation options that are changing the way Bay Area residents travel to work and play. The project is poised to both take advantage of the new mobility options and further encourage these shifts.

2.1.1 STATE, REGIONAL, AND CITY POLICIES

Starting in 2006, the State of California began laying out a constellation of policies aimed at reducing the state's carbon footprint. Assembly Bill (AB) 32, signed into law in 2006, required that the state reduce greenhouse gas emissions to 1990 levels by 2020, a 15 percent reduction relative to expected trends. Senate Bill (SB) 375 was the first major policy aimed at implementing AB 32. It required that each major region in the state create a "sustainable communities strategy" that would use a combination of land use and transportation planning to create more sustainable development patterns. Furthermore, the City of San Francisco's Climate Action Strategy specifically calls for shifting 80% of all trips to non-automobile trips by 2030.

Plan Bay Area is this Bay Area's sustainable communities strategy, and concentrating growth around the existing transit system is a key pillar of the plan. The plan identified Priority Development Areas with strong transit access and higher existing densities, and Mission Rock sits along a major axis of priority development areas along the eastern edge of San Francisco.

Infill and transit-oriented development are the two most important strategies for developing in a more sustainable fashion. When projects are located in areas that are already developed, they generally allow their inhabitants to travel shorter distances to reach jobs, grocery stores, and other daily destinations. When located near existing transit networks, they make transit the default mobility option.

Infill development has long been a priority for the City of San Francisco, and the City has an array of policies aimed at aligning the transportation system to denser development patterns. Policies include the city's long-standing "transit first" policy, a 20% bicycle mode share goal, and a collection of recent policy changes – known as the Transportation Sustainability Program - that aim to further invest in transit, bike, and pedestrian network improvements, align the environmental review process for development with other city policies, and shift travel behavior toward non-motorized or shared modes while ensuring access and mobility. Mission Rock's transportation program is consistent with this approach.

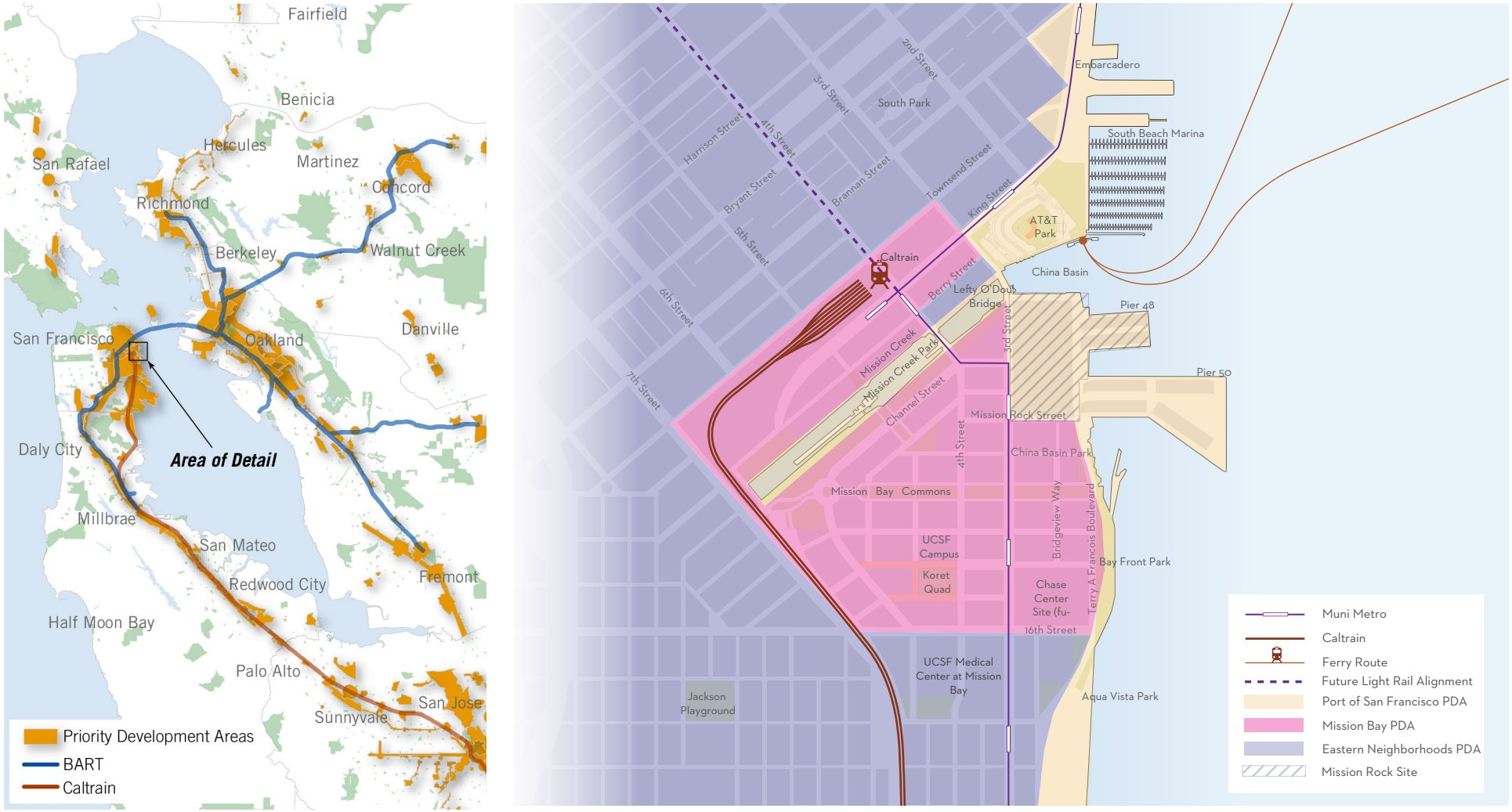
With these policies in the background, travel behavior in San Francisco seems to be steadily shifting toward transit and non-motorized modes, and the market for developments that enable transit-, bicycle-, and pedestrian-oriented lifestyles has strengthened. The last few years have seen increases in transit ridership (including record ridership levels on BART and Caltrain in recent years) and major increases in cycling, particularly for commutes.

2.1.2 THE IMPACT OF TECHNOLOGY

New technology-enabled travel options have also emerged, making it easier to routinely travel longer distances or make trips that do not align well to the transit network without owning a car. Car share companies like Zipcar and City Car Share have made it easy to rent vehicles, stored conveniently in small pods across the city, for short periods. This allows people who

SFMTA has installed "red carpet" transit-only treatments around the city in recent years (SFMTA)

Cycling rates have increased dramatically in recent years (FLICKR USER RICHARD MASONER)



Plan Bay Area's Priority Development Areas (PDAs) and regional transit connections

do not own a car to conveniently accomplish errands that require hauling more than one can carry on transit or a bicycle. Transportation network companies (TNCs) like Uber and Lyft and taxi hailing apps like Flywheel have made it far easier and more convenient to hail rides for trips the transit system is less well set up to handle – across town or late at night.

These trends and the new suite of travel options seem to be affecting people's behavior. A recent study showed that newcomers to the city began taking advantage of them as they emerged, with nine in 10 net new households in the city since 2000 not owning an automobile, according to data from the U.S. Census Bureau. Additional evidence from the Shared Use Mobility Center (TCRP Report 188) shows that individuals who use car sharing frequently tend to own vehicles at lower rates.

2.1.3 THE FUTURE OF TRANSPORTATION

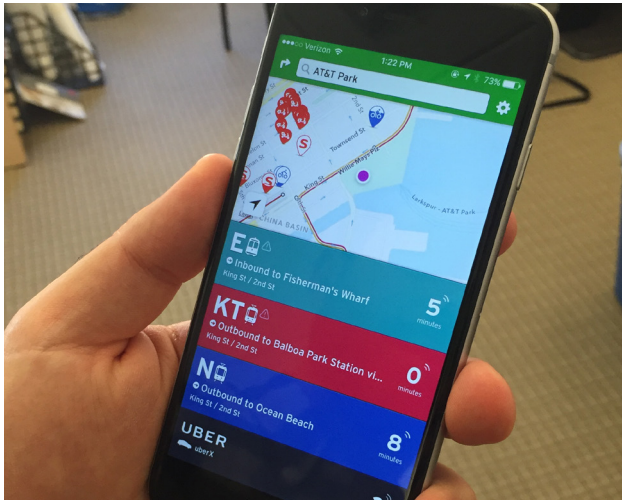
More dramatic changes could be in the offing. In the middle of 2016, several companies announced the first limited public use of autonomous vehicles, in Pittsburgh (Uber) and Singapore (nuTonomy). Google has been developing its own autonomous vehicles and testing them around its Mountain View headquarters for several years, and several other major Bay Area companies are also working hard – sometimes in partnership with more traditional auto companies – to develop their own models. When autonomous vehicles emerge in large numbers, the Bay Area is likely to be an area that adopts them quickly.

The precise effects self-driving cars will have on urban environments is unclear, given that the technology is still in the early stages of development. What is clear, though, is that they have the potential to dramatically change the way we get around, as the advent of motorized mobility did 100 years ago. Indeed, the emergence of automobiles in the early 1900s reshaped the economics and urban space needs of the transportation system.

If autonomous vehicles are used mainly as shared mobility resources, rather than privately held ones in the pattern of the vast majority of small vehicles today, they could lead to shifts like a major drop in parking demand and a major increase in the need for passenger loading space. Even if they emerge as privately owned mobility resources, though, the urban parking footprint is likely to go down. For example, if autonomous vehicles are able to communicate with each other while parking, they could theoretically squeeze together more efficiently, in much the same way as cars parked by valet can be lined up and parked in more narrow columns than can self-parked cars.

Mission Rock is set up to weather these changes well. As Chapter 3 describes, the site's curbs prioritize loading and delivery activities, which have already taken on increasing importance with growth in online shopping and, more recently, the earliest releases of new mobility technologies. The ways in which the site's transportation program has been shaped by its location will also help its design stay current in a world of changing mobility patterns. As detailed in the following sections, Mission Rock is located at the heart of the region's bicycle, pedestrian, transit, and roadway networks, giving future residents, employees, and visitors a wide range of natural options for getting around, even in the absence of new technologies.

Google's autonomous vehicle prototype (WIKIMEDIA COMMONS, USER GRENDELKHAN)



Smartphones have revolutionized access to transportation information (NELSON\NYGAARD)

2.2 NEARBY NETWORKS

2.2.1 NON-MOTORIZED NETWORKS

Pedestrian

Most trips begin or end on foot, so safe and robust pedestrian space is the backbone of any high quality transportation system.

The Embarcadero, 3rd Street, and Fourth Street are the major pedestrian routes between Mission Rock and the jobs and transit connections in SoMa and Downtown San Francisco. Pedestrian facilities on the Embarcadero are wide and spacious, while sidewalks through SoMa are typically more narrow and less well maintained. The City's Central Corridor Plan aims to steadily improve pedestrian conditions as the area grows and changes in the coming years. Mission Bay's street network is also in the process of being built out. Once the area's development is complete, all streets in the area will have sidewalks on both sides that are six feet wide, and in many places 10 or 12 feet.

Bicycle

San Francisco continues to build bicycle lanes of various class distinctions throughout San Francisco as part of its implementation of the 2009 San Francisco Bicycle Plan. In Mission Bay, dedicated bicycle lanes exist on Terry A. Francois Boulevard, Fourth Street, and 16th Street. The facilities on Terry A. Francois Boulevard will soon be improved to a full two-way cycle track as part of the larger San Francisco Bay Trail, which will ultimately be a high quality bicycle and pedestrian route along the entire bay-front. New or improved bicycle facilities are slated for multiple streets running north to Market Street, including 2nd, 3rd, and 5th streets.

Mission Rock's connections to the broader bicycle network and planned routes

2.2.2 TRANSIT NETWORKS

Mission Rock is served by several local and regional transit networks within a half-mile walk, including bus, light rail, and commuter rail. More regional connections are available a bit further to the north, along Market Street, the Embarcadero and in eastern SoMa, where there are additional regional rail, bus, and ferry options.

Local Transit – Muni

Muni provides local transit service throughout San Francisco. The following Muni routes have stops within a quarter-mile of Mission Rock:

- **Light Rail** – N-Judah, T-Third, and E-Embarcadero
- **Bus** – 10-Townsend, 30-Stockton, 45-Union-Stockton, 47-Van Ness, 55-16th Street, 81X-Caltrain Express, 83X-Mid-Market Express

Notable investments and plans underway by SFMTA include:

The Central Subway project will place the T-Third line in a subway along Fourth Street north of Bryant Street and along Stockton Street, extending it 1.7 miles north through the SoMa, Union Square, and Chinatown neighborhoods. This will provide a more direct connection between the Mission Bay neighborhood and BART at Powell Station, as well as transit-, job-, and destination-rich neighborhoods near and north of Market Street. The project is due to open to the public in 2019.

Muni Forward is a comprehensive update to Muni routes and service plans. A subset of lines called the Rapid Network is receiving particular attention through the project, including increases in service frequency and other improvements. Service along 16th Street, through the Mission and into Mission Bay, will see notable improvements through the project, including transit-only lanes, stop consolidation, transit signal priority, and additional transit bulbs and islands. An early Muni Forward improvement that directly affected Mission Bay was the implementation of the 55-16th Street bus, creating a direct connection between the BART station at 16th and Mission streets and the center of Mission Bay, at 3rd and Mission Bay Boulevard North. In several years, that route will be replaced by a re-routed 22-Fillmore, a trolley bus that provides crosstown connections along 16th Street through the Mission and north along Church and Fillmore streets to the Lower Height, Fillmore, Pacific Heights, and the Marina. Other routes in the vicinity of the project that will see updates include the 10-Townsend and the 12-Folsom/Pacific (the latter will be replaced by the 11-Downtown Connector).

Regional Transit

Caltrain

Caltrain provides commuter rail service between San Francisco and the South Bay, with stops along the Peninsula, into San Jose and, during peak periods, south to Gilroy. Caltrain offers local, limited stop and "baby bullet" express routes which all serve San Francisco. Caltrain's northernmost station is located about a quarter mile from the Mission Rock site at the intersection of 4th and King streets in San Francisco and is the busiest in the Caltrain system.

Notable planned Caltrain investments include:

- **Caltrain electrification** will replace the existing diesel service with electrified service between San Francisco and San Jose by 2020, allowing for increased speeds and service levels along the

Caltrain (CALTRAIN)

SF Bay Ferry (FLICKR USER PHOCA2004)

Peninsula corridor. The electrification project will also accommodate shared use of the corridor by Caltrain and planned high-speed rail service.

- Caltrain's **Downtown Extension** would connect Caltrain to the new Transbay Transit Center. The alignment of the extension is still being determined and is among the items being advanced in the Planning Department's Railyard Alternatives and I-280 Boulevard Feasibility Study.

BART (Bay Area Rapid Transit)

BART provides regional transit service to the East Bay, Peninsula, and other parts of San Francisco. The closest stations to Mission Rock — Embarcadero and Montgomery — are a little more than one mile from the neighborhood. When it opens, the Central Subway will provide a rapid light rail connection between the site and Powell Station. BART is the region's rail spine, and it operates every 5 to 15 minutes on lines serving downtown San Francisco during the afternoon peak and every 20 minutes during non-peak times, including weekends.

