Infrastructure Plan

Potrero Power Station

SAN FRANCISCO, CALIFORNIA

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These appendices are for reference only and are not approved as part of the Infrastructure Plan approval. Please find the Appendices available for review and download at:

https://www.dropbox.com/sh/ufipjvvkzpnxicn/AADRwXbwhtIDLnT-tuHC8NeJa?dl=0

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1 INTRODUCTION

1.1 Purpose

The Infrastructure Plan ("Plan") describes the required infrastructure improvements to be constructed to support the Potrero Power Station Project ("Project"). The Plan outlines the infrastructure related elements of the Project's sustainability, environmental remediation, demolition, corrective geotechnical measures, site grading, street and multi–modal transportation improvements, open space and park improvements, potable water system, auxiliary water system, non-potable water system, combined sewer system, separated sanitary sewer system, separated storm drain system, stormwater management controls, and dry utility system. The Plan also identifies the responsible parties for the design, construction and operation of the infrastructure.

1.2 Site Location and Areas

The Project area is approximately 29 acres located along San Francisco's Central Waterfront. The Project site is generally bound by 22nd Street to the north, the San Francisco Bay to the east, 23rd Street to the south and Illinois Street to the west. The Project location is depicted on Figure 1.0.

The Project area is comprised of the following properties which are depicted in Figure 1.1:

- ***Power Station Sub-Area*** – approximately 21.0 acres, consisting of Assessor's Block 4175/Lot 002 and Lot 017, and Block 4232/Lot 001 and Lot 006; currently owned by the project sponsor. This sub-area includes a large portion of the site of the former power station formerly owned and operated by the Pacific Gas & Electric Company ("PG&E") and by NRG Potrero LLC and their predecessors.

- ***PG&E Sub-Area*** – approximately 4.8 acres, consisting of a portion of Assessor's Block 4175/Lot 018 and owned by PG&E, located in the northwest corner of the Project Site, and also a portion of the site of the former power station.

- ***Port Sub-Area*** – approximately 2.4 acres owned by the City and County of San Francisco ("the City") through the Port of San Francisco ("Port"), consisting of three noncontiguous areas. The largest area is 1.4 acres located between the Power Station sub-area and the Bay, and also includes the area of the proposed recreational dock; the second largest is 1 acre, located along 23rd Street between the Power Station sub-area and Illinois Street; the smallest piece is less than one tenth of an acre, located on the northeast corner of the site next to the Bay.

- ***Southern Sub-Area*** – approximately 0.2 acres consisting of a portion of Assessor's Block 4232/Lot 010 and owned by Harrigan Weidenmuller Company, located south of the Power Station sub-area along 23rd Street.

- ***City Sub-Area*** – the City owns a triangular-shaped area and a strip of land along the and the southern side of 23rd Street between the Power Station sub-area and Illinois Street approximately 0.35 acres.

The redevelopment of PG&E sub-area is subject to PG&E's long-range facilities planning. Portions of the sub-area may or may not ultimately be redeveloped. This Plan assumes the redevelopment of this entire sub-area such that the infrastructure could support the full development program contemplated.

1.3 Proposed Land Uses

The Project includes the redevelopment of the project site into a mixed-use development including residential, commercial, hotel, community facility, PDR, retail and other active uses, and parking. The Project will also include public access areas and open spaces as well as a grid of public streets and private alleys.

Overall, the proposed Project will construct up to approximately 5.4 million gross square feet (gsf), of uses, including between approximately 2.4 and 3.0 million gsf of residential uses (about 2,400-3,000 dwelling units), between approximately 1.2 and 1.9 million gsf of commercial uses (office, R&D/life science, retail, hotel, and PDR), approximately 965,000 gsf of parking, approximately 50,000 gsf of community facilities, and approximately 25,000 gsf of entertainment/assembly uses. Most new buildings will range in height from 65-180 feet, with one building at 240 feet. Approximately 7 acres will be devoted to publicly accessible open space. The proposed range of development programs is outlined in Table 1.1.

Table 1.1: Proposed Development Program Scenarios

Proposed Building Use	Proposed Project Program	Maximum Residential Development Program	Maximum Commercial Development Program	Project Variant Program (Preferred Project)	Project Variant Program (Max Residential)
Residential	2,682 units / 2,682,427 sf	3,014 units / 3,014,376 sf	2,441 units / 2,441,667 sf	2,601 units / 2,522,970 sf	2,748 units / 2,669,778 sf
Commercial (Hotel)	241,574 sf	0 sf	241,574 sf	241,574 sf	0 sf
Commercial (Office)	597,723 sf	421,952 sf	814,240 sf	814,240 sf	814,240 sf
Commercial (Research and Development)	645,738 sf	645,738 sf	645,738 sf	645,738 sf	645,738 sf
Commercial (Retail)	107,439 sf	107,439 sf	107,439 sf	99,464 sf	99,464 sf
Commercial (PDR)	45,040 sf	45,040 sf	45,040 sf	35,000 sf	35,000 sf
Community Facilities	100,938 sf	100,938 sf	100,938 sf	50,000 sf	50,000 sf
Assembly / Entertainment	25,000 sf	25,000 sf	25,000 sf	25,000 sf	25,000 sf
Parking	921,981 sf	931,614 sf	902,856 sf	965,458 sf	992,785 sf
Publicly Accessible Open Space	6.2 acres	6.2 acres	6.2 acres	6.9 acres	7.15 acres

The land use program may be adjusted in the future provided that it remains within the limits analyzed under the Project EIR. The Project utility demands and infrastructure requirements have been evaluated based on the development program that results in the highest utility demand – the Maximum Residential development program. Accordingly, future adjustments are not anticipated to significantly change the overall Project utility demands or general infrastructure requirements outlined in this Plan.

1.4 Infrastructure Plan Overview

The Infrastructure Plan defines the required infrastructure to be provided by the Developer to support the development of the Project. The Plan includes the required infrastructure within the Project site and off-site within the vicinity of the Project site. The obligations for design, construction, operation and acceptance of the required infrastructure are described in the Plan.

1.5 Companion Document (D4D)

The design of the Project is guided by the Design for Development ("D4D") and Infrastructure Plan that together make up the Master Plan documents. The D4D sets the vision, standards and guiding principles for the redevelopment of the site as an urban, mixed-use, waterfront neighborhood. It contains the controls relating to the design of streets, open spaces and buildings. It also outlines sustainability features and identifies transportation strategies to encourage walking, biking and transit use. Specifically, Section 3 – Open Space and Section 4 – Streets of the D4D are carefully coordinated with the infrastructure systems described in this Plan.

1.6 Master Utility Plans

Master Utility Plans ("MUP") will be prepared based upon this Infrastructure Plan. The MUPs will provide further details of the site grading and utility systems, including utility modeling. The MUPs will be processed with the SFPUC prior to other SFPUC required submittals including the Basis of Design or first Improvement Plan approvals (see Section 1.10), whichever is first. The Basis of Design is a report that outlines project requirements, design criteria, necessary design exceptions and presents preliminary drawings for each utility system.

1.7 Property Dedication and Easements

The proposed public infrastructure described in the Plan will be constructed within public right-of-way or dedicated public easement areas. Easement areas within privately owned lands associated with utilities will provide for access and maintenance of infrastructure facilities. Easement areas within privately owned lands associated with the private alleys and open spaces will provide for emergency and public access within these corridors. The establishment of proposed parcels, rights-of-ways, easements, street vacations, dedication and acceptance of streets and other infrastructure will occur through the subdivision map process in accordance with the San Francisco Subdivision Code and San Francisco Subdivision Regulations.

The existing ownership of 23rd Street within the Project varies. The western half of 23rd Street is existing public right-of-way. The eastern half is a private street encumbered with access easements in favor of the properties to the south. Except for the addition of curbs to direct stormwater, the street design maintains the existing configuration of loading docks on the south side of the street. Pedestrians are directed to the sidewalk on the north side of the street, across from loading activities. The street is intended to be constructed to public street standards and is proposed to be a public street with Department of Public Works approval.

If the eastern half of 23rd Street remains as a private street, some of the public utility systems would be re-routed to not occupy this private street. See Section 18 providing a description of this scenario and the adjustments to the utility system configurations. See Table 8.1 outlining the proposed street widths and components for the various segments of 23rd Street.

Subject to approval, public utilities within easements may be allowed within the Project as necessary to provide infrastructure and services to the Project. These public utilities within easements on private property will be reviewed by the SFPUC to confirm full access for maintenance and repair of the utility facilities, including provision of minimum H-20 loading for maintenance access roads. The utilities will be installed in accordance with applicable City regulations for public acquisition and acceptance within dedicated public service easement areas. The proposed easements are depicted on Figure 1.2.

A tentative map will be prepared for the Project. Subsequently, final maps will be submitted depicting the public rights-of-ways prior to permits for each Phase of infrastructure. Final maps for each parcel, or group of adjacent parcels, will be submitted for each development phase.

1.8 Project Datum

The Infrastructure Plan is based upon the San Francisco Vertical Datum 13 ("SFVD13"). The SFVD13 Datum is equivalent to the North American Vertical Datum 1988 ("NAVD 88").

1.9 Applicability of Codes and Infrastructure Standards

The Infrastructure Plan may be modified in the future to the extent that future modifications are in accordance with the current City of San Francisco Subdivision Regulations – Appendix B and are accepted by the City.

1.10 Project Phasing

The Project is anticipated to be implemented in multiple Phases. See Figure 1.3 depicting the anticipated Phases of infrastructure and development. Each Phase will include Development Parcel(s) and associated Infrastructure (Phased Infrastructure) to facilitate the incremental build-out of the Project. Phased Infrastructure will be defined in the Phase Applications and associated Improvement Plans and Public Improvement Agreements for each Phase to be approved by the City prior to filing final maps for the associated Development Parcel(s).

Phased Infrastructure must be designed and constructed to create complete systems within each Phase. Additionally, demolition and construction of each phase must ensure service can be continuously provided to any existing customers. There are components of the Phased Infrastructure, as described in the Infrastructure Plan, such as abatement, demolition, environmental management, grading, geotechnical improvements and utility connections that may be required or desired outside the Phase in which it is designated. The Phased Infrastructure may include deferring sidewalk and street planting zones until the building construction on adjacent Development Parcel(s) is completed. Deferred infrastructure will require written request from the Developer and approval from the Director of Public Works. The proposed improvements will not be accepted by the City prior to deferred improvements being completed.

The Improvement Plans will depict the proposed infrastructure system configurations to be constructed with each Phase. The Improvement Plans will identify existing and proposed infrastructure, temporary and permanent connections, and demonstrate how service will be preserved to any existing adjacent occupied areas.

Construction of each proposed Development Parcel and associated Phased Infrastructure may impact site accessibility. During construction of each Development Parcel and associated Phased Infrastructure, interim access shall be provided and maintained for active utility access and emergency vehicles, subject to San Francisco Fire Department ("SFFD") requirements, as necessary. Within active streets to remain open, pedestrian access shall be maintained on at least one side where adjacent to an active construction area.

The key components of the Phased Infrastructure are outlined as follows:

Phase 0

- Demolition and Abatement of existing structures, private utilities and surface improvements, for the entire Project site except the PG&E Sub-Area.
- Site Grading establishing the street subgrade elevations and Development Parcel rough pad elevations (excluding below grade garage excavations), for the entire Project site except the PG&E Sub-Area.
- Demolition, abatement and site grading for the Tank Farm Area will be completed at the time environmental remediation of this area is complete.
- Demolition, abatement and site grading for the PG&E Sub-Area will be completed at the time the land becomes available.

Phase 1

- 23rd Street from Illinois Street to Waterfront Open Space.
- Humboldt Street from Maryland Street to the Waterfront Open Space.
- Maryland Street from 23rd Street to Humboldt Street.
- Delaware Street from 23rd Street to Humboldt Street.
- Traffic signal at 23rd Street and Illinois Street.
- Low Pressure Water System within Phase 1 public streets with points of connection to existing pipelines in 23rd Street at Maryland Street, and 23rd Street at Delaware Street.
- Low Pressure Water System second point of connection will be provided by an interim connection through Humboldt Street and/or Georgia Street connecting to the existing pipeline in either Illinois Street or 22nd Street, respectively. The selected corridor for this interim connection is subject to coordination with PG&E and review by the City.
- An access road capable of supporting active utility access and emergency vehicles will be provided along the interim low-pressure water line to Illinois Street or 22nd Street providing a second point of emergency access to Phase 1.
- Non-Potable Water System within Phase 1 public streets with potential Local District or Centralized Wastewater Treatment Plant on Block 8 supplying non-potable water to the system.
- AWSS connecting to existing pipeline at 3rd Street and 23rd Street intersection, extending in 23rd Street to Maryland Street and within Maryland Street from 23rd Street to Humboldt Street.
- Separated sanitary sewer system within Phase 1 public streets including the sanitary sewer pump station located near Delaware Street.
- Separated storm drain system within Phase 1 public streets including stormwater management controls and a stormwater outfall to the Bay.

Phase 1 *(Continued)*

- Dry Utility System within Phase 1 public streets.
- Power Station Park between Maryland Street and Delaware Street.
- Waterfront Park except for the area between Block 4 and Bay Trail.
- Grading within each Phase 1 Development Parcel for below grade parking, if necessary, and final building and / or open space elevations.

Phase 2

- Humboldt Street from Louisiana Street to Maryland Street.
- Low Pressure Water System within Humboldt Street.
- Non-Potable Water System within Humboldt Street with potential Local District Wastewater Treatment Plant on Block 7 supplying non-potable water to the Non-Potable Water system.
- Separated sanitary sewer system within Humboldt Street.
- Separated storm drain system within Humboldt Street including stormwater management controls.
- Dry Utility System within Humboldt Street.
- Power Station Park West between Maryland Street and Louisiana Paseo.
- Grading within each Development Parcel for below grade parking, if necessary, and final building and / or open space elevations.

Phase 3

- Maryland Street from Humboldt Street to Craig Lane.
- Delaware Street from Humboldt Street to Craig Lane.
- Craig Lane from Maryland Street to Delaware Street.
- Low Pressure Water System within Maryland Street.
- AWSS within Maryland Street.
- Separated sanitary sewer system within Maryland Street.
- Separated storm drain system within Maryland Street including stormwater management controls.
- Dry Utility System within Maryland Street.
- Waterfront Park, between Block 4 and the Bay.
- Grading within each Development Parcel for below grade parking, if necessary, and final building and / or open space elevations.

Phase 4

- Georgia Lane from 23rd Street to Humboldt Street.
- Humboldt Street from Louisiana Street to Georgia Street
- Low Pressure Water System within Phase 4 public streets.

Phase 4 *(Continued)*

- Non-Potable Water System within Phase 4 public streets with potential Local District Wastewater Treatment Plant on Block 5 supplying non-potable water to the Non-Potable Water system.
- Combined Sewer System within Georgia Lane.
- Stormwater management controls within Phase 4 public streets. Dry Utility System within Phase 4 public streets.
- Louisiana Paseo
- Grading within each Development Parcel for below grade parking, if necessary, and final building and / or open space elevations.

Phase 5

- Louisiana Street from Humboldt Street to Craig Lane.
- Craig Lane from Maryland Street to Georgia Street.
- Georgia Street from Humboldt Street to 22nd Street.
- Low Pressure Water System within Phase 5 public streets with permanent point of connections to the existing pipelines in 22nd Street.
- Combined Sewer System within Phase 5 public street.
- Stormwater management controls within Phase 5 public streets.
- Dry Utility System within Phase 5 public streets.
- Potential Local District Wastewater Treatment Plants on Block 1 supplying non-potable water to the Non-Potable Water system.
- Grading within each Development Parcel for below grade parking, if necessary, and final building and / or open space elevations.

Phase 6

- Humboldt Street from Georgia Street to Illinois Street.
- Traffic signal at Humboldt Street and Illinois Street.
- Low Pressure Water System within Phase 6 public streets with permanent point of connections to the existing pipelines in Illinois Street.
- Non-Potable Water System within Phase 6 public streets with potential Local District Wastewater Treatment Plant on Block 13 supplying non-potable water to the system.
- Combined Sewer System within Phase 6 public street.
- Stormwater management controls within Phase 6 public streets.
- Dry Utility System within Phase 6 public streets.
- Illinois Plaza
- Grading within each Development Parcel for below grade parking and final building and / or open space elevations.

1.11 Acceptance of Phased Infrastructure

Any acceptance of street and other infrastructure improvements will occur according to the San Francisco Subdivision Code and San Francisco Subdivision Regulations, unless otherwise approved as an exception by the City. The City shall accept full, complete, and functional streets and infrastructure as designed in conformance with the Subdivision Regulations and utility standards, and constructed in accordance with the project plans and specifications, subject to any design modifications or exceptions that may be authorized by the Public Works Director with consent of affected City department, as detailed under the San Francisco Subdivision Code and regulations.

Utilities and other infrastructure improvements to be offered by the Developer for City acceptance cannot rely on utilities constructed to a temporary standard. Any offer of utilities that rely on utilities constructed to a non-permanent standard will require authorization by the Public Works Director with the consent of the affected City department. This is anticipated for the Low-Pressure Water System point of connection through the PG&E Sub-Area with Phase 1. This is necessary to provide a reliable potable and fire water system for the first phase and until a permanent connection is made in later phases.

With the consent of the City, select portions of Phased Infrastructure to be offered by the Developer for City acceptance may rely upon existing infrastructure that is required to be replaced in a subsequent Phase provided the existing infrastructure adequately serves the present Phase demands and subject to written approval of applicable City department(s), consistent with San Francisco Subdivision Regulations. Upon any replacement of existing infrastructure beyond the current phase limits, the newly accepted infrastructure will require monitoring and re-inspection at the Developer's expense, as described in Section 4.3, Phases of Demolition and Abatement.
Phased Infrastructure may include improvements within the Project, but outside of the current Phase boundary and within a subsequent Phase area. The City will not accept the Phased Infrastructure that is constructed outside of the phase boundary until that subsequent phase of infrastructure is completed.

1.12 Operation and Maintenance

Under formal acceptance of public infrastructure installed by the Developer, the City will be responsible for maintenance of the infrastructure installed by the Developer, except as otherwise agreed to in writing by the Developer and the City. A maintenance agreement, as required by the Public Improvement Agreement (PIA), will be prepared in conjunction with the first phase of Improvement Plans and may be subject to a Major Encroachment Permit ("MEP").

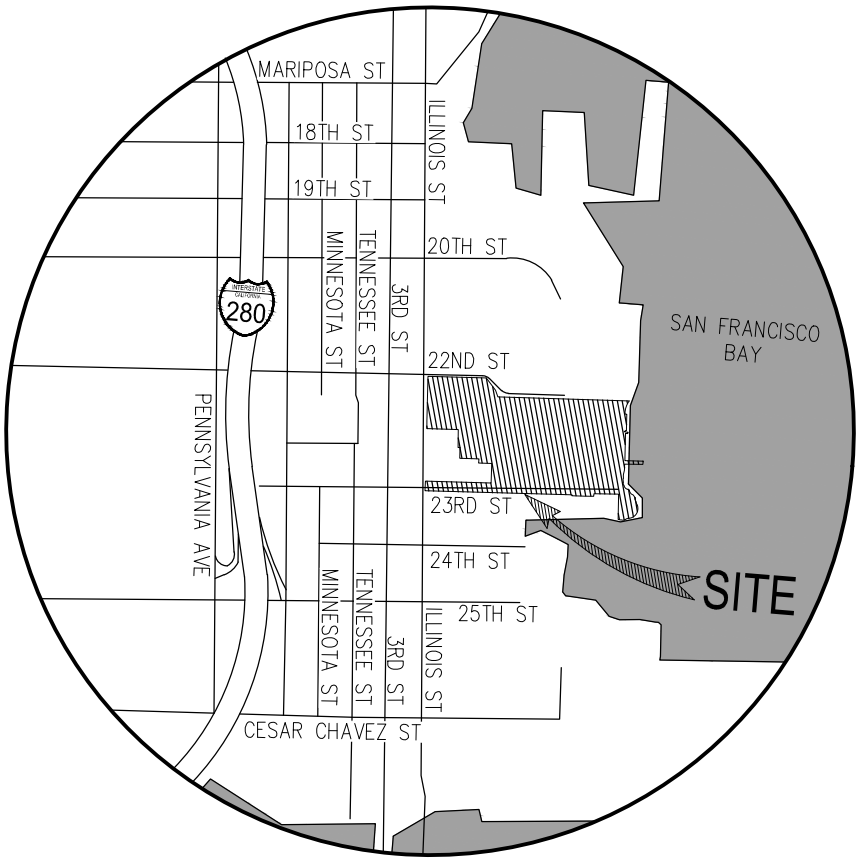


Figure 1.0 Site Location

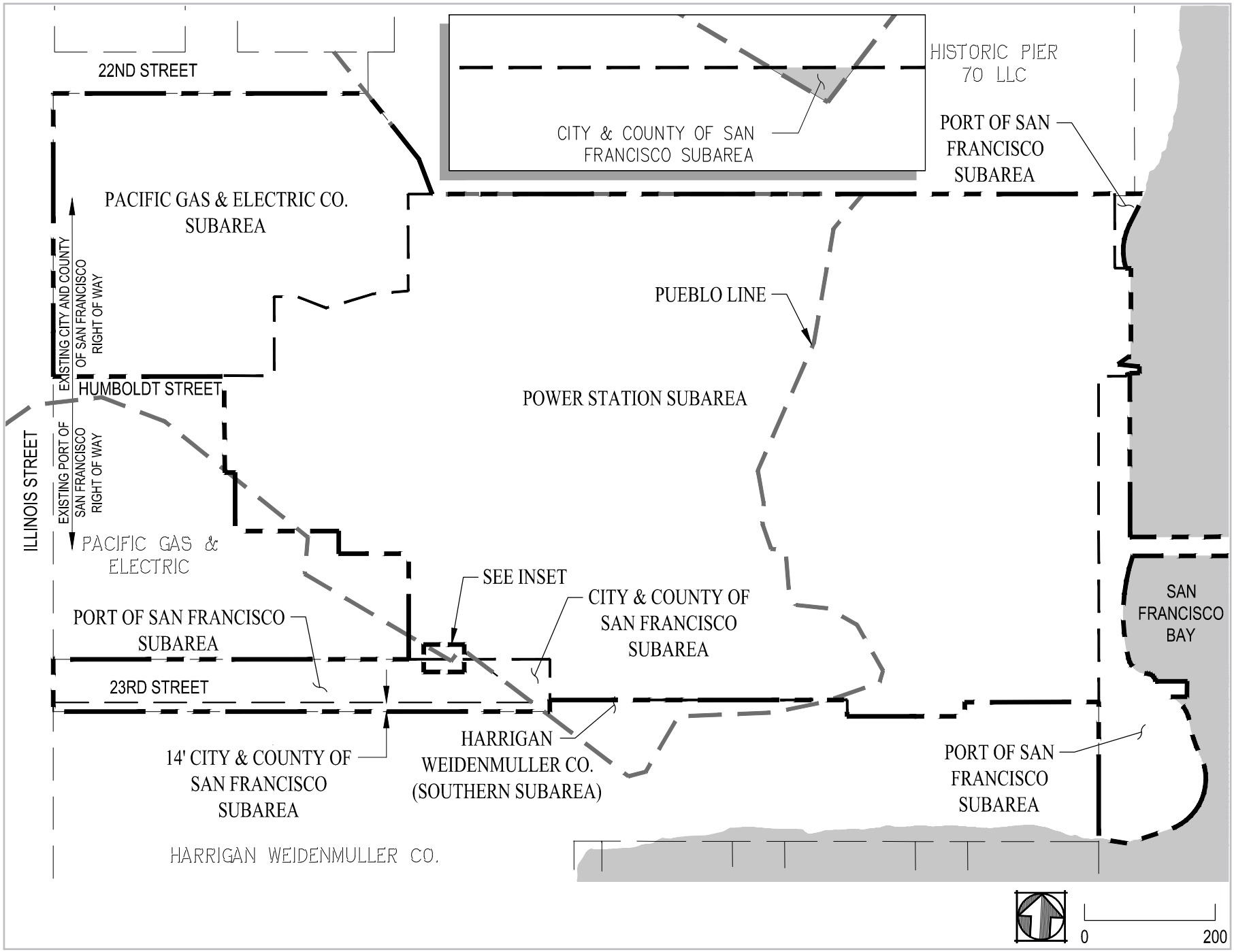


Figure 1.1 Project Areas

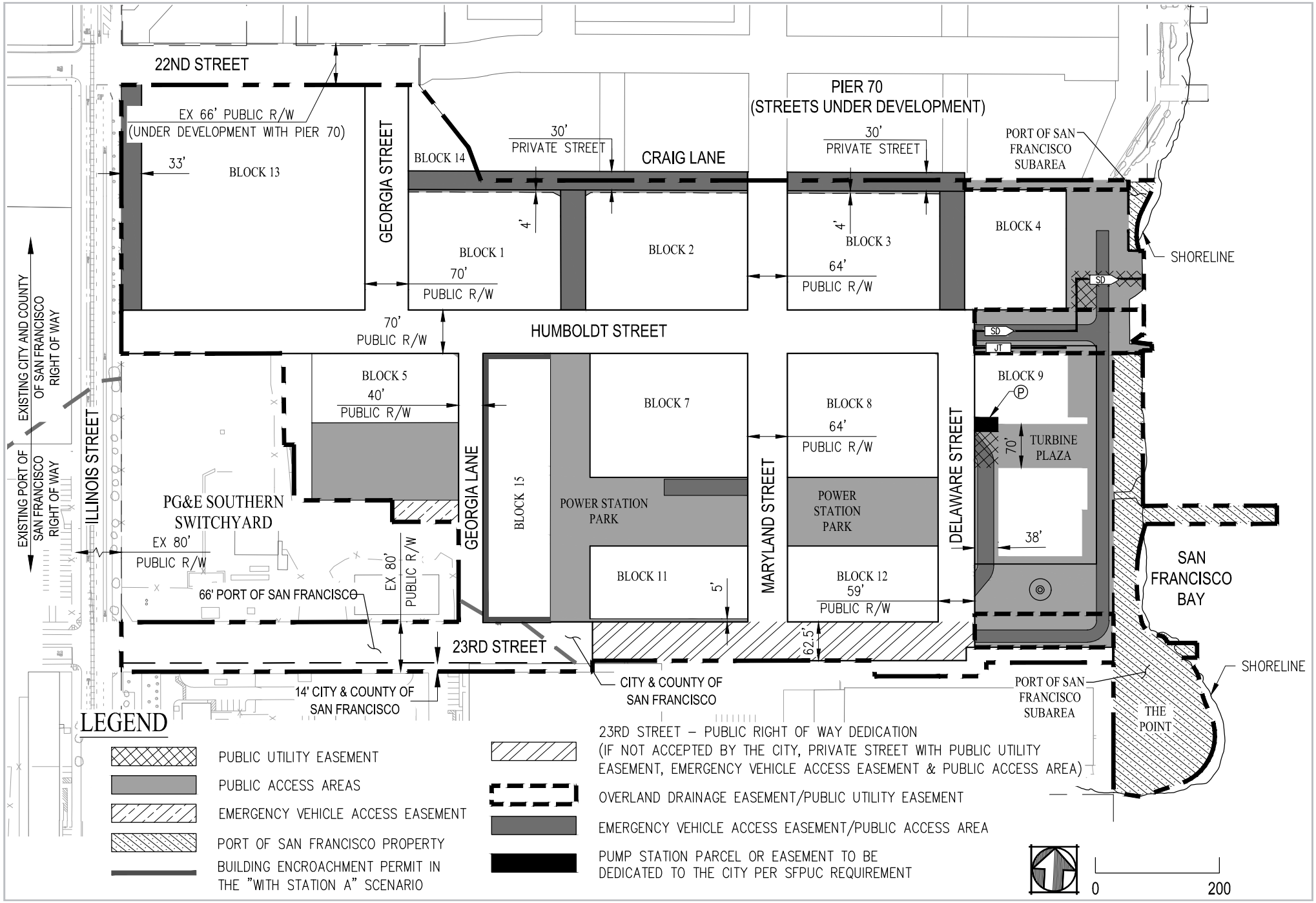


Figure 1.2 Property Dedications and Easements

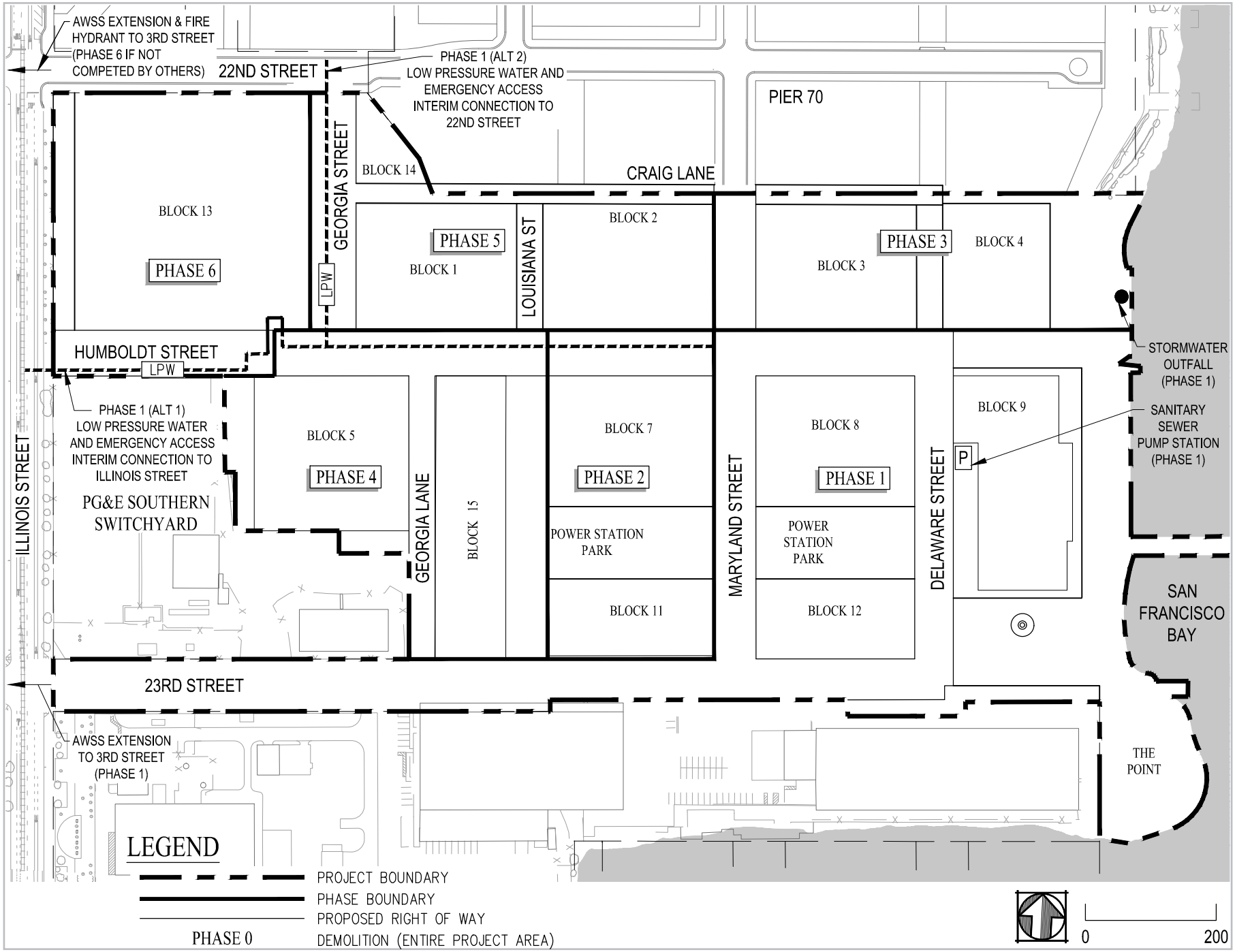


Figure 1.3 Project Phasing

2 SUSTAINABILITY

2.1 Sustainable and Resilient Infrastructure

The Project will include a variety of sustainable and resilient design elements integrated into the infrastructure design. The infrastructure systems will be designed to support Site and Bay ecosystems, promoting the return of biodiversity to the Project Area. A summary of the key sustainable infrastructure design strategies are as follows:

Section 3 – Environmental Management

- Environmental remediation to satisfy all applicable statutory and regulatory requirements for the proposed land uses.

Section 4 – Site Demolition

- Demolition and abatement of identified unusable structures.
- Reuse of select historic structures to current seismic, structural, and code requirements.
- Demolition or abandonment of sub-standard utility infrastructure. To the extent feasible the un-used existing utilities within future public rights-of-way will be removed.
- Recycle materials on-site where feasible.
- Target minimum of 65% diversion from landfill of construction and demolition debris that is not contaminated.

Section 5 – Sea Level Rise and Adaptive Management Strategy

- Streets and open spaces designed to provide built-in resilience for long term protection against a 100-year storm surge plus sea level rise up to 6.9 feet. Buildings will also have an additional 1-foot of freeboard in accordance with the San Francisco Floodplain Management Ordinance.
- Financing mechanism established to fund continuing monitoring and future improvements at the Project site to adapt to amounts of sea level rise beyond 6.9 feet.
- See Section 5 for discussion of the Project's sea level rise protection strategy.

Section 6 – Geotechnical Conditions

- Geotechnical improvements to improve seismic and shoreline stability.

Section 7 – Site Grading and Drainage

- Grading and drainage designs to provide built-in long-term protection and future adaptability to address sea level rise.
- Erosion and sedimentation control measures during construction will be implemented consistent with an approved Storm Water Pollution Prevention Plan for the site during grading and construction to protect and control run-off to the Bay.

Section 8 – Street and Transportation

- New infrastructure and facilities to improve circulation and safely support all transportation modes such as walking, bicycles, buses, and shuttles to regional transit hubs.
- Establish an accessible neighborhood that prioritizes walking, biking and transit.
- New public bicycle and pedestrian paths to provide connection to open spaces to support safety of bicycles and pedestrians.
- Selection of Street Trees that support Site and Bay ecosystems.

Section 9 – Open Space and Parks

- New parks and recreational facilities that will complement the existing neighborhood and citywide open space network.
- Selection of plants and trees that support Site and Bay ecosystems and habitats.

Section 11 – Low Pressure Water System

- New reliable potable water system.
- Use of water conservation fixtures and non-potable water use to reduce potable water demands.

Section 12 – Non-Potable Water System

- Use of graywater, and potentially blackwater and rainwater, to meet non-potable water demands including irrigation, flushing and cooling towers.
- Wastewater collection and treatment plants, either multiple local district plants or one centralized plant, will treat wastewater generated within certain development blocks to comply with Article 12C of the San Francisco Health Code and deliver to Development Parcels through a new private non-potable water distribution system located either within the public right-of-way or through privately-owned parcels. (Note that an

encroachment permit from the Department of Public Works would be required under this option and an exception from the Recycled Water Use Ordinance); or

Section 12 – Non-Potable Water System *(Continued)*

- In the event the City constructs a regional recycled water treatment facility that provides recycled water to the Project Site and surrounding areas, the proposed project may elect to connect to this system, delivering recycled water to Development Parcels through a new public recycled water distribution system within the public right-of-way. In this case, the project would not construct separate wastewater diversion, treatment and reuse systems on private parcels.
- Potential Shared District Thermal Energy Plants to recover waste heat and utilize it for heating and cooling to further reduce the Project energy demand and water demand for mechanical uses.

Section 13 – Auxiliary Water Supply System ("AWSS")

- New AWSS to improve reliability of fire suppression systems and enhance resiliency during a seismic event.

Section 14 – Separated Sanitary Sewer System

- New low flow fixtures minimizing the Project demand to the existing sanitary sewer system.
- Complete replacement of aged existing collection system of private sanitary sewer pipelines, thereby avoiding exfiltration of sanitary sewer flows to ground water.
- Site grading design to provide physical protection and delineations between the combined sewer and separated storm drain areas, and to provide additional protection from potential overflows from the combined sewer system to the Bay.

Section 15 – Storm Drain System

- New storm drain collection system designed for long term protection from flooding and adaptability for sea level rise.
- Separated storm drain pipelines will be designed to convey the stormwater flows from a 5-year / 3-hour design storm with appropriate freeboard, and the public streets will be designed to convey the stormwater flows from a 100-year / 3-hour design storm below the top of curb elevation, using a starting tail water of the FEMA Base Flood Elevation plus 24 inches of sea level rise.

Section 16 – Stormwater Management

- Eliminate the industrial discharges to Bay from the historic existing uses within the Site.
- Stormwater management controls within the western watershed included in buildings, street designs and open spaces to reduce runoff rate and volume impacting the City Combined Sewer System and without increasing system overflows.
- Stormwater management controls within the eastern watershed included in street designs, buildings and open spaces to provide water quality treatment and trash capture prior to discharge to the Bay.
- Building rooftops to include Living Roofs in accordance with the Better Roofs Ordinance.
- Selection of plantings within green infrastructure that support Site and Bay ecosystem.

Section 17 – Dry Utilities Systems

- Replace overhead electrical distribution with an underground joint trench distribution system.
- New power, gas and communication systems to serve the Project.
- Installation of photovoltaics on building rooftops in accordance with the Better Roofs Ordinance for renewable generation, of type and quantity as approved by the power provider.
- Use of energy efficient fixtures and equipment to reduce energy demands, including potential private shared thermal energy plants to recover waste heat and utilize it for heating and cooling to further reduce Project energy demand.
- The project sponsor and/or future vertical developers may elect to eliminate the use of natural gas for space heating and domestic water use, which would reduce operational greenhouse (“GHG”) emissions and limit on-site combustion.

3 REMEDIATION SUMMARY

3.1 General Site Characterization

The Potrero Power Plant had been in operation producing manufactured gas and electricity for over 100 years. The last operating unit at the Potrero Power Plant ("Site") was closed in 2011. Over the course of its operational history, various hazardous substances were released into the subsurface soil and groundwater beneath the Site. Since 1991, PG&E, the former owner, has been conducting environmental site investigations ("SI") and remediation of hazardous materials in the soil, soil vapor and groundwater under the oversight of San Francisco Bay Regional Water Quality Control Board (Water Board) and San Francisco Department of Public Health ("SFDPH").

The data collected from the SIs was evaluated with respect to applicable regulatory standards and risk-based site-specific cleanup levels to identify Constituents of Concern ("COC"). SIs and Human Health Risk Assessments ("HHRA") have evaluated the potential adverse health effects that may be associated with cumulative exposure to Site COCs. The primary COCs detected in the soil, soil vapor and groundwater include metals, total petroleum hydrocarbons ("TPH"), polycyclic aromatic hydrocarbons ("PAH"), volatile organic hydrocarbons ("VOC"), polychlorinated biphenols ("PCB") and naturally occurring asbestos ("NOA"). Reports documenting the results of previous SIs and HHRAs have been submitted to the Water Board and are available for review on their GeoTracker website (http://geotracker.waterboards.ca.gov).

3.2 Regulatory Framework and Management Approach

PG&E has delineated the Site into five operational areas for purposes of the environmental work. These include the Station A area, Unit 3 area, Northeast area, Tank Farm area, and the Offshore area. See Figure 3.1 depicting the general location of these operational areas. PG&E evaluated several options to remediate the Site to support future commercial and industrial land uses.

The Station A area was the first area to be completely investigated, risks evaluated, and a remedy put into place. The approved Station A remedy consists of the following:

- Durable Covers (defined as hardscape such as asphalt, concrete, non-moveable pavers, or a minimum of four feet of clean soil) over existing soil that meet the remedial action objective of preventing human exposure to constituents of concern in the soil beneath the Site.

- Long-term maintenance and monitoring of durable covers to ensure that covers continue to function as designed; and
- Institutional controls to minimize the potential to impact human health and the environment after installation of durable cover.

In June 2016 PG&E prepared a Risk Management Plan ("RMP") for the Station A area that provides a framework for managing residual COCs in soil in a manner that protects site users under current and future commercial and industrial land use. Land use restrictions are presented in the Covenant to Restrict Use of Property Agreement (Appendix B of the RMP).

Investigations and risk evaluations in the Unit 3 area, Northeast area, and Offshore area have been completed and are ongoing in the Tank Farm area. The remedy that is proposed for the Unit 3 area will be the same as for Station A. The remedy for the Northeast area includes in-situ soil stabilization as well as durable covers, long term monitoring and maintenance, and institutional controls similar to Station A. The remedy for the offshore area includes limited sediment dredging and monitored natural attenuation. PG&E plans for all remediation work to be completed at the Site by the year 2023.

3.3 Requirements for Future Ground-Disturbing Work

The San Francisco Health Code and the RMP require that ground-disturbing activities at the Site comply with Article 22A of the Health Code, commonly known as the Maher Ordinance. Any future construction work that involves ground disturbing activities involving more than 50 cubic yards or 1,250 square feet of soil is subject to both the Maher Ordinance and the RMP, including the Project's infrastructure obligations. The RMP describes risk management measures that include notifying the Port, Water Board, and SFDPH of planned ground-disturbing activities; controlling Site access; managing soil including stockpile management, offsite disposal, and dust control; managing storm water runoff; controlling contact with groundwater; and reestablishing the durable cover following completion of ground-disturbing activities. The RMP also outlines procedures for addressing unexpected subsurface conditions encountered during development.

3.4 Utility Corridors

The proposed utility systems will be placed in utility corridors that are comprised of the required clean backfill materials of each utility installation trench. The conditions will be such that construction and maintenance worker safety will be within the acceptable limits although certain safety precautions will be necessary in certain areas (i.e. dust masks, dust control, etc.). Soil excavated from the utility corridors for future maintenance will need to be handled in accordance with the RMP protocol.

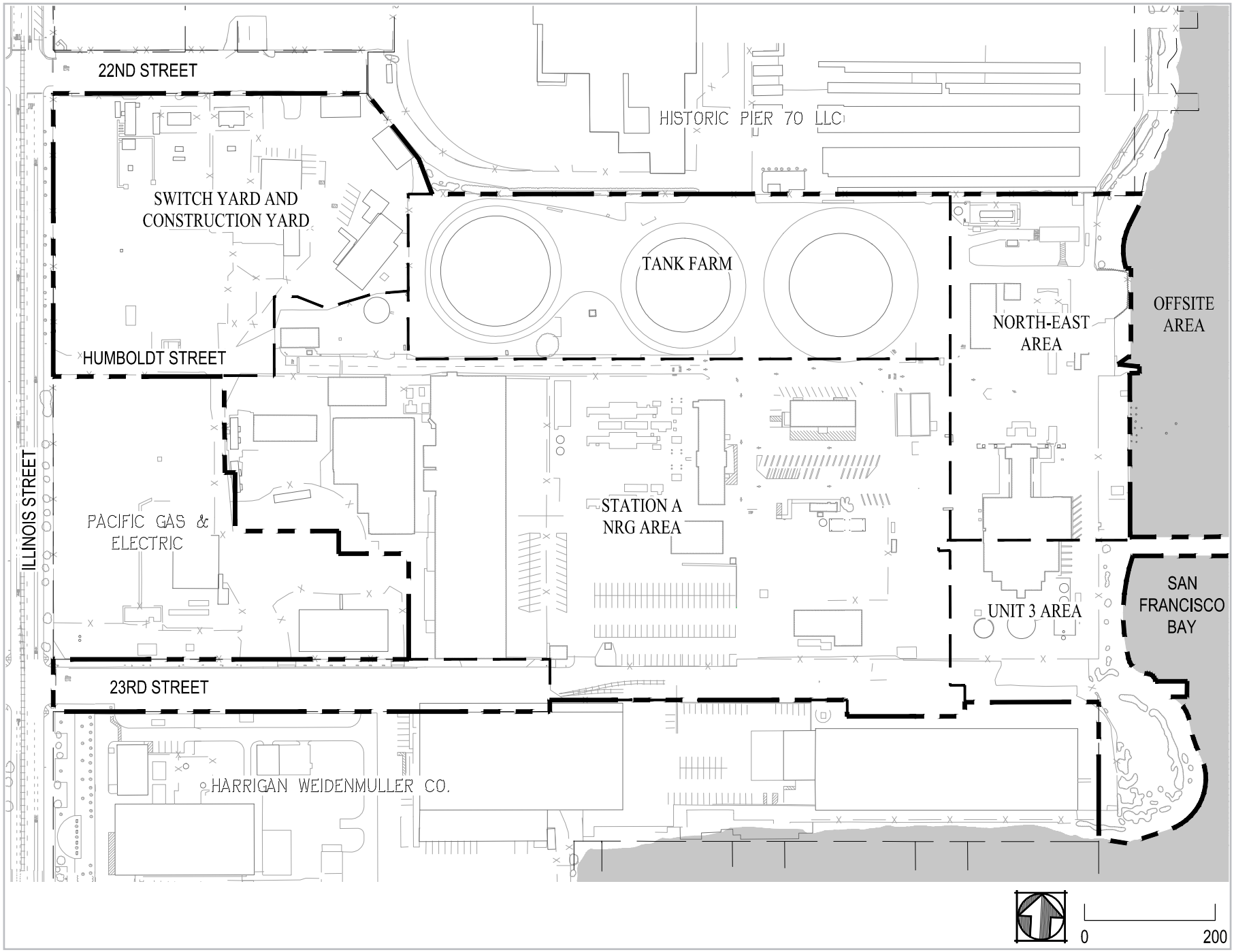


Figure 3.1 Environmental Remediation Operational Areas

4 SITE DEMOLITION

4.1 Scope of Demolition

The Developer's infrastructure responsibilities include the abatement and demolition of non-retained existing buildings and infrastructure features within the Project site. The proposed Project will demolish about 20 existing structures on the Project site, including two individually significant historic buildings in the Power Station sub-area, the Meter House, and the Compressor House – which have been identified as eligible for the California Register. The Gate House, which is a contributor to the Third Street Industrial District but not individually significant, will also be demolished as part of the proposed Project. Station A, which is also an individually significant building, may be preserved and repurposed into an office building as part of the Project. As permitted in the Design for Development (D4D) document, the new additions to the building are permitted to reach an average height of 145-feet. The building may reach a taller height, provided that appropriate sculpting compliant with controls contained in the D4D occurs.

The Unit 3 Power Block ("Unit 3") and the Stack have also been identified as contributors to the Third Street Industrial District, although are not individual resources. Unit 3 may be repurposes and converted into a hotel which will involve the removal of obsolete mechanical equipment, including the boiler. The repurposed structure will not exceed the existing height of the 143-foot concrete elevator shaft, although two additional floors will be added, creating a 10-story building. In some areas, the building envelope will increase to create a floor plate suitable for a hotel. However, under the proposed flexible land use program, a residential land use or new hotel could be developed on Block 9 instead of a hotel in the repurposed structure, in which case, Unit 3 would be demolished. In either case, the Stack will be retained and potentially repurposed as a ground floor retail space occupying approximately 1,000 square feet. If repurposed, proposed improvements to the Stack include perforations for a secondary means of egress and interior enclosures to provide a roof and any necessary structural support. Seismic retrofit or other improvements the Stack may obstruct the hollow flue. Proposed alterations of the two buildings could affect their eligibility for the California Register. See Figure 4.1 depicting the locations of Unit 3 and the Stack.

Additionally, the following existing underground utilities will also be retained as depicted on Figure 4.2.

- 23rd Street
  - Underground high voltage facilities
  - Transmission and distribution pipelines
  - Combined sewer facilities (Note this pipeline was replaced in 2019 through the City's routine pipeline replacement project. This new pipeline will be retained.)

- Humboldt Street (Western Portion)
  - Natural gas transmission line
- Illinois Street Frontage (West Edge of Block 13)
  - Natural gas transmission line
  - Underground high voltage facilities

Demolition will include the abatement (if necessary), deconstruction, removal, and disposal or reuse of existing buildings, hardscape, landscape, utilities, and temporary building structures and utilities. In specific cases, underground utilities may be abandoned in place rather than demolished, subject to City approval. The Developer will transport demolition debris off-site by a registered transporter for delivery to a registered facility that processes debris for recycling, in accordance with City regulations. Where possible, inert materials such as concrete or brick will be processed and reused onsite as fill, aggregate, or landscaping. Reuse of site demolition materials will be limited by potential contamination that would require material to be disposed of off-site.

4.2 Existing Infrastructure Demolition or Abandonment

With the exception of the Stack, feasibility for retaining other structures, such as Unit 3 and Station A, is still being determined. Unit 3 is being studied for feasibility for retention and adaptive reuse as a hotel, residential building or combination of the two uses. Station A is being studied for feasibility for retention and adaptive reuse as an office building. Prior to demolition, the buildings will be surveyed for regulated building materials and abated as necessary. Demolition debris from buildings on-site will be recycled to the greatest extent feasible at a registered off-site disposal / recycling facility, targeting a 65% diversion rate of material that is not contaminated.

Inert demolition materials such as asphalt concrete paving, concrete pads, foundations, and bricks, etc., will be demolished and recycled off-site. Reuse of recycled demolition materials as fill, aggregate, or decorative landscaping will be retained as an option, but current plans indicate that demolition materials will be recycled off-site. As part of the vegetation grubbing and clearing operation, the few trees and other plant materials located near the center of the Site will be removed and recycled as green waste.

The existing utility demolition or abandonment scope includes water, separated storm drain, combined sewer, separated sanitary sewer, gas, electric, and other utility infrastructure above and below ground. With the exception of the high voltage, natural gas, and combined sewer lines beneath 23rd Street and the natural gas transmission line along Humboldt Street and the west end of Block 13, which are to be retained, existing utility infrastructure will be abandoned in place or removed and disposed of at an authorized facility. Temporary utilities will be constructed prior to

demolition of several active utilities to maintain service to adjacent properties prior to construction of new utility infrastructure.

Temporary facilities required during abatement and demolition activities, such as temporary utility corridors and equipment and materials laydown areas will be removed from the Site as necessary prior to initiation of construction activities.

4.3 Phases of Demolition and Abatement

Demolition and abatement activities will occur within phases, particularly Phase 0 as shown in the Project Phasing Plan. All abatement and demolition of existing structures will be completed at the start of the Project, with the exception of the PG&E Sub-Area lands and potentially the Tank Farm area (subject to PG&E's schedule for remediation work in that area. While demolition of the large Phase 0 area will be performed at the outset of the Project, it will be phased in a manner that maintains access ways to adjacent properties, and utility connections necessary for other ongoing site activities. In addition, the Developer will be responsible for monitoring temporary, new, and existing utilities to ensure operation during pre- and post-demolition construction activities. This will include inspection of existing utilities to confirm new construction has not caused damage to existing utilities adjacent to demolition activities.

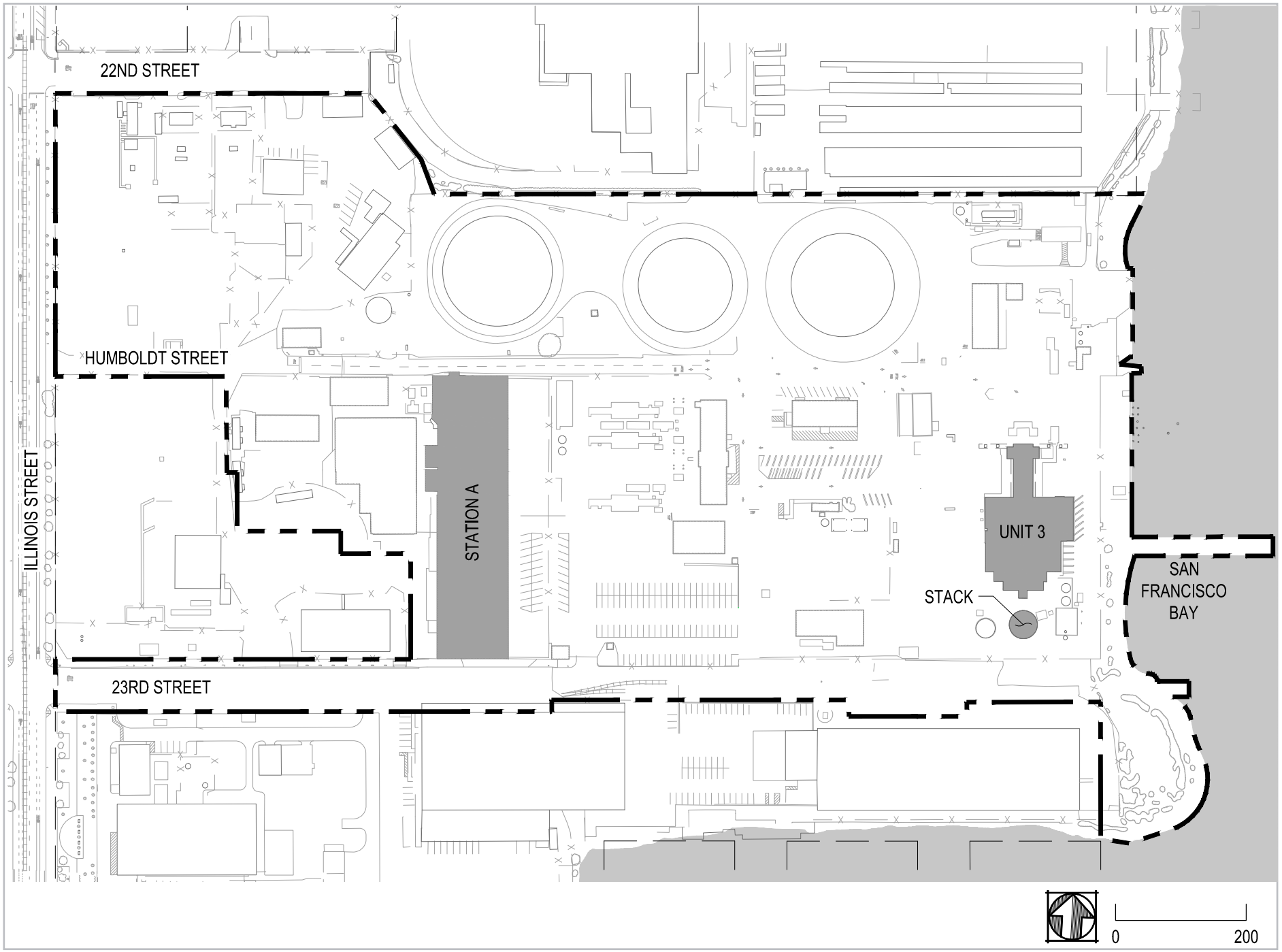


Figure 4.1 Location of Adaptively and Potentially Adaptively Reused Structures

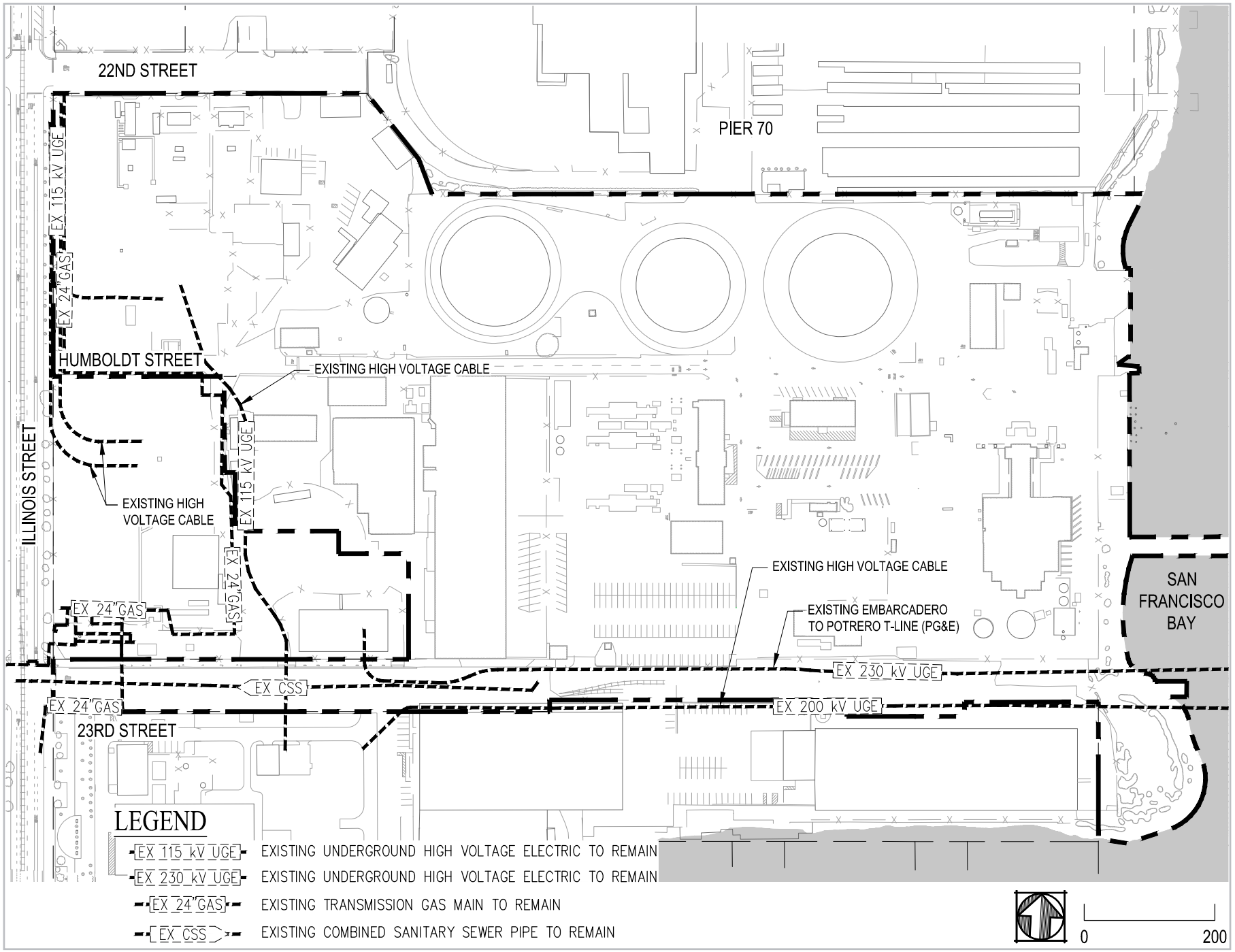


Figure 4.2 Existing Infrastructure to Remain

5 SEA LEVEL RISE AND ADAPTIVE MANAGEMENT STRATEGY

5.1 Sea Level Rise Design Parameters and Risk Assessment

The existing waterfront areas within the Project are vulnerable to coastal flooding as the sea levels rise over time. Accordingly, the Project will be constructed to provide protection from future sea level rise ("SLR").

The Project has conservatively selected to provide built-in protection from the current high-end estimate of sea level rise at the end of the century. The Project has been planned based on estimated sea level rise from the best available science on sea level rise projection rates. This includes the June 2012 National Academy of Sciences ("NAS") Sea-Level Rise for the Coasts of California, Oregon and Washington. Additionally, in March 2018, the California Ocean Protection Council published an update to its sea level rise guidance. The updated report provides the scientific foundation for a decision-making process to select which sea level rise projection is appropriate for a specific project. This approach considers many factors, including project location, lifespan of the project, degree of sea level rise exposure, risk tolerance and adaptive capacity of the project. The updated guidance provides sea level rise projected values for low risk aversion, medium-high risk aversion, and extreme risk aversion. The Council's updated report estimates the likely range of sea level rise at 2100 for low risk aversion sites to be 2.4-3.4 feet, medium-high risk aversion to be 5.7-6.9 feet and extreme risk aversion to be 10.2 feet. The areas within the project site that would be inundated, if left unprotected, at the sea level rise projected at 2070 and 2100 for medium-high risk aversion and high emissions scenarios are depicted on the enclosed Figure 5.1.

The Potrero Power Station project is considered as a medium-high risk aversion site as it is a coastal development with adaptive capacity. The Project has also determined to utilize the high emissions scenarios for planning of sea level rise protection measures. The Project is designed to be elevated to provide resiliency and protection from future sea level rise of 6.9 feet above the 100-year storm surge. The project also includes considerations for planned adaptive capacity strategies.

