Sunnydale HOPE SF

Master Infrastructure Plan

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Sunnydale HOPE SF

Master Infrastructure Plan

Section 1 Introduction/Project Description

1.1 Purpose

The Sunnydale HOPE SF development ("Project") is a master planned development of up to 1,700 new affordable and market rate housing units, new open spaces, neighborhood serving amenities, and new streets and utility infrastructure to be built in place of the existing Sunnydale-Velasco public housing site ("Project Site") owned by the San Francisco Housing Authority ("SFHA"). The Project also includes a vacant half acre site located outside the Project Site at the southeast corner of Hahn and Sunnydale Streets, which will be developed as an infill site into affordable housing units under the Sunnydale HOPE SF Special Use District, the zoning control for the development of the Project. This infill lot is not included in this Master Infrastructure Plan.

This Master Infrastructure Plan ("MIP") serves as an exhibit to the Development Agreement ("DA") between Sunnydale Development Co., LLC and its Assignees ("Developer") and the City and County of San Francisco ("City") that controls the development of the Project. The DA describes the Project, and the roles and responsibilities of the Developer and the City in the design, financing, permitting, construction and monitoring of the Project. The term of the DA is 25 years.

The MIP describes the Project Site, its existing conditions, and the new infrastructure to be constructed in phases to support the phased development of the Project. The inclusion of the MIP as an exhibit to the executed DA constitutes the vetting of the MIP by the various City departments responsible for approving elements of the design and construction of the Project infrastructure. The DA, including the MIP, will serve as a reference for City permitting and monitoring over the course of the 25 year term of the DA.

1.2 Existing Conditions

Of the four properties chosen by the San Francisco Housing Authority for development under the HOPE SF program – a program aimed at revitalizing the City's most distressed public housing properties – Sunnydale is the largest and one of the most isolated. Tucked below

the southeastern border of McLaren Park, Sunnydale is removed from the city and the rest of Visitacion Valley by topography, the unusual street pattern, and by its barracks-like building design.

Today, Sunnydale's 775 housing units on 50 acres reflect a serious decline from the original design and construction. Entire systems require full replacement: the buildings and site are not compliant with building codes or ADA, and there are conditions that pose ongoing health and safety risks to residents, visitors and staff. Water intrusion into the units and the exterior canopies over the unit entries provide evidence of structural decline.

The stormwater utility system, sanitary sewage system, interior plumbing lines, electrical system, hot water heating system, hydronic radiator heating units, landscaping, irrigation system, and the site's asphalt pavement base and sidewalks must all be fully replaced.

1.3 Land Use Program

Anticipated land uses at Sunnydale include up to 1,700 new residential units, a 30,000 square foot Community Center, approximately 30,000 square feet of retail and community serving space, 6.5 acres of new open spaces and over 12 acres of new and reconfigured streets. These maximum land use plan numbers have been used to develop utility demands. The master land use plan is illustrated in Figure 1.1.

1.4 Master Infrastructure Plan Overview

The MIP will govern the construction and development of infrastructure on the Project Site, as well as off-site work needed to support the Project. The MIP may be modified to the extent that such additional infrastructure is mutually agreed to by the City and the Developer, consistent with the terms of the DA.

The MIP and DA define infrastructure improvements to be provided by the Developer as an integral part of the Project. The Project infrastructure obligations of the City and its agencies and departments are described in the DA.

As described in this MIP, the San Francisco 2015 Subdivision Regulations were the basis of design for the MIP. The design of the Project infrastructure will comply with the Subdivision Regulations that apply at the time of permitting, except where this may conflict with Sections 7.2 and 7.3 of the Development Agreement.


"GREEN STREET" ALONG SUNNYDALE AVE.
HERZ PLAYGROUND "ACTIVE PARK"
COFFMAN POOL (EXISTING)
NEIGHBORHOOD COMMUNITY REC. / SERVICES CENTER (NEW)
SENIOR HOUSING WITH GROUND FLOOR RETAIL AND COMMUNITY SERVICES
FAMILY HOUSING WITH GROUND FLOOR RETAIL AND CHILD CARE
FAMILY HOUSING
COMMUNITY OPEN SPACE "NEIGHBORHOOD GREEN"
VEHICULAR CONNECTION TO SUNRISE WAY
BUS STOPS
"GREEN STREETS" ALONG SANTOS ST., BROOKDALE AVE. AND BLYTHEDALE AVE.
PEDESTRIAN CONNECTION TO MCLAREN PARK
HILLSIDE POCKET OPEN SPACE
"SKINNY" PEDESTRIAN FOCUSED CENTRAL STREET
OVERLOOK OPEN SPACE
INTERNAL RESIDENTIAL COURTYARDS
CHILD DEVELOPMENT CENTER AND POTENTIAL COMMUNITY SERVICES
LEGEND
STAND ALONE REC. / SERVICES BUILDING
GROUND FLOOR COMMUNITY SERVICES
GROUND FLOOR RETAIL
RESIDENTIAL
BUS STOP
SITE STATISTICS
TOTAL SITE AREA: 49.9 acres
NEW & RECONFIGURED STREETS: 12.2 acres
DEVELOPMENT SITES: 36.2 acres
OPEN SPACE: 3.6 acres
SUNNYDALE AVE. LINEAR OPEN SPACE: 1.0 acres
COURTYARDS: COMMON OPEN SPACE: 1.0 acres
TOTAL USABLE OPEN SPACE: 5.6 acres
SUNNYDALE HOPE SF | MASTER PLAN
SAN FRANCISCO, CA | JULY 27, 2015 | MERCY HOUSING CALIFORNIA | THE RELATED COMPANIES OF CALIFORNIA
mercy HOUSING
RELATED
VAN METER WILLIAMS POLLACK

Figure 1.1.

Section 1.4.1 Improvements to be owned and maintained by City

Per Section 2.66 of the DA, the City will ultimately own and maintain the following Public Infrastructure Improvements:

- The roadway and streetscape elements located in the public rights of way, upon acceptance by the City's Department of Public Works ("SFDPW").
- Water and wastewater utility infrastructure and streetlights within the street improvements upon acceptance by the San Francisco Public Utilities Commission ("SFPUC").
- The green stormwater infrastructure located in the public rights of way, upon acceptance by the SFPUC and SFDPW, as applicable.
- Power utility infrastructure owned by SFPUC per the SFPUC's *Rules and Regulations Governing Electric Service*.

The following is a list of infrastructure items to be owned, operated and maintained by the San Francisco Metropolitan Transportation Agency ("SFMTA") within the public rights of way:

a. Security cameras and monitors if desired by SFMTA
b. Signals and Signal Interconnects for MUNI Bus Prioritization signals
c. TPS signal preempt detectors
d. Conduit containing TPS signal cables
e. Departure prediction ("NextBus") monitors and related communications equipment
f. Bus shelters
g. Paint for MUNI stops on poles or asphalt delineating coach stops
h. Asphalt painting for transit lanes
i. Crosswalk striping
j. Bike lane and facility striping
k. Bicycle racks
l. Street signs
m. Stop signs

Section 1.4.2 Improvements to be maintained by the Project Community Association

The following infrastructure improvements will be maintained by the Project Community Association. (The Project Community Association will be a project-wide association of

property owners and occupants.) Prior to the Association's acceptance of maintenance responsibility, the Developer or its Assignees will be responsible for maintenance. These infrastructure improvements are not owned by the City and County of San Francisco.

- New street and utility infrastructure that has been constructed but not yet accepted by the City or utility agencies may be transferred from the Developer to the Project Community Association.

- Street trees and tree wells and irrigation systems located within the public right of way shall be maintained by the adjacent property owner, unless City legislation currently pending is enacted that transfers the maintenance responsibility to the City.

- Pedestrian and bicycle paths that are located on private property but are publicly accessible, such as the path located between Blocks 32 and 33 leading from Blythdale Avenue to Velasco Street, and the paths that are located within the open space blocks described in Section 8.

- The open spaces in Blocks 2, 4, 25 and 30.

- Art and seating in bulb outs or other public right of way areas not accepted by the City for maintenance

- Special paving not accepted by the City for maintenance

1.5 Property Acquisition, Dedication and Easements

The mapping, street vacations, property acquisition, and dedication and acceptance of streets and other infrastructure improvements will be accomplished through the Subdivision Mapping process. Except as otherwise noted, the infrastructure described in the MIP will be constructed in the public rights of way or in dedicated easement areas to provide City and utility company access for maintenance of infrastructure facilities.
Private utility facilities located in the public right of way as designated and authorized by the California Public Utilities Commission and San Francisco Public Utilities Commission will also be installed in accordance with the standards of the utility companies providing service.

1.6 Project Datum

All elevations referred to herein are based on the City of San Francisco datum. All horizontal and vertical measurements shall refer to CCSF-13.

1.7 Conformance with EIR/EIS and Entitlements

The MIP has been developed to be consistent with the Mitigation Monitoring and Reporting Program ("MMRP") required as a result of the joint Environmental Impact

Report/Environmental Impact Statement ("EIR/EIS") for the Project, and other land use entitlement documents. Regardless of whether specifically included in the MIP, the mitigation measures described in the MMRP shall apply to the Project.

1.8 Applicability of Uniform Codes and Infrastructure Standards

Future modifications of the MIP and/or City standards, guidelines and codes that affect the Project are subject to the requirements of the DA.

1.9 Project Phasing

The Project will be developed in phases to accommodate the relocation of existing households at the Project Site and the City's flow of funds and budget for the Project. Each phase will involve demolition of existing conditions and the construction of new infrastructure and public rights of way, and housing in one or more parcels or Blocks, as such Blocks are shown in Figure 7.2. The development of the infill lot at the southeast corner of Hahn Street and Sunnydale Avenue will not require housing unit demolition.

Some phases will also include the construction of publicly accessible open spaces (Blocks 2, 4, 25 and 30) and neighborhood serving facilities, including a stand-alone community center at Block 1.

Figures 1.2 and 1.3 illustrate the phased demolition and construction of the Project. The phasing sequence is proposed as follows: 1A-1, 1A-2, 1A-3, 1B, 1C, 2A, 2B, 2C, 3A, 3B, and 3C. Phases may be combined or developed concurrently.

For each phase, the Developer will relocate any remaining existing residents from the phase area, abate any hazardous materials in the structures or soil, and demolish the existing units and infrastructure. The Developer will coordinate the demolition so that the areas of the Project Site that continue to provide housing to existing households do not experience a disruption to their utility services, transportation service or street access to their housing.

The Developer will construct new utilities and streets to serve the phase and its future users and occupants, as well as future phases and applicable existing occupants. The Developer will connect new infrastructure in the phase to existing infrastructure for the remainder of the Project Site. Repairs or modifications of existing infrastructure facilities as necessary to facilitate this connection will be designed by the Developer based on existing infrastructure information from the City and utility agencies. Each phase shall be self –sustaining, full, complete and functional. Constructed phases may not rely on future phases in order to fully function.

At all phases of development prior to the full build out of the Project, the Developer shall demonstrate to SFPUC that a functioning water and wastewater infrastructure system is in place at all times and complies with applicable federal, State and City laws. In addition, the Developer is responsible for maintaining a safe flow path for the 100-year storm at all times during development of the Project. The SFPUC shall review the adequacy of the flow path for the 100-year storm for full build out as well as all phases prior to the full build out. The Developer is responsible for providing and maintaining any temporary infrastructure that is necessary to provide functional service to any phase of development prior to full build out. The SFPUC is not obligated to accept or operate temporary infrastructure; however, in certain circumstances the SFPUC may elect to operate temporarily utilities (not at SFPUC's expense) if the temporary infrastructure is needed to serve existing customers.

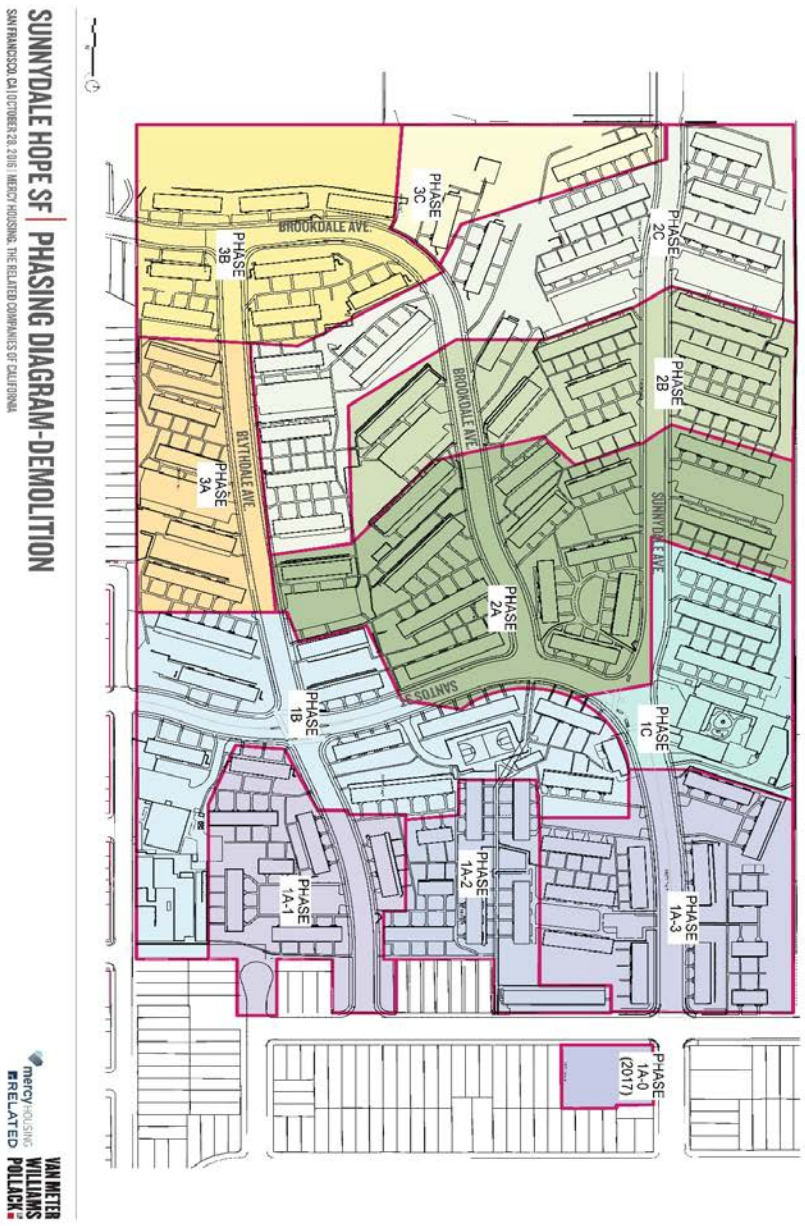

SUNNYDALE HOPE SF | PHASING DIAGRAM-DEMOLITION
SAN FRANCISCO, CA | OCTOBER 28, 2016 | MERCY HOUSING, THE RELATED COMPANIES OF CALIFORNIA
PHASE 3C
PHASE 3B
PHASE 3A
PHASE 2C
PHASE 2B
PHASE 2A
PHASE 1B
PHASE 1C
PHASE 1A-1
PHASE 1A-2
PHASE 1A-3
PHASE 1A-0 (2017)
BROOKDALE AVE.
BLYTHDALE AVE.
SUNNYDALE AVE.
SANTOS ST.
mercy HOUSING
RELATED
VAN METER WILLIAMS POLLACK

Figure 1.2.

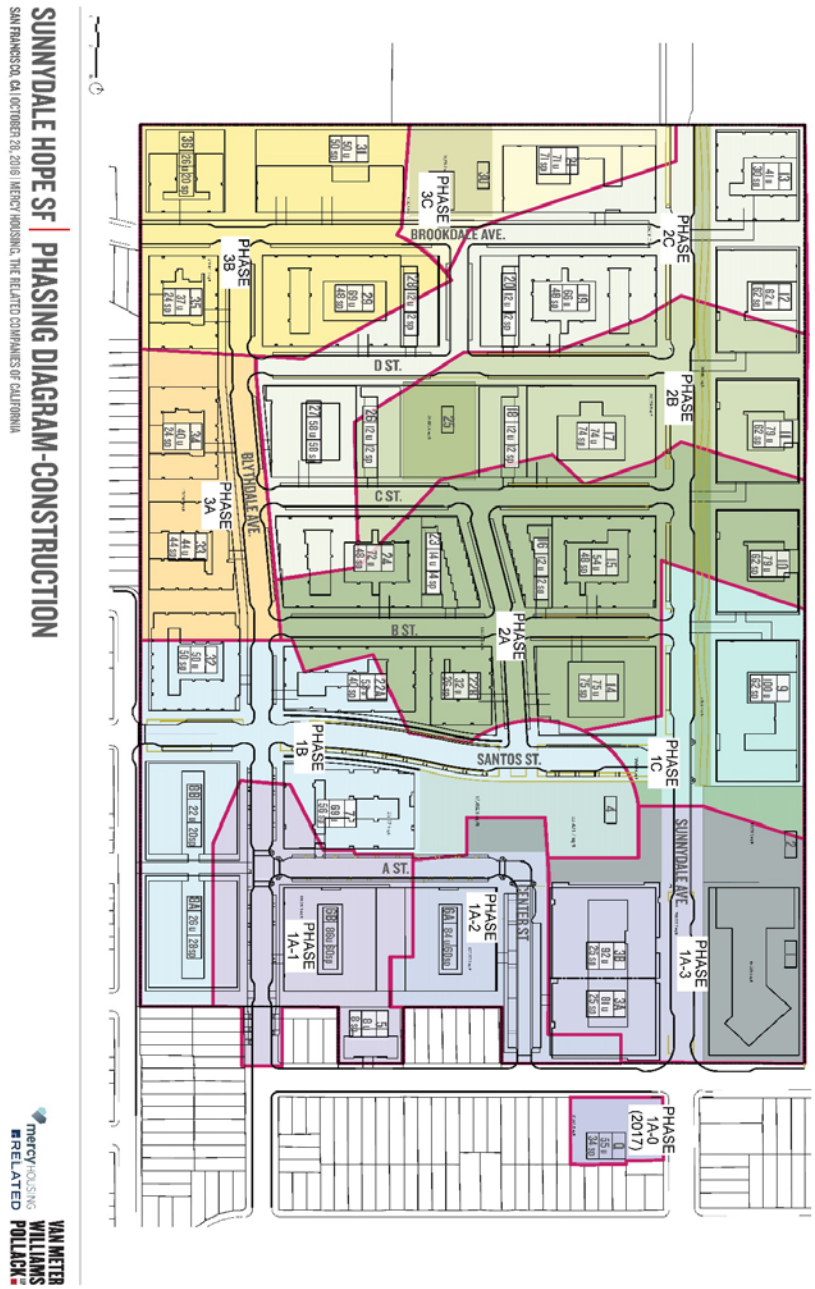

SUNNYDALE HOPE SF | PHASING DIAGRAM-CONSTRUCTION
SAN FRANCISCO, CA | OCTOBER 28, 2016 | MERCY HOUSING, THE RELATED COMPANIES OF CALIFORNIA
PHASE 3C
BROOKDALE AVE.
PHASE 2C
PHASE 3B
D ST.
PHASE 2B
C ST.
PHASE 3A
BLYTHDALE AVE.
B ST.
PHASE 2A
PHASE 1B
SANTOS ST.
PHASE 1C
A ST.
SUNNYDALE AVE.
PHASE 1A-1
PHASE 1A-2
PHASE 1A-3
PHASE 1A-0 (2017)
mercy HOUSING
RELATED
VAN METER WILLIAMS POLLACK

Figure 1.3.

As described in more detail in Section 9, the Project as a whole, and at the completion of each phase, will include the construction of stormwater management infrastructure to comply with SFPUC and SFDPW requirements and the City's Stormwater Design Guidelines. Housing parcels, as well as open space and the community center parcels, will include individual stormwater control plans for each parcel, which will be reviewed as part of the building permit application process for the parcel. The new public rights of way will include green stormwater infrastructure ("GSI") in a combination of bio-retention areas and permeable paving. The stormwater management controls for the public rights of way within a phase may not meet SFPUC requirements for volume and rate reduction for the public rights of way within that phase, but cumulatively, with all previous phases taken together, the Project's public rights of way will meet the SFPUC requirement. Upon submittal of an application for each phase (a "Phase Application"), the Developer will submit the GSI plans for the public rights of way in the phase, showing how the GSI will meet SFPUC requirements, along with Developer's tracking of progress of all phases to date toward the SFPUC requirements for the public rights of way.

As described in more detail in Section 14, the Project as a whole, and at the completion of each phase, will include the construction of a new joint trench system delivering gas, electric (including streetlights), and communications services to the Project to comply with the requirements of the SFPUC, as the electrical utility, of PG&E, as the gas service provider, of private utilities (Comcast and AT&T) as communications service providers, and of the City's emergency communications system. Upon submittal of an application for each phase (a "Phase Application"), the Developer will submit joint trench and, where required, streetlight distribution, plans showing how these new utility services will meet the applicable requirements for that phase of development, as well as how utility services will continue to be provided to all existing buildings remaining occupied within the Project.

1.9.1 Phase Application Process

For each phase, the Developer will submit a Phase Application to the City as described in the DA. Phase Applications will include a description of the scope of the phase, including the infrastructure to be constructed and how it ties back to the existing infrastructure for the portion of the Project Site that is not yet developed. The infrastructure includes streets, utilities, and transportation network. The improvements are to correspond with the proposed subdivision map for the Phase.

The Phase Application, once reviewed by the Planning Department, will be followed by construction document submittals ("Street Improvement Plans") for the infrastructure in the phase. These Street Improvement Plans will be submitted to the City agencies for review at 30%, 60% and 90% completion, and at 100% completion for issuance of a permit by DPW.

The Developer and the City agree that the Developer may proceed with Phase Applications according to the phases described herein. The Developer, with approval from the City, may revise the project phasing if needed.

1.10 Mapping, Street Vacation and Street Dedication Approach

The Project Site is 50 acres, and the total construction, which will occur in multiple phases, is anticipated to last 12-20 years. The mapping, street vacation and street dedication processes for the Project are proposed to enable the phasing of the demolition, construction and acceptance of infrastructure improvements. The Developer will prepare and submit a master street vacation application to vacate public rights of way ("ROW") under a "conditioned vacation" approach in which rights of way in a phase would be officially vacated only at the satisfaction of the City's conditions and subject to alternative streets being available as determined by the DPW Director. A Street Vacation and Street Dedication Ordinance that covers the entire Project Site will be recorded, but no ROWs or street improvements will be vacated or dedicated until a Final Map is recorded and improvements are built within the limits of a particular portion of the phase of development covered by that Final Map. The Developer's Phase Application to the City for any given phase will describe the streets to be vacated in that phase. As required by State and City law, all street vacations will occur only after City departmental review and notice and after satisfaction of the statutory conditions that enable the Board of Supervisors to approve the street vacation.

Prior to or concurrent with the master street vacation application, the Developer plans to submit an application for a master Tentative Map for the entire Project Site to DPW. The Tentative Map will show the design improvements and new streets, final parcelization, and entitle the homeownership units (condominiums). There is no offer of dedication given at the time that the Tentative Map is approved; this map is just a general conceptual design for approval of the development. The life of the Tentative Map will be extended by the City to 25 years, the term of the DA. Under Govt. Code Section 66452.6(a)(1) "a tentative map on property subject to a development agreement authorized by Article 2.5 (commencing with Section 65864) of Chapter 4 of Division 1 may be extended for the period of time provided for in the agreement, but not beyond the duration of the agreement."

A Final Map will then be created for the area of each development phase. Then the streets will be constructed as shown on the Final Map for a development phase. Once construction is complete and the improvements inspected and determined satisfactory, the City can accept the public streets/easements. In order to be accepted, the entire street will have to be full, complete and functional prior to being considered for acceptance. The Offer of Dedication on the Final Map will not yet create a public street; that only occurs after

the improvements are built and the City formally accepts the improvements.

Since the existing buildings located within a phase will need to be demolished prior to the approval of a Final Map for a phase, the Department of Building and Inspection (DBI) will need to issue its approval for building demolition prior to the recording of the Final Map and DBI's issuance of the building permit for the new housing units in that phase.

Section 2 Sustainability

Sustainable infrastructure is designed to facilitate the use of walking, biking and public transit as preferred forms of transportation, while reducing the use of resources such as water and energy. Key benefits of sustainable site design and infrastructure elements include improved health and a cleaner environment. For the Project, sustainable infrastructure includes stormwater management facilities (i.e. landscaped open space areas, landscape strips, flow-thru planters, bio-retention areas), infrastructure to support walking, biking and public transit, and energy-efficient outdoor lighting. Each of these elements is addressed in other chapters of the MIP.

Sustainable building designs will be addressed in the individual Phase Application and building permit application documents. The design of sustainable project elements within the public rights-of-way will be reviewed as part of the construction approval process of Street Improvement Plans for each phase of development. Refer to the Sunnydale HOPE SF Design Standards and Guidelines for specific sustainability controls.

Section 3 Environmental Remediation

3.1 Summary of Previous Environmental Assessment

The new infrastructure for the Project will be developed phase by phase in conjunction with each residential phase developed, as illustrated in the Phasing Plans in Figures 1.2 and 1.3. The requirements presented in this section may be subject to change if future federal, state, or local regulations are changed, or unforeseen site conditions warrant such modification of the requirements.

3.1.1 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (Phase I ESA) was conducted in March and April 2010, covering the full Project Site. The Phase I ESA was conducted in conformance with the scope and limitations of ASTM Practice E 1527-05, and was performed to identify the potential presence of contamination due to current or historic land use at the Project Site that could have an adverse environmental impact on future land development. Results of the Phase I ESA are presented in the following report:

"Final Phase I Environmental Site Assessment Report, 1654 Sunnydale Avenue Site, San Francisco, California", prepared by AEW Engineering, Inc. (AEW) and dated April 5, 2010 (Phase I ESA Report). This report was approved by the San Francisco Department of Public Health on August 4, 2010. Based on the information obtained, the following major findings and conclusions were presented in the Phase I ESA Report:

- The site was developed between 1935 and 1946. The adjacent properties primarily consist of a mixture of residential and commercial uses;
- The improvements on the site consist of 93 one- to two-story buildings containing 785 residential units, one office administration building, playgrounds, paved parking, and grass landscape;
- During the site reconnaissance, no adverse environmental condition (i.e. soil discoloration or staining) was observed;
- Due to the age of the buildings and their construction in the 1940s, it is anticipated that asbestos, polychlorinated biphenyls ("PCB") ballasts and capacitors, and lead based paint are likely present within the buildings;
- Again based on age of the buildings, the earlier coatings of exterior walls are likely to contain lead-based paints. Past painting of the exterior walls might have required removal of loose paint on the walls or sand-blasting to remove the old paint layers, which may impact the shallow soil around the buildings;
- According to the radon database maintained by California Department of Health Services (California DHS), five test results have been identified for sites located within the zip code of the proposed development area. One of the five findings recorded in the California DHS database exceeded 4.0 picocuries per liter of radon (Ca DHS 2009);
- The site is not recorded in any of the databases searched by Environmental Data Resources, Inc. ("EDR"); and

Based on the results of the database search, a total of five sites are identified that are located within a one-mile radius at higher or similar elevations as the Project Site, and are designated with "Open" environmental remediation status. A review of the available files from regulatory agencies concluded that the chemicals of concern associated at these five sites are not anticipated to pose adverse environmental impact to the subsurface environment at the Project Site.

The Phase I ESA recommended the following:

- Radon testing program is to be conducted on newly developed buildings prior to occupancy;
- A Phase II site investigation program is to be conducted to develop a general understanding of the chemical environment in subsurface soil and groundwater;
- A materials survey and assessment is to be conducted to identify any asbestos, PCBs (including electrical parts, equipment and transformer-related sources), lead based paint and other hazardous materials within the buildings and to evaluate the need and the extent, if any, of required hazardous material abatement.
- All planned construction activities are to be completed in compliance with appropriate local, state, and federal regulations, including those related to worker safety, waste management (including transportation and disposal), storm water management, and air emissions, such as dust and particulate matter (PM_{10}).