Ferries

SF Bay Ferry (operated by the Water Emergency Transportation Authority, or WETA) and Golden Gate Ferry provide daily ferry service between the San Francisco Ferry Building and the North and East Bay. Aside from services at the San Francisco Ferry Building, the nearest terminal is currently just beyond AT&T Park's center field gate, where ferries provide service to and from home baseball games. WETA and the City are exploring the potential for a new terminal in Mission Bay near 16th Street, though planning is in the very initial stages.

Local transit connections as of 2017

Transbay Transit Center: Regional Bus and High Speed Rail

The under-construction Transbay Transit Center is located approximately one mile northeast of Mission Rock and will be open by the time the development is built out. The Transit Center will provide bus connections to regional destinations, as well as access to Greyhound and Amtrak Thruway Connection buses. Once the Downtown Extension is complete, the center will also be the terminal for California High-Speed Rail and Caltrain. Upon completion, the terminal will be served by 11 transit systems: AC Transit, BART, Caltrain, Golden Gate Transit, Greyhound, Muni, SamTrans, WestCAT Lynx, Amtrak, Paratransit, and High Speed Rail.

2.2.3 VEHICULAR CIRCULATION AND PARKING

Mission Rock is located near the center of the Bay Area's auto network, providing easy access to the region's freeway system but also exposing drivers in the area to congestion resulting from the large number of daily trips to, from, and through northeast San Francisco.

Local Streets

Third, 4th, and 16th streets are the key arterials providing vehicular access to and from Mission Rock and the broader Mission Bay neighborhood. Lefty O'Doul Bridge is also a drawbridge that is used several times per day, causing traffic congestion at one of the key access/egress points for the site on 3rd Street. The bridge is a historic landmark for which major structural modification is not an option, though the city is planning to realign lanes traveling across the bridge in the

Local street network

coming years to make space along its the eastern edge for bicycle and pedestrian facilities as part of the San Francisco Bay Trail.

Regional Connections

For connections to the region, ramps to Interstate-80 and access to the East Bay are located approximately a half mile north of the site, via 4th and 5th streets. Interstate 280 provides the main connection to the South Bay, and ramps are located less than a half mile of the site to the west, via King Street, or slightly further to the southwest, at Mariposa Street.

Parking

As of SFMTA's most recent parking inventory in 2011, the Mission Bay and the Central Waterfront area (bound by the Bay to the east, Mission Creek Channel to the north, 7th Street and Iowa Street to the west, and Pier 80 to the south) had approximately 7,000 off-street parking spaces, and SoMa (bound by the Bay, Market Street, 7th Street, and the Channel) had an additional 26,000 spaces. Many of the spaces in Mission Bay are reserved for the users of specific sites like University of California, San Francisco's hospital and medical campus, but a sizable share of the spaces in SoMa are in paid publicly accessible lots and garages. Parking supplies in that area have shrunk somewhat in recent years, as surface parking lots have been redeveloped.

Many streets in SoMa and Mission Bay also have on-street parking. A large share of the on-street parking in both neighborhoods is currently metered per SFpark pricing policies to manage demand during nearby special events.

Parking facilities near Mission Rock (2015)

2.3 TECHNOLOGY-BASED TRANSPORTATION

As noted earlier, technology-based transportation companies offering car share, bike share, and app-based ride hailing (e.g. Lyft and Uber) are changing the way people travel. Although it has yet to be determined how ride hailing trips affect the number of overall driving trips, these innovative services have enjoyed early and growing adoption by Bay Area residents, particularly San Franciscans, and they are widely available in the areas around the project.

Car-share has emerged as a strong mobility option for households without cars. Efforts to quantify the impacts of car sharing have found that car share members drive 40% fewer miles than the average driver and take 46% more public transit trips, 10% more bicycle trips, and 26% more walking trips. The average household reduces its vehicle ownership by 50% after joining a car-share service.

Bike share provides another short-term mobility option, offering hourly rental of bicycles. Unlike car share programs offered in San Francisco, bike share allows for one-way rentals. Bay Area Bike Share is poised to expand dramatically throughout San Francisco by the

City Car Share (WIKIMEDIA COMMONS, USER MARIORDO)

Bay Area Bike Share (WIKIMEDIA COMMONS, USER MARIORDO)

Scoot (FLICKR USER MARTIN WICHARY)

Water taxi service in Chicago (FLICKR USER LUKE GORDON)

time Mission Rock opens, with a plan to expand to 7,000 bicycles by 2018.

Scooter sharing is another service that has emerged in San Francisco in recent years. Scoot offers $3 one-way rentals of its fleet of more than 400 small two- and four-wheeled vehicles. The two-wheelers travel as fast as 30 miles per hour, and the four-wheeled "mini-cars" travel 25 miles per hour. Users of the service find nearby vehicles and unlock them using the company's smartphone app.

TNCs like Lyft and Uber provide on-demand booking of one-way car trips via smart phone app, and have recently expanded to facilitate shared vehicle trips (through Lyft Line and UberPool).

The rest of the private transit market is an evolving landscape, consisting of long-distance employer shuttles, short-distance institutional and transportation management association (TMA) shuttles, on-demand commuter shuttles, and other services.

Long-distance employer-sponsored shuttles currently make trips to many office campuses outside of San Francisco (e.g. technology companies in the South Bay). An SFMTA program that designated certain Muni bus stop sand other designated curb locations is ongoing.

There are a number of **short-distance shuttles** in operation in the project area. Currently, the Mission Bay TMA operates five routes from Mission Bay to Market Street and points throughout SoMa. Most of the routes operate only during peak periods Monday through Friday. Numerous companies and institutions also offer shuttle service within San Francisco. For example, Levi's operates a shuttle between Caltrain and BART stations and the company's headquarters in Levi's Plaza.

Chariot, which offers a **demand-responsive microtransit service** using 14-passenger vans, operated nine public routes during the morning and evening commute periods as of August 2017. The service typically utilizes white curb loading zones for passenger drop-off and pick-up. Chariot recently expanded many of its routes and now serves points in the South Bay and East Bay, in addition to intra-San Francisco routes.

Two **water taxi** companies currently run limited service between points along the Bay, including the San Francisco Ferry Building. Over time, water taxi operations may expand with growing demand, and there is potential for a landing at Pier 48 and, with the exception of winter, at AT&T Park's ferry dock.

These evolving transportation services provide people in San Francisco with new options to move around the city and the region, further supporting a multimodal lifestyle not dependent upon ownership or use of a private vehicle.

03

GETTING AROUND AT MISSION ROCK

Mission Rock will be designed to give all users high quality choices for how they move about the site and how they get to and from it.

The site will feature generous and active pedestrian areas throughout, and the bicycle network will give cyclists of different ages and skill levels high quality options. Wide sidewalks and wayfinding will help people find the variety of nearby transit options, and Mission Rock's entire street grid will provide comfortable access to the waterfront and, at Pier 48, a variety of water transportation options as well.

This chapter expands on these ideas, laying out the vision for how people will get around Mission Rock. Note that the project's Design Controls go into more detail on dimensions and materials.

3.1 NON-MOTORIZED CIRCULATION

Mission Rock's streets will be designed with the site's modal hierarchy in mind, prioritizing the safe and comfortable movement of pedestrians. Streets will include a variety of features that will help ensure that pedestrians feel safe and comfortable moving throughout the site by keeping vehicle speeds slow and ensuring that those on foot or on bicycles are highly visible to motorists.

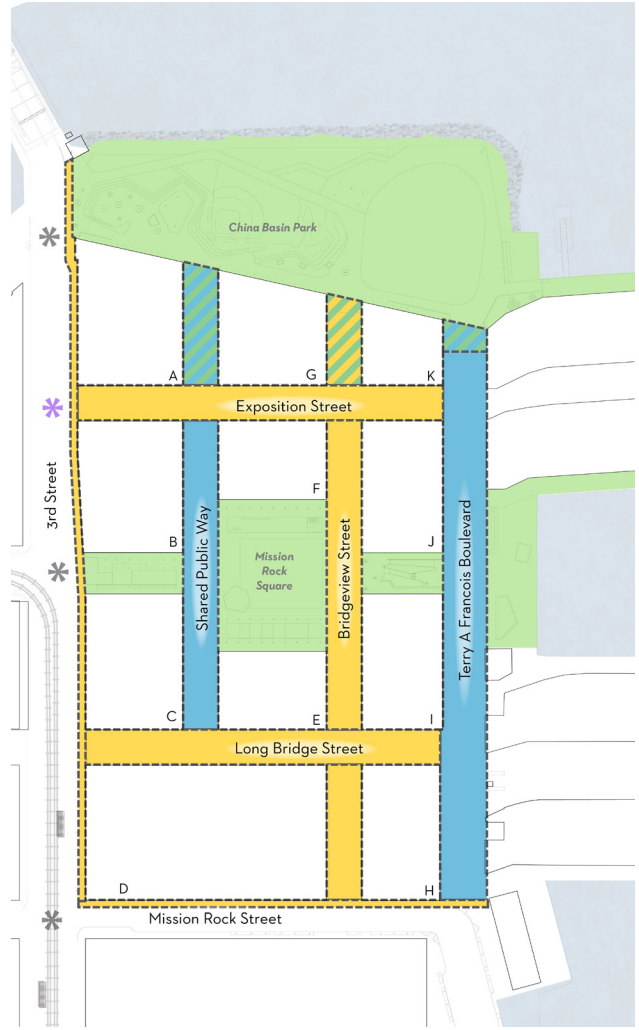
As specified in the Design Controls, all crossings will be marked using high visibility paint and other treatments, and all curbs will include ramps to facilitate accessible paths of travel. Some will be reinforced by bulbouts that bring curbs to the edge of travel lanes, shortening crossing distances and making pedestrians who are readying to cross more visible to drivers. At others, "tabletop" treatments will bring the roadway to sidewalk level and change paving materials through intersections. The changes in grade and visual treatment have been shown to make motorists instinctively slow down through these sensitive zones.

On the site's curbed streets, a combination of street furnishings, lighting treatments, and generous sidewalks will make pedestrian space vibrant, inviting, and comfortable even when pedestrian volumes are higher before and after events. Lighting will be at a pedestrian scale, and furnishings like benches and planters will create variety and a sense of protection from vehicle flows between the curbs. All three north-south streets will transition seamlessly into China Basin Park via vehicle-free zones at their northern ends.

3.1.1 SHARED STREETS

Shared streets, in which all modes mix across the entire street cross-section, will form the backbone of north-south pedestrian circulation, strategically placed along key paths of travel. These streets will be curbless, following street design approaches seen in Europe along key walking corridors and high streets. Visual and tactile cues like changes in the color or texture of pavers, bollards, street furniture, light fixtures, plantings, and tactile warning strips will differentiate between areas dedicated to pedestrian movement and areas shared by pedestrians, bicycles, and vehicles. These types of streets are somewhat rare in San Francisco, but the Mission Rock team has worked closely with the City to design the streets in a way that works with local norms and regulations. The Design Controls document describes the design of these streets in more detail.

The Shared Public Way will be a key retail corridor through the site, creating a vibrant connection between AT&T Park to the north and the ballpark's main parking facility at the southern end of Mission Rock. Lined with ground-floor shops and cafes, the street will feature



Street types on the Mission Rock site

patio seating and displays that extend the ground-floor uses into the right-of-way, creating "street rooms" that invite people to stroll and linger. The street will only allow northbound vehicle movement, and entrances to the zone will feature signs and other visual cues to make clear that vehicle access is for drop-off, pick-up, and deliveries only.

Terry A. Francois Boulevard, along the eastern edge of the site, will be a slightly different shared street, mixing the area's maritime history with a newer identity as a place where people come together for all kinds of activities. The boulevard will feature a slow two-way, plaza-like shared zone for all modes between wide zones reserved for walking, biking, and loading. The San Francisco Bay Trail will extend through the site on the east side of the street, and the west side will allow pedestrian and loading access to ground-floor maker spaces, which will be raised slightly above street level in an ode to traditional industrial and warehouse building vocabulary.

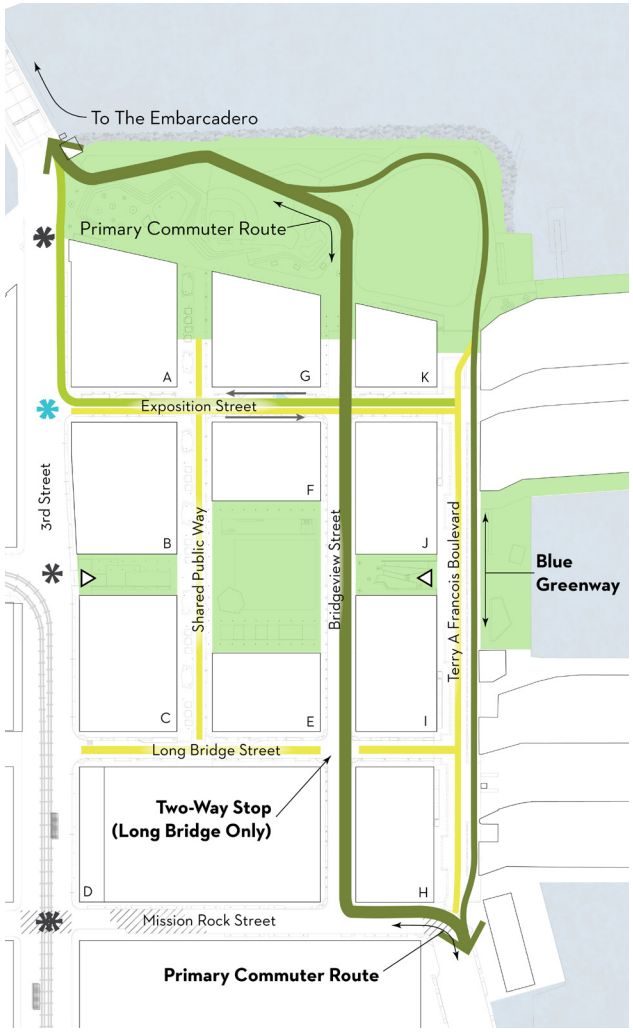
3.1.2 BICYCLE FACILITIES AND CIRCULATION

In keeping with the rest of the transportation program, Mission Rock's approach to bicycle circulation is about providing a multitude of choices, with facilities designed for leisurely riders along the waterfront and higher speed facilities along more direct routes to SoMa, Downtown, and other points north of the site.

Even in cities with higher rates of bicycle commuting like San Francisco, researchers estimate that a considerable number of additional people might consider cycling if there were a network of slower, more protected facilities that made them feel safe and comfortable while riding. Mission Rock will provide routes to and through the site that speak to this need, and these facilities will connect to a large and growing network of bicycle facilities in the surrounding area.