5.2 Sea Level Rise – Built-In Protection

The Project has been planned to provide long term protection to the public access areas and future building uses. The proposed shoreline and land side improvements are planned to be constructed at a minimum elevation of 17.5 ("SFVD13"). This provides built-in protection from the projected sea levels at 2100 for a medium-high risk aversion at the high emissions scenario of 6.9 feet above the current 100-year storm surge elevations. This also provides built-in protection from 9.9 feet of sea level rise above current King Tide. Additionally, this minimum elevation provides protection

from over 5 feet of future sea level rise above the 100-year Base Flood Elevation (BFE) coastal flood elevation, which is the estimated sea level rise projected to occur between 2080 and 2090 for a medium-high risk aversion site with the high emissions scenario. The current 100-year coastal BFE is 11-12 feet ("SFVD13") along the Project shoreline. See Section 7 for discussion of the BFEs at the Project. The minimum elevation of the proposed street and open spaces areas is 17.5 (BFE plus 5 feet) and the minimum elevation of the building ground floors is 18.5 (BFE plus 5 feet plus 1-foot freeboard).

The Stack is proposed to be preserved and Unit 3 may be preserved; both waterfront structures may potentially be adaptively reused. These existing structures and immediate surrounding areas will remain at the existing building elevation finish floor elevation of approximately 14 ("SFVD13"). These areas will be protected by the elevated shoreline improvements along with additional flood protection improvements. The improvements will include a local pump station and backflow protection integrated to the separated storm drain collection system for these areas. The pump station will ensure stormwater will be discharged from these areas to the Project stormwater outfall. The backflow prevention device will prevent backwater from extreme tidal elevations of the Bay entering the separated storm drain system and inundating these lower elevations. This localized stormwater pump and related facilities will be privately owned and maintained, not dedicated to the City. See Figure 5.2 demonstrating there are no areas of inundation within the Project at proposed conditions and 5 feet of sea level rise.

5.3 SLR Adaptive Management Plan

As there still remains variability of sea level rise projections within the scientific community, additional adaptive management measures will be integrated into the Project framework and infrastructure through an SLR Adaptive Management Plan, as described below. These measures will provide a proactive approach to planning, monitoring and implementing future adaptations to the Project to ensure resiliency from extreme sea level rise.

The Project will prepare a SLR Adaptive Management Plan that establishes a monitoring program to review SLR estimates prepared for San Francisco Bay by the National Oceanic Atmosphere Administration ("NOAA") and other State Agencies. The monitoring program will require periodic review of updated SLR guidance from Local, State and Federal regulatory agencies. The SLR Adaptive Management Plan will be prepared by and managed by the Shoreline Adaptation Community Facilities District ("SACFD"). The SACFD will also provide a funding mechanism to implement necessary future adaptive measures. The SACFD will be coordinated with City programs addressing SLR.

5.3.1 Adaptive Management Measures for Future SLR

The adaptive measures will include the following:

- Shoreline perimeter designs that provide the ability to be adapted if future sea level rise exceeds the built-in protection. This may include capacity to increase elevations along the shoreline through construction of small berms, low floodwalls or other similar measures without requiring fill within the Bay.
- Separated storm drain system designs that provide the ability to be adapted in the future if nuisance or hazard flooding becomes more frequent. This may include integrating a sea level rise pump station or other similar measures.
- The lower deck of the recreational dock is currently set at an elevation of 11.5 feet (SFVD13), which is 4 feet above King Tide. In order to accommodate SLR, the pile-supported lower deck will be designed to allow for construction of a higher deck on top of the lower deck in the future. The lower deck and piles are to be designed to carry additional weight of the future adapted higher deck and associated concrete frame.
- Create a monitoring program to periodically review SLR guidance from Local, State and Federal regulatory agencies.
- Create a reporting program to document monitoring of SLR and any recommended improvements to address increased sea levels causing nuisance and more frequent flooding.
- Create a funding mechanism for the monitoring / reporting program as well as shoreline and stormwater system adaptive improvements.

- Use of materials in areas of future inundation, such as "the Point", that will be supportive of future underwater habitat and/or address wave action.

5.3.2 Decision Making Framework

When the data from the monitoring program demonstrate that SLR in San Francisco Bay is expected to exceed the built-in protection, a range of additional improvements can be made to protect the Project from flooding. Planning, design, and review takes a significant amount of time, thus work will begin on improvements before those SLR effects are problematic. In coordination with the City, the SACFD will be responsible for determination of the improvements to be made at the time they are required, which will depend on a variety of factors, including, but not limited to:

- Consultation with the SFPUC and other local agencies;
- New Local, State or Federal requirements about how to address SLR;
- Available technology and industry best practices at the time; and
- Both the observed rate of actual SLR and available science with updated estimates of future SLR.

5.3.3 Sea Level Rise Monitoring and Implementation Report

The monitoring program will require periodic preparation of a report on the progress of the adaptive management strategy. SACFD will commission the report which will be prepared and submitted to the relevant City agencies for review and comment no less than every five years and more frequently if required by regulators. The report will include:

- The publication of the data collected and literature reviewed under the monitoring program;
- A review of changes in Local, State or Federal regulatory environment related to SLR, and a discussion of how the Project is complying with applicable new regulatory requirements;
- A discussion of the improvements recommended to be made if sea levels reach the anticipated thresholds identified in the Decision-Making Frameworks within the next 5-years; and
- A report of the fund collected for implementation of the adaptive management strategy, and a projection of funds anticipated to be available in the future.

5.3.4 Funding Mechanism

The SACFD will establish a funding mechanism, likely a project special tax, to create project-generated funding that will be dedicated to paying for monitoring and flood protection improvements necessary to implement the Adaptive Management Strategy for the Project. Funds will be overseen by the SACFD.

Figure 5.1 Sea Level Rise Potential Areas of Inundation — Existing Conditions

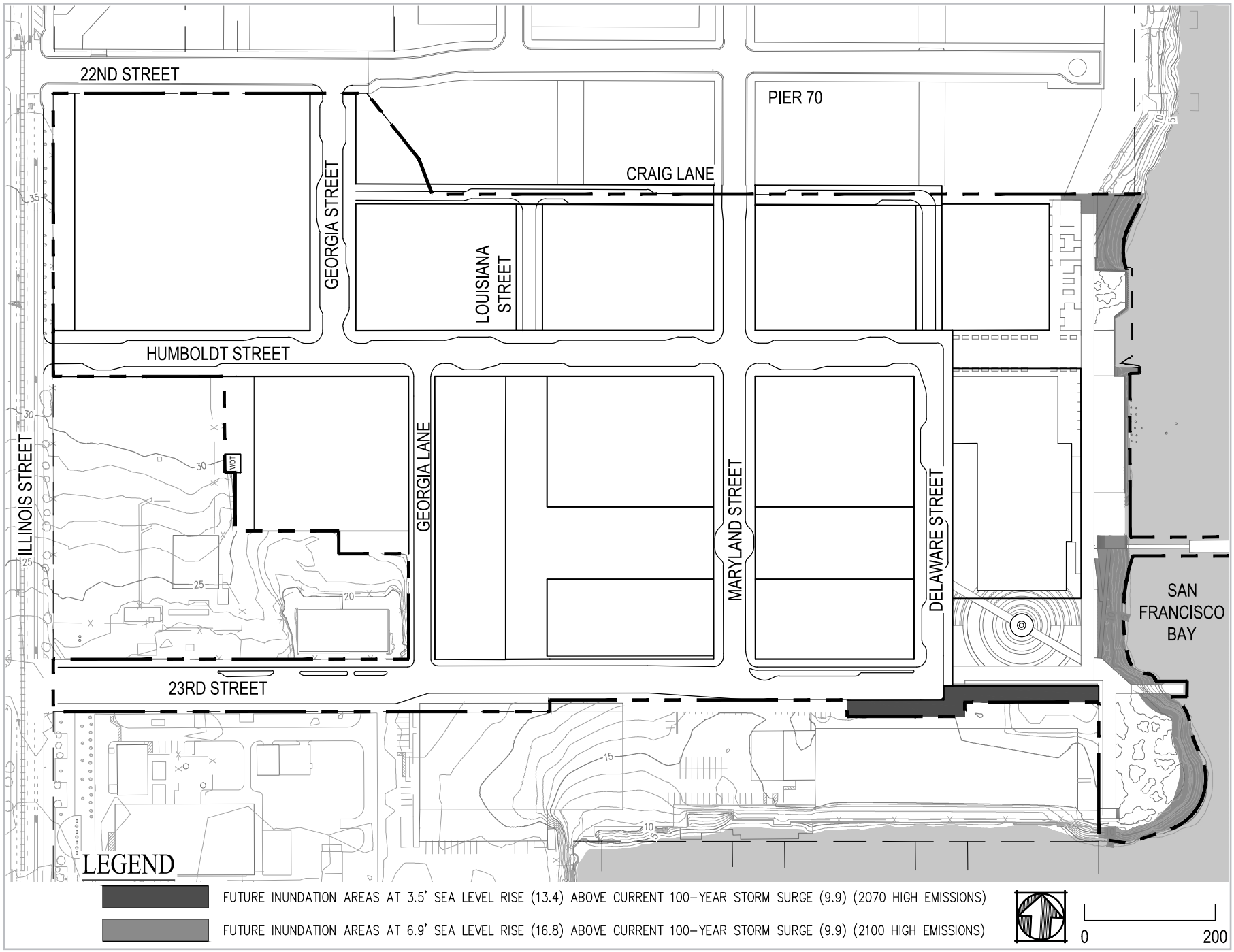


Figure 5.2 Sea Level Rise Potential Areas of Inundations - Proposed Conditions

6 GEOTECHNICAL CONDITIONS

6.1 Existing Site Geotechnical Conditions

Approximately, the eastern third of the Potrero Power Plant site is land formed by placing fill in the San Francisco Bay beyond the original shoreline. This portion of the site consequently has a significant thickness of existing fill that was placed at the site during the late 1800s and early 1900s, with the area east of the historic shoreline filled in the late 1800s and the area southwest of the historic shoreline filled in the early 1900s. Based on explorations, the fill thicknesses generally range from ten to 25 feet southwest of the historic shoreline and five to 52 feet east of the historic shoreline. Most of the fill appears to have been derived from cut into the western portions of the site where a previous hillside was lowered to construct buildings and other improvements. Review of previous explorations within the Switchyard and General Construction area show fill thicknesses ranging between one and six feet before encountering weathered Franciscan bedrock.

On the Bay side of the original shoreline, the fill is underlain by Young Bay Mud varying to depths of 30 to 77 feet within the most current explorations. Previous subsurface explorations indicate the presence of irregular Young Bay Mud thicknesses that were likely caused by rotational slumps / mudwaves that occurred due to rapid filling over the Young Bay Mud.

The approximate depth to bedrock at the site is mapped as varying between approximately 50 to 100 feet below existing grade along the eastern limits of the project. The bedrock comprises Jurassic-age Franciscan, with serpentinite mapped as the predominant rock type. Bedrock exposures can be found at the western portion of the project.

6.2 Existing Site Geotechnical Constraints

6.2.1 Liquefaction

Soil liquefaction results from loss of strength during cyclic loading, such as imposed by earthquakes. The soil most susceptible to liquefaction is clean, loose, saturated, uniformly graded fine sand below the groundwater table. Empirical evidence indicates that loose silty sand is also potentially liquefiable. When seismic ground shaking occurs, the soil is subjected to cyclic shear stresses that can cause excess hydrostatic pressures to develop. If excess hydrostatic pressures exceed the effective confining stress from the overlying soil, the sand may undergo deformation. If the sand undergoes virtually unlimited deformation without developing significant resistance, it is said to have liquefied, and if the sand consolidates or vents to the surface during and following liquefaction, ground settlement and surface deformation may occur. In some cases, settlements of approximately 2% to 3% of the thickness of the liquefiable layer have been measured.

Based on the results of the liquefaction analysis performed within the fill, it is estimated that site could experience up to 6 inches of liquefaction-induced settlement within the artificial fill material at the site. However, due to the variable thickness and composition of the fill, the differential could be rather large across the fill area.

6.2.2 Slope Stability

Due to the presence of liquefiable artificial fill over soft Young Bay Mud below the site, deformation of the shoreline could occur as a result of seismic loads consistent with the building code Maximum Considered Earthquake as well as lower levels of earth shaking. The deformation could take place as either lateral spreading due to the presence of a free face and loss of shear strength within the artificial fill following liquefaction and / or as a deeper shear failure within the Young Bay Mud.

Based on the results of the slope stability analysis, it is estimated that theoretical seismically induced permanent displacements could be on the order of 2 to 4 feet if geotechnical corrective measures are not taken.

6.2.3 Existing Fill and Soft / Compressible Soil

Review of the site history and previous explorations indicate the site is underlain by significant thicknesses of non-engineered fill and Young Bay Mud. Non-engineered fill and Young Bay Mud can undergo excessive vertical settlement, especially under new fill or building loads.

Because of the age of the fill, it was likely not engineered to the current standards for a site of this type. Further, it is anticipated that Young Bay Mud is normally consolidated due to historic filling activities at the site. Non-engineered fill and Young Bay Mud can undergo excessive settlement, especially under new fill or building loads.

6.3 Geotechnical Corrective Measures

6.3.1 Grading Considerations

The eastern portion of the proposed development will be elevated to provide built-in protection from potential future sea level rise.

Due to the project being underlain by Franciscan bedrock, this Project will be required to follow the rules and regulations outlined in the Asbestos Airborne Toxic Control Measure ("ATCM") for Construction, Grading, Quarrying and Surface Mining Operations established by the Bay Area Air Quality Management District ("BAAQMD") under California Code of Regulations, Title 17, Section 93015. The purpose of this regulation is to reduce public exposure to NOA from construction and mining activities that emit dust, which may contain naturally occurring asbestos (NOA). The ATCM requires regulated operations engaged in road construction and maintenance activities, construction and grading operations, and quarrying and surface mining operations in areas where NOA is likely to be found, to employ the best available dust mitigation measures in order to reduce and control dust emissions.

As part of compliance with the ATCM, an Asbestos Dust Mitigation Plan ("ADMP") should be prepared by a qualified representative for approval by the BAAQMD and for inclusion in the contract documents. Dust monitoring during ground disturbing activities may be required.

6.3.2 Soil Surcharging with Wick Drains

Where there are not conflicts with existing adjacent improvements or structures that will remain, surcharging with wick drains is likely the preferred method of mitigation of static settlement hazards, including differential settlement, from consolidation of compressible deposits. This mitigation method is appropriate for lightly loaded structures, structures with significant excavation depths, and areas that will have future grades raised (including designated utility corridors).

Wick drains are installed in soft/compressible soil to accelerate drainage during surcharge programs. The prefabricated drains create pathways for water to be pushed out of soft / compressible soils and are installed by attaching the drains to an anchor plate and pushing the anchor plate to specified depths. Due to the rocky nature of the fill, some predrilling of the wick drains may be necessary. A surcharge fill is then applied over the area of installed drains, and surface settlements and pore pressures within the soft / compressible material are monitored before additional soil surcharge is placed.

Mitigation against bearing failure as a result of rapid surcharging includes using staged surcharging so that the height of surcharge placed at one time is not high enough to cause ground failure, monitoring surface settlements, and pore pressures within the soft/compressible layer. Depending on the height of surcharge required, staged fill placement may be necessary.

6.3.3 Lightweight Fill

An alternative mitigation option for static settlement hazards, including differential settlement, from consolidation of compressible deposits at the site includes removal of existing fill and replacement with lightweight fill. This mitigation method may also be applied for lightly loaded structures, structures with significant excavation depths, and areas that will have future grades raised (including designated utility corridors).

The lightweight fill may be permeable or impermeable cellular concrete. Due to the voids in the permeable cellular concrete, buoyancy is not an issue, so the cellular concrete can be placed below future groundwater level without designing for uplift. The thickness of lightweight fill used should be determined based on two times the thickness of Young Bay Mud excavated but no less than a minimum thickness of 5 feet in locations where the Young Bay Mad is encountered. Neither permeable nor impermeable cellular concrete can be placed below water, so if the base of the cellular concrete must be below groundwater level, the excavation will need to be dewatered until some point after the material cures. The required minimum thickness will need to be determined depending on the documented unit weight of material as verified by the Geotechnical Engineer during construction.

Lightweight fill is not currently allowed within the public right-of-way per the Subdivision Regulations. However, lightweight fill is proposed within the 23rd Street public right-of-way to protect settlement of the existing high voltage lines. The use of lightweight fill must be approved by the DPW and SFPUC no later than the approval of the Master Tentative Map. The approval of use of lightweight fill in the public right-of-way may include necessary conditions and mitigations, including long term liability, maintenance and design oversight.

6.3.4 Deep Soil Mixing

Below-grade shoreline stabilization with a Deep Soil Mix (“DSM”) buttress would address potential lateral spreading as well as potential seismic slope deformation; in our experience this approach is the most economically feasible alternative to achieve the desired performance though other methodologies capable of achieving appropriate performance will be evaluated at the design phase. DSM mixes soil, cement and water to create individual or overlapping columns of cement-treated soil with specified strengths and stiffness. A mixing rig with either single or multiple mixing augers is advanced to specified depths, and the cement and water are added during initial auger advancement, and also during auger withdrawal.

Current environmental mitigation at the site includes large-diameter DSM mixing that extends through the fill to encapsulate contaminants and make them immobile. The necessary depth for shoreline stabilization is significantly greater than the depth of the environmental DSM mixing, therefore the environmental DSM mixing will not assist in shoreline stabilization. While it is likely DSM can be performed through the environmental soil mixing, a large amount of spoils will likely be generated and bench testing by the environmental consultant may be necessary to determine on-site reusability.

6.3.5 Deep and Intermediate Foundations

To address liquefaction in a seismic event and static settlement hazards for moderately to heavily loaded structures, structures in the vicinity or outside of the historic 1851 shoreline will likely be founded on deep or intermediate foundation systems. Deep foundations will likely comprise steel pipe-piles driven to bedrock refusal, while intermediate foundations may comprise spread footings or a structural mat foundation in conjunction with improved soil. Deep foundations would utilize a refusal or driven length criteria. If a driven length criterion is chosen, a load testing program would typically be performed to confirm load capacities. Due to the nature of the rocky fill, some amount of predrilling may be necessary prior to driving piles.

Improved soil for intermediate foundations would likely utilize vibro-compaction or vibro-replacement methods. Vibro-compaction improves the soil in-situ by lowering a crane-mounted vibrator to specified depths. The vibrator densifies the surrounding soil in lifts, and clean sand backfill is added at the ground surface to compensate for the decrease in soil volume from the densification process.

Vibro-replacement uses similar equipment to vibro-compaction activities and comprises construction of dense stone columns. A vibrator is lowered to a specified depth, and aggregate is introduced through an annular space around the vibrator. The vibrator is raised as more aggregate is introduced, and the end result is a stone column surrounded by densified soil. Due to the nature of the rocky fill, some amount of predrilling may be necessary prior to vibro-replacement or vibro-compaction.

6.4 Phases of Geotechnical Corrective Measures

The geotechnical corrective measures will be completed in phases to facilitate the proposed development. It is anticipated that the majority of the geotechnical corrective measures will be completed in conjunction with the demolition and mass grading operations, Phase 0.

Any proposed geotechnical corrective measures within the public rights-of-ways will require review and approval from the Department of Public Works.

6.5 Schedule for Additional Geotechnical Studies

Supplemental geotechnical studies and reports will be prepared as required to support the proposed public improvements. In addition, geotechnical reports for private building parcels will be prepared and submitted as part of the building permit process.

7 SITE GRADING

7.1 Existing Site Conditions

The existing topography of the Project Site is primarily gently sloped downward from the west to the east, towards the waterfront. There is an existing high point in Humboldt Street along the north side of the Station A building. The areas west of this high point slope to the west, towards Illinois Street, whereas the remainder of the site slopes to the east, towards the Bay. The existing elevations within the Project Site range from 44.5 feet at the Humboldt Street high point to 9.5 feet along portions of the waterfront ("SFVD13 Datum"). There is an existing grade differential to the existing elevations of the adjacent Pier 70 site, up to approximately 12 feet, along the eastern half of the Project northern boundary. The existing elevations of 23rd Street range from 22.5 at a high point located near the PG&E Substation to 11.5 at the eastern extent of the private portion of the street.

The Project Site has almost no vegetation. There are no significant landscape elements or street trees, except the existing street trees on the east side of Illinois Street along the Project frontage. The site has effectively 100% impervious coverage. See Figure 7.1 depicting the existing site topography.

7.2 Proposed Project Grading Overview

The Developer will be responsible for the design and construction of the proposed site grading. The proposed site grading is depicted on Figure 7.2. The proposed site grading includes raising elevations along the waterfront to approximately elevation 17.5 ("SFVD13"), providing protection from over 5 feet of sea level rise plus the 100-Year BFE.

The proposed grading will maintain the existing drainage patterns. The site grading will be configured to provide a physical delineation with high point separating the portions of the Project within the combined sewer watershed (western) and the portions draining to the Bay (eastern). This provides protection from potential overflows from the combined sewer system discharging to the Bay.

Paths of overland release have been integrated to the site grading to ensure storm flows from an extreme storm (i.e. 100-year event) will flow overland and discharge without causing impacts to buildings.

The areas west of the Humboldt Street high point, located at directly east of the intersection with Georgia Street, will have overland release and drain towards Illinois Street. The small portions of Georgia Street, north of Craig Lane, and Block 14 will overland release towards 22nd Street and through Pier 70. The portion of 23rd Street west of Station A will overland release towards Illinois Street. The remainder of the site will overland release over the curbs and open spaces along the Project shoreline and Bay. Figures 7.3 and 7.4 depicts the proposed watersheds and paths of overland release within the Project.

The proposed site grading will establish minimum elevations along the shoreline of 17.5 and then increase in elevation as the Project extends to the west.

The proposed improvements within 23rd Street, specifically the eastern portions will be elevated to provide a minimum elevation of 17.5. The project will construct pavement conforms and retaining walls as necessary to address the grade differential between the proposed improvements and the existing elevations of the loading docks associated with the neighboring buildings on the south side of 23rd Street. A curb will be constructed along the south side of 23rd Street to collect stormwater from the street prior to the existing loading docks.

The high point of Humboldt Street will be lowered approximately eight feet and shifted westerly. This improves site accessibility along Humboldt Street and views to the Bay through the Project.

The existing elevation of the Stack and Unit 3 is approximately 14, which will be maintained. The elevations of the surrounding improvements will conform to this localized low point.

The grade differential along the northern property line will be coordinated with the development of the Pier 70 site. Pier 70 proposes to raise elevations along this common property line. The site grading has been coordinated to match the elevations proposed by Pier 70 along this common property line. See Figure 7.5 depicting the proposed cross sections at the project extents.

7.3 Elevation and Grading Design Criteria

The minimum elevations for the Project are established as the FEMA 100-year BFE plus 5.5 feet, providing built-in protection from sea level rise.

7.3.1 Base Flood Elevations (BFE)

The 100-Year BFE at the site is based upon FEMA's San Francisco Bay Area Coastal Study. This study analyzed extreme tidal data, completed regional hydrodynamic and wave modeling of the Bay and onshore coastal analysis to estimate wave run up, overtopping and propagation to establish the 100-Year BFE throughout the waterfront of the Bay. The preliminary FEMA flood designation map (Map No. 0602980119A) indicates that the 100-year BFE within the Project range from elevations 11-12 feet. See Figure 7.6 depicting the FEMA flood map for the Project. Coastal flood elevations are dependent on the shoreline geometry. The final shoreline improvements and associated geometry will be evaluated by the Project shoreline engineer to confirm the project minimum elevations conform to FEMA's requirements.

7.3.2 Sea Level Rise

The Project will be designed to accommodate future sea level rise. More detailed discussion of the Project's protection strategy from future sea level rise is in Section 5 and the storm drain system sea level rise performance criteria in Section 15. The design criteria for the site grading include built-in accommodation for up to 5.5 feet of sea level rise above the BFE. This has been conservatively selected from the best available scientific modeling and forecasts available.

7.3.3 Long Term Settlement

Geotechnical corrective measures, described in Section 6, will be implemented to minimize long term settlement within the Project. The corrective measures will address long term settlement associated with potential liquefaction and the compressible Young Bay Mud underlying soils. The site grading will accommodate any minimal amounts of residual long-term settlement anticipated due to secondary compression of the underlying soils.

7.3.4 Design Elevations

The design minimum elevations for the proposed streets, open space and park areas within the Project are established as the BFE plus 5.5 feet, elevation 17.5. The design minimum elevation for proposed buildings are established as BFE plus 5.5 feet of sea level rise plus 1 foot of freeboard, elevation 18.5. The elevation of the areas of adaptively reused structures. The Stack and Unit 3 will remain at the existing elevation of 14. The elevation of Station A, if reused, will have a lowest ground floor elevation of 22.

7.4 Site Grading Design

The proposed site grading is depicted on Figure 7.2. The specific grading requirements for each component of the project are as follows:

7.4.1 Proposed Building Areas

The minimum elevations of the proposed first floor elevations and proposed below grade garage entrances will be established as the BFE plus 5.5 feet of sea level rise and 1-foot of freeboard elevation 18.5. The building first floor elevations will be set to provide accessible entrances to the surrounding streets.

7.4.2 The Stack, Unit 3 and Station A

The existing elevations of the Stack and Unit 3 are approximately 14. This elevation is proposed to be maintained as part of the adaptive reuse of these structures. The areas surrounding the Stack and Unit 3 will need to conform to this lower elevation with either slopes or retaining walls. The drainage system of this localized low point will be designed to address sea level rise in excess of 24 inches, including a pump station and tidal backflow protection measures.

If Unit 3 is determined to not be feasible to adaptively reuse, this area will be raised to the minimum elevations as outlined for new buildings (minimum elevation 18.5) or open space (minimum elevation 17.5).

The existing Station A structure has multiple floor levels that address the varying ground elevations around the perimeter of this building. The ground elevations around the perimeter of the Station A structure range from elevation 22 to elevation 32. The elevation of Station A, if reused, will have a lowest ground floor elevation of 22.

7.4.3 Proposed Street Areas

The minimum elevations of the proposed public streets and private alleyways will be established as the BFE plus 5.5 feet of sea level rise, elevation 17.5. The existing elevations of the eastern extent of 23rd Street will be raised to elevation 17.5. Pavement transition conforms and retaining walls will be constructed by the Developer to address conforms to the existing elevations of the loading docks and buildings on the south side of 23rd Street. A curb will be constructed along the south side of 23rd Street to collect stormwater from the street prior to the existing loading docks.

The proposed street and open space elevations will maintain overland release to the Bay. The portions of the site within the western watershed will overland to Illinois, 22nd and 23rd Streets, which eventually overland release to the Bay through 22nd Street and 23rd Street. The remainder of the Project within the eastern watershed will overland to the Bay through the project streets and open space areas. The streets will maintain a minimum effective slope of 0.3% directing overland flows to the Bay. Localized low points must have a down stream release elevation that prevents overtopping of the curb in the 100-year design storm. Where the public streets connect park and open space at the Stack Plaza and Humboldt Plaza, the City may consider an overland release design which takes into consideration the hydraulics, fine grading, accessibility design and public safety.

There may be some localized low points in the streets. The streets must contain storm runoff from a 100-year design storm during a 100-year tidal event below the street top of curb elevations.

7.4.4 Open Space and Park Areas

The minimum elevations of the proposed open space, park, Blue Greenway and waterfront areas, except for these areas directly adjacent to the Stack and Unit 3, will be established as the BFE plus 5.5 feet of sea level rise. The waterfront areas will conform to the proposed elevations of the proposed improvements to the north within Pier 70. The shoreline areas east of the Blue Greenway will be designed for safe public access to the Bay at certain locations.

7.4.5 Basement Excavations

The buildings may include 1-level of below grade basement parking. The excavations of the basements will be completed with the building construction. The building will be required to apply and obtain a dewatering permit from the City if the basement excavation requires dewatering.

7.5 Proposed Site Grading Along Boundary

The proposed site grading will conform to the existing elevations to remain at the project limits. Elevation differences at the project limits may be accommodated by either earthen slopes or retaining walls. The proposed elevations on the west boundary of the project will conform to the existing elevations of Illinois Street and the PG&E southern switchyard. The proposed elevations along the northern boundary of the project will conform to the proposed elevations of 22nd Street and Craig Lane. This will be coordinated with Pier 70's final design of the 22nd Street improvements and the buildings just north of Craig Lane. The proposed elevations of eastern extents of 23rd Street will require pavement transitions to conform from the proposed elevations

of 23rd Street to the existing elevations of the loading docks and buildings on the south side of the street. A curb will be constructed along the south side of 23rd Street to collect stormwater from the street prior to the existing loading docks. See the proposed grading sections of each of these conditions on Figure 7.5.

7.6 Earthwork Quantities

The estimated earthwork associated with the site grading is summarized in Table 7.1.

Table 7.1 Earthwork Quantities

	Cut (cy)	Fill (cy)	Net (cy)
Phase 1	96,000	16,000	80,000
Phase 2	66,000	500	65,500
Phase 3	51,000	4,000	47,000
Phase 4	61,000	500	60,500
Phase 5	94,000	0	94,000
Phase 6	26,000	0	26,000
Phase 7	60,000	0	60,000
Total	**454,000**	**21,000**	**433,000**

7.7 Phases of Site Earthwork

The site grading will occur in phases as necessary to implement the specific proposed Development Phase and consistent with the Project Phasing Plan. The limits and quantity of site grading will be minimized to the extent practical for each Development Phase. The proposed site grades will conform to the existing adjacent grades as close to the perimeter of that Development Phase area as possible. Interim grading will be completed and maintained as necessary to support existing facilities and improvements impacted by the proposed Development Phases.

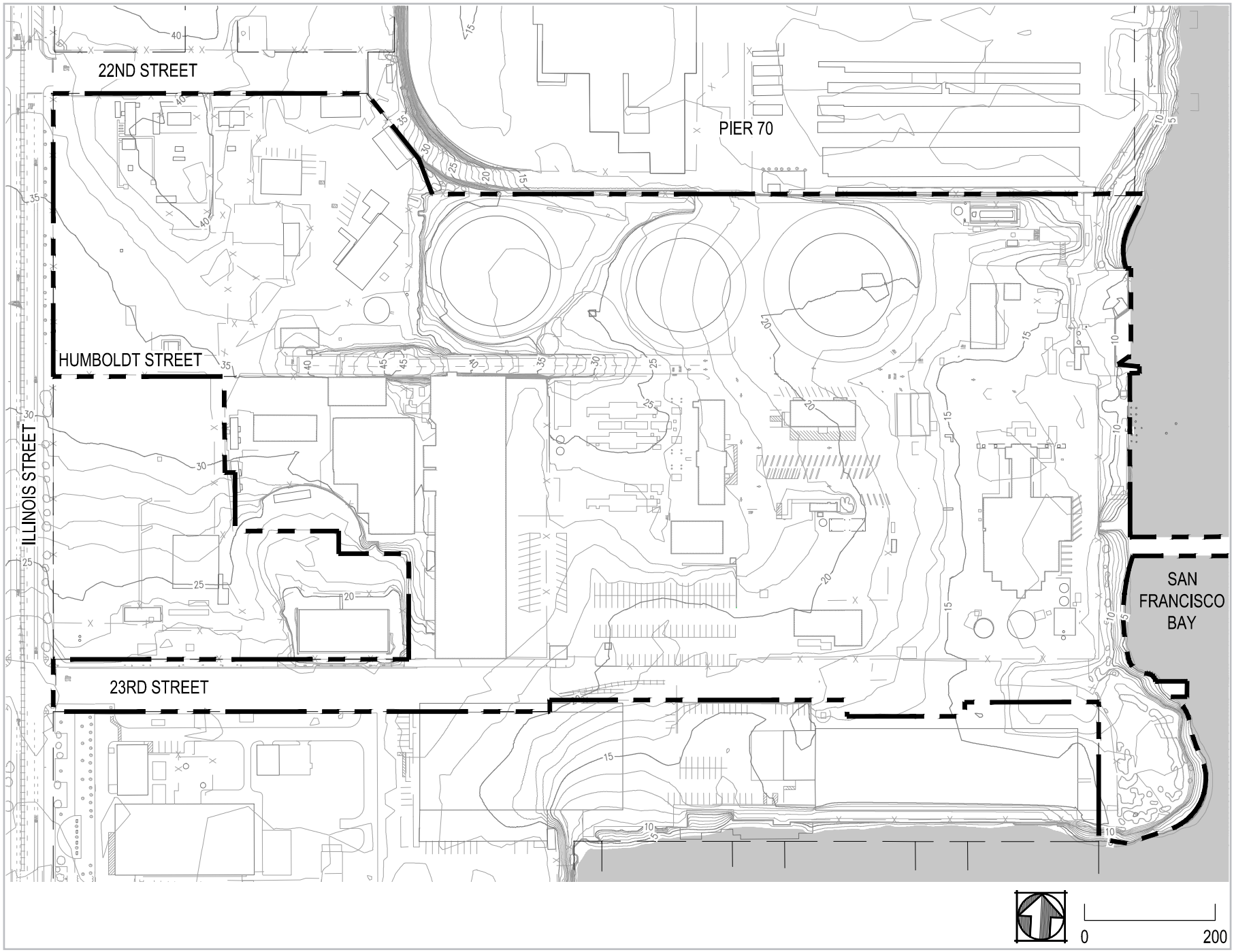


Figure 7.1 Existing Site Topography

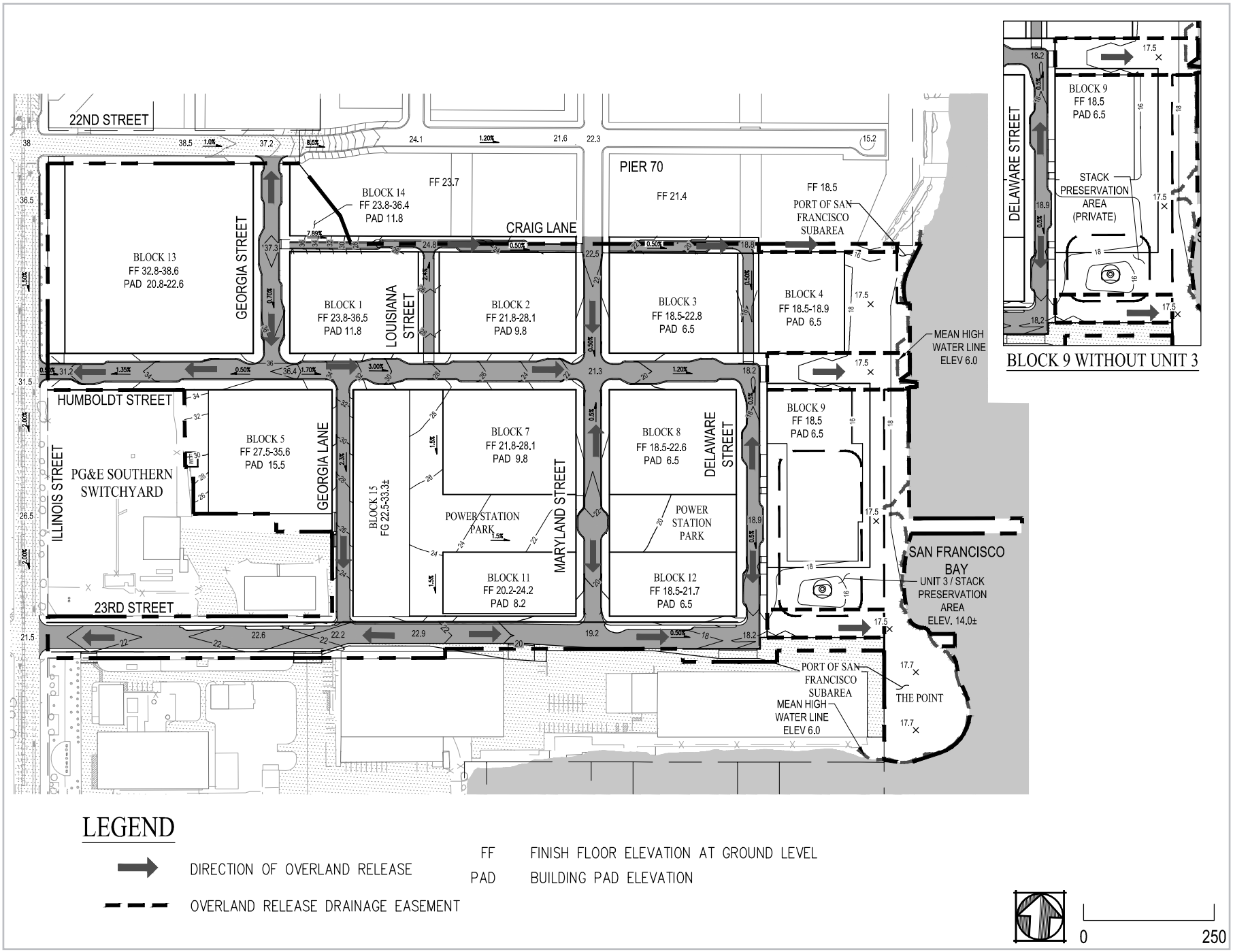


Figure 7.2 Proposed Site Grading

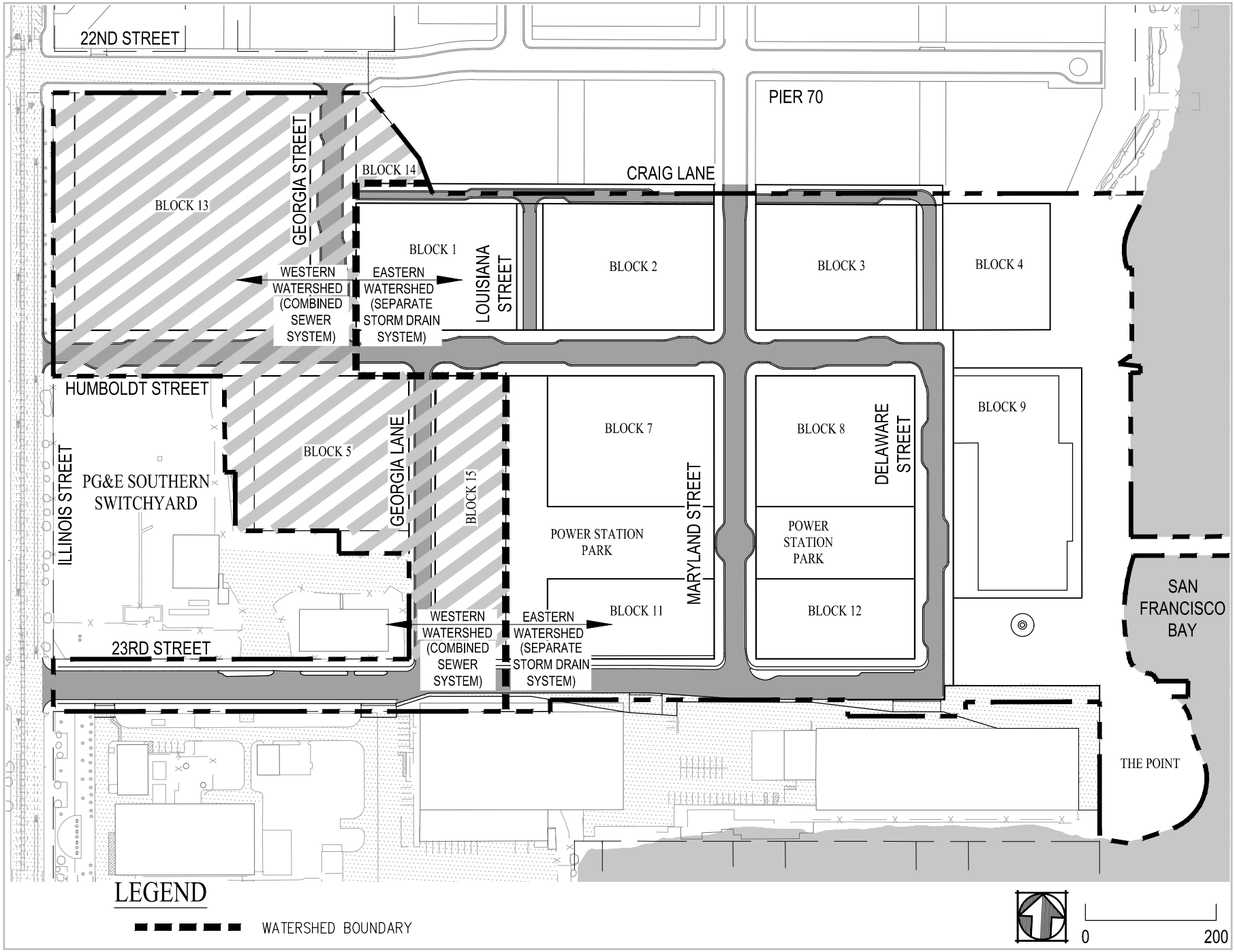


Figure 7.3 Proposed Watersheds

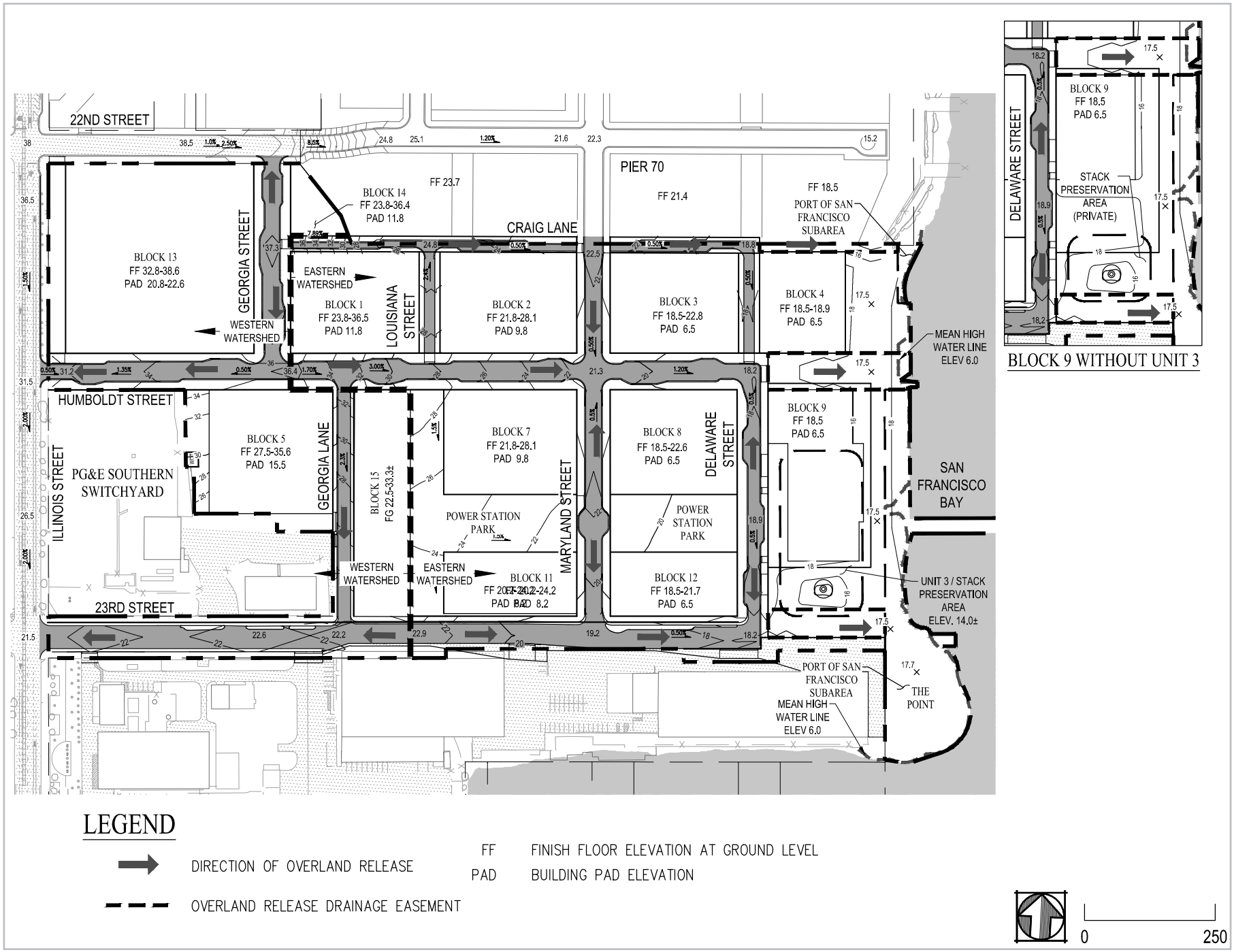


Figure 7.4 Proposed Overland Release

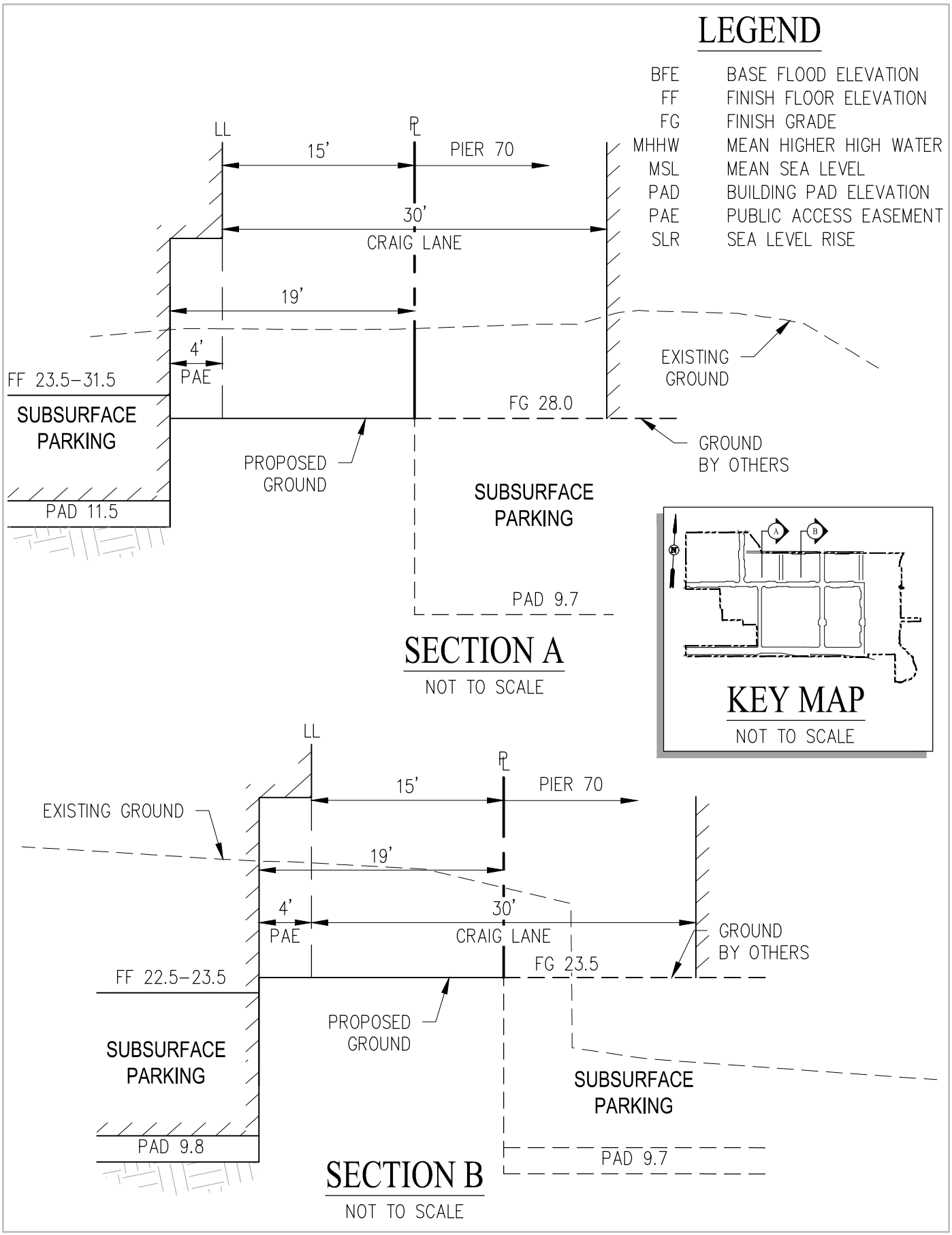


Figure 7.5 Grading Cross Sections at Project Boundaries - Section A & B

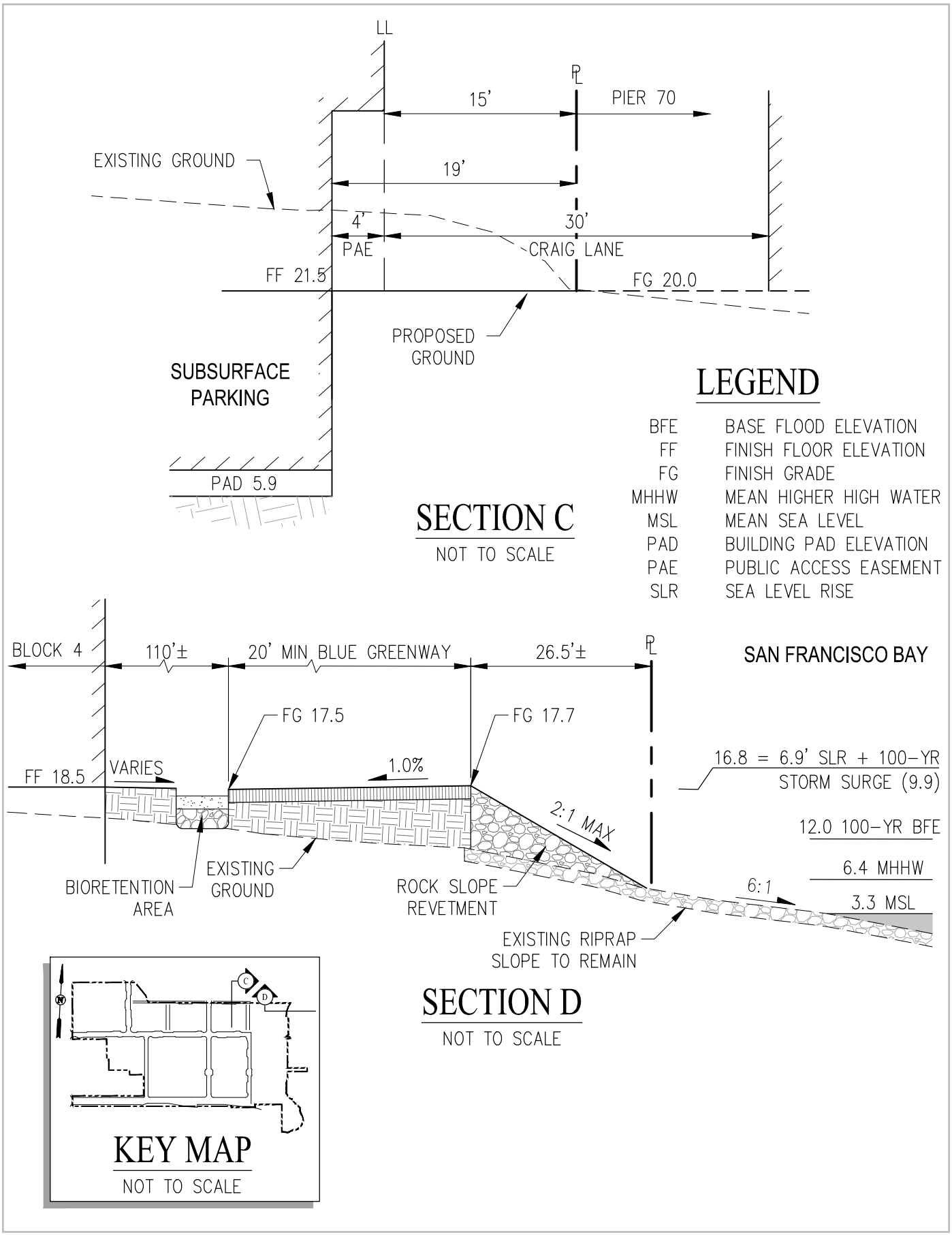


Figure 7.5 Grading Cross Sections at Project Boundaries - Section C & D

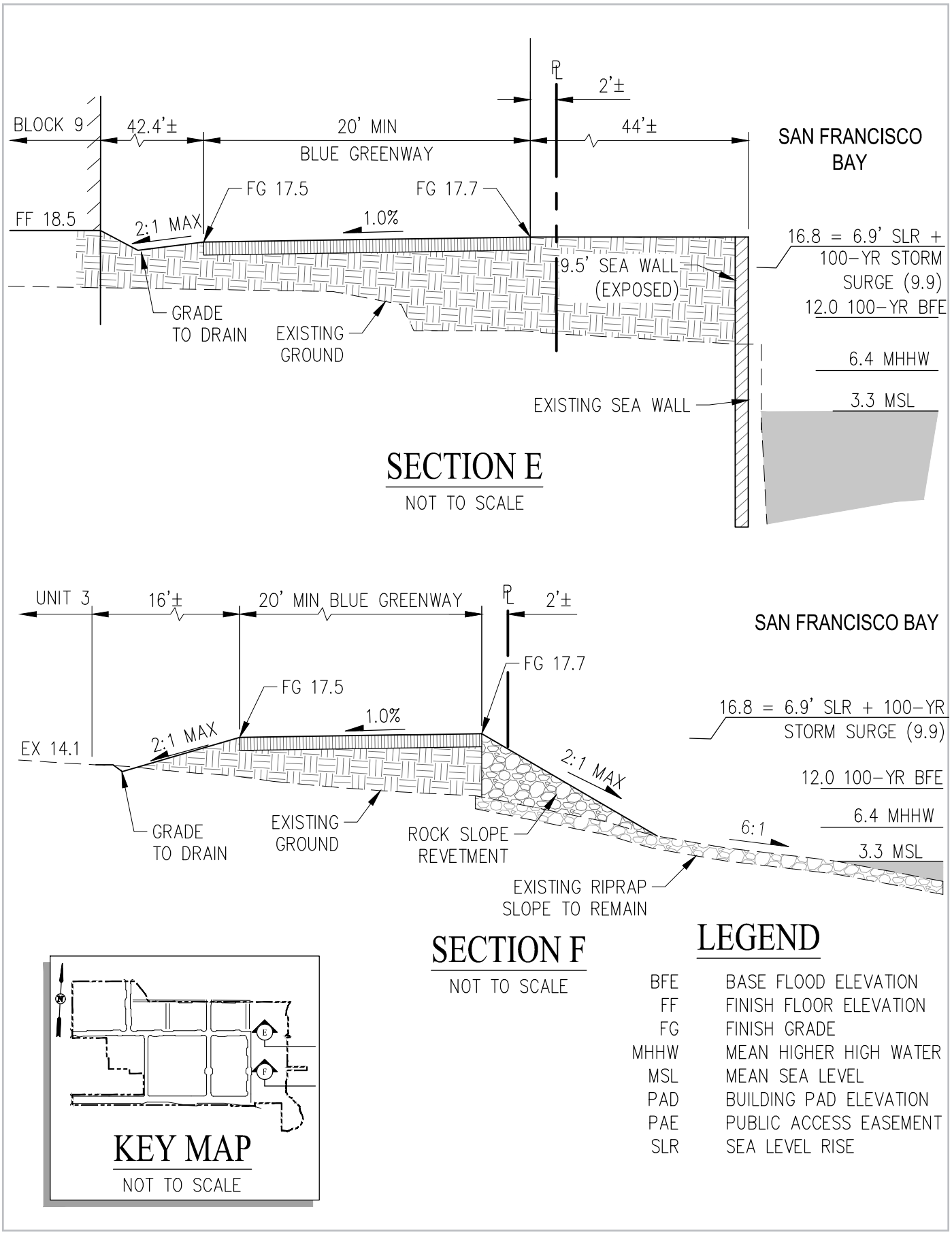
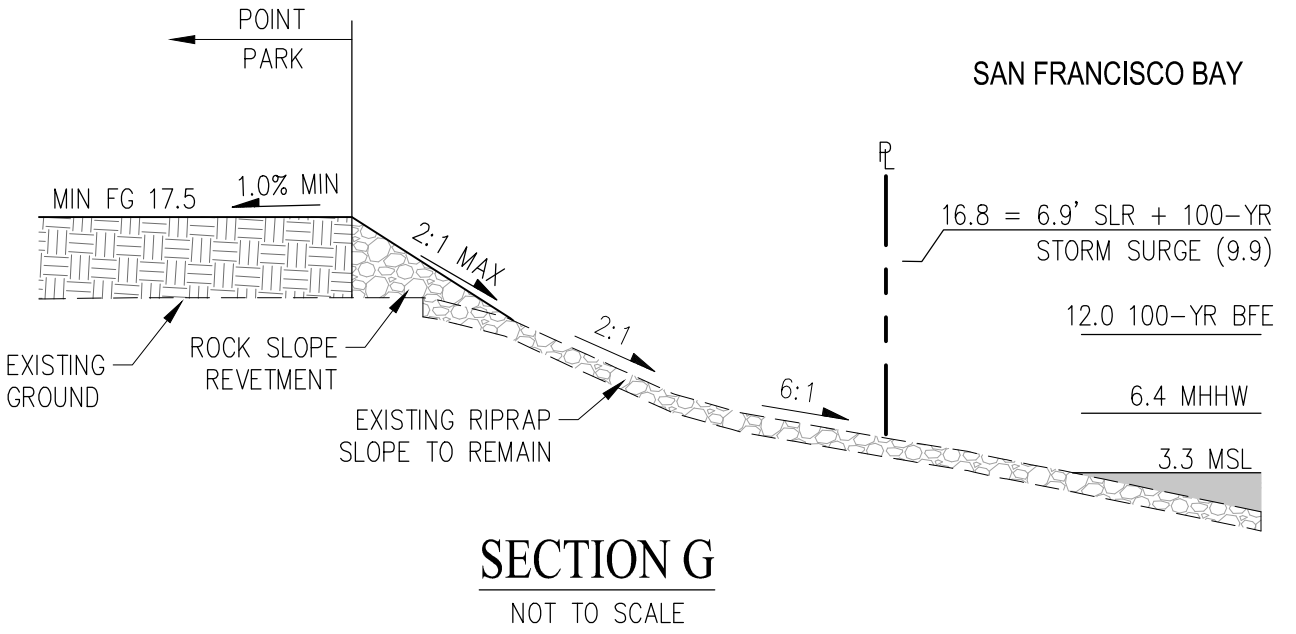
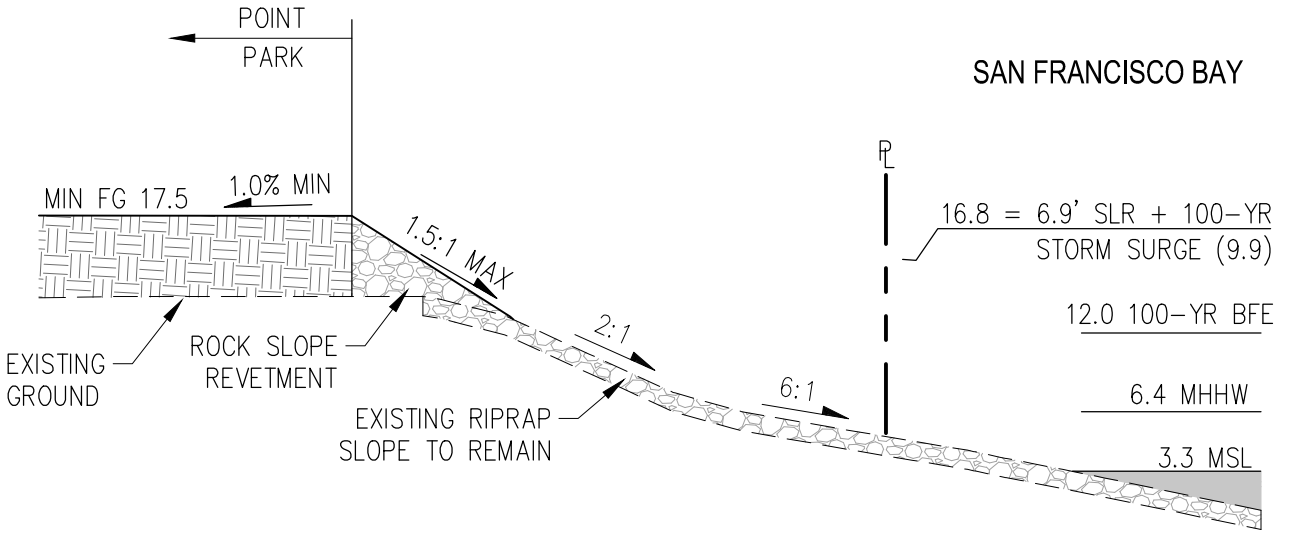


Figure 7.5 Grading Cross Sections at Project Boundaries - Section E & F



SECTION G

NOT TO SCALE

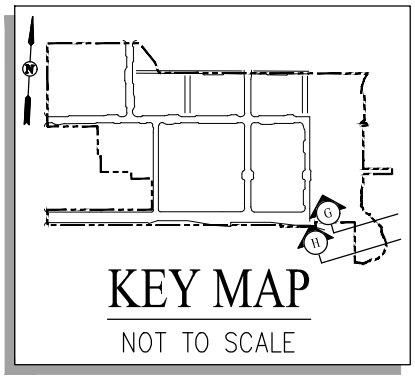


SECTION H

NOT TO SCALE

LEGEND

BFE	BASE FLOOD ELEVATION
FF	FINISH FLOOR ELEVATION
FG	FINISH GRADE
MHHW	MEAN HIGHER HIGH WATER
MSL	MEAN SEA LEVEL
PAD	BUILDING PAD ELEVATION
PAE	PUBLIC ACCESS EASEMENT
SLR	SEA LEVEL RISE



KEY MAP

NOT TO SCALE

Figure 7.5 Grading Cross Sections at Project Boundaries - Section G & H

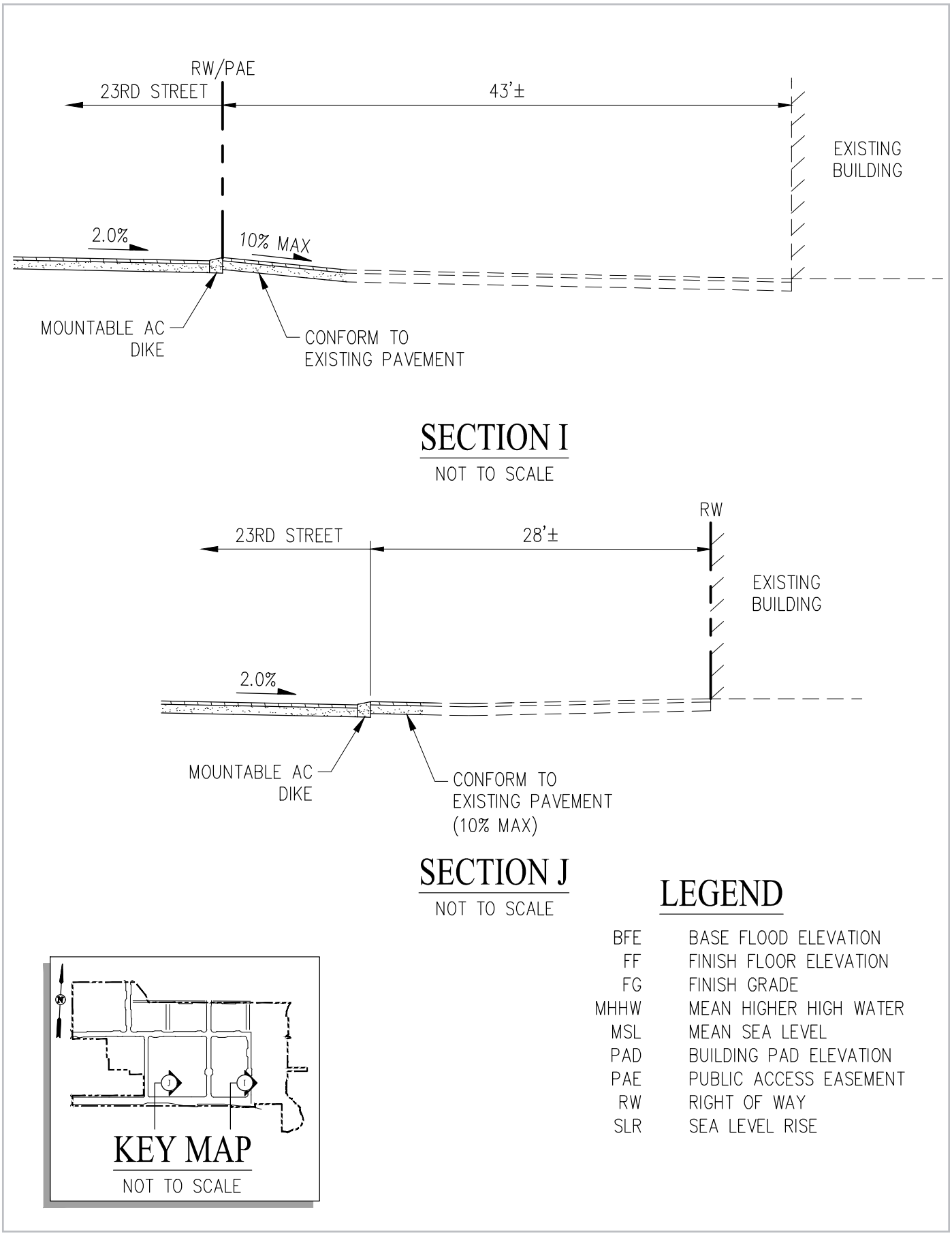


Figure 7.5 Grading Cross Sections at Project Boundaries - Section I & J

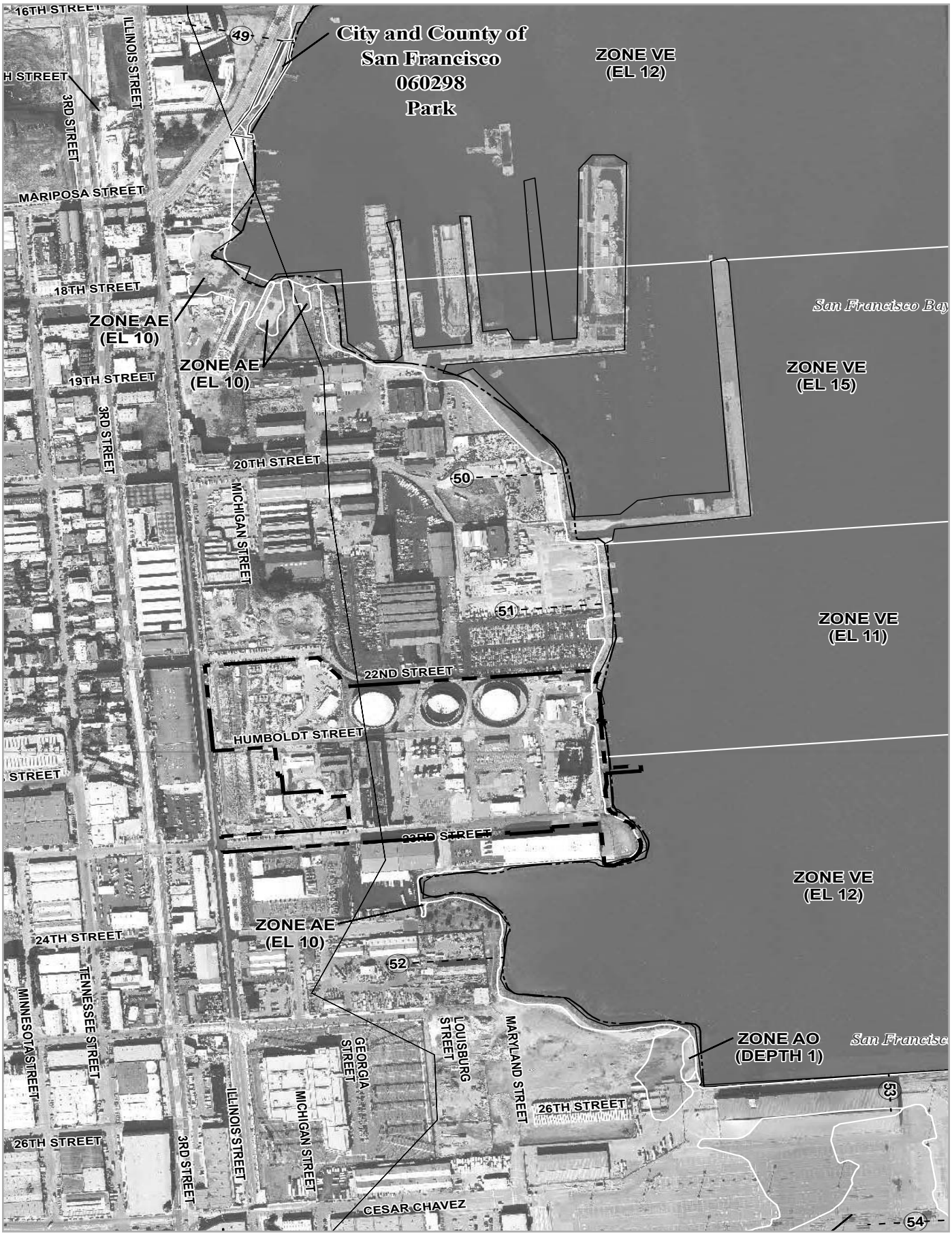


Figure 7.6 FEMA Flood Map

8 STREET AND TRANSPORTATION SYSTEMS

The Project is designed to be an extension of the surrounding street grid framework creating a unified neighborhood and providing additional access routes from the Dogpatch to the Bay. The proposed street framework will be walkable, with blocks and buildings creating urban spaces at the human scale. The proposed street system within the Project is intended to serve local access at low speeds (25 mph) establishing an accessible neighborhood that prioritizes walking, biking and transit.

