

SUBDIVISION REGULATIONS

2015

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF SAN FRANCISCO

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I. PURPOSE

These regulations are established pursuant to the Subdivision Code Section 1311, together with Public Works Code Section 147.2(b)(2) and Section 1204(b)(2) and other applicable Municipal Codes and City regulations to serve as general guidelines for the planning, development, design and improvement of subdivisions in the City and County of San Francisco, and also to supplement said Code.¹

II. APPLICABLE LAWS

Subdivision maps and all procedures in connection with the subdivision of land within the City and County of San Francisco shall conform to all applicable laws of the State of California and ordinances of the City and County of San Francisco, and all amendments thereto. The principal laws and ordinances in effect governing subdivisions and related public improvements are as follows:

- Subdivision Map Act (State of California), Government Code Sections 66410 et.seq.
- San Francisco Subdivision Code
- San Francisco Public Works Code
- San Francisco Administrative Code

¹ Department of Public Works Order No. 171,379 adopted separate Subdivision Regulations on November 18, 1998 that apply to the development of property in Mission Bay North and South Redevelopment Areas pursuant to Subdivision Code Section 1411; Department of Public Works Order No. 182,651 adopted separate Subdivision Regulations on June 5, 2014 that apply to the development of property in Candlestick Point and Hunters Point Shipyard pursuant to Subdivision Code Section 1611.

III. DEFINITIONS

Terms used shall have the meanings defined herein except where an alternate definition already exists in the applicable Codes or State Law in which case the Code or State Law definition shall prevail.

A. EXCEPTIONS

Exceptions as that term is used within these Regulations shall refer to Section 1712. Exceptions, inclusive, as defined in the San Francisco Subdivision Code.

B. DESIGN MODIFICATION

Design Modification shall refer to the process under which the Director of DPW in consultation with any affected City agencies may review a proposed alternative design, and for good cause and as consistent with customary engineering practices, approve such alternative design. A Design Modification may be requested by a Subdivider at any time prior to the decision to approve, conditionally approve or deny a tentative map application.

C. SUBDIVISION CODE

Subdivision Code shall refer to the applicable Code referenced in Section I. Purpose, of these Regulations.

D. DIRECTOR OF PUBLIC WORKS

Director of Public Works or Director shall mean the Director of Public Works, City and County Surveyor or City Engineer where these Regulations refer to the processes

governed under the Subdivision Map Act and as further promulgated under these Regulations; provided however, that where these Regulations specify the City and County Surveyor or the City Engineer, only such individual is authorized to take the action identified.

E. SURVEYOR

Surveyor shall mean a Professional Land Surveyor or Civil Engineer authorized to practice land surveying, and who is currently licensed by the California Board for Professional Engineers, Land Surveyors and Geologists.

F. CITY

City as used herein shall mean the City and County of San Francisco.

G. GLOBAL NAVIGATION SATELLITE SYSTEM

Global Navigation Satellite System (GNSS), including the Global Positioning System (GPS), shall refer to the satellite surveying methods employed by Surveyors as consistent with the applicable Public Resources Code.

H. RECORD MAP

Record Map shall refer to any map prepared by a Surveyor and required to be recorded pursuant to the Professional Land Surveyors Act Section 8762 or the Subdivision Map Act.

I. IMPROVEMENT, PUBLIC IMPROVEMENT, AND SUBDIVISION IMPROVEMENT AGREEMENTS

Improvement Agreement, Public Improvement Agreement and Subdivision Improvement Agreement shall be synonymous for the purposes of these regulations and refer to the agreements entered into pursuant to the Subdivision Map Act (SMA) and applicable City Code for completion of public improvements pursuant to a condition of approval of a tentative subdivision map.