3.1.2 Phase II Environmental Site Assessment, Initial Phase Site Development

A Phase II Environmental Site Assessment ("Phase II ESA") was conducted in the development area that consists of Phases 1A-1, 1A-2, 1A-3, 1B, and 1C (Phase 1 Area) in February 2011. The Phase II ESA has been conducted to address the site characterization recommendations described in the Phase I ESA Report for the Phase 1 Area. Results of the Phase II ESA are presented in the following report:

"Phase II Environmental Site Assessment Report, 1654 Sunnydale Avenue Site, San Francisco, California", prepared by AEW and dated June 2011 (the Phase II ESA Report). This report was approved by SFDPH on June 17, 2011.

The Phase II ESA consisted of the following elements:

- Soil and grab groundwater sampling and analyses from soil borings; and
- Shallow soil sampling and analyses around existing buildings.

Subsurface Soil Samples from Soil Borings. Results of the subsurface soil analyses indicated that, with the exception of arsenic and vanadium, all tested analyses results were detected below their respective California Regional Quality Control Board San Francisco Region's Environmental Screening Level (ESL) as under residential scenario in Table A and California Environmental Protection Agency - California Human Health Screening Level (CHHSL) values. Based on the rationale presented in the Phase II ESA Report, it is believed that the detected concentrations of arsenic in soil are likely representative of background concentration of arsenic and vanadium at the Project Site.

Results of the chemical analyses, including leaching tests, indicated that none of the subsurface soil samples were reported to have concentrations above the respective California and federal hazardous criteria: California Total Threshold Limit Concentration (TTLC) value, California Soluble Threshold Limit Concentration (STLC) value or the federal Toxicity Characteristic Leaching Procedure (TCLP) value. Therefore, the soil represented by these soil samples is considered as non-hazardous waste.

Shallow Soil Samples around Existing Buildings. Results of the subsurface soil analyses indicated that, with the exception of arsenic and vanadium, all tested analyses results were detected below their respective ESL values. Based on the rationale presented in the Phase II ESA Report, it is believed that both arsenic and vanadium are likely representative of background concentrations of arsenic and vanadium in soil.

Results of the chemical analyses including leaching tests indicated that none of the subsurface soil samples were reported to have concentrations above the respective California and federal hazardous criteria: TTLC value, STLC value or the TCLP value. Therefore, the soil represented by these soil samples is considered as non-hazardous waste.

Based on the results of the Phase II ESA, the following were recommended:

- No site mitigation would be required for chemicals with detected concentrations in soil exceeding the ESLs for the reasons as stated above;
- The site development is to comply with the San Francisco Department of Public Health Article 22B Ordinance ("Article 22B") for dust mitigation during site construction. A dust mitigation plan including dust management and monitoring protocols shall be developed in compliance with the Article 22B requirements;
- To ensure the safety of personnel during construction, a health and safety program is to be developed and implemented to protect workers from exposure to chemicals above the applicable federal and state Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs). Such protocols should include personal protective equipment requirements, worker decontamination procedures, and air monitoring strategies to ensure that the workers are adequately protected; and
- A waste management and disposal plan for soil and dewatered groundwater, if any, is to be developed and implemented by the construction contractor to ensure compliance with proper waste classification in accordance with applicable regulations and waste acceptance requirement by the landfill facility and SFPUC for wastewater discharge.

3.1.3 Phase II 2016 Environmental, Phases 1, 2 and 3 Site Development

An environmental investigation was conducted in the development area that consists of Phase 1, Phase 2 and Phase 3 in March, 2016. The Phase II ESA has been conducted to perform a supplemental soil characterization on pesticides within the Phase 1 area, and to characterize subsurface soil and groundwater within the Phases 2 and 3 areas to establish general baseline conditions of chemical quality in the subsurface environment across the Phases 2 and 3 areas. Results of the Phase II ESA are presented in the following report:

"*Environmental Investigation Report, Phases 1, 2 and 3 Developments, Sunnydale Hope SF Project Site, San Francisco, California*. Prepared by AEW and dated June 10, 2016. (The 2016 Report).

The environmental investigation consisted of the following elements:

- Shallow soil sampling and analyses around existing buildings; and
- Soil and grab groundwater sampling and analyses from soil borings.

Phase I area supplemental characterization. Pesticides were reported at concentrations below the respective RSL, ESL, DTSC Screening Levels and CHHSLs. Results of the shallow soil samples collected from around existing building indicated that with the exception of arsenic, all metals results were below their Tier 1 ESLs and data criteria presented in the 2016 report. Based on the rationale presented in the 2016 report, arsenic, cobalt and nickel are not expected to pose a significant risk to humans and the environment.

Results of the chemical analyses including leaching tests indicated that none of the subsurface soil samples were reported to have concentration above the respective California and federal hazardous criteria: TTLC value, STLC value or the TCLP value. Therefore, the soil represented by these soil samples is considered as non-hazardous waste.

Phase 2 and 3 Development Area. Results of samples collected from soil borings indicated that with the exception of arsenic, cobalt, and nickel, all metals results were below their Tier 1 ESLs and data criteria presented in the 2016 report. Based on the rationale presented in the 2016 report, arsenic, cobalt and nickel are not expected to pose a significant risk to humans and the environment.

Results of the chemical analyses including leaching tests indicated that none of the soil samples collected from the soil borings were reported to have concentrations above the respective California and federal hazardous criteria: TTLC value, STLC value or the TCLP

value. Therefore, the soil represented by these soil samples is considered as non-hazardous waste.

As presented in the 2016 report, a groundwater sample was collected from boring ENGEO-6 at a depth of approximately 36 feet bgs. Elevated concentrations of TPH as diesel, TPH as motor oil and total metals were detected in the groundwater sample. The elevated levels in groundwater are likely due to these chemicals associated with colloidal particles or fine suspended solids; therefore, pretreatment of groundwater such as sedimentation prior to discharge to SFPUC's combined storm water and sewer system may likely be required to allow separation of the suspended solids, and is likely not to require chemical treatment. However, SFPUC will make the final determination on the discharge requirements including pretreatment during the review and approval of the batch wastewater discharge permit application.

Based on the results of the environmental investigation, the following were recommended:

- No site mitigation would be required on chemicals with detected concentrations in soil or groundwater exceeding the ESLs for the reasons as stated above and presented in the 2016 report;
- The site development will comply with the San Francisco Department of Public Health Article 22B Ordinance (Article 22B) for dust mitigation during site construction. A dust mitigation plan including dust management and monitoring protocols shall be developed in compliance with the Article 22B requirements;
- To ensure the safety of personnel during construction, a health and safety program would be developed and implemented to protect workers from exposures of chemicals above the applicable federal and state Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs). Such protocols should include, but not be limited to personal protective equipment requirements, worker decontamination procedures, and air monitoring strategies (as necessary) to ensure that the workers are adequately protected; and
- A waste management and disposal plan for soil and dewatered groundwater, if any, to be developed and implemented by the construction contractor to ensure compliance of proper waste classification by applicable regulations and waste acceptance requirement by the landfill facility for soil disposal and SFPUC for wastewater discharge to the combined storm water and sanitary sewer system.

3.1.4 Asbestos, Lead Based Paint, and PCBs Surveys

Asbestos and lead based paint surveys have been conducted at the Project Site for the San Francisco Housing Authority. At the time of this narrative preparation, the following surveys were known to have been prepared:

- "Asbestos Survey Report for Sunnydale San Francisco, Ca", prepared by SCA Environmental Inc., and dated October 1994;

- "Lead-Based Paint Inspection Report for the Sunnydale Development", prepared by Environmental Science & Engineering, Inc., and dated February 22, 1993;

- "Additional XRF Testing Results, Sunnydale Public Housing Development, Sunnydale Modernization Project, San Francisco, California", prepared by Environmental Science & Engineering, Inc., and dated November 21, 1994;

- "Risk Assessment Report Form", prepared by Housing Environmental Services, Inc., and dated February 7, 1994;

- "Lead Based Paint Survey Results for Sunnydale Public Housing Development", prepared by Environmental Science & Engineering, Inc., and dated March 27, 1997;

- "Work Plan for Lead-Based Paint Component Removal, San Francisco Housing Authority, Sunnydale Development", prepared by QST Environmental Inc., and dated January 21, 1998;

- "Report of Interior Window Lead-Based Paint Survey for Sunnydale Boys and Girls Club", prepared by QST Environmental Inc., and dated February 9, 1998;

- "Lead-Based Paint Risk Assessment Report for Sunnydale Child Care Center 1652 Sunnydale Street, San Francisco, Ca", prepared by QST Environmental Inc., and dated February 9, 1998;

- "Lead in Soil Samples Collected at Proposed Site for the Wu Yee Childcare at the Sunnydale Family Development", prepared by San Francisco Housing Authority on July 19, 1999; and

- "Summary Report: Lead-Based Paint Partial Survey Interior & Exterior of Residence at 170 Brookdale, San Francisco, CA", prepared by SCA Environmental, Inc., and dated November 8, 2001.

A review of the results of these investigations will be conducted to evaluate the adequacy of the results for developing the abatement requirement of asbestos and lead based paint. An asbestos, PCBs (including electrical parts, equipment and transformer-related sources), lead based paint and other hazardous materials survey and assessment within the buildings is to be conducted to evaluate the need and the extent, if any, of the hazardous material abatement. In addition, a mold survey shall be conducted at each building within a few months prior to the demolition of the respective buildings.

3.1.5 Naturally Occurring Asbestos

Discussion on natural occurring asbestos at the site is presented in Section 5.2.6.

3.2 Regulatory Framework

3.2.1 Lead Environmental Regulatory Agency

The Developer entered the Project Site into Voluntary Remedial Action Program of the San Francisco Department of Public Health ("SFDPH") in 2010, and as such SFDPH is the lead environmental regulatory agency for the development. The case number at SFDPH for this site is "EHS-HWU Case Number: 807".

3.2.2 Current Site Status

SFDPH reviewed the reports for the Phase I ESA and the Phase II ESA for the Phase 1 Development in 2010 and 2011, respectively. SFDPH concurred with the findings and recommendations for both reports as follows:

- Phase I ESA Report: "Voluntary Remedial Action/Planning Review, Sunnydale HOPE SF Development", EHS-HWU Case Number 807, prepared by SFDPH and dated August 4, 2010 (SFDPH Phase I ESA Letter); and
- Phase II ESA Report: "1654 Sunnydale Hope Redevelopment Project", SMED Number 807, prepared by SFDPH and dated June 17, 2011 (SFDPH Phase II ESA Letter).

3.3 Future Regulatory Requirements for Master Infrastructure

3.3.1 Phases 1A-1. 1A-2, 1A-3, 1B, and 1C Developments

Based on this MIP, the future key environmental activities to be conducted for the Phases 1A-1, 1A-2, 1A-3, 1B, and 1C phases of development will include:

- Additional environmental characterization; and
- Compliance with site mitigation/remediation requirements.

3.3.1.1 Additional Environmental Characterization

Anticipated environmental characterization activities to be conducted for each phase will include, but not be limited to, the following:

- Subsurface Soil and Groundwater. Based on the anticipated extent and volume of soil to be disturbed (TBD Soil) during each phase of the development, an evaluation of the existing chemical information with respect to the TBD Soil will be conducted to identify

potential data gaps, if any, for characterizing TBD Soil for evaluating the potential options of (1) reuse on site, (2) disposal to a recycling facility, and (3) off-site disposal to permitted landfills. At the preparation of this narrative, the TBD Soil excavation is planned to be conducted above the groundwater level, and therefore groundwater dewatering is not anticipated. However, if the TBD Soil excavation is conducted to depths where groundwater is encountered, groundwater sampling and analyses will be conducted. If supplemental soil and groundwater characterizations are recommended, such characterization will involve the following key activities:

- Preparation of a work plan by the owner's environmental consultant presenting the supplemental soil and groundwater characterizations for Owner and SFDPH approval;

- Soil and groundwater sampling and analyses in accordance with the approved work plan; and

- Preparation of a report by the owner's environmental consultant presenting the results of the supplemental characterization and potential soil management/disposal options.

- Asbestos, Lead-Based Paint, PCBs, Mold, and Hazardous Materials in Buildings. A review of the results of previous asbestos and lead based paint surveys of the existing buildings shall be performed to evaluate the adequacy of the data for (1) identifying potential areas where asbestos and lead-based paint may be present, (2) estimating the extent of abatement required, and (3) developing the scope of work for the abatement. In addition, an evaluation shall be made of whether survey of other hazardous materials (such as polychlorinated biphenyls ballasts, equipment, and transformer related sources, mercury, and mold etc.) will be required for proper abatement prior to or during building demolition. If any additional survey is recommended, a work plan for performing such supplemental surveys will be prepared and implemented by the owner's hazardous material survey consultants. Results of the supplemental surveys and the previous surveys will be used for establishing the abatement requirement for hazardous materials in existing buildings.

- Radon Gas Survey. As stated in the SFDPH Phase II ESA Letter, SFDPH requires a soil vapor radon survey to be performed prior to construction by either the owner or the contractor. A radon soil vapor survey work plan will be prepared by owner's or contractor's environmental consultants for approval by SFDPH and for field implementation after receipt of approval from SFDPH.

3.3.1.2. Site Mitigation/Remediation

Based on the results of the environmental characterization described above, the following activities will be performed for the construction of the infrastructure for each phase of site development:

- Anticipated environmental characterization activities to be conducted for the infrastructure construction for each phase of development will include, but not be limited to, the following: Site Mitigation and Soil Management Plan Preparation. Prior to construction of each phase, a site mitigation and soil management plan will be prepared by the owner's environmental consultant and submitted for SFDPH approval. The site mitigation/soil management plan will include, but not be limited to, the following elements:
    - Site mitigation measures prior to construction;
    - Site mitigation measures during construction that include, but are not limited to the following:

Abatement plans and procedures, including confirmation sampling requirements for asbestos, lead-based paint, and hazardous waste materials for existing buildings prior to or during building demolition;

- Site remediation if hot spots are identified from supplemental site characterization;
- Soil management plan presenting the detailed plans and procedures for on-site soil reuse, and off-disposal to recycling facilities and/or California permitted landfills. The soil management plan shall include requirements to properly maintain stockpiles in the event that stockpiling of excavated soil will be required;
- Worker health and safety requirements, including preparation and implementation of an environmental health and safety plan for worker protection;
- Dust mitigation and monitoring plan, presenting dust mitigation procedures and monitoring plan, to be implemented in compliance with the SFDPH's Article 22B;
- Stormwater pollution prevention plan, describing the procedures to manage stormwater during construction in accordance with applicable federal, state, and local regulations;
- Noise control and mitigation plan for compliance with the San Francisco Noise Ordinance;

- Contingency response plan in the event that unforeseen or unexpected subsurface contaminations are found during construction; and

- Mitigation measures for radon if required based on the results of the radon survey.

- Site mitigation measures after construction. The proposed plan for attaining site closure for each individual phase will be presented.

- Site Mitigation and Soil Management Plan Implementation. Once the site mitigation and soil management plan for each phase is approved by SFDPH, it will be implemented by the contractors and project teams.

- Preparation of the Completion Report. Upon completion of the infrastructure construction at each phase, a site completion report will be prepared by owner's environmental consultant for submittal to SFDPH. The completion report will include but not be limited to the following key elements:

  - Environmental mitigation monitoring and reporting program implemented;
  - Air/dust quality monitoring;
  - Noise monitoring;
  - Stormwater pollution prevention control and best management practices implemented; and
  - Soil management and disposal.

3.3.2 Phases 2A, 2B, 2C, 3A, 3B, and 3C Developments

3.3.2.1 Environmental Characterization

Anticipated activities to be conducted for environmental characterization of the infrastructure construction for each phase will include, but not limited to, the following:

- Subsurface Soil and Groundwater. Based on the anticipated extent and volume of soil to be disturbed (TBD Soil) during each phase of the development, an evaluation of the existing chemical information with respect to the TBD Soil will be conducted to identify potential data gaps, if any, for characterizing TBD Soil for evaluating the potential options of (1) reuse on site, (2) disposal to a recycling facility, and (3) off-site disposal to permitted landfills. The soil and groundwater characterization will involve similar key activities as those presented in Section 3.3.1.1.

- Asbestos, Lead-Based Paint, Mold, and Hazardous Materials in Buildings. A review of the results of previous asbestos and lead based paint surveys of the existing buildings

and hazardous material survey shall be performed for similar rationale and protocols as presented in Section 3.3.1.1; and

- *Radon Gas Survey*. A soil vapor radon survey will be conducted using similar protocols as described in Section 3.3.1.1.

3.3.2.2 Site Mitigation/Remediation

The site mitigation/remediation will be conducted using the same protocols as stated above for the Phases 1A-1, 1A-2, 1A-3, 1B, and 1C developments.

Prior to installation of any new sewer lines Developer will take samples of the sludge from the existing sewer lines, report the results to the City, and, if necessary, review with the City options for managing the transfer of contaminants to the new sewer line.

Section 4 Demolition

The Developer will be responsible for the demolition and deconstruction of all existing buildings and infrastructure, except where utility agencies and/or City departments must perform this work due to regulatory issues. With each Phase Application, the Developer will prepare and submit plans for the scope of the demolition proposed, the hazardous materials abatement and disposal plan, if applicable, and plans to maintain or support the existing infrastructure serving the remainder of the Project Site.

Section 5 Geotechnical Conditions

In 2009, a preliminary geotechnical exploration was performed by ENGEO ("Geotechnical Report, Sunnydale-Velasco Redevelopment, San Francisco, CA. dated July 24, 2009"). In 2016, a design level geotechnical field exploration was initiated by ENGEO to provide geotechnical conclusions and recommendations for both the planned infrastructure associated with the full development of the Project, as well as the specific development of the initial two phases of development. Both 2009 and 2016 studies by ENGEO are herein referred as the "Geotechnical Report",

5.1 Site Geotechnical Conditions

Based on the Geotechnical Report, the soil profile is determined to generally consist of silty and clayey sand soil deposits with interbedded layers of sandy clay. The soil deposits are underlain at relatively shallow depths by a bedrock unit. The soils showed variable in-situ consistency and/or density based on the borings performed. The local soil conditions are described in more detail as follows:

- East of Santos Street, the uppermost one to five feet of soil is very loose to loose silty sand. West of Santos Street, the uppermost soils are medium dense to dense clayey or silty sand and stiff to hard sandy clay. In some locations, a soft to medium dense

clayey layer was encountered to approximately four feet below the ground surface (bgs). Medium dense to loose silty sand was encountered at about five feet below the ground surface in the northeast corner of the site.

- Undocumented fill material was encountered at the southeast of Blythdale Avenue and Santos Street, extending to roughly 18 feet below the ground surface. The fill material was clayey and contained rock fragments as well as debris. The consistency of the fill was highly variable, from loose to hard. Based on review of historic aerial photographs, the location appears to align with a previous drainage channel which was backfilled prior to the development of the project site. The west central portion of the site was developed on an east-west trending ridge.

- West of Santos Street, the development along Brookdale Avenue and Blythdale Avenue is underlain by relatively shallow bedrock at about 5 to 15 feet below the ground surface. The depth to bedrock increases significantly on the north side of the site along Sunnydale Avenue and along the southern limits of the property. East of Santos Avenue, bedrock was found in borings south of Blythdale Avenue but no bedrock was encountered in borings drilled east of Santos Avenue. Bedrock is extremely weak to very weak, very closely fractured to crushed, highly weathered and sheared claystone, siltstone and sandstone of the Franciscan Complex.

5.2 Geotechnical Constraints and Site Improvements Required

From a geotechnical perspective, the following are the primary issues for site improvements at the Project:

5.2.1 Loose Surface Soil

The upper one to five feet of soil is generally loose to medium dense in consistency. To reduce the potential for adverse settlement or stability problems within the proposed building footprints, the loose surface soil should be removed and replaced with engineered fill. Soil materials free of deleterious debris may be placed on site as engineered fill.

5.2.2 Liquefaction

Liquefaction of loose and medium dense material below the groundwater could cause settlement. Interlayering of potentially liquefiable layers were encountered at various locations of the site at depths of greater than 10 feet below the existing ground surface. In general, liquefaction settlements of less than 2 inches were estimated using a peak ground acceleration recommended by the Building Code and a historic highest groundwater level, which is shallower than the observed groundwater levels during previous exploration programs. Therefore, we expect this estimate, while in conformance with the code requirements, is conservative. To minimize impact, future improvements should be designed to tolerate these movements.

5.2.3 Seismically Induced Densification

Densification of loose sand above the groundwater level during earthquake shaking could cause settlement of the ground surface. Loose layers of silty sand susceptible to this type of densification were encountered on the site. Over-excavation of these soils during the site grading can reduce the potential for earthquake-induced densification within the development envelope.

5.2.4 Soil Creep

The current site layout includes steep graded slopes between the existing building pads. If steep engineered slopes are considered in the new development plans, the potential for adverse impacts from soil creep can be minimized by a combination of benching through the surficial soil during fill placement, soil compaction, foundation selection and structure setbacks.

5.2.5 Seismically Induced Landsliding

As with most hillside developments, landslides and slope stability are important issues for the Project. Portions adjacent to the western side of the site area are located within State of California Seismic Hazard Zones for areas that may be susceptible to seismically induced landsliding. The areas mapped as having the potential for seismically induced landsliding appear to consist of the steeper existing slopes. Seismically induced landsliding can generally be mitigated through proper slope design and grading procedures. Mitigation measures for this project will include re-grading of existing slopes and construction of proposed fill slopes with keyways, sub-drainage and engineered fill.

5.2.6 Bedrock Rippability and Suitability

Bedrock was exposed in the west-central portion of the site at depths ranging from 5 to 15 feet below the existing grade. If significant engineered cuts are planned that could encounter bedrock, it will likely be possible to rip most of the bedrock material with heavy duty grading equipment. Localized lenses of massive hard rock could be exposed that require laborious trenching efforts and may necessitate the use of excavators equipped with single-tooth ripping hooks or hydraulic hammers. Depending on the phasing of construction, it may be preferable to over-excavate bedrock in areas of proposed trenching during grading when more effective and powerful equipment is available.

5.2.7 Naturally Occurring Asbestos

The Franciscan Complex bedrock has been found underlying the site. The Franciscan Complex mapped in San Francisco can include serpentinite, which contains the fibrous mineral chrysotile, considered an asbestos mineral. Serpentinite was not encountered during the geotechnical exploration and no veinlets of chrysotile were observed in bedrock outcrops during a geologic reconnaissance of the site. Laboratory testing of selected soil samples did not detect asbestos-containing material. Care should be taken during site grading and development to check that naturally-occurring asbestos is not exposed or

incorporated into the engineered fill used at the site.

5.3 Design of Infrastructure Improvements; Site Geotechnical Approach

Successful site development will require engineering design and project construction methods to address the existing soil and bedrock conditions. The geotechnical corrective grading measures can improve the long-term performance of the infrastructure, building foundations and engineered slopes during seismic events.

To reduce the potential for settlement at the site, the shallow loose soil should be over-excavated and replaced with engineered fill. The deeper loose soil that cannot be practically removed and replaced shall require site improvements that are to be design to tolerate the settlement or be remediated with soil improvements per the recommendations of the Geotechnical Engineer. Recommendations for site grading are provided in the Geotechnical Report. Once final grading plans are available, more specific corrective grading procedures will be provided, including the location of keyways, sub-drains, and sub-excavation areas.

Geotechnical remediation will be completed in conjunction with the site grading and infrastructure construction by the Developer.

5.4 Design of Building Foundations

Building foundation designs will be based on the recommendations in the Geotechnical Report, review of the site grading and development plans, and the structural designs developed as part of the permitting process for vertical construction. The Developer or subsequent owner of a development parcel will be responsible for the design and construction of building foundations.

5.5 Design of Stormwater Control Plans

The Geotechnical Report found that the hydraulic conductivity of the on-site soils is between approximately 2×10^{-5} centimeters per second (cm/s) and 2×10^{-4} cm/s. The majority of the site includes USDA classified group D soils that have a very slow infiltration rate when thoroughly wet. Thus, it is expected that most of the rainfall will be turn into run-off. Design of the storm water controls must provide for the rapid removal of the surface water runoff.

Design that causes ponding of water or seepage toward foundation systems at any time during or after construction must be prevented. Ponding of stormwater must not be permitted on the building pad during prolonged periods of inclement weather. As a minimum requirement, finished grades should provide a slope gradient at right angles away from exterior walls to allow surface water to drain positively away from the structure. Care should be exercised that landscape mounds and landscape features do not interfere with these requirements. Sufficient area drains should be provided around the buildings to

remove excess surface water. Stormwater from roof downspouts should be conveyed in closed drain systems to a solid pipe that discharges to the street or storm drain system.

5.6 Phasing of Geotechnical Strategies

Geotechnical corrective grading will likely occur in phases to match the development sequence of the Project. The extent of the sub-excavation under the proposed building footprints will be a function of the rigidity of the foundations prepared by the Developer of each parcel, as explained in the foundation design section of the Geotechnical Report. When the final grading plans are available, a sequential analysis of the anticipated grading issues associated with the development will be prepared. All grading and project development plans should be coordinated with the Geotechnical Engineer to address the need to mitigate known soil and geologic hazards, as necessary.

At the completion of the site grading, a Geotechnical Report will be prepared and submitted to the City as part of the building permit process with findings and recommendations to support the development of private building parcels.

Section 6 Site Grading

6.1 Existing Conditions

The elevation change across the site is Elevation 177.4 feet, dropping from 250 feet above sea level at the western edge of the site to 72.6 feet at the eastern end of Blythdale, sloping down towards the Bay. Currently, the average grade change spanning from the highest point to the lowest point on the site is 9.8 percent.

The existing grade within the site slopes gradually downward from west to east. At the boundary edges, the site is bounded by and conforms to the existing grades along Hahn Street, Velasco Avenue, Brookdale Avenue, and Sunnydale Avenue.

6.2 Project Grading Design

It is estimated that fill as deep as or deeper than 10 feet is anticipated to achieve the future grades proposed in the Project plan. Proper compaction and moisture conditioning during fill placement per the Geotechnical Report should minimize future impacts. Appropriate measures, such as soil and foundation improvements, will be constructed by the Developer to minimize differential settlement from seismic induced deformation across the building parcels. The grading and building designs will incorporate measures to provide uniform performance across the building and improvements to allow for continuous accessible paths of travel to be maintained at building access points and where private passageways interface with the public right-of-way. A design level Geotechnical Report will be prepared to address mitigations as part of the Site Wide Grading and Overland Release Plan approval process for review and approval by the City for phased build-out of the public rights-of-way and open spaces.

6.3 Site Grading Design

The Developer will be responsible for the design and construction of the proposed grading plan for the Project. Proposed grading designs for the development will match the existing north to south drainage pattern of the existing site. To ensure proper overland release and provide Americans with Disabilities Act ("ADA") accessible pathways throughout and adjacent to the site, a new street grid with interconnected open space and pathway areas will be constructed to 5 percent slopes where possible, providing a high level of accessibility throughout the development. As required due to site constraints, privately-owned publicly-accessible open spaces and public access areas with walkways at slopes exceeding 5 percent but less than 8.33 percent will include handrails per Code requirements. The conceptual grading plan for the Project Site is included in Figure 6.1.

6.3.1 Proposed Site Grading at Conforms

Conceptual grading designs generally conform to the existing grades along the southern edge of Velasco Avenue, the eastern edge of Hahn Street, and the western edge of the higher elevation ground. At the eastern boundary of the Project, new connection segments of the proposed Sunnydale Avenue and Blythdale Avenue will be constructed, requiring the placement of 1 to 5 feet of fill.

An accessibility strategy has been incorporated into the MIP, with the intent to have the site east of Santos Street graded to a 5 percent slope or less, with the exception of Blythdale Avenue. This includes the portion of Sunnydale Avenue east of Santos Street, Santos Street, and Future Street "B". In addition, a multipurpose path at the new Sunnydale Linear Open Space will provide accessibility up to the western property line. This path will feed the new north-south streets, also graded to less than 5 percent slopes where possible, providing a high level of accessibility throughout the development. See Figure 6.2 for the Project Accessibility Strategy.

Interim grading solutions to accommodate the development of each adjacent phase of development will be designed based on recommendations provided by the Project geotechnical and structural engineers.

As more detailed designs are developed during the site-wide grading and overland release master plan and Infrastructure Improvement Plan review processes of the Project, the grading at conforms may require adjustment and refinement based on future coordination with SFDPW.