8.1 Proposed Street System

8.1.1 Public Streets

The Developer will be responsible for the design and construction of the proposed public streets within the Project. The primary framework of the proposed street grid will be public streets. The proposed public streets include Humboldt Street, Georgia Lane and Street, Maryland Street and Delaware Street between Humboldt Street and 23rd Street. All proposed public streets will be two-way, with a single lane of travel in each direction. The proposed public streets would provide the primary access for emergency and fire vehicles to the proposed buildings. The street network is designed consistent with the City of San Francisco's Better Streets Plan standards. See Figure 8.1 depicting the proposed street framework and locations of public streets.

See Table 8.1 outlining the proposed public street widths and components for each street segment. Also, see Figure 10.2 depicting the proposed utility configurations relative to each proposed street section.

8.1.2 23rd Street

23rd Street is a critical east / west gateway to the Project. The Project proposes to reconstruct the existing improvements to provide an inviting and safe corridor for bicycles, pedestrians and transit while allowing for the adjacent existing uses to maintain usability of this street. The existing adjacent uses include PG&E and other large electrical facilities along the western half of 23rd Street, as well as PDR uses with loading docks along the south side as 23rd extends to the east. The proposed improvements for 23rd Street include constructing sidewalks on the north side and portion of the south side, a parking protected bicycle lane on the north side and a parking protected bicycle lane on the south side that transitions to a Class II bicycle lane as it heads to the east. The improvements along the south side of the street will conform to and allow the existing loading docks to remain operable.

The proposed 23rd Street improvements will provide a connection from the surrounding neighborhoods to the Project, the Bay and the Blue Greenway, a continuous path envisioned to extend 13 miles along the southeastern waterfront of San Francisco.

The existing ownership of 23rd Street within the Project varies. The western half of 23rd Street is existing public right-of-way. The eastern half is a private street encumbered with access easements in favor of the properties to the south. Except for the addition of curbs to direct stormwater, the street design maintains the existing configuration of loading docks on the south side of the street. Pedestrians are directed to the sidewalk on the north side of the street, across from loading activities. The street is intended to be constructed to public street standards and is proposed to be a public street with Department of Public Works approval.

If the eastern half of 23rd Street remains as a private street, some of the public utility systems would be re-routed to not occupy this private street. See Section 18 providing a description of this scenario and the associated adjustments to the utility system configurations. See Table 8.1 outlining the proposed street widths and components for the various segments of 23rd Street.

8.1.3 Illinois Street

The Project proposes to complete certain pedestrian and traffic improvements on Illinois Street. These improvements will facilitate safe access into the Project and include crosswalks and accessible ramps. Traffic signals will be installed at the Illinois / 23rd Street and Illinois / Humboldt Street intersections.

Additionally, the Project will reconstruct the sidewalk along the east side of Illinois Street from Humboldt Street to 22nd Street improving the pedestrian experience and aesthetics of the Illinois Street corridor along the Project frontage. The existing street trees in this area will be removed and replaced.

8.1.4 Private Alleys

The proposed street system includes private alleys. These private alleys include Craig Lane, Louisiana Street and the portion of Delaware Street north of Humboldt Street. Louisiana and Delaware Streets will be designed to reduce vehicle speeds and be shared by pedestrian, bicycle and vehicle traffic. The alleys will be designed for 2-way travel, with the exception of Craig Lane which will be one-way travel from east to west. See Table 8.1 outlining the widths and components of the private alleys.

Table 8.1 Street and Alley Dimensions

Street	Construction Responsibility	Right-of-Way and Public Access Area Width (feet)	Street Elements and Width (feet)
Public Streets			
Maryland Street North of Humboldt Street (D4D Figure 5.17.5)	Developer	64’	West R/W – 15’ SW/6’ B/11’ TL/11’ TL/6’ B/ 15’ SW – East R/W
Maryland Street South of Humboldt (D4D Figure 5.17.2 & 5.17.4)	Developer	64’	West R/W – 15’ SW/6’ B/11’ TL/ 11’ TL/6’ B/15’ SW – East R/W (1)
Maryland Street at Power Station Park (D4D Figure 5.17.3)	Developer	64’ R/W + 16’ PAE	8’ PAE & SW – West R/W – 2’ SW/13’ P/6’ B/11’ TL/ 11’ TL/6’ B/13’ P/2’ SW – East R/W – 8’ PAE & SW (1)
Delaware Street – Power Station Park to 23rd Street	Developer	59’	West R/W – 19’ SW*/ 13’ TL / 13’ TL / 14’ SW – East R/W (*Sidewalk width may vary for parking bays)
Delaware Street at Shuttle Stop (D4D Figure 5.21.3)	Developer	59’	West R/W – 10’ SW / 10’ BS / 13’ TL / 12’ TL / 14’ SW – East R/W
Delaware Street – Humboldt Street to Power Station Park (D4D Figure 5.21.2)	Developer	59’	West R/W – 19’ SW / 14’ TL / 12’ TL / 14’ SW – East R/W
Delaware Street at Power Station Park (D4D Figure 5.21.4)	Developer	59’	West R/W – 19’ SW/13’ TL/12’ TL/8’ P/7’ SW – East R/W – 42’ Plaza
Georgia Street (D4D Figure 5.19.2)	Developer	70’	West R/W – 15’ SW*/ 8’ P/ 12’ TL/ 12’ TL/ 8’ P/ 15’ SW* – East R/W (*Sidewalk width may vary for AP bays)
Georgia Lane (with Station A) (D4D Figure 5.20.2 & 5.20.3)	Developer	40’	West R/W – 8’ SW/ 10’ TL/ 10’ TL/ 6’ B/ 5.5’ SW / 0.5’ BE – East R/W
Georgia Lane (without Station A) (D4D Figure 5.20.4 & 5.20.5)	Developer	40’ R/W + 3’ PAE	West R/W – 8’ SW / 10’ TL / 10’ TL / 6’ B / 6’ SW – East R/W – 3’ PAE & SW
Humboldt Street (D4D Figure 5.18.2)	Developer	70’	North R/W – 15’ SW*/ 8’ P/ 12’ TL/12’ TL/ 8’ P/ 15’ SW* – South R/W (*Sidewalk width may vary for AP bays)

Table 8.1 Street and Alley Dimensions *(Continued)*

Street	Construction Responsibility	Right-of-Way and Public Access Area Width (feet)	Street Elements and Width (feet)
23rd Street – Illinois Street to PG&E Substation (D4D Figure 5.16.2)	Developer	80’	North R/W – 12’ SW/6’ B/4’ BF/8’ P/10’ TL/10’ TL/8’ P/4’ BF/6’ B/12’ SW – South R/W
23rd Street – PG&E Substation to Georgia Lane (D4D Figure 5.16.3)	Developer	80’	North R/W – 12’ SW/ 7’ B/ 6’ RB/12’ TL/ 13’ TL/ 8’ P/ 4’ BF/ 6’ B/ 12’ SW – South R/W
23rd Street (with Station A) – Georgia Lane to Louisiana Paseo (D4D Figure 5.16.4)	Developer	80’	North R/W – 0.8’ BE / 9.2’ SW/5’ B/4’ BF/8’ P/ 10’ TL/10’ TL/ 5’ B/28’ L – South R/W
23rd Street (without Station A) – Georgia Lane to Louisiana Paseo (D4D Figure 5.16.5)	Developer	80’ R/W + 5’ PAE	5’ PAE & SW – North R/W – 10’ SW / 5’ B / 4’ BF / 8’ P / 10’ TL / 10’ TL / 5’ B / 28’ L – South R/W
23rd Street – Louisiana Paseo to Maryland Street (D4D Figure 5.16.6)	Developer	52’ R/W + 5’ PAE	5’ PAE & SW – North R/W – 10’ SW/5’ B/4’ BF/8’ P/10’ TL/10’ TL/5’ B – South R/W – 28’ L
23rd Street – Maryland Street to Delaware (with bus boarding) (D4D Figure 5.16.7)	Developer	62’	North R/W – 12’ SW/ 5’ B/ 9’ BI/11’ BS/ 10’ TL/ 10’ TL/ 5’ B – South R/W – 4’ F
23rd Street – Maryland Street to Delaware (without bus boarding) (D4D Figure 5.16.8)	Developer	62’	North R/W – 12’ SW/ 5’ B/ 4’ RB/ 5’ BF / 11’ BL / 10’ TL/ 10’ TL/ 5’ – South R/W – 44’ L
Illinois Street – Humboldt Street to 22nd Street (D4D Figure 5.25.1)	Developer (Remove and Replace East Sidewalk Zone Only)	80’	West R/W – 15’ SW / 9’P / 5’B / 11’ TL / 11’ TL / 5’ B / 9’ P / 15’ SW – East R/W – 33’ Plaza
22nd Street – Illinois Street to Georgia Street (D4D Figure 5.24.1)	Pier 70	66’	North R/W – 12’ SW / 5.5’ B / 11’ TL / 11’ TL / 5.5’ B / 9’ P / 12’ SW – South R/W

Table 8.1 Street and Alley Dimensions *(Continued)*

Street	Construction Responsibility	Right-of-Way and Public Access Area Width (feet)	Street Elements and Width (feet)
Private Streets			
Delaware Street – North of Humboldt Street (D4D Figure 5.21.6)	Developer	40’	West R/W – 7’ SW/ 3’ DW/ 10’ TL/10’ TL/ 3’ DW/ 7’ SW – East R/W
Craig Lane (Without Loading) (D4D Figure 5.23.2)	Developer	30’ R/W + 4’ PAE	North R/W – 7’ SW/ 4’ LS/ 14’ TL/ 4’ LS/ 1’ SW – South R/W – 4’ PAE & SW
Craig Lane (With Loading) (D4D Figure 5.23.3 & 5.23.4)	Developer	30’ R/W + 4’ PAE	North R/W – 7’ SW / 8’ P/ 14’ TL / 1’ SW– South R/W – 4’ PAE & SW
Louisiana Street (D4D Figure 5.22.2)	Developer	40’	West R/W – 7’ SW /3’ DW/10’ TL/10’ TL/3’ DW/7’ SW – East R/W

Abbreviations

ROW	Right-of-Way	BI	Bus Boarding Island
TL	Travel Lane	BL	Bus Lane
SW	Sidewalk	L	Loading
B	Bicycle Lane	E	Easement
P	Parking / Loading	BF	Striped Buffer
BS	Bus / Shuttle Stop	RB	Raised / Curbed Buffer
DW	Detectable Warning / Bollards	LS	Landscape
C	Curb	PAE	Sidewalk in Public Access Area
F	Furnishing	AP	Accessible Parking
RB	Raised Buffer	BE	Building Encroachment

Notes:

1. *The bike lane design for Maryland Street is tentative. The project will continue to work with the City towards a design of a separated bikeway within the 64’ right-of-way proposed on Maryland Street. Such a design change would be reviewed by the City infrastructure agencies and incorporated into City approvals as part of the first Basis of Design submittal.*
2. *Additional building encroachments may be required for the preservation of Station A and will be determined with final design of Block 15.*

8.1.5 Bicycle Network

The proposed street grid will include a network of bicycle facilities providing connectivity to the existing and planned larger network of bicycle facilities within the vicinity of the Site. The project will construct the segment of the Blue Greenway along the Project waterfront providing a Class I bicycle facility along the Bay. The Project will also provide an important east / west linkage of bicycle facilities along 23rd Street from the waterfront to Illinois Street. The bicycle facilities within 23rd Street include a parking protected 5 to 7 foot wide westbound bicycle lane on the north side and a parking protected 5 foot wide bicycle lane that transitions (west to east) to a Class II bicycle lane along the south side of the street. Additionally, the proposed design for Maryland Street includes a north / south connection with 6 foot wide Class II bicycle lanes. The bike lane design for Maryland Street is tentative. The project will continue to work with the City towards a design of a separated bikeway within the 64' right-of-way proposed on Maryland Street. Such a design change would be reviewed by the City infrastructure agencies and incorporated into City approvals as part of the first Basis of Design submittal. Georgia Lane also provides a north bound 6 feet Class II bicycle lane. All other public streets will include travel lanes with sharrow markings providing Class III bicycle facility linkages throughout the street network. The bicycle facilities will be designed to provide safe cycling through the Project. See Figure 8.2 depicting the proposed bicycle facilities.

8.1.6 Transit Access

The Project is located in close proximity to both regional and local public transit services. A planned Muni bus line route has been accommodated in the proposed street framework design. The planned Muni line, currently referred to as Dogpatch 55, will be routed through Maryland, Humboldt, Delaware and 23rd Streets. See Figure 8.3 depicting this planned bus route. A terminal bus stop has been located along 23rd Street between Maryland and Delaware Streets. The proposed bus layover will accommodate two, 40-foot-long Muni buses and will provide a bathroom facility nearby for drivers. See the Buildings section of the D4D for the standards of the bathroom facility location within Block 12. The intersections within this route will be designed for Bus-45 turning movements. See Appendix F for the bus turning movements through the Project.

As part of the Project's proposed Transportation Demand Management Plan ("TDM"), the project includes implementation of a transit shuttle service, with minimum service of 15-minute intervals during weekday morning and evening peak periods. The shuttle service would provide access between the project site, the 22nd Street Caltrain station, and the 16th Street BART station. The shuttle service may or may not connect with the shuttle service to be provided under the Pier 70 Mixed-Use District project. The shuttle will use the planned terminal bus stop until the Muni line "Dogpatch 55" is operational, at which

time the shuttle stop will move to its permanent location on Delaware Street adjacent to Block 8. Figure 8.4 presents the proposed transit shuttle plan in the project site vicinity and the permanent shuttle layover space location.

8.1.7 Parking and Loading

The proposed Project will provide approximately 2,622 off-street vehicle parking spaces. A centralized parking facility will be located at the intersection of Humboldt Street and Georgia Street and contain approximately 819 parking spaces. The remaining off-street parking spaces will be dispersed in podium parking structures on other development blocks. All parking will be accessory to principal uses. No off-street parking will be provided for proposed retail uses on the project site, except for the potential grocery store. Approximately 22 on-street passenger loading spaces will be provided along the internal streets and approximately 54 commercial delivery spaces will be provided, either through in-building loading docks or on-street loading zones along the internal streets. The remainder of the curb space not dedicated to off-street parking and loading will be divided into on-street parking and passenger loading spaces, including accessible parking and universal loading stalls. In total, the Project provides approximately 108 parking and loading spaces on-street.

All development blocks will allow – but not require – parking one level below-grade or parking within above-grade podium levels subject to the project's D4D controls. The project will provide car-share parking spaces, consistent with the project's D4D controls.

Class one bicycle parking spaces will be located either on the ground floor of each building or in the first level above or below ground floor, in locations compliant with the project's D4D controls. The proposed Project will include Class II bicycle parking spaces, all of which will be located in the right-of-way adjacent to each building or in the publicly accessible open space.

8.2 Street Design Considerations

8.2.1 Raised Street Crossings

The Project proposes to integrate raised street segments to provide additional traffic calming and pedestrian priority on Humboldt, Maryland, and Delaware Streets adjacent to the Power Station Park and Louisiana Paseo, and Georgia Lane. These zones are anticipated to have more intensive pedestrian activities related to the adjacent Park, plazas and outdoor retail areas. The objective of these raised street areas is to calm traffic traveling

through this area to provide safe crossings for pedestrians encouraging the use of the park and open space amenities within this Project.

The raised street area will have transition areas in the street slope at the entry and exit of the raised street area that will be designed at a maximum of 5% slope. The curbs will transition from full standard height to four inches though the transition areas. Within the raised street areas, specific crosswalk locations will be provided to designate where pedestrians have priority to cross. The vehicle travel zones will be delineated from pedestrian areas by the four-inch tall curbs. Additionally, vertical elements such as street trees or furniture will delineate between the pedestrian and vehicle zones. The raised street will be designed to meet the City's requirements for 100-year design storm and overland release. See Figure 8.5 depicting the proposed raised street crossing configuration.

8.2.2 Intersection Curb Extensions

The proposed street designs will include curb extensions at intersections within the Project. The curb extensions will enhance pedestrian safety and will be designed consistent with the San Francisco Better Streets Plan. The curb extensions will be designed to maximize the pedestrian space, while maintaining the required utility clearances and turning movement accommodations. See Figure 10.2 depicting the utility placements at the curb extension locations. Also, see Figure 8.8 for intersection geometry.

8.2.3 Sidewalk Easements

Public sidewalk easements will be provided at locations that vehicle accommodations, accessible ramps or parking stalls reduce the sidewalks to widths less than required by the San Francisco Better Streets Plan. These easements will provide safe passable sidewalk conditions and will be integrated with the open-space and building designs.

8.2.4 Fire Department Access

The proposed streets will be designed to accommodate turning movements of the City of San Francisco 57-foot articulated fire truck and the SFFD Engine, in accordance with the Subdivision Regulations and the California Fire Code. See Figure 8.11 depicting the fire access areas planned within the street network. The following is a summary of the fire access integrated into the street network to provide emergency and fire protection to the various development blocks and open spaces:

Type I Commercial, R&D, Office and Residential – *Blocks 1A, 2, 3, 5A, 5B (Parking Garage), 7B, 11, 12 and 15*

- 26' wide unobstructed fire access adjacent to 50% of the building street frontage, including 100' to 200' (200' preferred) staging area at the building lobby.
- 26' fire access area is to be positioned such that the truck ladder turn table is 15' to 30' from building.

Type III A Residential – *Blocks 1B, 4, 7A, 8, 13A, 13B, 13C and 14*

- 26' wide unobstructed fire access adjacent to 50% of the building street frontage, including 150' to 200' (200' preferred) staging area at the building lobby.
- 26' fire access area is to be positioned such that the truck ladder turn table is 15' to 30' from building.

Type V Residential and Hotel – *Block 9*

- 26' wide unobstructed fire access adjacent to 50% of the building street frontage, including 150' to 200' (200' preferred) staging area at building lobby.
- 26' fire access area is to be positioned such that the truck ladder turn table is 15' to 30' from building.
- Aerial ladder truck access (26' wide) to all bedroom egress windows over 40'.

Unit 3

The feasibility of adaptively reusing Unit 3 is under evaluation. Accordingly, multiple scenarios are being studied. The fire access requirements for each scenario are as follows:

- Unit 3 & Block 9 considered as 1 building by DBI, Type I construction -
  - 26' wide unobstructed fire access adjacent to 50% of the building street frontage, including 100' to 200' (200' preferred) staging area at the building lobby.
  - 26' fire access area is to be positioned such that the truck ladder turn table is 15' to 30' from building.

- Unit 3 Type I & Block 9 Type IIIA (2 buildings)
  - 26' wide unobstructed fire access adjacent to 50% of the building street frontage, including 100' to 200' (200' preferred) staging area at the lobby for each building.
  - 26' fire access area is to be positioned such that the truck ladder turn table is 15' to 30' from building.

Humboldt Street Plaza

- Provide 26' wide unobstructed fire access for 150' extending from intersection with Delaware Street.
- Provide 26' wide, 100-150 feet long staging area at the building lobby of Building 4 and 9 along Humboldt Plaza.
- Provide 20' wide emergency access extending to and along waterfront.

Louisiana Street

- If Block 1 is comprised of 2 buildings, 1A and 1B, provide 26' wide unobstructed fire access for 150' extending from intersection with Humboldt Street.
- Provide 26' wide 100-150 feet long staging area at the Building 1B and 2 lobbies along Louisiana Street.
- Bollards separating the pedestrian zones from the travel way are acceptable to be placed within the 26' wide fire access area.
- Provide 20' wide emergency access extending to Craig Lane.

Delaware Street *(North of Humboldt Street)*

- Provide 26' wide unobstructed fire access for 150' extending from intersection with Humboldt Street.
- Provide 26' wide 100-150 feet long staging area at the Building 4 lobby along Delaware Street.
- Bollards separating the pedestrian zones from the travel way are acceptable to be placed within the 26' wide fire access area.
- Provide 20' wide emergency access extending to Craig Lane.

Craig Lane

- One way 14' wide alley is acceptable and not required for fire access.
- Provide access for emergency vehicles (engine and ambulances) to make turns onto and from Craig Lane.

Truck Turning Requirements

- Truck turning templates shall be provided demonstrating the SFFD aerial ladder truck and engine can adequately maneuver through the proposed intersections.
- The truck and engine are allowed to turn into the opposing travel lane so long as a separation from the truck to the opposing curb of 7' minimum is maintained.

Unobstructed Width

- The required unobstructed width for fire department access areas assumes that on-street parked cars only utilize 7' from the adjacent curbs.

See Appendix H including the Fire Access Criteria Memorandum outlining this criteria's application within the project and as approved by San Francisco Fire Departments. Also, see Appendix G depicting the fire aerial truck and engine turning movements within each intersection.

8.2.5 Large Vehicle Access

The proposed street network will accommodate commercial trucks and tractor trailer trucks in accordance with Better Streets Plan.

The public streets are designed for SU-30 vehicles, including Maryland, Humboldt, Georgia and Delaware Streets. Vehicles accessing the site up to the size of WB-40 can be accommodated within the public streets.

The streets and intersections along the bus route are designed for the Bus-45 vehicle.

23rd Street is a mixed-use / industrial street type and is designed for WB-40 vehicles.

Additionally, vehicles accessing the site up to the size of a WB-67 can be accommodated on a limited route to access Blocks 1, 5 and 13. A Transportation Program Manager will manage conflicts and reasonably accommodate truck deliveries. See Appendix E depicting the large vehicle turning movements at each intersection.

Georgia Lane, Craig Lane, Louisiana Street and Delaware Street north of Humboldt Street, are designed for passenger vehicles and can accommodate SU-30 vehicles.

8.2.6 Universal Access Parking

The proposed streets will be designed with Universal Passenger Loading Zones and Accessible Parking Zones at select locations. The locations of these facilities will be distributed throughout the Project to provide convenient access to buildings and open spaces.

The Universal Passenger Loading zones will be curbside stalls limited to five-minute stops per SFMTA regulations. Each universal loading stall will be universally accessible and American Disabilities Act ("ADA") compliant. These stalls will be 20-feet long, have adjacent sidewalk with a 9' minimum throughway clear of obstacles with a loading area and SFDPW standard curb ramp.

On-street accessible parking stalls will be provided in accordance with ADA regulations and CBC Chapter 11B requirements (Table 11B-208.2). The accessible stalls will be generally located near intersections or access points to buildings and open space areas. These stalls will be 20-feet long, have signage and striping for an accessible stall, have adjacent sidewalk clear of obstructions, a 10-foot loading area at the rear with a SFDPW standard curb ramp. See Figure 8.8 depicting the typical configuration of these universal loading and accessible stalls.

8.2.7 22nd Street and Georgia Street Intersection

Georgia Street is proposed to intersect with 22nd Street. The slope of 22nd Street at this intersection is approximately 3%. The cross slope of Georgia Street will need to transition to a super-elevated condition as it approaches this intersection. The proposed intersection configuration, grading and sight distances are depicted on Figure 8.6 and 8.7.

8.2.8 Driveways

Driveways and building openings dedicated to parking and loading access shall be minimized. Entrances for off-street parking and off-street loading shall be combined where possible. The placement of parking and loading entrances should minimize interference with street-fronting active uses and with the movement of pedestrians, cyclists, public transit, and autos. Off-street parking and loading entrances shall be located to minimize the loss usable curb space. Driveway for grocery store loading may require curb cut of up to 53 feet.

8.2.9 Street Pavement, Curb and Gutter and Sidewalk Sections

The proposed public streets will be constructed consistent with the City standard structural section consisting of eight inches of Portland cement concrete and a two-inch asphalt concrete wearing surface. 23rd Street will be reconstructed with the City standard structural section. Pavement within Illinois Street will be replaced as needed to address utility trenching completed with the Project.

Alternative paving materials and sections such as Class II aggregate base, decorative asphalt and concrete paving, pervious pavers and porous paving may be used if approved by the SFDPW. The public streets, including City standard curbs, gutters and sidewalks, will be maintained by the SFDPW. Please see Figure 8.10 depicting the intended pavement surfaces for the various streets.

8.2.10 Existing Infrastructure

The existing infrastructure within the Project site depicted on Figure 4.2 will limit the allowed locations of streetscape landscaping, street trees, street furniture and signage on 23rd Street and Humboldt Street (west of Block 5).

8.2.11 Street Lighting

The Project street lighting system will be designed and constructed by the Developer within the proposed streets. The proposed street lighting will comply with the City of San Francisco standards.

8.2.12 Traffic Control and Signalization

The Project will design and construct traffic signals at the intersections of 23rd Street / Illinois Street and Humboldt Street / Illinois Street, in accordance with SFMTA standards, and subject to SFMTA review and approval.

8.3 Maintenance and Street Acceptance

The public streets will be maintained by the SFDPW. The Developer will be responsible for the maintenance of the public streets within the Project until such time as they are accepted by the City for maintenance and liability purposes.

Upon acceptance of the new and improved public streets by the City, responsibility for the operation and maintenance of the roadway and streetscape elements will be designated as defined in the City of San Francisco Municipal Code.

The private streets will be maintained by a Project Master Association or another entity created by the Developer to manage the long-term responsibility for the operation and maintenance of the private streets.

8.4 Phasing of Improvements

The proposed street system will be constructed in phases as depicted in the phasing plan, see Figure 1.3. Each Phase will connect to the existing streets as close to the perimeter of that Phase area as possible while maintaining safe access to the Project and surrounding areas. Repairs and or replacement of existing improvements will be made as necessary to serve the Phase.

The Phased Infrastructure may include deferring sidewalk and street planting zones until the building construction on adjacent Development Parcels is completed. Construction of each proposed Development Parcel and associated Phased Infrastructure may impact site accessibility. During construction of each Development Parcel and associated Phased Infrastructure, interim access shall be provided and maintained for active utility access and emergency vehicles, subject to San Francisco Fire Department ("SFFD") requirements, as necessary. Within active streets to remain open, pedestrian access shall be maintained on at least one side where adjacent to an active construction area.