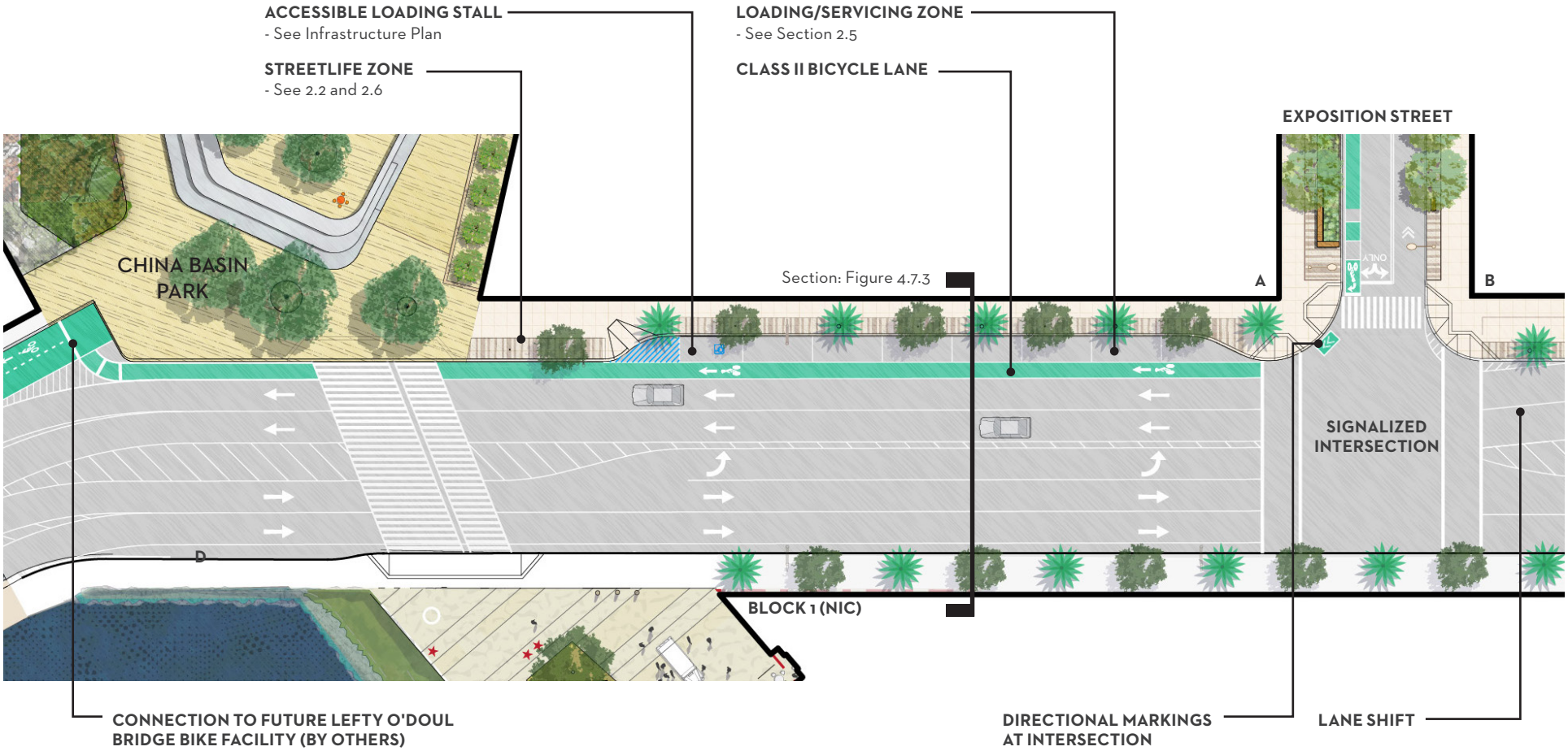
The San Francisco Bay Trail's connection through the site will provide a comfortable route for cyclists of all ages. Visual cues at north and south gateways to the multi-use path will encourage slower bicycle speeds, opening space for younger and older cyclists, as well as pedestrians. The figures on the following pages show how the bicycle facility is anticipated to connect into the City's bicycle network on the north and south ends. For more detail on the proposed design of these intersections or other streets, see Chapter 4 of the Design Controls.

A cycle track route along Bridgeview Street will provide a higher speed connection between the Embarcadero and points south of the site for commuters and more

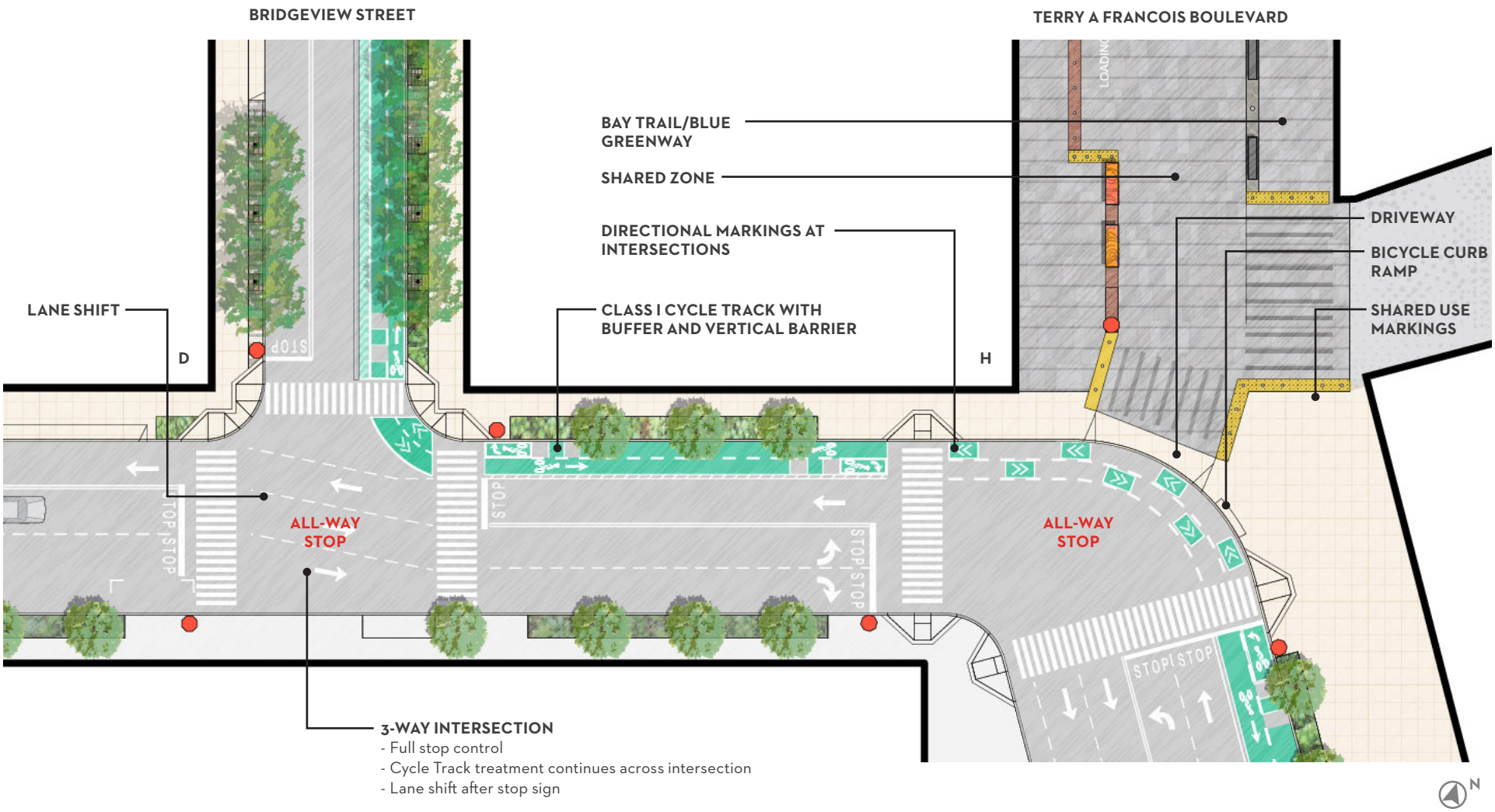


Planned Bike Path (Class I/IV)
Planned Bike Lane (Class II)
Planned Bike Route (Class III)
Existing Signal Location
Planned Signal Location
Access to Below-Grade Parking (if provided)

Bicycle circulation concept



A northound buffered bicycle lane would provide commuters an alternative to traveling through China Basin Park to connect to a planned two-way cycle track across Lefty O'Doul Bridge.



Cyclists on a planned two-way cycle track along Terry A. Francois Boulevard to the south will have two high quality options at the southeastern corner of Mission Rock. Some may choose to continue on Terry A. Francois Boulevard, but those seeking a faster route will be able to connect seamlessly to a two-way cycle track on Bridgeview Street via Mission Rock Street.

experienced cyclists. A raised and green-painted two-way track protected by a painted buffer zone and soft-hit posts or another buffering approach will clearly reserve a piece of the right-of-way for cyclists. A two-way stop will control cross-traffic on Long Bridge Street to enable a faster and smoother ride for north- and south-bound cyclists. The intersection will be raised to the level of the cycle track to slow cars as they approach and move through the intersection. To connect to high quality bicycle facilities planned for Lefty O'Doul Bridge and the Embarcadero, the route will rejoin the San Francisco Bay Trail in China Basin Park. Northbound cyclists will be able to bypass the park via a painted bicycle lane along Exposition and 3rd streets.

The Design Controls document contains more detail on the planned design of these facilities. That document will be updated as the design team works with the City to ensure that bicycle facilities on the site connect seamlessly to improved facilities north and south of the site, to be implemented in the next several years.

For cyclists with destinations in Mission Rock, the site will provide a variety of bicycle storage options, including a network of spaces in public areas and conveniently located secure spaces inside the site's residential and office buildings. The project team anticipates that an existing bike share provider will install at least one bike share pod on the site, connecting to the much expanded bike share network that hit San Francisco streets in 2017.

Bridgeview Street imagined, with a two-way cycle track providing a faster option for commuters.

3.2 TRANSIT ACCESS

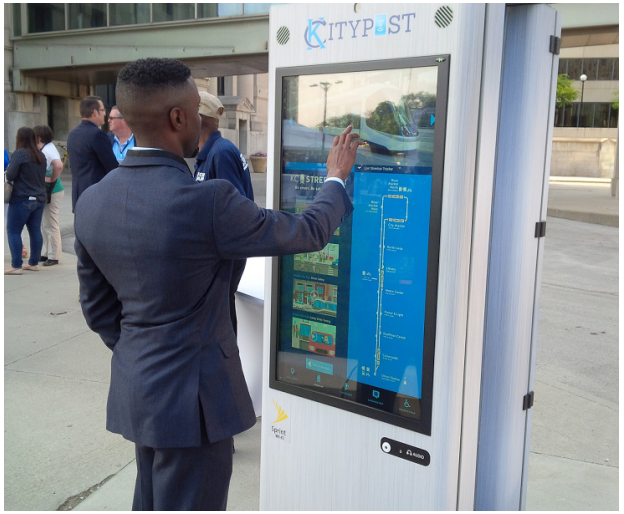
The Mission Rock site offers close, comfortable connections to several fast, high frequency, and high capacity transit options. By the time Mission Rock opens for occupancy, the T-Third Muni light rail line will have begun providing quick access to Market Street via 4th Street and the Central Subway (Mission Rock Station is located adjacent to the site, at the intersection of 3rd and Mission Rock streets). Caltrain's San Francisco terminal is a 10-minute walk from the site at 4th and King streets, and BART will be a 20-minute walk or quick T-Third ride away. Bay Area Bike Share will also provide a fast and convenient way to get to transit nodes like Market Street's subway stations and the Transbay Terminal.

The project team will implement a multi-pronged signage and wayfinding strategy to ensure that residents, employees, and visitors understand just how convenient it is to access these high quality mobility options. Outdoor static wayfinding will show basic directions and distances to nearby transit stops, and interactive information kiosks in key places on the site will provide access to more specific directions and real-time transit service information. For residents and employees, a Mission Rock website and screens in building lobbies will both show real-time transit information.

Elements of the site's transportation demand management program will also encourage transit use. See Chapter 4 and the Mission Rock TDM Strategy for more information on transit-supportive programs and incentives.

Transit screens set up in an office lobby (TRANSITSCREEN.COM)

Wayfinding signage in Amsterdam (FLICKR, ANDREY KARMATSKY)



Interactive information kiosk (USDOT)

Directional wayfinding to transit (FLICKR, CHRIS HEATHCOTE)

3.3 VEHICULAR CIRCULATION

Mission Rock's street network will be dense, highly connective, and strongly tied into its surroundings. The interior street grid will link up with the developing Mission Bay street network at several points, continuing east-west and north-south streets that currently dead-end at the edges of the project site. Bridgeview Way, which today runs between South Street and the southern border of the project site at Mission Rock Street, will continue as Bridgeview Street through the site to China Basin Park. Long Bridge Street, which today links Third and Fourth Streets will extend to the waterfront at Terry A. Francois Boulevard.

Most vehicles will enter the site from 3rd Street, the main north-south vehicular route through Mission Bay. The figures on this page show estimated relative vehicle flows through the site at peak periods, extrapolated from traffic modeling done for the Transportation Impact Study.

The site's approach to providing parking would place a single garage near the southwestern corner of the project site, which would keep most private vehicle traffic at the southern and western edges of the site. The project's entitlement documents also include an alternative parking approach that would distribute the site's parking supply between an above-ground facility at the site's southwest corner and a smaller facility under Mission Rock Square.

Vehicular circulation through the rest of the site should mostly consist of delivery vehicles and cars dropping off or picking up passengers. Mission Rock will proactively manage commercial delivery activity, discouraging deliveries during commute periods and encouraging them instead in the early morning hours or late at night. The Mission Rock team will put together a detailed loading management plan for each phase of the project. The team will also work with tenants that are likely to regularly receive large-truck deliveries, such as potential tenants in Pier 48, to ensure that individual deliveries are appropriately staffed to maintain safe conditions for other street users.

As specified in the Design Controls, passenger loading spaces on the Shared Public Way, Bridgeview Street, Long Bridge Street, and Terry A. Francois Boulevard each have curb conditions that meet the standards of the Americans with Disabilities Act, for pick-up and drop-off of passengers with mobility limitations. During specified hours, parcel delivery will be concentrated around commercial loading zones on 3rd, Exposition, and Long Bridge streets and Terry A. Francois Boulevard. Outside of those hours, these spaces would open up to use by private cars picking up and dropping off passengers and for-hire passenger vehicles like taxis and TNCs.

The shared streets – Shared Public Way and Terry A. Francois Boulevard – are expected to see very low traffic volumes, consisting mainly of loading for passengers with mobility limitations. "Traffic calming" treatments like changes in paving materials and changes in roadway grades will help ensure that volumes and speeds stay low (see the Design Controls for more detail). If all parking is concentrated in a single facility at the southwest corner of the site, Channel Lane and Channel Street will each be closed to vehicle traffic. If the project ultimately includes a parking facility under Mission Rock Square, one or both streets may provide vehicle access to the facility.