6.3.2 Proposed Roadway and Building Areas

The proposed on-site street grid will be graded to provide overland release for the Project. As required by the SFPUC, grading and hydrology designs will be developed such that the 100-year storm is contained within the top of curb elevations of the streets.

Site development and grading designs will be developed to comply with the codified requirements for accessible paths of travel. Where feasible, proposed slopes along public streets and private alleys will be set at a maximum of 5 percent to provide ADA-accessible pathways of travel. See Figure 6.2 for the Project Accessibility Strategy.

At street intersections, grades will be tabled at a maximum slope of 2% to provide an accessible path of travel in crosswalks. In addition, vertical curves within the streets will be designed to both begin and end outside the limits of the crosswalk areas.

6.4 Proposed Site Earthwork

Future grading within the Project will include importing fill on the eastern side and fine grading of streets and open space areas. To support future grading activities, a Storm Water Pollution Prevention Plan/Erosion and Sediment Control Plan ("SWPPP") will be submitted in parallel with future grading permits. Grading in conjunction with site remediation efforts will be performed by the Developer.

6.5 Phases of Grading Activities and Approvals

The proposed grading will be completed in phases to match the phases of development within the Project. The amount of grading will be the minimum necessary for the development phase. The phasing of grading will allow the Project to minimize the disruption to the adjacent and future built uses at the site and to limit the amount of export required for any given development phase. Impacts to improvements installed with previous phases of development due to the designs of the new phase will be the responsibility of the Developer and addressed prior to approval of the construction drawings for the new development phase.

A Grading and Overland Release Master Plan and a Combined Sewer System Master Plan, addressing the full build-out of the public rights-of-way, will be submitted to be approved prior to the 30% Street Improvement Plans for the first phase of development.

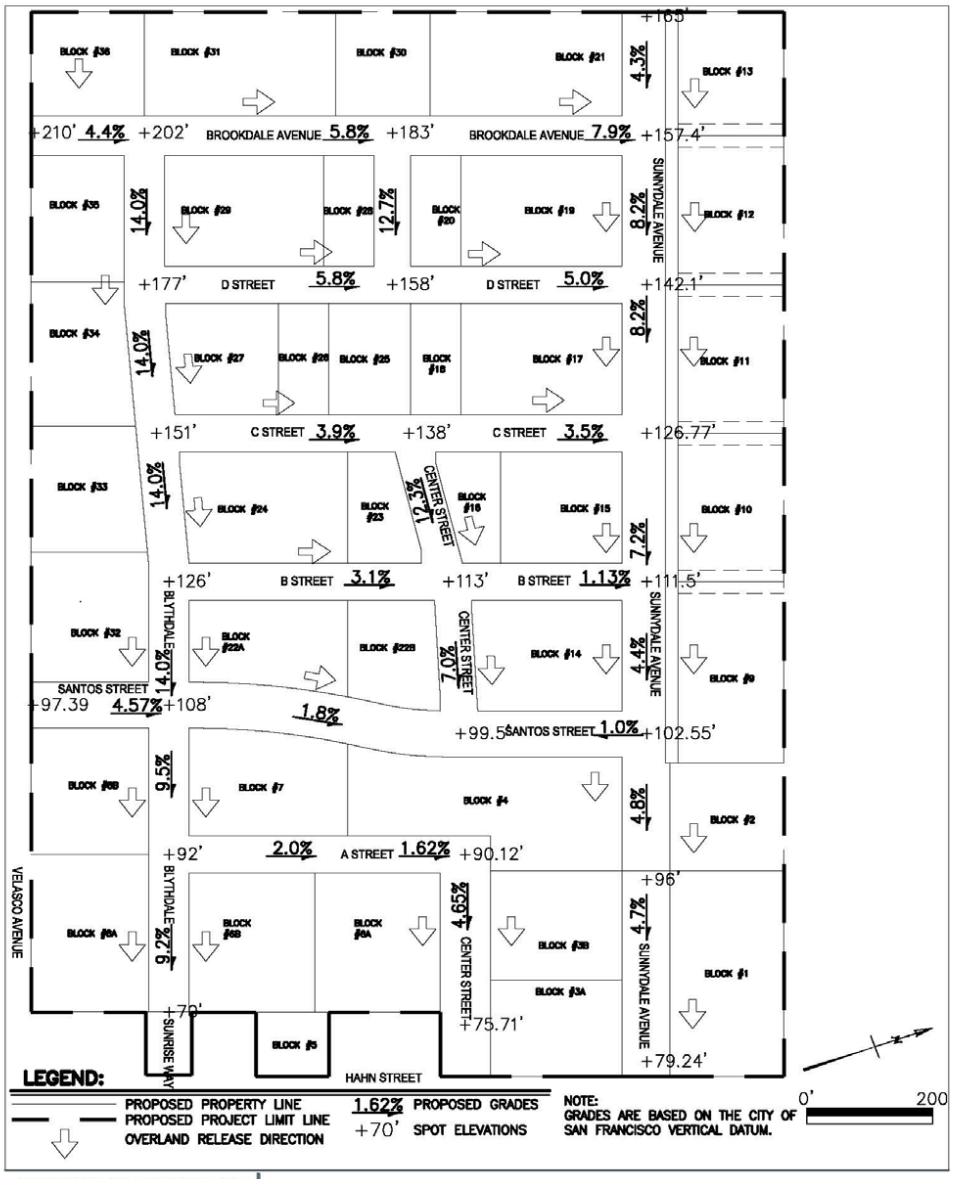

BROOKDALE AVENUE
D STREET
C STREET
B STREET
A STREET
SANTOS STREET
HAHN STREET
SUNNYDALE AVENUE
CENTER STREET
BLYTHDALE AVENUE
VELASCO AVENUE
SUNRISE WAY
LEGEND:
PROPOSED PROPERTY LINE
PROPOSED PROJECT LIMIT LINE
OVERLAND RELEASE DIRECTION
PROPOSED GRADES
SPOT ELEVATIONS
NOTE:
GRADES ARE BASED ON THE CITY OF SAN FRANCISCO VERTICAL DATUM.
0'
200
SUNNYDALE HOPE SF | FIGURE 6.1
CONCEPTUAL GRADING

Figure 6.1.

Figure 6.2. Proposed Accessibility Strategy

Section 7 Street Mobility and Circulation Designs

7.1 Existing Conditions

The Project Site currently has few access points to the immediate neighborhood, but upon exiting the Project Site connectivity to neighboring parts of the city is relatively good via car and public transportation. Existing Sunnydale streets are in an irregular street grid pattern, with few north-south connections. Streets are typically one driving lane in each direction.

7.1.1 Vehicular Connections

Within the larger neighborhood of Visitacion Valley two major streets provide access to two regional freeways and to other neighborhoods. Bayshore Boulevard forms the eastern border of the neighborhood and leads to the 101 freeway, the City of Brisbane to the south, and the Bayview neighborhood to the north. The MUNI T light rail line also runs on Bayshore Boulevard, terminating at Sunnydale Avenue.

Geneva Avenue is a major arterial that forms the southern border of the neighborhood, and is partially located in Daly City. Geneva Avenue leads to the Excelsior and Ocean Avenue neighborhoods and to Interstate 280.


GENEVA-HARNEY BUS RAPID TRANSIT | PLAN BAY AREA 2040
WESTERN SEGMENT
CENTRAL SEGMENT
EASTERN SEGMENT
0
0.25
0.5 Miles
28R 19th Avenue
28R / Geneva-Harney (GH) BRT: Western Segment
28R / GH BRT: Central Segment
28R / GH BRT: Eastern Segment
Existing Muni Metro Light Rail
Existing Muni Bus Routes (Express Routes Not Shown)
Existing SamTrans Bus Routes
Caltrain / Future High-Speed Rail Alignment
Priority Development Areas
Communities of Concern
Existing Muni Metro Light Rail Stops
Potential BRT / Muni Metro Transfers*
Option A: Blanken/Lathrop Couplet
Option B: Recology North
Option C: Beatty Avenue

Figure 7.0

7.1.2 Public Transportation System

Over 50% of current Sunnydale households do not have a car; therefore public transit is an important connector. The area is served by San Francisco's public transit MUNI lines 9, 8X, 8AX, 8BX, 56 and the T light rail, which take passengers to the Balboa BART station and to downtown. The MUNI lines 9 and 8X run through the Sunnydale development and new bus stops installed as part of the Project will be designed to be ADA accessible. In addition to MUNI service, the Caltrain Bayshore stop is located 1/4 mile east of Bayshore Boulevard at Tunnel Avenue. A pedestrian and bicycle "shortcut" to the Bayshore Caltrain Station extending east of Sunnydale Avenue is planned to provide more direct access from Visitacion Valley and the connecting buses to Caltrain.

Plans are also in study to convert Geneva Avenue from an auto-focused street into a multi-modal corridor with a Bus Rapid Transit ("BRT") line. Muni's 28R line will function as Bus Rapid Transit on Geneva Avenue, providing a frequent, rapid connection to BART, T Third, and Caltrain, and is expected to begin operation by 2023. The closest BRT stop will be at Santos and Geneva. Figure 7.0 illustrates the proposed BRT.

The SamTrans line 292 connects Sunnydale residents at Bayshore Boulevard to downtown San Francisco to the north and to San Mateo County cities to the south.

Disruptions to service and/or temporary re-routing of Transit lines will be coordinated with the SFMTA as phased documents are developed.

7.1.3 Pedestrian and Bicycle Connections

Sidewalks line all streets within Sunnydale, but few street trees, poor lighting and inadequate trash enclosures make walking unpleasant and occasionally dangerous. Narrow and non-ADA compliant concrete paths provide the main access to most units but do not connect through the development. There is no direct pedestrian connection to Herz Playground. There are no secure bicycle parking facilities in Sunnydale, and the nearest bike racks are located at the John McLaren School and Coffman Pool.

7.2 New and Reconfigured Street Network

As illustrated in Figures 7.1 and 7.2, the existing streets within the Project Site - Sunnydale Avenue, Santos Street, Brookdale Avenue and Blythdale Avenue – will be reconfigured with new streets and sidewalks. New north-south residential streets moving west from Santos will connect these four main streets, providing the infrastructure for the area. The new streets will be aligned in a grid, fronted by residential entries, in keeping with the surrounding neighborhood fabric. Although grade differential and the current development pattern provide few opportunities to connect to the existing neighborhood streets, pedestrian walkways are planned where possible and new view corridors will be opened to the golf course to the north. All new streets will be built per City of San Francisco

standards and offered for dedication to the City.

Santos Street, currently the only north-south vehicular connection through the site, will remain the principal transit street in the neighborhood, with reconfigured bus stops incorporating bus bulbs and 'NextBus' or similar technology. Pedestrian and bicycle connections will be strengthened through wide tree-lined sidewalks and marked bicycle lanes, linking Herz Playground to the new Community Center in Block 1 and the Neighborhood Green in Block 4, and continuing south to Geneva Avenue. The difficult 'Y' intersection at Sunnydale Avenue and Santos Street will be reconfigured into a 'T' to provide for greater pedestrian safety, and further traffic calming measures will be taken throughout the site. Brookdale Avenue will be re-aligned to connect Sunnydale Avenue in the north of the neighborhood through the site to Geneva Avenue to the south.

The City is planning a Green Connection from the Candlestick Recreation Area to the Project Site and McLaren Park, linking Leland Avenue, Hahn and Sunnydale Avenue. A Green Connection is a pedestrian and bike friendly street network that connects people to parks and open spaces with wildlife, improving people's access to the City's urban ecology. Building on this Green Connection, a new street at the center of the site, Center Street, will become the community spine. Center Street will be a smaller scale street that downplays its role as a movement corridor, and is, instead, part of an exceptional pedestrian circulation system. Wide, planted setbacks and generous street tree planters will create a park-like character connecting though the neighborhood starting at the Neighborhood Green in Block 4 to the Mid-Terrace Open Space in Block 25 and up to the Overlook Open Space in Block 30.

To meet SFPUC stormwater requirements, the Project has proposed permeable paving in the parking lanes and drive aisles in the public rights of way, which will be dedicated to the City and maintained by the City. The Developer will design and engineer the public rights of way with permeable paving, which SFPUC and SFDPW will review as part of the street improvement permit process for each phase of improvements. If in reviewing the street improvement permit plans for any phase of development the City determines that the permeable paving is not an acceptable surface within the drive aisles, parking lanes, or both, then the Project will use standard paving techniques and the Developer will not be responsible for managing the runoff that was intended to be managed by the permeable paving within the subject phase application; however other proposed stormwater management controls will continue be installed as described in the Infrastructure Plan. Determinations will be made on a phase-by-phase basis.


A NEW SUNNYDALE | CIRCULATION DIAGRAM
SAN FRANCISCO, CA | JULY 25, 2016 | MERCY HOUSING, THE RELATED COMPANIES OF CALIFORNIA
SUNNYDALE AVENUE
BROOKDALE AVENUE
BLYTHDALE AVENUE
SANTOS STREET
SUNRISE WAY
HAHN STREET
LEGEND
EXISTING BUS STOP
NEW BUS STOP LOCATION
NEW STREET CONNECTIONS
TRAFFIC CALMING
BIKE ROUTES
BUS ROUTES
NEW / IMPROVED PEDESTRIAN CONNECTION
mercy HOUSING
RELATED
VAN METER WILLIAMS POLLACK

Figure 7.1.


SUNNYDALE HOPE SF | NEW AND RECONFIGURED STREETS DIAGRAM + PRELIMINARY PARCEL MAP
SAN FRANCISCO, CA | JUNE 12, 2015 | MERCY HOUSING, THE RELATED COMPANIES OF CALIFORNIA
BROOKDALE AVE.
D ST.
C ST.
B ST.
A ST.
SANTOS ST.
BLYTHDALE AVE.
SUNNYDALE AVE.
VELASCO STREET
CENTER STREET
HAHN STREET
LEGEND
EXISTING STREETS
RECONFIGURED EXISTING STREETS
NEW STREET
NEW OPEN SPACE
GREENWAY ALTERNATE
VAN METER WILLIAMS POLLACK
mercy HOUSING
RELATED
Figure 7.2.

7.3 Streetscape Design Considerations and Elements

The new and reconfigured streets of the Project will be designed to be safe and accommodating to all, with wide sidewalks, shade trees, and Bay views. The Design Standards and Guidelines below apply to all appropriate streets.

- Streets shall be provided at locations specified in Figure 7.3. All required streets must be through streets, with full access by the public at all times. Private drives or parking entries may not be substituted for required streets.

- Street design shall adhere to the standards contained in the Better Streets Plan and Subdivision Regulations.

- Street trees shall be planted approximately every 20-35 ft. along all public streets, acknowledging that actual tree spacing will be influenced by street character, lighting, tree species, lines of sight, utility clearances, building architecture, location of bioretention areas, and other factors.

- Major intersections, including all intersections at Sunnydale Avenue and Santos Street, shall be designed with corner bulb-outs to slow traffic and to decrease pedestrian crossing distances. If approved by affected City agencies, bulb-outs shall be planted with native and/or drought-tolerant plants, and offer seating areas and opportunities for installation of public art.

- Corner bulbs and sidewalk bulb-outs shall be designed consistent with SFDPW specifications, San Francisco Fire Department and SFMTA regulations, and the Subdivision Regulations.

- In addition to street lights, pedestrian-scaled streetlights shall be installed along all streets as supplemental lighting. All fixtures to be selected from SFPUC Catalogue.

- All utilities on new streets shall be located underground when applicable.

- Utility boxes, backflow devices, and other mechanical equipment shall be placed in unobtrusive locations or screened from view when possible and as approved by the City.

- Projections or obstructions into the public rights-of-way shall be limited to those permitted in the San Francisco Planning Code.

7.4 Street Sections

A system of street and parcel numbers has been created to facilitate planning and design coordination and is shown on Figure 7.3. Streets A through D and Center Street are temporary street names for planning use, with final street names to be selected in

the future. The proposed public street network for the Project is shown on Figure 7.6. Typical cross sections for these streets are included on Figures 7.7 and 7.8.

Typical vehicular travel lanes within streets handling two-way traffic are either 9 feet or 12 feet in width. Parking lanes will be 8 feet wide. Per the 2015 Subdivision code, that portion of a parking space having a width greater than 7 feet may be included in the calculation of the minimum operational width. Therefore 1 foot may be added to the 9 foot lanes, giving a 20 foot operational width as required; similarly, 1 foot may be added to the 12 foot lanes, providing a 26 foot operational width. These dimensions also comply with the utility separation requirements in the 2015 Subdivision Regulations. Street sections will be updated to include the AWSS, if needed, in accordance with Section 13 of this Master Infrastructure Plan.

Class II bike lanes are provided along Sunnydale Avenue, Brookdale Avenue, and Santos Street and will be 5 feet wide measured from face of curb to center line of lane striping.

Blue painted curbs will indicate accessible parking zones.

7.5 Streetscape

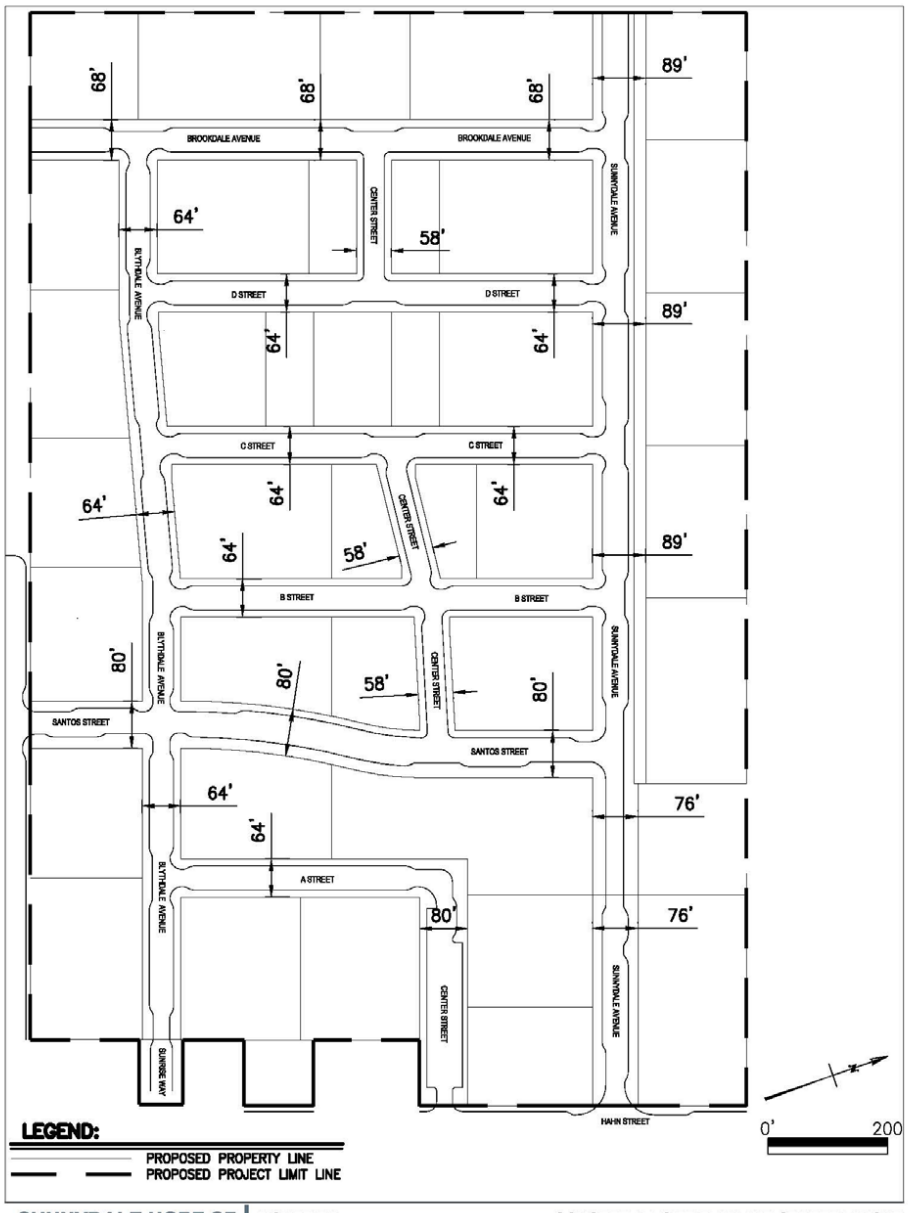
Streetscape Improvements within the public right-of-way generally include the following:

- Vehicular pavements. Permeable paving is to be considered per specific agreement between SFPUC and SFDPW.
- Accessible on-street parking spaces with adjacent curb ramps.
- Concrete curbs and gutters, concrete curb extensions, and bulb outs.
- Sidewalk concrete. Permeable and impervious.
- Sidewalk unit pavers. Permeable and impervious. Sidewalk unit pavers may be used on Sunnydale Avenue and Hahn Streets adjacent to Blocks 1 and 3. These special pavers may not be maintained by the City.
- Courtesy strips and curb ramps
- Bike lanes
- Traffic control signs and striping
- Street and pedestrian lighting
- Street trees
- Street planting

- Signage
- Irrigation systems
- Public Stormwater Management Improvements (including landscape strips acting as bio-retention areas and permeable pavements) per specific agreement between SFPUC and SFDPW.
- Street furnishings (including benches, trash/recycling receptacles, bike support facilities)

7.5.1 Landscape, Sidewalk and Setback Zone Dimensions

Dimensions of the landscape planting, and sidewalk adjacent to the vehicular travel ways vary throughout the site. Specific dimensions for these components are illustrated in the Prototypical Street Sections in Figures 7.7 through 7.10 and selected based on the land use, character and traffic conditions of each street.



SUNNYDALE HOPE SF | FIGURE 7.3 CONCEPTUAL SITE PLAN AND STREET LAYOUT

Figure 7.3.

7.5.2 Planting (in Public Right-of-Way)

Planting within the right-of-way consists of street trees, shrubs, perennial grasses and groundcovers. If City legislation currently pending passes, maintenance of the street trees but not the other planting types will be the responsibility of the City. Tree plantings will be a mix of evergreen and deciduous, chosen to reinforce urban design concepts, provide a continuous canopy at streets, mark site entries, create distinct identity to streets and open spaces, provide variety and resiliency to disease. Shrubs and groundcovers will be chosen to provide an intermediate scale of detail and texture between trees and building at open spaces, streets and residential areas.

The Project includes extensive use of bio-retention basins for stormwater management in the public rights-of-way. A special palette of plant material will be used for these areas. Selected plants must be adaptable to the extremes of tolerating saturated soils for extended periods during the rainy season to dry conditions with limited supplemental irrigation during the dry season. Trees shall not be placed in stormwater management facilities where SFPUC is to assume maintenance responsibility or the facility is a SFPUC asset.

7.5.3 Irrigation

A permanent irrigation system using a highly efficient weather based control system will be used at the Project. Hydrozones will be established to segregate plant materials with similar water requirements for irrigation valve layout. The system will be in conformance with the Water Efficient Irrigation Ordinance of the SF Administrative Code. Crossover of the irrigation system design under the roadways will not be allowed. The irrigation system will be designed so that the fronting property owners are able to maintain the irrigation system, or the Project Community Association will maintain the irrigation system.

7.6 Proposed Street Lights

The Developer will design, layout and install the proposed Project street and pedestrian lights. Pedestrian-scale lighting will be considered supplemental. The street and pedestrian light poles and fixtures shall comply with the SFPUC Streetlight Design Guidelines and Requirements, and the final pole and fixture selection shall be approved by the SFPUC. Building mounted lights are recommended where buildings flank the pedestrian alleys or paths, but shall not be used to satisfy lighting requirements in the public right-of-way. As necessary, temporary pole light standards will illuminate any sidewalk or temporary pathways that are constructed to provide pedestrian access to the circulation paths before the adjacent buildings are complete and building mounted lights are operational. The lighting described in this section will be energy efficient. The electrical service for the street lights will be located in the joint trench. The street light construction documents will be submitted to the SFPUC for review, comment and approval prior to construction, in accordance with Section 15.

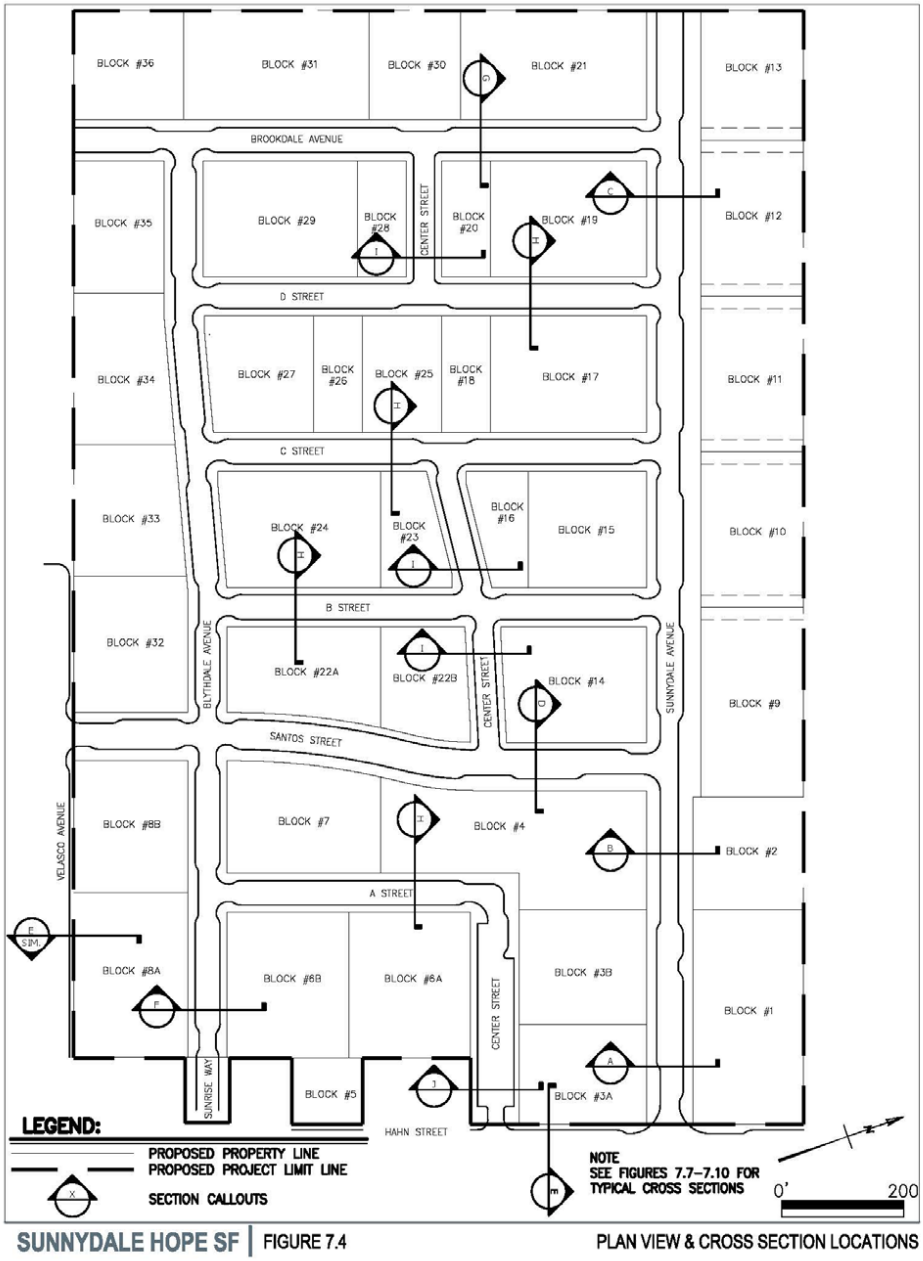
Fixtures and poles located within the public right-of-way will be dedicated to the City and owned, powered and maintained by SFPUC.

7.7 Street Pavement Types and Locations

The structural pavement cross section for the vehicular travel lanes on all new public roadways will comply with the requirements of the San Francisco Subdivision Regulations unless otherwise approved by SFDPW. Vehicular travel way structural cross sections will typically consist of 9-inches of Portland Cement Concrete and a 3-inch asphalt concrete wearing surface for proposed on- site streets and shall be designed to the AASHTO rigid pavements design method using a 40-year design life. For Typical Street Cross Sections, see Figures 7.4 through 7.8.

Parallel parking stalls within the public right-of-way will be constructed with the same material as the roadway. Painted concrete special striping or other special decorative treatment, meeting accessibility requirements as determined by the SFDPW, may be used at intersection locations. Final special pavement designs will be submitted to SFDPW in the Street Improvement Plan for a development phase.