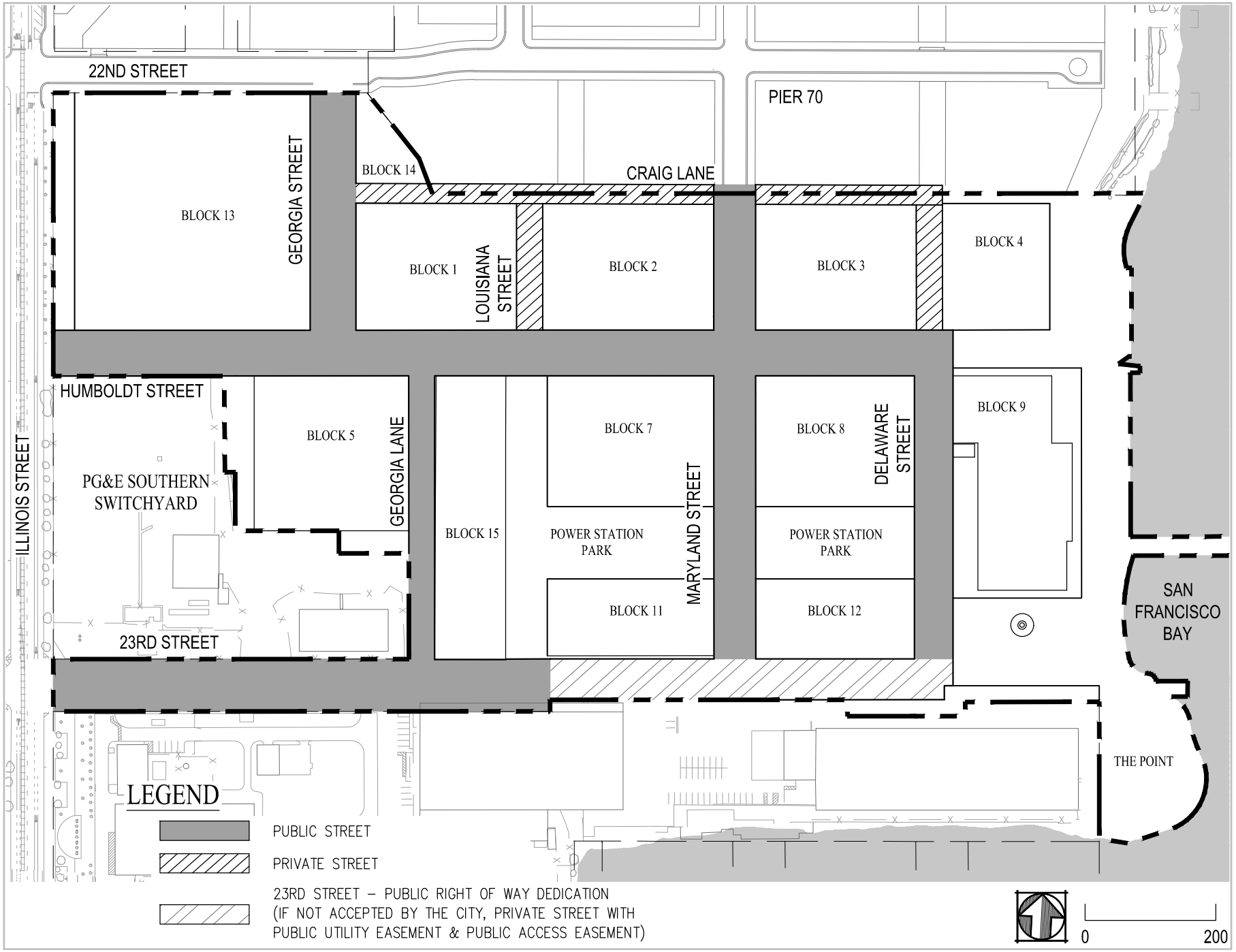


Figure 8.1 Proposed Street System

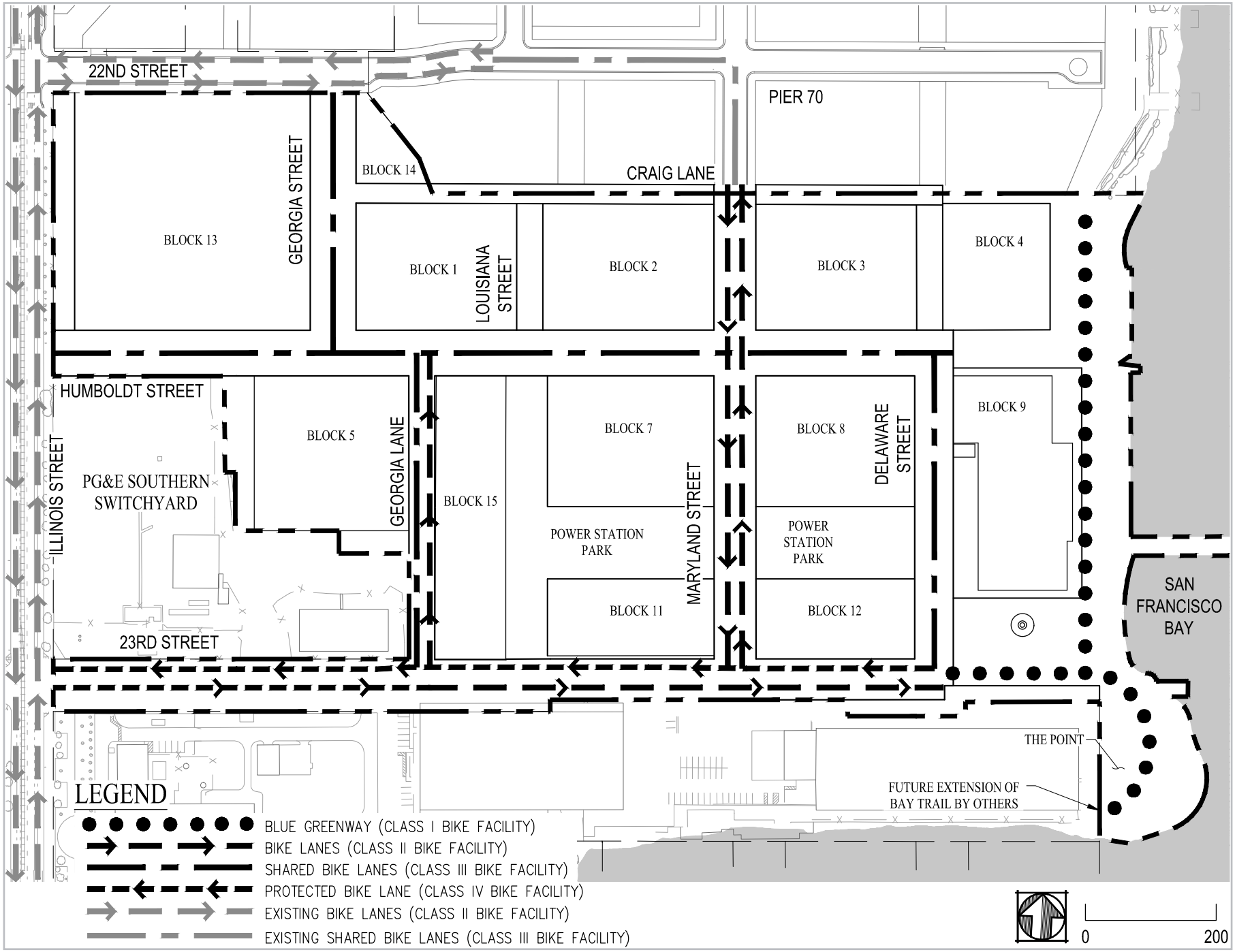


Figure 8.2 Proposed Bike Facilities

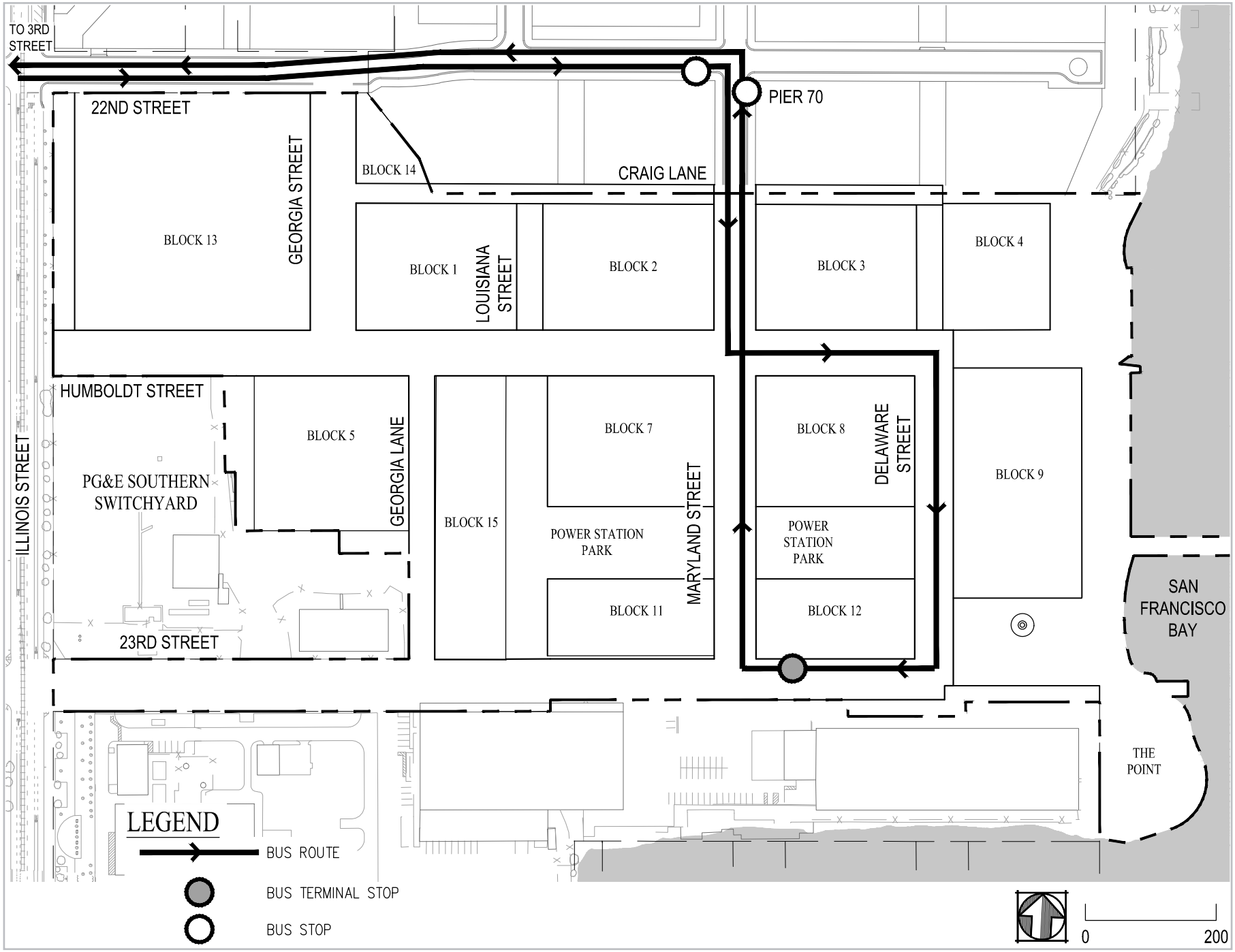


Figure 8.3 Planned Bus Route

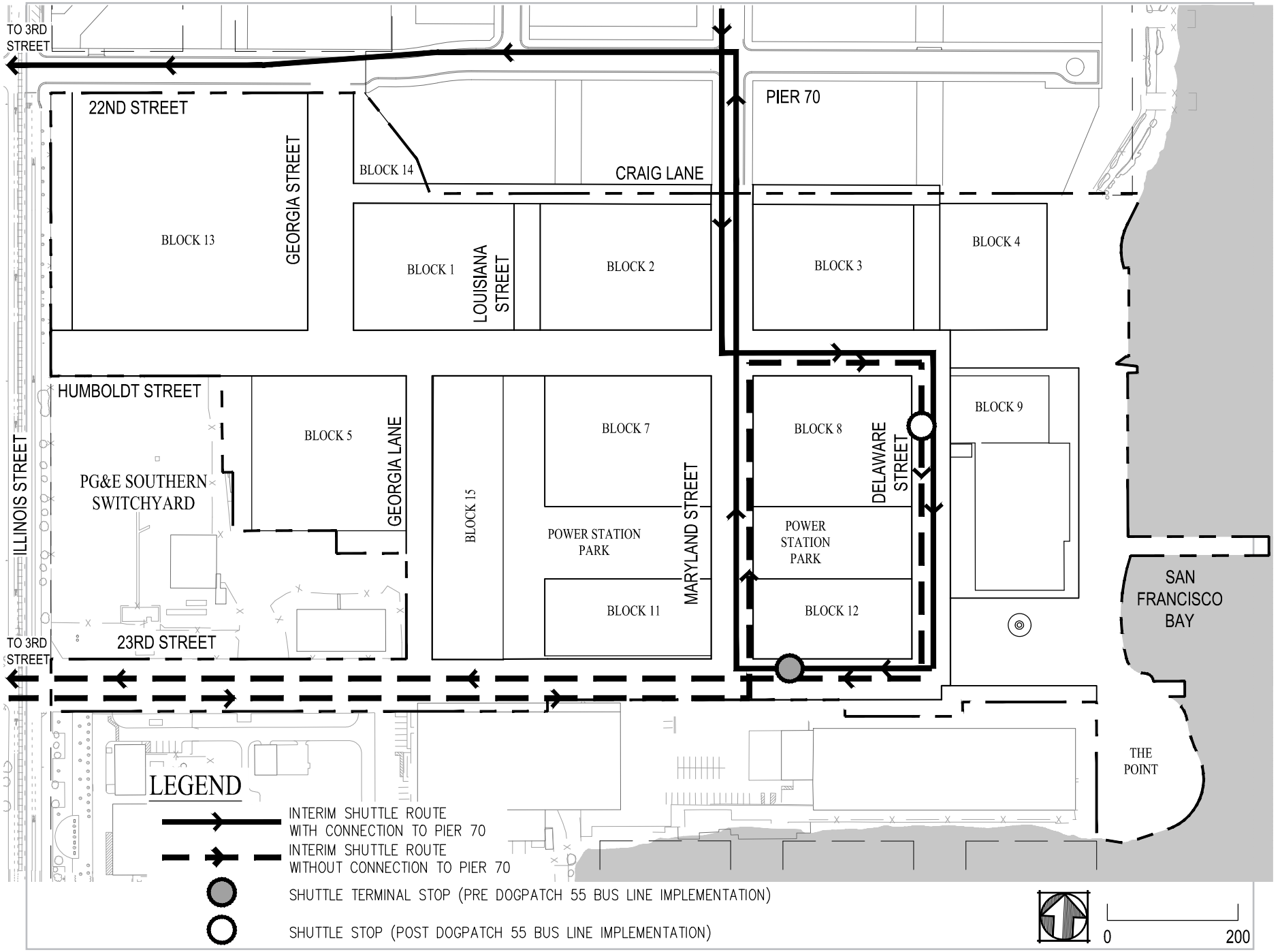


Figure 8.4 Planned Interim Shuttle Route

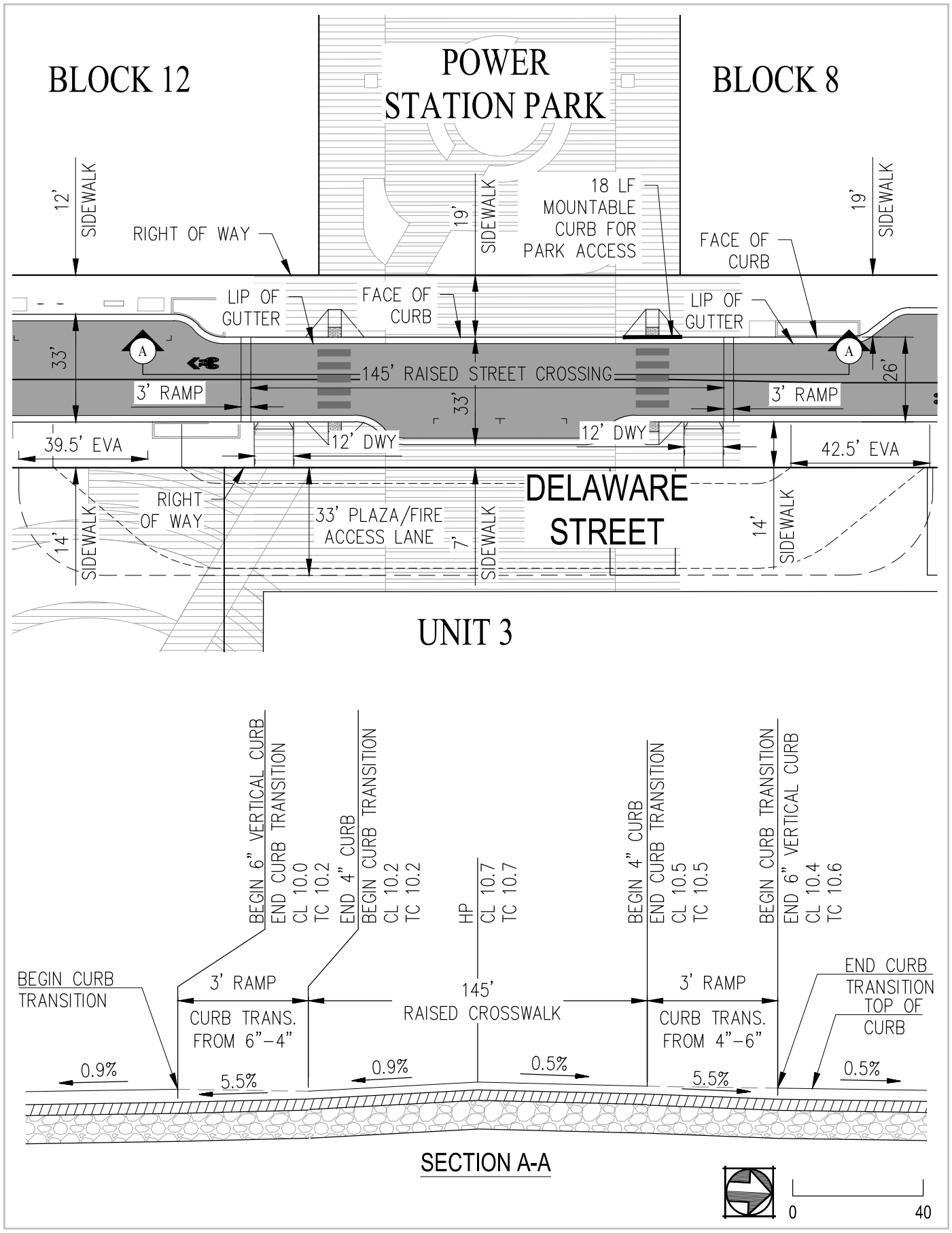


Figure 8.5 Raised Street Crossings – Delaware Street

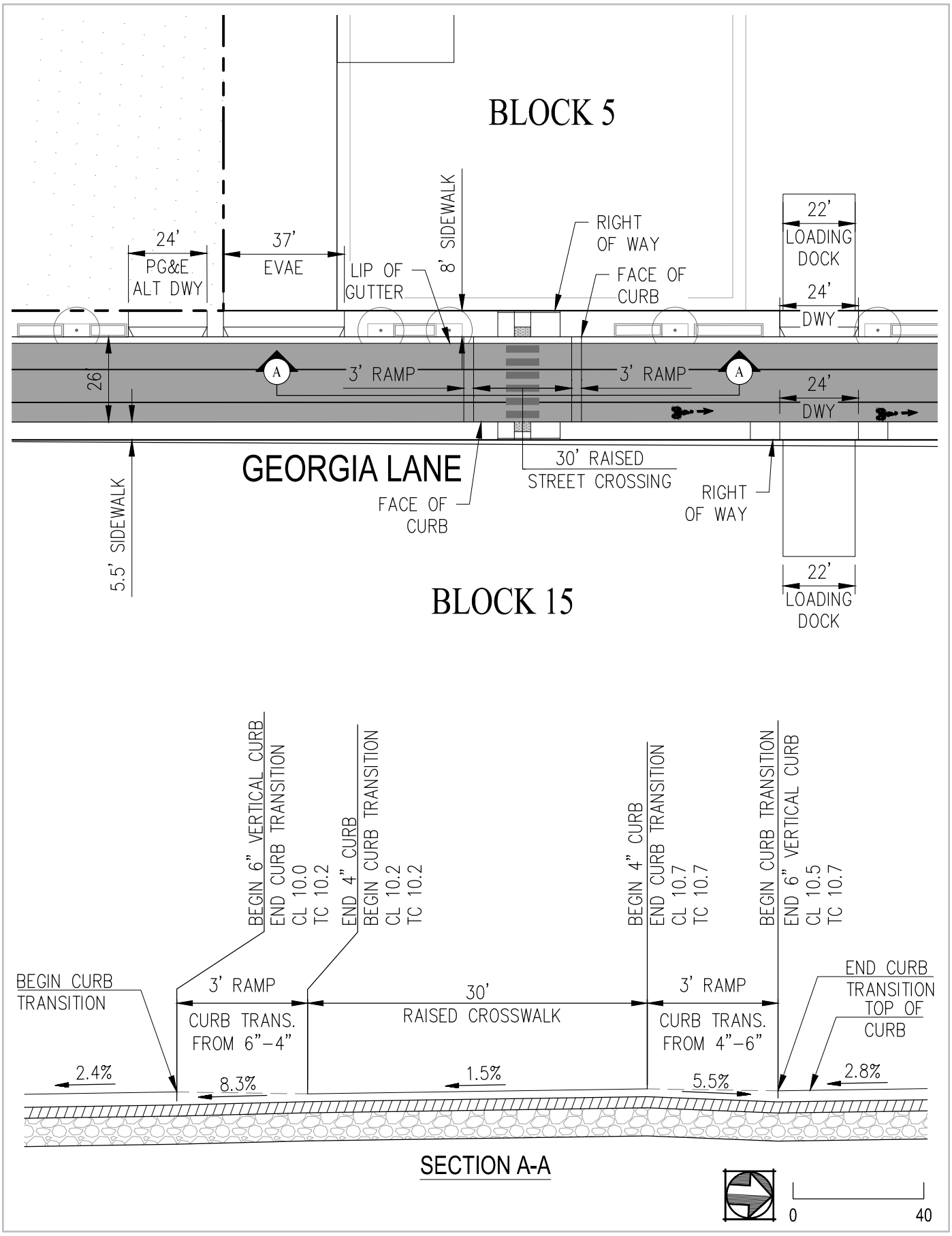


Figure 8.5 Raised Street Crossings – Georgia Lane

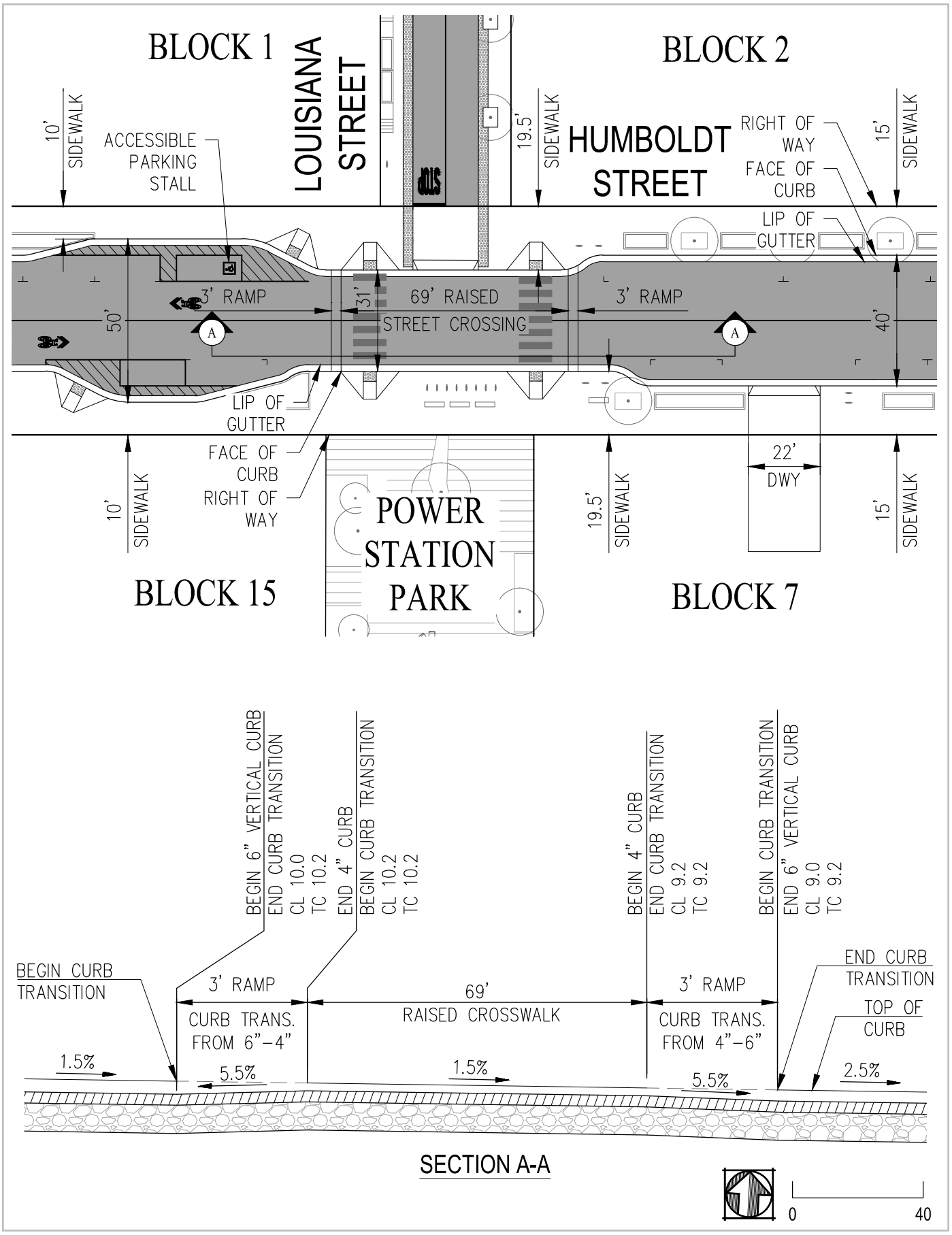


Figure 8.5 Raised Street Crossings – Humboldt Street

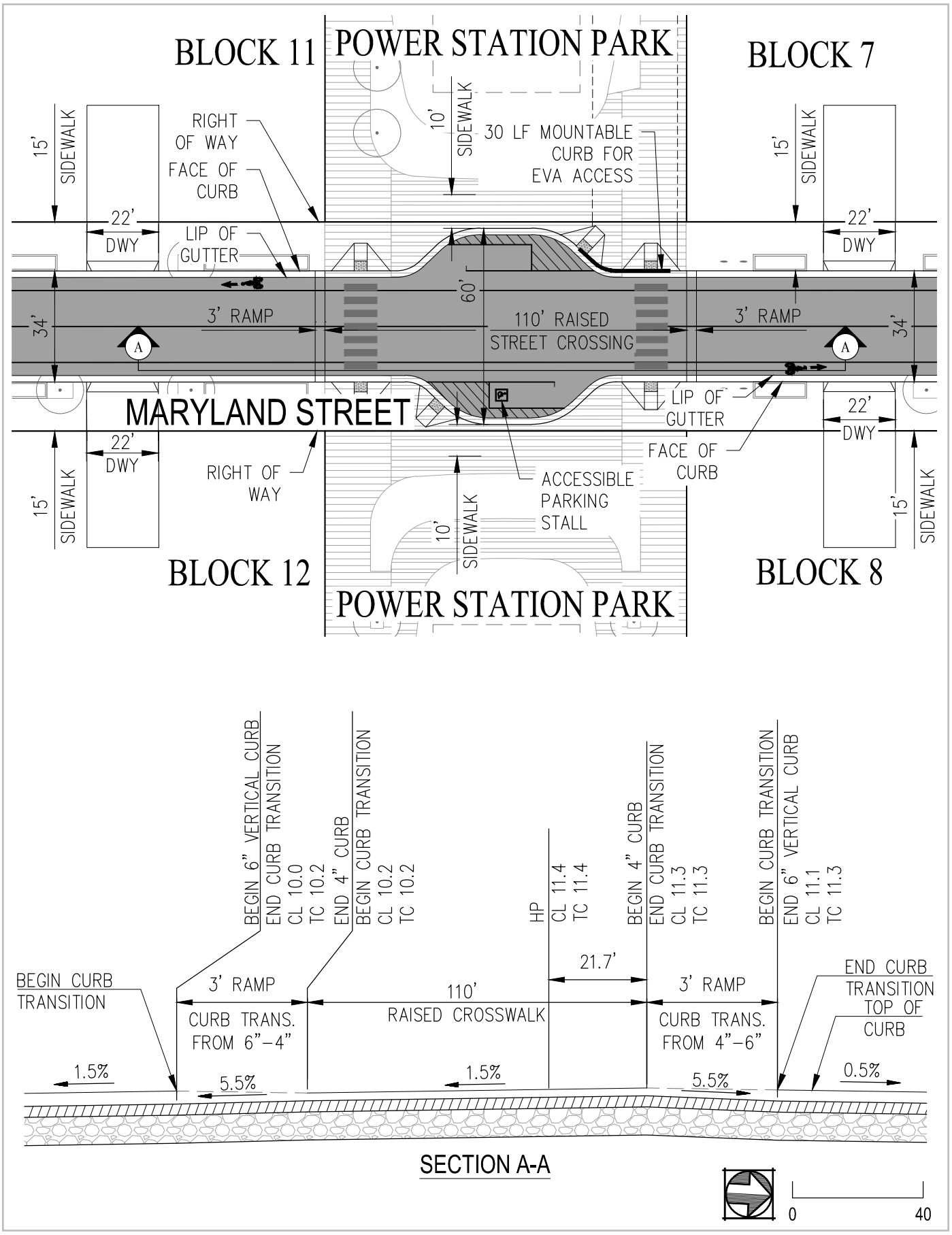


Figure 8.5 Raised Street Crossings – Maryland Street

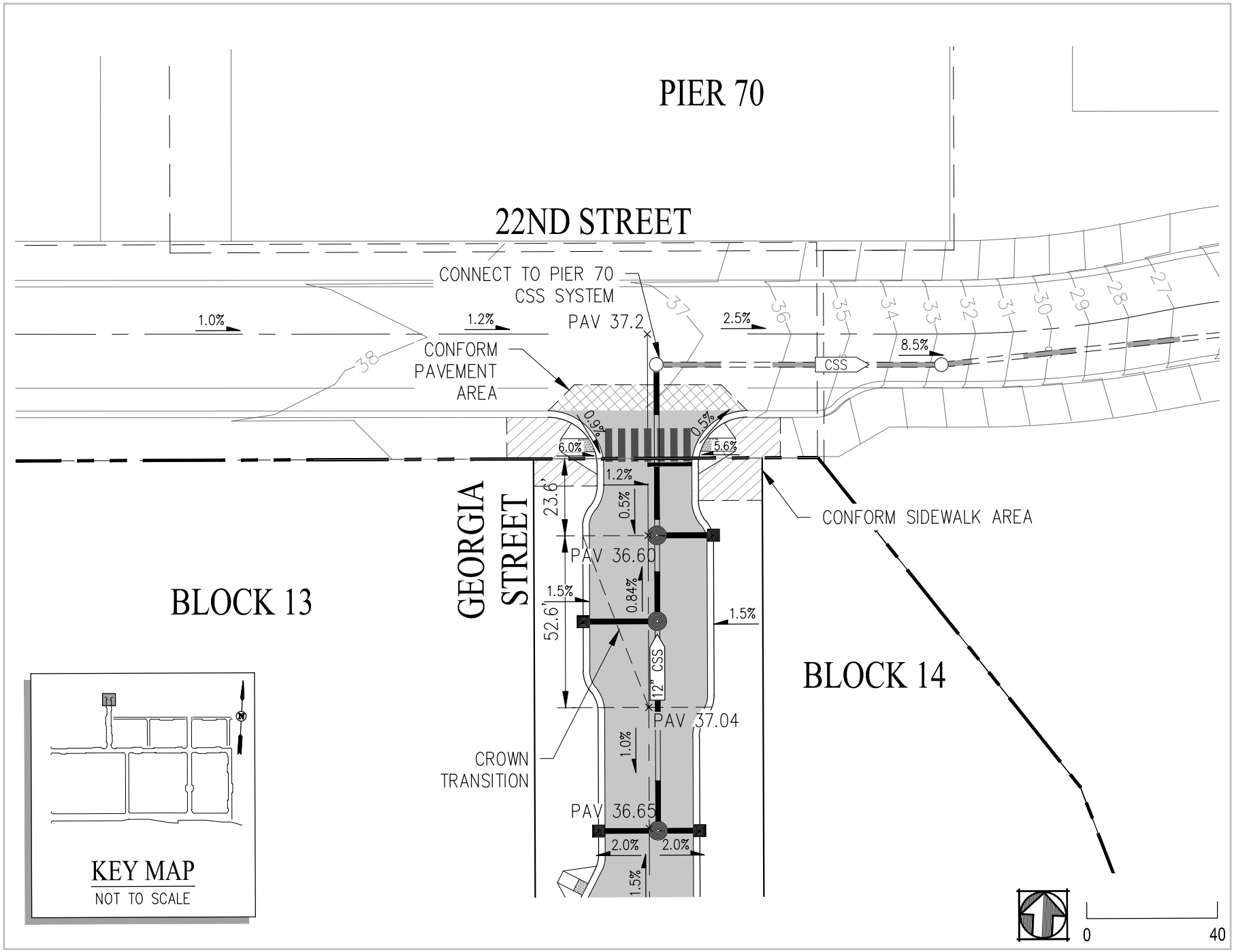


Figure 8.6 22nd Street & Georgia Street Intersection Preliminary Grading

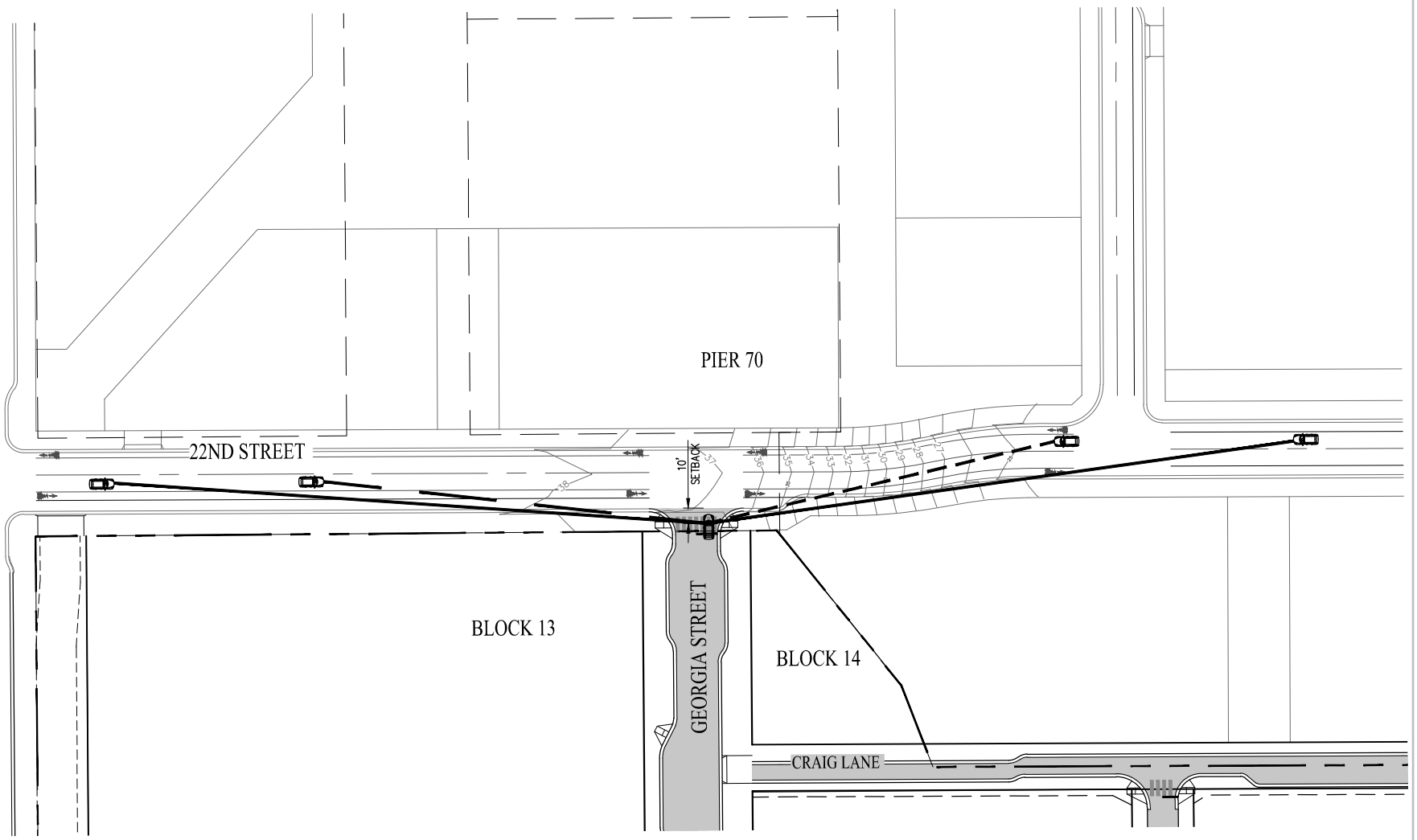


Figure 8.7 22nd Street & Georgia Street Intersection Sight Distances

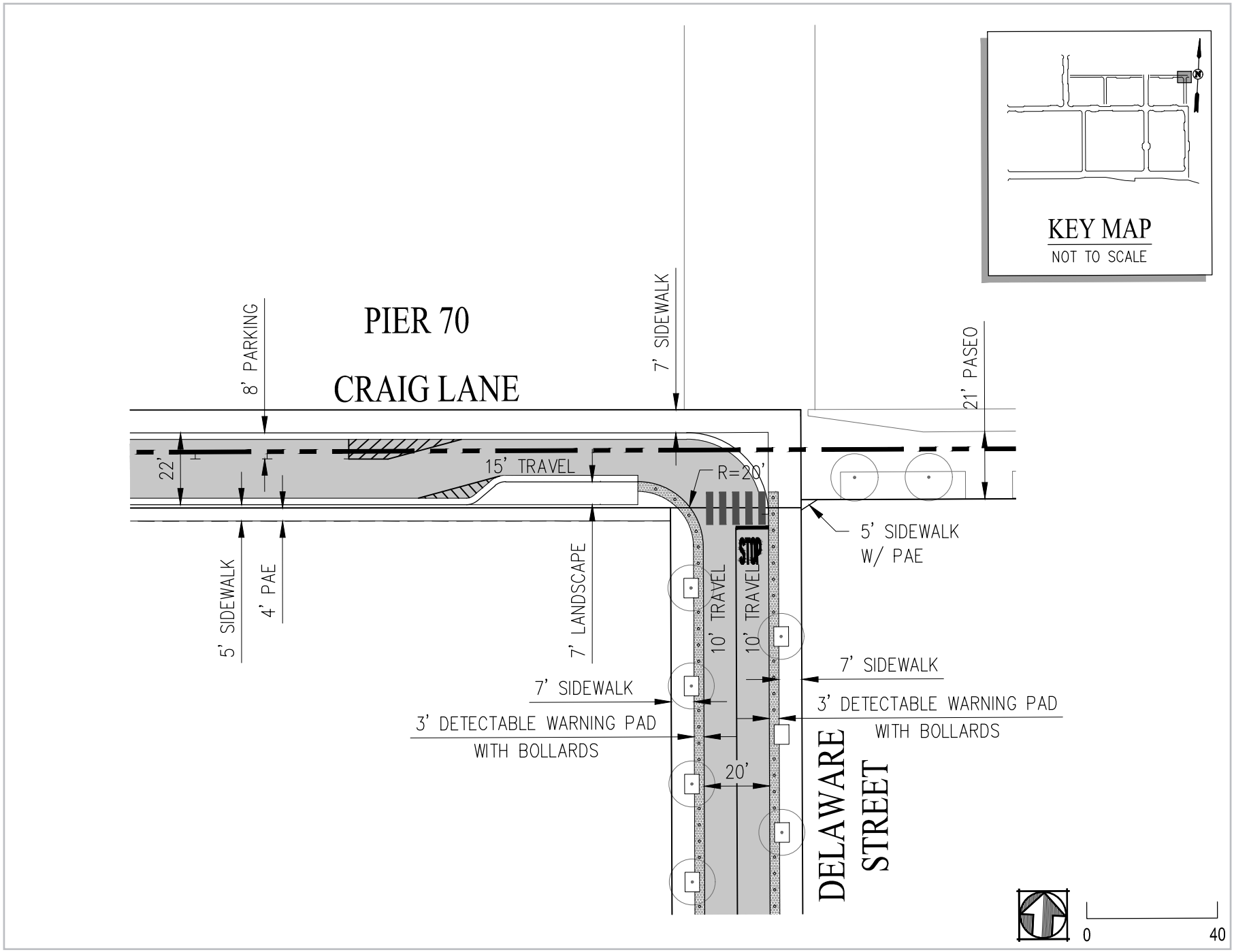


Figure 8.8 Intersection Geometry (Craig Lane & Delaware Street)

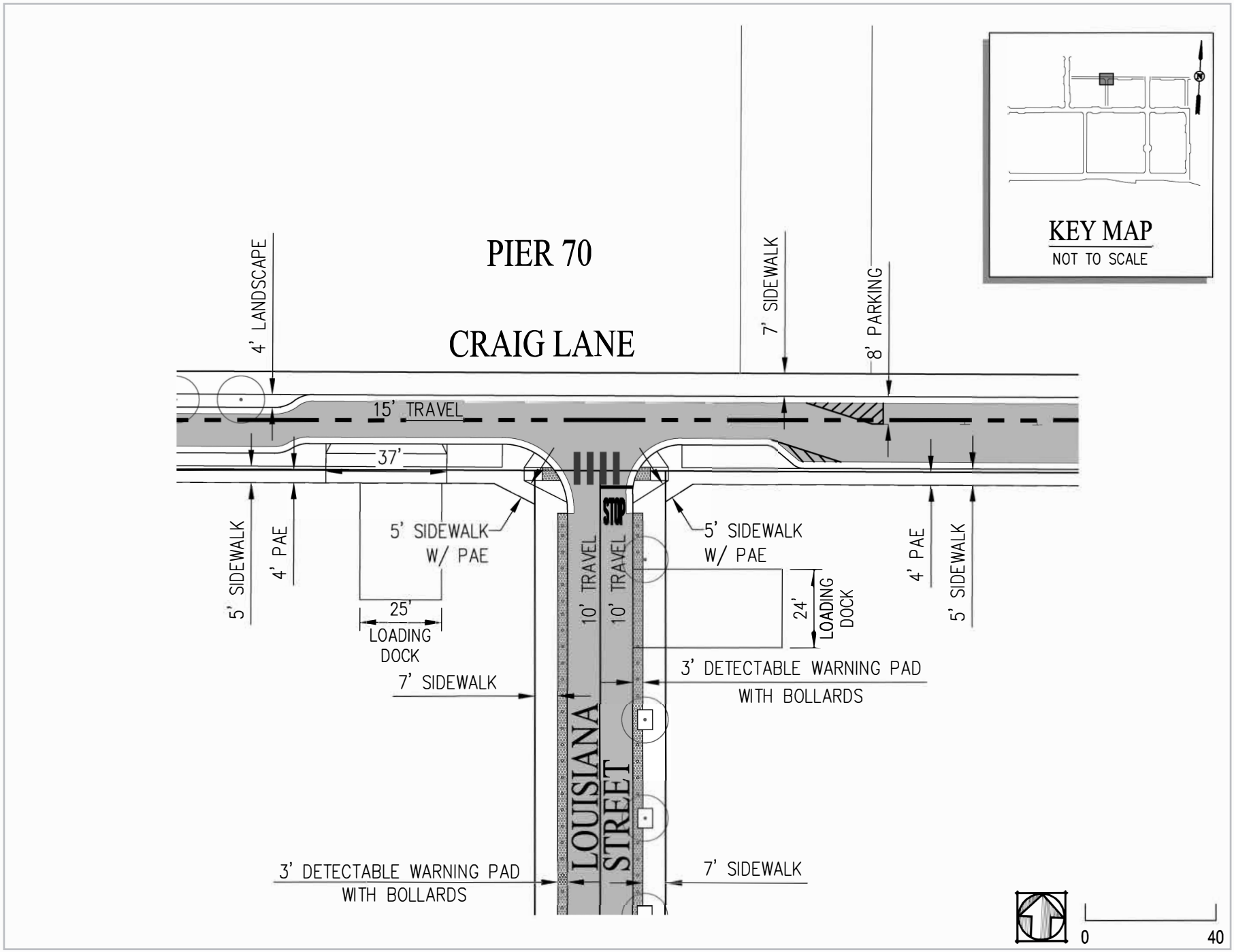


Figure 8.8 Intersection Geometry (Louisiana Street & Craig Lane)

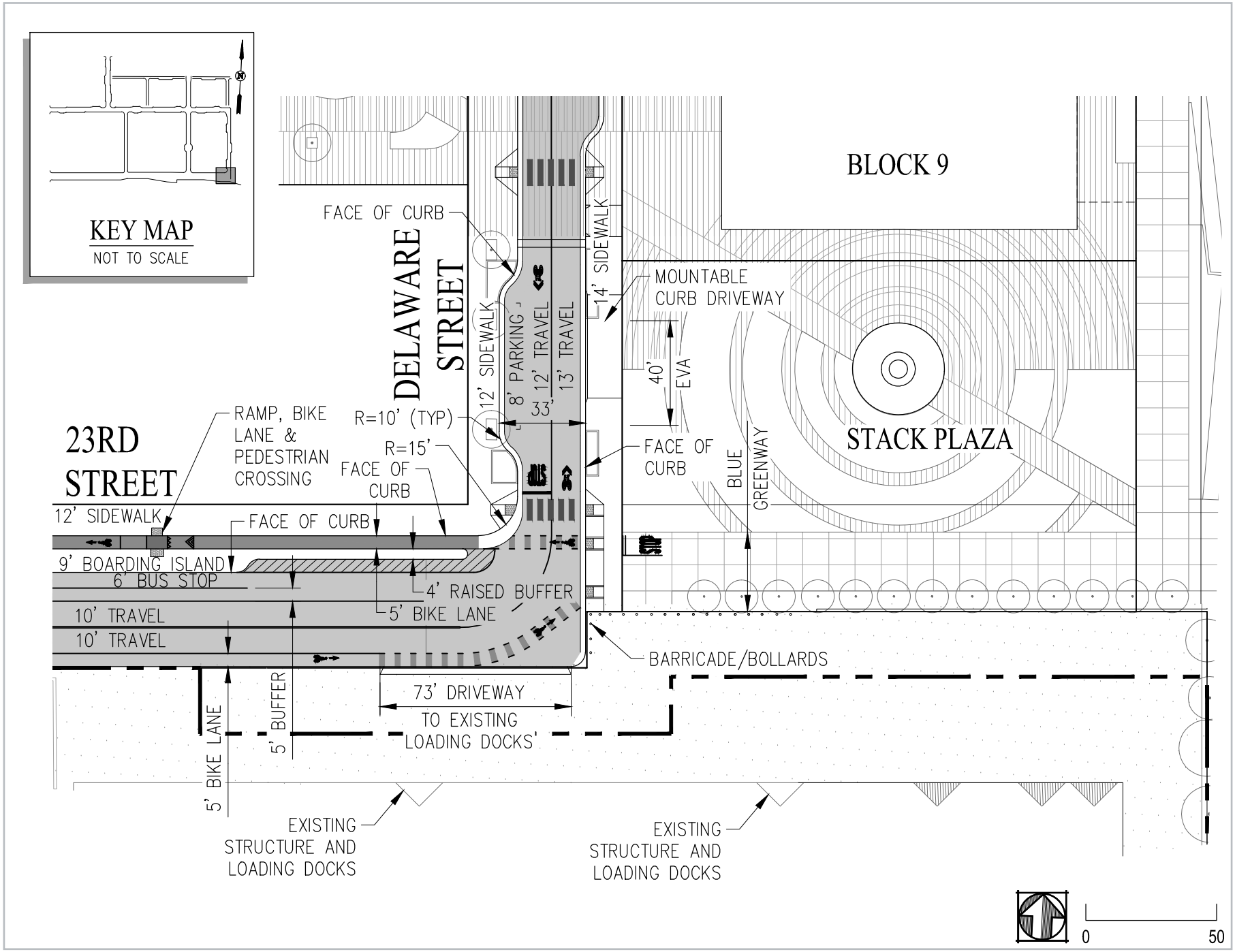


Figure 8.8 Intersection Geometry (23rd Street & Delaware Street)

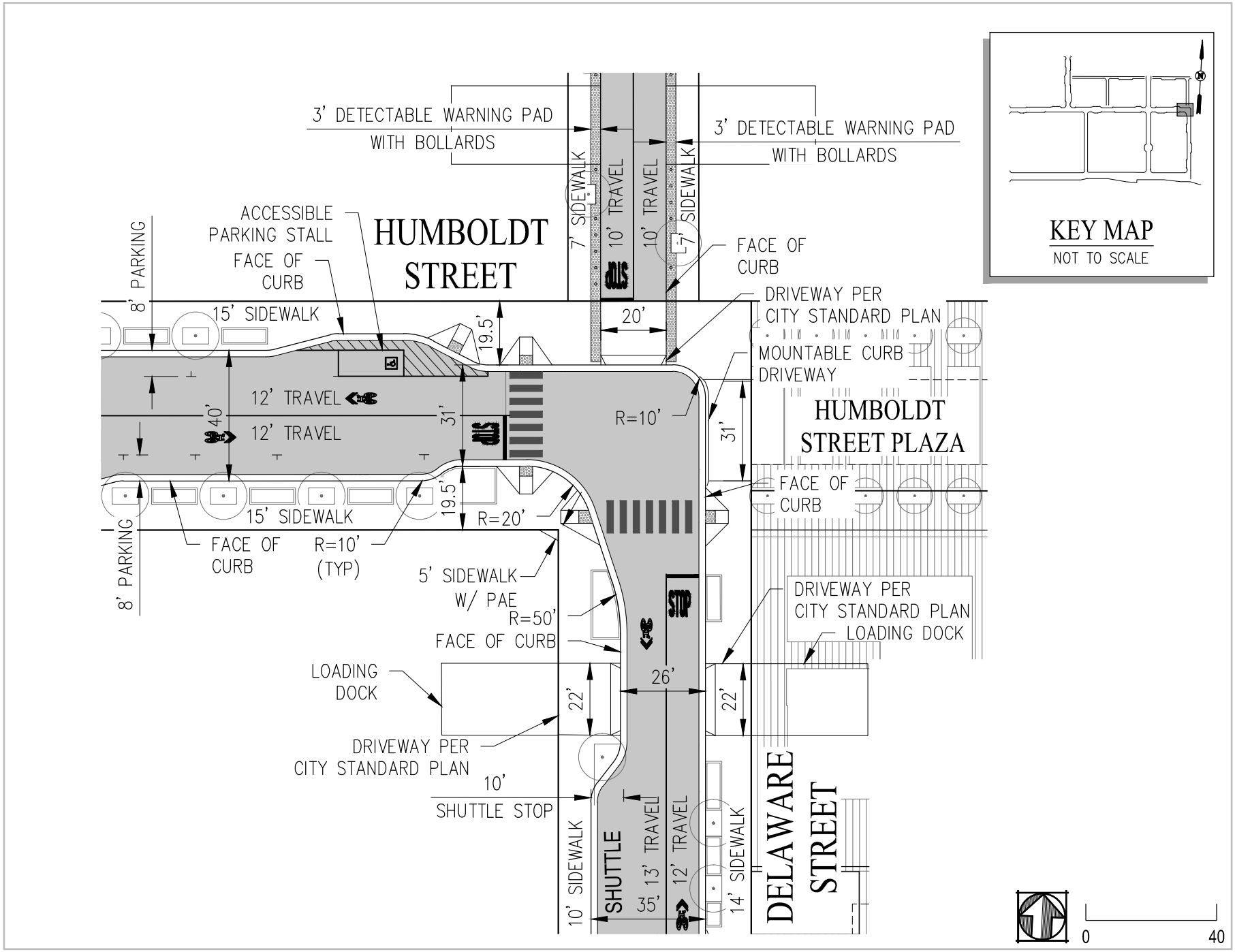


Figure 8.8 Intersection Geometry (Delaware Street & Humboldt Street)

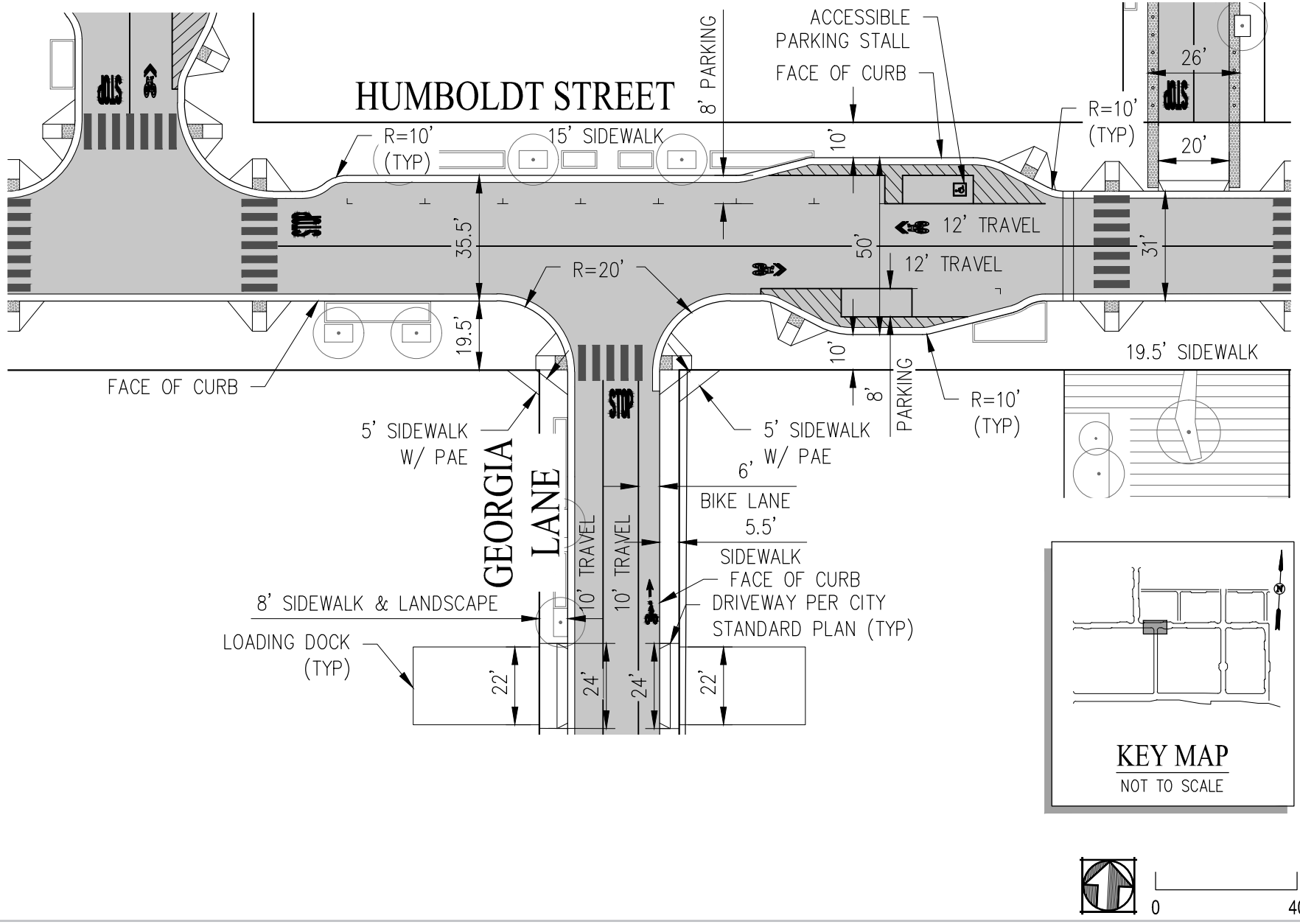


Figure 8.8 Intersection Geometry (Georgia Lane & Humboldt Street)

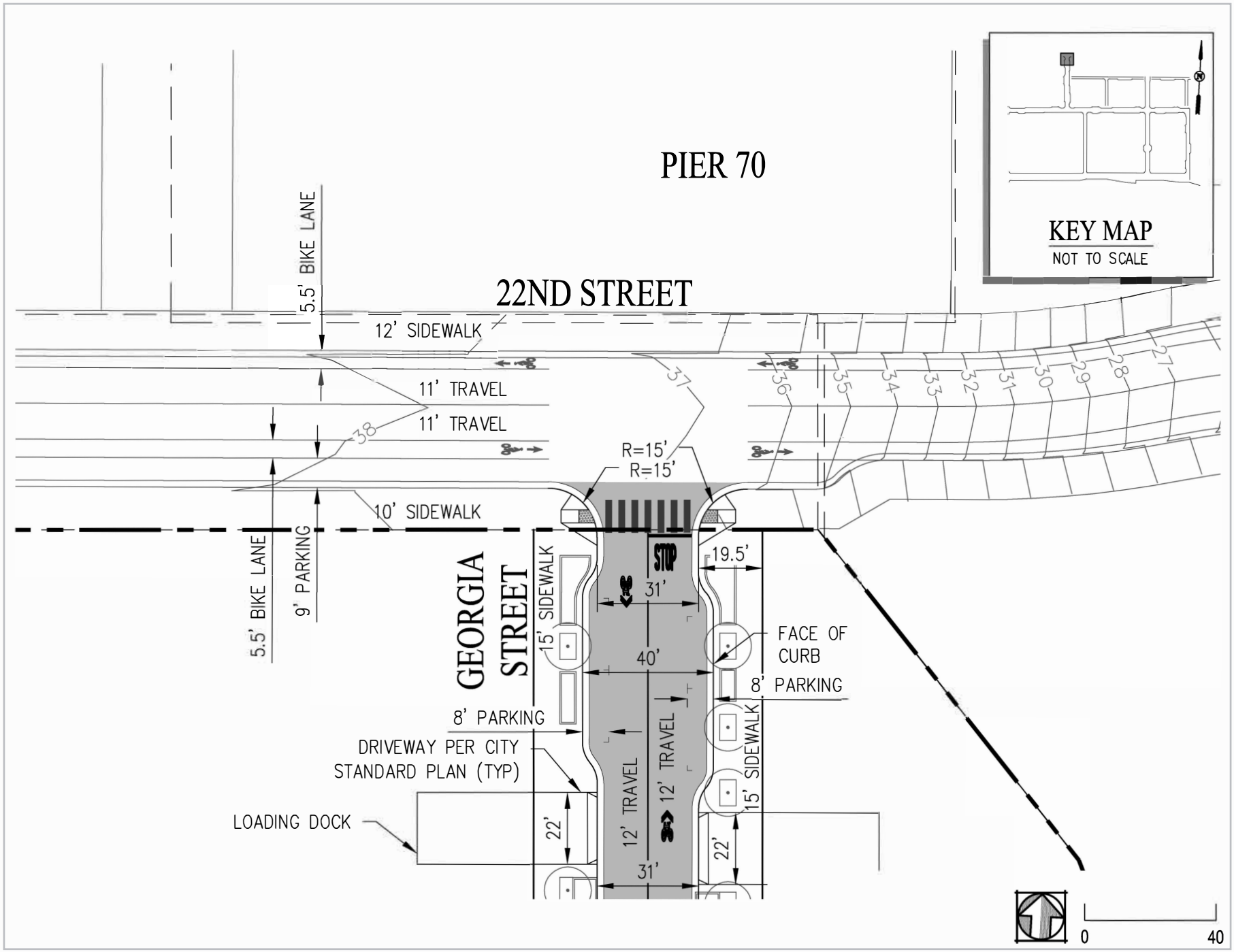


Figure 8.8 Intersection Geometry (Georgia Street & 22nd Street)

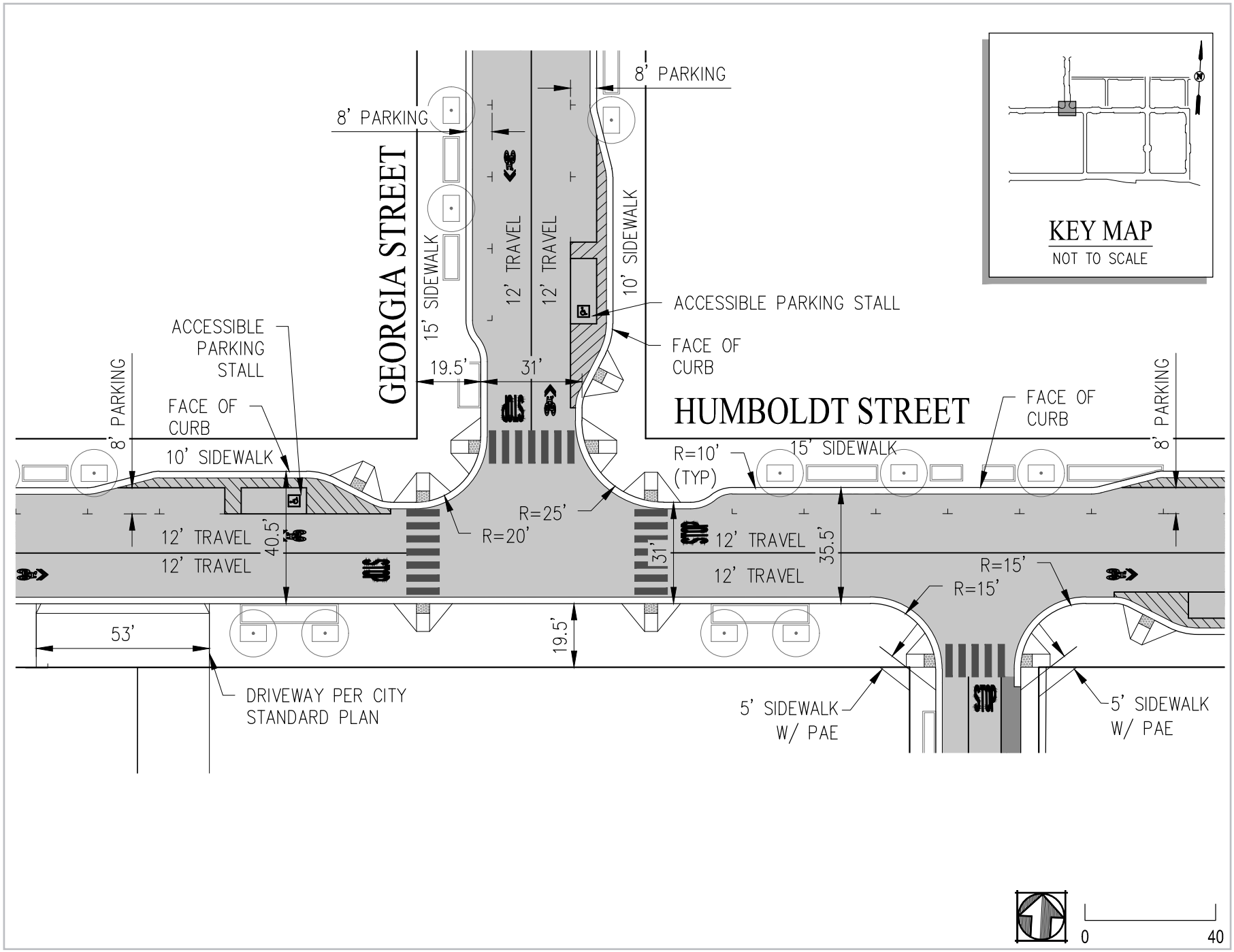


Figure 8.8 Intersection Geometry (Georgia Street & Humboldt Street)

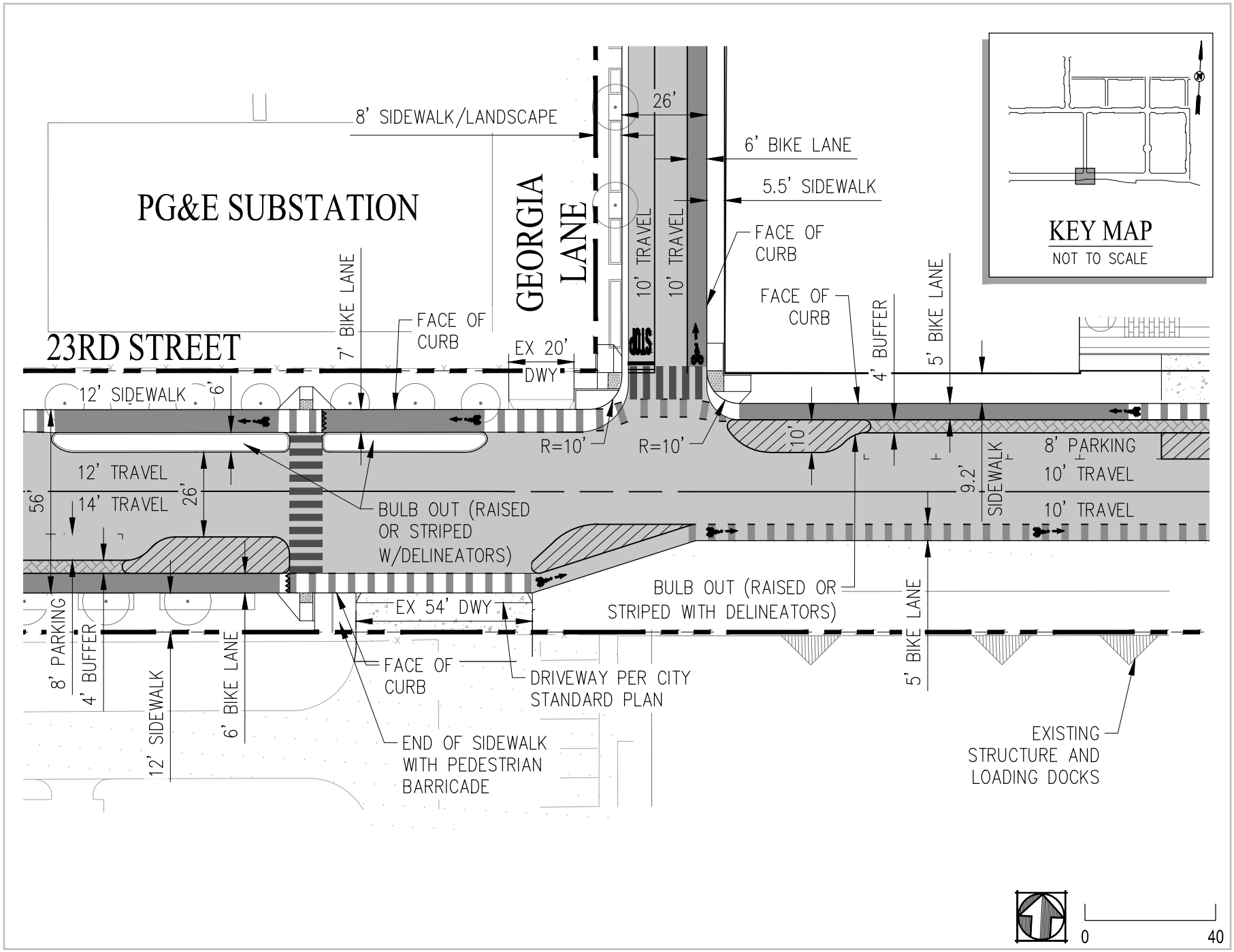


Figure 8.8 Intersection Geometry (23rd Street & Georgia Lane)

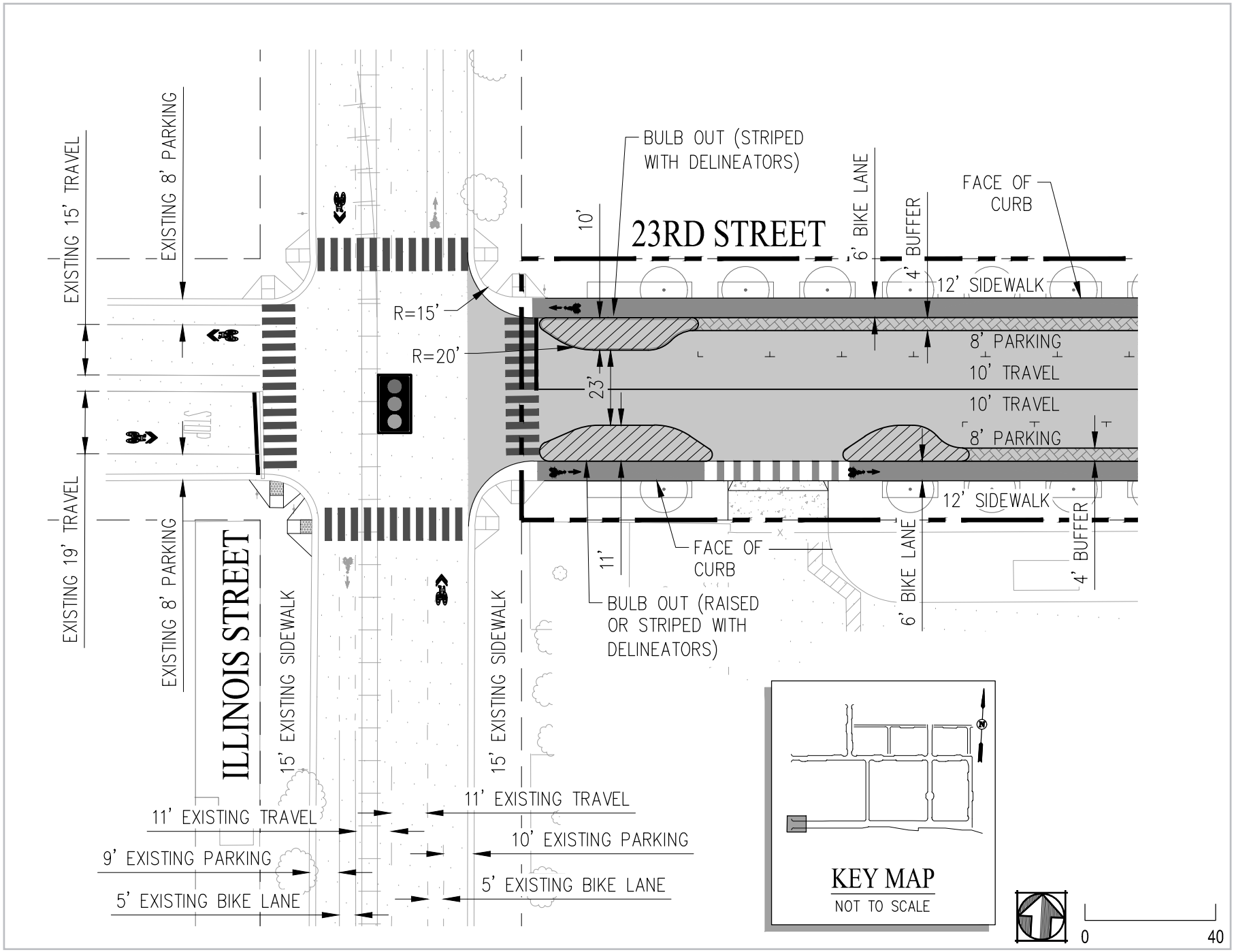


Figure 8.8 Intersection Geometry (Illinois Street & 23rd Street)

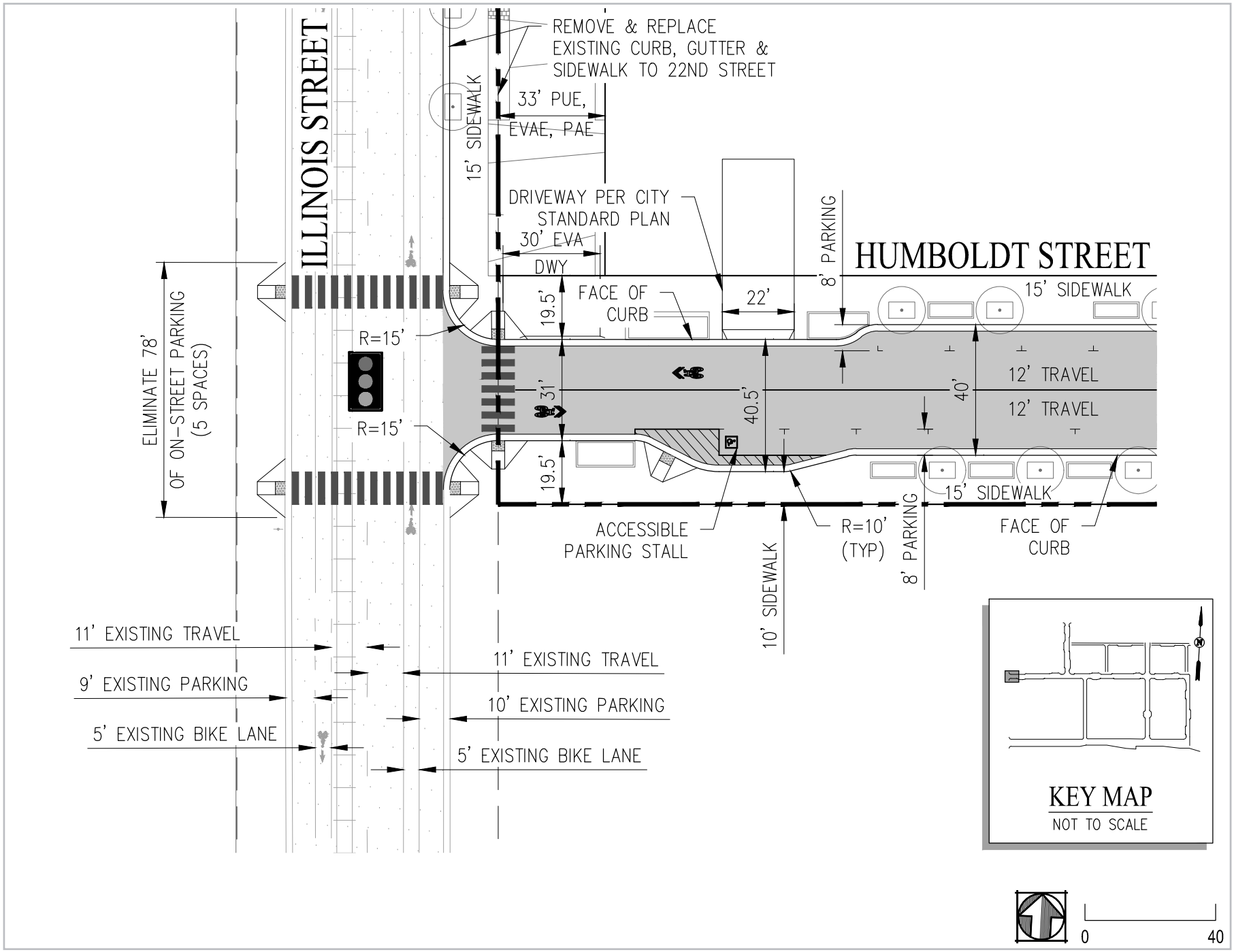


Figure 8.8 Intersection Geometry (Illinois Street & Humboldt Street)

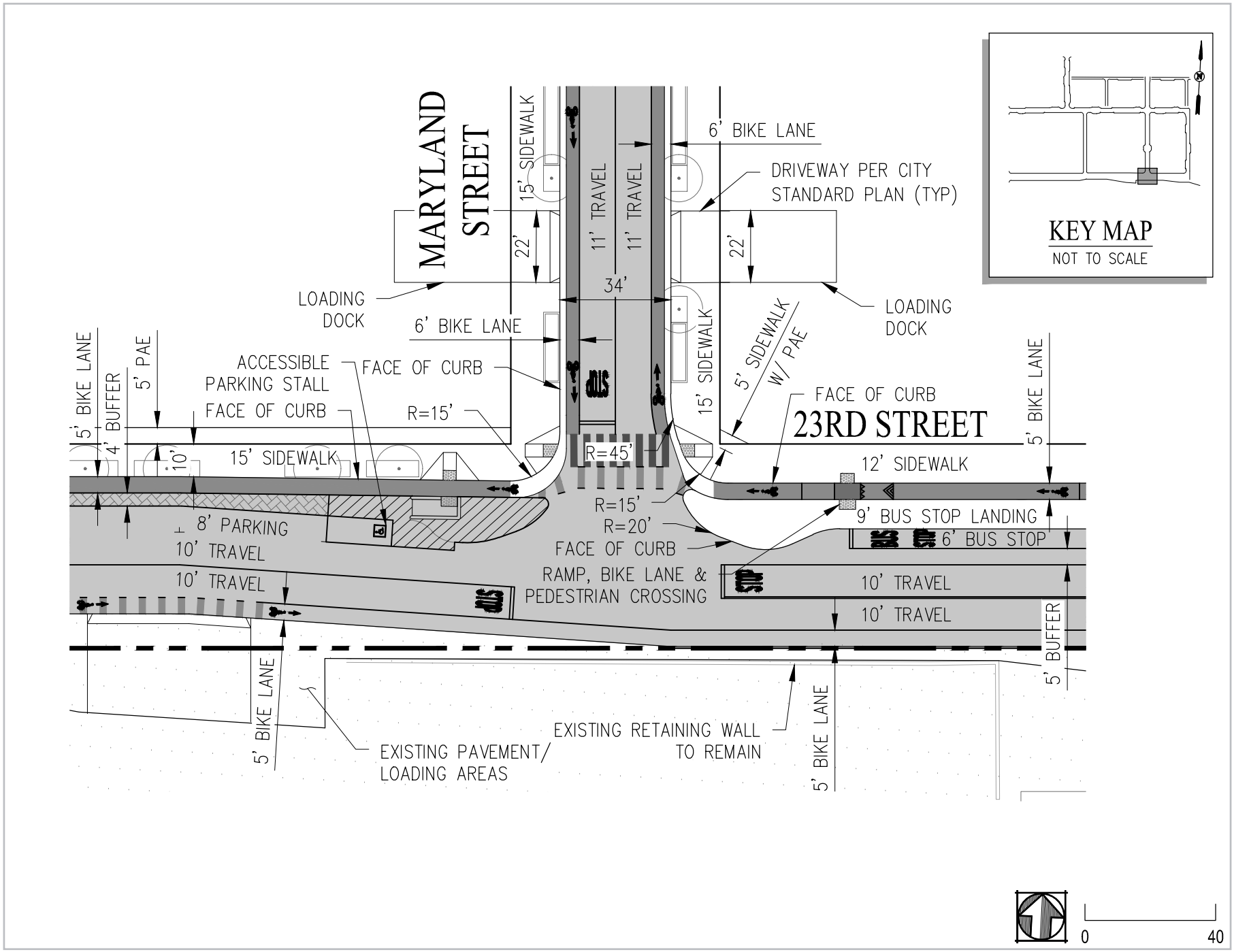


Figure 8.8 Intersection Geometry (Maryland Street & 23rd Street)

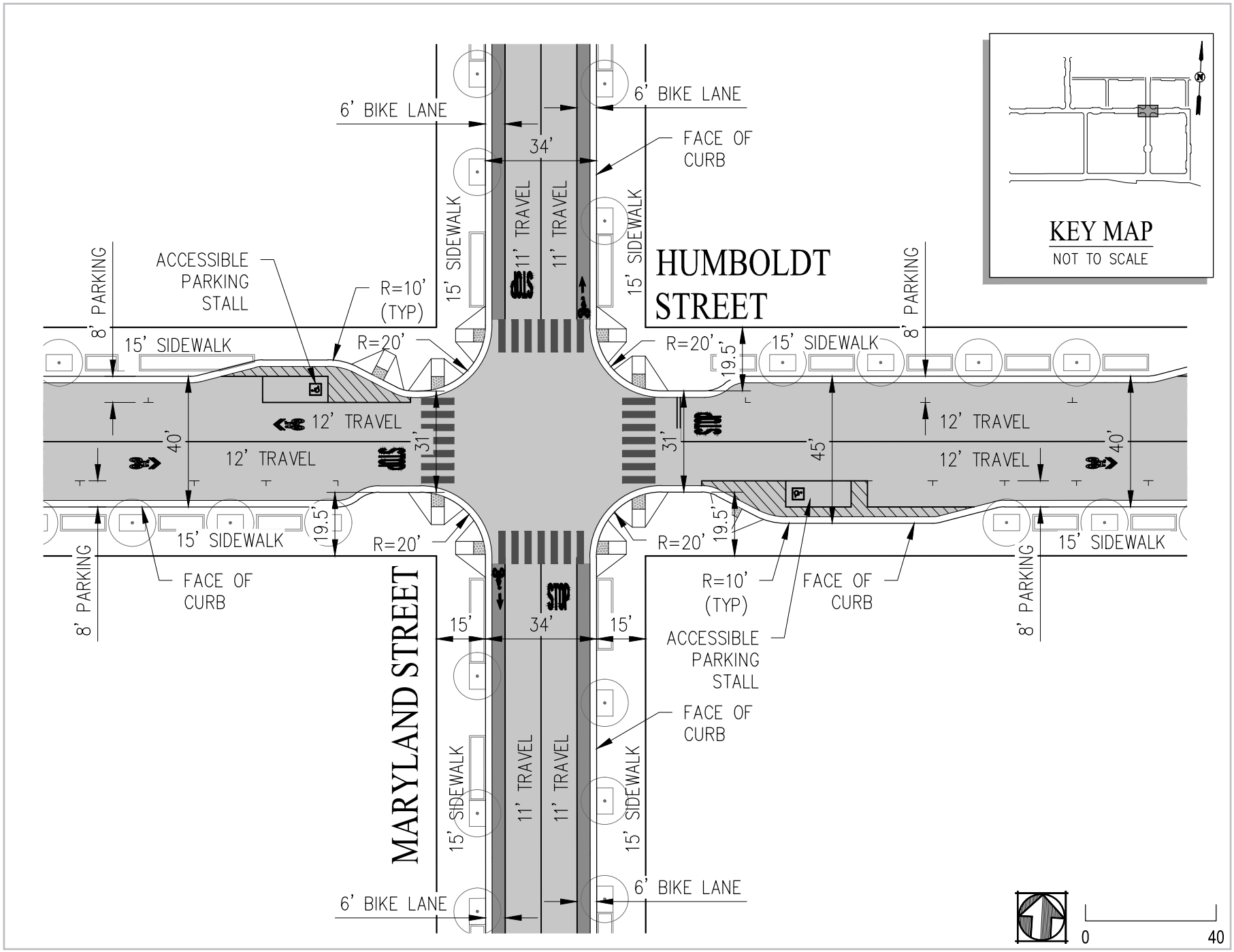


Figure 8.8 Intersection Geometry (Maryland Street & Humboldt Street)

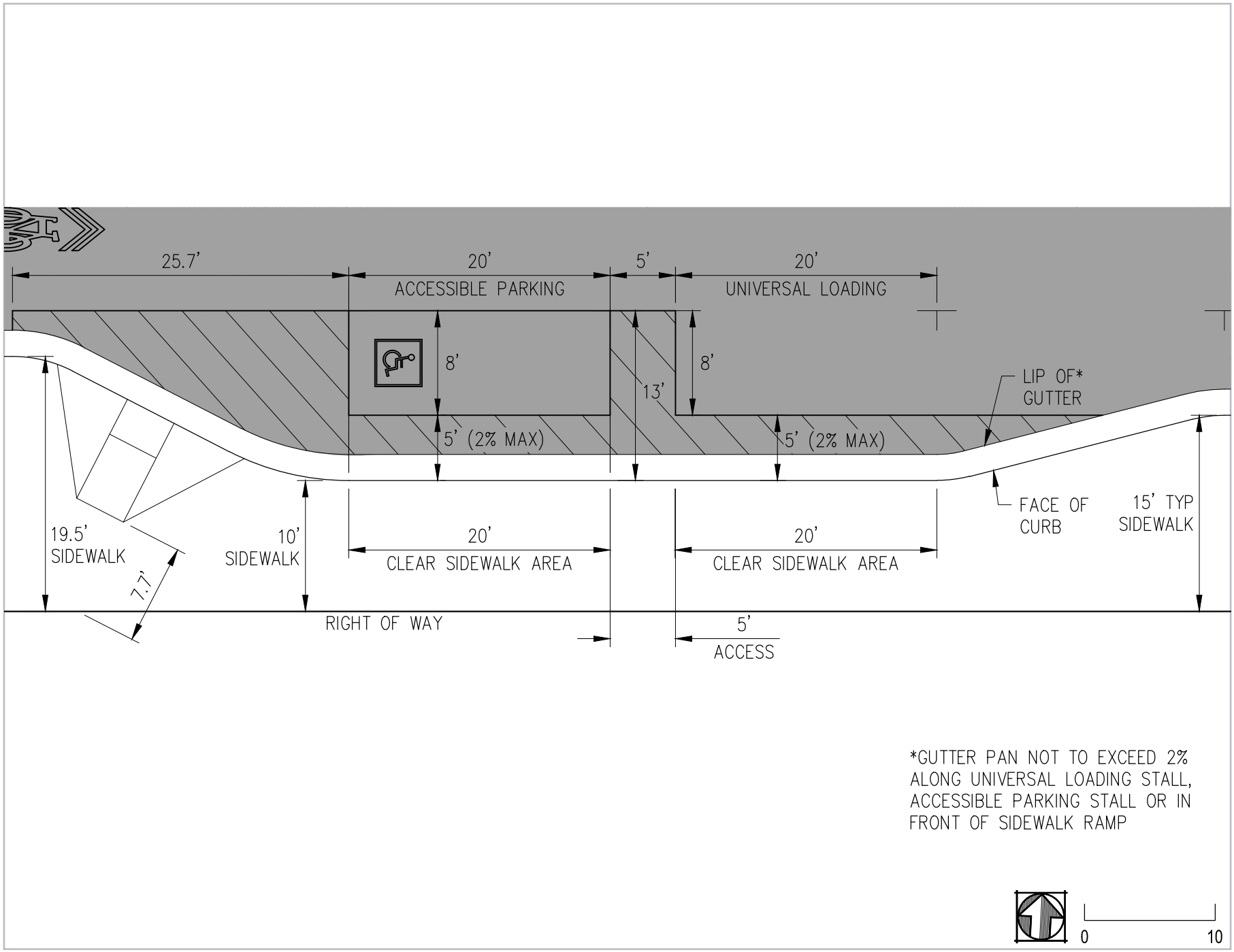


Figure 8.9 Typical Configuration of On-Street Universal Loading and Accessible Parking Stalls

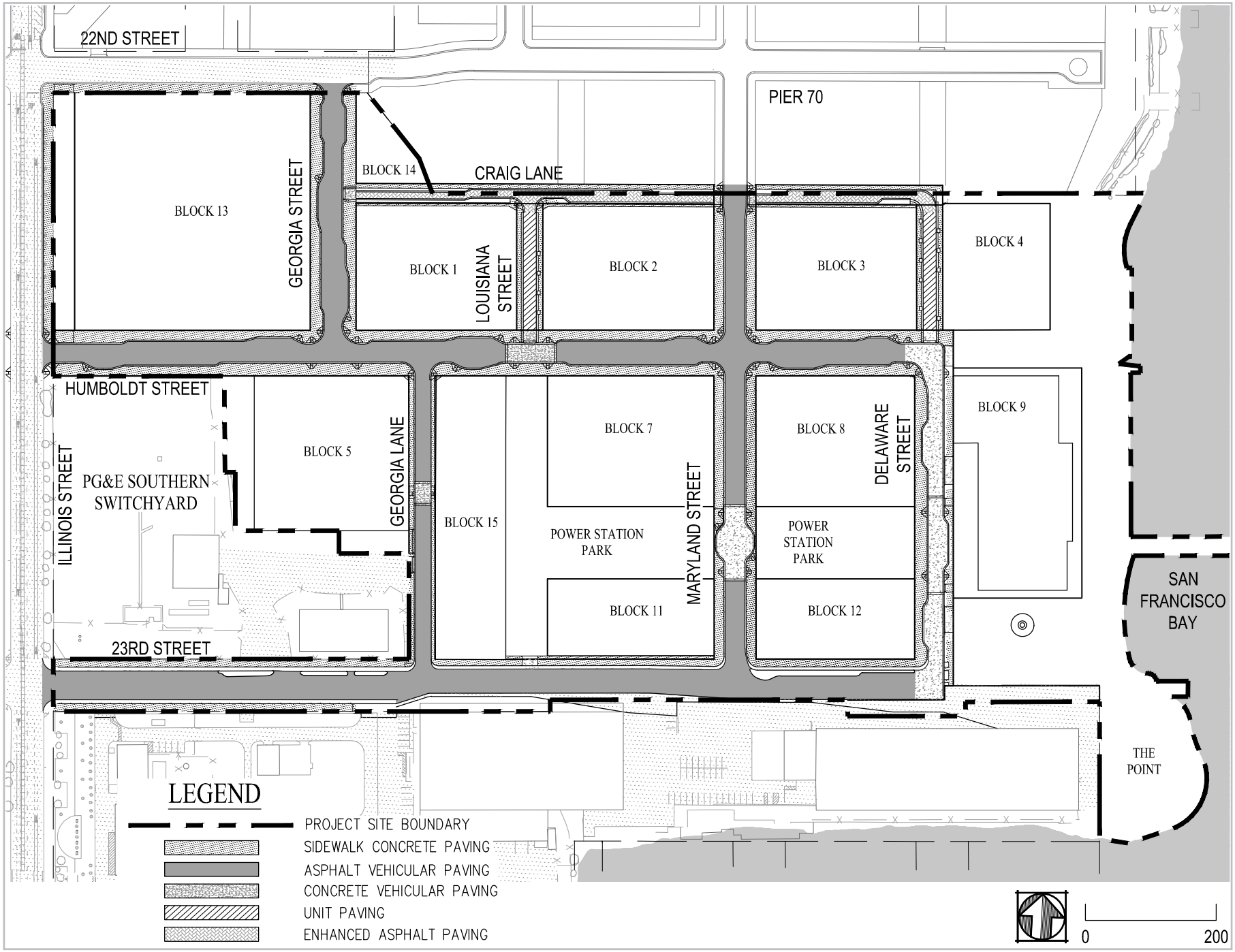


Figure 8.10 Pavement Surfaces

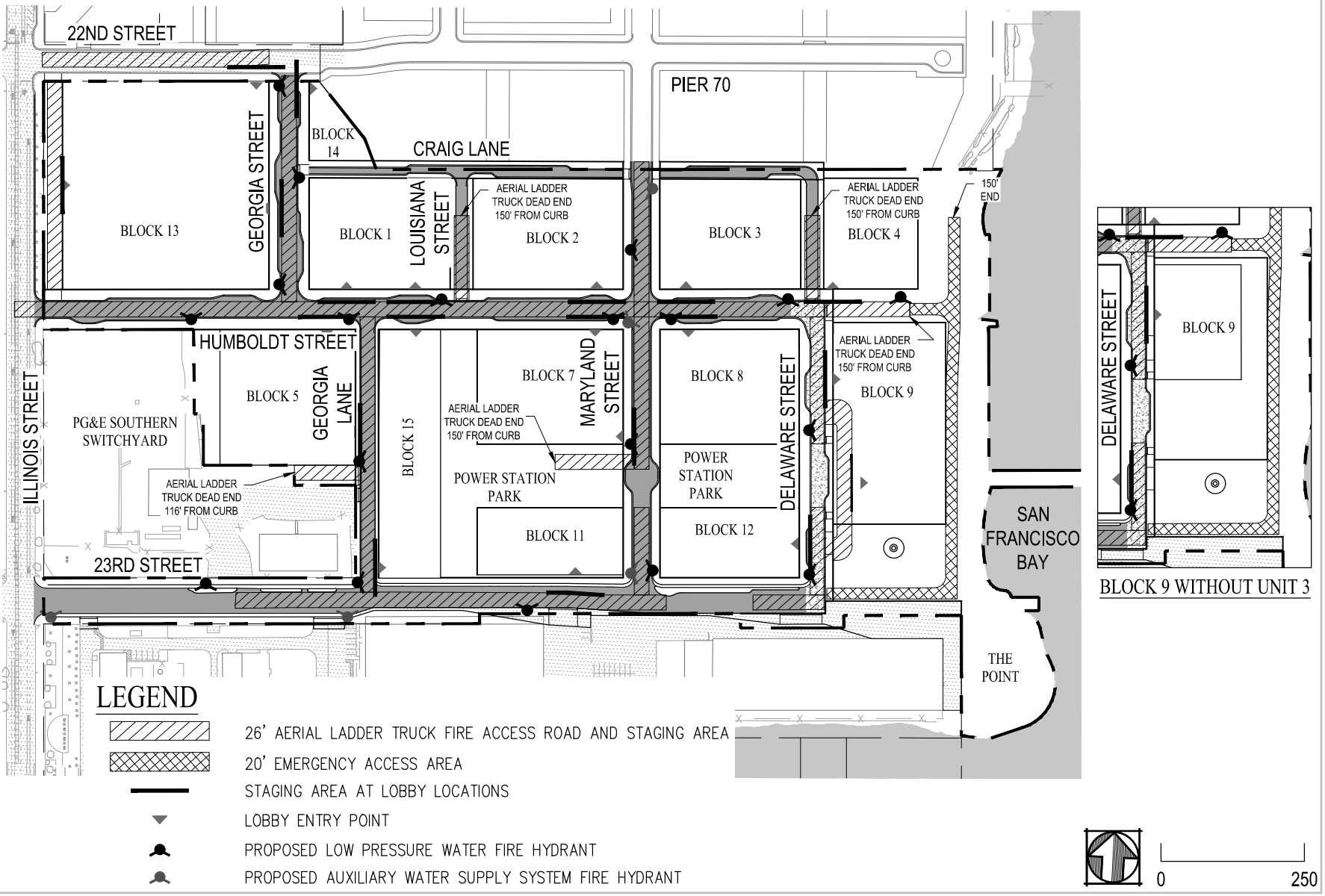


Figure 8.11 Fire Access Plan

9 OPEN SPACE

9.1 Proposed Open Spaces Areas

The proposed Project will provide approximately 6.9 acres of publicly accessible open space. The following is a summary of the major components of the open space network. Please see the D4D Open Space section for a detailed description of the Open Space System. These improvements are intended to complement the planned, adjacent Pier 70 Mixed-Use District open space improvements, extend the Blue Greenway and Bay Trail through the project site, and create an urban waterfront space. The Developer's infrastructure obligations include the design and construction of the open space and park improvements. Key components of the open space program area are described below.