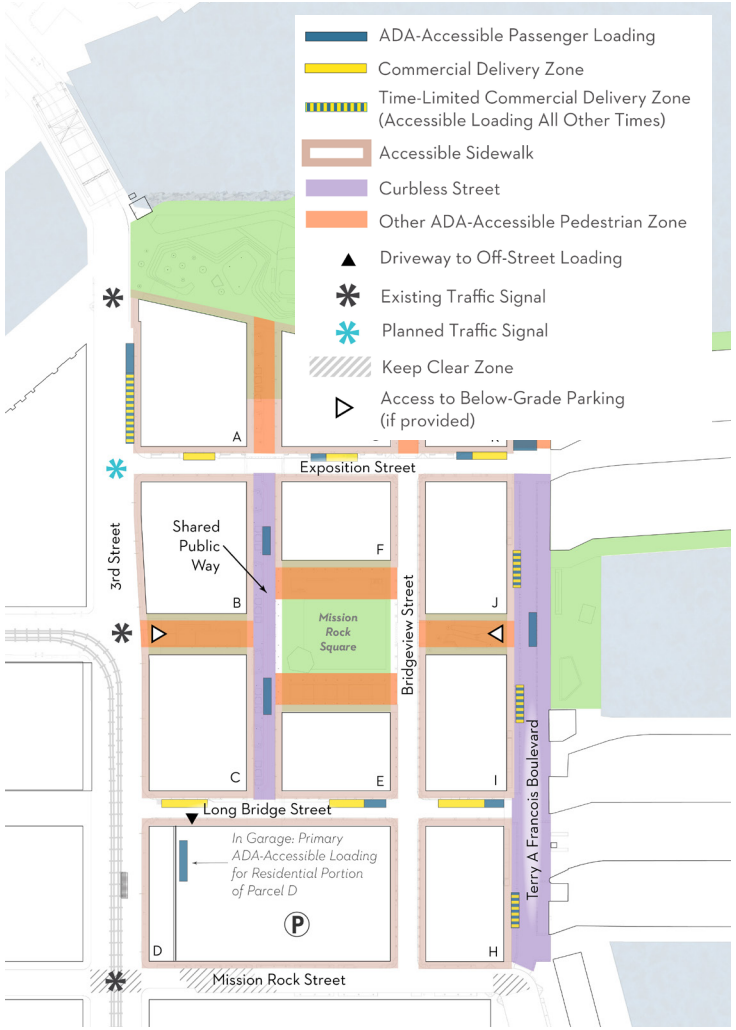
3.3.1 INTERSECTION CONTROLS

Most internal intersections will be controlled by all-way stop signs. As noted earlier, one intersection along Bridgeview Street will only stop cross traffic on Long Bridge Street to allow for smooth and efficient cycling along the route.

Third Street's interfaces with Mission Rock and Channel streets will be controlled by traffic signals, as they are today. A signal that currently controls the intersection of 3rd Street and Terry A. Francois Boulevard and halts traffic when Lefty O'Doul Bridge is raised for boat traffic entering Mission Creek is anticipated to remain where it is, allowing for signalized control of what will be an important pedestrian and bicycle connection between China Basin Park and a linear park on the west side of 3rd Street. An additional signal is planned at the intersection of 3rd and Exposition streets. The exact sequence of signals along 3rd Street will be determined by the San Francisco Municipal Transportation Agency and the Department of Public Works.

In keeping with the way major entries and exits from AT&T Park's main parking lot are managed before and after events today, intersections around the site's

Relative parking-related vehicle flows and garage access control plan (one-garage scenario)



Planned passenger loading zones

Shared Street (No Street Parking)
2-Way Street (No Street Parking)
Paseo with Emergency Vehicle Access
All-Way Stop
One/Two-Way Stop
Existing Traffic Signal
Planned Traffic Signal
Access to Below-Grade Parking (if provided)

Proposed intersection control plan

parking garage may be controlled by traffic control personnel (also known as parking control officers, or PCOs) before and after events. The number and location of PCOs will be identified in the project's development agreement with the City. See Chapter 5 for more on traffic control before and after major events.

3.3.2 PARKING

Strategic parking management is a cornerstone of the Mission Rock transportation program. A parking garage on the site's southwestern parcel will be the site's main parking facility, with 2,300 to 3,000 of the maximum of 3,100 parking spaces allowed on-site, per the development's entitlement documents. The garage will be used to serve the needs of both users of Mission Rock and users of AT&T Park, replacing the surface parking lot that currently covers the entire site. The site's entitlement documents include an alternative parking approach that could reduce the size of the main garage and locate some of the site's parking supply in a smaller facility under Mission Rock Square.

The site's parking supply will be managed around major AT&T Park events in much the same way as the surface lot is today: To ensure that there is adequate space available for event attendees, prices will be raised around event times to clear the garage at the site's southwest corner. When there is not an AT&T Park event on the calendar, available capacity in the facility could serve the needs of some users of Chase Center (the Golden State Warriors' planned arena and event center at 16th and 3rd streets) as well.

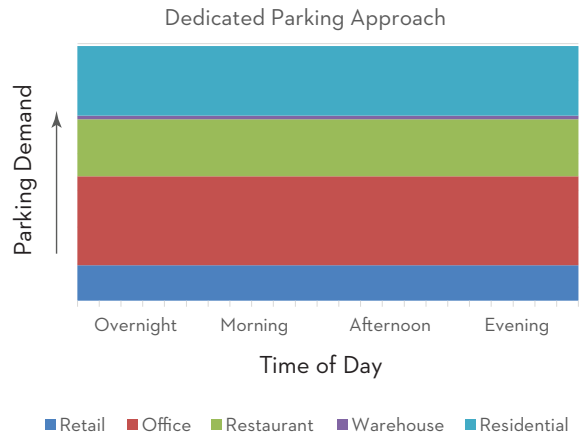
Outside of event times, most parking at Mission Rock will be a resource shared flexibly by all of the users of the site. This arrangement is an alternative to the traditional suburban model of requiring that a certain number of spaces be reserved for each individual use (i.e. office, residential, retail, or restaurant), with enough to accommodate each use's estimated peak demand. Sharing allows a more limited number of spaces to go further by taking advantage of the fact that different uses have different peak periods. For example, peak demand for parking related to office uses tends to take place in the late morning or early afternoon, while peak demand for residential uses is typically overnight. One set of parking spaces can serve both needs. The figures at the right illustrate how this approach to parking management typically results in the need for fewer spaces.

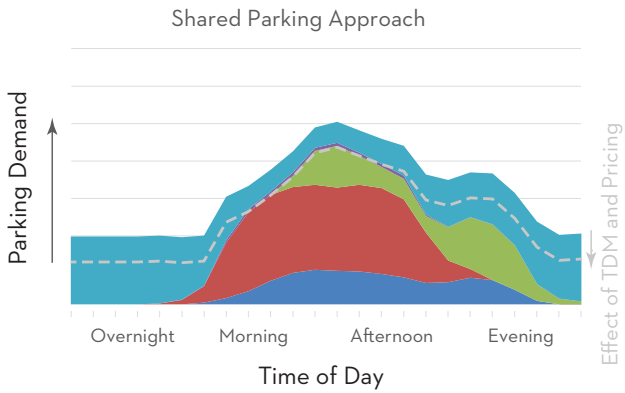
While most spaces will be designed for a typical self-park arrangement, with parking stall widths of eight to nine feet and vehicle circulation lanes, a portion of the spaces for long-term users could be in more space-efficient vehicle stackers. Approximately 60 of the vehicle spaces will also be reserved for car share and scooter share vehicles (see additional information about vehicle sharing programs in Chapter 4).

3.3.2.1 Parking Pricing

The price of parking has been shown to be a highly effective mechanism in changing parking and travel behavior. Parking prices at Mission Rock will be set according to levels of demand: During times with higher levels of typical demand, parking might have a higher price, encouraging the use of other modes. Prices would not change in real time based on current occupancy, but might be adjusted overall a few times a year based on recent occupancy data. Prices might automatically increase by a pre-set amount during peak periods, based on typical demand patterns, or for scheduled events.

Given the project's desire to encourage people to the most sustainable mode that fits their lifestyle, hourly, daily, and monthly parking prices will be set based





These figures illustrate how the concept of shared parking often results in reduced parking supplies overall. Because different uses see peak demand at different times, the total parking needed at any given time in a shared arrangement can be as much as one third less than what would be needed if each use had to accommodate peak demand separately. Pricing and TDM can reduce demand further.

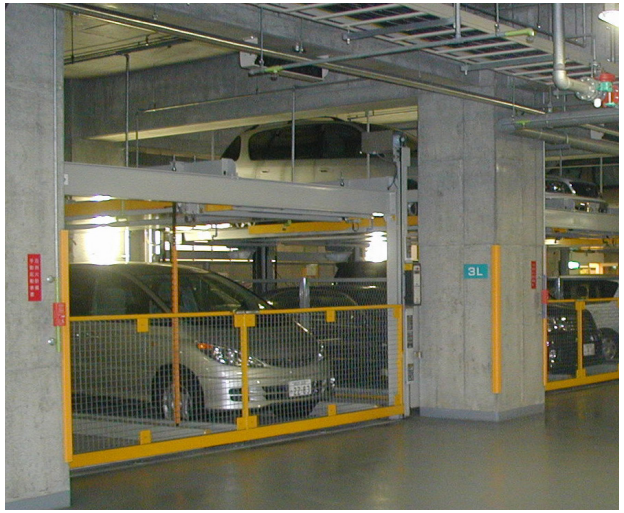
on market prices in the surrounding neighborhood. Disseminating pricing and availability information is critical to ensuring that users are able to change behavior in response to changes in price. Real-time parking information will be shared in a variety of ways, including the Mission Rock website and dynamic signs at entrances to the site.

The price of parking at Mission Rock will be unbundled from residential and commercial leases, which means parking will not be included in rental agreements by default – residents and employees will need to purchase a daily or monthly parking permit separately. This approach is in-line with City of San Francisco policy and ensures that site users who do not own a car or do not plan to commute to the site by single-occupancy vehicle are not burdened with the price of parking they do not plan to use.

3.3.3 EMERGENCY ACCESS

All of Mission Rock's streets have been designed to provide appropriate clearance for emergency vehicles like large fire trucks. Corners have also been designed to accommodate the turning needs of large vehicles. The site's highly connective street grid will help facilitate emergency access to all of the site's buildings. Streets closed to general vehicle traffic will be made accessible to emergency vehicles as needed. The Infrastructure Plan contains further detail on the streets' technical specifications that allow for the safe circulation of emergency and other larger vehicles.

Dynamic parking information board (NELSONNYGAARD)



Car stacker (SAEPARKINGSOLUTIONS.COM.AU)

3.4 CONCLUSIONS

Mission Rock's design reflects the future of transportation in San Francisco. More and more, people count on having convenient access to several ways of getting around, and Mission Rock provides comfortable facilities for all kinds of lifestyles. Mission Rock is designed to be safe and comfortable to pedestrians and cyclists, to create easy paths of access to the wealth of nearby public transit options, and to ensure that those who rely on motorized transportation can be dropped off or picked up in convenient locations around the site.

Of course, circulation infrastructure is only part of the program. The next chapter details the strategies and up-front investments that will help further provide incentives for the use of sustainable, space-efficient modes of transportation.

04

TRANSPORTATION DEMAND MANAGEMENT

Mission Rock's transit-rich context and its bicycle and pedestrian-oriented approach make the site a prime candidate for robust and effective transportation demand management (TDM).

This chapter summarizes a comprehensive TDM program that will enable Mission Rock to actively manage travel demand through a variety of up-front infrastructure investments and ongoing programs. Ultimately, a robust TDM program will reinforce Mission Rock's forward-thinking vision and its aspirations to be an active and vibrant district that is inclusive and safe for all users.

4.1 PLANNED STRATEGIES

Cities and campuses alike have implemented TDM programs to reduce single-occupancy vehicle (SOV) travel and find the optimal balance of transportation modes to accommodate growth. New residents and office tenants increasingly demand convenient access to quality multimodal infrastructure, and in urban areas like San Francisco, they assume that parking will be treated as a limited commodity that will be priced based on occupancy levels and market rates. The Mission Rock TDM Plan is in line with these expectations and exceeds them in important ways to maximize user satisfaction and foster travel choices that are sustainable in all senses of the word.

As summarized in this chapter, the Mission Rock TDM Plan consists of a package of cost-effective strategies that will work together to affect behavioral change. Strategies include incentives, programs, and infrastructure improvements, and they include many that have been successfully implemented in other mixed-use and urban environments. The package of strategies aims to reduce the number of daily SOV trips to the project site (as projected in the site's environmental impact report) by 20%.

The tables on this and the opposite page give an overview of the individual programs that comprise the site's overall TDM Plan. The text that follows provides some information on these programs; complete operational details are included in a separate TDM Plan document. A few of these recommendations have also been directly integrated into the design of Mission Rock, as codified in the Design Controls and other design documents.

Note that TDM programs work together to reduce demand, providing users with a complete package of incentives and infrastructure that can allow them the flexibility to use the mode that makes the most sense for them on a given day. This is in-line with the overall approach to transportation at Mission Rock - providing a variety of high quality mobility choices.

The collection of programs has been thoughtfully crafted into the cohesive strategy outlined in this chapter and further detailed in the TDM Plan document. While some TDM strategies like parking pricing have a more direct effect on travel behavior, others like facilitating delivery services play a more supportive role. Individual strategies would be unlikely to have the same impact in the absence of other strategies.

MEASURE TYPE	INFRASTRUCTURE AND POLICY	OPERATIONAL	
4.1.1 TRANSIT	4.1.1.1 Real-Time Transit Information and Marketing Screens	4.1.1.1 Dynamic Transportation Information	4.1.1.2 Transit Subsidies
4.1.2 BICYCLE	4.1.2.1 On-Site Bike Share 4.1.2.5 Bicycle Parking 4.1.2.6 Showers and Lockers	4.1.2.2 Bike Share Memberships 4.1.2.3 Bicycle Community Programming	4.1.2.4 Bicycle Resource Centers 4.1.2.7 Bicycle Valet
4.1.3 MOTORIZED TRANSPORT	4.1.3.1 On-Site Shared Scooters 4.1.3.3 On-Site Car Share Parking Spaces	4.1.3.2 Scooter Share Memberships	4.1.3.4 Car Share Memberships
4.1.4 PARKING	4.1.4.3 Unbundled Parking	4.1.4.1 Parking Pricing 4.1.4.2 Real-time Parking Pricing and Availability Information	
4.1.5 BUILDINGS	4.1.5.4 Cold and Dry Delivery Storage Space 4.1.5.5 Convenient Zones for Loading and Building Servicing 4.1.5.6 Childcare Facilities 4.1.5.7 Collaborative Work Space 4.1.5.8 Affordable Housing	4.1.5.1 In-Building Concierge Services 4.1.5.2 Coordinated Delivery Services	4.1.5.3 CSA Partnerships 4.1.5.6 Childcare Services
4.1.6 ALL AREAS	4.1.6.1 Signage & Wayfinding Across Modes 4.1.6.4 Improved Walking Conditions	4.1.6.2 Mobile-Friendly Mission Rock Transportation Website 4.1.6.3 Site-wide transportation staff	

4.1.1 TRANSIT STRATEGIES

4.1.1.1 Real-time Transit Information and Marketing Screens

Dynamic transit information and transportation marketing to residents, employees, and visitors will be displayed on screens in building lobbies, or a similar approach will be used based on state-of-the-practice technology at the time of occupancy. Information will be also displayed in other high traffic areas, such as collaborative work spaces inside residential and office buildings around the site or childcare facility entrances. Making such information readily available can increase residents' awareness of local transit options and facilitate efficient trip planning.

4.1.1.2 Transit Subsidies

Clipper Cards pre-loaded with some cash value will be provided to all residents upon move-in, and business tenants will be required to offer employees the same. Clipper is the Bay Area's transit fare payment card and can be used on more than 20 of the region's transit agencies, including BART, Muni, and the ferries. Providing Clipper Cards upon move-in can increase residents' awareness of nearby transit options and increases the ease with which they can start using it. Clipper Cards can also be customized through a bulk purchase through the Metropolitan Transportation Commission, helping site users further associate Mission Rock with transit access.