The use of alternative pavements in the public rights-of-way described above or other alternative pavement sections, such as asphalt concrete wearing surface over Class 2 aggregate base, permeable pavement, and decorative pavement (patterned concrete, patterned asphalt, paving stones, etc.) are subject to review and approval by SFDPW. Use of permeable paving surfaces is subject to review and approval by SFDPW and SFPUC. The Project Community Association will be responsible for maintenance and restoration of the pavement markings within areas with special striping or decorative treatments.


BLOCK #36
BLOCK #31
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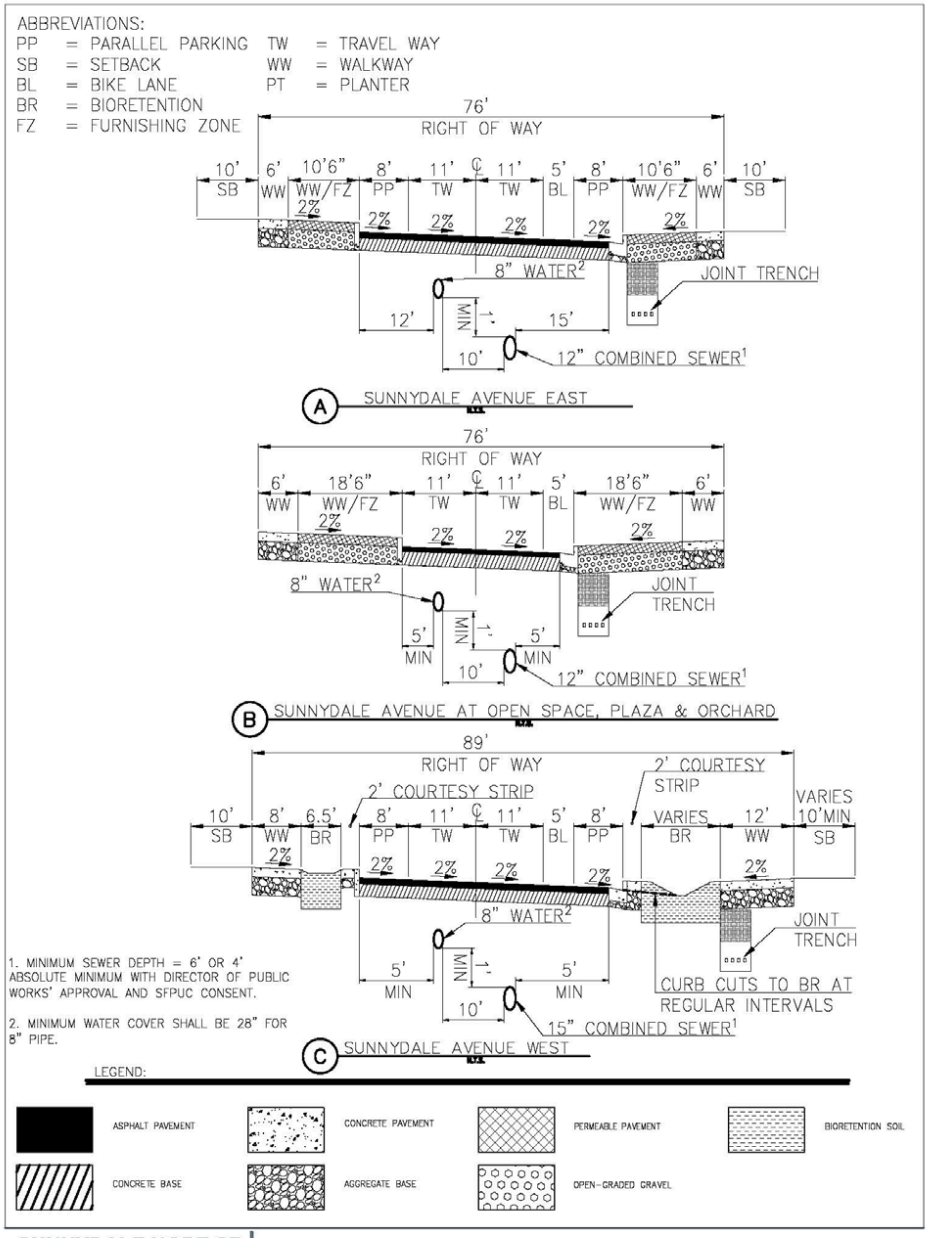
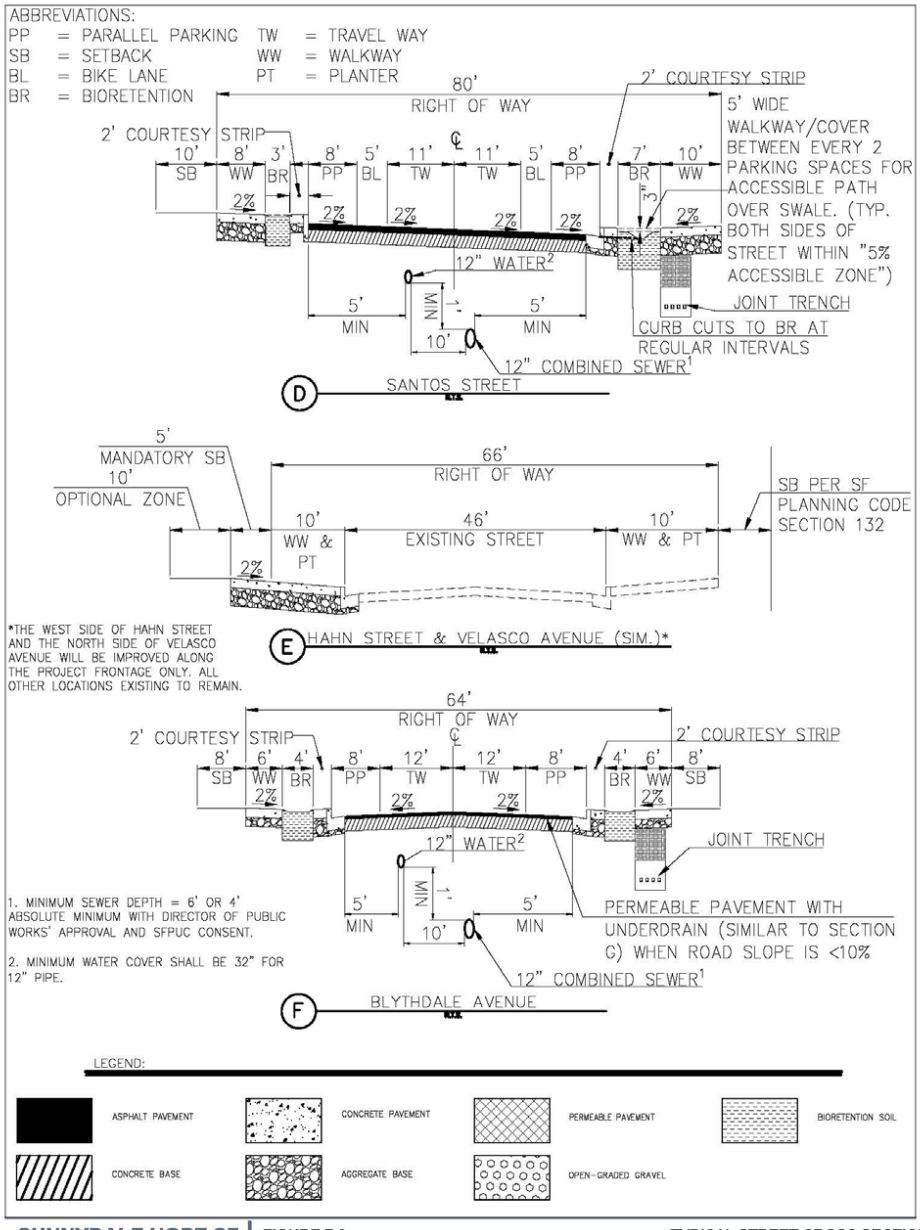
BLOCK #21
BLOCK #13
BROOKDALE AVENUE
BLOCK #35
BLOCK #29
BLOCK #28
CENTER STREET
BLOCK #20
BLOCK #19
BLOCK #12
D STREET
BLOCK #34
BLOCK #27
BLOCK #26
BLOCK #25
BLOCK #18
BLOCK #17
BLOCK #11
C STREET
BLOCK #33
BLOCK #24
BLOCK #23
BLOCK #16
BLOCK #15
BLOCK #10
B STREET
BLOCK #32
BLYTHDALE AVENUE
BLOCK #22A
BLOCK #22B
CENTER STREET
BLOCK #14
SUNNYDALE AVENUE
BLOCK #9
SANTOS STREET
VELASCO AVENUE
BLOCK #8B
BLOCK #7
BLOCK #4
BLOCK #2
A STREET
BLOCK #8A
BLOCK #6B
BLOCK #6A
CENTER STREET
BLOCK #3B
BLOCK #1
SUNRISE WAY
BLOCK #5
HAHN STREET
BLOCK #3A
LEGEND:
PROPOSED PROPERTY LINE
PROPOSED PROJECT LIMIT LINE
SECTION CALLOUTS
NOTE
SEE FIGURES 7.7–7.10 FOR
TYPICAL CROSS SECTIONS
0'
200
SUNNYDALE HOPE SF | FIGURE 7.4
PLAN VIEW & CROSS SECTION LOCATIONS
Figure 7.4.



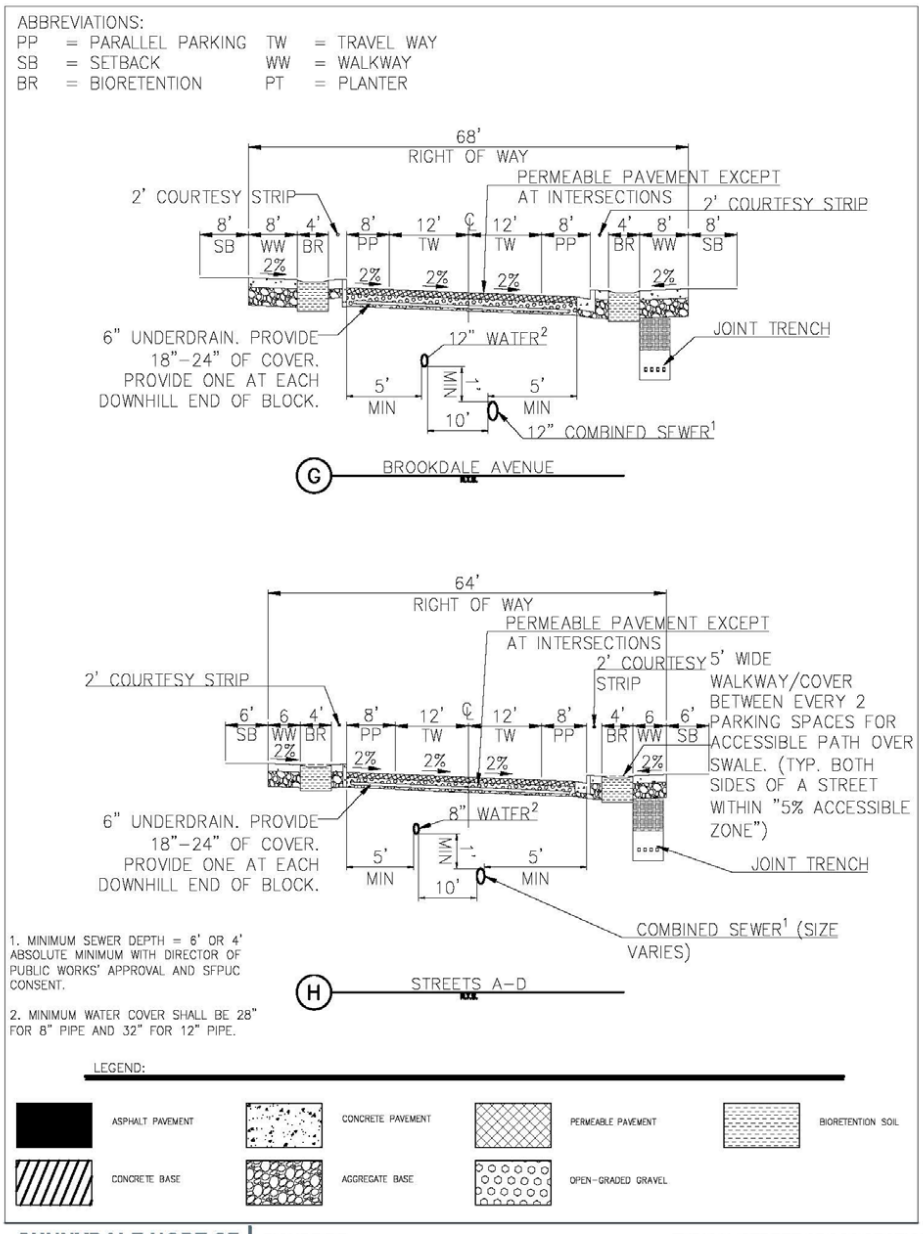
SUNNYDALE HOPE SF | FIGURE 7.5 **TYPICAL STREET CROSS SECTIONS**

Figure 7.5.



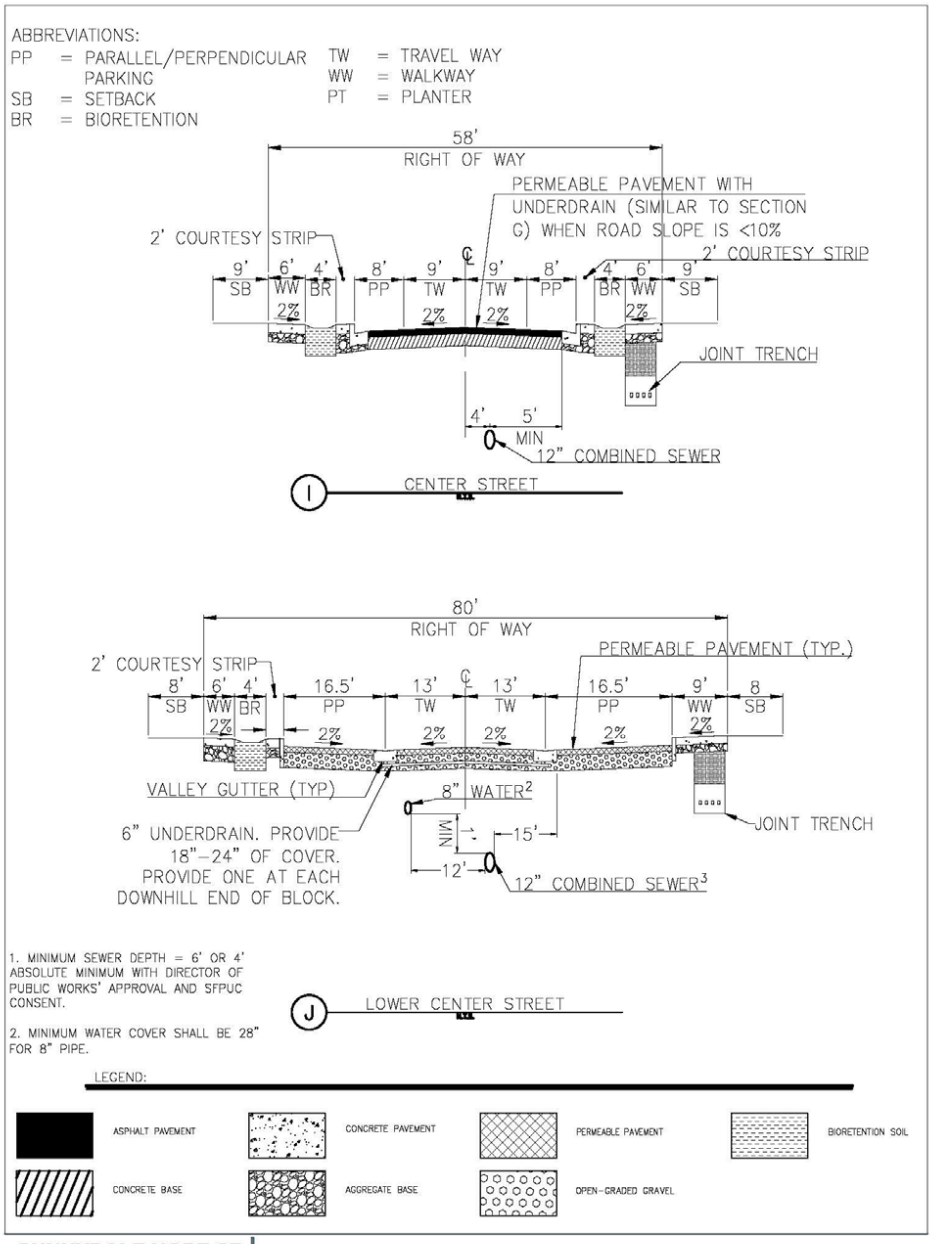
SUNNYDALE HOPE SF | **FIGURE 7.6** **TYPICAL STREET CROSS SECTIONS**

Figure 7.6.



SUNNYDALE HOPE SF | FIGURE 7.7 **TYPICAL STREET CROSS SECTIONS**

Figure 7.7.



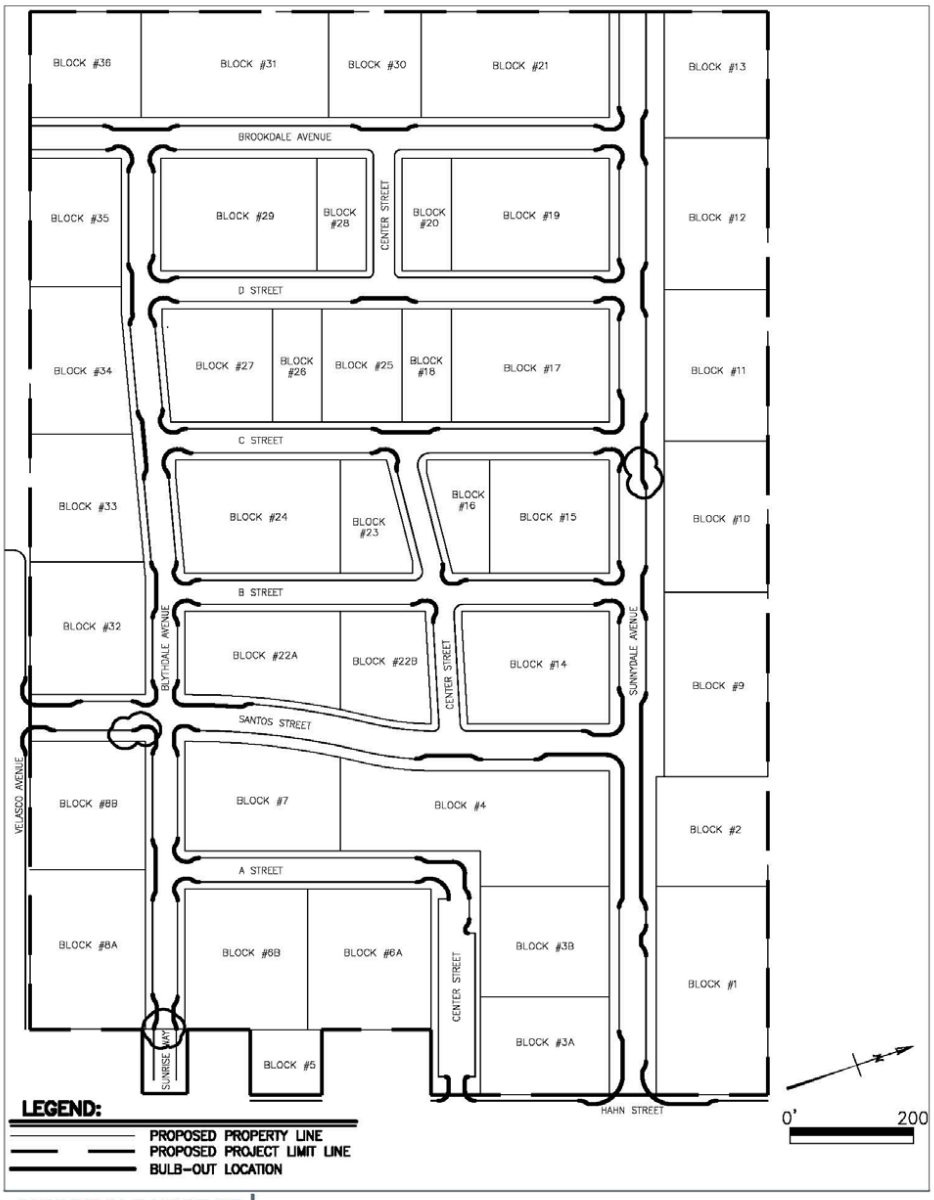
SUNNYDALE HOPE SF | FIGURE 7.8 **TYPICAL STREET CROSS SECTIONS**

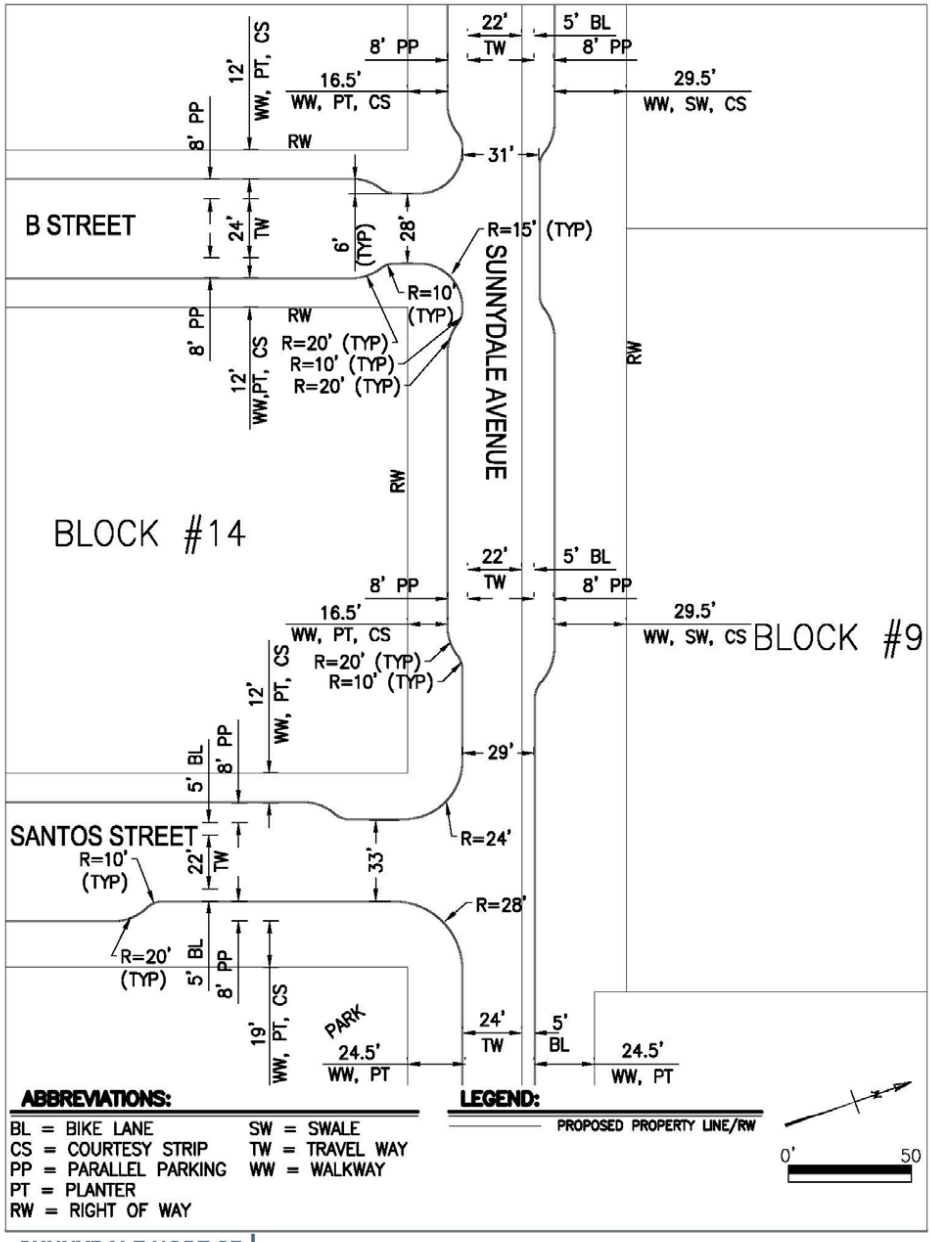
Figure 7.8.

7.8 Traffic Calming

7.8.1 Intersection Bulb-Outs

Bulb-outs have been strategically added to facilitate safe pedestrian travel along intersections where there are currently parallel parking areas, wider drive lanes, higher volumes of pedestrian circulation, and/or striped shoulders. Curb radii are designed to provide the required clearances for San Francisco Fire Department ("SFFD") access. The final design for the bulb-outs will be coordinated with the SFMTA, SFDPW, SFPUC, and the SFFD. Bulb-out improvements must meet the SFDPW and SFPUC requirements for overland drainage release and SFPDW requirements for accessibility for persons with disabilities. Overland release at these locations will be studied in the Grading and Overland Release Master Plan, which will be reviewed and approved by the SFPUC and SFDPW prior to the 30% Street Improvement Plans for the first phase of development. Bulb-out improvements will comply with SFPUC utility clearances and the Subdivision Regulations. Locations and a typical bulb-out detail are shown on Figure 7.9, 7.10, and 7.10.1.


BLOCK #36
BLOCK #31
BLOCK #30
BLOCK #21
BLOCK #13
BROOKDALE AVENUE
BLOCK #35
BLOCK #29
BLOCK #28
CENTER STREET
BLOCK #20
BLOCK #19
BLOCK #12
D STREET
BLOCK #34
BLOCK #27
BLOCK #26
BLOCK #25
BLOCK #18
BLOCK #17
BLOCK #11
C STREET
BLOCK #33
BLOCK #24
BLOCK #23
BLOCK #16
BLOCK #15
BLOCK #10
B STREET
BLOCK #32
BLYTHDALE AVENUE
BLOCK #22A
BLOCK #22B
CENTER STREET
BLOCK #14
SUNNYDALE AVENUE
BLOCK #9
SANTOS STREET
VELASCO AVENUE
BLOCK #8B
BLOCK #7
BLOCK #4
BLOCK #2
A STREET
BLOCK #8A
BLOCK #6B
BLOCK #6A
CENTER STREET
BLOCK #3B
BLOCK #1
SUNRISE WAY
BLOCK #5
BLOCK #3A
HAHN STREET
0'
200
LEGEND:
PROPOSED PROPERTY LINE
PROPOSED PROJECT LIMIT LINE
BULB-OUT LOCATION
SUNNYDALE HOPE SF |
POTENTIAL TRAFFIC CALMING ELEMENTS
Figure 7.9.


B STREET
SANTOS STREET
SUNNYDALE AVENUE
BLOCK #14
BLOCK #9
PARK
22' TW
5' BL
8' PP
16.5' WW, PT, CS
29.5' WW, SW, CS
12' WW, PT, CS
RW
31'
24' TW
6' (TYP)
28'
R=15' (TYP)
R=10' (TYP)
R=20' (TYP)
R=10' (TYP)
R=20' (TYP)
29'
R=24'
33'
R=28'
R=10' (TYP)
R=20' (TYP)
19' WW, PT, CS
24.5' WW, PT
ABBREVIATIONS:
BL = BIKE LANE
CS = COURTESY STRIP
PP = PARALLEL PARKING
PT = PLANTER
RW = RIGHT OF WAY
SW = SWALE
TW = TRAVEL WAY
WW = WALKWAY
LEGEND:
PROPOSED PROPERTY LINE/RW
0'
50
SUNNYDALE HOPE SF | FIGURE 7.10
TYPICAL INTERSECTION BULB-OUT DETAIL
Figure 7.10.