9.1.1 Waterfront Open Space

This proposed approximately 4.0-acre waterfront park will extend the Blue Greenway and Bay Trail from the Pier 70 Mixed-Use District project through the Project Site, and provide spill-out spaces for retail, quiet spaces, and waterfront viewing terraces and recreational area. Additional amenities could include trellis structures, barbeques, a recreational dock, and public art.

9.1.2 Power Station Park and Louisiana Paseo

This proposed 1.92-acre central green space will extend east-west through the interior of the Project Site and connect the Louisiana Paseo to the waterfront. This park could contain play or fitness structures, art, trellis structures, and outdoor picnic areas. Louisiana Paseo will provide flexible use urban plaza spaces.

9.1.3 Rooftop Soccer Field

A public open space is proposed on a portion of the roof of the district parking garage. This rooftop open space would include benches and a screened 0.68-acre U-10 soccer field. The rooftop soccer field will be accessible from the street level by an elevator.

9.1.4 Illinois Plaza

This proposed 0.28-acre linear plaza stretches between 22nd Street and Humboldt Street along the west side of Block 13. The plaza sits over a utility corridor and will serve as an EVA lane.

9.2 Phasing, Ownership, Operation and Maintenance

The new open space system will be constructed in phases to match the Phases of the Project and as depicted on the Phasing Plan, Figure 1.3. The Phase will connect to the existing open space and parks as close to the edge of the Phase area as possible where a logical transition line can be established within the open space improvement features.

The proposed parks and open space will be owned and maintained by the Project Master Association, except for the portions of The Point and Waterfront Park that are owned by the Port. The Port will maintain ownership of these areas, but these areas will also be maintained by the Project Master Association.

The rooftop soccer field will be available for reservation through the San Francisco Recreation and Parks Department athletic field reservation system.

10 UTILITY LAYOUT AND SEPARATION

10.1 Utility Systems

The Project will install public utility systems, including combined sewer system, separated sanitary sewer system, separated storm drain system, low pressure water system, non-potable water system, auxiliary water supply system and dry utility systems.

10.2 Utility Separation Criteria

The proposed utility systems will be designed to provide the required placement and separation criteria in accordance with the City of San Francisco Subdivision Regulations, SFPUC Utility Standards and asset protection standards, California Code of Regulations Title 22, Section 64572 and PUC GO 128. Utility main separation requirements are depicted in Figure 10.1 from the Subdivision Regulations.

10.2.1 23rd Street Utility Considerations

The 23rd Street corridor contains existing underground high voltage electrical lines along the north and south sides of the street. Additionally, SFPUC Power Enterprises is currently implementing their Bay Corridor Transmission and Distribution ("BCTD") Power Enterprises Project. The proposed utilities within the 23rd Street have been carefully planned to provide the required separations from these existing significant components of infrastructure. The alignments of the proposed utilities in 23rd Street will vary in order to provide the required separations to the existing facilities.

10.3 Utility Configurations

The proposed utility systems are designed to connect to the reliable existing adjacent public utility infrastructure facilities. Descriptions of each utility system are provided in Sections 11 through 16. The anticipated configurations of the utility systems within each street complying with the required placement and separation criteria are depicted in Figure 10.2.

10.4 Utility Configurations Variances

The existing underground utilities that are required to be preserved in 23rd Street and Humboldt Street may require exceptions or design modifications for the proposed public utilities within these streets. A formal exception or design modification for any facility that does not meet the SFPUC standards will be requested with the Project construction documents submittal, if necessary.

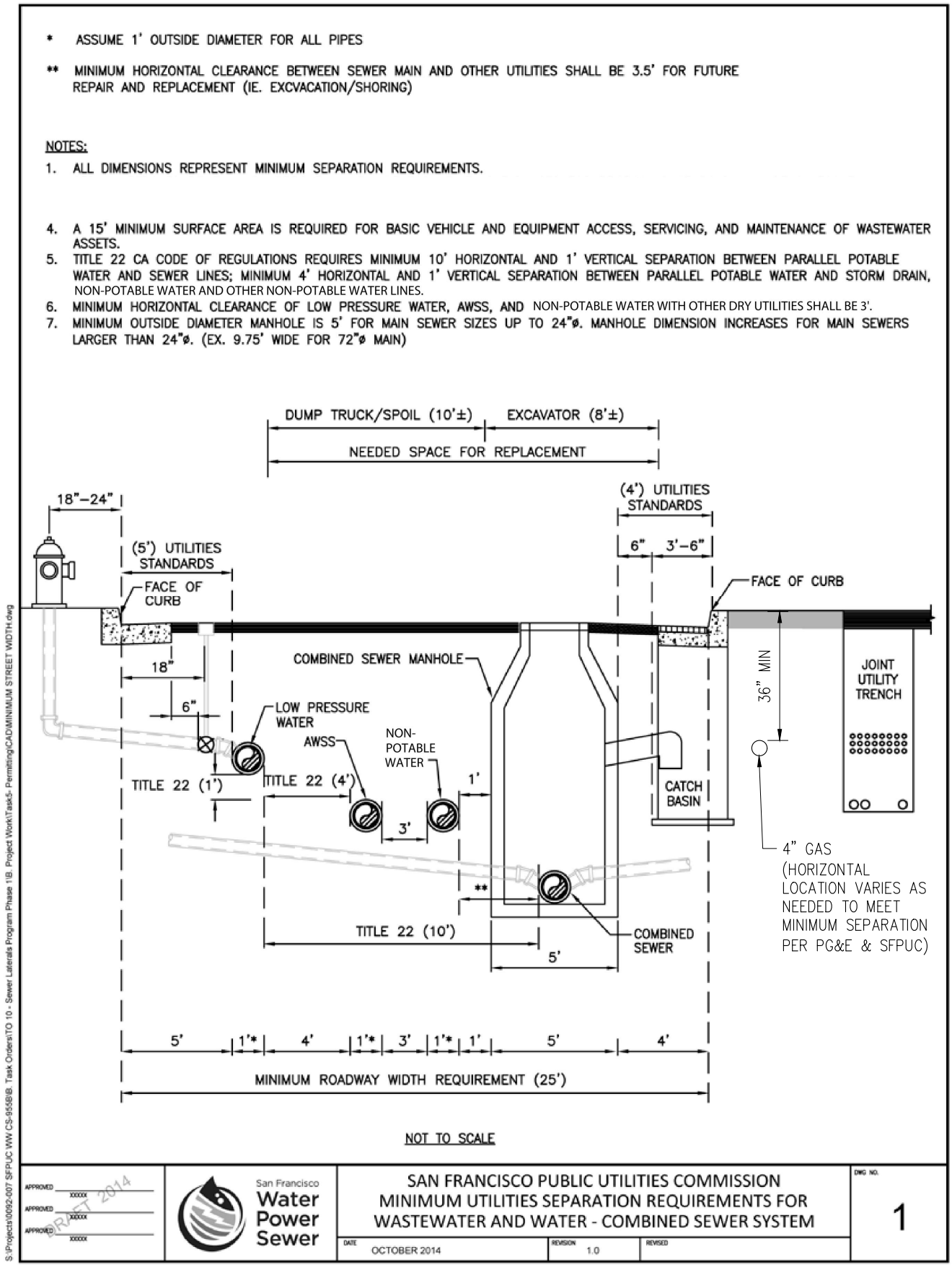


Figure 10.1 Utility Separation Criteria - Combined Sewer

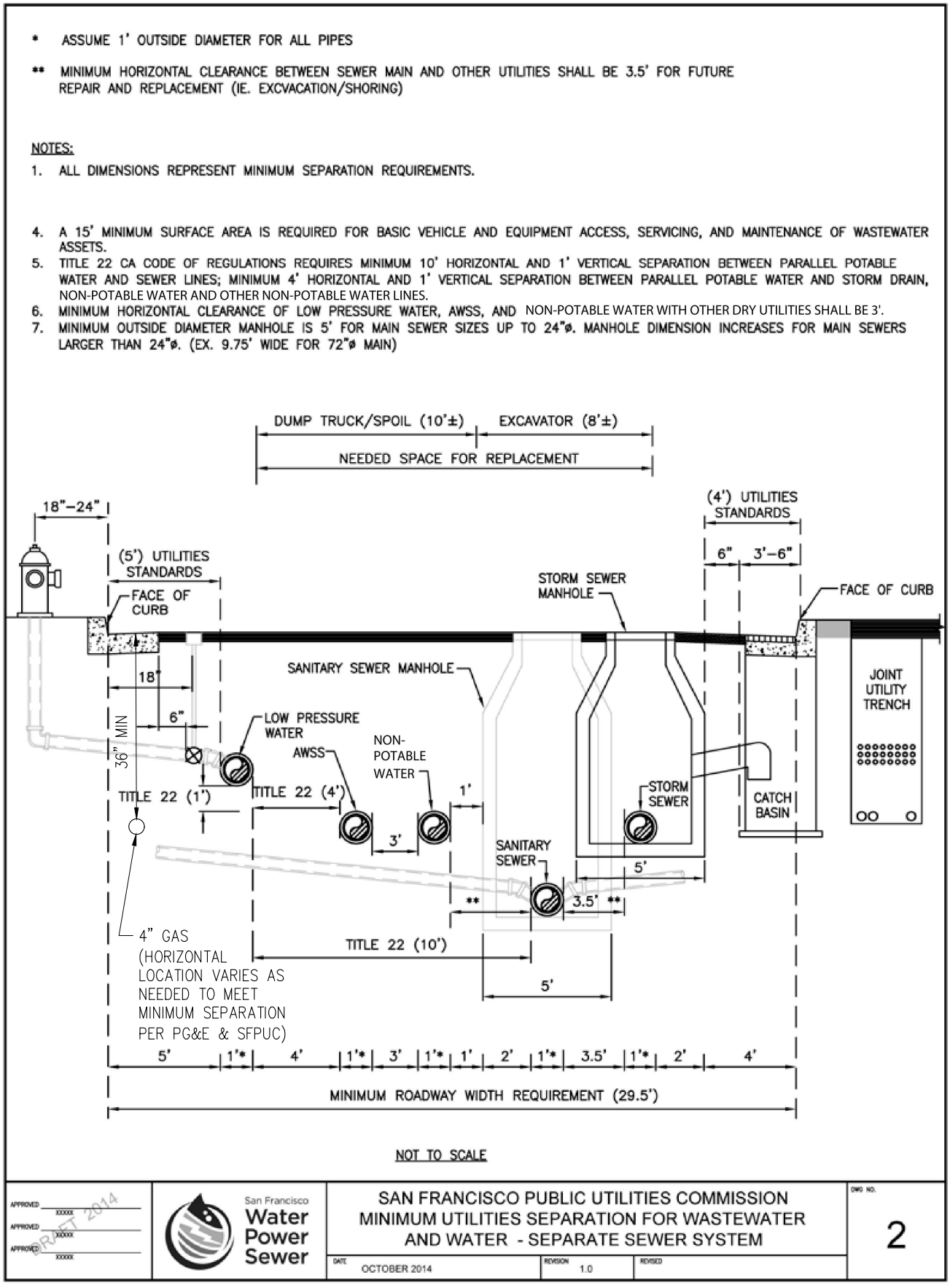


Figure 10.1 Utility Separation Criteria - Separated Sewer

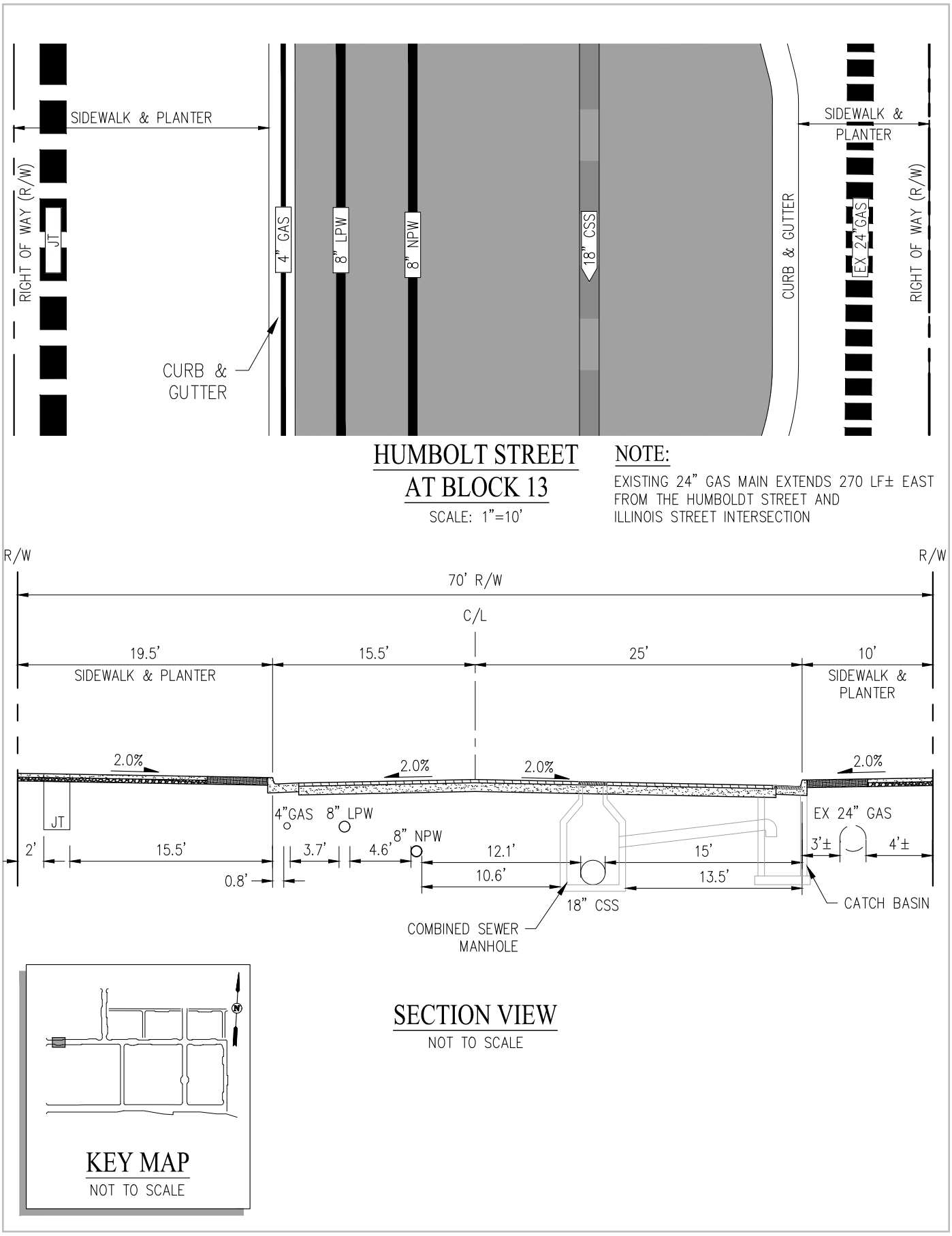


Figure 10.2 Utility Configurations

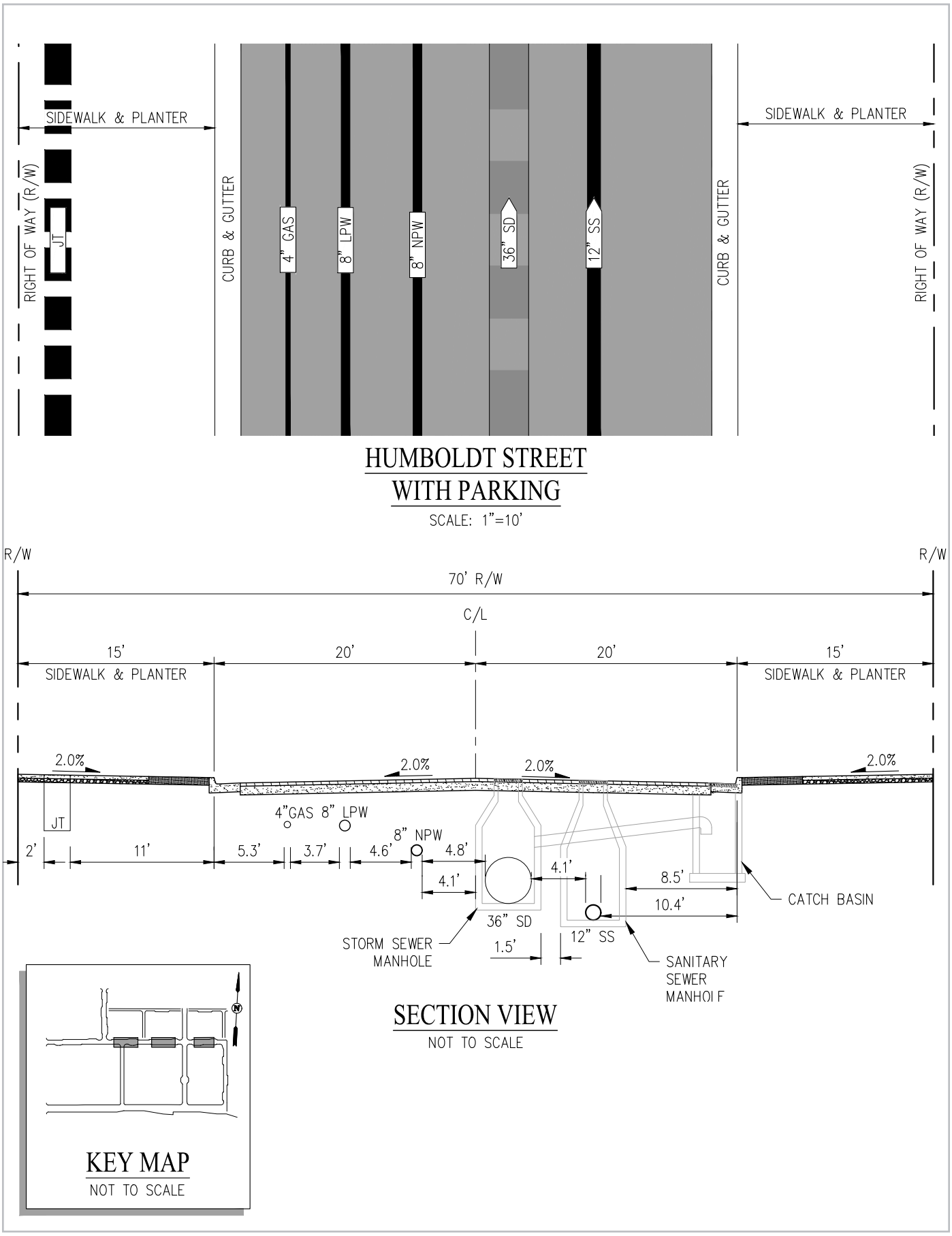


Figure 10.2 Utility Configurations

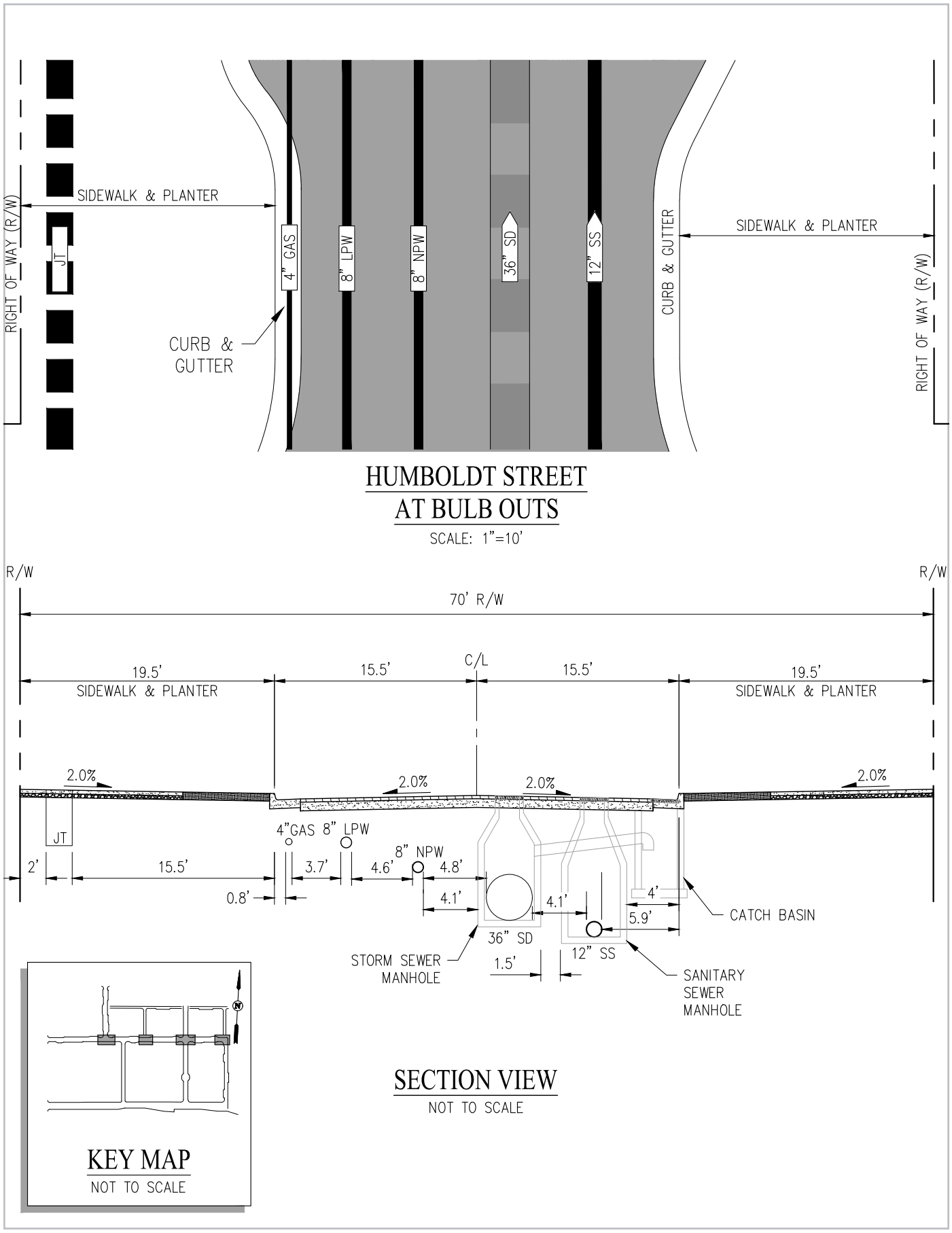
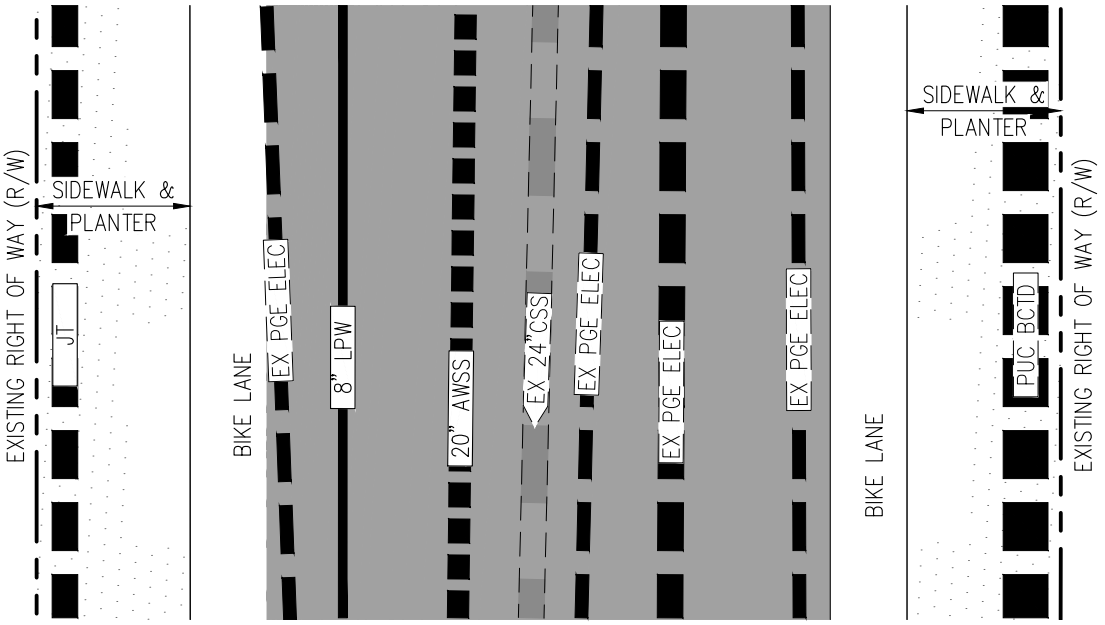
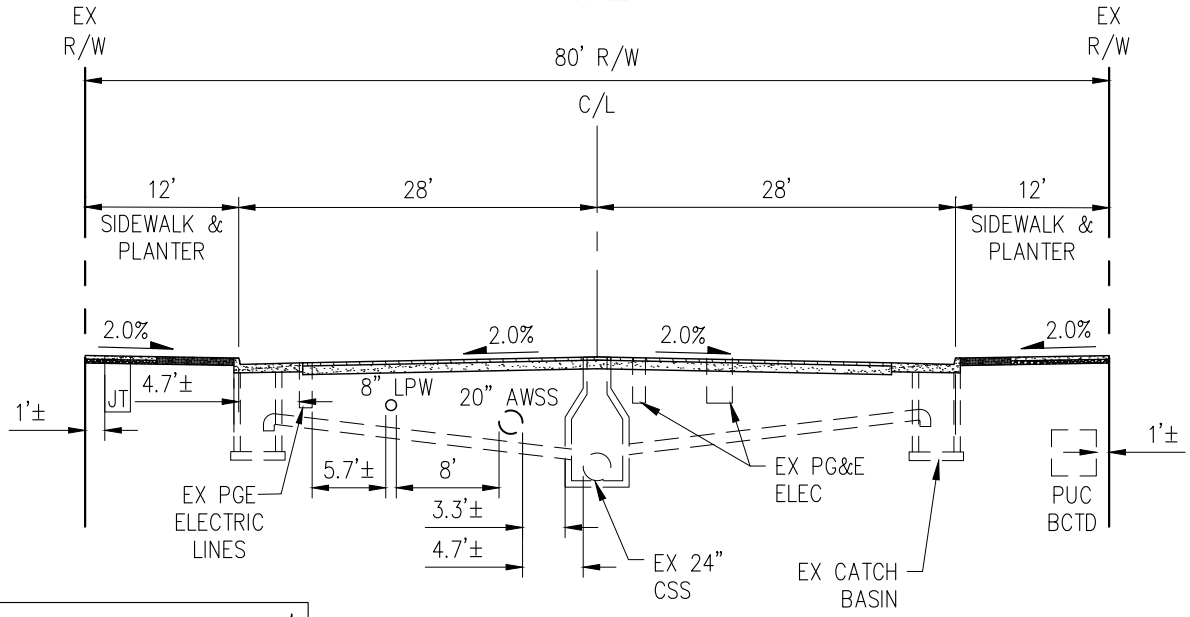


Figure 10.2 Utility Configurations



23RD STREET AT
PG&E SWITCHYARD

SCALE: 1"=15'



SECTION VIEW

NOT TO SCALE

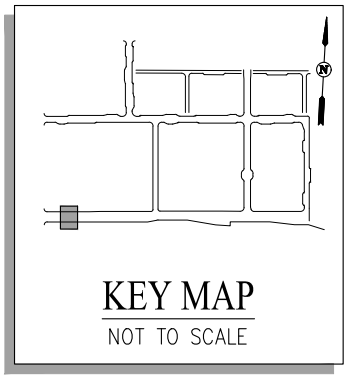
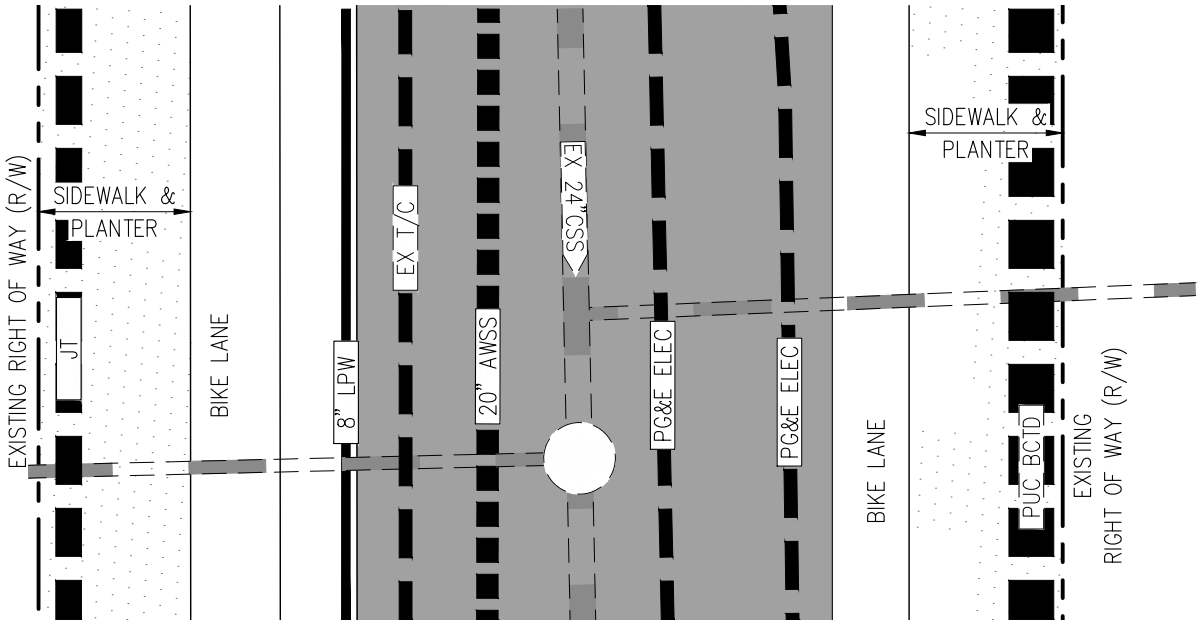


Figure 10.2 Utility Configurations



23RD SREET
AT BULB OUTS
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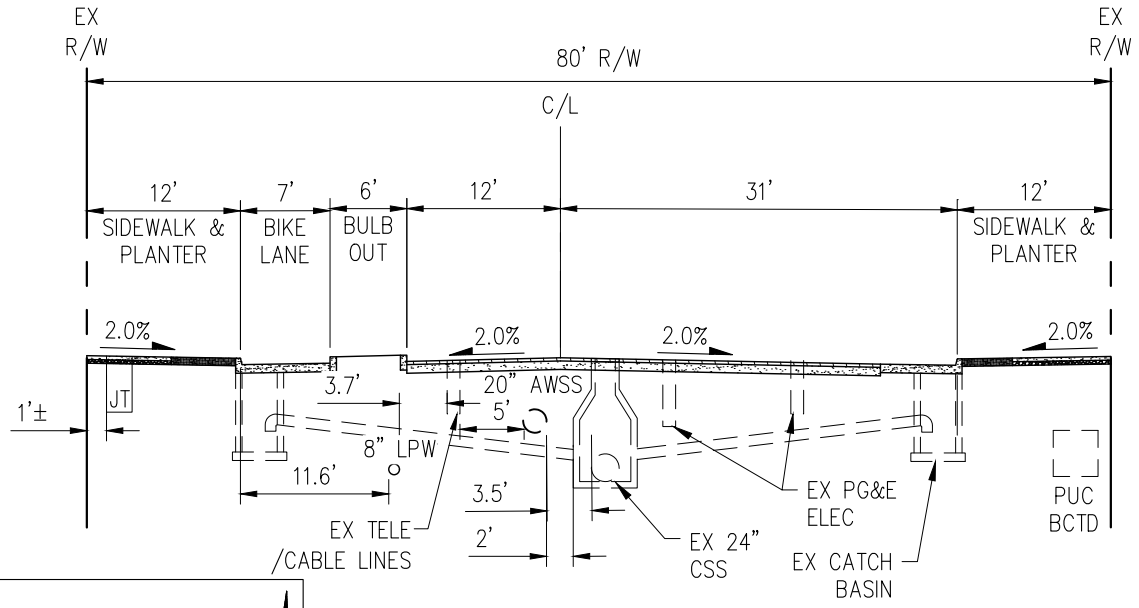

SECTION VIEW
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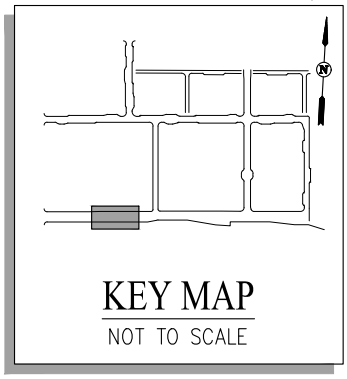

KEY MAP
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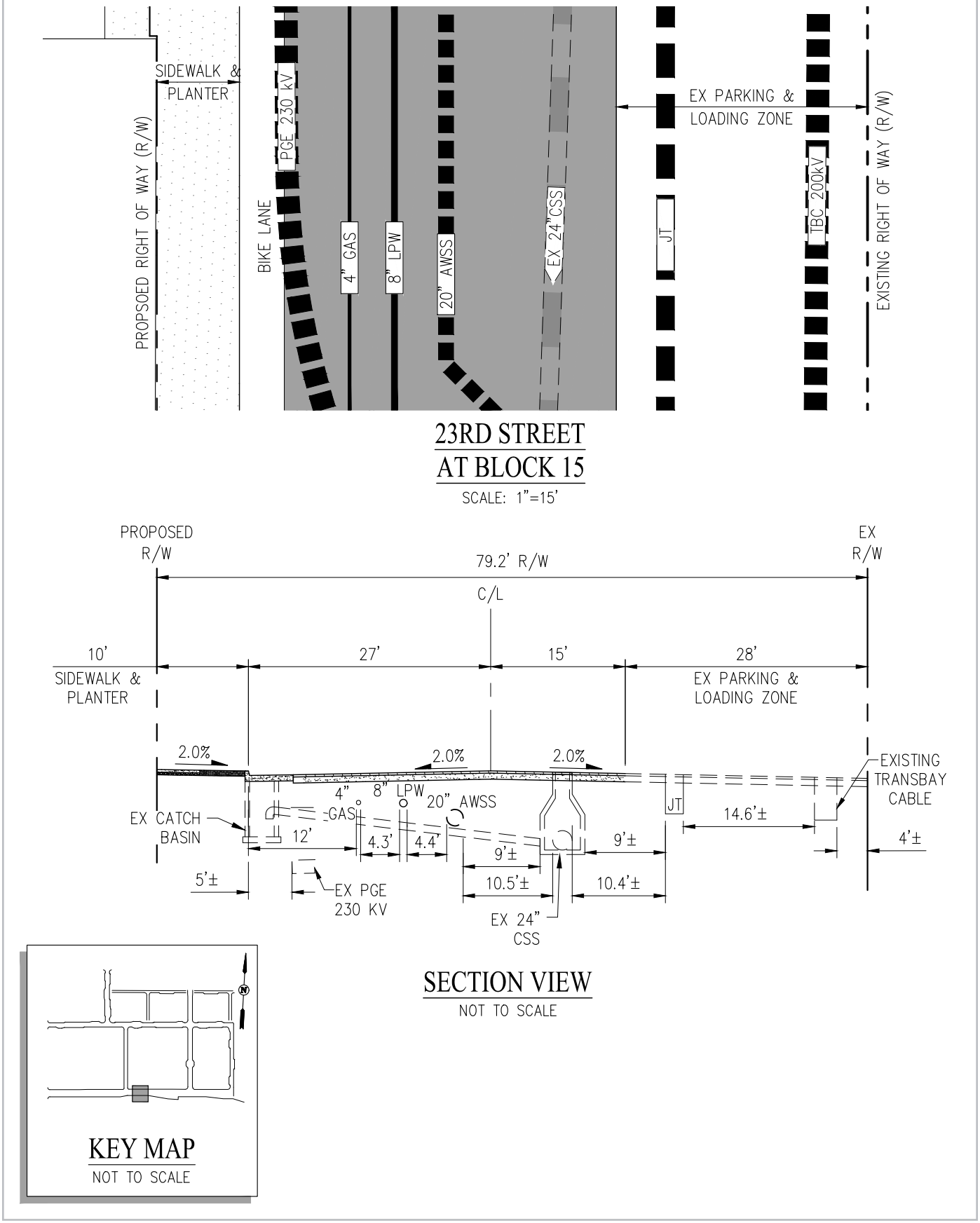
Figure 10.2 Utility Configurations



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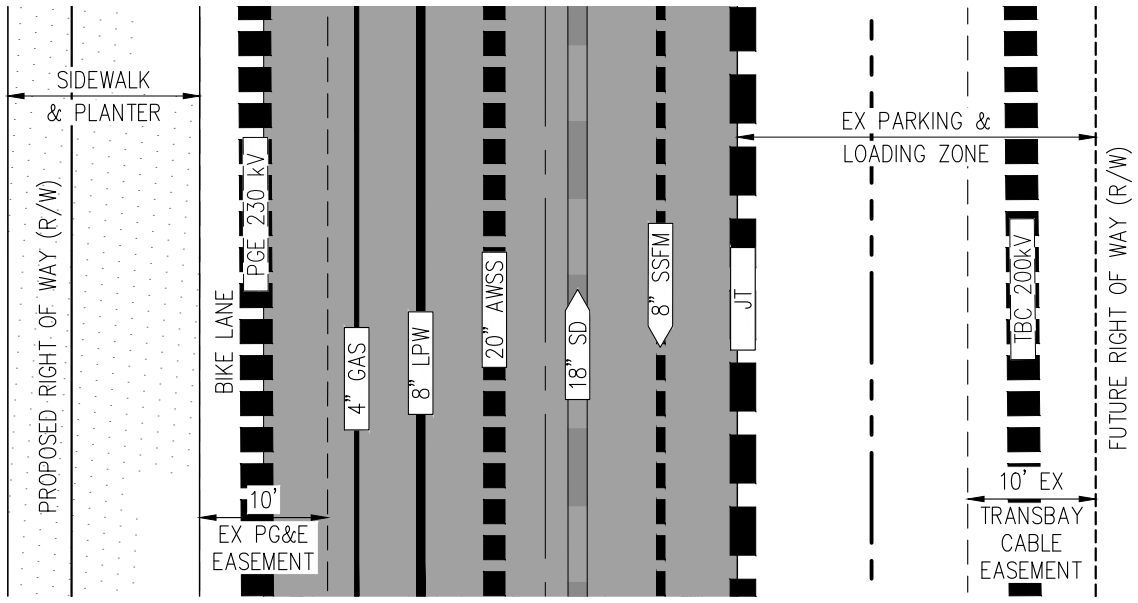

23RD STREET
AT BLOCK 11
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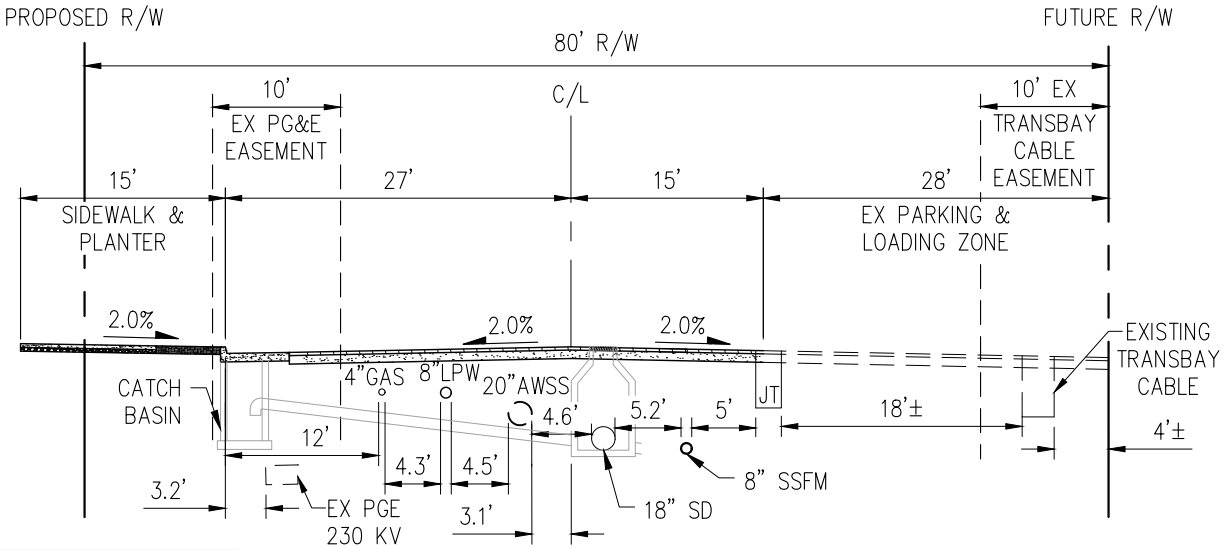

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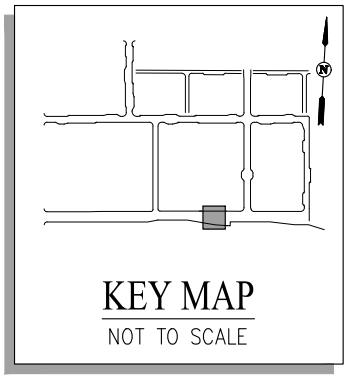

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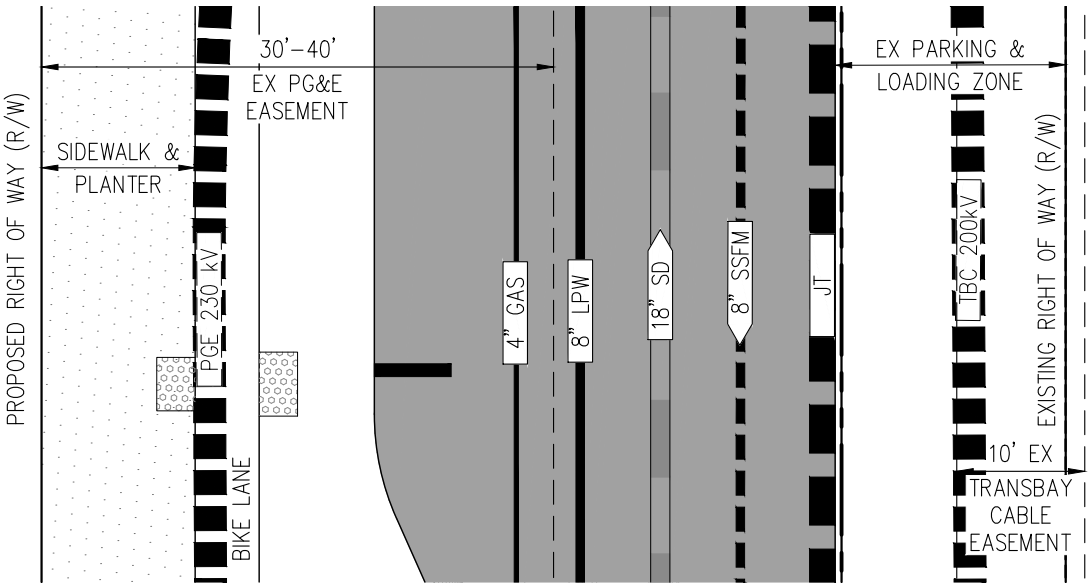
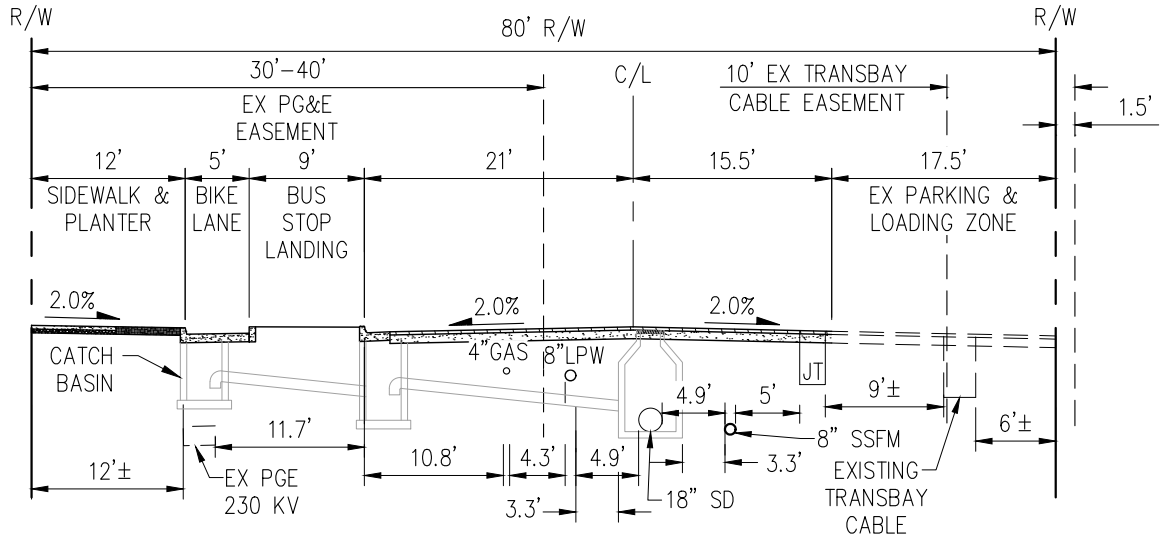
Figure 10.2 Utility Configurations



23RD STREET
AT BLOCK 12

SCALE: 1"=15'



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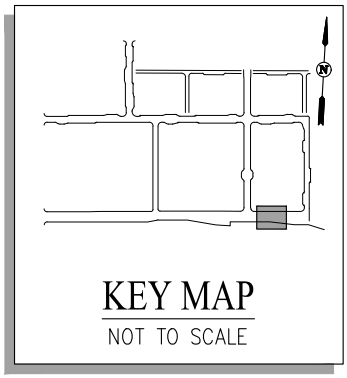