J. DPW WEBSITE

DPW Website shall refer to the internet page maintained by the Department of Public works for dissemination of information regarding the subdivision and mapping process. The site address is <http://www.sfdpw.org/index.aspx?page=1710>. Or, <http://www.sfdpw.org>, then select “Services A-Z”, and select “Subdivisions”. The DPW Bureau of Street Use and Mapping is physically located at 1155 Market Street, 3rd Floor, San Francisco, CA.

IV. GENERAL PROCEDURES

The procedures described herein conform with State and local laws and with such additional procedures that the Director of Public Works has found necessary and desirable for the expeditious handling of Subdivision Maps. These Regulations supersede the 1982 Regulations and amendments thereto. DPW’s Standard Plans and Specifications, Project Manual and Reference Documents, and Departmental Procedures Manual, shall be viewed as supplemental to these Regulations; provided, however, that if there is a conflict between these Regulations and the Standard Plans and Specifications in regard to subdivision specific requirements, these Regulations shall prevail. In

addition, these regulations shall apply to all street or public improvement construction projects that occur independent of or in advance of a subdivision map.

A. SUBMISSION OF TENTATIVE MAP

The initial official act to obtain the approval of a subdivision is the formal submission of a Tentative Map and other application materials to the City and County Surveyor. Either a Registered Civil Engineer or a Licensed Land Surveyor may prepare and submit an application. This application shall include all of the documents that the Subdivision Code and the Application Packet require. The "Application Packet" is available at DPW's offices or on the DPW website. The Subdivider shall collate and submit the required number of copies specified within the Application Packet². The City and County Surveyor shall then submit a copy of the map and application materials to the Planning Department and other appropriate governmental agencies for review and recommendations.

1. Vesting Tentative Maps

The Subdivider may submit a Tentative Map or Vesting Tentative Map. Because a Vesting Tentative Map vests the Subdivider with rights to proceed with development, subject to the laws, ordinances, and standards in effect at the time of application submittal, the requirements of an application for Vesting Tentative Map are more extensive as set forth in the applicable Subdivision Codes. Of chief concern is the necessity of a Site Plan that a Surveyor prepares. Such Site Plan need not constitute a

² The Department of Public Works anticipates acceptance of electronic application submittals. Applicants should check the DPW website for the most current application instructions.

final boundary survey, but it must show actual property boundary lines and any title gaps or physical encroachments that would necessarily impact the subdivision process.

2. Required Tentative Maps

A Tentative Map is required for all Final Maps (consisting of five or more units or lots), and all Parcel Maps (consisting of four or less units or lots) except as provided for otherwise in the applicable Subdivision Code. In cases where the Subdivision Code permits submittal of an application without a Tentative Map, the content requirements of such application shall be consistent with the content requirements of the applicable Parcel Map Application to the extent consistent with, and as set forth in the applicable Subdivision Code.

3. Multiple Phased Final Maps must be requested in Application

- a. A Subdivider may request to submit multiple phased Final Maps when permitted by the applicable Subdivision Code or with prior authorization do so from the Director of Public Works. Such a request shall be made at the time of application and affirmed in the conditions of approval for the Tentative Map.³
- b. Where authorized by the Subdivision Code, and because multiple phased final maps typically record over the span of several years, it is not uncommon that the Subdivider may request a deferral of certain required items when such information will necessarily change, be refined or become outdated during the time before the submittal of phased Final Maps or associated Improvement Plans. Any such request for deferral shall be in writing and identify each item being requested for deferral. In such case, the Director of Public Works, in his or her sole discretion, may defer such items, in accordance with the Subdivision

³ Gov. Code Sec. 66452.6 requires DPW to determine the number of phased final maps in conditions of approval when a Tentative Map application is pursuant to a development agreement with the City.

Code, and condition the deferral in a manner that he or she deems appropriate. The Subdivider shall include all deferred information as part of the submission of a Deferred Materials Submittal.

- c. The Subdivider may request in writing waivers of items required in a Tentative Map application only in accordance with the applicable provisions of the Subdivision Code. The Director of Public Works, in his or her sole discretion, may grant such waivers in writing and condition the waivers in a manner that he or she deems appropriate.