Providing Clipper Cards could increase the ease of using transit for employees and residents who currently do not have Clipper. For individuals who already have cards, the one-time financial subsidy could help lower one barrier to increased transit use.

4.1.2 BICYCLE STRATEGIES

4.1.2.1 On-Site Bike Share

At least one high visibility space will be made available for a Ford GoBike dock on-site, with the possibility of additional docks depending on Ford GoBike's intended Mission Bay expansion. Prominently located bike share docks can increase awareness of bike share as a viable transportation option while also facilitating use. Each bicycle dock would be provided and maintained by the Ford GoBike management company, Motivate, and the project team will work with the company to identify appropriate dock locations on the Mission Rock site.

4.1.2.2 Bike Share Memberships

Single-year Ford GoBike memberships will be offered to all residents 18 years or older upon move-in. Members of Ford GoBike can take free, unlimited 45-minute one-way bicycle rides between bike share stations.

Providing residents with bike share memberships could help tenants with minimal experience cycling in San Francisco a low-cost and low-obligation opportunity to try cycling, and it would provide residents with a quick and easy way to get to the Transbay Transit Center and Market Street, for BART connections and a variety of other transit options and recreational activities.

4.1.2.3 Bicycle Community Programming

Through the site transportation staff, regular bicycle parties or happy hours for the bicycling community will be hosted at Mission Rock, potentially paired with gear giveaways. Bicycle-oriented programs and events encourage bicycling by raising public acceptance and

Real-time transit information in Seattle (FLICKR USER ORAN VIRIYINCY)

Bay Area Bike Share (FLICKR USER DAVID GOEHRING)

support for non-motorized transportation and building connections between residents who regularly bicycle, making biking a fun, social activity. Integrating bicycling into the social fabric of the Mission Rock community will raise the profile of bicycling as a viable mode of transportation and encourage people to try biking for a portion of trips.

4.1.2.4 Bicycle Resource Centers

Each building's secure bicycle parking area will be equipped with a bicycle maintenance space, with resources like a bicycle stand, a workbench, tools, and a basic repair kit. These dedicated spaces contribute to social acceptance of bicycling and reduce one key barrier associated with owning a bicycle – concern about complications related to ongoing maintenance – by providing tools and parts through a vending machine at low prices.

This measure will also include working to incorporate a bicycle store in the site retail plan and establishing a resource center containing a vending machine for bicycle parts, a "fix-it" work station with basic tools, and bicycle pumps somewhere else within the site at an easily accessible location.

4.1.2. 5 Bicycle Parking

Given the importance of non-motorized transportation to the site's overall design concept, more bicycle parking will be provided than is required by San Francisco City Code. This will include secure Class I parking spaces in residential and office buildings and a network of Class II bicycle parking spaces throughout public areas.

Class I parking consists of secure long-term bicycle parking, including bicycle lockers, bicycle cages, and bicycle rooms. Class II bicycle parking refers to more short-term bicycle parking, including on-street bicycle racks. The site's location in a flat part of San Francisco and the numerous planned bicycle facilities through the site imply a strong potential for very high rates of bicycle usage, and this will be encouraged through easy access to ample, convenient bicycle parking. Bicycle parking facilities will also be available to accommodate various types of bicycles including those with cargo and trailer attachments.

There are several methods of providing secure (Class I) bicycle parking spaces for residents and employees. The site will employ approaches that reflect best practices regarding secure short-term and long-term bicycle parking. For instance, one approach may be to locate bicycle cages at convenient locations within buildings, and bicycle owners who qualify can receive a key or access card to use the cages for a set period of time (e.g. during work hours). The access card can be the same as one used to access an elevator or parking garage. Public bicycle parking is often considered secure when it is situated in well-lit, highly visible areas.

4.1.2.6 Showers and Lockers

The site will meet the San Francisco Code requirement to provide shower and clothes locker facilities for tenants and employees in buildings with certain uses. Offices (including childcare, business services, and light manufacturing) that exceed 10,000 square feet must provide at least one shower and six clothes lockers;

Bicycle fix-it station (FLICKR USER JOE)

Bicycle room (Class I parking) (NELSON\NYGAARD)

for facilities between 20,000 and 50,000 square feet, the building must provide two showers and 12 lockers. Those exceeding 50,000 square feet must provide four showers and 24 lockers. Retail sales and restaurants exceeding 25,000 square feet must also provide one shower and six clothes lockers; those exceeding 50,000 square feet must provide at least two showers and 12 lockers.

4.1.2.7 Bicycle Valet

Free bicycle valet services will be provided for large on-site events (per code requirements). Complementing the bicycle parking available on a daily basis, bicycle valet services during special events can encourage people to travel to and from events by bicycle by eliminating the challenge of finding safe and convenient bicycle parking in an area crowded with event attendees. These services also raise public acceptance and support for non-motorized transportation by building connections with visitors.

4.1.3 MOTORIZED VEHICLE STRATEGIES

4.1.3.1 On-Site Shared Scooters

Off-street parking spaces will be reserved for 15 to 20 shared scooters (approximately six car parking spaces in total). These spaces will be made available to scooter share companies at no cost. Electric scooters are highly convenient in a dense urban environment and may have additional marketing value, given the cache scooters carry among certain population segments. Scoot is a current provider of this type of service. One of the benefits of Scoot's network is the ability to travel point-to-point, instead of needing to return scooters to their point of origin. Scoot already has pods within a short walk of Mission Rock. The parking garage would accommodate space for a scooter dock, which the scooter share vendor would provide and maintain.

4.1.3.2 Electric Scooter Memberships

Pending a partnership with Scoot Networks, a one-year Scoot membership will be offered to all new residents, and Scoot Networks could provide its scooter orientation on-site. Like a bike share membership, a scooter share membership could help establish new travel behavior patterns upon move-in. This measure would entail forming a partnership with Scoot or another electric scooter share vendor to provide free memberships in exchange to reserving space for electric scooter parking on-site.

4.1.3.3 On-Site Car Share Parking Spaces

Designated car share spaces will be provided in the parking garage, with flexibility to increase over time in response to demand. The number of spaces provided will exceed the amount required by the San Francisco Zoning Code. These spaces will be made available to car share companies at no cost.

Research indicates that a single car-share vehicle can remove as many as 20 private cars from the transportation network. Spaces will be located in high-visibility parking spots within the parking garage, which will be publicly accessible. Clear exterior signage will increase these spaces' visibility and emphasize the convenience of car share. Depending on the car share vendor provided, additional partnerships with ChargePoint may be required to provide infrastructure for electric vehicle charging.

SF Bicycle Coalition bicycle valet AT&T Park (NELSON\NYGAARD)

4.1.3.4 Car Share Memberships

Car share memberships will be offered to all households for their first year of residency. Depending on specifics of agreements with car share vendors, membership fees could be reduced or waived and some rental credit could be provided. These memberships could help establish new behavioral patterns upon moving in. Pairing access to car sharing vehicles with car sharing memberships is also shown to be more effective than implementing one or the other on its own.

4.1.4 PARKING STRATEGIES

Priced and actively managed parking is a cornerstone of the Mission Rock transportation program. The following measures will ensure that driving is not the default choice for access to the site.

4.1.4.1 Parking Pricing

The price of parking has been shown to be a highly effective mechanism in changing travel behavior, and as such, parking will be priced strategically at Mission Rock. During times of higher demand, parking might have a higher price, encouraging a higher rate of turnover and the use of other modes. Prices will not change in real time based on current occupancy, but instead might automatically increase by a pre-set amount during peak periods, based on typical demand patterns, or for scheduled events. Prices might be adjusted overall a few times a year based on recent occupancy data.

By refining the price of parking periodically, it would be possible to keep parking occupancy rates relatively close to the optimal level, typically around 90% for off-street parking. Researchers have found that parking facilities function efficiently (i.e. without requiring excessive parking-search time) up to roughly this level of occupancy. Demand-responsive pricing has been successfully piloted in San Francisco, Berkeley, Los Angeles, and other cities, and the AT&T Park lot on which Mission Rock will be built currently employs a form of this concept.

4.1.4.2 Real-Time Parking Pricing and Availability Information

Dynamic displays (or another state-of-the-practice price-information sharing strategy) will be installed to show real-time parking price and availability information. This information will also be made available through other channels like a Mission Rock transportation website; this will require installing technology and associated information systems to automatically monitor parking usage. For market-based parking pricing to be truly effective, the dynamic between price and availability must be clearly communicated to drivers. Making such information readily available to potential drivers, particularly at parking garage entrances, decreases the likelihood of drivers' circling for parking or potentially increases the possibility of choosing other modes.

4.1.4.3 Unbundled Parking

Parking costs will be unbundled from all residential, commercial, and retail leases and ensure that the users of parking are the ones who ultimately pay for it. In other words, individuals desiring parking will be required to pay the cost of parking themselves, and the price of parking will not be included in the leases of any residential or commercial tenants. "Unbundling" parking means that the cost for parking is separate from the cost of residential and commercial units. It is an increasingly common practice in urban areas, and it is required in San Francisco. Thirty percent of San Francisco households do not own a vehicle, and unbundled parking makes housing more affordable, particularly for those who do not need a parking space.

Car share spaces (NELSON\NYGAARD)

Parking pricing information sign (NELSON\NYGAARD)

This approach provides financial savings to households who decide to dispense with one of their cars, and it can help attract households who wish to live in a transit-oriented neighborhood where it is possible to live well with only one car, or even no car, per household. Unbundling parking costs changes parking from a required purchase to an optional amenity, so that households can freely choose how many spaces they wish to lease.

Unbundling parking tends to reduce demand for parking by specifically calling out and making optional the previously hidden cost of "free" parking. This in turn allows developers to provide less parking, which increases the area that can be developed with more lucrative land uses such as additional housing units. For this measure to work optimally for office users, the users of parking – not their employers – must be the ones who ultimately pay daily or monthly costs.

4.1.5 BUILDING STRATEGIES

4.1.5.1 In-Building Concierge Services

Mission Rock will work with the managers of individual buildings to appoint an in-building concierge to provide information about local merchants and coordinate/facilitate delivery services for residents. In-building concierge services and/or multi-purpose front-desk staff can facilitate valet parking, farm-to-table produce delivery, cold and dry storage for grocery or produce delivery, and secure package delivery. Concierge staff could also provide information about the nearest stores and services like dry cleaning and laundry service, as well as pickup/delivery services from local merchants. Residents would pay for all services.

The site-wide transportation staff would provide centralized transportation support to the in-building concierges. The combination of these services will provide targeted travel information, consolidating or eliminating the need for additional trips.

4.1.5.2 Coordinated Delivery Services

Mission Rock will consider partnering with delivery service companies, in addition to establishing a centralized staging location for parcel delivery and a distribution system that relies on non-motorized transportation to deliver packages to the various buildings within the development. In the absence of an official partnership, ways of making ordering in more appealing instead of making separate trips off the property for daily needs would be facilitated, thus reducing vehicle trips in the process. One potential way to do this would be to offer direct ordering through the Mission Rock website. Each building would manage these services individually as needed.

4.1.5.3 Community-Supported Agriculture Partnerships

Local community-supported agriculture (CSA) deliveries will be coordinated. Fostering the use of local CSA organizations has the potential to reduce greenhouse gas emission and vehicle-trips by providing project residents convenient access to locally sourced food, reducing the number of trips and vehicle miles traveled by both vendors and consumers. This measure could also have marketing benefits and reinforce the site's overall message about sustainability.

In-building concierge (FLICKR USER ALAN LIGHT)

CSA box (FLICKR USER NIKI SUBLIME)

4.1.5.4 Cold and Dry Delivery Storage Space

Mission Rock will work with individual building managers to provide storage space near the concierge and elevators to store packages, perishables, laundry, and other deliveries. Storage should be family friendly, including room to store car seats and strollers and near to car share locations. Providing storage space for groceries, laundry, and other packages can have a direct effect on reducing trips by encouraging and facilitating online ordering. A centralized storage facility within each building can also consolidate delivery trips by enabling delivery vehicles to only make one stop for multiple recipients instead of several.

4.1.5.5 Convenient Zones for Loading and Building Servicing

Passenger loading and building servicing zones are integrated into Mission Rock's overall street design. These zones will reduce the need for personal vehicle trips by facilitating deliveries and also enabling easy pick-up and drop-off of seniors and people with disabilities by locating them near elevators and at corners with curb ramps.

4.1.5.6 Childcare Facilities and Services

Mission Rock will aim to attract a provider of on-site childcare services and facilities to ensure easy access for Mission Rock residents and employees. Ensuring that childcare services are provided on-site at Mission Rock would break down a key barrier for parents to taking non-auto modes to work by bringing such services within walking distance and near the many commute options around the Mission Rock site. The childcare services could be provided on the ground floor of a northern parcel, near China Basin Park. Other family-friendly amenities will also be established, including storage spaces with room to store car seats, strollers, and other family-related equipment.

4.1.5.7 Collaborative Work Space

Mission Rock will work with the developers of individual parcels to establish a collaborative work space in each residential building. A typical offering in residential buildings today, business services rooms can help encourage and facilitate working from home, which can directly reduce trips to and from the site.

Work spaces could include for-rent work rooms that can be reserved in advance, equipped with video conference equipment, high-speed internet connections, projectors, white boards, basic office supplies, and printing, scanning, and faxing services. For residents interested in using this work space long term, dedicated mailboxes for businesses could be set aside and located nearby. The developers and managers of individual buildings will ultimately be responsible for developing and maintaining these business services rooms and ensuring that they are equipped with appropriate equipment.

4.1.5.8 Affordable Housing

Forty percent of on-site units will be restricted to inclusionary affordable housing, to be provided in a balanced manner throughout the phasing of the development. Affordable units are generally associated with lower rates of auto trip-making, as residents living in affordable housing typically own fewer cars per household than residents of market-priced units. They are more likely to use transit and are less likely to require parking, reducing overall vehicle trip generation.

4.1.6 ALL-REALM STRATEGIES

4.1.6.1 Signage and Wayfinding across Modes

ADA compliant signage and wayfinding will be installed at key points throughout the development. Signs can help indicate points of connection between different modes, as well as estimated travel times and directions by mode, and they can help increase people's understanding of travel options. Clear signage is also important for ensuring safety for all types of users, differentiating spaces for different users within shared public spaces.

Transit-focused wayfinding (NELSON\NYGAARD)

4.1.6.2 Mobile-Friendly Mission Rock Transportation Website

An ADA compliant site-wide website will be maintained with a dynamic and engaging section dedicated to transportation information and services, with specific portals for each user type (or the state-of-the-practice equivalent to this measure, per changes in technology by the time of first occupancy). A mobile-friendly website oriented toward all residents, employees, and visitors providing online access to concierge services and transportation programs can help raise awareness and visibility of transportation options and facilitates connections among transportation modes. The transportation information on the website will likely include but not be limited to real-time transit information and a transportation tab with all nearby options (e.g. Muni, car share, scooter share, ride-sourcing apps) showing locations and availability.

The informative website of a TMA in Mountain View. The site is mobile-friendly, as the images on the next page show.