Figure 10.2 Utility Configurations

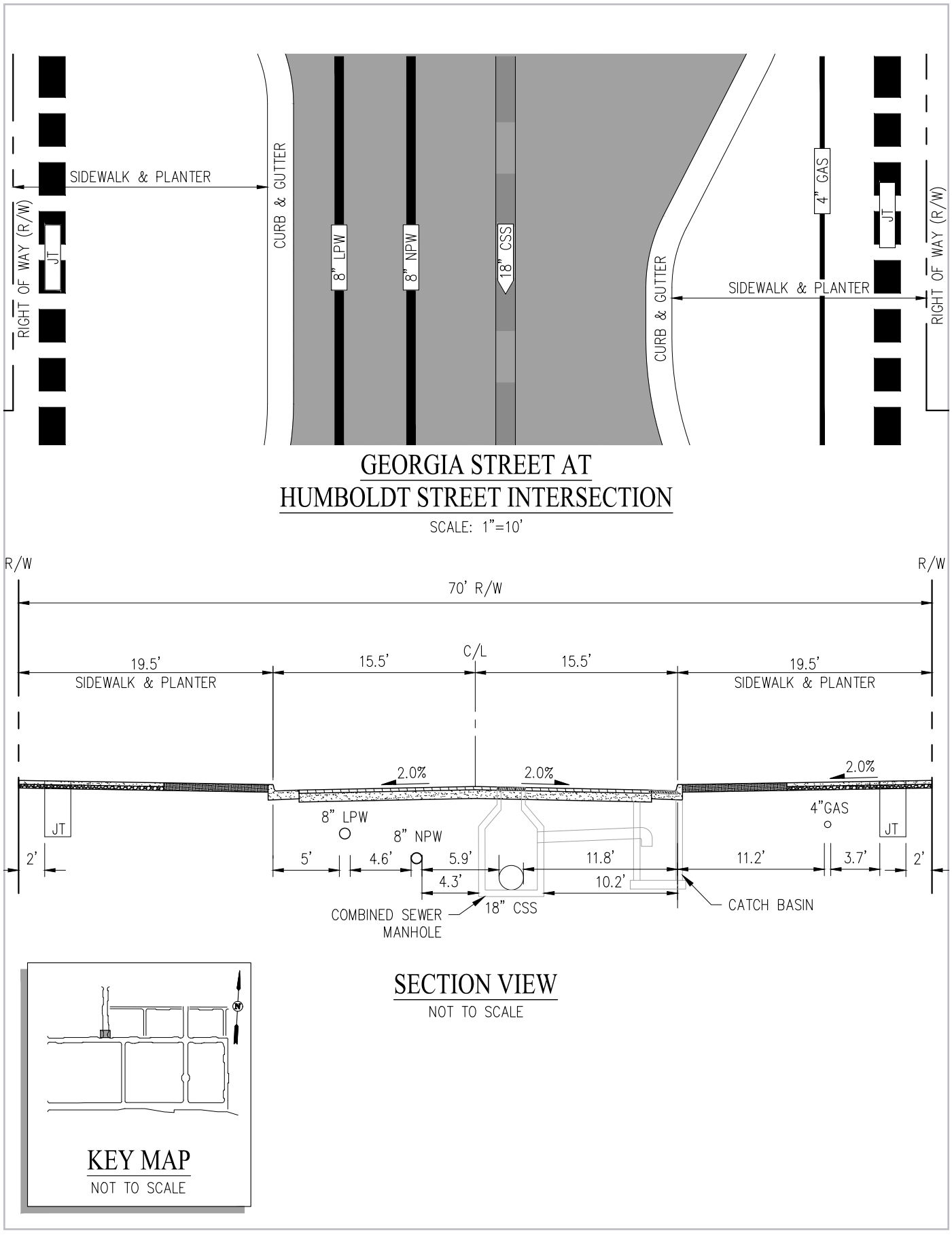


Figure 10.2 Utility Configurations

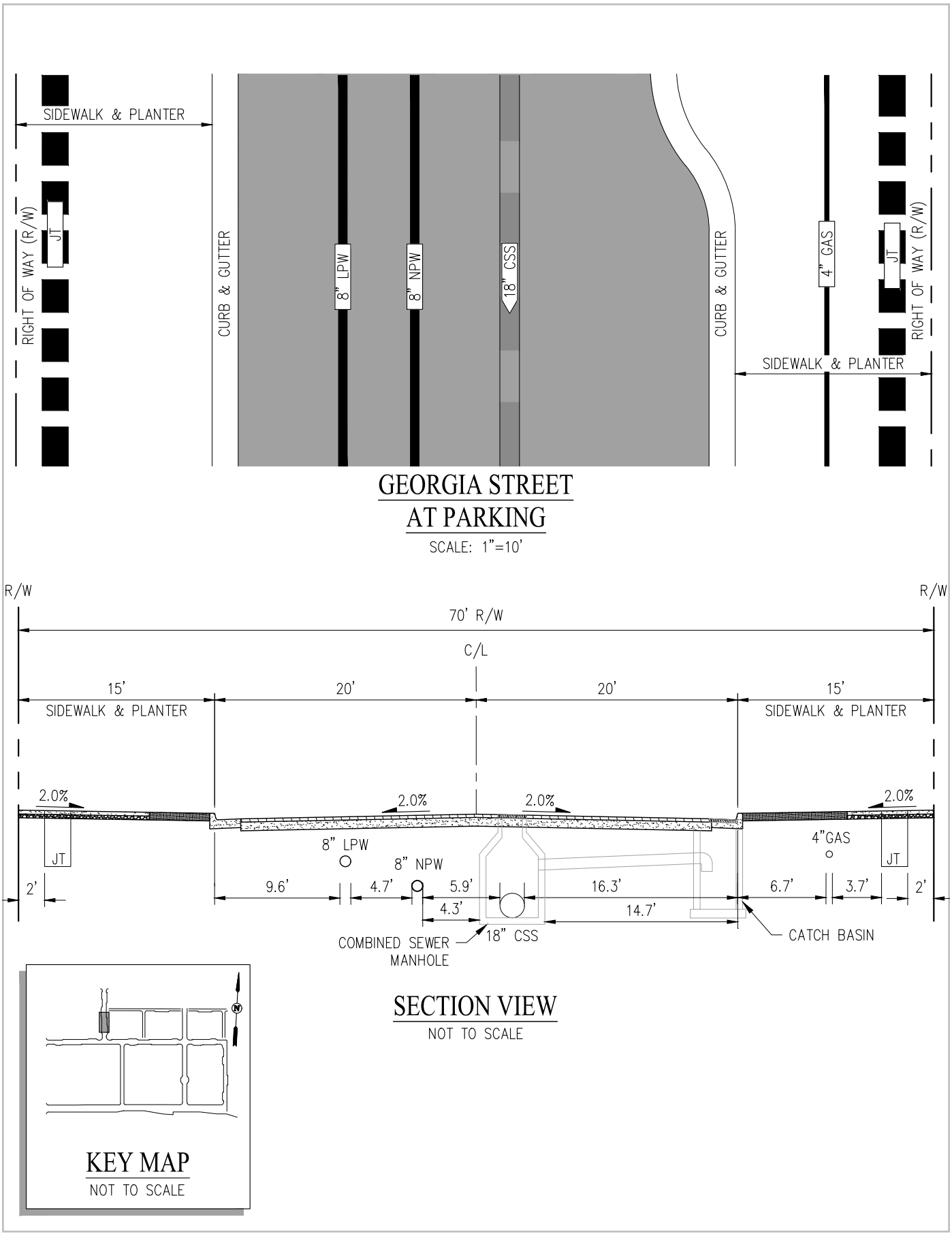


Figure 10.2 Utility Configurations

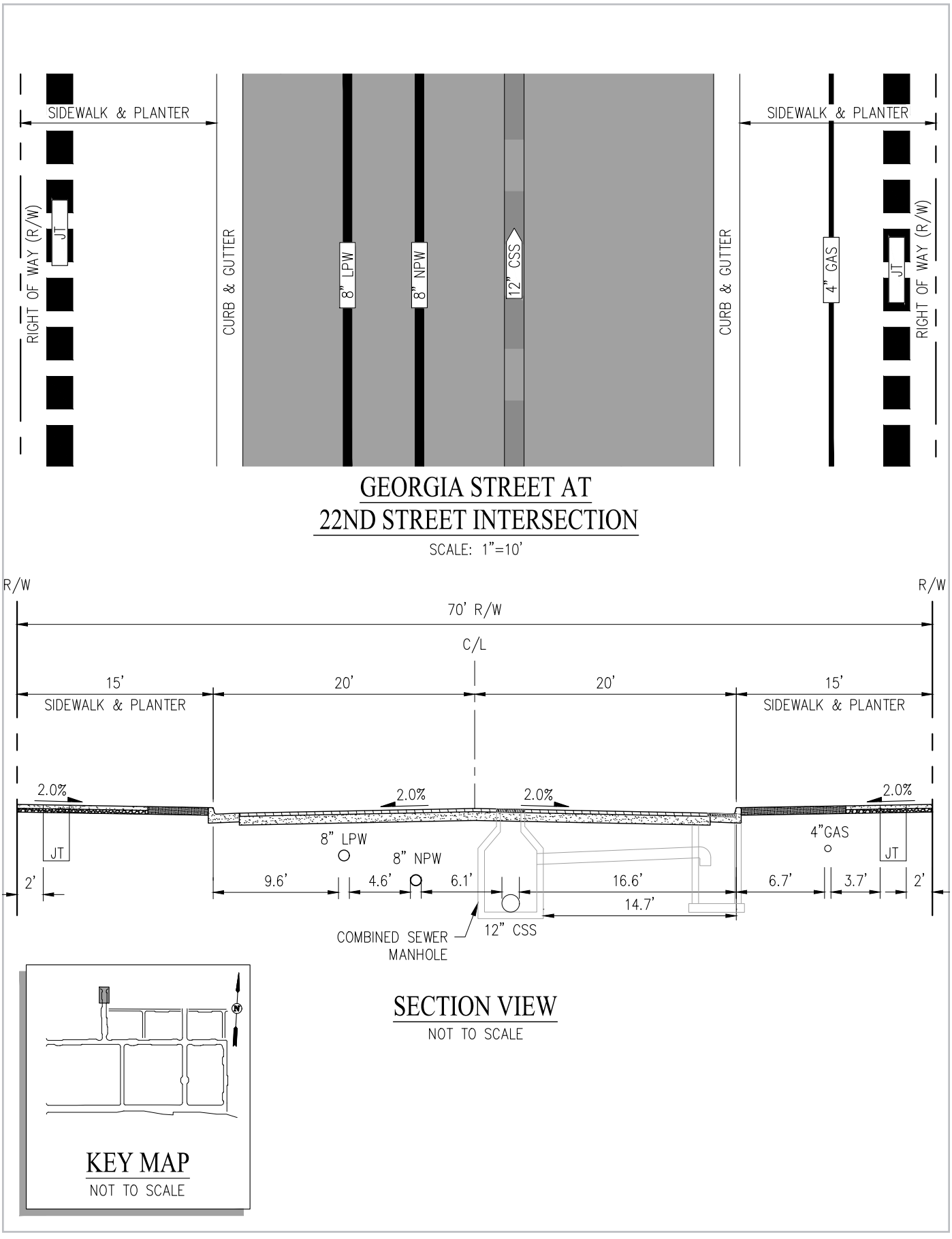
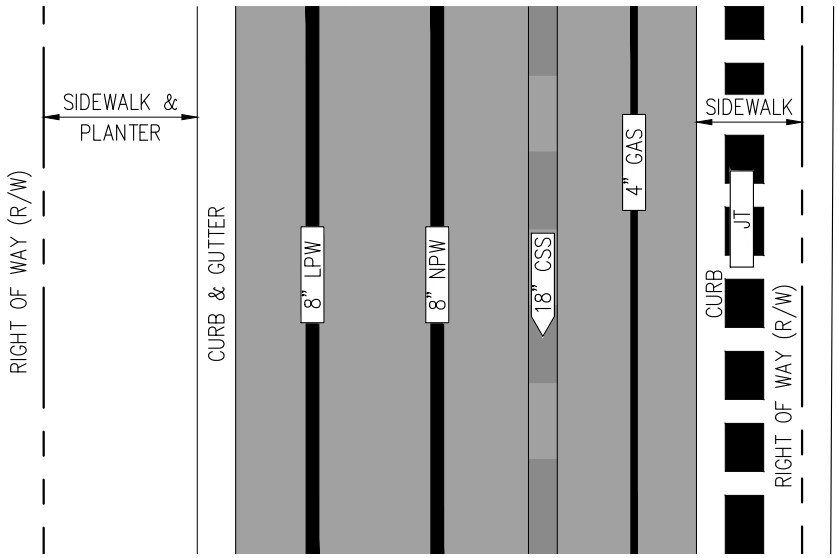
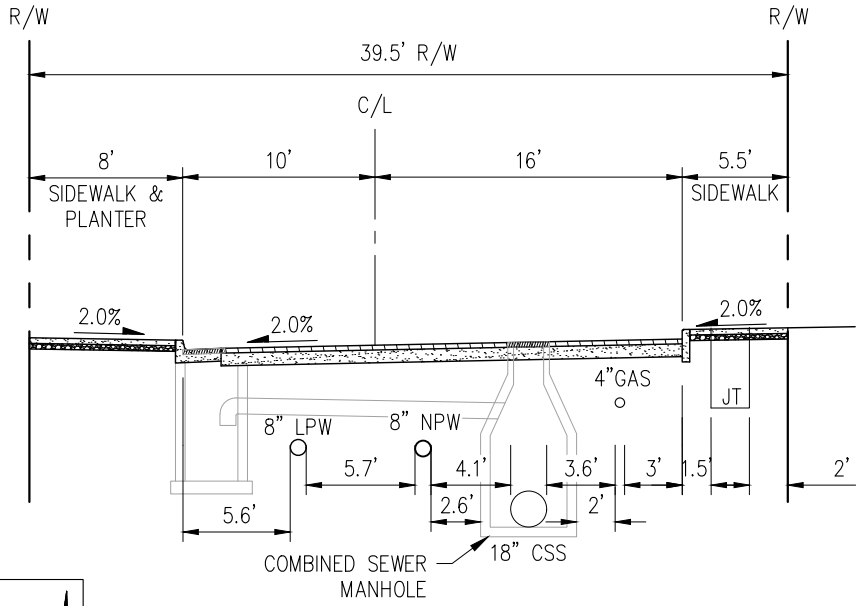


Figure 10.2 Utility Configurations



GEORGIA LANE

SCALE: 1"=10'



SECTION VIEW

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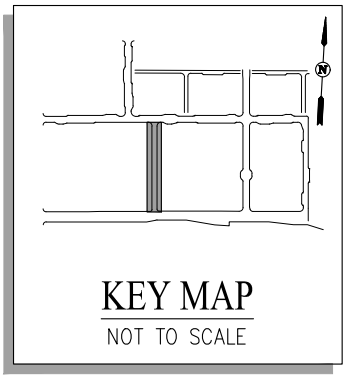


Figure 10.2 Utility Configurations

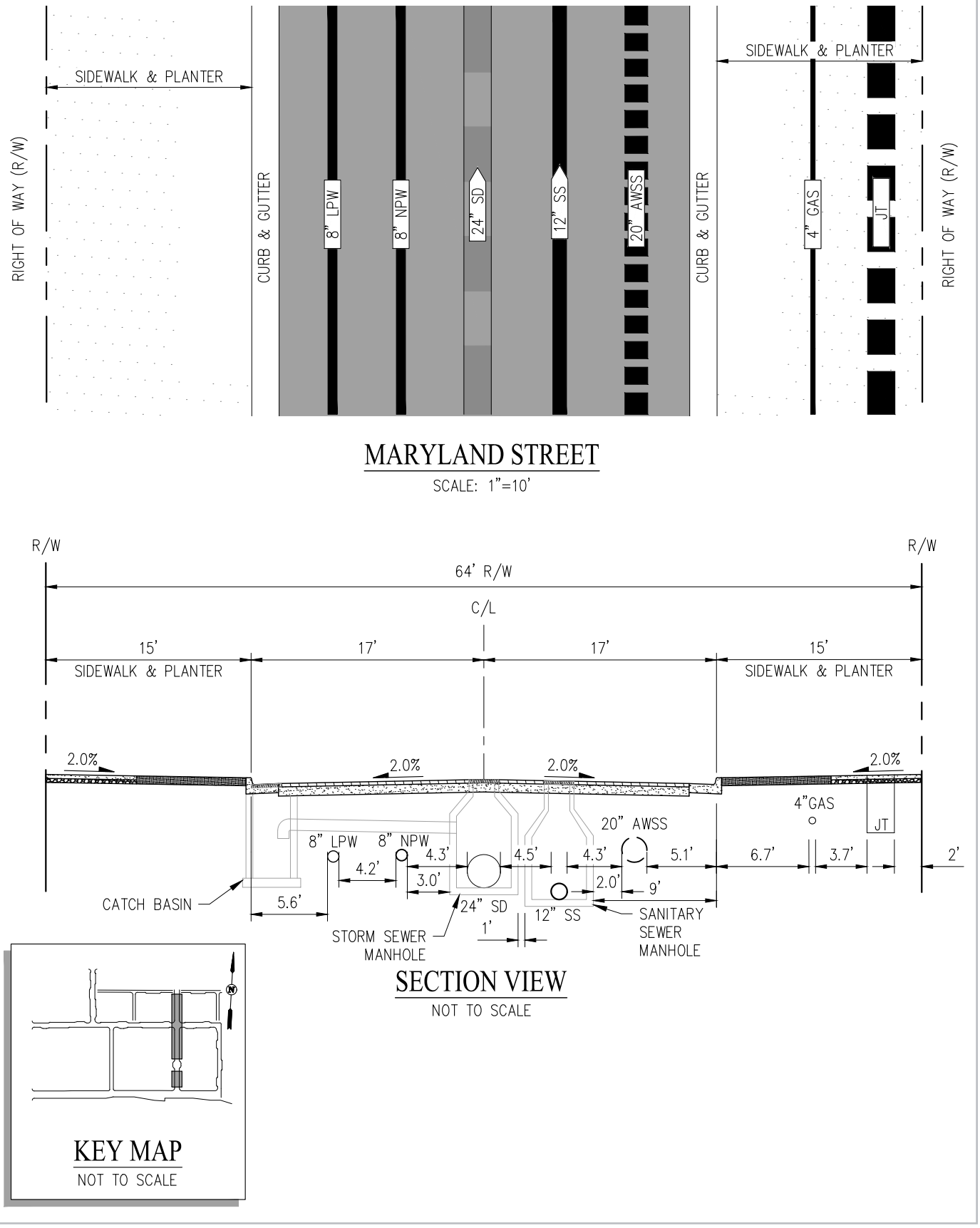
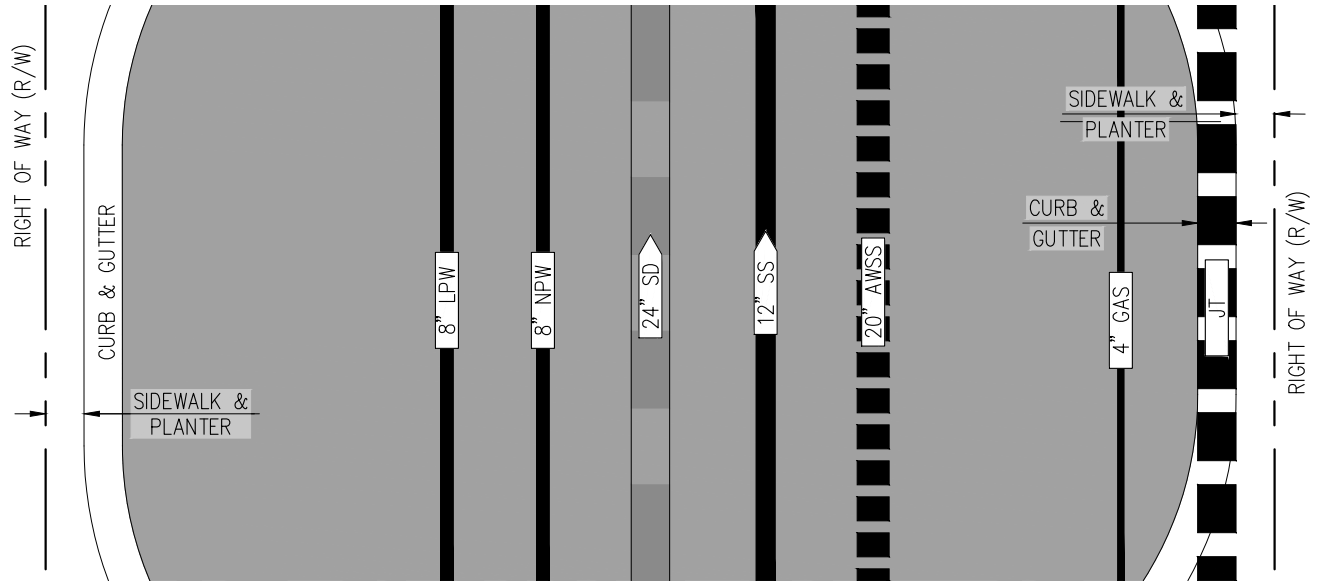
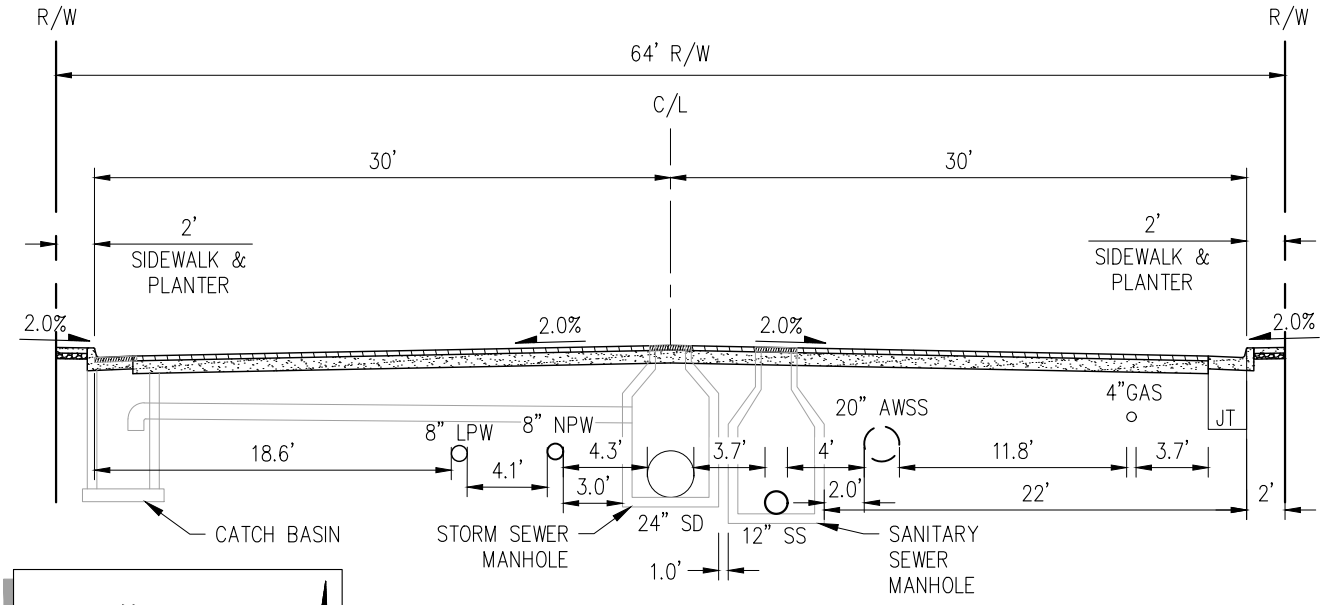


Figure 10.2 Utility Configurations



MARYLAND STREET
AT PARKING
SCALE: 1"=10'



SECTION VIEW
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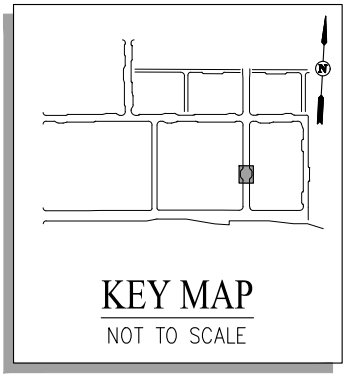

KEY MAP
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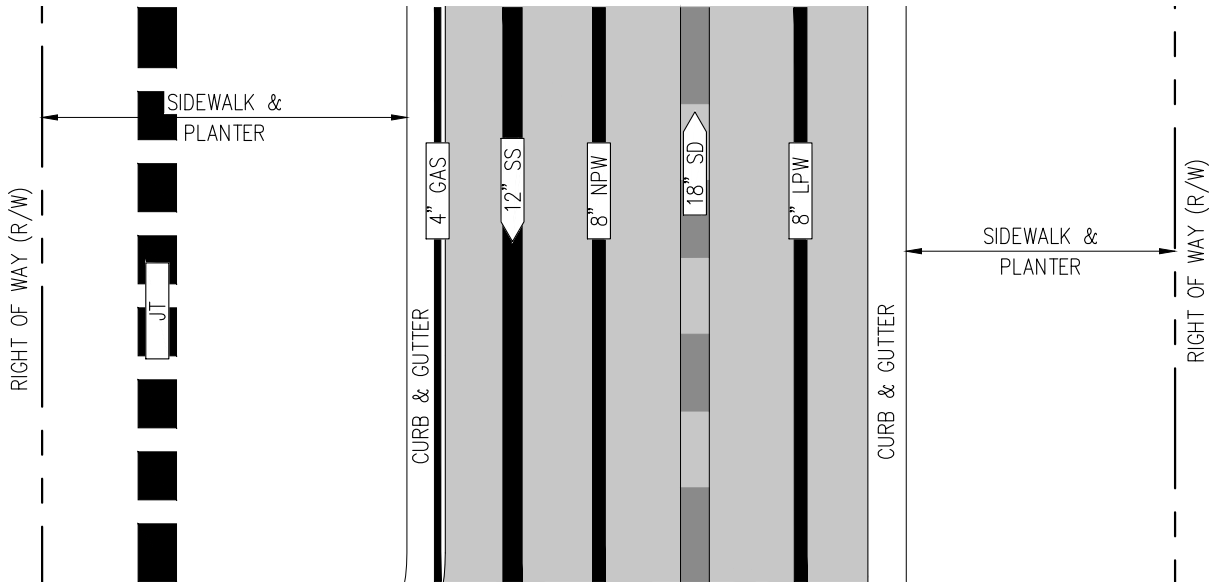
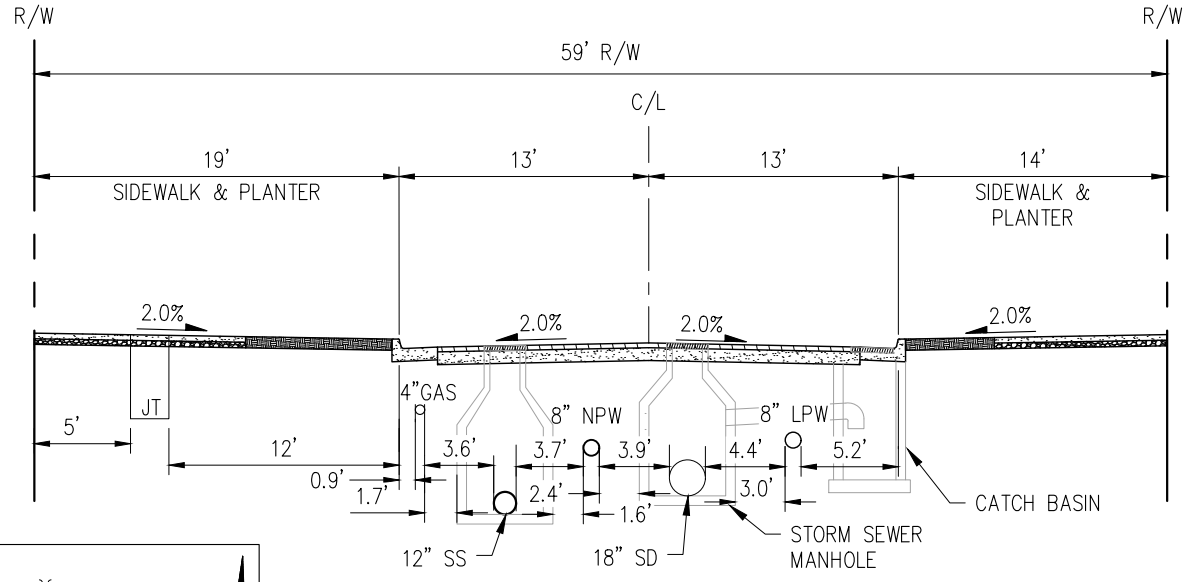
Figure 10.2 Utility Configurations



DELAWARE STREET
NORTH OF SEWER PUMP STATION

SCALE: 1"=10'



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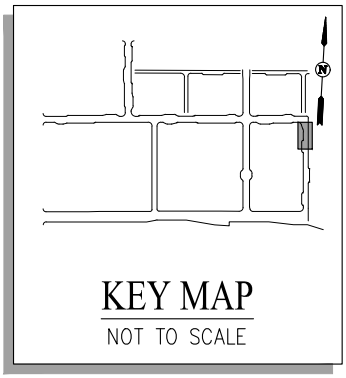

KEY MAP

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Figure 10.2 Utility Configurations

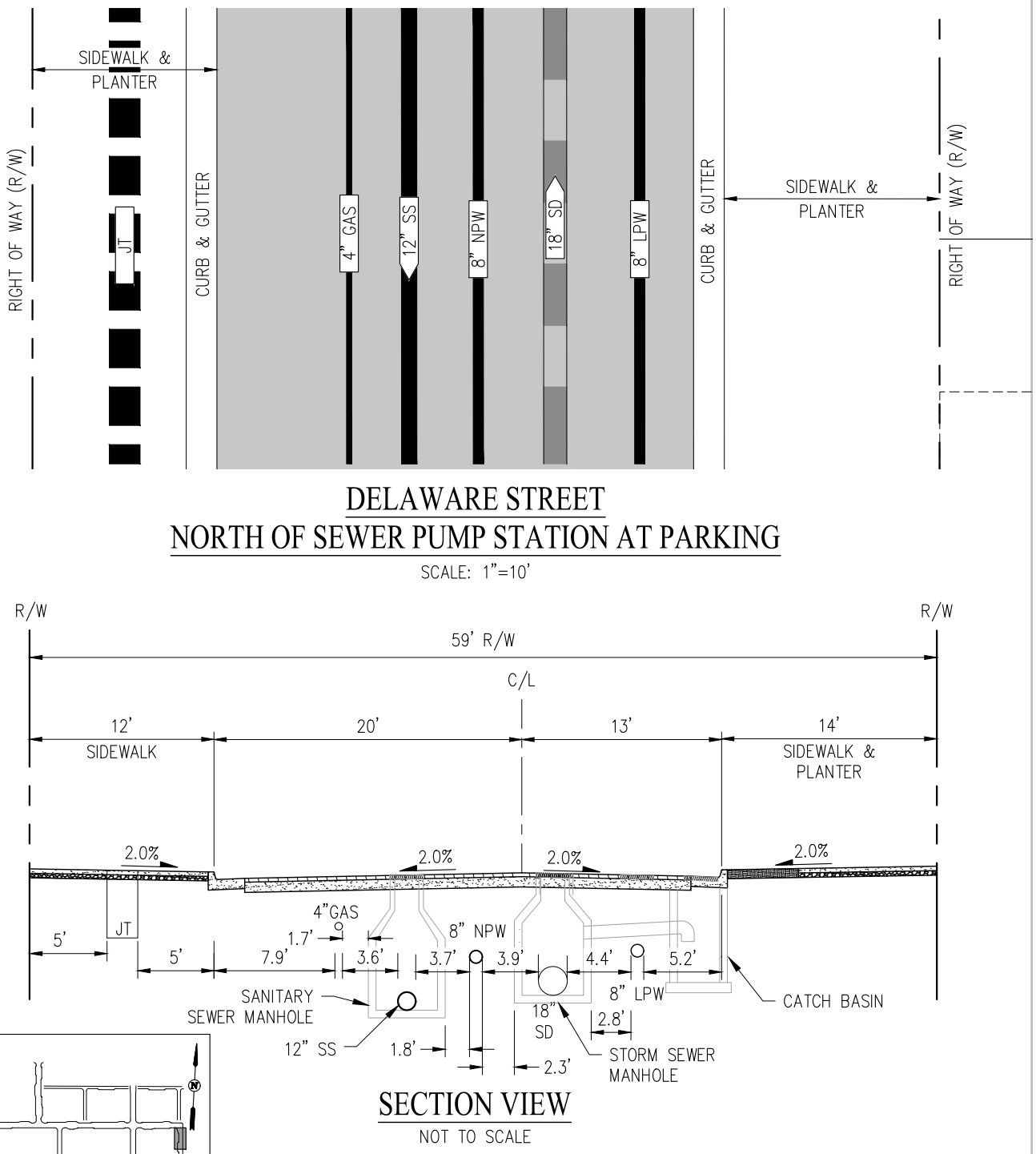


Figure 10.2 Utility Configurations

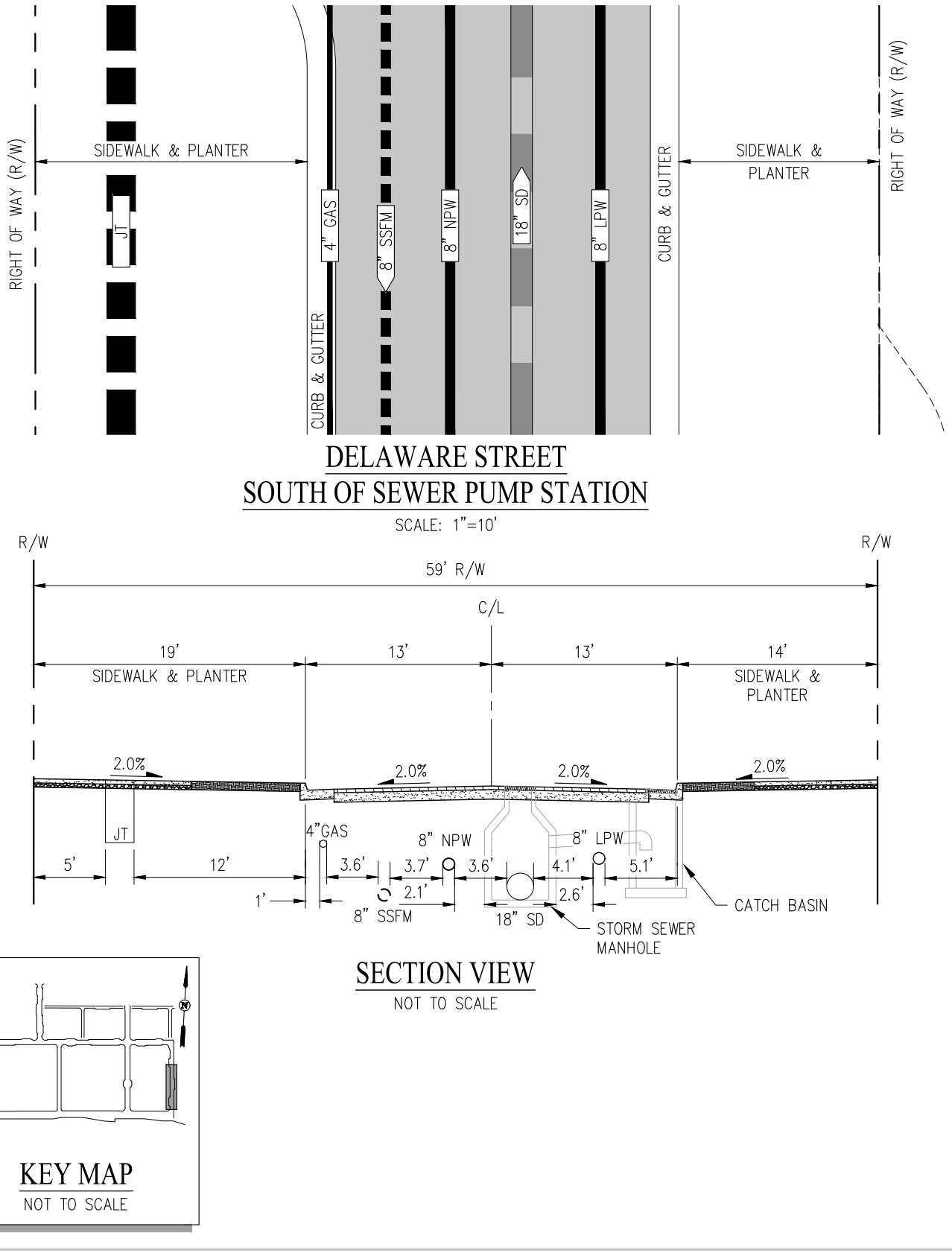


Figure 10.2 Utility Configurations

11 LOW PRESSURE WATER SYSTEM

11.1 Existing Low Pressure Water System

Potable water service will be provided by a water supply, storage, transmission and distribution system operated by the SFPUC. The proposed Project will connect to the SFPUC's Low Pressure Water (LPW) system for domestic supply and fire protection. The existing LPW system within the project vicinity includes eight and 12-inch diameter distribution pipelines and low-pressure fire hydrants within 22nd Street, Illinois Street and 23rd Street. Existing potable water services and fire services to the Project Site are located along the 23rd Street frontage and at the intersection of Illinois Street and Humboldt Street.

There was an existing robust on-site private fire protection system within the Project Site to provide fire protection for the decommissioned PG&E Power Plant. This system has mostly been abandoned with the closure of the Power Plant and demolition of the Tank Farm. The existing on-site private potable and fire water systems will be abandoned and removed as part of the site demolition.

11.2 Proposed Low Pressure Water System

11.2.1 Project Potable Water Demands

The proposed Project water demands are summarized in Table 11.1 below and in the Low-Pressure Water Master Plan ("LPWMP") and Project Water Demand Memo included in Appendices C and D. The Project's water demands have been calculated using the SFPUC's Non-Potable Water Program District Scale water calculator. The proposed low-pressure water system has been planned based upon the Maximum Residential Development Program scenario which generates the highest water demand. The required fire flows are consistent with the California Fire Code – Appendix B. The proposed Project includes district or centralized wastewater treatment plants that will divert, treat and reuse wastewater and rainwater for non-potable uses within the project. The use of non-potable water will reduce the potable water demand. This is reflected in the calculated water demands below.

Table 11.1. Potable Water Demands

Project Potable Water Demands	
Design Scenario	**Demand**
Domestic Average Day Demand ("ADD")	251,000 gpd
Maximum Day Demand ("MDD") including 1.2 peaking factor	301,200 gpd
Peak-Hour Demand ("PHD") including 2.65 peaking factor	665,150 gpd
Required Fire-Flow (2,000 gpm x 4 hours)	480,000 gpd
Maximum Potable Water Demand (Maximum Day Demand + Required Fire Flow)	**781,200 gpd**

11.2.2 Project Potable Water Supply

In accordance with the California Water Code, SFPUC has prepared and approved a revised Water Supply Assessment for the proposed Project. The results of this assessment conclude the SFPUC has sufficient short term and long-term water supplies to serve the proposed Project. See the approved revised Water Supply Assessment in Appendix D.

11.2.3 Project Low Pressure Water Distribution System

The proposed Project will include the design and construction of the proposed LPW system by the Developer. The proposed LPW system will be owned and maintained by the SFPUC upon completion and acceptance of the improvements. The proposed LPW system is depicted on Figure 11.1. The proposed LPW system is anticipated to consist of a network of 8-inch diameter low pressure water mains, fittings, valves, fire hydrants, service laterals, meters and appurtenances. The final LPW system pipeline sizes will be verified by the PUC's review of the hydraulic modeling in the Master Utility Plan.

The proposed LPW system will connect to the existing LPW system within 22nd Street, 23rd Street and Illinois Street. The existing 8-inch diameter main within 22nd Street is proposed to be replaced and relocated with the Pier 70 project. The project will connect to either the existing main or the replaced pipeline, depending on the timeframe of the Project connection relative to the Pier 70 improvements. The Project may replace the existing LPW main in 23rd Street as necessary to meet separation requirements to other utilities and proposed improvements as outlined in Section 10. The proposed LPW system will also connect to the existing 8-inch diameter pipeline in Illinois Street at the intersection with Humboldt Street.

The proposed LPW mains will be placed within the proposed Project public streets or within private property with a Public Utility Easement (Humboldt Plaza). The vertical and horizontal separation distances to other utilities will be consistent with the requirements outlined in Title 22 of the California Code of Regulations, the SFDPW 2015 Subdivision Regulations and the State of California Department of Health Services Guidance Memorandum 2003-02. The typical utility locations within each street section are depicted on Figure 10.2.

SFPUC will perform the required disinfections of new mains and connections to existing mains at the Developer's cost.

11.2.4 Low Pressure Water Design Criteria

The proposed LPW system is required to maintain a minimum system pressure of 20 psi and a maximum velocity of 14 fps maximum velocity during MDD plus Fire Flow design scenario. The LPW system will also maintain 40 psi minimum residual pressure and eight fps maximum velocity during PHD. The proposed LPW water system is modeled in the LPWMP to confirm the proposed system meets the pressure and flow requirements in each design scenario.

11.2.5 Proposed Low Pressure Water Fire Hydrant Locations

The LPW system will be the primary fire water supply for the Project Site. The proposed LPW fire hydrants will have a maximum radial separation of 300-feet between hydrants, or as specified in the California Fire Code – Appendix C. Additionally, the LPW hydrants will be placed within 100-feet of building fire department connections. The proposed LPW fire hydrant locations are depicted on Figure 11.2. The LPW system will be designed to provide the maximum daily demand plus a design fire flow of 2,000 gpm for a duration of 4 hours. The 2,000 fire flow will provide adequate fire protection for new and reuse construction per the California Fire Code – Appendix B. The Project will coordinate with the SFFD for the final locations of LPW fire hydrants within and surrounding the Project.

11.3 Low Pressure Water System Phasing

The proposed Project will design and install the new LPW system in phases as needed to support each proposed Development Phase consistent with the Project Phasing Plan. The extent of the proposed LPW system installed within each phase will be the minimum necessary to support each respective Development Phase. Each Development Phase will at minimum install the portions of the proposed LPW system within or adjacent to that Phase and will connect to existing reliable facilities as close to the Project Site as possible. The first Phase of development will include two points of connection to the existing LPW facilities within the vicinity of the Project, anticipated to be at 23rd Street and at either the 22nd Street / Georgia Street intersection or Humboldt Street / Illinois Street intersection. The second connection for Phase 1 to facilities in 22nd Street is subject to the status of redevelopment with the PG&E Sub-Area. These second connections through the PG&E Sub-Area will likely be interim, constructed to SFPUC standards but replaced once the final improvements within Maryland Street, Georgia Street and Humboldt Street are constructed. The timing of the Maryland Street connection is subject to PG&E completion of remediation within the Tank Farm area and Pier 70 development timeline Repairs or replacements of the existing facilities surrounding the Project will be made as necessary to support each proposed Development Phase. Interim LPW systems may be constructed and maintained by the Developer as necessary to maintain existing LPW facilities operational.

The SFPUC will be responsible for maintenance of existing LPW facilities. The SFPUC will be responsible for the new LPW facilities once construction of each Development Phase or a new LPW facility is complete and accepted by the SFPUC. Impacts to improvements installed with previously constructed portions of the Development due to the designs of subsequent phases will be the responsibility of the Developer and will be addressed prior to approval of construction documents for each subsequent Phase. For each Development Phase, the Developer will provide Phasing Plans depicting the existing LPW facilities and proposed phase of LPW facilities. The Plans and supporting reports will demonstrate that the proposed phase of LPW facilities will provide the required pressures and flow for that Development Phase.

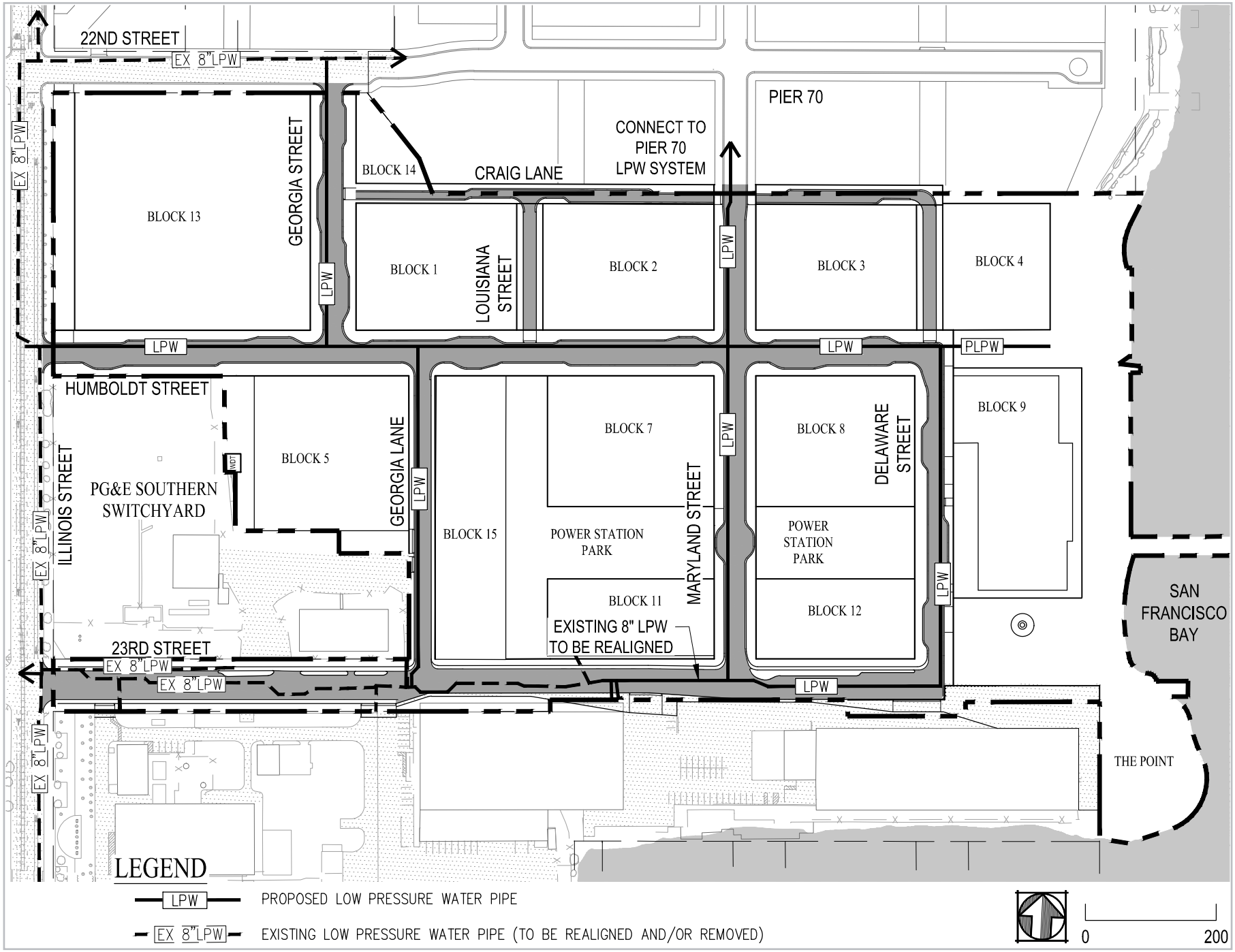


Figure 11.1 Low Pressure Water System

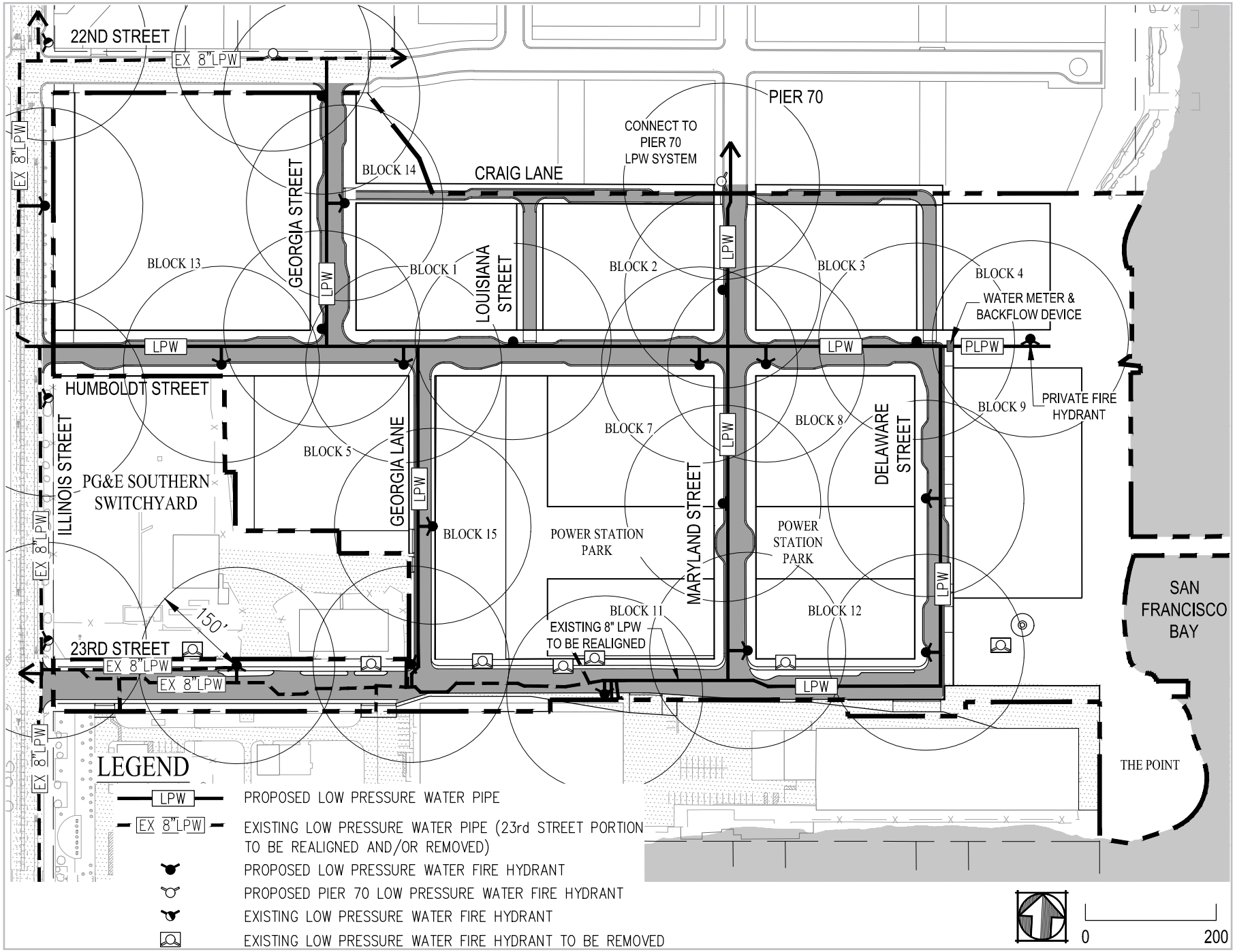


Figure 11.2 Proposed Fire Hydrant Locations

12 NON-POTABLE WATER SYSTEM

12.1 Existing Non-Potable Water System

The City's recycled water system does not currently extend to or serve the Project Site. The City does not have existing recycled water facilities within the vicinity of the Project Site.

12.2 Proposed Non-Potable Water Demands

The estimated non-potable water demands associated with the Project are summarized in Table 12.1. The Project non-potable water demands, associated with flushing, irrigation and cooling towers, have been calculated using the SFPUC's Non-Potable Water Program District Scale water calculator. The Project non-potable water system has been planned based upon the Project Variant Development Program scenario which generates the highest project non-potable water demands. See the Project Water Demand Memo in Appendix D.

Table 12.1. Non-Potable Water Demands

Project Non-Potable Water Demands	
Design Scenario	**Demand (gpd)**
Average Day Demand (ADD)	79,500
Maximum Day Demand (MDD) – Peaking Factor 1.4	111,300
Peak-Hour Demand (PHD) – Peaking Factor 3.0	238,500

12.3 Proposed Non-Potable Water System

The Project is located within the City's Designated Recycled Water Use Area and is subject to the Recycled Water Ordinance. Additionally, the Project is subject to the Non-Potable Water Ordinance.

The project will pursue one of the following three options for complying with the City's Non-Potable Water Ordinance. The section of non-potable water treatment system option will be made prior to the Phase 1 Street Improvement Permit.

- Localized district wastewater collection and treatment plants will treat wastewater generated within certain development blocks to comply with Article 12C of the San Francisco Health Code and deliver to Development Parcels through a new private non-potable water distribution system either within the public right-of-way or privately-owned parcels. (Note that an encroachment permit from the Department of Public Works would be required under this option and an exception from the Recycled Water Use Ordinance); or

- Centralized wastewater treatment plant will treat wastewater from the separated sanitary sewer system watershed and likely be located in Block 8, near the low point of this system. This treatment plant will treat wastewater to San Francisco's non-potable standard and deliver to Development Parcels through a new private non-potable water distribution system within the public right-of-way. (Note that an encroachment permit from the Department of Public Works would be required under this option and an exception from the Recycled Water Use Ordinance); or

- In the event the City constructs a regional recycled water treatment facility that provides recycled water to the Project Site, the proposed project may elect to connect to this system, delivering recycled water to Development Parcels through a new public non-potable water distribution system within the public right-of-way. In this case, the project would not construct a separate wastewater diversion, treatment and reuse systems on private parcels.

12.3.1 Localized District Wastewater Treatment Option

The Localized District Wastewater Treatment Option will include privately owned and maintained wastewater collection and treatment plants within certain development blocks. The best candidates for wastewater collection and treatment are Blocks 1, 4, 5, 7, and 8; they are planned for residential land use, which generates the largest amount of wastewater on site. The number of wastewater plants incorporated into the project will meet the need of district-wide non-potable demands for flushing, irrigation, and cooling towers. If wastewater collection and treatment in the Blocks identified above do not meet the district-wide needs, additional residential buildings will incorporate wastewater collection and treatment (Block 9 and 13).

The treatment plants will treat wastewater to meet San Francisco's Health Code Article 12C Water Quality Standards. Pumps required to maintain pressurization in wastewater collection lines and/or non-potable water distribution lines will be provided by the vertical developer as necessary.

The treatment plants will supply non-potable water to all development blocks within the Project by connecting to a private non-potable water distribution system. The non-potable water will be distributed to all buildings and open space areas within the Project. The irrigation and building non-potable water demands will be met by the non-potable water supplied by the district wastewater treatment plants. Wastewater flows in excess of the non-potable water demand will be discharged to the sanitary sewer system, Blocks 1 and 5 to the combined sewer system and Blocks 4, 7 and 8 to the separated sanitary sewer system. The wastewater treatment plants will be enclosed, and odor control units will be installed to vent to the atmosphere. Each of these facilities are anticipated to require approximately 500 square feet within a within a Building. Each facility will also likely include up to two

storage tanks totaling to 25,000 gallons. These treatment plants may be integrated to also treat and harvest rainwater, in which case the size of the storage tanks would increase.

This option will include the design and construction of a proposed private non-potable water distribution system by the Developer. The private non-potable water system will be located in the public right-of-way and will consist of 8-inch diameter low pressure mains, fittings, valves, service laterals, meters and appurtenances. The extents of the private non-potable water pipelines will be limited to the portions of the public right-of-way's necessary to provide service to the Development Blocks and Open Spaces. Accordingly, in this option the project intends to submit an exemption from the Recycled Water Ordinance, as there will be portions of the public right-of-way that the non-potable water pipelines are not needed to be installed. The proposed private non-potable water system associated with the Localized District Wastewater Option is depicted on Figure 12.1.

The project will prepare a non-potable water implementation plan for review and approval by the SFPUC. This plan will also demonstrate that this option will comply with the requirements of San Francisco's non-potable water program, including the San Francisco Department of Health rules and regulations regarding the operation of alternate water source systems.

12.3.2 Centralized Wastewater Treatment Option

The Centralized Wastewater Treatment Option will centralized privately owned and maintained wastewater treatment plant within Block 8. This location is ideal for a centralized facility, as it is near the low point of the sanitary sewer system, which generates the largest amount of wastewater on site. The centralized wastewater plant incorporated into the project will meet the need of district-wide non-potable demands for flushing, irrigation, and cooling towers. If the centralized wastewater collection and treatment at Block 8 does not meet the district-wide needs, additional residential buildings will incorporate wastewater collection and treatment

The treatment plant will treat wastewater to meet San Francisco's Health Code Article 12C Water Quality Standards. Pumps required to maintain pressurization in wastewater collection lines and/or non-potable water distribution lines will be provided by the vertical developer as necessary.

The treatment plant will supply non-potable water to all development blocks within the Project by connecting to a private non-potable water distribution system. The non-potable water will be distributed to all buildings and open space areas within the Project. The irrigation and building non-potable water demands will be met by the non-potable water supplied by the district wastewater treatment plants. Wastewater flows in excess of the

non-potable water demand will be discharged to the sanitary sewer system. The wastewater treatment plants will be enclosed, and odor control units will be installed to vent to the atmosphere.

This option will include the design and construction of a proposed private non-potable water distribution system by the Developer. The private non-potable water system will be located in the public right-of-way and will consist of 8-inch diameter low pressure mains, fittings, valves, service laterals, meters and appurtenances. The extents of the private non-potable water pipelines will be limited to the portions of the public right-of-way's necessary to provide service to the Development Blocks and Open Spaces. Accordingly, in this option the project intends to submit an exemption from the Recycled Water Ordinance, as there will be portions of the public right-of-way that the non-potable water pipelines are not needed to be installed. The proposed private non-potable water system associated with the Centralized Wastewater Treatment Option is depicted on Figure 12.1.

The project will prepare a non-potable water implementation plan for review and approval by the SFPUC. This plan will also demonstrate that this option will comply with the requirements of San Francisco's non-potable water program, including the San Francisco Department of Health rules and regulations regarding the operation of alternate water source systems.

12.3.3 City Recycled Water Treatment Facility Option

In the event that the City constructs recycled water treatment facility and distribution pipelines in the vicinity of the project and the project elects to connect to this system, a new public recycled water distribution system will be constructed within the public right-of-way.

The distribution system will provide recycled water to all buildings and open spaces within the project. The irrigation and building non-potable water demands will be met by the recycled water supplied by this system. The public recycled water system will be located in the public right-of-way and will consist of 8-inch diameter low pressure mains, fittings, valves service laterals meters and appurtenances. The proposed public recycled water system associated with the City supply option is depicted on Figure 12.2.

12.4 Rainwater Harvesting

The project may potentially integrate rainwater harvesting into some of the Development Blocks. This is intended to achieve compliance with the City's Stormwater Management Requirements, specifically the required runoff flow and volume reduction within the combined sewer areas as discussed in Section 16. Where feasible, the rainwater harvesting will be integrated to the

Localized District Wastewater Treatment Plants within the certain Development Blocks planned to have these features.

12.5 Non-Potable Water System Phasing

The proposed Project will design and install the new non-potable water system in phases as needed to support each proposed Development Phase consistent with the Project Phasing Plan. The extent of the proposed non-potable water system installed within each phase will be the minimum necessary to support each respective Development Phase. Each Development Phase will at minimum install the portions of the proposed non-potable water system and treatment plant(s) within or adjacent to that Phase as required to supply non-potable water to each Development Phase.

Impacts to improvements installed with previously constructed portions of the Development due to the designs of subsequent phases will be the responsibility of the Developer and will be addressed prior to approval of construction documents for each subsequent Phase.

For each Development Phase, the Developer will provide Improvement Plans describing and depicting the existing non-potable water facilities and proposed phase of non-potable water facilities. The Phasing Plans and supporting reports will demonstrate that the proposed phase of non-potable water facilities will include on-site treatment plant(s) to supply the required non-potable water demands and pipeline distribution systems to provide the required pressures and flow for that Development Phase.

12.6 Shared District Thermal Energy Plants

The project may elect to construct shared thermal energy plants, if the project sponsor determines that such system would be feasible. Such a system would use shared thermal energy plants within the project site to recover waste heat from commercial buildings for heating and cooling use in residential buildings to reduce the project's overall energy and water demands. A connection would be provided between residential and commercial building pairs when (1) such pairing occurs, and (2) a connection can be made without crossing a public right of way. Anticipated residential-commercial pairings include Blocks 1 and 2; 3 and 4; 7 and 11 and/or 15; and 8 and 12. If any of the residential-commercial pairings do not occur as anticipated due to a change in land use within a flex parcel, there will be no requirement to implement a shared thermal energy plant within that pairing.

Shared thermal energy plant equipment installed in commercial buildings would include heat recovery cooling equipment (heat recovery chillers) to provide excess hot water to the adjacent residential buildings for space heating and domestic hot water production. Residential buildings

would install space heating and domestic hot water equipment capable of utilizing the hot water provided by the adjacent commercial building.

If construction of shared thermal energy plants in residential building precedes construction of the commercial building, temporary provision of hot water for space heating and domestic hot water would be provided. In the case of this temporary provision, electric or natural gas may be used to produce hot water.

12.7 All-Electric Building Heating and Cooling

The project may elect to eliminate the use of natural gas for space heating and domestic water use, which would reduce operational greenhouse ("GHG") emissions and limit on-site combustion. During the design of the mechanical system for each building, the feasibility of systems that provide for all-electric space heating and domestic hot water production shall be explored. Among other factors, future utility rates and the impact on affordability will be considered as part of the determination of feasibility made by the Project Sponsor for using all-electric systems for building heating and cooling.