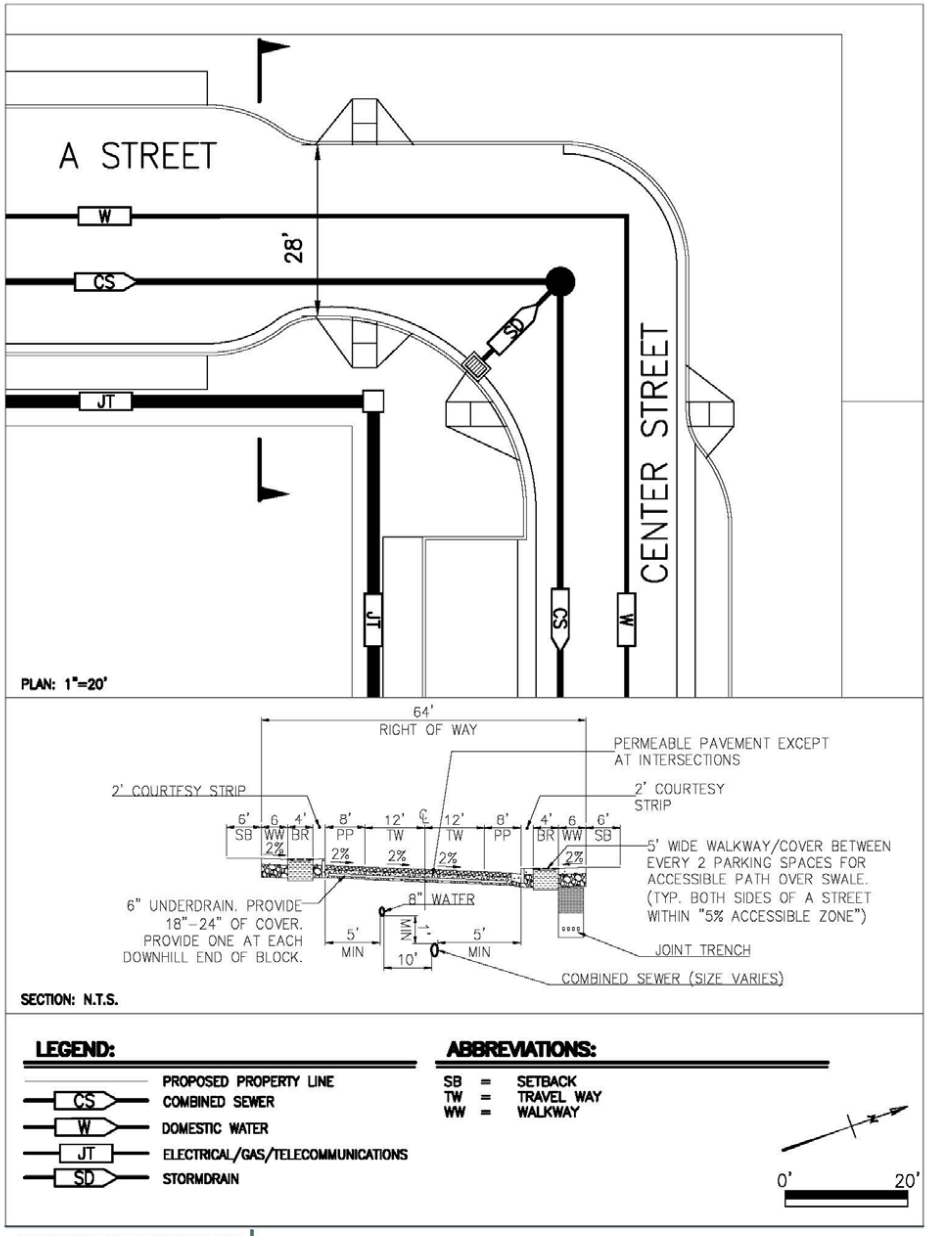

A STREET
W
CS
JT
SD
28'
CENTER STREET
PLAN: 1"=20'
64'
RIGHT OF WAY
PERMEABLE PAVEMENT EXCEPT AT INTERSECTIONS
2' COURTESY STRIP
2' COURTESY STRIP
6' 6 4' 8' 12' 12' 8' 4' 6 6'
SB WW BR PP TW TW PP BR WW SB
2% 2% 2% 2% 2%
5' WIDE WALKWAY/COVER BETWEEN EVERY 2 PARKING SPACES FOR ACCESSIBLE PATH OVER SWALE. (TYP. BOTH SIDES OF A STREET WITHIN "5% ACCESSIBLE ZONE")
6" UNDERDRAIN. PROVIDE 18"–24" OF COVER. PROVIDE ONE AT EACH DOWNHILL END OF BLOCK.
8" WATER
5' MIN
MIN
5' MIN
10'
JOINT TRENCH
COMBINED SEWER (SIZE VARIES)
SECTION: N.T.S.
LEGEND:
PROPOSED PROPERTY LINE
CS COMBINED SEWER
W DOMESTIC WATER
JT ELECTRICAL/GAS/TELECOMMUNICATIONS
SD STORMDRAIN
ABBREVIATIONS:
SB = SETBACK
TW = TRAVEL WAY
WW = WALKWAY
0' 20'
SUNNYDALE HOPE SF | FIGURE 7.10.1
TYPICAL BULB-OUT UTILITY CLEARANCE PLAN & SECTION

Figure 7.10.1.

7.8.2 Narrowed Lane Widths

The traffic lane widths for Center Street between Santos Street and Brookdale Avenue will be 10 feet, per SFMTA recommendations for low-traffic streets. Due to SFFD access requirements, all other street lane widths are in excess of 10 feet.

7.9 Fire Department Access

The overall Fire Access approach, including street grades, building heights and operational street widths, is shown in Figure 7.11.

Intersection radii, street widths from curb to curb on opposite sides of the street, and right-of-way layouts have been designed to accommodate fire truck turning movements, as documented on Figures 7.12 and 7.13A thru C. Per the SFFD, intersections are designed to accommodate the truck turning movements of the City of San Francisco Custom Fire Engine and Custom Aerial Ladder Truck (Fire Truck) as provided by the SF MTA. At intersection approaches and within intersections, the Fire Truck may encroach into the opposing vehicular travel lane to complete turning movements. Figure 7.12 identifies a typical detail of turning movements of the Fire Truck at typical site intersections.

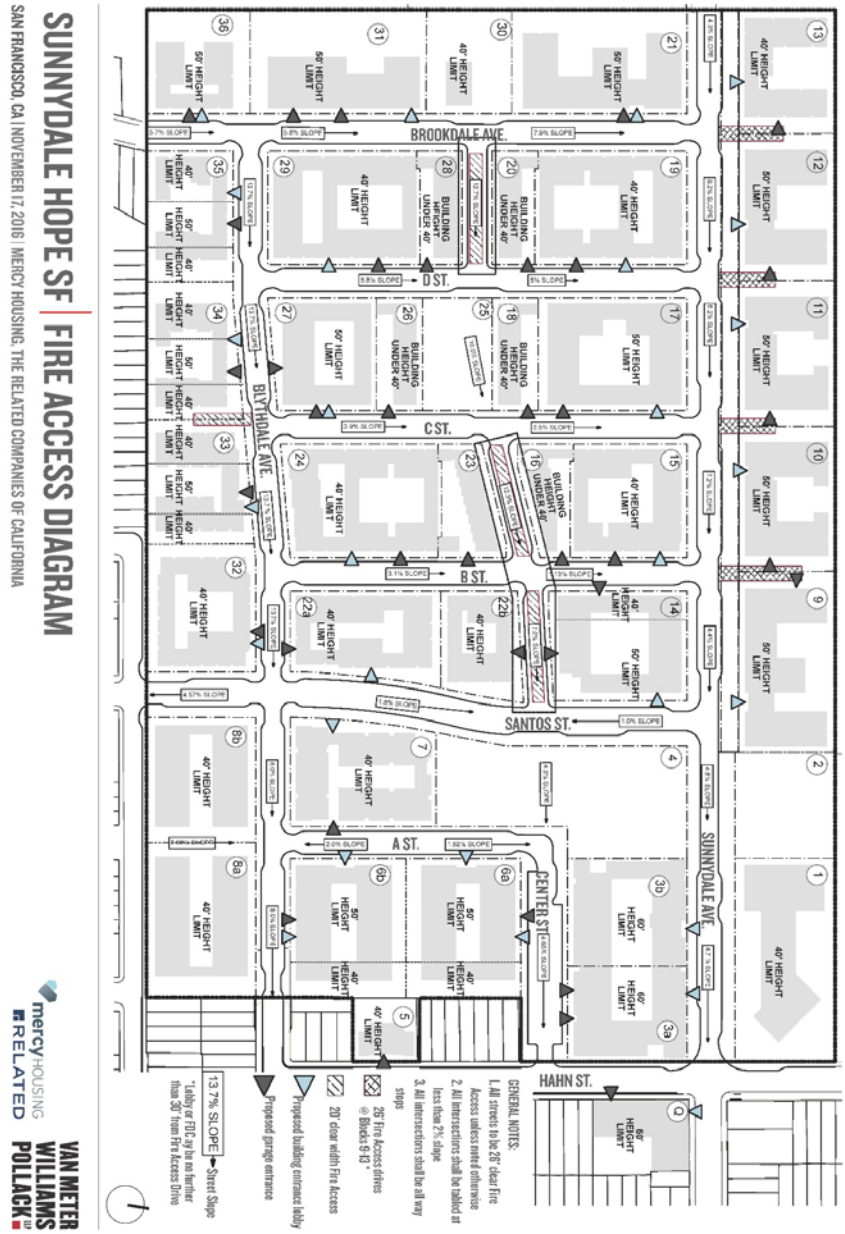
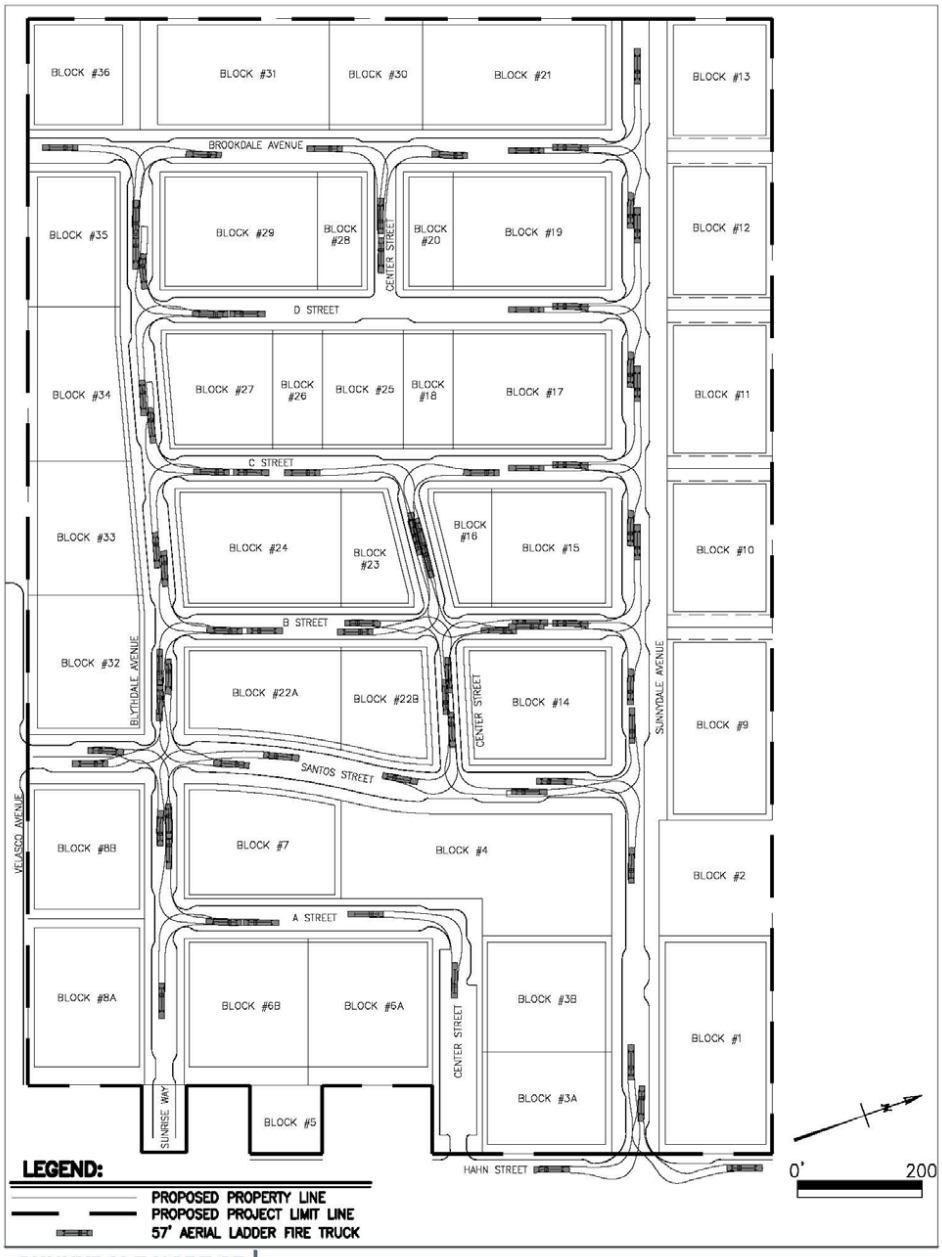

SUNNYDALE HOPE SF | FIRE ACCESS DIAGRAM
SAN FRANCISCO, CA | NOVEMBER 17, 2016 | MERCY HOUSING, THE RELATED COMPANIES OF CALIFORNIA
VAN METER WILLIAMS POLLACK LLP
mercy HOUSING
RELATED
BROOKDALE AVE.
D ST.
C ST.
BLYTHDALE AVE.
B ST.
SANTOS ST.
A ST.
SUNNYDALE AVE.
CENTER ST.
HAHN ST.
40' HEIGHT LIMIT
50' HEIGHT LIMIT
60' HEIGHT LIMIT
BUILDING HEIGHT UNDER 40'
GENERAL NOTES:
1. All streets to be 28' clear Fire Access unless noted otherwise
2. All intersections shall be tabled at less than 2% slope
3. All intersections shall be all way stops
26' Fire Access @ Blocks 9-13 *
20' clear width Fire Access
Proposed building entrance lobby
Proposed garage entrance
13.7% SLOPE
Street Slope
* Lobby or FLC or be no further than 30' from Fire Access Drive

Figure 7.11.


BLOCK #36
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BLOCK #34
BLOCK #27
BLOCK #26
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BLOCK #18
BLOCK #17
BLOCK #11
C STREET
BLOCK #33
BLOCK #24
BLOCK #23
BLOCK #16
BLOCK #15
BLOCK #10
B STREET
BLOCK #32
BLYTHDALE AVENUE
BLOCK #22A
BLOCK #22B
CENTER STREET
BLOCK #14
SUNNYDALE AVENUE
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SANTOS STREET
VELASCO AVENUE
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BLOCK #2
A STREET
BLOCK #8A
BLOCK #6B
BLOCK #6A
CENTER STREET
BLOCK #3B
BLOCK #1
BLOCK #3A
SUNRISE WAY
BLOCK #5
HAHN STREET
0'
200
LEGEND:
PROPOSED PROPERTY LINE
PROPOSED PROJECT LIMIT LINE
57' AERIAL LADDER FIRE TRUCK
SUNNYDALE HOPE SF | FIGURE 7.12
CONCEPTUAL FIRE TRUCK TURNING ANLYSIS
Figure 7.12.

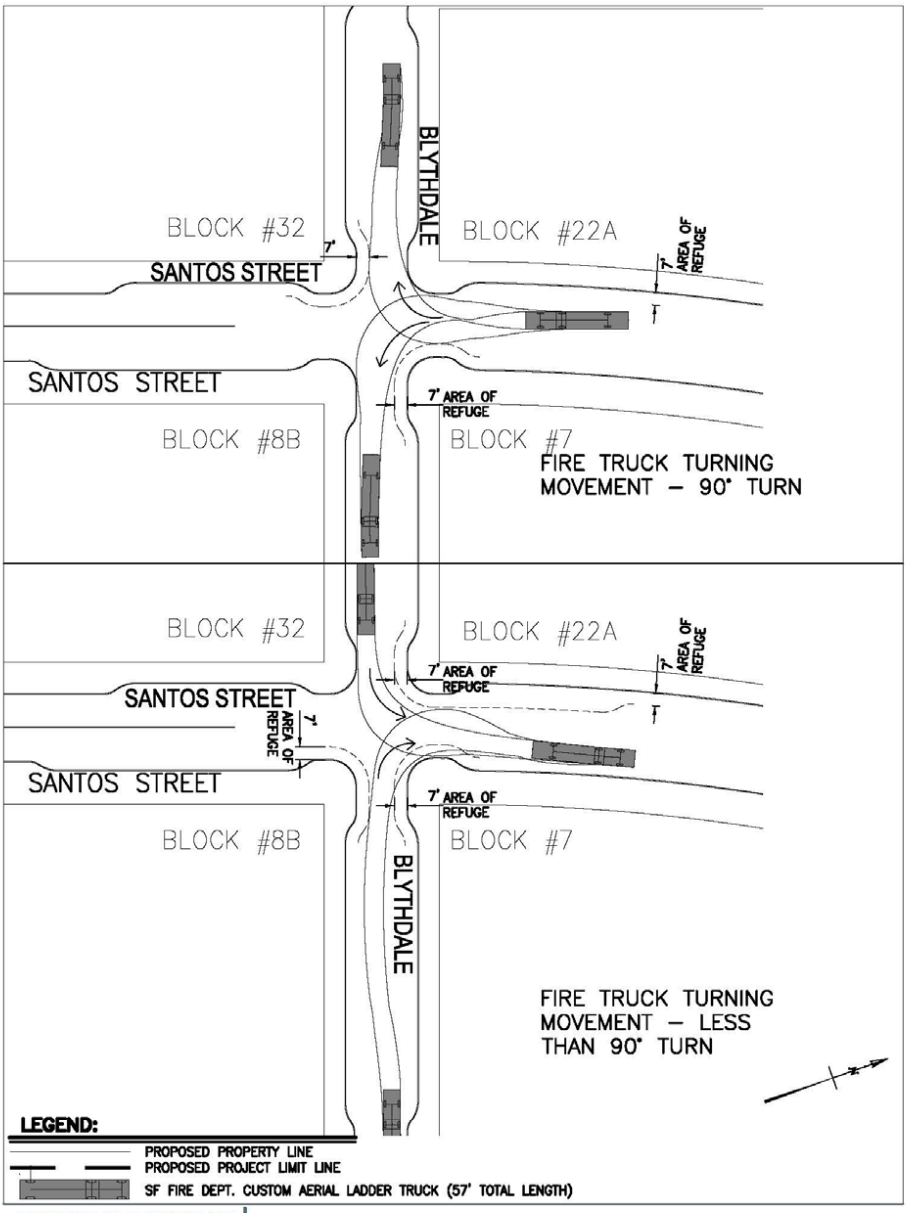
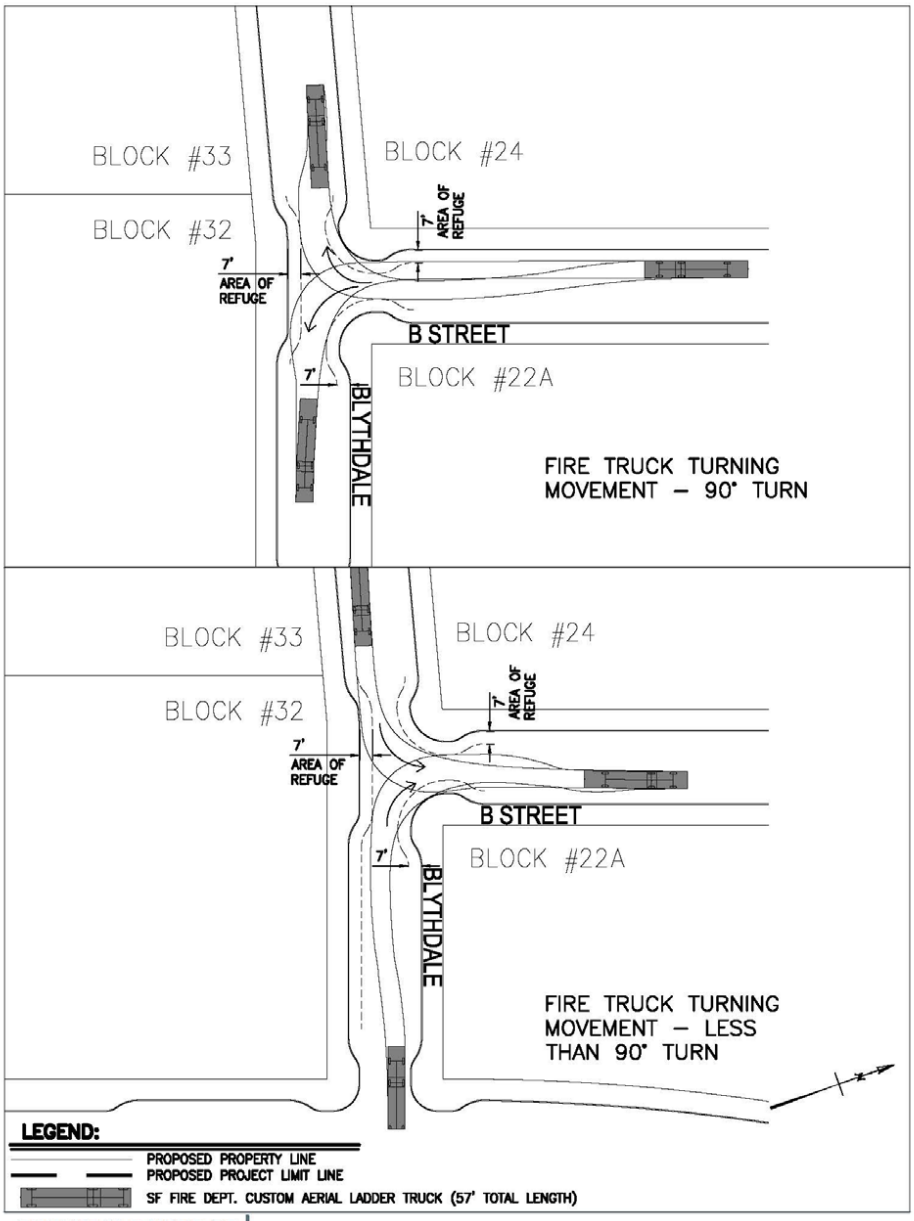
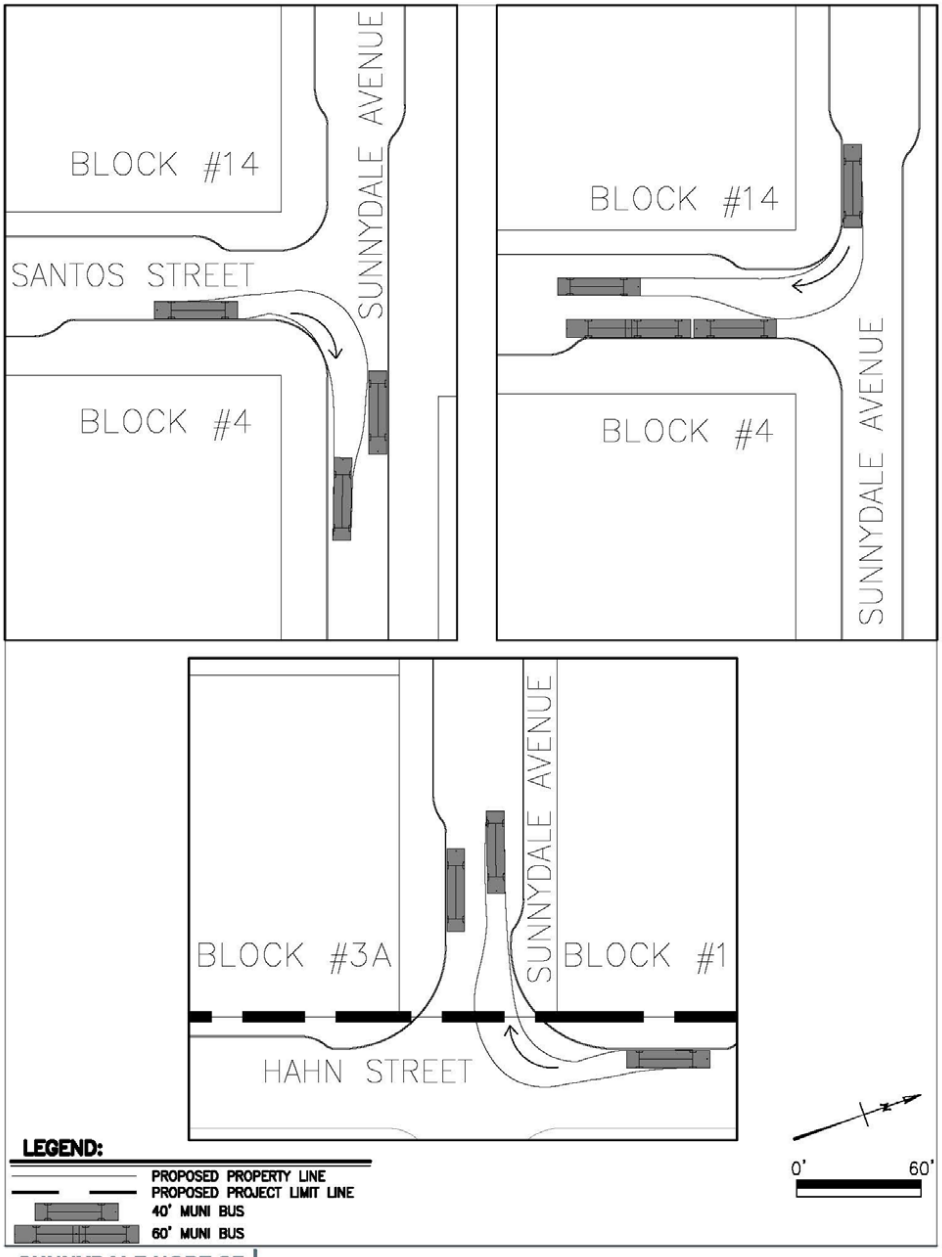

BLOCK #32
BLOCK #22A
BLYTHDALE
SANTOS STREET
7'
7' AREA OF REFUGE
SANTOS STREET
BLOCK #8B
BLOCK #7
FIRE TRUCK TURNING MOVEMENT – 90° TURN
BLOCK #32
BLOCK #22A
7' AREA OF REFUGE
SANTOS STREET
SANTOS STREET
BLOCK #8B
BLOCK #7
BLYTHDALE
FIRE TRUCK TURNING MOVEMENT – LESS THAN 90° TURN
LEGEND:
PROPOSED PROPERTY LINE
PROPOSED PROJECT LIMIT LINE
SF FIRE DEPT. CUSTOM AERIAL LADDER TRUCK (57' TOTAL LENGTH)
SUNNYDALE HOPE SF | FIGURE 7.13A ENLARGEMENT OF TYPICAL INTERSECTION FIRE TRUCK TURNING

Figure 7.13A.


BLOCK #33
BLOCK #32
BLOCK #24
7' AREA OF REFUGE
7' AREA OF REFUGE
B STREET
BLOCK #22A
7'
BLYTHDALE
FIRE TRUCK TURNING MOVEMENT – 90° TURN
BLOCK #33
BLOCK #32
BLOCK #24
7' AREA OF REFUGE
7' AREA OF REFUGE
B STREET
BLOCK #22A
7'
BLYTHDALE
FIRE TRUCK TURNING MOVEMENT – LESS THAN 90° TURN
LEGEND:
PROPOSED PROPERTY LINE
PROPOSED PROJECT LIMIT LINE
SF FIRE DEPT. CUSTOM AERIAL LADDER TRUCK (57' TOTAL LENGTH)
SUNNYDALE HOPE SF | FIGURE 7.13B ENLARGEMENT OF TYPICAL INTERSECTION FIRE TRUCK TURNING
Figure 7.13B.


BLOCK #14
SANTOS STREET
SUNNYDALE AVENUE
BLOCK #4
BLOCK #14
BLOCK #4
SUNNYDALE AVENUE
BLOCK #3A
SUNNYDALE AVENUE
BLOCK #1
HAHN STREET
LEGEND:
PROPOSED PROPERTY LINE
PROPOSED PROJECT LIMIT LINE
40' MUNI BUS
60' MUNI BUS
0'
60'
SUNNYDALE HOPE SF | FIGURE 7.13C
MUNI BUS TURNING ANLYSIS
Figure 7.13C.