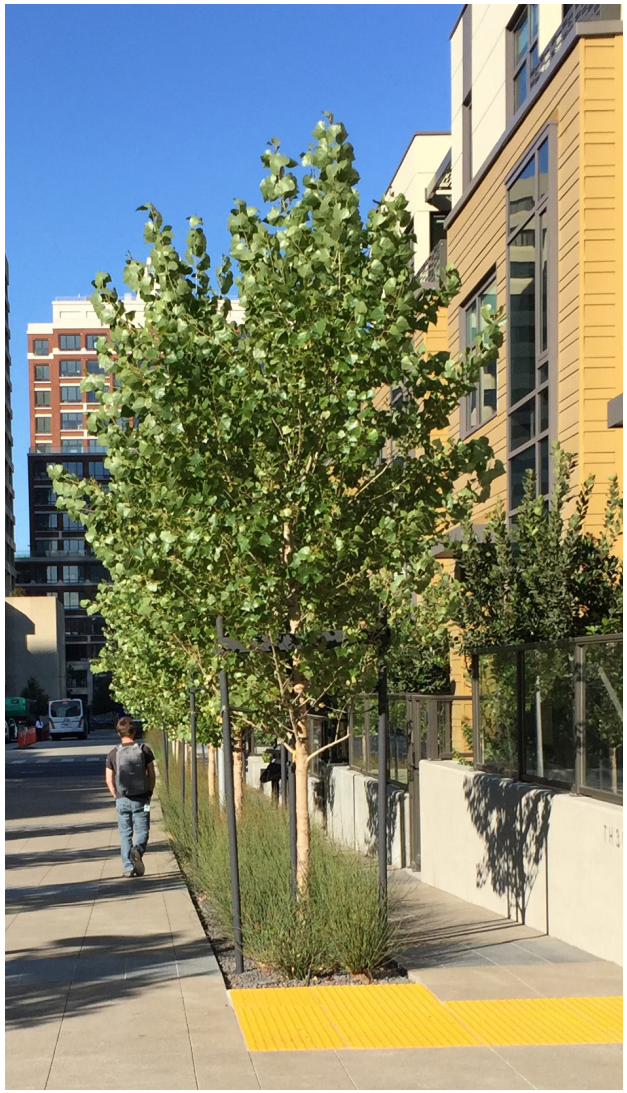
4.1.6.3 On-Site Transportation Staff

A site-wide, dedicated transportation staff will be hired and tasked with providing individualized advice and information on transportation options to residents and employees. This can help raise awareness and understanding of transportation options and ensure that site users can find non-auto transportation options that meet their unique travel needs.

Other staff, such as the in-building concierge or those tasked with organizing bicycle events and maintaining the bicycle resource room, could also provide similar targeted information and facilitate discussions around using different modes. This dedicated transportation staff would act as a centralized transportation resource to the in-building concierges, providing up-to-date transportation information and expert support to front-line staff that are less likely to have the same depth of knowledge of the transportation system. Staff responsibilities may include active campaigns encouraging sustainable trip-making.

4.1.6.4 Improved Walking Conditions

High-quality pedestrian design features (high connectivity, wide sidewalks, highly visible crossings, and others) are directly integrated in the design of Mission Rock. As described in the Mission Rock Design Controls, the development will add over half a mile of complete streets, including new and improved sidewalks and pedestrian crossings. Today, many sidewalks in Mission Bay are narrow or missing in areas. The new streets within Mission Rock will greatly improve the overall walking conditions of the neighborhood and facilitate safer and more convenient pedestrian connections. A pedestrian-oriented urban design is essential for residents, employees, and visitors to fully take advantage of the other TDM strategies, supporting access to all of the available transportation options and programs throughout the site and nearby. These improvements help shape the environment for the other TDM strategies to succeed.



High-quality design for pedestrians (NELSON\NYGAARD)

4.2 MARKETING AND COMMUNICATIONS

A strong communication strategy is critical to the success of any TDM program, ensuring that residents, employees, and visitors receive information about relevant resources and incentives at appropriate times and through channels that are easily accessible. Incorporating consistent branding into all communications can help create a sense of place and establish a cohesive identity for the transportation program. Branding can be used to support marketing and communication efforts, particularly on signage and wayfinding, to emphasize that residents, employees, and visitors can travel seamlessly through the area.

The TDM strategies cited in the chapter include three main channels for transportation-related communications: its site-wide transportation staff, a mobile-friendly web portal for site users, and physical signage and other wayfinding mechanisms on site. This section includes examples of communication tactics and channels to illustrate how specific channels can help reach target audiences.

4.2.1 SITE-WIDE TRANSPORTATION STAFF

Led by a coordinator, Mission Rock transportation staff would be responsible for maintaining information about TDM programs and acting as a point of contact to assist residents, employees, and visitors with transportation-related questions, concerns, or general assistance. The transportation coordinator would have the authority to implement TDM strategies, oversee the management and marketing of all measures, manage the TDM program budget, and monitor success of the TDM program.

The transportation staff might also be responsible for compiling a print and/or electronic transportation handbook to be distributed to residents on move-in and employees on hiring. This handbook could include information on transportation programs, policies, and service options, in addition to the following information:

- Transportation staff contact information, including information for the in-building concierges (if relevant)
- How to access transportation information in other media and locations, such as the website, relevant mobile applications, and real-time screens
- Commute trip planning information, including links to the regional 511 Rideshare program
- Clipper Card and vehicle (including car, bicycle, and scooter) share membership subsidies and parking policies
- Information on accessing other TDM program details and amenities, such as the in-building storage facilities
- Walking and biking routes within the area, estimated walking and cycling times to key locations, including transit hubs, and a link to the San Francisco bicycle map
- Local transit options and schedules, including links to Muni, BART, and Caltrain schedules, route maps, and existing trip planner mobile applications

The handbook would be distributed to all prospective residential tenants and all prospective employees who receive an offer to work within the development as part of welcome packets or employee orientation, or posted in prominent locations for all residents and employees.

Signage that combines directional and map-based wayfinding
(NELSON\NYGAARD)

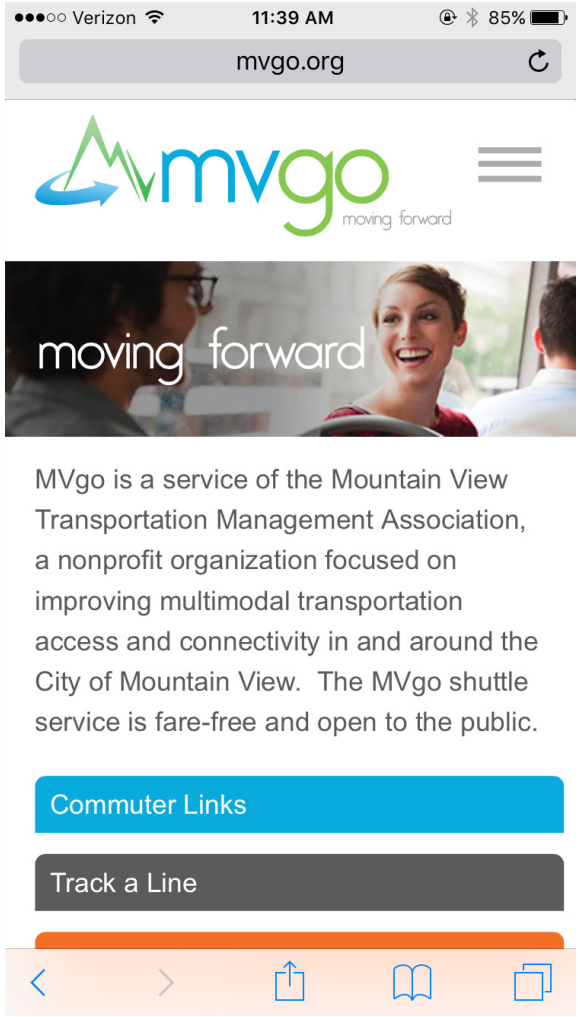
To make sure information stays useful to residents and employees over time, transportation staff will endeavor to keep all information and materials up to

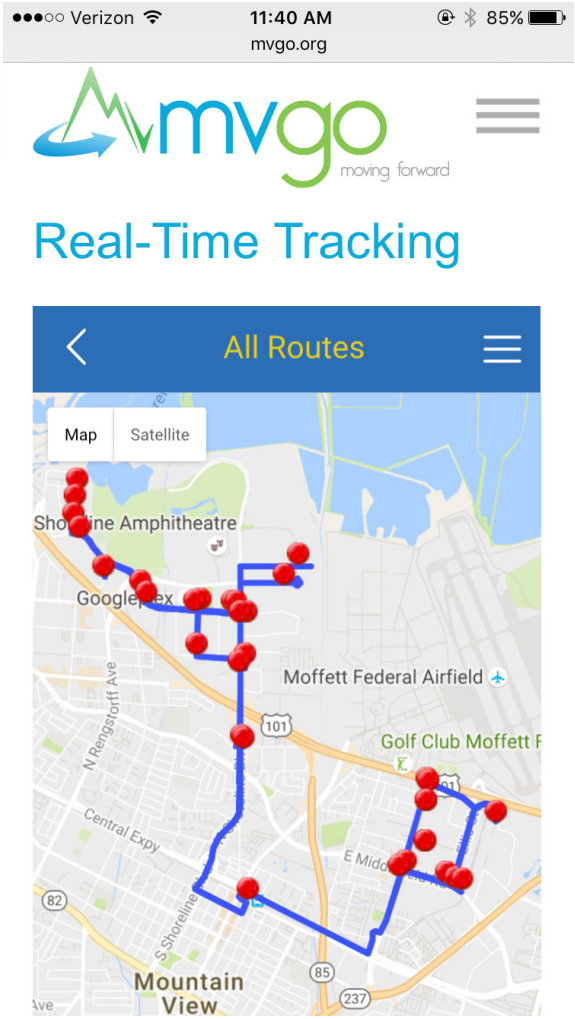
date and relevant. Staff may also consider developing other transportation tools in addition to or instead of a handbook as appropriate, drawing on available best practices.

4.2.2 MOBILE-FRIENDLY WEBSITE

Mobile-friendly websites are a way to create a dynamic and engaging repository for transportation information, point-to-point navigation tools, travel suggestions, user engagement campaigns, and other efforts to raise awareness of alternatives to drive-alone travel options and residents, employees, and visitors to use them. In addition to supporting the information already provided in the resident and employee handbook, this website could include the following:

- Real-time transit information
- Real-time parking pricing and availability information
- Notifications of upcoming transportation-related events, such as bicycle parties and farmers' markets, and alerts
- Integration with internet delivery services for ordering
- Registration for car share, bicycle share, and/or scooter share memberships
- Room reservations for the collaborative workspace
- On-site childcare services enrollment
- Specific pages or portals for residents, employees, and visitors so that each of these audiences has access to the appropriate and relevant travel information





The mobile-friendly version of the Mountain View TMA's website. The TMA offers real-time transit information and links to a variety of other resources.

- Functionality which allows for tracking travel behavior and enables gamification for incentives

This website will be ADA/Section 508 compliant to ensure that users of all abilities are able to easily access this information. Establishing specific portals for each audience can allow for the delivery of targeted, individualized TDM information for each of the audience groups. Each of the portals could also provide specific information on costs and multimodal options available for traveling to and from Mission Rock, as well as information on nearby attractions and services and links to citywide or regional information. The images on the previous pages show an example of computer and mobile-friendly versions of landing pages for this type of website.

4.2.3 SIGNAGE AND WAYFINDING

Clear, consistent, and predictable signage and wayfinding can help residents, employees, and visitors navigate the site easily. Signage can also bring awareness to important information such as parking prices and availability, bicycle parking locations, estimates of bicycle and pedestrian travel times, and other information on Mission Rock programs or services. Simply providing information on non-motorized travel prominently can increase the likelihood that people will select biking or walking as their mode of transportation.

The efficacy of signage and wayfinding is dependent on the design and placement of signs. Signage should be clear and provide relevant information at key decision points in people's journeys, in areas that are highly visible, and in clear lines of sight. For instance, when entering the site, cyclists should be able to clearly understand their route options through the site. This signage will be especially important for safety along the shared public ways, to ensure that users understand the encouraged forms of travel and appropriate behavior on each mode. Temporary signage may be used in areas more highly trafficked by residents or employees, to provide information on specific events or programs, such as CSA pick up locations.

Wayfinding examples throughout the chapter show how it can be used in vibrant, mixed-use areas. Some signs offer clear guidance for the nearby area at several scales while providing clear directional guidance to nearby transportation hubs and popular destinations.

For further information on the design considerations that will be accounted for in designing signage for the Mission Rock site, see section 2.10 of the Design Controls.

4.2.3.1 Transportation Information Kiosks

Transportation information kiosks in the public realm can provide centralized locations for relevant transportation information for trips within Mission Rock and to nearby services and attractions. These kiosks could be placed throughout the site, at strategic decision-making locations where residents, employees, and visitors might need the information, such as the intersection of Terry A. Francois Boulevard and Mission Rock Street, China Basin Park, and Mission Rock Square. The kiosks could include transit schedules and fare information, walking and cycling routes, real-time transit information, and Bay Area Bike Share dock locations and bicycle availability.

It is recommended that these kiosks be digital, interactive displays (as shown in the accompanying image) to allow information to be updated easily and regularly. These boards would be maintained and updated as needed by the transportation staff.

While the information kiosks can provide detailed information on transportation options to visitors and others new or unfamiliar with Mission Rock and the surrounding area, real-time transit screen technology is designed to offer an opportunity to understand transportation options at a quick glance. This would be particularly useful for employees and residents, those who make recurring trips frequently and don't need detailed guidance.

Each of the communication-based TDM measures are pertinent to residents, employees, and visitors at different times during their life cycle at Mission Rock. As such, it is critical to think strategically about when to share what with each of these key segments to reach certain groups of users.

The mobile-friendly Mission Rock website will be an important avenue for sharing information about programs, policies, and services. It is reasonable to assume that the website will act as a front-line communications vehicle to reach all of those who have or may be interested in having a connection with the site. Signage and wayfinding will be seen on a daily basis and is an important element for users of the development to efficiently navigate Mission Rock.

4.3 CONCLUSIONS

Establishing a robust TDM program reaffirms Mission Rock's commitment to sustainability and inclusivity. The program will encourage the site's residents, employees, and visitors to use the most environmentally friendly and spatially efficient mode possible for each trip, with an emphasis on cycling, walking, and shared rides.

TDM MEASURE	TARGET AUDIENCE		
	RESIDENT	EMPLOYEE	VISITOR
4.1.1.1 Real-Time Transit Information	■	■	■
4.1.1.2 Clipper Cards	■	■	
4.1.2.2 Bike Share Memberships	■		
4.1.2.1 On-Site Bike Share	■	■	■
4.1.2.7 Bicycle Valet			■
4.1.2.3 Bicycle Community Programming	■	■	
4.1.2.4 Bicycle Resource Centers	■	■	
4.1.2.5 Bicycle Parking	■	■	■
4.1.2.6 Showers and Lockers		■	
4.1.3.1 On-Site Shared Scooters	■	■	■
4.1.3.2 Scooter Share Memberships	■		
4.1.3.4 On-Site Car Share	■	■	■
4.1.3.4 Car Share Memberships	■		
4.1.4.1 Parking Pricing	■	■	■

TDM MEASURE (CONT'D)	TARGET AUDIENCE		
	RESIDENT	EMPLOYEE	VISITOR
4.1.4.2 Real-Time Parking information	■	■	■
4.1.4.3 Unbundled Parking	■	■	
4.1.5.1 In-Building Concierge Services	■	■	
4.1.5.2 Coordinated Delivery Services	■	■	
4.1.5.3 CSA Partnerships	■	■	
4.1.5.4 Cold and Dry Delivery Storage Space	■		
4.1.5.5 Convenient Zones for Loading	■	■	■
4.1.5.6 Childcare Services	■	■	
4.1.5.7 Collaborative Work Space	■		
4.1.5.8 Affordable Housing	■	■	■
4.1.6.2 Mobile-Friendly Website	■		
4.1.6.3 Site-Wide Transportation Staff	■	■	■
4.1.6.1 Signage and Wayfinding	■	■	■
4.1.6.4 Improved Walking Conditions	■	■	■

Target audience for each TDM program

05

EVENT MANAGEMENT

The energy and excitement generated by San Francisco's premiere event venues will be part of what makes Mission Rock a fun and interesting place to live, work, and play. AT&T Park will bring thousands of good-natured baseball fans to the area during the summer months, and the planned Chase Center will bring the Warriors' spirited fans through the winter and spring.