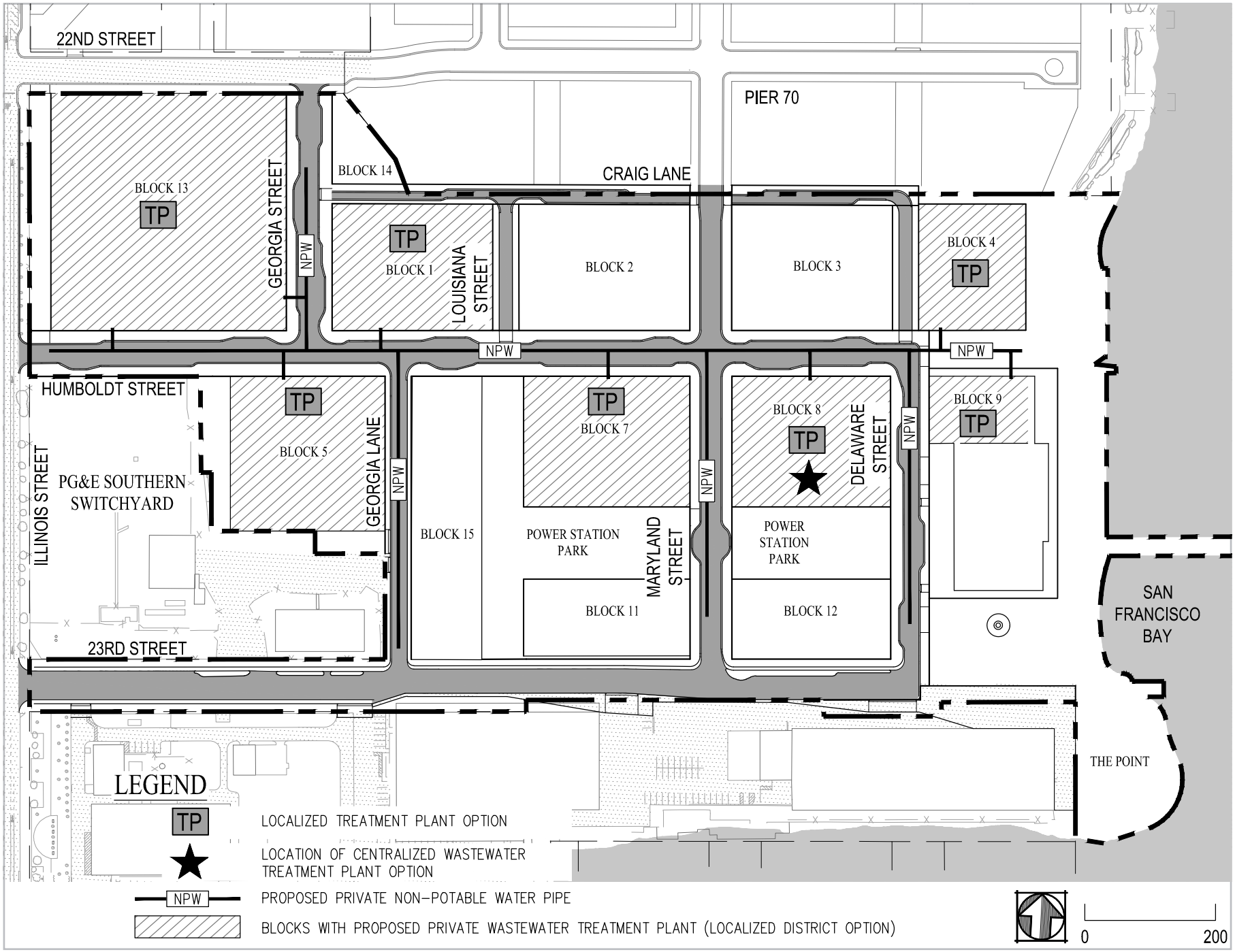


Figure 12.1 Proposed Non-Potable Water System - Localized District and Centralized District Treatment Plant Options

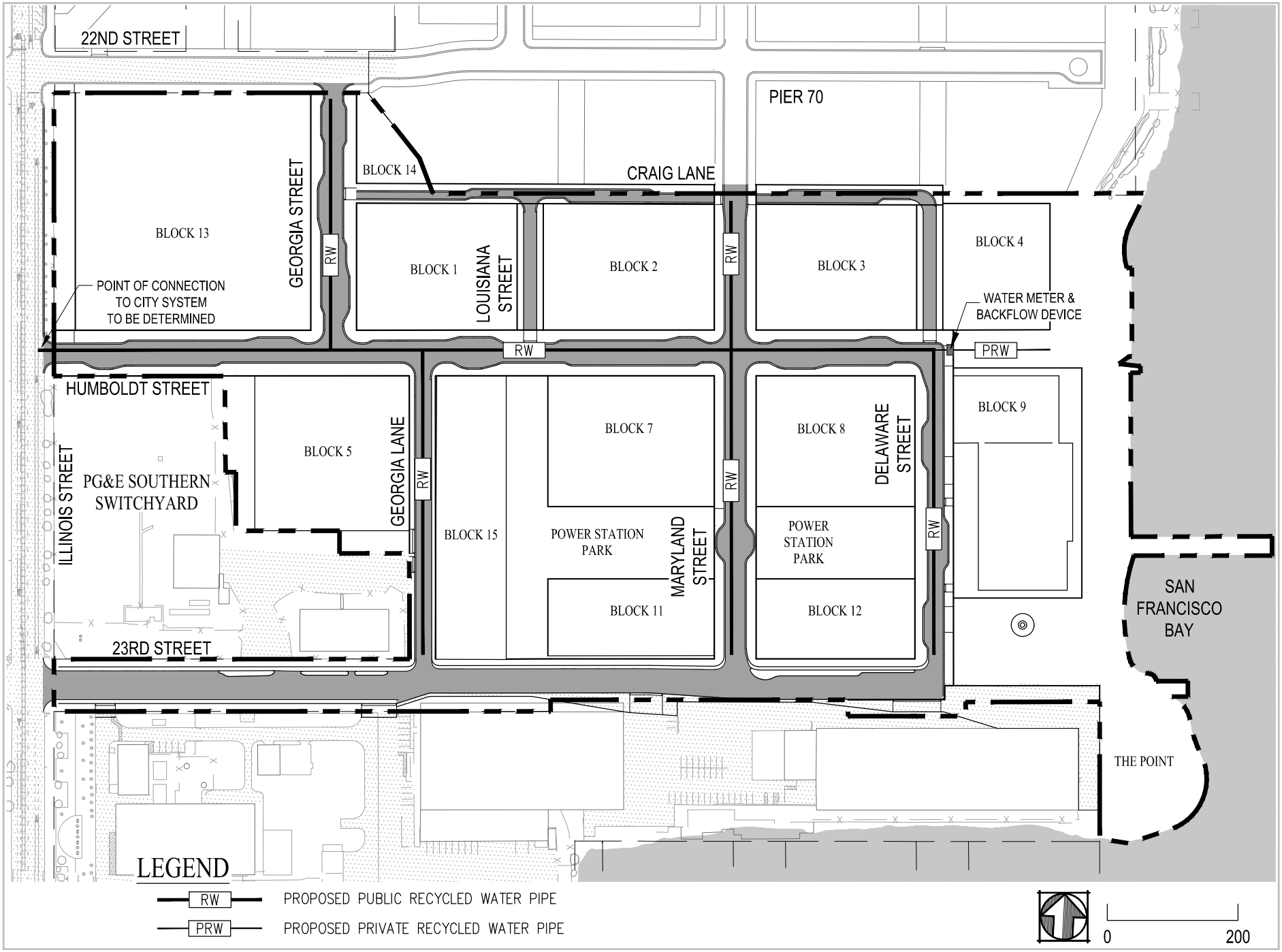


Figure 12.2 Proposed Public Recycled Water - City Supply Option

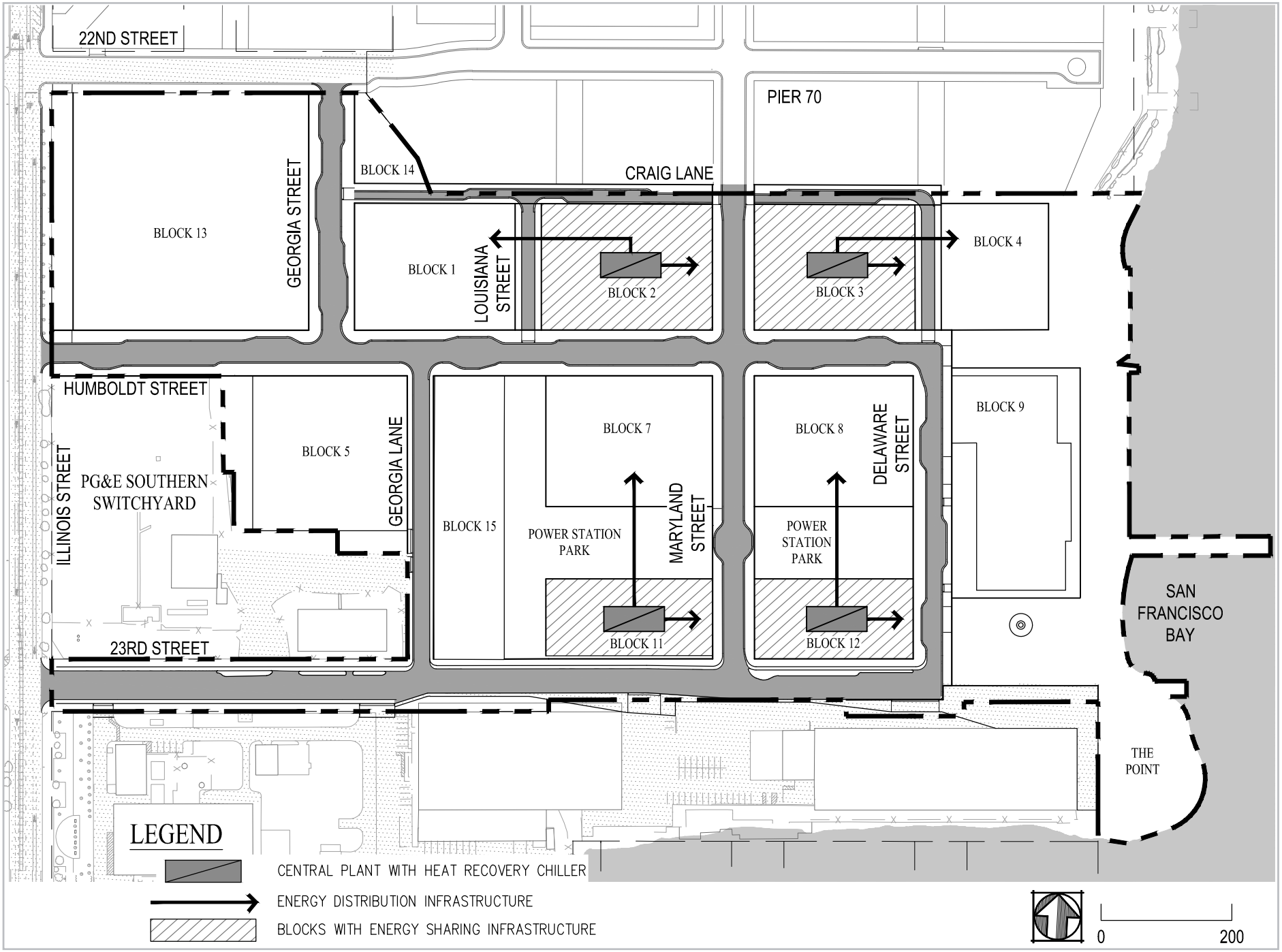


Figure 12.3 Shared Localized Thermal Energy Plants

13 AUXILIARY WATER SUPPLY SYSTEM (AWSS)

13.1 Existing AWSS System

The SFPUC, in cooperation with the SFFD, owns and operates the Auxiliary Water Supply System ("AWSS"). The AWSS is a high pressure, non-potable water distribution system dedicated to fire suppression specifically designed for reliable operation after a major seismic event. The existing AWSS system within the vicinity of the project includes a 14-inch diameter main in 3rd Street.

13.2 AWSS Design Criteria

The proposed Project will meet the fire protection requirements established by the SFFD to meet their City-wide objectives for fire protection following a seismic event. This includes the extension and installation of AWSS facilities to and within the Project. The proposed AWSS facilities will be located in the proposed streets that are either public right-of-way or private property with a public utility easement (23rd Street), as approved by the SFPUC.

The AWSS facilities will be placed with vertical and horizontal separation distances to other utilities as identified in Section 10.

13.3 Proposed AWSS System

The proposed Project will install new AWSS facilities within the Project and extending and connecting to the existing AWSS main in 3rd Street. The proposed AWSS facilities will include a 20-inch diameter main extension within 23rd Street connecting to the existing 14-inch main in 3rd Street and extending to the proposed intersection of Maryland Street and 23rd Street. Additionally, a 20-inch diameter main will be installed in Maryland Street extending from 23rd Street to the Project northern boundary line where it will connect to the AWSS main to be installed by the Pier 70 project. The proposed 20-inch pipeline will be earthquake resistant ductile iron pipe material. The Project will also install AWSS fire hydrants, at a maximum spacing of 500 feet, at locations determined by the SFPUC and SFFD. The proposed AWSS facilities, including proposed hydrant locations, are depicted on Figure 13.1.

13.4 AWSS Phasing

The proposed Project will design and install the new AWSS facilities in phases consistent with the Project Phasing Plan. The extent of the proposed AWSS installed within each phase will be the minimum necessary to support each respective Development Phase. Each Development Phase will at minimum install the portions of the proposed AWSS facilities within or adjacent to that Phase and will connect to existing reliable facilities as close to the Project Site as possible. Repairs or replacements of the existing facilities surrounding the Project will be made as necessary to support each proposed Development Phase.

The SFPUC will be responsible for maintenance of existing AWSS facilities. The SFPUC will be responsible for the new AWSS facilities once construction of each Development Phase or a new AWSS facility is complete and accepted by the SFPUC. Impacts to improvements installed with previously constructed portions of the Development due to the designs of subsequent phases will be the responsibility of the Developer and will be addressed prior to approval of construction documents for each subsequent Phase.

The SFPUC and SFFD will provide flow and pressure capacities of the existing AWSS the proposed AWSS is connecting to for each Development Phase. The Developer will provide Phasing Plans and supporting reports describing and depicting the proposed phase of AWSS facilities and demonstrating the facilities will provide the required pressures and flow for that Development Phase. The Phasing Plans will assume the AWSS system through the Pier 70 Project is completed by others.

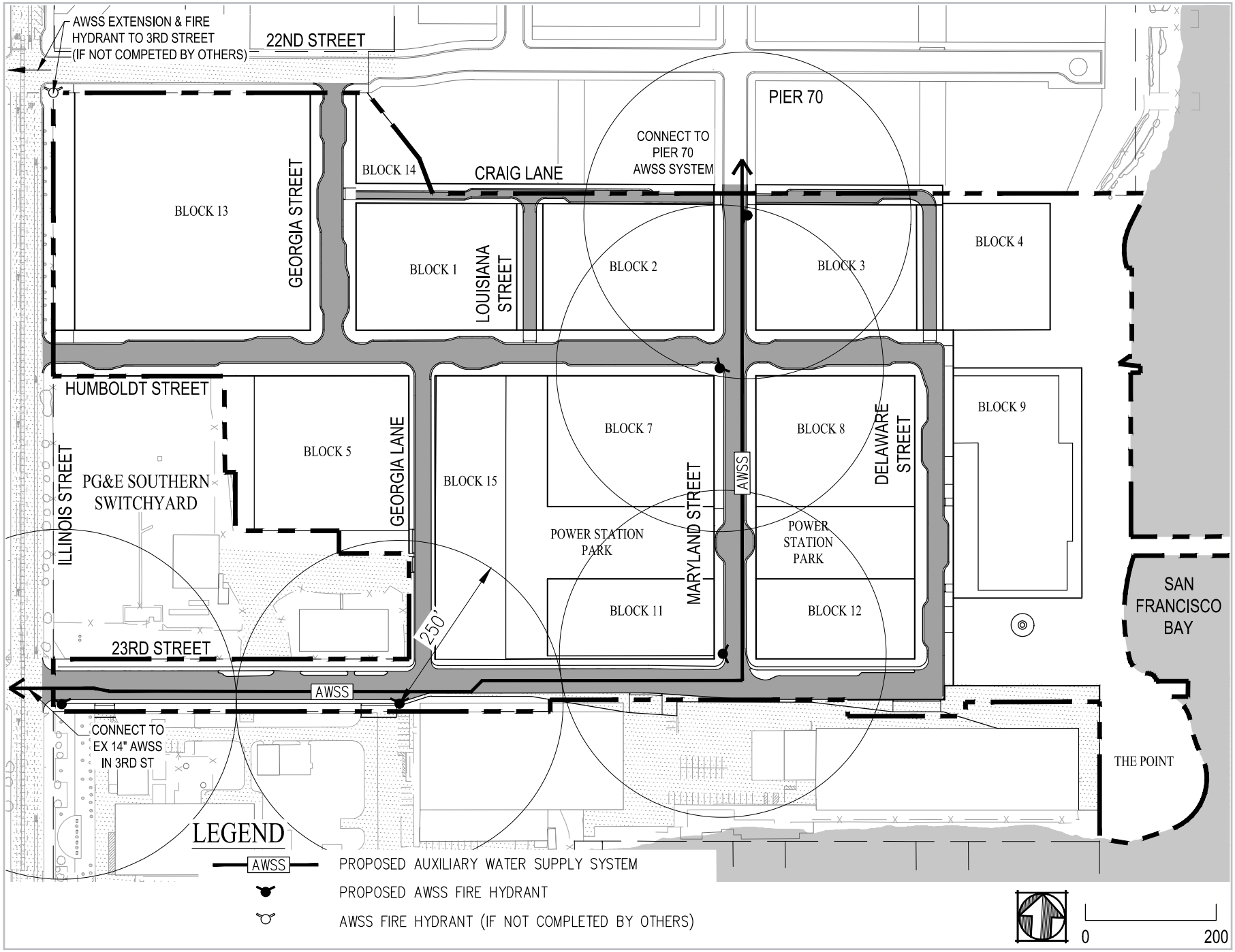


Figure 13.1 Proposed AWSS System

14 SANITARY SEWER SYSTEM

14.1 Existing Combined Sewer System

The Project is within the Combined Sewer Area – Bayside Drainage Basin. The historical sanitary sewer generated at the Project site was associated with the PG&E Power Plant operations, which was closed in 2011. Since the PG&E Power Plant was closed in 2011, the site has had on-going environmental remediation activities and some of the structures have been since demolished. The existing sanitary sewer flow generated at the Project has been further reduced as there are only a small amount of remaining employees and uses within the project site.

The existing conditions within the Project consists of several buildings in varying states of activity as the as well as numerous parking lot areas and three recently deconstructed holding tanks. The Project is nearly 100% impervious. The sanitary sewer and stormwater runoff generated from the existing buildings within the Project is collected by a network of private pipelines, holding tanks and pump stations within the Project area. This private system discharges the Project wastewater to the existing combined sewer 12-inch diameter pipeline located in 23rd Street, along the south side of Station A.

The combine sewer pipeline within 23rd Street connects to a 27-inch gravity trunk main in Illinois Street, which conveys wastewater southerly and eventually to the Southeast Treatment Plant.

There is an existing 12-inch diameter pipeline and drainage inlets in Humboldt Street near the intersection with Illinois Street. This existing system only collects stormwater flows from the PG&E switchyard areas and connects to the 27-inch gravity trunk main in Illinois Street.

There are additional proposed combined sewer pipelines planned within 22nd Street associated with the Pier 70 project. These facilities will connect to the Pier 70 combined sewer system which consists of pipelines, storage and the SFPUC 20th Street Pump Station. This system discharges to the existing combined sewer system within 20th Street, which eventually also drains to the 27-inch gravity trunk main in Illinois Street. See Figure 14.1 depicting the existing combined sewer system within the vicinity of the Project.

The Project is comprised of two stormwater watersheds defined by the existing topography of the Project site. The stormwater runoff from the western watershed is collected by the existing combined sewer facilities in Humboldt Street and 23rd Street. The stormwater runoff from the eastern watershed is collected and conveyed to existing outfalls to the Bay. See Figure 14.2 depicting the extents of the two existing stormwater watersheds within the Project.

14.2 Proposed Sanitary Sewer Flows

The proposed Project estimated sanitary sewer flow assumes a return of 95% on the potable water demand and 100% on the non-potable water for the Average Day Demands. The potable and non-potable water demand calculations associated with the proposed Project are estimated using the SFPUC's Non-Potable Water Program District Scale Water Calculator. The output from the calculator is enclosed in Appendix D.

A peaking factor of three was applied to the Average Daily Dry Weather Flow ("ADWF") to determine the Peak Dry Weather Flow ("PDWF"). The resulting ADWF for the proposed Project is 309,810 gpd or 215 gpm. The proposed Project is anticipated to generate a PDWF of 929,430 gpd or 645 gpm.

14.3 Downstream Combined Sewer Facilities

Preliminary wastewater modeling for the Project have been coordinated with the SFPUC to confirm that the existing combined sewer system facilities have adequate capacity for the Project. The modeling did not identify additional combined sewer system discharge events or system freeboard deficiencies created by the additional wastewater flows from the Project to the existing system.

The existing 12-inch pipeline in 23rd Street is currently planned for replacement through the SFDPW Contract 2710J Various Locations No. 28 Pavement Renovation and Sewer Replacement project. The SFPUC has confirmed the proposed pipeline replacement will have adequate capacity to accommodate the proposed Project wastewater flows.

14.4 Proposed Sanitary Sewer System

The proposed separated sanitary sewer system will maintain the existing drainage patterns within the Project site. The topography and site grading will be configured to provide clear differentiation of the two sewersheds within the Project. The sanitary sewer generated within the eastern watershed is proposed to be collected and conveyed by a proposed separated sanitary sewer system to be constructed by the Developer. The wastewater generated within the western watershed is proposed to be collected and conveyed by a proposed combined sewer system to be constructed by the Developer. The proposed sewershed limits that comprise the Project are depicted on Figure 7.3. The proposed separated sanitary sewer systems are described further below and depicted on Figure 14.3.

The proposed combined sewer system in the northern portions of Georgia Street and within the western watershed will connect to the proposed combined sewer system in 22nd Street that is proposed to be installed by the Pier 70 project. The Project will coordinate with the SFPUC and the Pier 70 project to ensure the necessary capacity for these wastewater flows are accommodated by the Pier 70 system.

14.4.1 Proposed Separated Sanitary Sewer System

The sanitary sewer generated within the Project eastern sewershed will be collected and conveyed by a proposed separated sanitary sewer system. The proposed separated sanitary sewer system is depicted on Figure 14.3. The separated sanitary sewer system will be designed and constructed by the Developer. The separated sanitary sewer design will be reviewed and approved by the SFPUC. The proposed separated sanitary sewer system will consist of 12-inch diameter collection pipelines that convey sanitary sewer by gravity to a pump station located near Delaware Street. The pump station will include an emergency back-up generator. The pump station control panel and emergency generator are proposed to be located in an enclosure placed in the open space adjacent to Delaware Street and Block 9. This facility will be encompassed by a public utility easement. A sanitary sewer force main will extend from the pump station southerly in Delaware Street and westerly in 23rd Street, eventually discharging to the existing combine sewer system in 23rd Street.

The proposed pipelines will be constructed in accordance with the City of San Francisco 2015 Subdivision Regulations and SFPUC Wastewater Utility Standards. The minimum service laterals to the buildings are to be six inches and eight inches, depending on the building use, size and demands. Laterals will have a fresh air inlet and trap in compliance with the Subdivision Regulations. Manhole covers will be solid with manhole spacing set at a maximum of 300 feet apart in linear distance, and up to 350 feet apart with approval from the SFPUC, and at changes in pipeline diameter, grade or alignment. Collection pipelines will be designed to have sufficient capacity to convey the average day design sanitary sewer flows when flowing half full based on depth (d/D = 0.50) and flowing three quarters full based on depth (d/D=0.75) for peak day design flows. The slope of the collection pipelines will maintain a minimum flow velocity of two ft/sec under average flow conditions. See Figure 10.2 depicting the proposed separated sanitary sewer pipeline locations relationship to other utilities and street improvements.

Upon completion of construction by the Developer and improvement acceptance by the SFPUC, the proposed separated sanitary sewer system will be maintained and owned by the SFPUC.

14.4.1.1 Northern Connection Alternative

There is an alternative configuration of the separated sewer system that would connect to the north, to the Pier 70 Combined Sewer System. This alternative would eliminate the pump station located within the Project. The proposed sanitary sewer system would be configured to convey the Project sanitary sewer by gravity flow to the Pier 70 System located in Maryland Street. This would require accelerating to Phase 1 the installation of this pipeline in Maryland Street, north of Humboldt Street for both the segment in PPS and the segment in Pier 70 to 22nd Street. This will require construction coordination with PG&E's planned remediation of the PPS "Tank Farm" area and construction coordination with Pier 70. This alternative is subject to further coordination and evaluation between the Project, Pier 70 and SFPUC.

14.4.2 Proposed Combined Sewer System

The wastewater generated within the Project's western sewershed will be collected and conveyed by a proposed combined sewer system. The proposed combined sewer system is depicted on Figure 14.3. The combined sewer system will be designed and constructed by the Developer. The combined sewer design will be reviewed and approved by the SFPUC. The proposed combined system will consist of collection pipelines ranging from 12" to 18" in diameter that convey sanitary sewer and stormwater by gravity to the surrounding existing combined sewer facilities in Illinois Street, 23rd Street and 22nd Street. The combined sewer system will be designed in accordance with the Subdivision Regulations, maintaining four feet of freeboard and designed to protect from flooding related to potential overland flows.

Figure 10.2 depicting the proposed combined sewer pipeline locations relationship to other utilities and street improvements.

Upon completion of construction by the Developer and improvement acceptance by the SFPUC, the proposed combined sewer system will be maintained and owned by the SFPUC. The SFPUC acceptance of infrastructure will occur upon the City' acceptance of the public streets associated with each phase.

14.5 Phases for Sanitary Sewer System Construction

The Developer will design and install the new separated sanitary sewer system and combined sewer system based on the Project Phasing Plan and as needed to facilitate each specific proposed Development Phase. The amount and location of the proposed sanitary sewer facilities installed will be the minimum necessary to support the Development Phase. Phase 1 will include the design and construction of the separated sanitary sewer pump station and force main discharging to the

combined sewer system in 23rd Street. Each Development Phase will connect to the existing system as close to the limit of the Development Phase as possible while maintain the integrity of the existing system for the remainder of the Project. Repairs and / or replacement of the existing facilities necessary to support the proposed Development Phase will be designed and constructed by the Developer. Interim sanitary sewer systems will be constructed and maintained by the Developer as necessary to maintain existing sanitary sewer facilities impacted by proposed Development Phases.

The SFPUC is responsible for maintenance of the existing combined sewer facilities surrounding the Project. The Developer will maintain acceptable access through all phases for the SFPUC to maintain SFPUC accepted infrastructure. The SFPUC will be responsible for the new separated sanitary sewer system and combined sewer system once construction of the Development Phase or new sanitary sewer system is complete and accepted by the SFPUC. The Developer will own and maintain interim facilities, as required, until completion of the Development Phase.

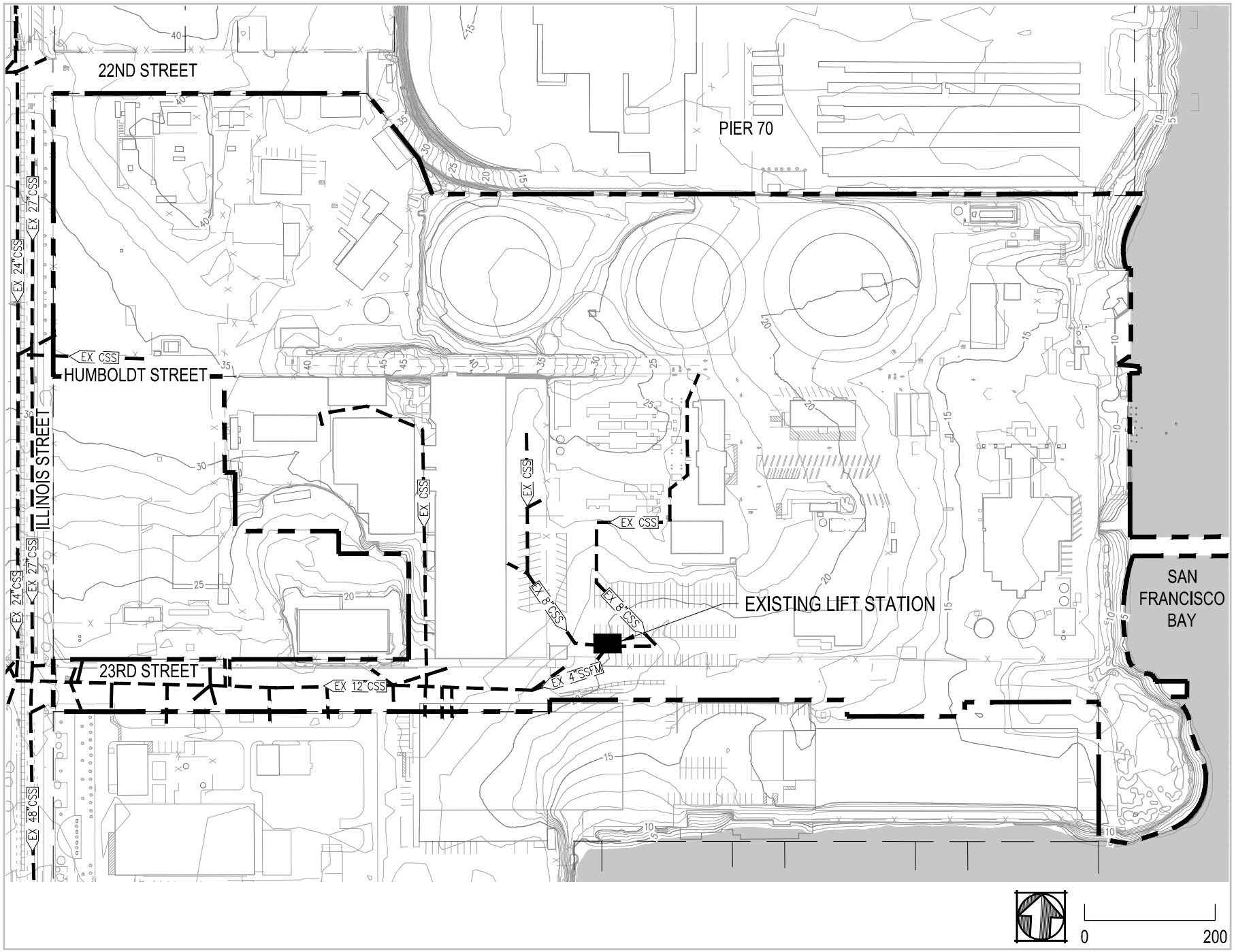


Figure 14.1 Existing Combined Sewer System

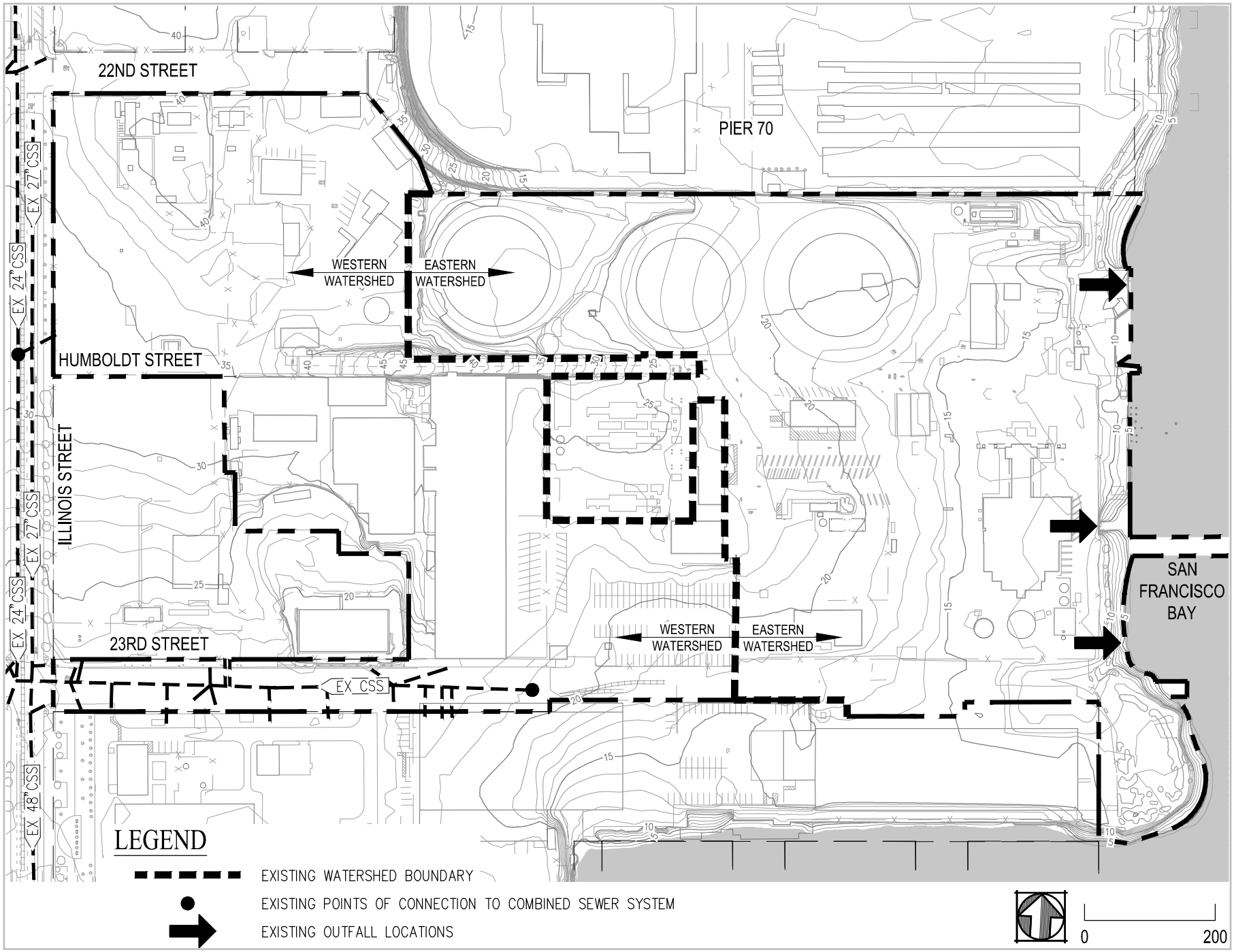


Figure 14.2 Existing Stormwater Watersheds Within Project

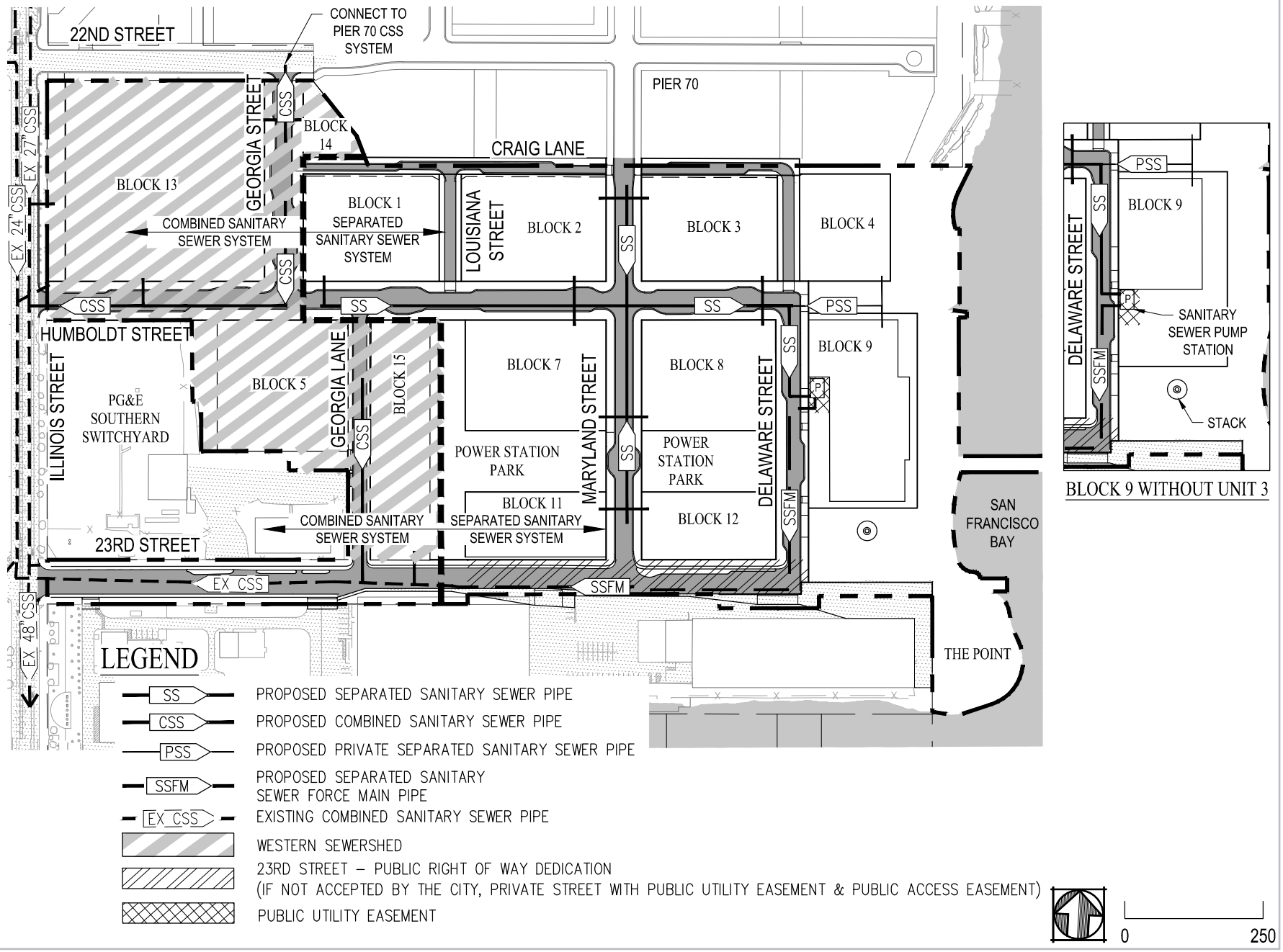


Figure 14.3 Proposed Combined and Separated Sanitary Sewer Systems

15 STORM DRAIN SYSTEM

15.1 Existing Storm Drain System

The Project site is comprised of two drainage watersheds. The western watershed is collected and conveyed by existing on-site inlets, pipelines and pump stations to the existing combined sewer system in Illinois Street and 23rd Street. The eastern watershed is collected and conveyed by a separated storm system that discharges to the Bay. The existing on-site separated storm system is comprised of inlets, pipelines, holding tanks and three existing outfall discharge points to the Bay located along the project waterfront. The existing watersheds are depicted on Figure 15.1.

The eastern portion of 23rd Street, east of Station A, overland flows to the east and releases by overtopping the shoreline at the eastern terminus of the street. Table 15.1 outlines the areas of the existing watersheds.

The existing storm drain infrastructure within the Project does not include any best management practices (BMP) to manage or treat stormwater runoff. The existing site conditions are effectively 100% impervious surfaces comprised of pavement and roof areas.

Table 15.1 Existing Watershed Areas – Combined Sewer Areas

Point of Connection	Drainage Areas (Acres)
Humboldt at Illinois Street	6.38
23rd at Illinois Street	7.55
Total Combined System	**12.93**

Table 15.2 Existing Watershed Areas – Separated Storm Drain Areas

Point of Connection	Drainage Areas (Acres)
Existing Bay Outfalls	14.93
Overland Flow	0.80
Total to San Francisco Bay	**15.73**

15.2 Proposed Storm Drain System

The proposed storm drain systems will generally maintain the existing drainage patterns within the project site, while reducing the area draining to the City's combined sewer system. Stormwater runoff will continue to be conveyed by both a separated storm system directly to the Bay and pipelines connecting to the City's combined sewer system. The topography and site grading will be configured to provide clear differentiation of the two watersheds within the Project, protecting from any potential overflow discharges from the combined sewer system to the Bay.

15.2.1 Proposed Separated Storm Drain System

The stormwater runoff within the eastern watershed is proposed to be collected and conveyed by a proposed separated storm system discharging to the Bay via a new outfall to be constructed by the Developer. The portions of 23rd Street that formerly drained by overland flow to the Bay will be collected and conveyed by the proposed separated storm drain system. A curb will be constructed along the south side of 23rd Street to collect stormwater from the street immediately north of the existing loading docks. The proposed separate storm drain systems will consist of entirely new infrastructure, consolidated into a single outfall to the Bay. The proposed system will be designed to convey stormwater flows from a 5-year / 3-year design storm. For maintenance and permit compliance purposes, an isolation gate with manhole will be installed directly upstream of the outfall to allow blocking of stormwater flows to the outfall or rerouting of nonconforming flows to the sanitary sewer system. A conceptual configuration of the proposal outfall is depicted on Figure 15.4. The proposed pipelines will range from 12 inches to 42 inches in diameter.

15.2.2 Proposed Combined Sewer System

The stormwater runoff within the western watershed is proposed to be collected and conveyed by a proposed combined sewer system to be constructed by the Developer and discharging to the existing combined sewer facilities in Illinois Street and 23rd Street.

The existing combined sewer pipeline in 23rd Street is scheduled to be replaced as part of the SFDPW Contract 2710J Various Locations No. 28 Pavement Renovation and Sewer Replacement Project. The PUC has confirmed the proposed pipeline replacement has adequate capacity for the Project's sanitary sewer and stormwater flows planned to connect to this facility.

There is a small portion of this western watershed at the north end of Georgia Street that will connect to the combined sewer system in 22nd Street proposed to be constructed by Pier 70.

The proposed combined sewer system pipelines will range from 12 inches to 18 inches in diameter.

The proposed storm drain systems will be designed to maintain the required clearances to adjacent utility systems and street improvements. The utility clearances for each street segment are depicted on Figure 10.2. The proposed watershed limits that comprise the Project are depicted on Figure 15.2. The proposed storm drain systems are depicted on Figure 15.3. Table 15.2 outlines the acreages of the proposed watersheds.

Table 15.3 Proposed Watershed Areas – Combined Sewer Areas

Point of Connection	Drainage Areas (Acres)
22nd Street	0.49
Humboldt at Illinois Street	4.33
23rd at Illinois Street	3.95
Total Combined Sewer Areas	**8.77**

Table 15.4 Proposed Watershed Areas – Separated Storm Drain Areas

Point of Connection	Drainage Area (Acres)
Proposed Bay Outfalls	20.25
Overland Flow	0.00
Total to San Francisco Bay	**20.25**

15.3 Design Standards

The proposed storm drain systems will be designed in accordance with the Subdivision Guidelines, including the following items:

- Baseline Hydraulic Design Storm – the baseline design storm for new pipelines systems is the 5-year, 3-hour rainfall event as per the Subdivision Regulations.
- Baseline Design Tail Water Elevations – the baseline tail water elevation for infrastructure draining to San Francisco Bay is 7.8 as per the Subdivision Regulations.
- Design Freeboard – the Subdivision Regulations require that the hydraulic grade line in pipe systems generally be four feet below the ground surface and no less than two feet.
- Overland Release Design Storm – the Subdivision Regulations require overland release provisions for extremely large storm events that exceed the capacity of the storm drain system. The design storm for this scenario is the 100-year, 3-hour event.
- Overland Release Tail Water Elevations – the baseline tail water elevation for the overland release analysis is the BFE plus 24-inches of sea level rise.

Additional modeling for the 100-year design storm will be completed with a tidal elevation equal to the BFE plus 24 inches of sea level rise, consistent with SFPUC standards and as requested per subdivision regulations.

15.4 The Stack and Unit 3

The Stack is proposed to be preserved and Unit 3 may be preserved; both structures may potentially be adaptively reused. The existing elevation of Unit 3 and Stack is approximately 14. The areas surrounding Unit 3 and Stack will need to conform to this lower elevation with either slopes or retaining walls. The private separated storm drain system of this localized low point will be designed to address sea level rise in excess of 24 inches, including a pump station and tidal backflow protection measures. The pump station will be designed to convey flows up to the 100-year storm event. This pump will be privately owned and maintained and is estimated to require a 1,000 gpm capacity with no storage. If storage is provided, the pump requirements could be reduced significantly.

15.5 Phases for Storm Drain System Construction

The Developer will design and install the new combined sewer system and separated storm drain system based on the Project Phasing Plan and as needed to facilitate each specific proposed Development Phase. The amount and location of the proposed storm drain facilities installed will be the minimum necessary to support the Development Phase. Phase 1 will include the design and construction of the separated storm drain outfall to the Bay. Each Development Phase will connect to the existing system as close to the limit of the Development Phase as possible while maintaining the integrity of the existing system for the remainder of the Project. Repairs and / or replacement of the existing facilities necessary to support the proposed Development Phase will be designed and constructed by the Developer. Interim storm drain systems will be constructed and maintained by the Developer as necessary to maintain existing storm drain facilities impacted by proposed Development Phases.

The City will be responsible for the new combined sewer system and separated storm drain system once construction of the Development Phase or new storm drain system is complete and accepted by the City. The Developer will own and maintain interim facilities, as required, until completion of final permanent facilities, as defined in this Infrastructure Plan.

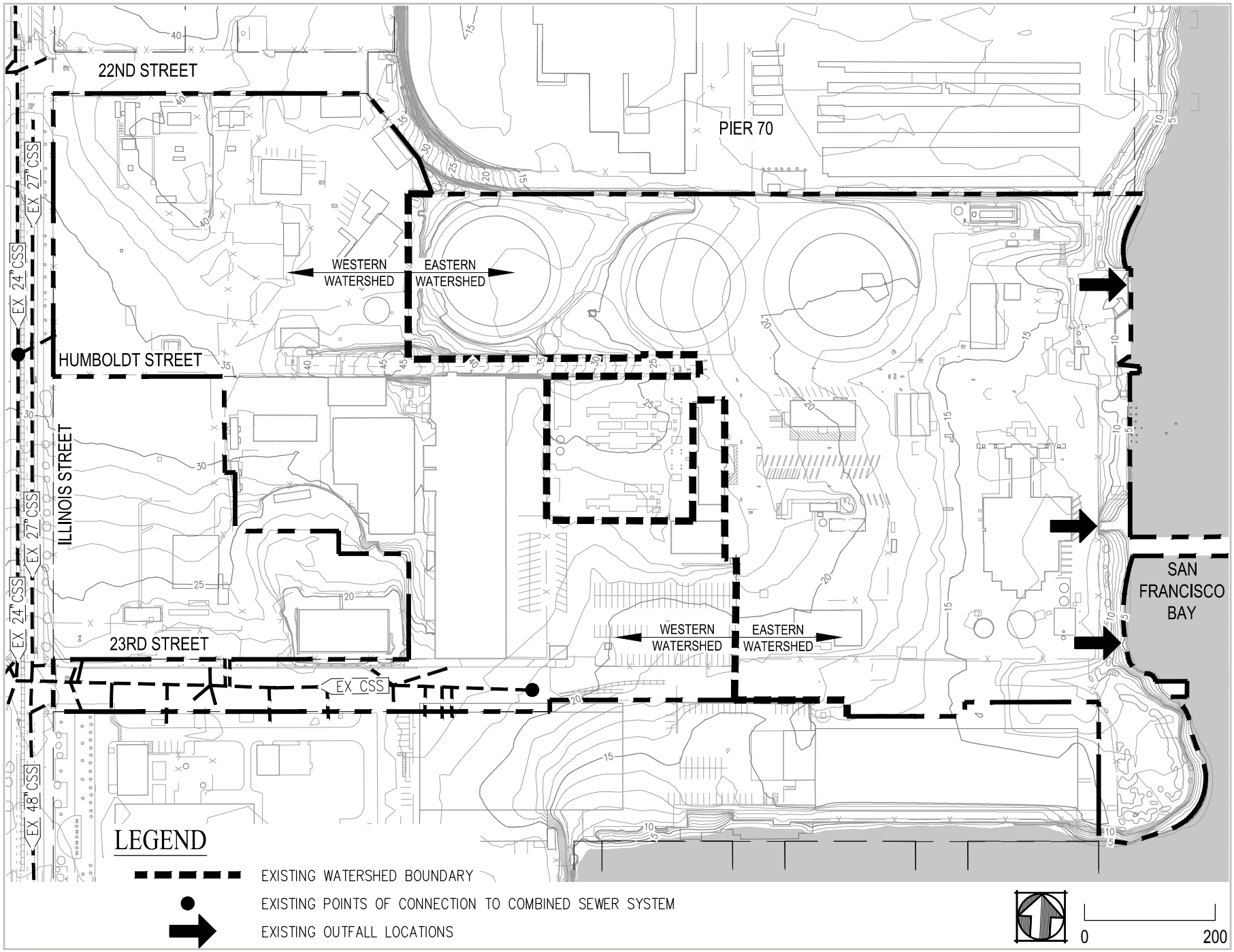


Figure 15.1 Existing Watersheds

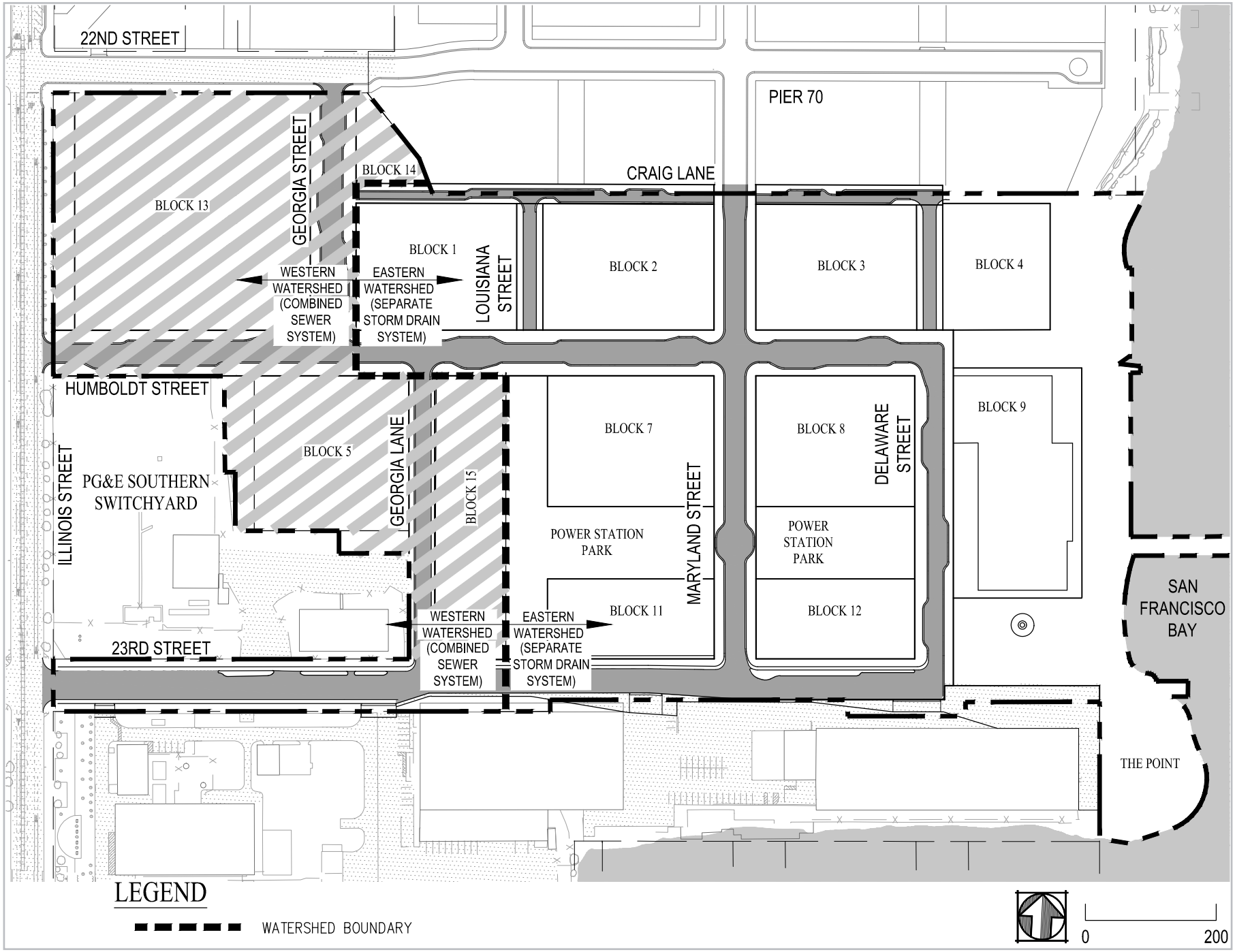


Figure 15.2 Proposed Watersheds

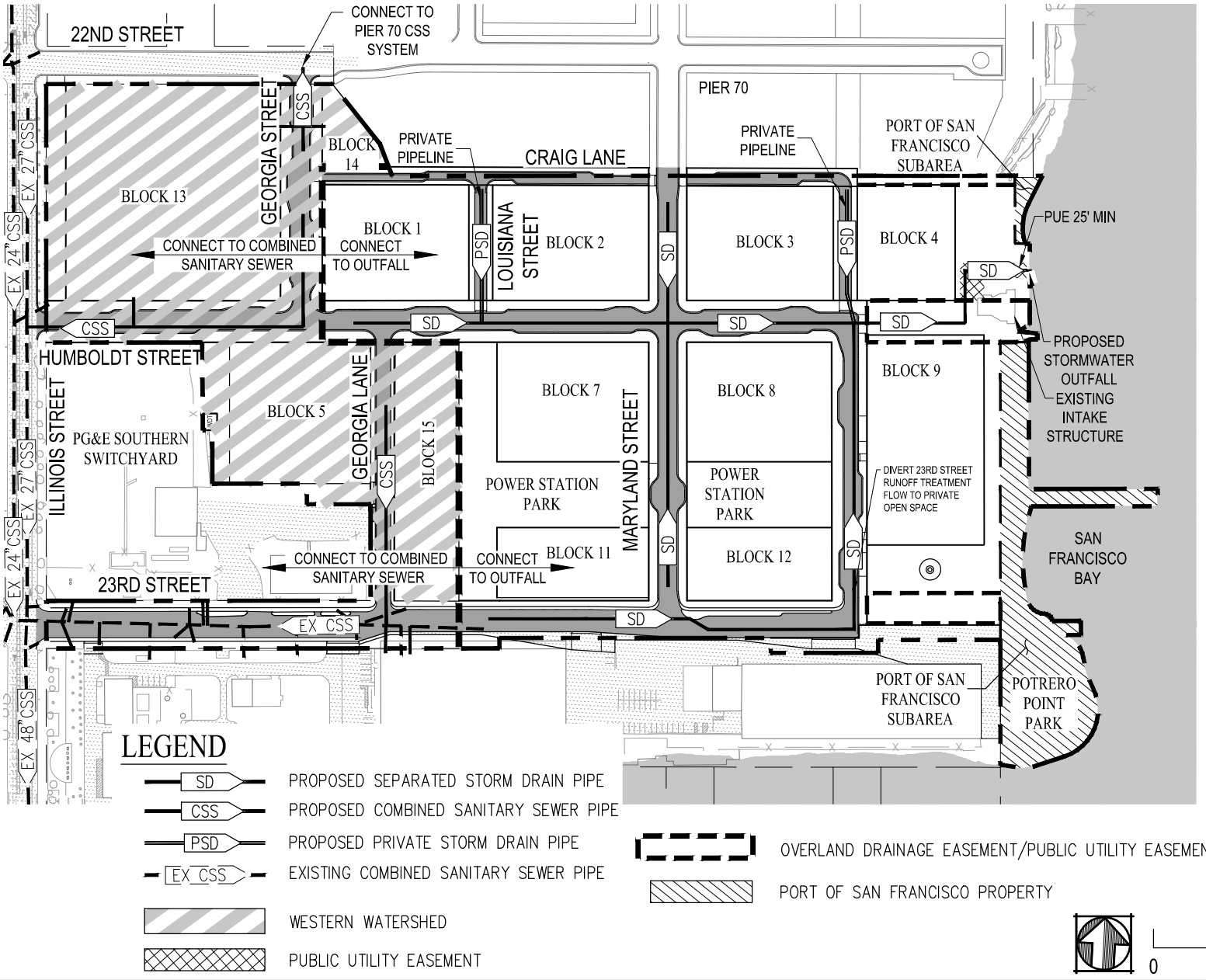


Figure 15.3 Proposed Storm Drain Systems

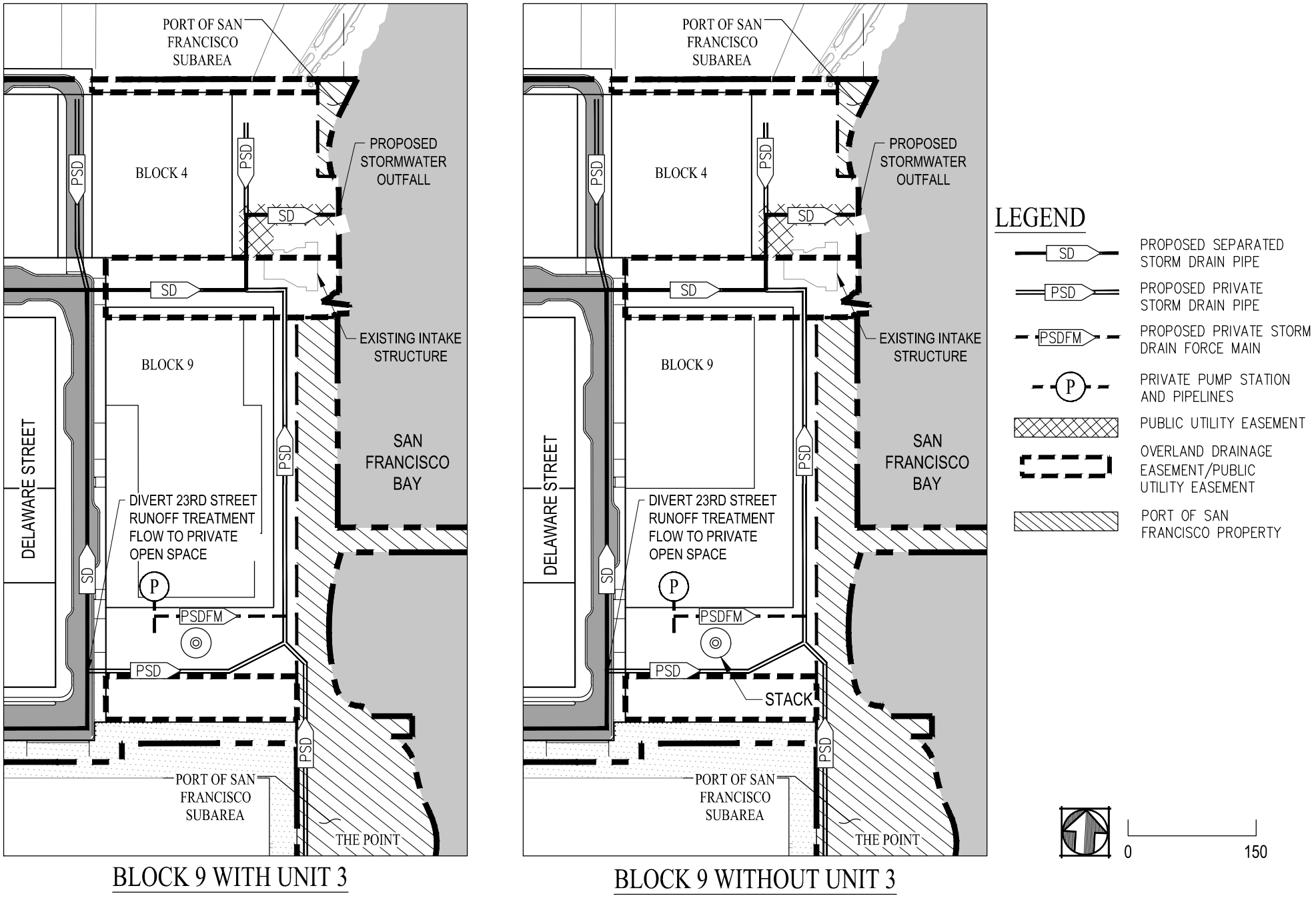


Figure 15.3 Proposed Storm Drain Systems

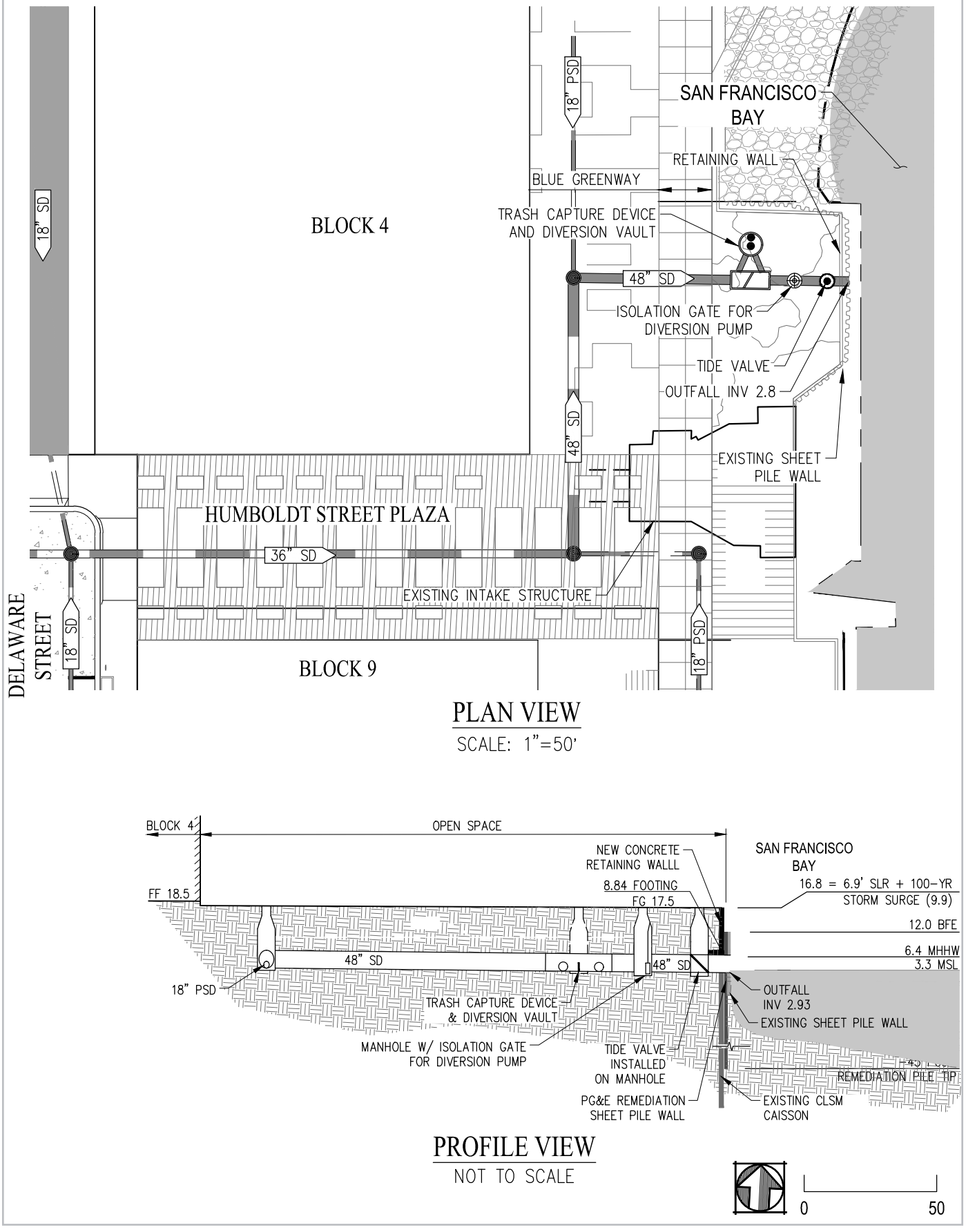


Figure 15.4 Conceptual Outfall

16 STORMWATER MANAGEMENT

16.1 Existing Stormwater Management Controls

The existing storm drain infrastructure within the Project does not include any best management practices (BMP) to manage or treat stormwater runoff. The existing site conditions are effectively 100% impervious surfaces comprised of pavement and roof areas.