7.10 Public Bike and Pedestrian Paths on Private Property

Pathways restricted to foot and bicycle traffic will be privately owned, publicly accessible open spaces, built by the Developer. Currently, the only path that meets this description is the path between Blocks 32 and 33, leading from Blythdale Avenue to Velasco Street. This area is subject to an existing SFPUC easement. Proposed improvements will require SFPUC's prior written consent. Other pedestrian and bicycle paths are located within open space blocks.

7.11 Underground Utilities

Vertical and horizontal separation distances between adjacent combined sewer system, potable water, and dry utilities will conform to the requirements outlined in Title 22 of the California Code of Regulations and the State of California Department of Health Services Guidance Memorandum 2003-02 and Subdivision Regulations. See Typical Street Sections (Figures 7.7 through 7.10) for depth and relationship to other utilities. Developer will cause to be completed required disinfection and connections to new water mains in accordance with the SFPUC's policies and procedures.

7.12 Phasing of New Roadway Construction

The Developer will construct the new roadway system and traffic control and signalization improvements in phases in advance of or to match the phased development of the Blocks. The amount of the existing roadway repaired and/or replaced will likely be the minimum necessary to serve the Block. Repairs and/or replacement of the existing facilities necessary to serve the Block will be designed and constructed by the Developer. Fire truck turnaround areas, if any, will be coordinated with the SFFD and constructed by the Developer consistent with the Fire Code. Sidewalk and other accessible pedestrian paths of travel, either permanent or temporary, shall be provided to serve the pedestrian entrance and exit requirements of each Block prior to being released for occupancy.

Impacts to improvements installed with previous phases of development due to the designs of the new phase will be the responsibility of the Developer and addressed prior to approval of the permit drawings for the Block.

7.13 SFMTA Infrastructure

In coordination with SFMTA, the MUNI 9 and 8X transit stop locations have been optimized within the site, and transit bulbs have been added to improve service levels. Planned pedestrian improvements will increase safety and access throughout the Project. See Figure 7.16 Transit Diagram with Bus Stop Locations.

7.14 Acceptance and Maintenance of Street Improvements

In order to be accepted, the entire street will have to be full, complete and functional prior to being considered for acceptance. Upon acceptance of the new and/or improved public streets by the SFDPW, responsibility for the operation and maintenance of the roadway and

streetscape elements will be designated as defined in the various City of San Francisco Municipal Codes. Acceptance of water, wastewater and power utility infrastructure and streetlights within street improvements and Public Stormwater Management Improvements shall be subject to SFPUC approval. Proposed water and combined sewer infrastructure shall be designed to facilitate future access for maintenance.

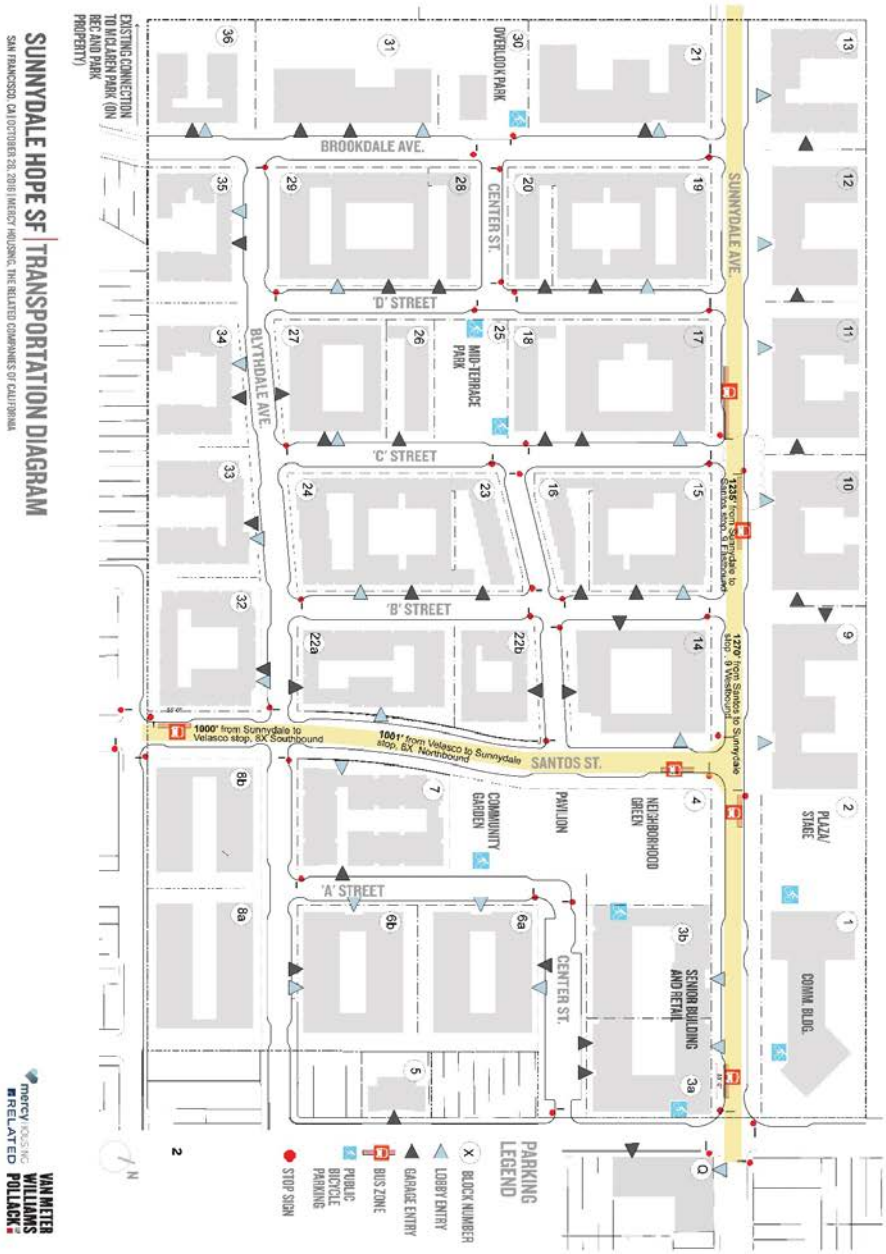

SUNNYDALE HOPE SF | TRANSPORTATION DIAGRAM
SAN FRANCISCO, CA | OCTOBER 28, 2016 | MERCY HOUSING, THE RELATED COMPANIES OF CALIFORNIA
EXISTING CONNECTION TO McLAREN PARK (ON REC AND PARK PROPERTY)
OVERLOOK PARK
BROOKDALE AVE.
SUNNYDALE AVE.
CENTER ST.
'D' STREET
MID-TERRACE PARK
BLYTHDALE AVE.
'C' STREET
1235' from Sunnydale to Santos stop, 8X Express
'B' STREET
1279' from Santos to Sunnydale stop, 8X Northbound
1900' from Sunnydale to Velasco stop, 8X Southbound
1061' from Velasco to Sunnydale stop, 8X Northbound
SANTOS ST.
COMMUNITY GARDEN
PAVILION
NEIGHBORHOOD GREEN
PLAZA/ STAIRS
'A' STREET
CENTER ST.
SENIOR BUILDING AND RETAIL
COMM. BLDG.
PARKING LEGEND
BLOCK NUMBER
LOBBY ENTRY
GARAGE ENTRY
BUS ZONE
PUBLIC BICYCLE PARKING
STOP SIGN
mercy housing
RELATED
VAN METER WILLIAMS POLLACK

Figure 7.14.

Section 8 Open Spaces

8.1 Proposed Open Spaces

There are five major open spaces within the Project Site, totaling 4.6 acres of new, publicly accessible open space. Figure 7.2 indicates the location and areas of each of the five open spaces, which are Blocks 2, 4, 25 and 30 and a linear open space on the north side of Sunnydale Avenue. (Block 1 is noted as Open Space but will be the site for the new Community Center.))At the base of the site on Block 2 is the approximately 0.75 acre Community Open Space, complete with plaza, stage, and orchard next to the Community Center. Across the street at Block 4 is the 1.6 acre Neighborhood Green, pavilion, orchard, and community garden. A combination of softscape areas, raingarden stormwater detention basins, and permeable paving will collect and detain stormwater runoff and allow for infiltration. The 1 acre Sunnydale Linear Open Space will occur along the north side of Sunnydale Avenue. This Linear Open Space will showcase the stormwater infrastructure with generous setbacks and planting areas for stormwater detention and infiltration. In the center of the Project Site, on Block 25, will be the Mid- Terrace Open Space, which is approximately 0.7 acres in size. This open space will feature a series of terraces, a sloped path connecting all terraces, and small pockets of play space, gathering space, and gardens. Small rainwater infiltration basins within the garden terraces will collect stormwater and act as detention areas and allow for slow infiltration. Perched at the upper elevations along the west edge of the site, on Block 30, will be the Overlook Open Space, which is approximately 0.6 acres and will include view stairs, landscaping and possibly an overlook pavilion. Stormwater runoff from the pavilion will infiltrate within this open space site.

The open space construction will be phased along with the rest of the Project, and all open spaces will be privately owned and maintained, but publicly accessible, with the exception of the Linear Open Space, which will be proposed as public open space maintained by the City[1]. Stormwater infrastructure and irrigation systems will be designed and installed per City standards. The Developer is responsible for costs associated with the review, permitting, and inspection of the open space improvements. Open space designs shall be reviewed and approved by San Francisco Planning Department and the San Francisco Department of Building Inspection prior to permit issuance, and shall be inspected for compliance with the approved plans prior to public use.

[1] Work to finalize maintenance responsibility of the Sunnydale Linear Open Space is ongoing at the time of finalization of this infrastructure plan.

Section 9 Stormwater Management System

9.1 Existing Stormwater Management System

The Project Site consists of approximately 48.8 acres of primarily multifamily residential buildings accessed and served by curb and gutter public streets. Unpaved areas generally consist of lawn or bare earth with modest canopy cover. Pavement, buildings and other impervious surfaces cover approximately 50-percent of the site. The project Geotechnical Engineer has classified the site soils as having very low infiltration rates (Hydrologic Soil Group D). Most rainfall that falls on the site becomes runoff. Stormwater runoff is collected and conveyed via an on-site combined sewer system that carries both the stormwater runoff and sanitary sewer flows from the site. The combined system is described further in Section 10.

9.2 Proposed Stormwater Management System

This MIP describes the overall site approach to Stormwater Management. Runoff from right-of-way areas will be managed within the rights-of-way using green stormwater infrastructure, as approved by applicable City agencies. Runoff from private housing, open space, and community center parcels will be managed with a combination of conventional stormwater facilities and green stormwater infrastructure. A Stormwater Control Plan ("SCP") for each private parcel, private open space, and public right-of-way Street Improvement Plan will be submitted per the SCP review process for SFPUC review and approval.

9.2.1 SFPUC Stormwater Management Requirements

The SFPUC Stormwater Management Requirements provide the regulatory guidance by describing requirements for post-construction stormwater management. All projects that disturb more than 5,000 square feet are required to meet or exceed SFPUC Stormwater Management Performance Requirements. Sunnydale HOPE SF will include a total reconfiguration of the street grid within the development. The SFPUC Stormwater Management Requirements therefore apply to all rights-of-way within the Project, except for the Hahn Street improvements which do not include modification of the public right-of-way lines.

Since the site discharges to a combined sewer system, Leadership in Energy and Environmental Design ("LEED") Sustainable Sites Credit 6.1 (SS6.1) applies. Option 1 of this credit applies to Project, as the existing impervious area is less than or equal to 50-percent of the total area.

SS6.1, Option1, states that the project shall "...Implement a stormwater management plan that prevents the post-development peak discharge rate and quantity from exceeding the pre-development peak discharge rate and quantity for the 1- and 2-year, 24-hour design storms." The SFPUC interprets "pre-development" in this case to mean

existing conditions. Modified Compliance is not applicable to sites with existing impervious cover of less than or equal to 50-percent and therefore is not applicable to this Project.

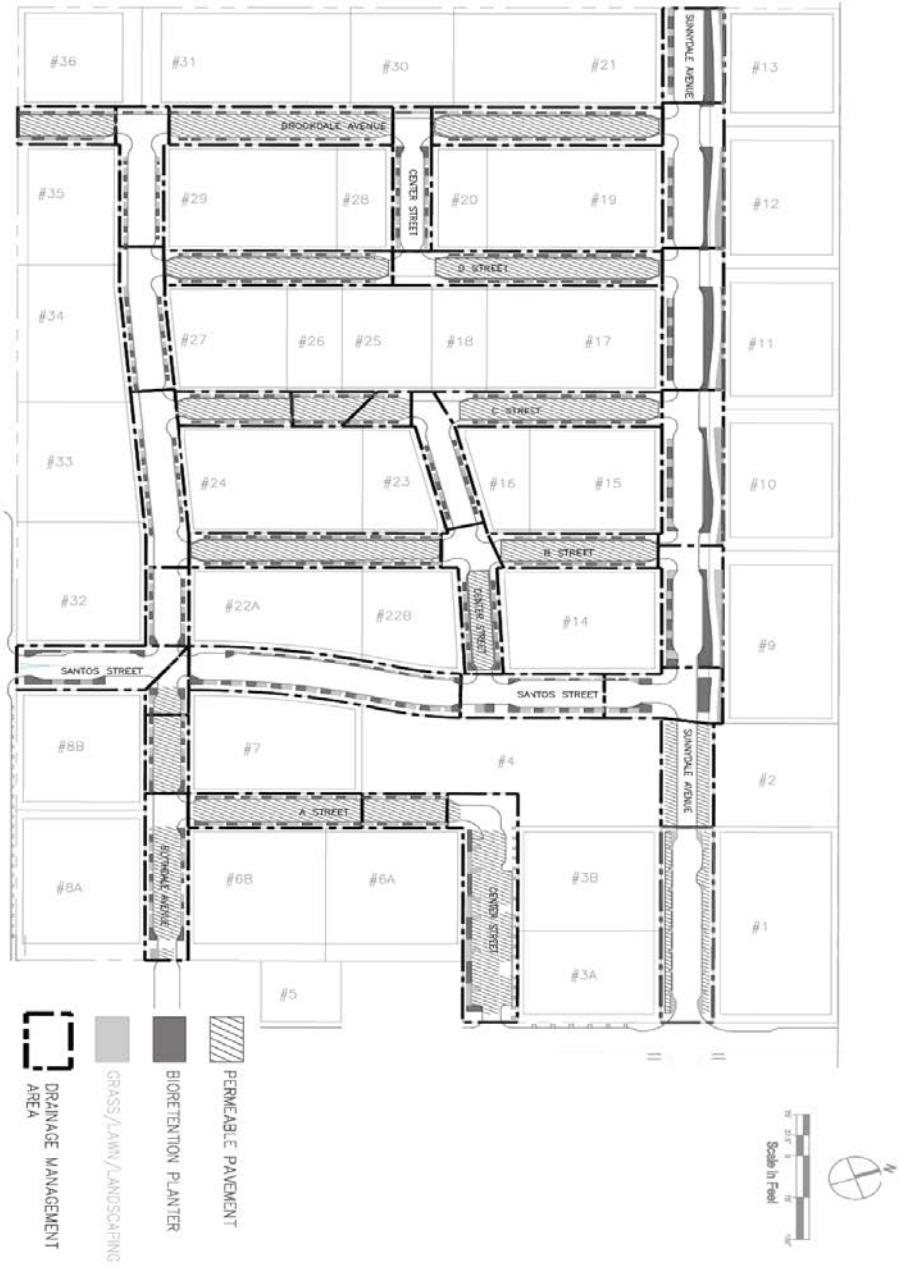


Figure 9.1. Location of Green Stormwater Infrastructure in Public Right of Ways

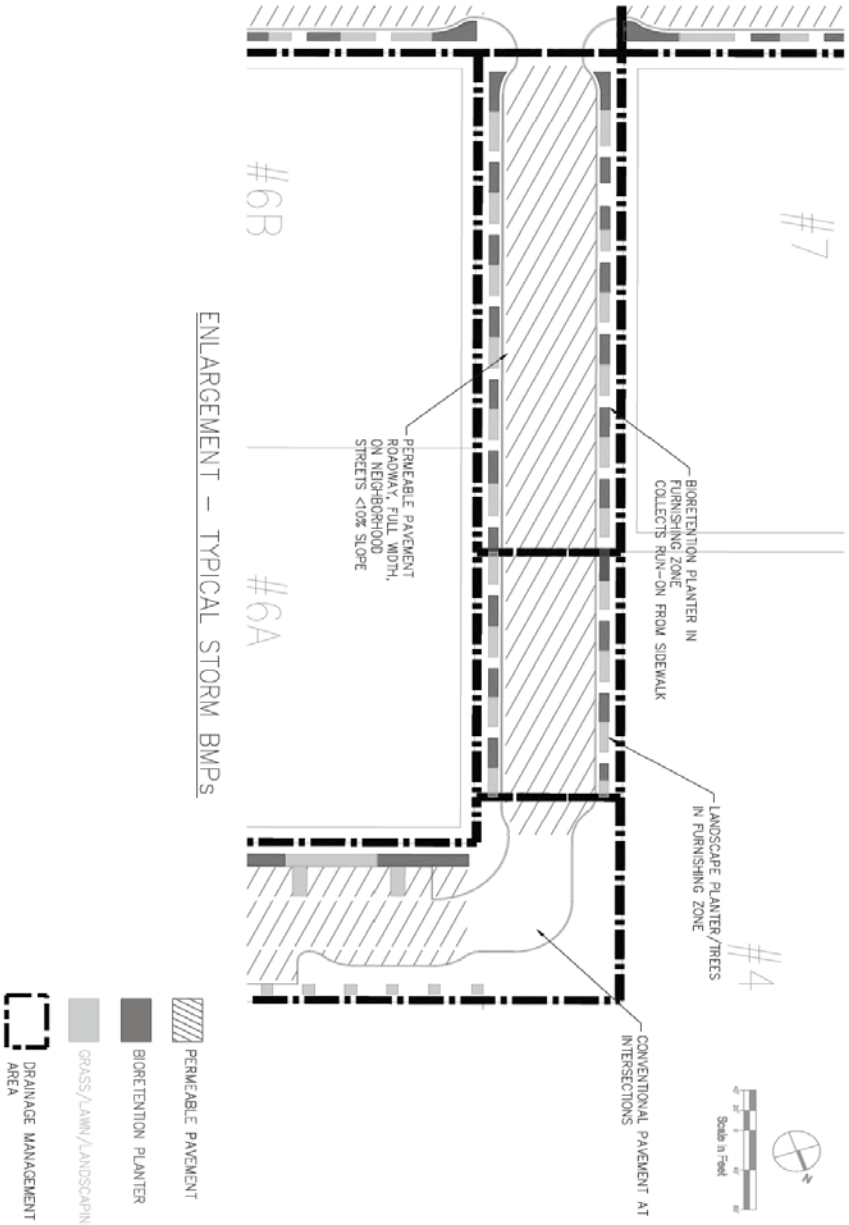


Figure 9.1.1. Location of Green Stormwater Infrastructure in Public Right of Ways Enlargement

9.2.2 Site Conditions and Proposed Stormwater Controls - Public Street Rights-of-Way

The Sunnydale HOPE SF Project will include the reconfiguration and construction of approximately 13.6 acres of public street right-of-way. To meet SFPUC stormwater requirements, the Project has proposed permeable paving in the parking lanes and drive aisles in the public rights of way, which will be dedicated to the City and maintained by the City. The Developer will design and engineer the public rights of way with permeable paving, which SFPUC and SFDPW will review as part of the street improvement permit process for each phase of improvements. If in reviewing the street improvement permit plans for any phase of development the City determines that the permeable paving is not an acceptable surface within the drive aisles, parking lanes, or both, then the Project will use standard paving techniques and the Developer will not be responsible for managing the runoff that was intended to be managed by the permeable paving within the subject phase application; however other proposed stormwater management controls will continue be installed as described in the Infrastructure Plan. Determinations will be made on a phase-by-phase basis.

Following the SFPUC Green Infrastructure Typical Details right- of-way landscape strips will function as bio-retention cells, and furnishing zones, parking areas and drive aisles will be constructed using permeable pavements. Figure 9.1 illustrates where permeable pavement and bio-retention facilities are anticipated, subject to appropriateness of design and SFPUC and SFDPW approval. Figure 9.1.1 also provides an enlarged view of the permeable pavement and bio-retention facilities on a typical street.

These stormwater control elements will act to slow the rate at which stormwater flows from the streets and sidewalks to the public combined sewer system and reduce the volume of runoff through limited infiltration, evapotranspiration, retention within engineered soil void spaces and absorption by plant materials. Due to the low infiltration potential of the site soils, bio-retention and permeable pavement facilities will be designed with a perforated underdrain to collect any excess water and convey it to the combined sewer system. Underdrains within permeable paving located in public rights-of-way are subject to SFPUC and SFDPW approval. Each facility will also be designed with an overflow to convey the stormwater from larger storm events to the combined sewer system to satisfy the SFPDW and SFPUC requirements.

Bio-retention within the right-of-way will be constructed in accordance with the SFPUC Green Stormwater Infrastructure Typical Details for bio-retention planters, bio-retention basins, or combinations thereof, unless otherwise approved by SFPUC. Permeable pavements will also be constructed in accordance with the current SFPUC Green Infrastructure Typical Details and Working DRAFT SFDPW Permeable Paving Director's Order (pending formal release) unless otherwise approved by SFPUC and SFDPW. Permeable pavement materials will be selected from the SFDPW list of pre-approved

materials, currently under development.

Bio-retention will primarily collect runoff from sidewalks. On streets with wider bio-retention areas, such as Sunnydale Ave and Santos Street, the roadway will be thrown so that runoff is directed to bio-retention. Through the Sunnydale Ave linear open space, overflow from bio-retention cells will cascade from cell to cell, creating a linear stormwater feature that is interwoven with the multi-use sidewalk. Permeable pavements will be used primarily within the furnishing zone on Sunnydale Avenue (outside the pedestrian through zone) and within roadway and parking lanes along neighborhood residential streets.

9.2.3 Proposed Stormwater Control Plans for Public Street Rights-of-Way

A Preliminary Stormwater Control Plan ("SCP") for the public right of way improvements will be submitted for review and approval with the 30% Street Improvement Plans for each phase of the project, and the Final SCP for a phase will be submitted with the 90% Street Improvement Plan for that phase. Approval of Final SCPs will be obtained prior to Street Improvement Plan permit issuance. A Multi-Phase SCP for public right-of-way improvements will be submitted along with the Preliminary SCP for the first phase. It is anticipated that, during some later phases, some individual right-of-way drainage management areas will not meet stormwater control requirements. To mitigate this, earlier right-of-way phases will offset these non-complying phases by managing more stormwater than is required. The extra control provided will be recorded in a project specific Stormwater Management Tracking Table. The tracking table will be used to "bank" stormwater control from early right-of-way phases so that later right-of-way phases may provide less control.

Throughout the build out of the Project, the Developer will maintain a record copy of the tracking table; each right-of-way project will provide a copy of the tracking table with their SCP demonstrating that the net result in runoff from the site is less than or equal to the predevelopment runoff.

9.2.4 Site Conditions and Proposed Stormwater Controls - Private Parcels and Open Spaces

The private development areas will occupy approximately 35.2 acres of the site. The private development sites will be largely covered with podium structures, pedestrian pathways and other hard surfaces, increasing runoff potential. Private developments sites will also include open space and plaza areas. Each private development may incorporate green stormwater controls where feasible to reduce effective impervious surface. It is anticipated that many private site developments will require rainwater harvesting systems in order to meet the SFPUC Stormwater Management Requirements for volume control. Anticipated non-potable uses for harvested rainwater include irrigation and flushing. For private development parcels, a Preliminary SCP and Final SCP shall be submitted for approval per SFPUC stormwater management requirements.

If an open space is to be turned over to the City for ownership and maintenance, the open space SCP will be completed in conjunction with the right-of-way SCPs. For compliance with the SFPUC Stormwater Management Requirements these open spaces will be counted as public right-of-way.

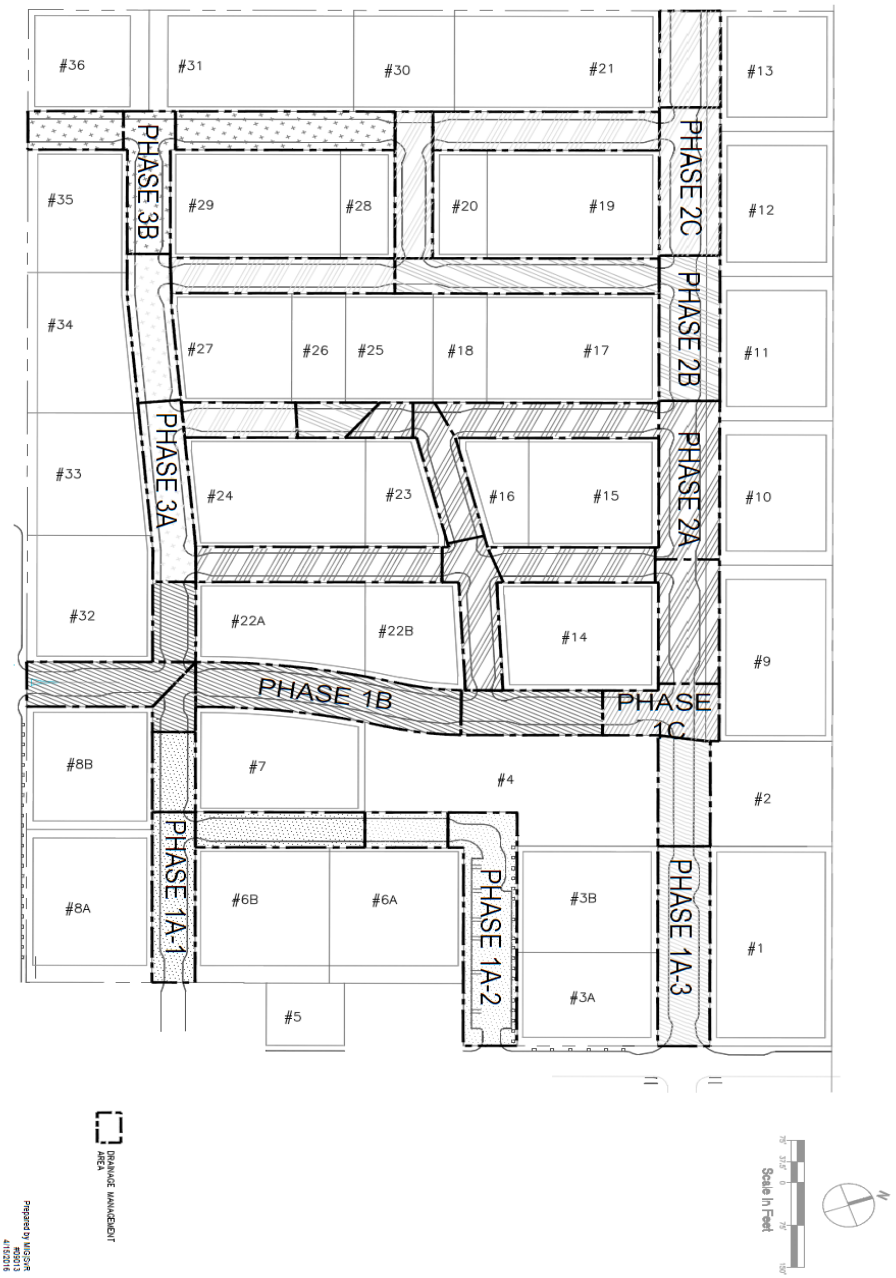


Figure 9.2. Right-of-Way Stormwater Phasing Diagram

9.3 Phasing for Stormwater System Construction

The Developer will design and install the new stormwater management systems to match the phased construction of the Project. SFPUC Stormwater Management Requirements will be met for right-of-way portions of the site at full buildout. Private property portions of the site will meet SFPUC post-construction Stormwater Management Requirements at the completion of each Block and/or phase of the Project. Figure 9.2 shows the proposed right-of-way buildout for each anticipated phase.

At all phases of the development, the Developer will provide functioning and adequate permanent or interim stormwater management facilities necessary to achieve stormwater management compliance. Within a development phase, facilities will be constructed and operational prior to or in conjunction with that phase.

Section 10 Combined Storm/Sewer System

10.1 Existing Combined Sewer System

The existing combined sewer mains on Blythdale Avenue and Hahn Street connect to the 3' x 4.5' combined brick sewer at the Sunrise Way/Hahn Street intersection. The existing combined brick sewer main located within the existing sewer easement on the east side of Blythdale Avenue also connects through Hahn Street before reaching the sewer at the Sunrise Way and Hahn intersection.