Concerts and smaller events at both venues and in Mission Rock's two smaller event spaces will bring the area to life at other times.

Mission Rock will be designed and actively managed to maximize the best aspects of these festivities while responsibly managing the potential inconveniences that large crowds can cause. This chapter outlines the basic site's anticipated approach to managing pedestrian activity, vehicle flows, and bicycle parking around them to ensure that residents and employees can enjoy the energy without the hassle.

As the team has since it moved to AT&T Park in 2000, the San Francisco Giants will continue to work closely with the City and with citizens advisory committees in the area to manage the effects of event crowds on surrounding neighborhoods, through measures like deploying traffic control officers (known in San Francisco as parking control officers, or PCOs). In addition to such measures, the Mission Rock transportation staff might also be empowered to take additional actions like closing on-site streets or individual lanes to vehicle traffic and encouraging the use of non-auto modes for travel to events. This chapter describes how these types of strategies might be combined for three scenarios, representing the likely range of common events: A primary event at AT&T Park (40,000+ attendees), a secondary event at AT&T Park (15,000 to 25,000 attendees), and on-site events (2,000 to 5,000 attendees) in China Basin Park and Mission Rock Square. More detailed event management plans will be developed in the future.

Given their storage-space needs, automobiles naturally pose challenges for organizers of any large event. As such, most scenarios include some restrictions on vehicle movement through the site, and the TDM Plan's efforts to reduce reliance on single-occupancy vehicles for travel to and from the site will be particularly crucial during these times. However, some vehicle movement will be accommodated. A 2,300 to 3,000-space parking garage at the southwest corner of the site will serve as AT&T Park's main parking facility, replacing the surface lot on which Mission Rock will be built. During AT&T Park and Mission Rock events, curb space around the site will also provide important capacity for passenger loading.

Mission Rock and AT&T Park

Parking control officers (PCOs) (NELSON\NYGAARD)

On game days today, vehicle circulation is adjusted to account for high pedestrian volumes. Note that the Lefty O'Doul Bridge street closure shown in the photo above will likely change with planned changes to the roadway. (NELSON\NYGAARD)

5.1 PRIMARY EVENTS

AT&T Park, 35,000 to 40,000+ Attendees

A primary event at AT&T Park will be the most common scenario, occurring between 80 and 100 times per year, depending on whether the Giants make the playoffs and on how many non-baseball events (like concerts or other sporting events) AT&T Park hosts.

5.1.1 MANAGEMENT STRATEGIES

Parking Pricing

As noted in Chapter 4, it is anticipated that the Mission Rock garage will be actively managed around event times to ensure that there is space available for AT&T Park event attendees. To encourage regular users of the garage to find alternative ways to get to the site on event days, parking prices could be raised during a period covering a few hours before and after AT&T Park events. This approach has already been successfully employed to manage parking demand in the existing main AT&T Park lots, Lot A and Pier 48. People arriving at the garage around event times could pay a flat event rate that might amount to a total that is higher than typical hourly rates would be (i.e. if the event period is six hours long, the flat event rate would exceed the total cost of parking for six hours at typical hourly rates).

Vehicle Flows and Curb Space

Vehicular circulation through Mission Rock could be restricted during primary events in anticipation of high pedestrian volumes through the site. The Shared Public Way is a particularly critical north-south pedestrian route, providing the most direct path of travel between the main garage and the ballpark. As such, it is anticipated that the street would be closed

Giants games at AT&T Park regularly sell out, bringing a festive atmosphere to the neighborhood

to vehicle traffic around major event times. Right turns from Mission Rock Street to 3rd Street could also be prohibited before events, to reduce volumes on Mission Rock Street in front of the Public Safety Building. Left turns into and out of the site at 3rd Street's intersections with Long Bridge will be prohibited at all times. The eastern-most lane on 3rd Street between Exposition and King streets will also likely be closed before and after events, as it is today, to facilitate the movement of large volumes of pedestrians near the ballpark.

Traffic flows will be actively managed through PCOs and strategically placed signs, and garage entrances and exits will be managed to allow for efficient processing of major vehicle flows. To ensure that emergency vehicles have clear access to Public Safety Building driveways on the south side of Mission Rock Street, keep clear zones will be maintained and could be reinforced by one or more PCOs. Traffic flows on Mission Rock Street could also be managed to maintain an open lane for potential emergency vehicle movement. Event vehicles will also be encouraged, via signs and PCOs strategically located at points south of the site, to enter and exit the area via Terry A. Francois Boulevard. Specific PCO locations will be determined by the SFMTA with the goal of supporting pedestrian safety, limiting impacts on transit, and keeping intersections clear of vehicles.

Most vehicular circulation through the site is expected to be for passenger pick-up and drop-off. Key passenger loading locations will include the north side of Exposition Street and the east side of the block of 3rd Street just north of Exposition Street. Primary loading zones for people with mobility limitations include the east side of 3rd Street north of Exposition Street and an accessible loading zone on Exposition Street between the Shared Public Way and Bridgeview Street.

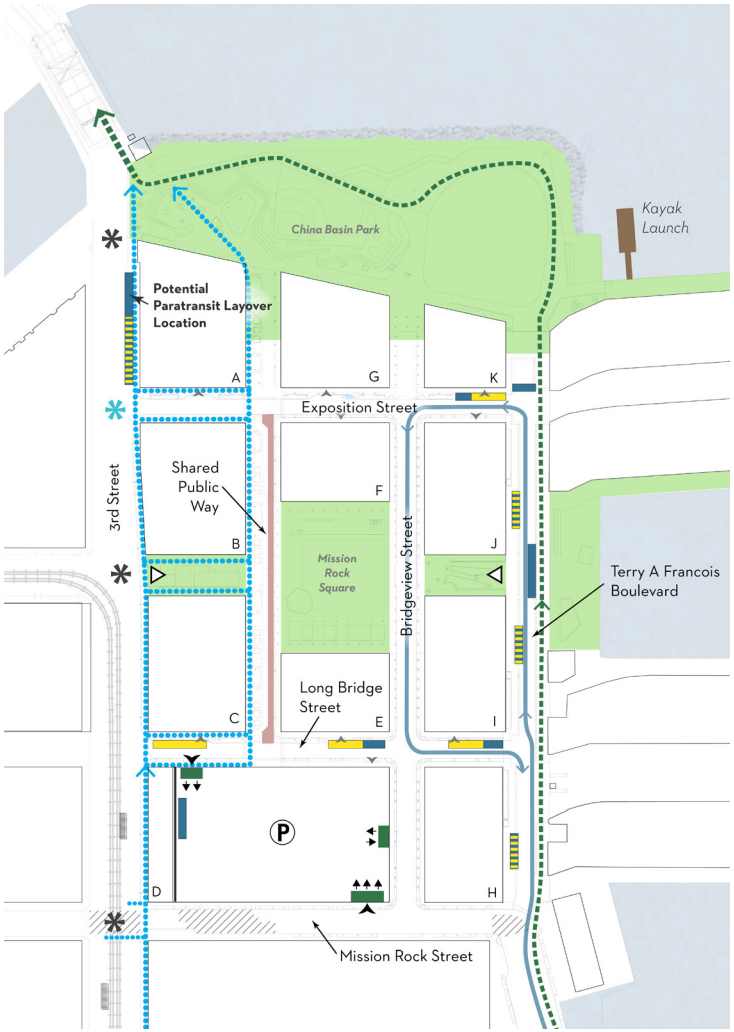
To manage vehicle movement at points of potential conflict between modes, this plan recommends the use of PCOs in key places along 3rd Street and through the site, including the intersections of Mission Rock and 3rd, Mission Rock and Bridgeview, and Mission Rock and Terry A. Francois Boulevard, and the 3rd Street crossing just south of Lefty O'Doul Bridge.

Pedestrians

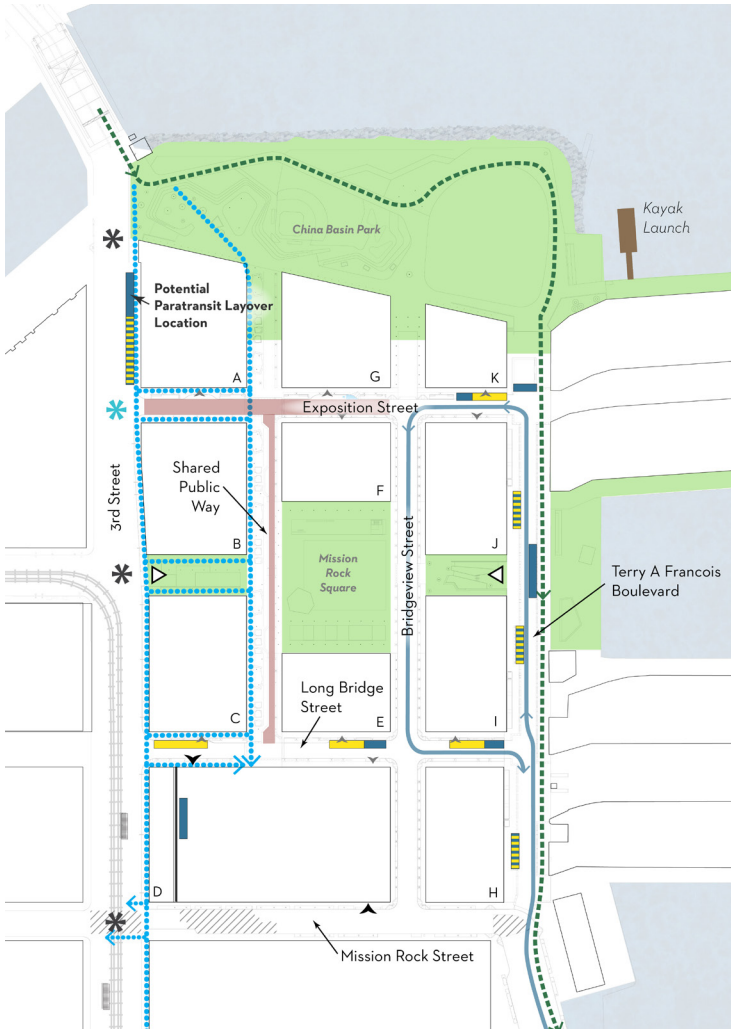
It is anticipated that all pedestrian paths of travel will be open, but pedestrian activity is likely to concentrate along the Shared Public Way and 3rd Street, the two key north-south routes between Long Bridge Street and the ballpark.

Bicycles

Primary bicycle flows south of China Basin are expected to be along the San Francisco Bay Trail to and from bicycle parking facilities immediately around AT&T Park. Some cyclists may also use Bridgeview Street, but they might be less likely to do so than in normal conditions due to larger numbers of vehicles turning into and out of the garage. Cyclists will be encouraged to dismount at the western end of China Basin Park to reduce conflicts with the heavy pedestrian flows across Lefty O'Doul Bridge. Some event attendees will also likely lock their bicycles on the Mission Rock site, to visit on-site bars and restaurants before or after games or to avoid crowds closer to the venue. An additional ballpark bicycle valet facility could also be located on the Mission Rock site, if usage of the main valet facility warrants it.



Pre-event circulation patterns



Post-event circulation patterns

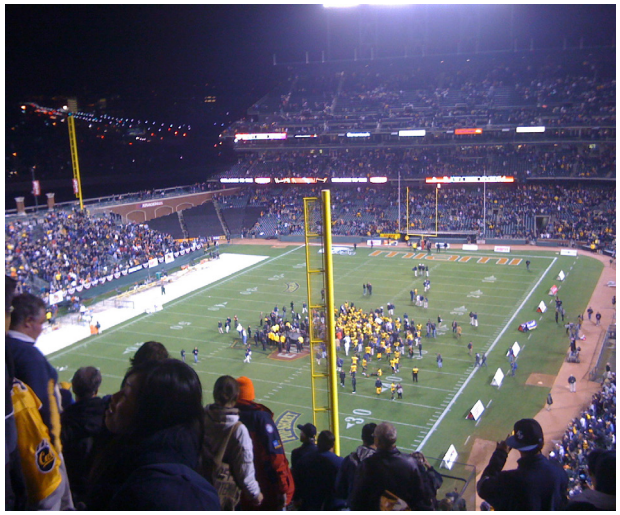
- Key Pedestrian Routes
- Primary Bicycle Route
- Primary Passenger Loading Flow
- ADA-Accessible Loading
- Commercial Deliveries Only
- Time-Limited Commercial Loading
- Closed to Vehicular Traffic
- Existing Traffic Signal
- Planned Traffic Signal
- Potential Traffic Control Officer Location
- Garage Lanes
- Planned Driveway
- Potential Driveway
- Keep Clear Zone
- Access to Below-Grade Parking (if provided)

5.2 SECONDARY EVENTS

AT&T Park, 15,000 to 25,000 Attendees

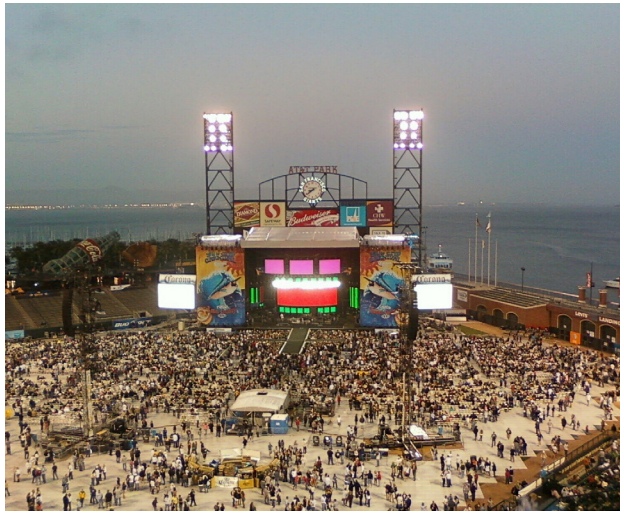
Circulation patterns at Mission Rock are anticipated to be similar around smaller events at AT&T Park. The Shared Public Way could be closed, and the relative intensity of different vehicle flows should be consistent with the basic patterns seen for the biggest events at the ballpark, though overall flows should be much smaller. Bicycle and pedestrian circulation patterns are also expected to be consistent with those anticipated for larger events.

Given lower levels of expected parking demand, it is anticipated that the garage at the southwest corner of the site would generally not need to use flat-rate event pricing around secondary events. Event attendees would be able to park in available spaces as long as spaces are available. However, communications related to AT&T Park events would likely still encourage the use of other modes to access the ballpark, in the interest of reducing congestion and parking demand overall.