16.2 Proposed Stormwater Management System

The required Stormwater Management for compliance with the City of San Francisco Storm Water Management Requirements ("SMR") will vary for the portions of the Project that are connected to the combined sewer system as compared to those connected to the separated storm drain system. Where Development Blocks or roadways / open space are connected to the combined sewer system, the Project will reduce the rate and volume of stormwater runoff based on the thresholds defined in the SMR. Modified compliance may be allowed for projects in the combined sewer system with proven site constraints upon SFPUC approval. Where the Development Block or roadway / open space connect to the separated storm drain system, the Project will treat the stormwater runoff per the SMR.

The Project will be designed to integrate Low Impact Development ("LID") elements with stormwater treatment BMPs to achieve compliance with the SMR. LID elements will include reducing stormwater runoff from impervious surfaces by integrating landscaping, permeable surfaces, rainwater harvesting and Living Roofs. Stormwater treatment BMPs include primarily plant based BMPs, such as bioretention areas, rain gardens, flow-through planters and Living Roofs. Infiltration BMPs may be also considered, but it is anticipated that the low infiltrating soils and documented underlying environmental contamination will challenge the feasibility of permeable pavements and other infiltration BMPs being used as a stormwater BMP. The stormwater treatment BMPs will treat, reuse or infiltrate stormwater runoff prior to discharging to the Bay or downstream combined sewer system. See Figure 16.2 depicting the conceptual locations and general ownership of the stormwater management system. The actual locations of the green infrastructure and stormwater management system will be approved through the Stormwater Management Master Plan, the Street Improvement Permit and Stormwater Control Plan review and approval process.

Stormwater treatment BMPs will be designed to accommodate sea level rise based on the Project BFE. BMPs will be designed using identical design criteria as the storm drain system conveyance analysis (i.e. 5-year LOS, BFE and SLR tail water) such that the hydraulic grade line (HGL) is at or below the BMP aggregate base section. If hydraulic modeling does not meet HGL requirements, the Project shall identify each BMP with the modeled duration of inundation for SFPUC review and approval.

Any standard or non-standard paving materials used to comply with the SMR, such as permeable paving (sidewalk, roadway or open space) shall be maintained by the Project Master Association. The City or acquiring agency will not maintain permeable paving used to achieve SMR compliance.

The following describes the performance requirements for the stormwater management system within each of the storm drain systems.

16.2.1 Stormwater Management in Separate Storm Drain System Areas

The Project exceeds the threshold of more than 50% impervious in the existing condition and considered a Large Project. The stormwater runoff from impervious surfaces will be directed to appropriate stormwater treatment BMPs prior to entering the public separated storm system, providing enhanced runoff quality prior to discharge to the Bay. The treatment BMPs will be designed to manage 90-percent of the 24-hour storm.

16.2.1.1 Development Blocks

Each Development Block will be responsible for achieving compliance with the SMR independently. The Development Parcels are generally directly adjacent to public and private streets with limited options to treat the stormwater runoff. The buildings and spaces within each Development Block will consider site design measures to reduce runoff, such as rainwater harvesting, Living Roofs and permeable surfaces. The anticipated locations of Living Roofs are depicted on Figure 16.2. Stormwater runoff from the impervious areas within the Development Blocks that are not treated by a site design measure will be treated by stormwater treatment BMPs. The treatment BMPs will be plant based, including bio-retention basins, rain gardens and flow-through planters. The private owner of each Development Block will be responsible for the design, construction and maintenance of the stormwater treatment system to achieve SMR compliance of that respective Development Block.

16.2.1.2 Roadways and Open Space

The roadways and open space areas will be designed with integrated plant based BMPs. These will include bioretention basins, rain gardens and flow-through planters. The treatment BMPs within the public streets will be designed consistent with the City's Green Infrastructure Typical Details. The runoff from the eastern portion of 23rd Street will be conveyed to treatment BMP's located in the Stack

Plaza. This is necessary to avoid conflicts between treatment BMP's and the underground high voltage lines in 23rd Street. The Developer is responsible for the design and construction of the stormwater BMPs within the Roadways and Open Space areas. The City is responsible for maintenance of the stormwater management facilities located in the public right-of-way that only treat public street and sidewalk runoff. The Developer is responsible for maintenance of stormwater treatment facilities that treat a blend of public right-of-way runoff and Development Block runoff.

16.2.2 Stormwater Management in Combined Sewer Areas

The Project is more than 50% impervious in the existing condition within the Combined Sewer Areas. The Project will reduce the runoff rate and volume of stormwater discharging into the combined sewer system relative to the 2-year, 24-hour design storm. The SMRs require that the runoff rate and volume of stormwater within the proposed Combined Sewer Area be reduced by 25%. The SMRs acknowledge that some projects have site conditions that challenge complying with this reduction. Accordingly, the SMR also allows for a Modified Compliance Program ("MCP") for these types of sites with limitations and constraints, such as low soil permeability, high groundwater tables, or limited rainwater harvesting opportunities. Under the MCP, individual projects can apply for a modified performance to reduce volume reduction targets (down to a minimum of 10% reduction in runoff volume) if a proportional additional reduction is made in peak stormwater flow rates (up to a maximum credited reduction of 40%).

16.2.2.1 Development Blocks

The Development Parcels are generally directly adjacent to public and private streets with limited options to reduce the volume of runoff. The Project will submit a modified compliance application for each individual parcel project for review and approval by the SFPUC. Additionally, the project may pursue an "equivalency credit" for stormwater volume reduction associated with the non-potable reuse proposed at the site, for the SFPUC review and approval. The allowance of a volume reduction "equivalency credit" is dependent on the configuration proposed non-potable reuse and stormwater management approach. Additional runoff volume and rate reductions at each development Block will be implemented as needed to achieve compliance with the SMRs. This will include the implementation of additional stormwater BMPs, such as Living Roofs, rainwater harvesting, permeable surfaces, flow-through planters, rain gardens or bioretention basins. The private owner of each development block will be responsible for the maintenance of stormwater management facilities within that Development Block.

16.2.2.1 Roadways

The roadways areas will be designed with integrated plant based BMPs. These will include bioretention basins, rain gardens and flow-through planters. The treatment BMPs within the public streets will be designed consistent with the City's Green Infrastructure Typical Details. The City will be responsible to maintain the stormwater management facilities located within the public right-of-way that treat only public street and sidewalk runoff.

The Development Parcels may increase stormwater management and rainwater harvesting performance to over-comply and apply to the Roadway areas, assuming modified compliance has not been allowed on the parcel project.

16.3 Exempt Areas

The portion of 23rd Street that is existing public right-of-way adjacent to the Project is exempt from and not subject to SMRs. See Figure 16.1 depicting the exempt areas.

16.4 Stormwater Control Plans

The Project will prepare stormwater control plans for SFPUC review and approval.

- Roadways / open space improvement projects will submit preliminary Stormwater Control Plans ("SCP") and final SCPs for approval by the SFPUC prior to SFDPW permit issuance, where Improvement Plans include stormwater BMPs.
- Development Block projects will submit preliminary SCPs for SFPUC approval prior to issuance of site permit. The final SCP will be submitted to SFPUC during the DBI addenda permit process and require SFPUC approval prior to issuance of certificate of final completion.

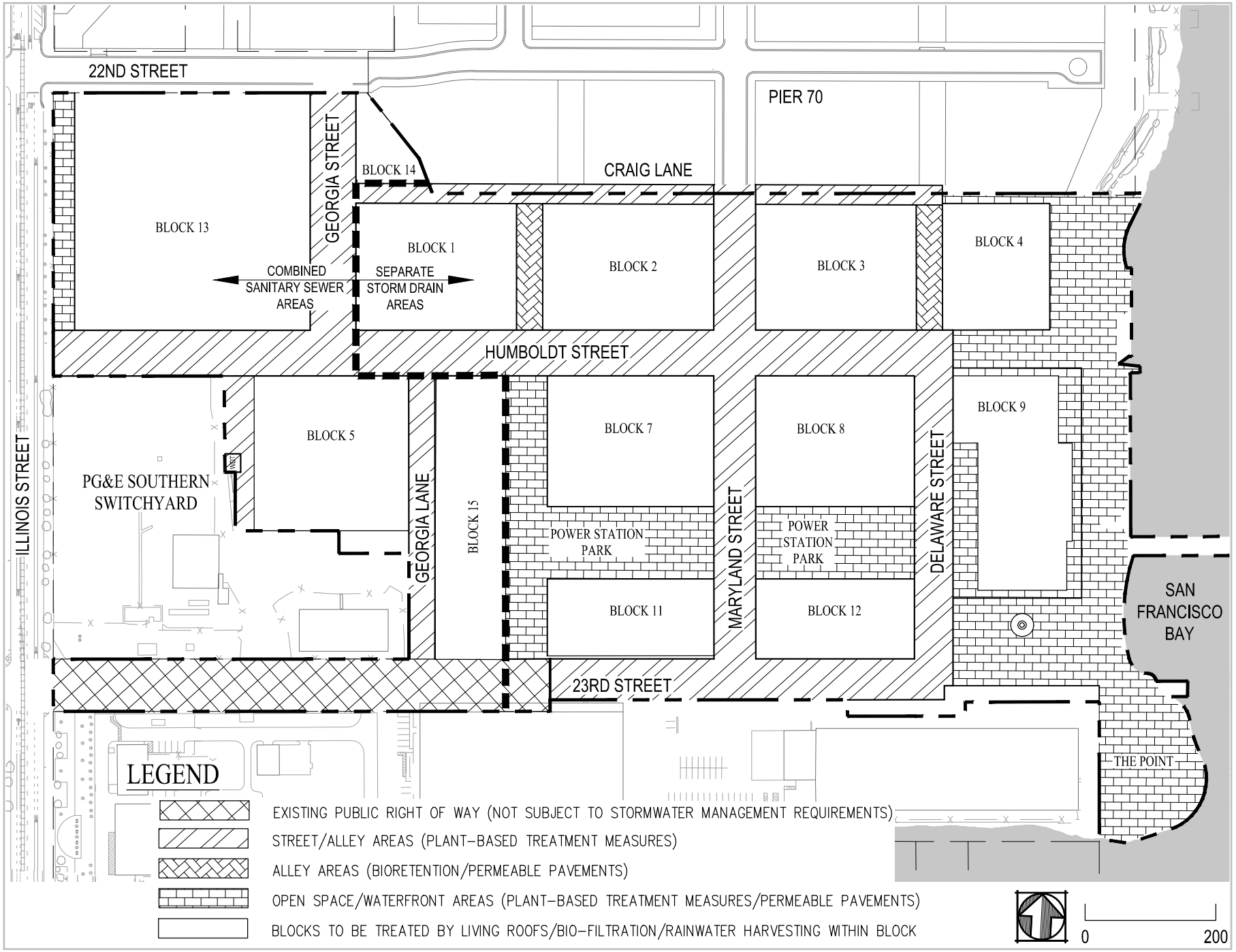


Figure 16.1 Conceptual Stormwater Treatment Controls

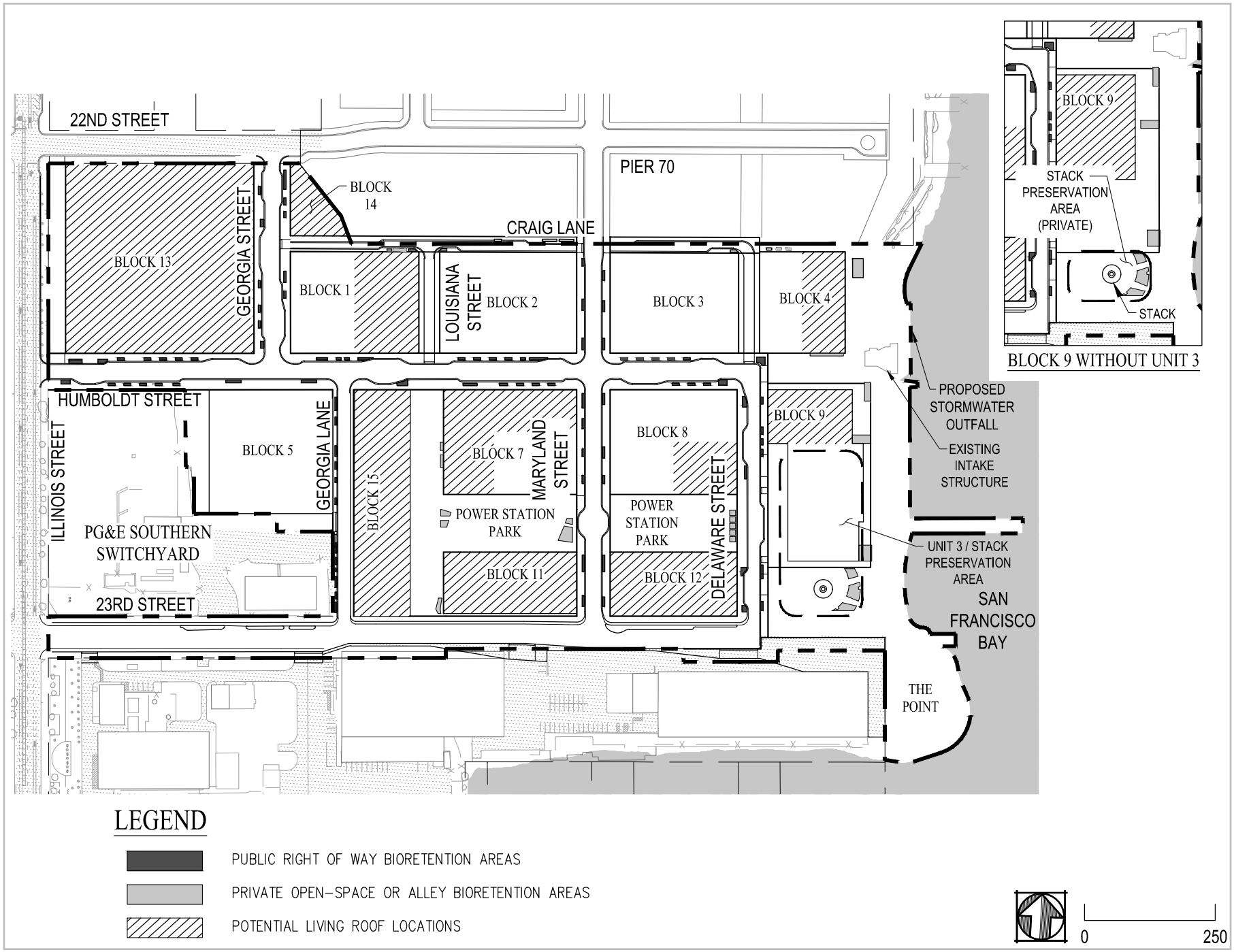


Figure 16.2 Conceptual Stormwater Control Plan

17 DRY UTILITY SYSTEMS

17.1 Existing Dry Utility Systems

17.1.1 Electric

Within the Project area there are existing overhead and underground Pacific Gas and Electric ("PG&E") 12kV distribution systems. The existing 12kV distribution systems are served from the PG&E Substation A. Substation A is located along Illinois Street between 22nd Street and 23rd Street, adjacent to the Project. With the proximity of Substation A to the Project, there are also existing underground electric transmission systems, both 115kV and 230kV, adjacent to and within the Project.

17.1.2 Natural Gas

The site is currently served from existing 2-inch plastic mains in Humboldt Street and 23rd Street. There is also a 24-inch PG&E transmission gas main adjacent to Illinois Street, and along the Block 13 Western Boundary. The existing 24-inch transmission gas main is depicted in Figure 4.2.

17.1.3 Communications

AT&T and Comcast own and operate existing communication facilities in Illinois Street. These facilities are within underground duct banks. There are also existing City of San Francisco Communication Department of Technology Information Services (DTIS) facilities consisting of overhead lines and cables in underground conduits located in Illinois Street adjacent to the Project.

17.2 Proposed Dry Utility Systems

The Developer's infrastructure obligations include the design and construction of the proposed dry utility systems within the Project. These systems will be located in a common, joint trench where feasible. The joint trench system will be public and will include facilities such as electric, natural gas, communications and street lighting facilities. The utility companies will maintain and operate their respective facilities in accordance with their franchise agreements with the City within the future public streets. The natural gas system may be located in a separate trench in order to comply with PG&E's separation requirements from a building. The proposed Joint Trench Layout is depicted on Figure 17.1. The configuration of the joint trench in 23rd Street may need to incorporate alternative layouts or special facilities in order to address the existing high voltage lines in this

corridor and the existing loading docks to remain on the south side of the street. The exact location of the joint trench in 23rd Street will be determined during the detailed design stage of the project.

17.2.1 Electric

The total cumulative peak power demand (design) associated with the Project is approximately 20 MVA. This has been estimated based on typical utility demands for the proposed types of land use and Project climate zone.

The proposed electric distribution system will be installed in the joint trench system. These facilities will be located within the proposed public and private streets providing service to the various uses throughout the Project.

Electric service to the Project could be provided by PG&E or San Francisco Public Utilities Commission Power Enterprise (SFPUC PE). The determination of which entity will supply electricity to the Project will be made through the approval of the Master Electric Utility Plan and other project agreements.

In the case PG&E is the electric provider, PG&E electric service would be delivered to the site at 12kV by connections to existing distribution feeders at the adjacent Substation A. Additional new feeders may be required based on existing service capabilities of the PG&E facilities.

In the case SFPUC PE is the electrical provider, SFPUC PE service may also be provided at 12kV, but would require wholesale interconnections to existing PG&E 12kV facilities or require the construction (at SFPUC PE expense) of a new single or multiple 115kV-12 / 34.5kV transformer bank substation.

Temporary electric service during construction may be provided by PG&E from existing local facilities, or SFPUC PE may provide temporary construction service for the project by developing a PG&E Wholesale Distribution Tariff (“WDT”) distribution interconnection at no cost to the project. If necessary, the location of a WDT connection point will be determined in coordination between the Developer and the SFPUC.

The Project location is in proximity to a number of existing electric transmission and distribution facilities. These facilities will be located, potholed and included in all Improvement Plans to assure proper coordination and proper clearances for construction phasing. The existing distribution facilities that bisect the Project and serve uses to the north will be relocated. The relocation of these facilities will be coordinated such that service disrupting will be minimized.

The Project will be responsible for trenching, installing conduit and substructures required to complete a fully operational electric distribution system. The distribution system elements such as switches, transformers and cables, will be provided by the electric provider. The costs associated with the installation of these elements will be pursuant to the applicable CPUC tariffs (for PG&E) or per the Rules and Regulations Governing SFPUC Electric Service, Distribution Line Extensions and Service Line Extensions (for SFPUC PE).

17.2.2 Natural Gas

The total cumulative peak gas demand (design) for the Project is approximately 340 Mcfh. This is based on typical utility demands for specific types of land use and Project climate zone.

The gas distribution system is planned to be an element of a joint trench system. On some streets, in order to provide ten feet of separation between proposed building structures and gas piping systems, gas mains may require to be separated from the joint trench into a gas only trench. The Developer will be responsible for construction of gas mains within the proposed roadway network.

17.2.3 Lighting

The project will install a street lighting system on all streets. The street lights and system within the public streets will be owned and maintained by the SFPUC. The light features and poles within the public streets will be selected from the SFPUC catalogue and be consistent with the SFPUC design standards for spacing, photometrics and installation details. The light systems within the private streets, parks and plazas will be privately owned and maintained by the Project Master Association.

17.2.4 Communications

The communications systems are planned to be an element of a joint trench or common trench system.

AT&T, Comcast and DTIS will provide new service for the proposed Project as participants in the joint trench system. Facilities will be placed in franchised areas. The Project will be responsible for trench cost to accommodate AT&T, Comcast and DTIS, as well as installing conduits and substructures for AT&T and DTIS. Some of the project

AT&T costs may be reimbursable based on applied tariffs. Comcast will provide the placement of their facilities at their own expense.

17.2.5 Renewables

The project will comply with the San Francisco Green Building Code Better Roof requirements, which will include photovoltaic generation on a portion of the roofs providing additional on-site renewable energy resources. The photovoltaic generation on-site will be subject to the power provider's requirements.

Solar photovoltaic arrays could be located on various project rooftops and interconnected with a proposed Project dry utility system to serve the distribution system capable of balancing captive supply and demand resources. The Project will reduce energy losses in transmission and distribution, increasing efficiency of the electric delivery system. The Project will be backed up by the Project Electric System and will not supply all project electrical demand.

17.2.6 All-Electric Building Heating and Cooling

The project may elect to eliminate the use of natural gas for space heating and domestic water use, which would reduce operational greenhouse ("GHG") emissions and limit on-site combustion. During the design of the mechanical system for each building, the feasibility of systems that provide for all-electric space heating and domestic hot water production shall be explored. However, future utility rates and the impact on affordability will be considered as part of the determination of feasibility made by the Project Sponsor for using all-electric systems for building heating and cooling.

17.3 Proposed Dry Utility System Phasing

The Project will design and install the new joint trench system as-needed to facilitate a specific proposed Development Phase, and consistent with the requirements of the Project Phasing Plan. The amount and location of the proposed joint trench installed will be the minimum necessary to support the Development Phase. The new Development Phase will connect to the existing systems as close to the edge of the Development Phase area as possible while maintaining the integrity of the existing system for the remainder of the Project. Repairs and/or replacement of the existing facilities necessary to support the proposed Development Phase will be designed and constructed by the Developer. Temporary joint trench or overhead facilities and poles may be constructed and maintained by the Developer as necessary to maintain service to existing buildings or adjacent properties as necessary.

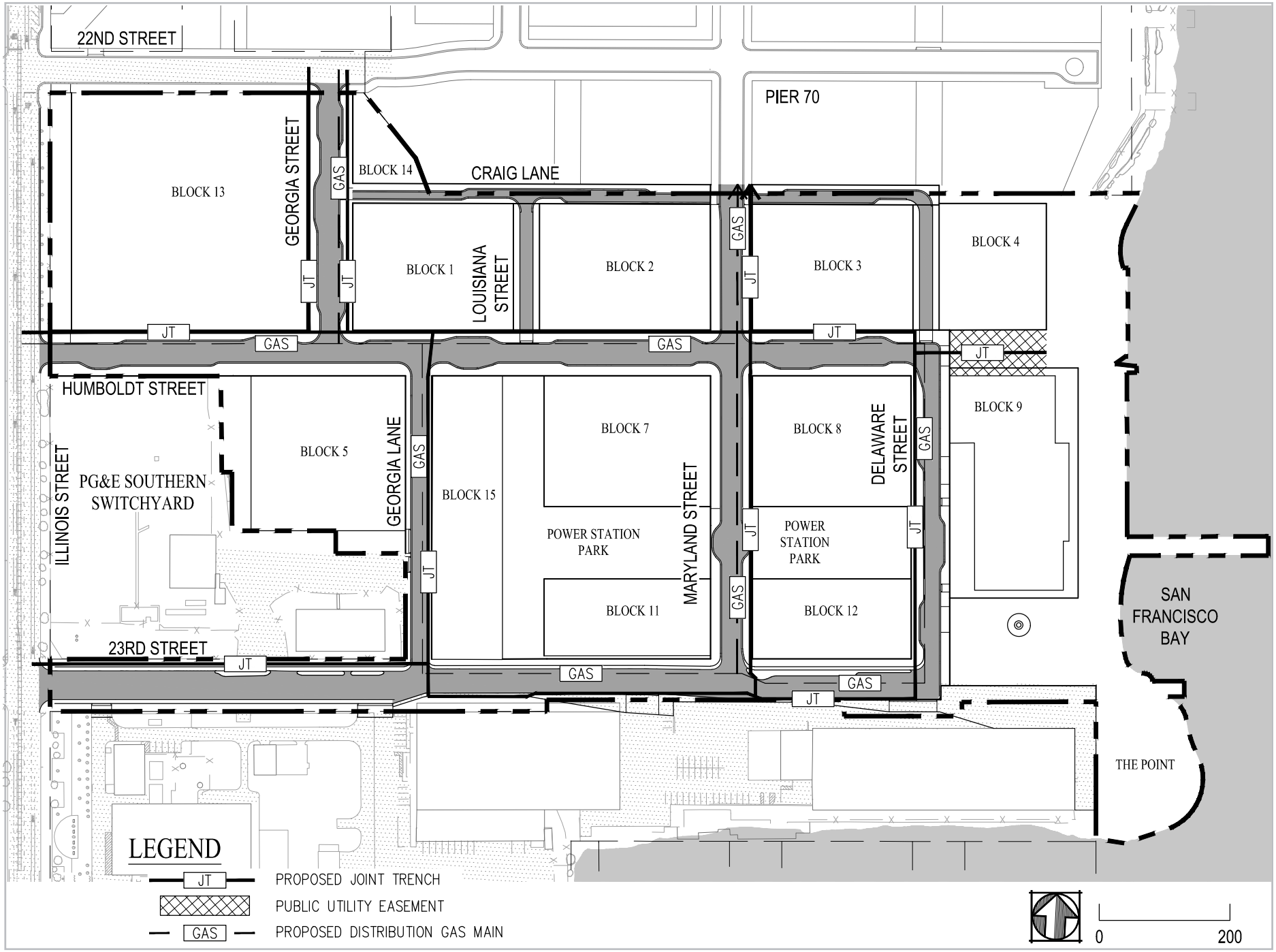


Figure 17.1 Proposed Joint Trench System

18 23RD STREET – PRIVATE STREET SCENARIO

The eastern segment of 23rd Street is currently privately owned. The street is intended to be constructed to public street standards and is proposed to be dedicated as a public street with Department of Public Works approval. Approval and acceptance of this segment of 23rd Street as a public street is subject to extinguishing an existing private PG&E high voltage line easement within this corridor. Accordingly, the potential for this segment of 23rd Street to remain a privately owned and maintained street has been considered. In this private street scenario, the public utility systems planned within this corridor, as described in the previous sections, will be reconfigured to minimize public utility installations within the private portion of 23rd Street. The following is a description of each utility system and the potential reconfigurations that will be considered in the 23rd Street private street scenario.

18.1 Auxiliary Water Supply System (AWSS)

The AWSS pipeline corridor through the project site will provide connections to the pipeline to be constructed by Pier 70 in Maryland Street to the north and to the existing pipeline at the 23rd Street / 3rd Street intersection. An alternative route of the AWSS pipeline through the project site utilizing Humboldt Street and Georgia Lane will eliminate placement of the AWSS pipeline within the 23rd Street private street segment. This alternative route is depicted on Figure 18.1.

The utility configurations and separations within these segments of Humboldt Street and Georgia Lane will be adjusted to accommodate the addition of the AWSS pipeline. This will require placement of pipelines within the curb bulb-outs planned at the pedestrian crossings of Humboldt Street, which are less than 100 feet long. The segments of utilities within these bulb-outs will be installed in a steel sleeve as required by the SFPUC and DPW. The modified utility sections for these segments of Humboldt Street and Georgia Lane are depicted in Figures 18.4.

18.2 Sanitary Sewer System

As described in Section 14, there are two alternatives configurations of the proposed separated sanitary sewer system:

(1) On-Site Pump Station with a force main connecting to the existing combined sewer pipeline within the existing public right of way segment of 23rd Street.

(2) Northern Connection Alternative with gravity flow connecting to the combined sewer system planned to be installed by Pier 70 to the north. This alternative eliminates the on-site pump station and force main in 23rd Street. Refer to Figure 18.3.

For the first alternative in the 23rd Street private street scenario, an alternative route of the sanitary sewer force main through Humboldt Street and Georgia Lane will eliminate placement of the force main within the 23rd Street private street segment. The force main will connect to the new gravity combined sewer pipeline in Georgia Lane just south of Humboldt Street intersection. This alternative route of the sanitary sewer force main is depicted in Figure 18.2.

The utility configurations and separations within these segments of Humboldt Street and Georgia Lane will be adjusted to accommodate the addition of the sanitary sewer force main as previous discussed. The utility sections for these segments of Humboldt Street and Georgia Lane are depicted in Figures 18.4.

18.3 Low Pressure Water

There is an existing low-pressure water pipeline within the private segment of 23rd Street in order to provide service to the adjacent properties to the south. A publicly maintained low pressure water line will be necessary through the 23rd Street private street segment in order to maintain service to adjacent properties and provide redundancy to the systems within the Project. Service laterals to the blocks along the north side of 23rd Street will not be allowed to connect to the existing main within 23rd Street in order to avoid laterals crossing the existing high voltage line.

18.4 Storm Drain System

The high point elevation of 23rd Street within the Project will be positioned at the public / private ownership line. Accordingly, the watershed division will be at this line as well and the private street segment will be entirely within the separated storm drain watershed. A storm drain pipeline will be installed within the private segment of 23rd Street to convey runoff to the public storm drain system planned within Delaware Street to the north, eventually discharging to the Bay via the proposed Project stormwater outfall. The storm drain pipeline within this segment of 23rd Street will be private in the private street scenario.

18.5 Joint Trench System

The configuration of the joint trench in 23rd Street may need to incorporate alternative layouts or special facilities in order to address the existing high voltage lines in this corridor and the existing loading docks to remain on the south side of the street. The exact location of the joint trench in 23rd Street will be determined during the detailed design stage of the project.

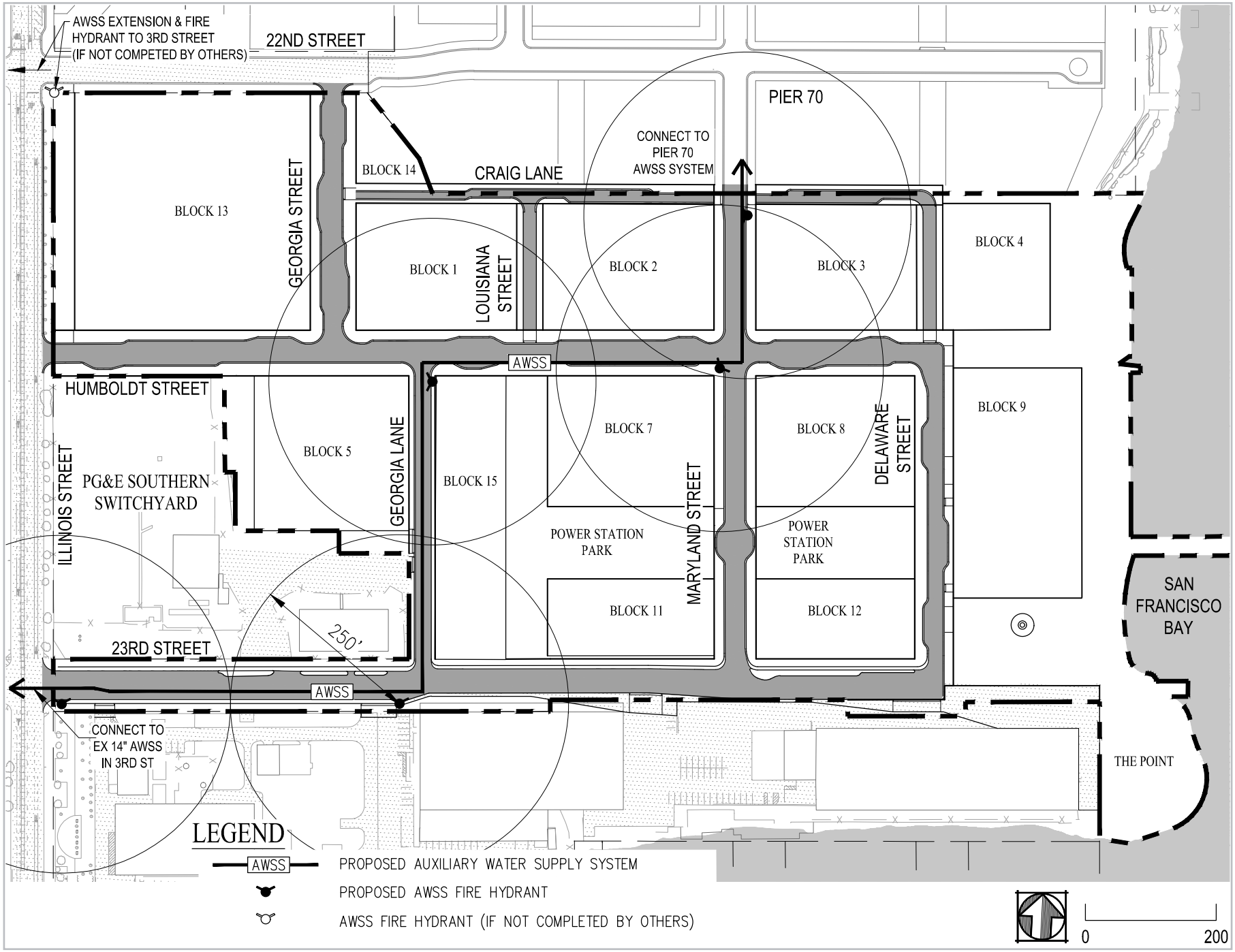


Figure 18.1 Proposed Alternative AWSS System

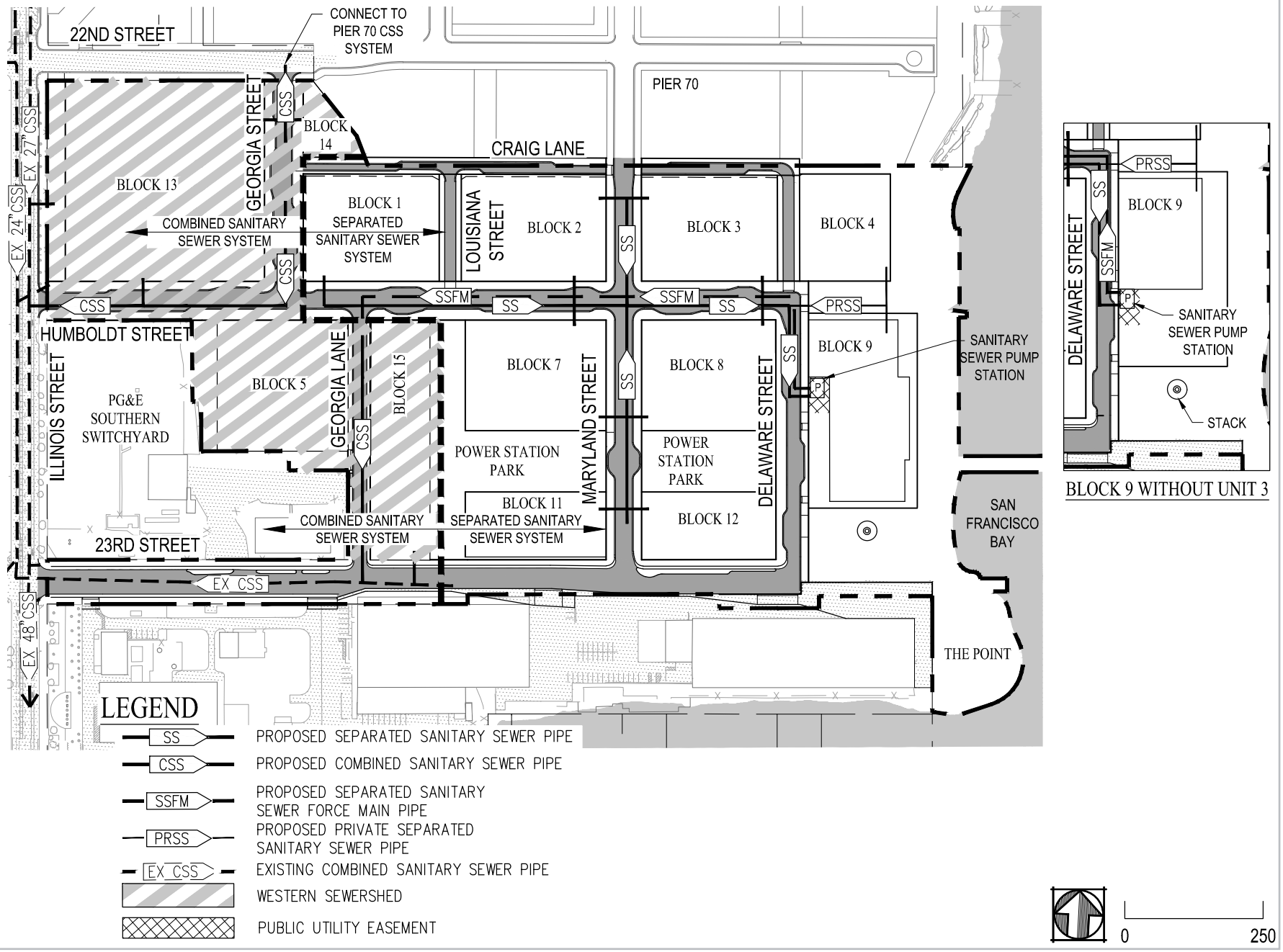


Figure 18.2 Proposed Alternative Combined and Separated Sanitary Sewer Systems

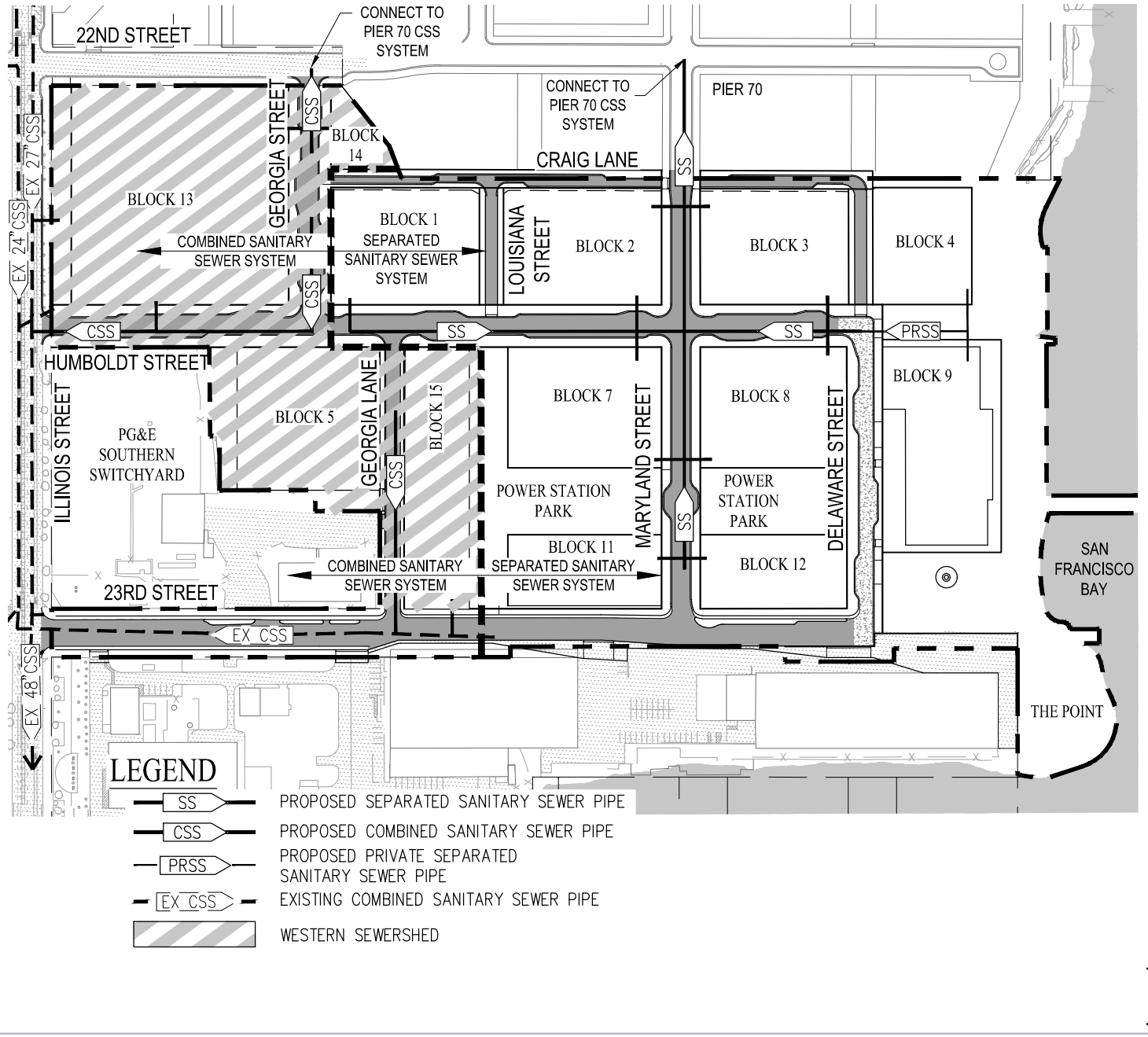


Figure 18.3 Proposed Separated Sanitary Sewer - Northern Connection Alternative

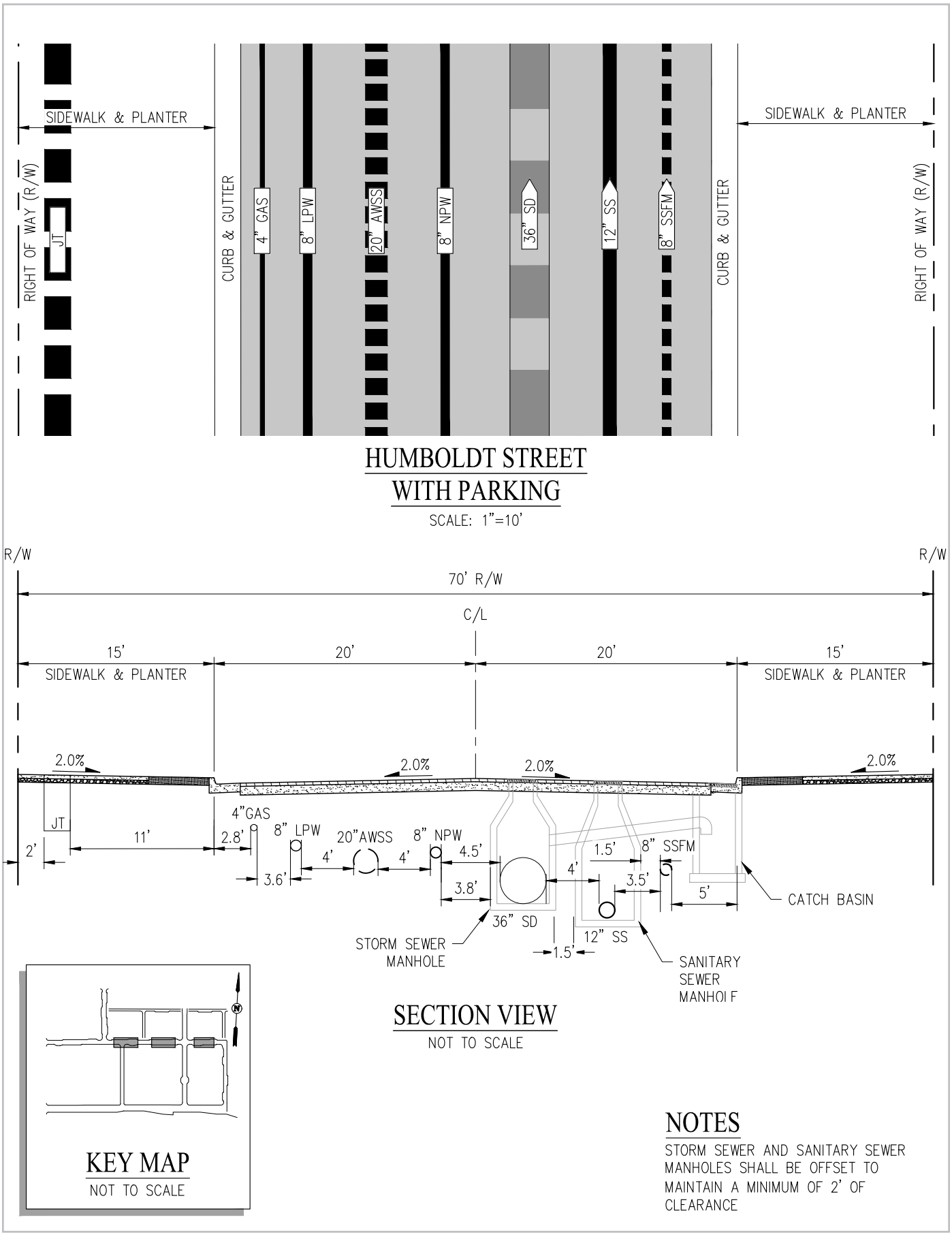


Figure 18.4 Alternative Utility Configurations

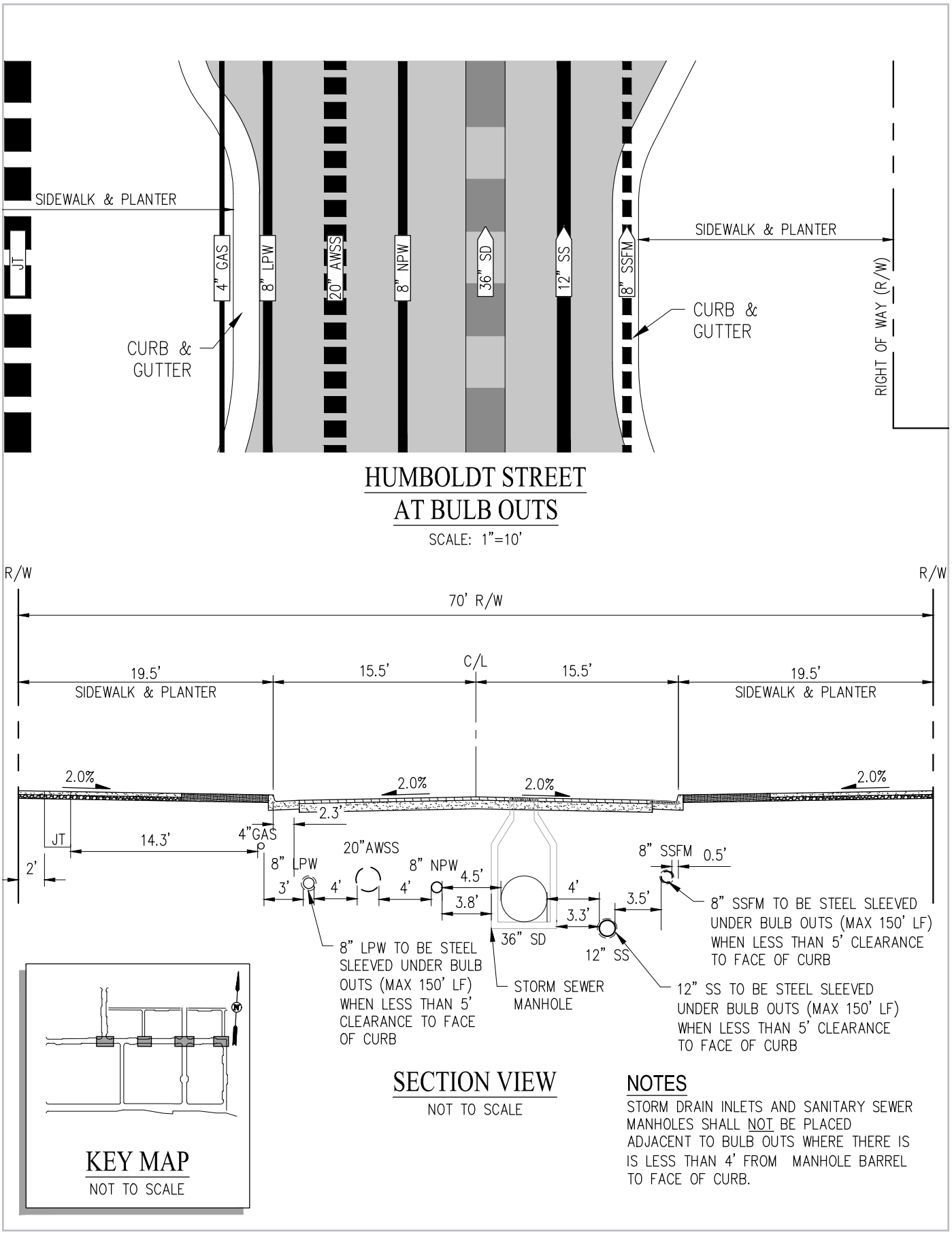
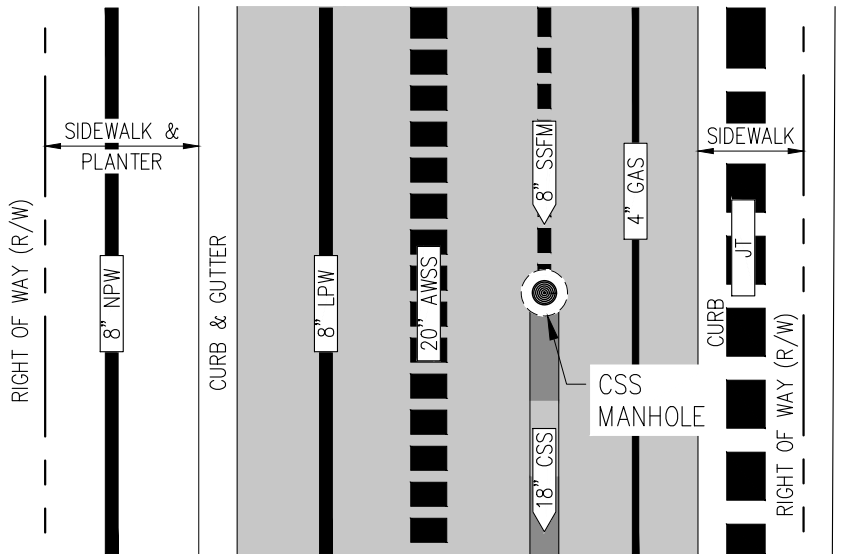
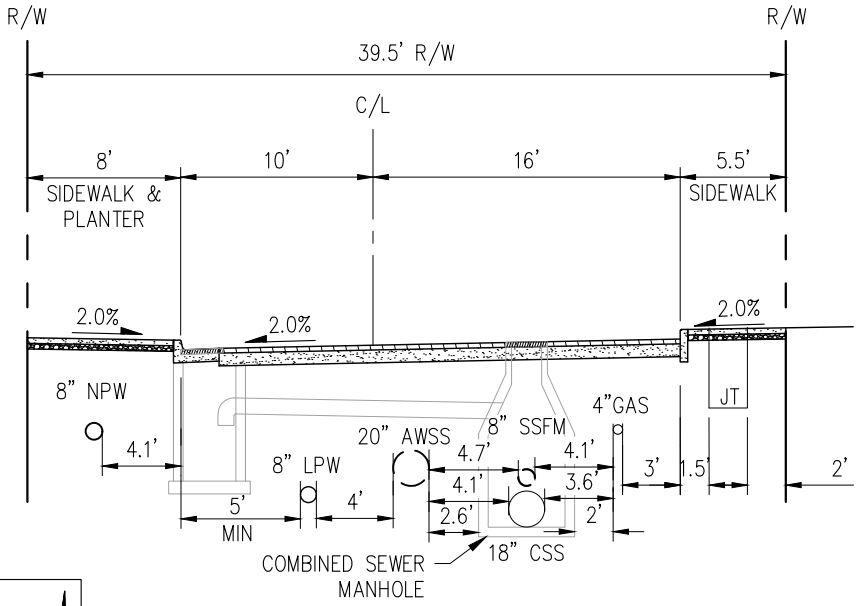


Figure 18.4 Alternative Utility Configurations



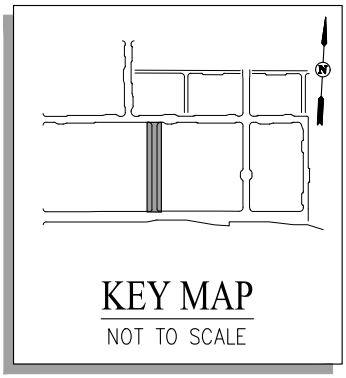
GEORGIA LANE

SCALE: 1"=10'



SECTION VIEW

NOT TO SCALE



KEY MAP

NOT TO SCALE

Figure 18.4 Alternative Utility Configurations

19 NO PG&E SUBAREA SCENARIO

This plan includes the redevelopment of the entire PG&E Subarea, such that the planned infrastructure could support the full development program contemplated. However, the PG&E Subarea redevelopment is subject to PG&E's long-range facilities planning. Portions of the PG&E Subarea may or may not ultimately be redeveloped. In the scenario that the PG&E Subarea is not redeveloped, the majority of the planned infrastructure within the PG&E subarea will not be constructed. The modifications to the planned infrastructure are further described below and depicted on Figure 19.1.

The western extent of Humboldt Street and utilities, except low pressure water, will be terminated at the western boundary of the Power Station Subarea with a turnaround that is compliant with the SFFD Fire Code. The sidewalk adjacent to the turnaround will be reduced to 6-feet. The western extent of Craig Lane will terminate at the intersection with Louisiana Street. A private driveway will be provided from this intersection to the loading dock planned on the north side of Block 1.

The low pressure water may be extended through the PG&E Subarea with Phase 1 in order to provide a redundant point of connection. This pipeline would be installed within the existing water line easement that is in favor of the Power Station Subarea, as depicted on Figure 19.1.

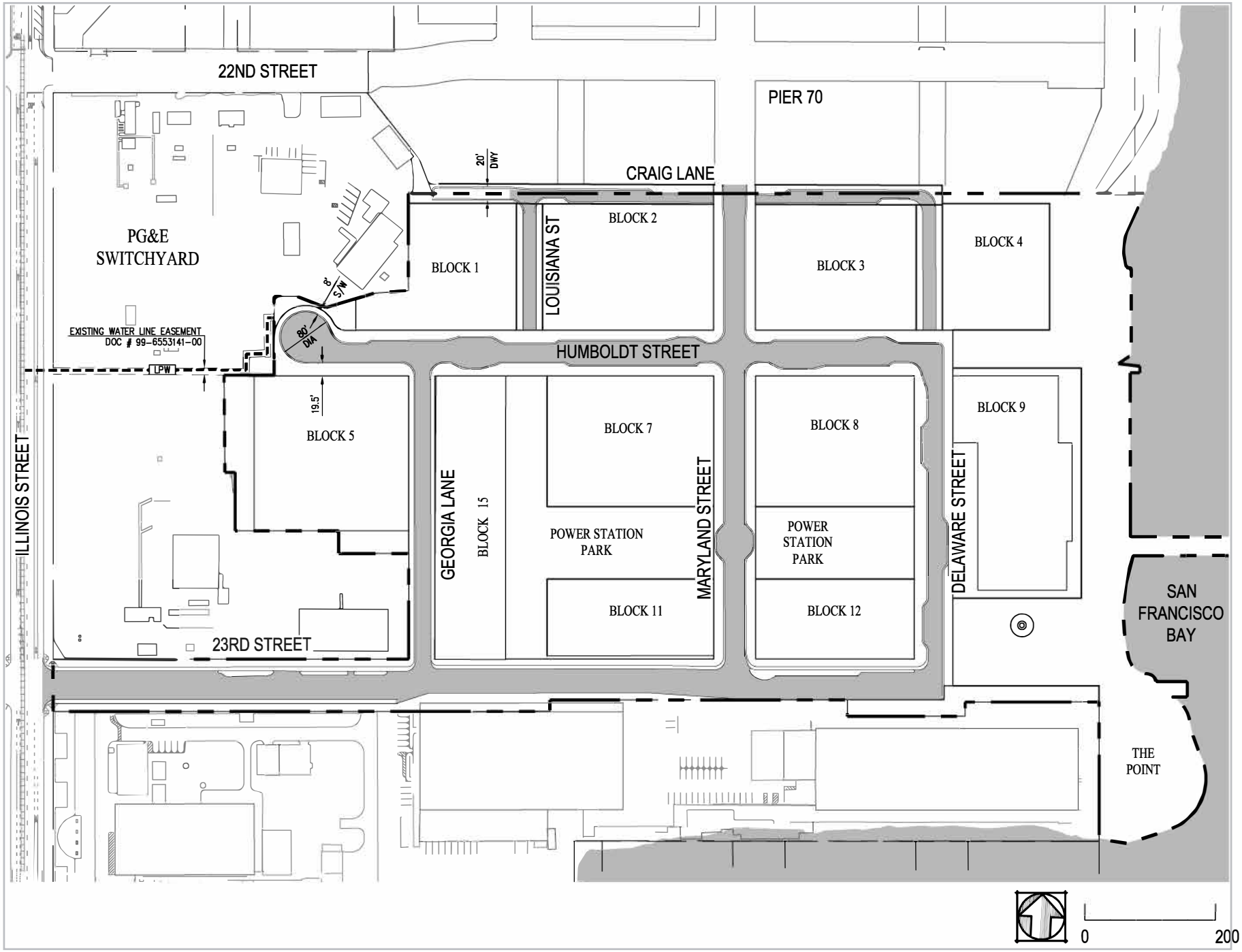


Figure 19.1 No PG&E Subarea Scenario

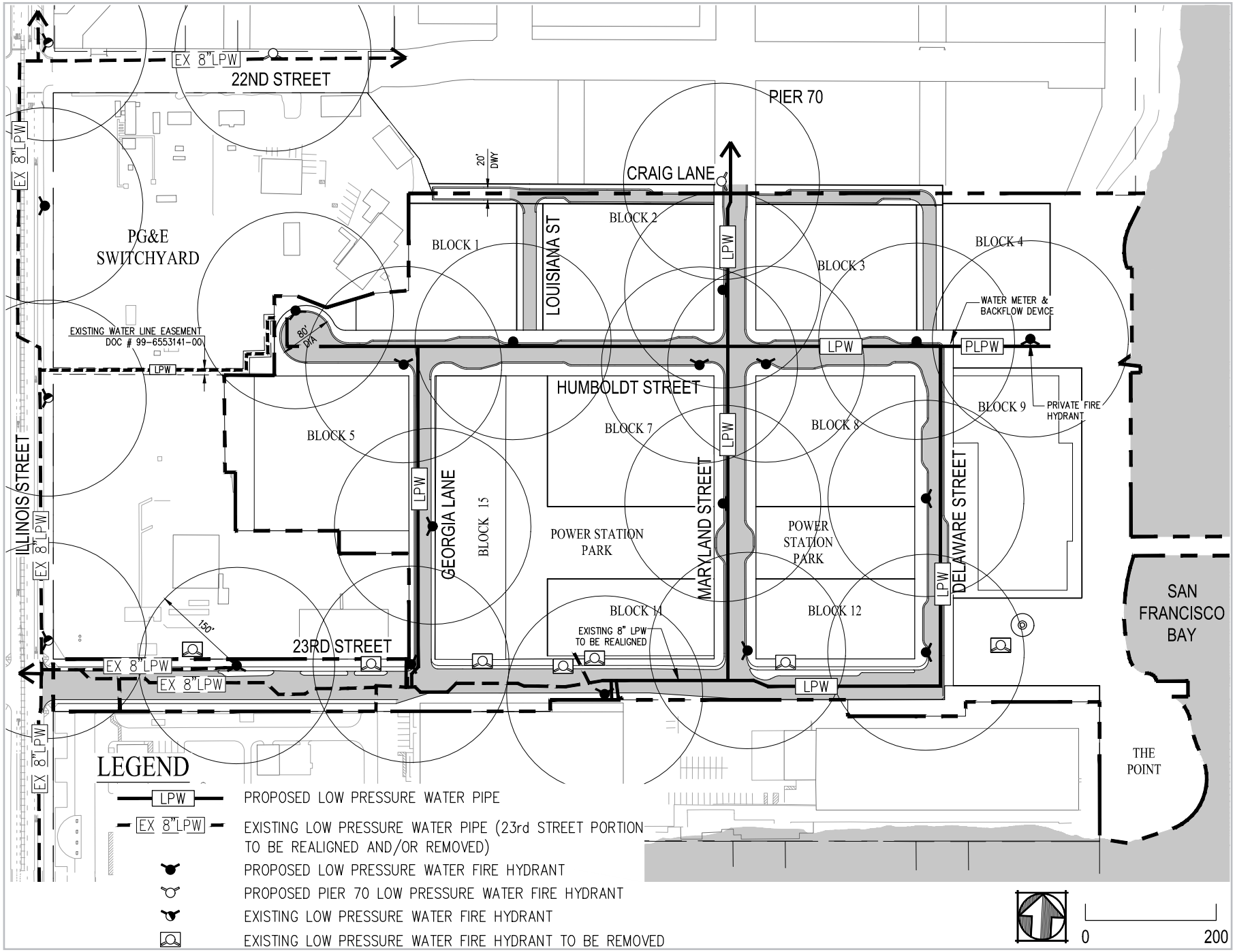


Figure 19.2 No PG&E Subarea Scenario – Proposed Fire Hydrant Locations