The 3' x 4.5' combined brick sewer eventually connects to a 78-inch combined sewer, which is then conveyed through a series of conduits, tunnels and lift stations, eventually arriving at San Francisco's Southeast Water Pollution Control Plant ("SWPCP") for treatment prior to discharge to the San Francisco Bay. According to the Project EIR/EIS, capacity is available at the SWPCP to serve the proposed project.

10.2 Proposed Combined Sewer System

10.2.1 Proposed Sanitary Sewer Demands

Project sanitary sewer demands conservatively assume a 95% return on water demands, resulting in an Average Daily Dry Weather Flow ("ADWF"). A Combined Sewer Master Plan that outlines the Project's methods for calculating the flow demands will be submitted to the SFPUC to be approved prior to the 30% Street Improvement Plans for the initial phase of development. There will be the application of a peaking factor of 3 to the ADWF, which will anticipate the generation of a Peak Dry Weather Flow ("PDWF"). As recommended by the Subdivision Regulations, an Inflow and Infiltration rate ("I&I") of 0.001-0.003 cubic feet per second (cfs) per acre will be added to the PDWF to calculate the Peak Wet Weather Flow ("PWWF").

10.2.2 Proposed Combined Sewer Capacity

Hydrology models and Hydraulic Study for the entire site will be developed and submitted to the City to confirm the combined sewer system designs and capacity in conjunction with the 30% Infrastructure Improvement Plans for the initial phase of development.

10.2.3 Proposed Combined Sewer Design Basis

The proposed combined sewer system will be designed in accordance with the Subdivision Regulations and SFPUC wastewater utility standards. Combined sewers will have sufficient capacity, when flowing full or surcharged, to carry the computed storm water runoff, based on the ultimate development of the area including the material drainage from upstream areas. Piping systems will be designed to convey the 5-year storm event inside the combined sewer infrastructure with overland release of the 100-year storm conveyed between the top of curb elevations of the streets. Where sewer ejector pumps, diversion line, or interceptors are incorporated into the private development parcel utility system designs, the sewer demands shall be included in the hydrology calculations for sizing combined sewer mains. If pumps, interceptors or diversion lines are not included, the sewer demands shall not be included in the sizing calculations for the combined sewer mains per the Subdivision Regulations. Where sewer ejector pumps, diversion line, or interceptors are incorporated into the private development parcel utility system design, these utilities will be owned and maintained by the private parcel owner. A complete combined sewer design will be developed as part of the Combined Sewer Master Utility Plan review and approval process prior to the 30% Street Improvement Permit plans for the first phase of construction.

10.2.4 Proposed Combined Sewer Design Criteria

As documented in the Subdivision Regulations or SFPUC wastewater utility standards, as appropriate, sewer mains will be constructed from ASTM C-700 Extra Strength Vitrified Clay Pipe (VCP) with a minimum diameter of 12 inches. Where required, 24-inch to 36-inch pipe constructed from ASRM C-700 Extra Strength VCP with construction modifications or reinforced concrete pipe (RCP), subject to the approval of the Director of Public Works with the consent of the SFPUC. VCP sewers will have bell and spigot joints with fabricated compression type fittings in accordance with ASTM C425. RCP sewers will have bell and spigot joints. Due to planned trees at the project site, high density polyethylene (HDPE) pipe is anticipated to be an acceptable alternative to VCP, subject to SFPUC approval. Proposed city main sewers within the development will be constructed on appropriate bedding for HDPE, as approved by SFPUC. The minimum residential and commercial service lateral size will be 6 inches and 8 inches, respectively. Sewer laterals will have an air vent and trap. Sewer laterals from private open spaces will have a sand trap prior to the air vent and trap, and will not connect to the public sewer system at the back of catch basins. Manhole covers will be solid, with manhole spacing set at a maximum distance of 300 feet (or 350 feet with SFPUC approval), and at changes in pipe diameter, grade or

alignment. Manholes will not be located in pedestrian crosswalks. Stormwater inlets will be installed per the Subdivision Regulations or SFPUC wastewater utility standards and outside of the curb returns, crosswalks, accessible passenger loading zones and accessible parking spaces, where feasible.

A minimum cover of 6 feet will be provided on top of mains within public streets, in accordance with the Subdivision Regulations. Pipe slopes will be designed to minimum and maximum values of 0.2 percent and 15 percent, respectively, subject to complying with the more important minimum and maximum velocities noted below. Mains that are 12 inches to 18 inches in diameter shall have sufficient capacity to carry the design flow when running half full based on depth (d/D = 0.50). Mains larger than 18 inches shall have sufficient capacity to carry the design flow when running 0.75 full based on depth (d/D = 0.75). Freeboard Requirements will conform to the City of San Francisco Subdivision Regulations or SFPUC wastewater utility standards. The minimum freeboard requirement should take precedence over the filling ratio (d/D) for design flow conditions. ADWF is d/D = 0.5 and PWWF is d/D = 0.75. Unless approved otherwise by the SFPUC, the slope of the main sewer will achieve a minimum velocity of 2 ft/sec under average flow conditions to maintain sufficient cleaning velocities and a maximum velocity of 10 ft/s to reduce scouring. If minimum velocities cannot be met, sewers as small as 8 inches will be considered on a case by case basis.

Vertical and horizontal separation distances between adjacent combined sewer system, potable water, and dry utilities will conform to the requirements outlined in Title 22 of the California Code of Regulations, the State of California Department of Health Services Guidance Memorandum 2003-02, and the Subdivision Regulations. Where feasible, the combined sewer will be located in the center of the proposed public streets per Subdivision Regulations. In many locations within the Project Site, the combined sewer will be offset from the center of the street to ensure that adjacent water lines can be placed outside of the proposed bulb-outs while maintaining the required health code separation clearances. The combined sewer will be located within the public street travel way pavement such that the outside wall of a water or combined sewer pipe is a minimum of 2.5-foot clear from the lip of gutter and a minimum of 5-feet clear from a proposed tree. Sewer manholes will be located such that the outside wall is a minimum 4-foot clear from the face-of-curb and 0.5-foot from a catch basin, in compliance with the

Subdivision Regulations. No public sewer infrastructure will be constructed in easements. Cross sections of the proposed utility layout are shown in Figures 7.7 through 7.10. Final approval of the combined sewer location within the street section and variances for a specific phase of development is subject to SFPUC approval through review of the Street Improvement Plans for that phase of development in accordance with the Subdivision Regulations.

10.2.5 Proposed Combined Sewer Collection System

The proposed combined sewer system is identified schematically on Figure 10.1. The combined sewer system will be designed and constructed by the Developer. Street sewers including street drainage within the new City street rights-of-way will be reviewed and approved by the SFPUC. The new combined sewer system will be maintained and owned by the SFPUC, upon construction completion and improvement acceptance by the City. The proposed system will include stormwater collection structures and sanitary sewer laterals connected by a system of 12-inch to 36-inch gravity combined sewer mains.

Sewer laterals may be connected to sewers using "Tap-tite" connections if the sewer is a minimum twice the size of the lateral. If the sewer is not twice the size or larger than the lateral, a wye or tee must be used. "Tap-tite" connections must have a 2-foot clearance from pipe joints and other connections.

When connecting proposed combined sewer infrastructure to the existing 3'x4.5', ±12' deep, brick sewer on Sunrise Way, Developer will install a precast manhole on the existing 3'x4.5' sewer at the point of connection in conformance with SFDPW "Precast Manhole On Existing Brick Sewer" Std. Detail, File No. 87,185.Drawings detailing the method of manhole installation will be provided in the Street Improvement Plans for each phase of development and approved by SFPUC before connection to the existing sewer will be approved. With the exception of the existing 3'x4.5' brick sewer, no existing sewer infrastructure shall be reused in each phase of new development.

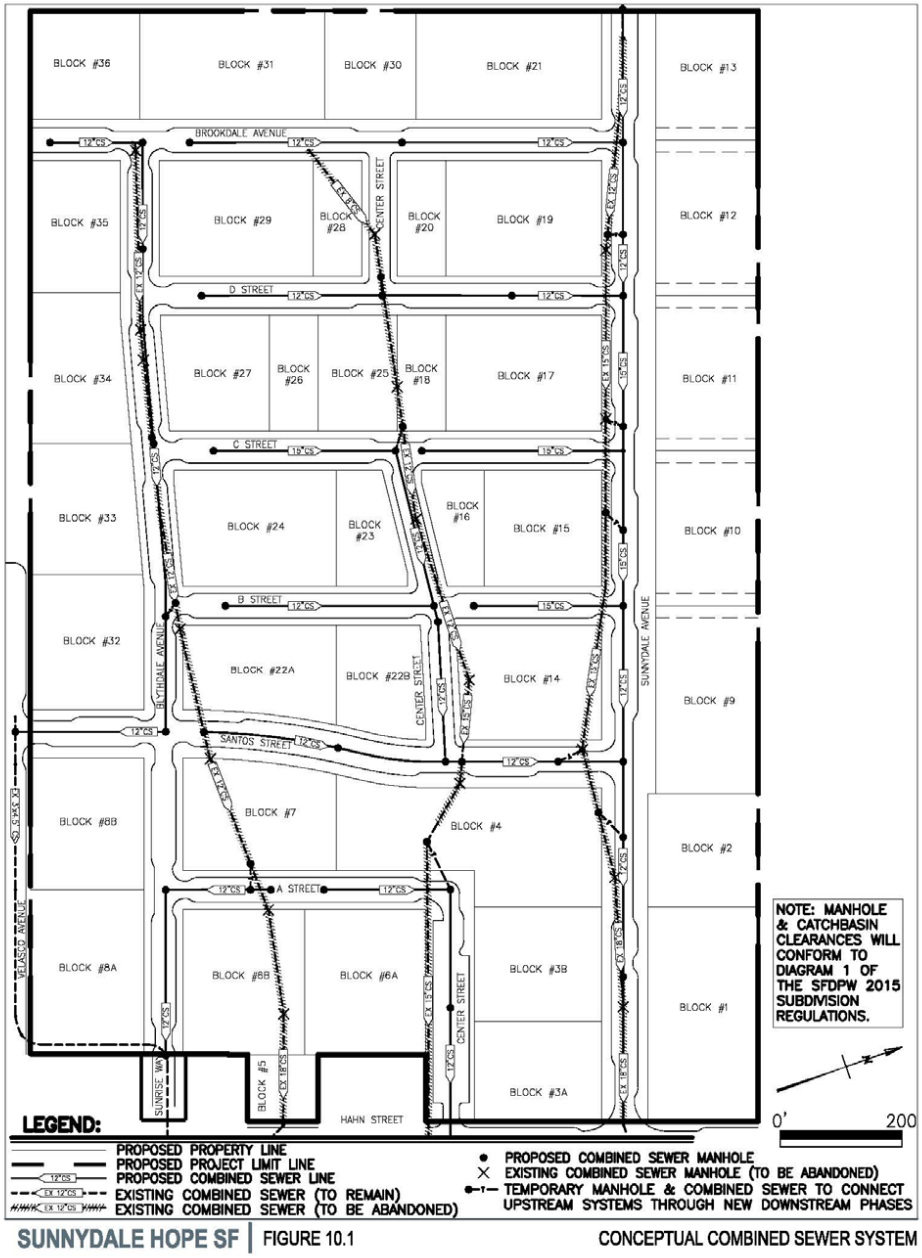

BLOCK #36
BLOCK #31
BLOCK #30
BLOCK #21
BLOCK #13
BROOKDALE AVENUE
BLOCK #35
BLOCK #29
BLOCK #28
CENTER STREET
BLOCK #20
BLOCK #19
BLOCK #12
D STREET
BLOCK #34
BLOCK #27
BLOCK #26
BLOCK #25
BLOCK #18
BLOCK #17
BLOCK #11
C STREET
BLOCK #33
BLOCK #24
BLOCK #23
BLOCK #16
BLOCK #15
BLOCK #10
B STREET
BLOCK #32
BLOCK #22A
BLOCK #22B
BLOCK #14
SUNNYDALE AVENUE
BLOCK #9
SANTOS STREET
BLOCK #8B
BLOCK #7
BLOCK #4
BLOCK #2
A STREET
VELASCO AVENUE
BLOCK #8A
BLOCK #6B
BLOCK #6A
BLOCK #3B
BLOCK #1
SUNRISE WAY
BLOCK #5
BLOCK #3A
HAHN STREET
NOTE: MANHOLE & CATCHBASIN CLEARANCES WILL CONFORM TO DIAGRAM 1 OF THE SFDPW 2015 SUBDIVISION REGULATIONS.
0'
200
LEGEND:
PROPOSED PROPERTY LINE
PROPOSED PROJECT LIMIT LINE
PROPOSED COMBINED SEWER LINE
EXISTING COMBINED SEWER (TO REMAIN)
EXISTING COMBINED SEWER (TO BE ABANDONED)
PROPOSED COMBINED SEWER MANHOLE
EXISTING COMBINED SEWER MANHOLE (TO BE ABANDONED)
TEMPORARY MANHOLE & COMBINED SEWER TO CONNECT UPSTREAM SYSTEMS THROUGH NEW DOWNSTREAM PHASES
SUNNYDALE HOPE SF | FIGURE 10.1
CONCEPTUAL COMBINED SEWER SYSTEM

Figure 10.1.

10.2.6. Proposed Combined Sewer Backflow Prevention

Hydrology models analyzing the Project's combined sewer system from its points of connection to the City mains and upstream through its system, based on hydraulic grade line information at the connection points provided by the City, will be developed as part of the Combined Sewer System Master Plan prior to the 30% Street Improvement Plans for the first phase of development.

10.3 Phases for Combined Sewer System Construction

The phasing of construction of the new combined sewer system by the Developer will include consideration of several variables, including continuity of existing service connections above and below the current phase as noted by temporary connections ("T") on Figure 10.1, surface routing of overland flows, and project compliance with the requirements of the State of California Construction General Permit. The Developer will design and install the new combined sewer system by phase to support each phase of development within the Project, while allowing for continuity of service where applicable.

Each new residential project within a phase of development will connect to the systems constructed in previous phases as close to the edge of the new phase as possible, while maintaining the integrity of the system for the remainder of the development. A condition assessment will be necessary of adjacent existing pipes before and after construction of each phase. All sewers, manholes, laterals and catch basins shall require testing and videoing prior to acceptance of each phase. Video shall be in NASSCO PACP format unless otherwise specified by SFPUC. Repairs and/or replacement of the existing system or new system constructed for previous phases necessary to serve the new phase will be designed and constructed by the Developer.

The SFPUC will be responsible for the new combined sewer facilities once construction of the infrastructure is complete and accepted by the City. Impacts to the improvements installed in previous phases caused by the design or construction of the current/new phases will be the responsibility of the Developer and addressed prior to approval of the Street Improvement Plans by the City.

Section 11 Potable Water System

11.1 Existing Low Pressure Water System

Existing low pressure water system surrounds the site on Brookdale Avenue (8-inch) coming from the south end, Sunnydale Avenue (6-inch) from the east and west, and on Santos Street (8-inch) on the west side.

11.2 Proposed Low Pressure Water System

Water service will be provided by a water supply, storage, and distribution system owned and operated by the SFPUC. The system will be used for domestic water supply and low pressure fire hydrants.

11.2.1 Project Water Demands

The project per capita water demands stated as total water demand analysis and required flow rate will be calculated using fixture count methodology and per capita flow estimates for domestic flows. Peaking factors are assumed to follow AWWA standards.

11.2.2 Project Water Supply

As included in the Project EIR/EIS, the 2010 SFPUC Urban Water Management Plan had accounted for water demands associated with the proposed development of the Project and that development would not require major expansions of the existing water system. In June 2016, the SFPUC adopted the 2015 Urban Water Management Plan for the City and County of San Francisco. As both the proposed project and SFPUC water demand projections have been revised since then, the currently proposed Project has subsequently been accounted for in SFPUC's latest City- wide demand projections provided in its 2013 Water Availability Study. As concluded previously, the development would not require major expansions of the existing water system.

11.2.3 Project Water Distribution System

The low pressure water system will be designed and constructed by the Developer. , The proposed low pressure water system is identified schematically on Figure 11.1. Cross sections of the proposed utility layout are shown in Figures 7.7 through 7.10. Along Blythdale Avenue and Sunnydale Avenue, four existing water connections will line up with an additional existing connection at Santos Street. The project's proposed public street connections will continue to provide an on-site looped system.

The proposed domestic water supply and fire protection system consists of ductile iron pipe mains, low pressure fire hydrants, valves and fittings, and appurtenances. Final pipe sizes, locations, connections and interconnections, flows, pressures, and location and number of fire hydrants will be determined with a hydraulic model analysis using design criteria established by the City. The results of the hydraulic model analysis will be verified

and approved by SFPUC. The potable water infrastructure will be located within the public street pavement such that the outside wall of a water pipe is a minimum of 1-foot clear from the lip of gutter and a minimum of 5-feet clear from a proposed tree trunk. At bulb-outs water main shall be 24" minimum from lip of gutter. The project water system will be modeled by the SFPUC for analysis confirmation and review process to determine on-site system infrastructure requirements. A Low Pressure Water System Master Plan will be submitted to be approved prior to the submittal of the 30% Street Improvement Plans for the first phase.

Vertical and horizontal separation distances between adjacent combined sewer system, potable water, and dry utilities will conform to the requirements outlined in Title 22 of the California Code of Regulations, the State of California Department of Health Services Guidance Memorandum 2003-02, and the Subdivision Regulations.

11.2.4 Proposed Fire Hydrant Locations

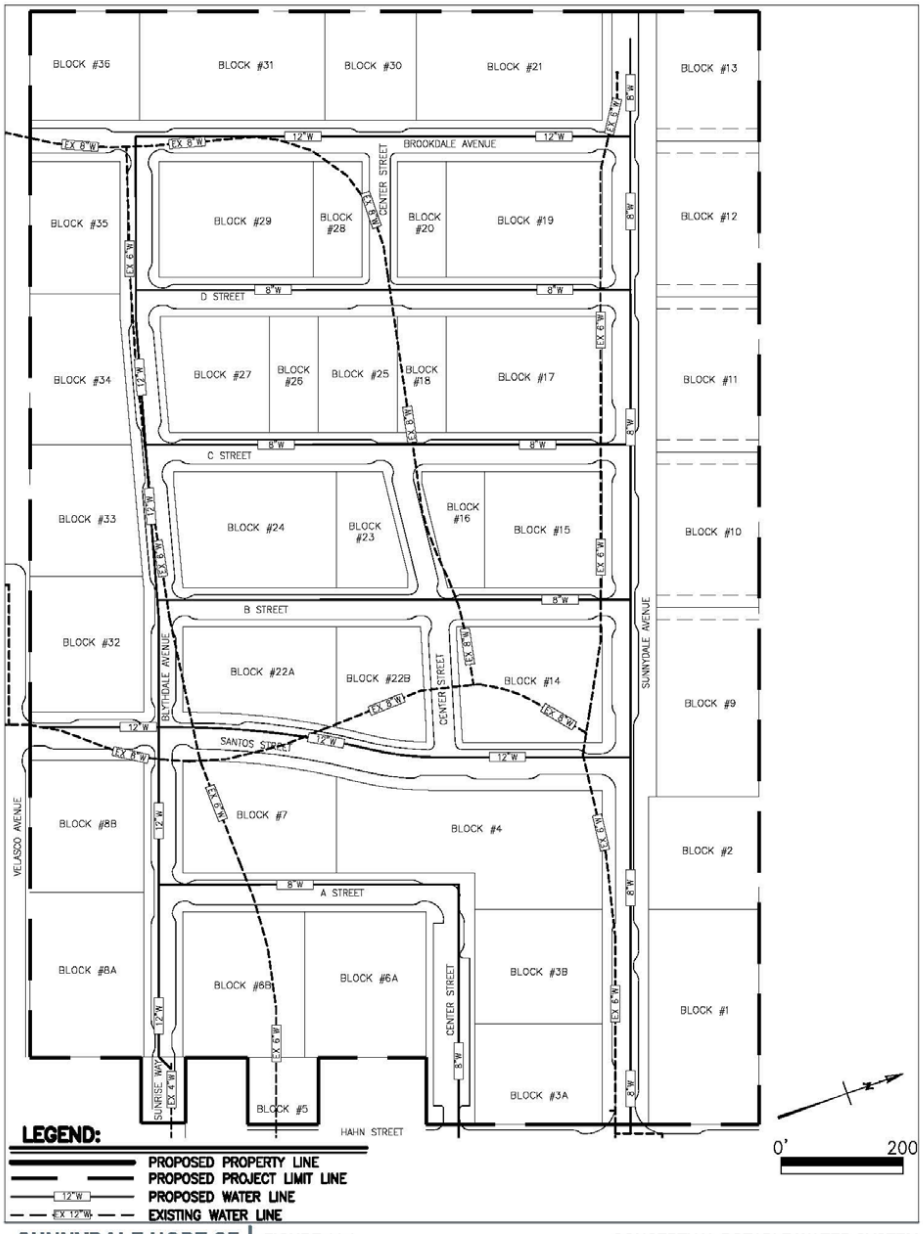
Proposed on-site and off-site fire hydrants will be located at a maximum radial separation of 300 feet between hydrants. In addition, building fire department connections will be located within 100-feet of a fire hydrant. To accommodate the proposed frontage improvements, existing fire hydrants will be relocated or replaced by the Developer. Final hydrant locations are subject to the approval of the SFFD and the SFPUC, and will be located outside of the curb returns per DPW Order 175,387. If fire hydrants are required within the curb returns to meet SFFD requirements, the project will work with the SFPUC and SFDPW to request an exception per Sections VI and VII of DPW Order 175,387.

11.3 Phases for Potable Water System Construction

The Developer will design and install the new potable water system in advance of or in phases to match the phases of the Project. The amount of the existing system replaced with each phase may be the minimum necessary to serve the phase.

The new phase will connect to the existing systems as close to the edge of the phase area as possible, while maintaining the integrity of the existing system for the remainder of the development. Repairs and/or replacement of the existing facilities necessary to serve the phase will be the responsibility of the Developer.

The SPFUC will be responsible for the new water facilities once construction of the infrastructure is complete and accepted by the City. Impacts to the improvements installed by previous phases caused by the design or construction of the current/new phases will be the responsibility of the Developer and addressed prior to approval of the Street Improvement Plans by the City.


BLOCK #36
BLOCK #31
BLOCK #30
BLOCK #21
BLOCK #13
BROOKDALE AVENUE
BLOCK #35
BLOCK #29
BLOCK #28
BLOCK #20
BLOCK #19
BLOCK #12
CENTER STREET
D STREET
BLOCK #34
BLOCK #27
BLOCK #26
BLOCK #25
BLOCK #18
BLOCK #17
BLOCK #11
C STREET
BLOCK #33
BLOCK #24
BLOCK #23
BLOCK #16
BLOCK #15
BLOCK #10
B STREET
BLOCK #32
BLOCK #22A
BLOCK #22B
BLOCK #14
BLOCK #9
BLYTHDALE AVENUE
SUNNYDALE AVENUE
SANTOS STREET
VELASCO AVENUE
BLOCK #8B
BLOCK #7
BLOCK #4
BLOCK #2
A STREET
BLOCK #8A
BLOCK #6B
BLOCK #6A
BLOCK #3B
BLOCK #1
SUNRISE WAY
BLOCK #5
HAHN STREET
BLOCK #3A
LEGEND:
PROPOSED PROPERTY LINE
PROPOSED PROJECT LIMIT LINE
PROPOSED WATER LINE
EXISTING WATER LINE
0'
200
SUNNYDALE HOPE SF | FIGURE 11.1
CONCEPTUAL POTABLE WATER SYSTEM
Figure 11.1

Section 12 Recycled Water and Greywater

12.1 Recycled Water Assessment

Currently, neither existing nor planned recycled infrastructure exists within the vicinity of the Project Site. The existing site does not contain infrastructure for recycled water, nor did the former site facilities include recycled water infrastructure or similar on-site systems. The nearest existing source of recycled water is North San Mateo County Sanitation District's water treatment plant in Daly City; however, there is no recycled water conveyance infrastructure serving the Project Site.

SFPUC's Recycled Water Master Plan for the City and County of San Francisco (March 2006) calls for the expansion of the auxiliary water supply system, including an upgrade of SWPCP and extension of recycled water pipelines. However, these pipelines are not planned to extend to the Project site, with the nearest system termination points located at Salinas Avenue and Third Street in the Bayview Neighborhood and San Bruno Avenue and Mansell Street in the Portola Neighborhood. Correspondingly, the Project Site is located outside the Reclaimed Water Use Ordinance Area.

Currently, the SFPUC is conducting a recycled water demand assessment of potential users and uses in the eastern areas of San Francisco. The 2012 Recycled Water Project Needs Assessment Report examined the potential uses of recycled water for irrigation, toilet flushing, and various commercial and industrial applications. The report does not identify the Sunnydale HOPE site among potential users.

Since a recycled water source and service is not available, the proposed project does not intend to design or construct recycled water infrastructure at the Project Site.

The Project Site will be not be developed with a master plan greywater system. The evaluation of the need and benefits of reusing greywater will be made for individual housing parcels and community facility parcels.

Section 13 Auxiliary Water Supply System

The San Francisco Public Utilities Commission (SFPUC), in cooperation with the San Francisco Fire Department (SFFD), owns and operates the Auxiliary Water Supply System (AWSS), a high pressure non-potable water distribution system dedicated to fire suppression that is particularly designed for reliability after a major seismic event. Currently, AWSS infrastructure does not exist within or directly adjacent to the Project Site.

Following a major seismic event, new developments within the City must meet fire suppression objectives that were developed by the SFPUC and SFFD. The SFPUC and SFFD will work with the Developer to determine post-seismic fire suppression requirements during the planning phases of the Project. Requirements will be determined based on increase in building density, fire flow and pressure requirements, City wide objectives for fire suppression following a major seismic event, and proximity of new facilities to existing AWSS facilities. AWSS improvements will be located in the public right of way or on City property, as approved by the SFPUC.

To meet the SFPUC and SFFD AWSS requirements, the development may be required to incorporate infrastructure and facilities that may include, but are not limited to:

- Multiple underground water storage cisterns, typically 75,000 gallons each;
- Seismically reliable high-pressure water piping and hydrants with connection to existing AWSS distribution system;
- Independent network of seismically reliable low-pressure piping and hydrants with connection to existing potable water distribution system at locations that are determined to be seismically upgraded by SFPUC;
- Saltwater pump station that supplies saltwater to the AWSS distribution piping following a major seismic event;
- Piping manifolds along waterfront that allow fire trucks to access and pump sea or bay water for fire suppression; and/or
- Portable water supply system (PWSS) including long reaches of hose and equipment mounted on dedicated trailers or trucks.

Project specific requirements have not been fully analyzed by the SFPUC and SFFD in time for the publication of this Master Infrastructure Plan. Final design of the AWSS solution for the Project Site will be determined by the SFPUC and SFFD.

The Developer will construct the new AWSS per the Phasing Plan in the DA. The SFPUC will be responsible for the new AWSS facilities once construction of the infrastructure is complete and accepted by the City. Impacts to the improvements installed in previous infrastructure phases caused by the design or construction of the current/new infrastructure

phases will be the responsibility of the Developer and addressed prior to approval of the infrastructure improvement drawings by the City.

Section 14 Dry Utility Systems

14.1 Existing Electrical, Gas, and Communication Systems

The existing dry utility systems currently serving the Sunnydale public housing consist of the following:

14.1.1 Electrical Service

The Sunnydale public housing improvements and site are owned and operated by the San Francisco Housing Authority ("SFHA"). The electric distribution system currently serving the Sunnydale area is shown in Figure 14.1. PG&E electric distribution facilities in the area, taken from PG&E PV and RAM Program maps, are shown in Figure 14.2, which shows that the Sunnydale public housing site is currently fed by one PG&E 4kV feeder (H-0405). The area is served by PG&E's Martin Substation. Power is distributed to residents via SFHA-owned primary and secondary overhead facilities. The secondary power is metered at a number of locations by building; service to individual units is not individually metered. The SFHA pays for all electrical service usage.