Football at AT&T Park (FLICKR USER ELTON LIN)

Opera at AT&T Park (SFOPERA.COM)



Concert at AT&T Park (FLICKR USER REBECCA WILLIAMSON)

Race at AT&T Park (FLICKR USER PRESIDIO OF MONTEREY)

5.3 ON-SITE EVENTS

Mission Rock, 500 to Several Thousand Attendees

Mission Rock will have two spaces equipped to host large events. The Great Lawn in China Basin Park will have room to host concerts, movie nights, and other large gatherings. Mission Rock Square will likely host a broader range of events, from staged performances to farmers markets or craft fares, with thousands of people flowing through the space over a several-hour period.

The garage at the southwest corner of the site's parking prices could be converted to event rates for a period covering several hours before and after the biggest events, to discourage use by regular users.

5.3.1 CHINA BASIN PARK EVENT

5.3.1.1 Vehicle Circulation and Passenger Loading

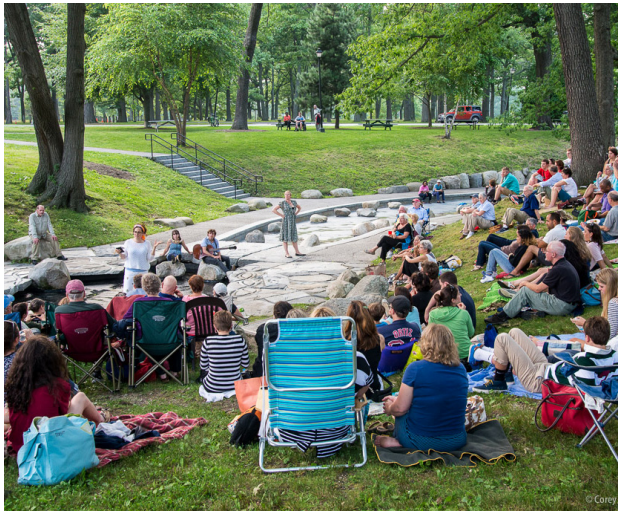
For the biggest China Basin Park events, Terry A. Francois Boulevard and Exposition Street could be closed to through traffic (the project team will apply for street closure permits through the standard City process), with the streets reserved for event-related pick-up and drop-off. To make vehicle flows predictable for pedestrians crossing these key streets, Terry A. Francois Boulevard could be converted to a one-way street northbound, and Exposition Street could be one-way westbound to complete a site-wide circuit.

It is anticipated that the north end of Terry A. Francois Boulevard, at or north of the intersection with Exposition Street, would be the main drop-off and pick-up location for people with mobility limitations. Taxi, TNC, and other vehicular loading could be focused along Exposition Street west of Terry A. Francois Boulevard.

Movie in a public park (FLICKR USER AARON MOLINA)

Stern Grove concert series (NELSON\NYGAARD)

Farmers market (NELSON\NYGAARD)



Shakespeare in the Park (FLICKR USER COREY TEMPLETON)

5.3.1.2 Pedestrian Circulation

Pedestrian traffic is likely to focus along two major routes: 1) through China Basin Park and up 3rd Street to/from the Caltrain terminal at 4th and King streets and toward BART on Market Street, and 2) through the site to/from the parking garage and the Muni light rail station on 3rd Street south of Channel Lane. Flows through the site can be expected to concentrate on Bridgeview Street north of Mission Rock Square, in the square, and along the Shared Public Way and Long Bridge Street, en-route to the parking facility and the Muni station at the southwestern corner of the site. PCOs may be helpful on Exposition Street at Shared Public Way and Bridgeview Street, to enable vehicles picking up or dropping off passengers to exit the site.

5.3.1.3 Bicycle Circulation and Parking

Bicycle valet facilities could be located along the San Francisco Bay Trail, just southeast of the event space, and cyclists will also be able to use the network of public bicycle parking spaces throughout the site.

Cyclists from the north could be encouraged to dismount at the edge of China Basin Park and walk their bicycles around the event space to the bicycle valet facility. Cyclists from the south could be encouraged to dismount as they approach the area for pick-up and drop-off of attendees with mobility limitations.

5.3.2 MISSION ROCK SQUARE EVENT

5.3.2.1 Vehicle Circulation and Passenger Loading

For the biggest Mission Rock Square events, Shared Public Way could be closed to vehicle traffic (with appropriate City permits), and Bridgeview Street between Long Bridge and Exposition streets will be closed to all but pick-up and drop-off of people with mobility limitations. As for China Basin Park events, Terry A. Francois Boulevard and Exposition Street could create a one-way loop for taxi, TNC, and other vehicular drop-off, and they could be closed to through traffic.

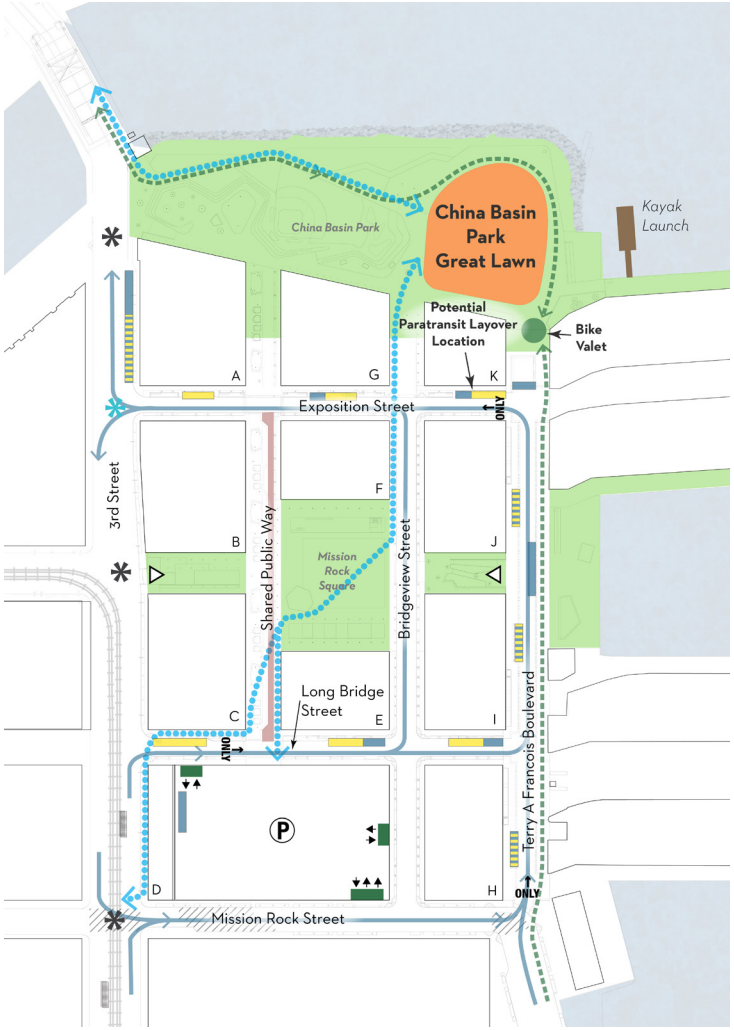
5.3.2.2 Pedestrian Circulation

Major pedestrian flows to transit nodes north and northwest of the site are anticipated to follow the Shared Public Way through China Basin Park to 3rd Street. Flows southwest to the main garage and the T-Third Muni light rail stop would follow Shared Public Way to the south and Long Bridge Street between Shared Public Way and 3rd Street.

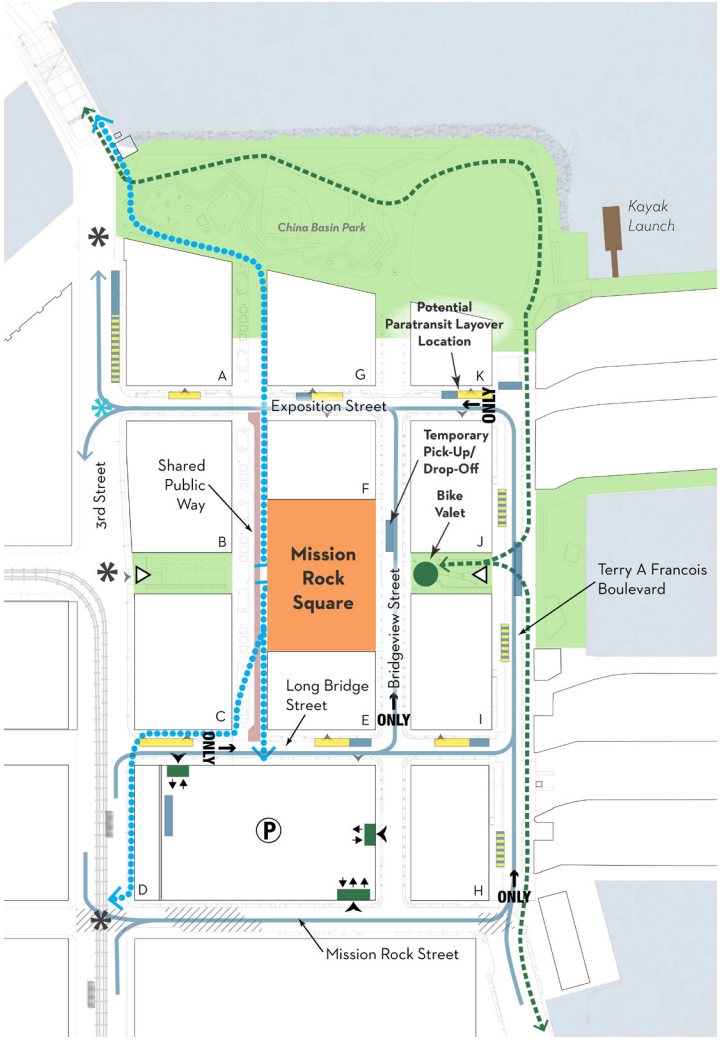
5.3.2.3 Bicycle Circulation and Parking

Bicycle valet could be located on Channel Lane east of Mission Rock Square. The main flows of cyclists from points south would follow the San Francisco Bay Trail to Channel Lane. Temporary signage at the north end of the site would encourage cyclists to follow the San Francisco Bay Trail to Channel Lane. The cycle track on Bridgeview Street could be closed to bicycle traffic temporarily, to make way for large pedestrian flows and for the primary loading area for event attendees with mobility limitations.

Mission Rock residents, employees, and visitors would also be encouraged to travel to and from the site on foot, bike, or transit on days with events on-site or at AT&T Park. Site transportation staff would keep and prominently display a calendar of major events as a planning resource for regular users of the site.



China Basin Park event circulation patterns



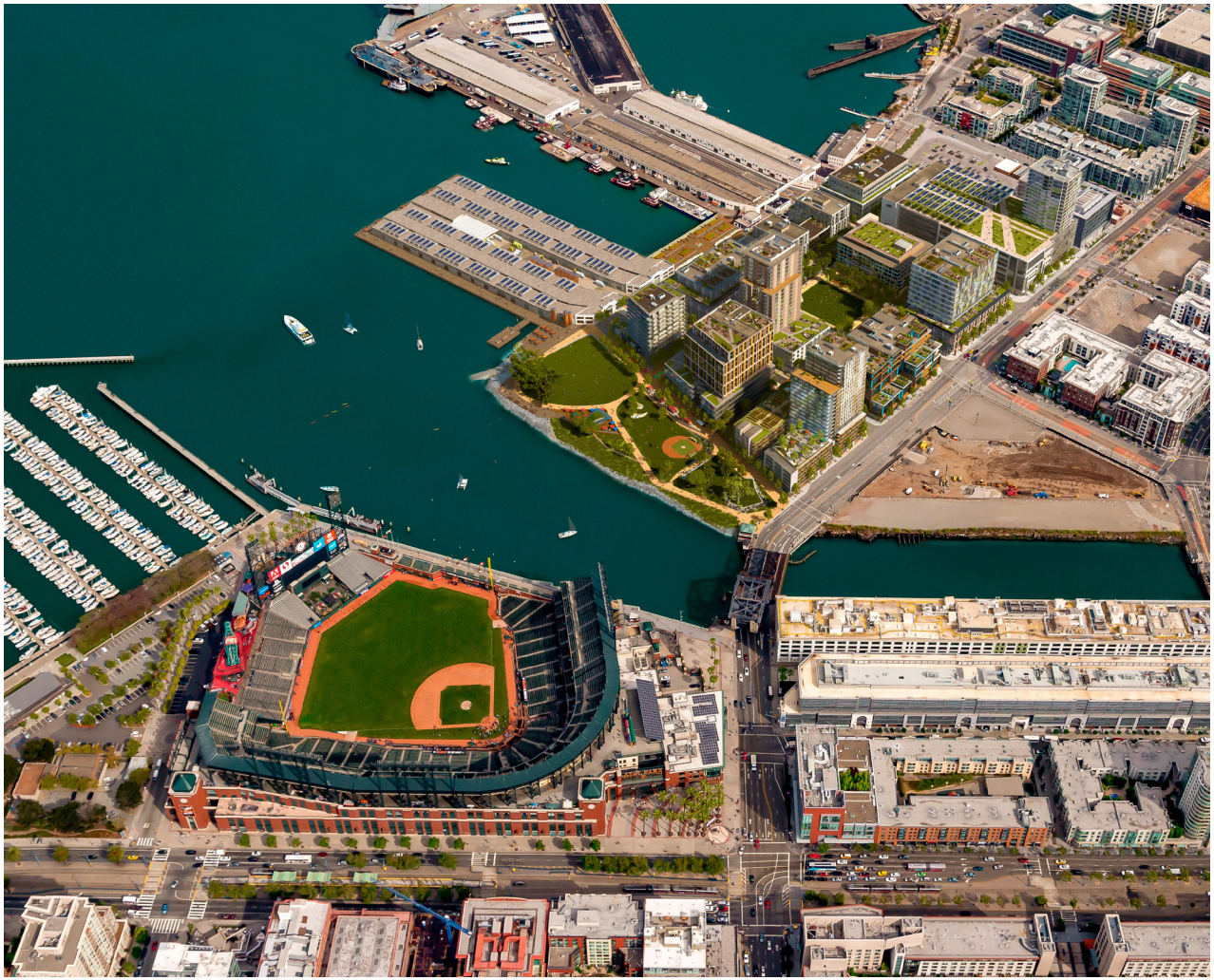
Mission Rock Square event circulation patterns

- Passenger Pickup & Dropoff
- ADA-Accessible Loading
- Commercial Deliveries Only
- Closed to Vehicular Traffic
- Existing Traffic Signal
- Potential Traffic Signal
- Garage Entry Lane Open
- Garage Exit Lane Open
- Planned Driveway
- Potential Driveway
- Keep Clear Zone
- Access to Below-Grade Parking (if provided)

5.4 CONCLUSIONS

Those who live and work near AT&T Park enjoy the exciting, festive atmosphere created by such a premiere urban event space, and they also know it takes some extra planning to make trips to and from the area as smooth as possible. The Giants and the transportation staff at Mission Rock will work hard to aid in this planning by providing users of the site ready access to an abundance great information and a range of travel choices.

In the same spirit, the Giants and the Mission Rock team are committed to working with neighborhood organizations to responsibly manage event-related transportation conditions and make sure inconveniences related to events are kept to a minimum.



AT&T Park and Mission Rock