This overhead system is owned by the SFHA, with repair and emergency response services on the high voltage lines provided by SFPUC, according to an MOU, and consists of overhead pole mounted lines with pole mounted transformers. SFHA's system interconnects with PG&E's 4 kV feeder via SFHA's overhead pole located on Hahn Street just south of Sunnydale Avenue. Two single phase feeders run through the project site. These feeders have two hot phase wires and one neutral wire. The development of residential buildings and supporting infrastructure for Phases 1A-1 and 1A-2 (Blocks 6A and 6B, the first on-site blocks that the Developer plans to build) will require demolition that will necessitate revised routing of existing electrical service to ensure that the existing buildings and infrastructure "upstream" continue to have power (as well as telecommunications) service.

Figure 14.1 – Existing Electrical distribution at Project Site

PG&E Distribution Map (Sunnydale Area)
Intertie: July 26, 2016
4 kV
12 kV
12 kV
Source: PG&E RAM Program Map
Google
Map
Satellite
Legend
SF H 1236
12 kV
SF H 1109
12 kV
SF H 1107
12 kV
SF H 1102
12 kV
SF H 1106
12 kV
SF H 1405
4 kV
Carter Terrace
Alpine Inn & Suites
Cow Palace
John McLaren Child Development Center
Our Lady-The Visitation School
Sunnydale Ave
Blythdale Ave
Argonaut Ave
Garrison Ave
Rey St
Loehr St
Britton St
Delta St
Cora St
Rutland St
Arleta Ave
Lelande Ave
Carter St
Saddleback Dr
Map data ©2016 Google
Terms of Use
Report a map error

Figure 14.2

14.1.2 Gas Service

Existing gas service is provided by PG&E. Gas mains enter the Sunnydale property at both the east and west ends of Sunnydale Avenue, from the southwestern corner of the property at Brookdale Avenue, and for a limited number of buildings directly from Hahn Street. The gas distribution system is shown schematically on Figure 14.3. As with the electrical services, gas service to each building is metered for the building as a whole; the SFHA pays for all gas service usage. The new development infrastructure will incorporate new gas mains and service to each new phase of development.


SUNNYDALE HOPE SF
EXISTING GAS DISTRIBUTION PLAN
LEGEND
EXISTING GAS LINE
PROJECT BOUNDARY
0'
200
BROOKDALE AVE.
SUNNYDALE AVE.
BLYTHDALE AVE.
SANTOS ST.
HAHN ST.
2"HPG
1.25" HPG
3" HPG
1.75" HPG
8" HPG

Figure 14.3

14.1.3 Communication Systems

Phone, cable TV and internet services are provided via overhead pole mounted lines carrying the services provided by AT&T and Comcast. These telecommunication services enter the Sunnydale property at several locations – from Velasco, on the south; from Brookdale, on the west; from Hahn, on the east – and circulate through the interior of the site via the same network of private utility poles that distribute electrical service. Individual residents are responsible for arranging for service to their unit. The new development infrastructure will incorporate communication services to each new phase of development.

14.1.4 Streetlights

The streets within the existing Sunnydale project are lit by a system of streetlights owned by the SFHA and powered by SFPUC electricity through the SFHA-owned electrical distribution system, which as noted above is maintained by the SFPUC. The new development infrastructure will incorporate a new streetlight system to illuminate the revised street grid. Please see Section 7.6 for more information about the streetlights.

14.1.5 City/County of San Francisco Emergency Communication System

The City maintains a system of fiber-optic underground cables throughout the City, carrying its emergency communications used by the Police and Fire Departments and managed by the City's Department of Technology ("DT"). The joint trench design engineer will coordinate with DT staff to ensure that the conduit composing the distribution system for these DT facilities located within the joint trench meets the City's requirements.

14.2 Project Power Providers and Requirements

Chapter 99 of the City of San Francisco Administrative Code requires the City to consider the feasibility of supplying electricity to new development projects. The SFPUC, as the current electrical service provider, has determined its intent to continue to serve as the electrical service provider. The Developer has engaged a joint trench engineer to design the dry utility distribution system, and will work closely with SFPUC power enterprise staff to design the system, including the location of the required switchgear to transition from the PG&E- provided power near the Project Site to SFPUC power. The City has stated its intent to provide electric service to the Project on terms and conditions generally comparable to, or better than, the electric service otherwise available from PG&E, both in up-front costs and, more critically, in costs to the residents of the Project. Electrical service shall be provided by the City according to the SFPUC's Rules and Regulations Governing Electrical Service, with the electric rates as adopted by the City. A potential electrical switchgear location and layout to serve the Project is shown in Figure 14.5.

14.3 Proposed Joint Trench

The Developer will be responsible for designing, obtaining design approval of, and constructing a Joint Trench in which all of the dry utilities will be distributed throughout the Project. The proposed Joint Trench is identified schematically on Figure 14.4 and 14.4.1.

Work necessary to provide the joint trench for dry utilities, for which the Developer will be responsible and which is typically installed within to-be-dedicated public streets and adjacent sidewalk and planting areas, consists of trench excavation and backfill, and installation of conduit, utility vaults and splice boxes for electrical distribution, communication lines, and streetlights, as well as gas mains. Additionally, Developer will install street lights and bases. Where streetlights are required on both sides of streets to provide adequate illumination, the streetlights on the side of the street opposite from the joint trench will be installed as a separate run of conduit.

Electric, power systems and streetlights will be constructed per the applicable SFPUC standards. The utility owner/franchisees (SFPUC, PG&E, AT&T, Comcast and/or other communication companies) have provided the Developer with the option of installing facilities such as transformers, switches and wire, at the Developer's choice. All necessary and properly authorized public utility improvements for which franchisees are authorized by the City shall be designed and installed in the public right-of-way in accordance with permits issued by SFDPW. Joint trenches or utility corridors will be utilized wherever allowed. The location and design of joint trenches or utility corridors in the public right-of way, documented in the Infrastructure Improvement Plan for each phase of development, must be approved by SFDPW during the subdivision review process, to be coordinated by the City's Infrastructure Task Force. The precise location of the joint trench in the right-of-way will be determined prior to recording the applicable Final Map for each phase of development, and will be identified in the Infrastructure Improvement Plans for that phase. Nothing in this MIP shall be deemed to preclude the Developer from seeking reimbursement for or causing others to obtain consent for the utilization of such joint trench facilities where such reimbursement or consent requirement is otherwise permitted by law.

14.4 Phases for Dry Utility Systems Construction

The Developer will design and install the new joint trench systems in conjunction with and as required to support each successive phase of residential development. The amount of the existing system replaced with each phase of development will be the minimum necessary to serve that phase and ensure that development of the subsequent phase of joint trench does not require destruction of previously installed facilities. Each phase of development will connect to the existing systems as close to the edge of the new phase as possible while maintaining the integrity of the existing system and ensuring that adjacent existing buildings that remain occupied during and after development of that phase retain electrical, gas and communication service both during and after construction of the phase. Maintaining

the integrity of the existing system will be the responsibility of the Developer.

Repairs and/or replacement of the existing facilities necessary to serve the new residential development will be designed and constructed by the Developer.

The SFPUC will be responsible for maintenance of existing facilities until replaced by the Developer and will be responsible for the new power facilities once the residential development or new power facility is complete and accepted by the SFPUC.

Impacts to improvements installed with previous phases of development due to the designs of the new phase will be the responsibility of the Developer and addressed prior to approval of the construction drawings for the new phase.

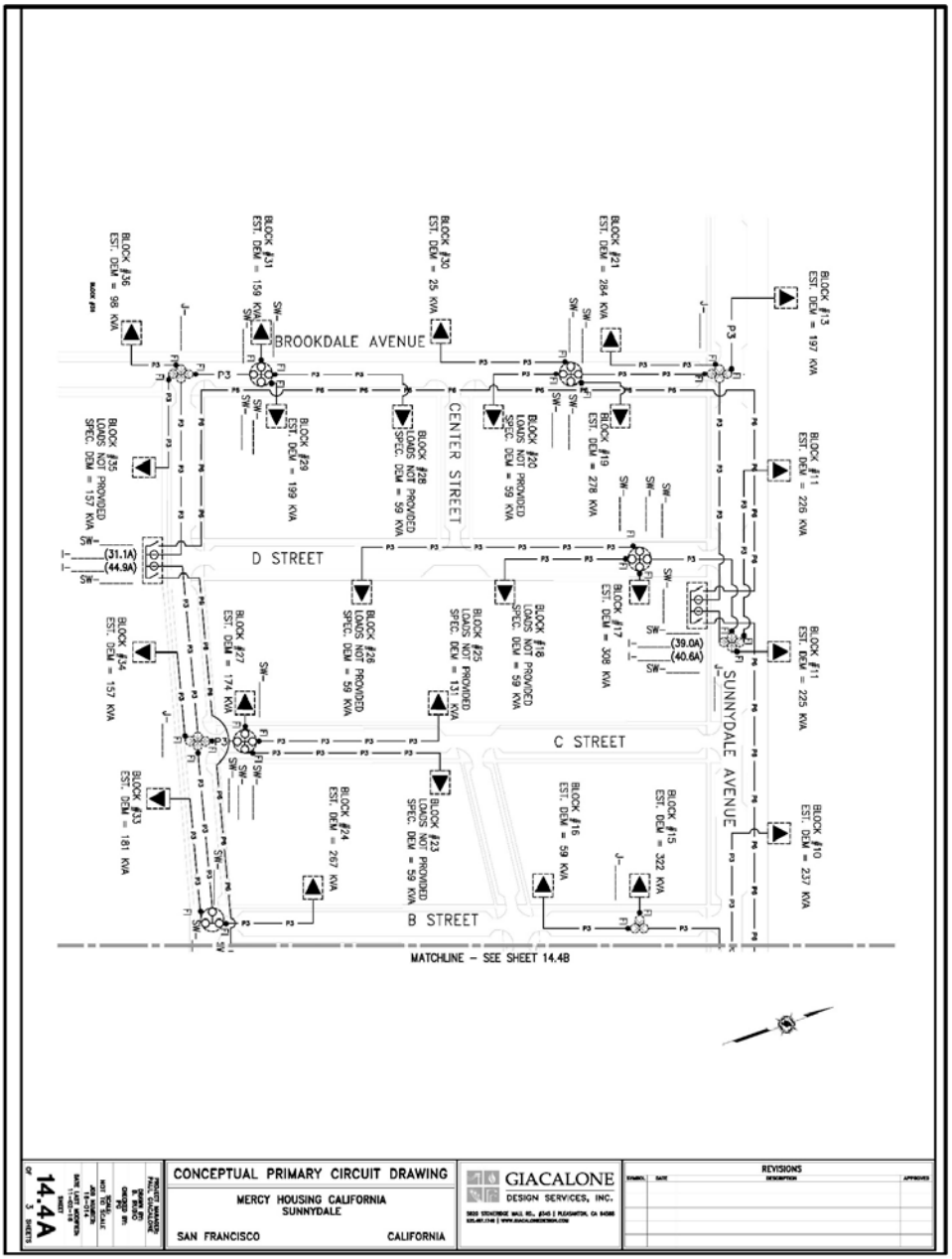


Figure 14.4 Conceptual Joint Trench Plan

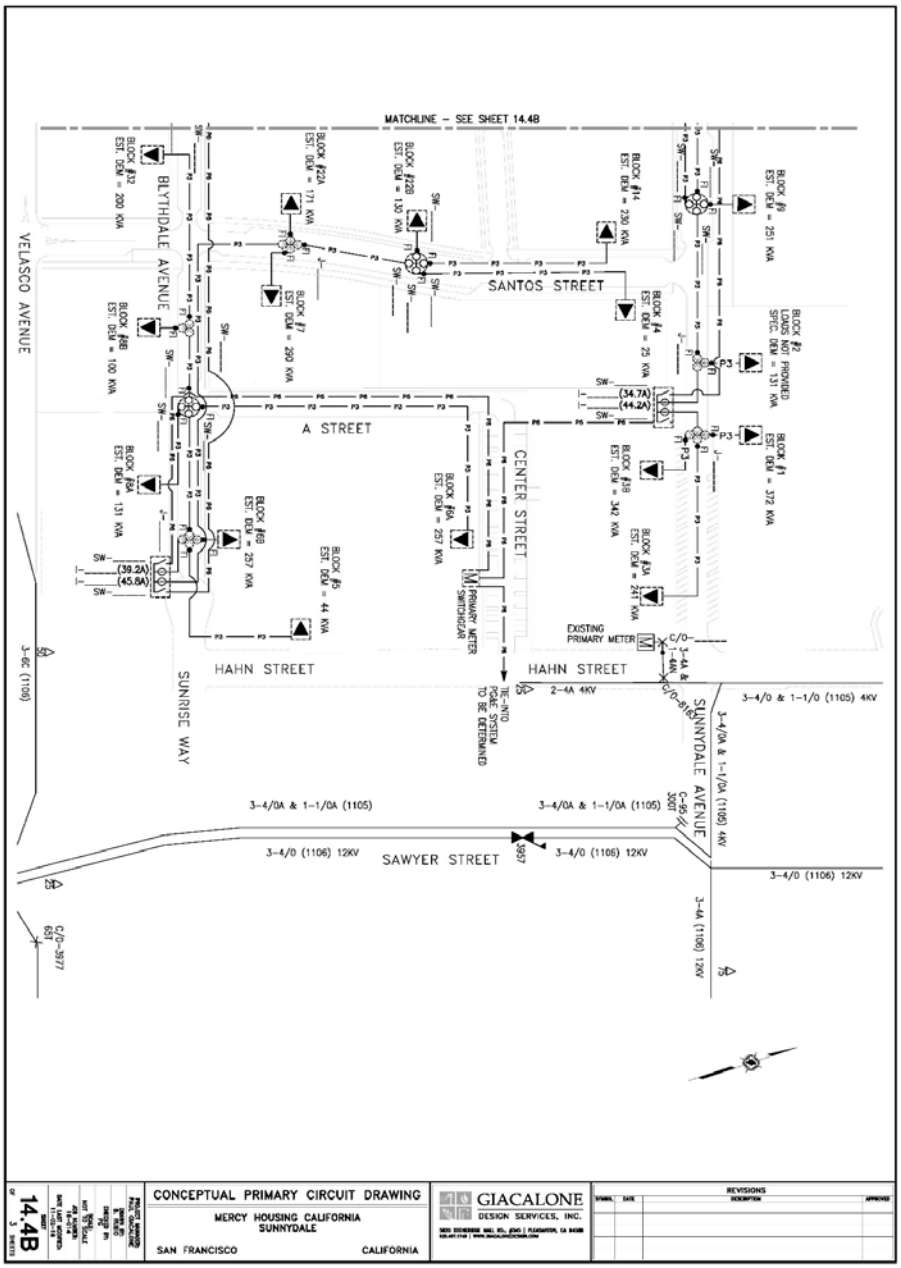


Figure 14.4.1 Conceptual Joint Trench Plan

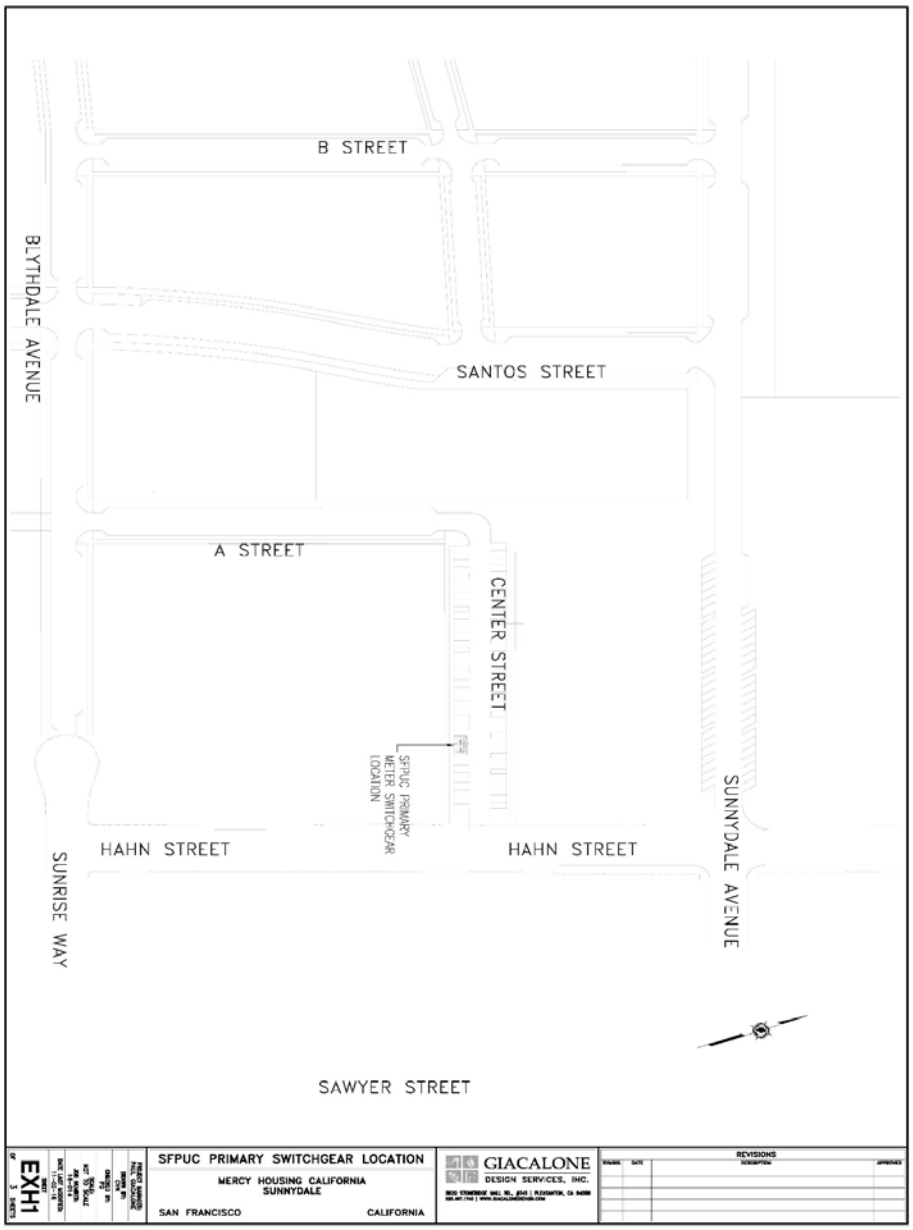


Figure 14.5 Electrical Switchgear Location

Section 15 Future Infrastructure Documentation Submittal Requirements

Following City approval of this Master Infrastructure Plan ("MIP"), the Developer shall submit the following subsequent infrastructure related design documents to the City for review and approval to ensure that all proposed infrastructure improvements, including public water, wastewater, stormwater management, dry utilities (including SFPUC power) and public right- of-way improvements meet all requirements and standards of the City.

15.1 Phased Development Project Construction Documents

Following approval of the MIP, and in conformance with an approved Tentative Parcel Map, the Developer plans to design and construct a series of phased development projects, each consisting of a residential development on at least one parcel of property, along with the infrastructure required to support that phased development project.

For each phase of development, the Developer shall prepare and submit for City review a set of Street Improvement Plans (i.e. - street and infrastructure plan construction documents (CD's)), comprehensively documenting the infrastructure to be constructed in conjunction with that phase of development. The Street Improvement Plans will be submitted to the City for review at the 30%, 60% and 90% completion stages. A 100% of Street Improvement Plans will be submitted for permit.

15.2 Master Utility Plans (MUPs)

To advance the design of the various infrastructure systems (domestic and fire water, AWSS, combined sewer, stormwater management, dry utilities, and public right-of-way improvements), the Developer shall prepare MUPs that provide the City with adequate information to generally determine the feasibility of the proposed system to serve the full Project upon completion. The electrical utility MUP shall include information required by the SFPUC to adequately review the proposed systems.

These MUPs shall be submitted and approved prior to the 30% Street Improvement plans for the initial phase of development. The Developer shall submit MUPs for review and approval, as outlined below, that cover site wide infrastructure issues.

15.2.1 Low Pressure Water System Master Plan

The MUP shall include the following, at a minimum:

- Written description and figures showing the proposed water system layout, sizes, materials, depths, and hydrants.
- Flow demands and supporting calculations, including methodology,
- Written description and figures showing all proposed pump stations or non-pipe facilities proposed as part of the project.
- Figures showing all proposed points of connection with existing SFPUC-

owned water infrastructure as appropriate. (City standard connection details to existing infrastructure will be provided with 30% CD's.)

- Figures showing proposed service connections to parcels. (City standard service connection details will be provided with 30% CD's.)
- Written description and figures showing any proposed underground water-related structures in the public ROW.
- Description and figures showing and proposed easements for future public water facilities.
- Updated description and figures showing any revised project phasing.
- A written description and figures demonstrating that a functioning water system will be in place at all times that complies with all City laws, codes and regulations at all phases of development, up to and including full build-out of the Project.
- A written description and figures outlining any proposals for variances to SFPUC standards for water main location within street sections for review and approval on a case-by-case basis (such approval will not be granted as part of the MUP approval).

15.2.2 The Combined Sewer System Master Plan

The MUP shall include the following, at a minimum:

- A written description and figures demonstrating that a functioning wastewater infrastructure system will be in place at all times and complies with all City laws, codes and regulations at all phases of development up to and including full build out of the Project.
- Stormwater Capacity Analysis for entire development including modeling (SWMM or equivalent) to demonstrate that the Project will provide adequate collection system capacity. The Analysis shall include detailed sanitary sewer and stormwater flows based on anticipated building usage and development plan, analyzing the impact of the project on downstream infrastructure (points of connection to the existing public combined sewer system), localized wet weather flooding; and combined sewer system surcharges into streets at full build out. The analysis shall include a detailed description of all assumptions and calculation methods used, including explanation and reference for selected peaking factors.
- A written description and figures outlining any proposals for variances to the SFPUC standards for the combined sewer location within the street section for review and approval of the SFPUC on a case-by-case basis (such approval will not be granted as part of the MUP approval).
- In the event that hydraulic modeling is necessary to confirm that the City system can accommodate flows from the Project, those studies will be conducted by the City as a reimbursable City cost.
- Written description and figures showing the proposed gravity pipe and force main layout, sizes, materials, depths, velocities and slopes.

- Written description and figures showing all proposed pump stations or non-pipe facilities proposed as part of the project.
- Figures showing all proposed points of connection with existing SFPUC-owned sewer infrastructure as appropriate. (City standard connection details to existing infrastructure will be provided with 30% CD's.)
- Figures showing proposed service connections to parcels. (City standard service connection details will be provided with 30% CD's.)
- Written description and figures showing any proposed underground sewer-related structures in the public ROW.
- Description and figures showing any proposed easements for future sewer facilities.
- Updated description and figures showing any revised project phasing.

15.2.3 The Grading and Overland Release Master Plan

The master plan shall include the following:

- Written description and figures generally showing the overland flow path for the 100- year storm, outlet locations, and drainage boundaries.
- A hydrologic/hydraulic modeling analysis to demonstrate overland flow will be managed at full project build out as required in applicable codes and regulations. The analysis shall include all proposed surface improvements in the development phase that could impede overland flow paths in the ROW such as raised intersections, curb less street designs, bulb-outs, etc. If site designs cannot meet the SFPUC requirements for overland drainage release, alternative solutions will be developed with the submittal of the 30% Street Improvement Plans for the initial phase of development.
- A final geotechnical investigation that covers development of the public street rights- of-ways and open spaces for the entire project and demonstrate to the SFPUC that appropriate mitigations measures such as soil and foundation improvements will be constructed by the Developer to minimize differential settlement across the building parcel.
- Updated description and figures showing any revised project phasing.

15.2.4 The Stormwater Master Utility Plan

The MUP shall include the following:

- A modeling analysis (SWMM or equivalent) demonstrating to the SFPUC that the project's stormwater management approach and layout for full build-out as well as all phases prior to full build out of the Project, including stormwater management are adequate to meet the performance quantities and strategies required by the SFPUC stormwater management regulations and the requirements of the

Stormwater Management Requirements.

- Conceptual details showing any proposed stormwater management controls, as appropriate.
- A project wide Maintenance Assessment of the maintenance required for the proposed Stormwater Controls as well as a description of the funding mechanism that will be in place to perform that maintenance.
- Updated description and figures showing any revised project phasing.

15.2.5 The Electrical Master Utility Plan

This master utility plan shall be submitted as described in the SFPUC's Rules & Regulations Governing Electrical Service, Appendix II. The study shall contain the following information:

- Single line diagrams, and a site-wide exhibit showing general routing of distribution cables and key facilities such as switches and switchgear, for an electrical system that is consistent with any approved development plan.
- A phasing plan identifying major development milestones sequencing with estimated time schedules.
- Existing site maps, proposed land use plans, estimated number of proposed units and configuration, gross unit area, projected demand and annual energy loan estimates for at least five years.
- (Please refer to the SFPUC's Rules & Regulations Governing Electrical Service found online at http://sfwater.org/index.aspx?page=172)
- Typical joint trench configuration
- Written description and figures showing any proposed underground dry utility-related structures in the public ROW.
- Description and figures showing any proposed easements for future dry utility facilities.
- Updated description and figures showing any revised project phasing.

Additionally, this MUP shall include streetlighting:

- Proposed streetlight locations
- Proposed fixture type(s)
- Classification information for each street (or street segment, as applicable)
- Streetlight design criteria/relevant regulations

Infrastructure improvement plans for streetlights must include photometric calculations and specifications.

15.2.6 Phase Specific Hydraulics/Hydrology Plans

Each set of Street Improvement Plans documenting the infrastructure to be built to support a phase of development shall include a development phase Hydraulics and

Hydrology Plan including:

- Updated Development Phase Combined Sewer System Capacity Analysis of sanitary sewer and storm drain flows for the development phase based on anticipated building usage and the development plan. This analysis shall also include an assessment of the impact of the development phase on upstream and downstream infrastructure, localized wet weather flooding, and combined sewer system surcharges into streets. The analysis shall include a detailed description of all assumptions and calculation methods used, including explanation and reference for selected peaking factors.
- Updated Overland Flow analysis for development phase demonstrating that overland flow will be contained in conformance with City standards and Subdivision Code requirements during and after construction of the development phase in question as required in applicable codes and regulations. The analysis shall include all proposed surface improvements in the development phase that could impede overland flow paths in the ROW such as raised intersections, curbless street designs, bulb-outs, etc. The analysis shall also describe any necessary off-site improvements to be constructed by the Developer deemed reasonably necessary to protect publicly- and privately-owned property upstream and downstream. The need or absence of need, for any such off-site improvements shall be demonstrated by the Developer by determining the 100 year overland flows at the Project Site for both existing conditions and for the proposed Development Phase in question. The analysis shall include a detailed description of all assumptions and calculation methods used.
- Updated Stormwater Management Plan for development phase, demonstrating how the development phase in question will comply with federal, state and City laws, codes and regulations in effect as of the date any such application is submitted, including but not limited to the Stormwater Management Ordinance.
- Updated Maintenance Assessment: Each development phase will include, if appropriate, an assessment of the activities required to appropriately maintain the proposed Stormwater Controls. If SFPUC has identified a failure to maintain the Stormwater Controls of previous phases, the SFPUC shall not be required to approve the any subsequent phase applications until such maintenance failure is resolved.

15.3 Street Improvement Plans

Street Improvement Permit applications shall include then following:

- Standard specifications for use with all subsequent improvement phases will be submitted with the first phase of development. Subsequent improvement phases will conform to the approved standard specifications subject to future changes allowed by the DA. Phase specific specifications to supplement the standard specifications will be submitted for review and approval, as needed.

- Proof of conformance with infrastructure requirements outlined in the applicable Tentative Map conditions, City regulations, the MIP, and the phase applications.
- Proof of conformance with mitigations identified in the phase application to alleviate impact of the development project on downstream infrastructure, minimize localized flooding, minimize combined sewer system surcharges, and safely manage overland flow.
- Proof of conformance with the stormwater management requirements applicable to the project at the time of submission including:
    - Preliminary Stormwater Control Plan at conceptual design first construction document (30% construction documents)
    - Final Stormwater Control Plan at detailed design (100% construction documents)
- Proof of conformance with the City's construction site runoff requirements, including a Storm Water Pollution Prevention Plan/Erosion and Sediment Control Plan
- Details of the connection to existing, off-site infrastructure.
- Listing on the plans of how environmental mitigation measures (from the EIR) have been addressed.