4. Transfer Maps

Where authorized by the Subdivision Code, a Subdivider may submit a Tentative Transfer Map. Transfer Maps are meant to create legal parcels for the purpose of financing and conveyancing only, but do not grant any development rights. Because no development rights are granted, a Subdivider may request in writing the waiver or deferral of many items generally required in a Tentative Map Application Packet in accordance with the applicable provisions of the Subdivision Code for Conveyancing or Finance Maps. The Director of Public Works, in his or her sole discretion, may grant such deferrals and/or waivers in writing and condition the deferrals and/or waivers in a manner that he or she deems appropriate.

B. CITY AGENCY REVIEW

As required by the State Subdivision Map Act, the Subdivision Code and other applicable local laws, all proposed subdivisions shall be reviewed by the Planning Department for consistency with the General Plan and any applicable Area Plan.⁴ The Planning Department

⁴ Subdivision Map Act (SMA) Sec. 66473.5

also shall review the application to determine consistency with the priority policies of Planning Code Section 101.1 and in accordance with the applicable environmental laws including the California Environmental Quality Act and Administrative Code Chapter 31 and report its determination to DPW. In order to be informed of the various policies applicable to a particular subdivision, DPW recommends that the Subdivider consult with the Planning Department prior to submittal of a Tentative Map application.

Other City Agencies and interested persons may also review and comment on the Tentative Map as provided for in the applicable State law and Subdivision Code.

C. NOTICE OF PUBLIC HEARINGS AND NOTICE OF TENTATIVE MAP DECISION

The Subdivider shall submit the following materials with the Application Packet.

1. 300-Foot Radius Map

A map drawn to scale showing the property that is the subject of the application and all other properties within a radius of 300 feet of the exterior boundaries of the subject property, the Assessor's Block number on each block and Assessor's Lot number on each lot, and the names of all streets shown. The drafting scale shall be sufficiently sized to show and identify individual properties. The Subdivider shall show the 300' Radius line in a bold dashed linetype and shall annotate in several places with leaders from the offset perimeter to the subject development boundary.

2. Address List

The Subdivider shall submit a printed and electronic list, showing in numerical order by Assessor's block and lot, the names and mailing addresses of the last known

owners of all properties touching or within the 300-foot radius of the subdivision shown on the map. These names and addresses are available at the Tax Collector's Office and are shown on the latest city-wide assessment roll. The list also shall include the names of the residents within the subdivision itself. In addition, the Subdivider shall include on the list names and addresses of the persons, organizations or any other agencies that have made a formal request to DPW to receive notification concerning the subdivision. The electronic copy of the list shall be in *.xls or *.txt format or other format acceptable to the Director of Public Works.

3. Mailing Envelopes

The Subdivider shall submit one set of #10 regular envelopes with rounded gummed flap, stamped and addressed to the parties in the Address List and printed with the DPW return address. Envelopes are available upon request from the City and County Surveyor's office.

4. Mailing Envelopes for a Public Hearing on the Tentative Subdivision

In the case of vesting tentative maps or multiple phased final maps or when the DPW Director elects to hold a public hearing, the applicant shall submit an additional set of Mailing Envelopes.

D. ACTIONS ON TENTATIVE MAP

1. Approval, Conditional Approval, or Denial of Map

After the determination that a Tentative Map application is deemed complete and the Planning Department issues its determination under the California Environmental Quality Act (CEQA), the Director of Public Works shall approve, conditionally approve, or deny the application within 50 days (or other time period as specified in the Subdivision Code) unless such time shall have been extended by mutual agreement.

2. Director's Hearing

In advance of the Tentative Map decision, the Department may hold a Director's Hearing, as determined in accordance with the provisions of the applicable Subdivision Code. DPW and the Subdivider may hold a Subdivision Conference, as determined in accordance with the applicable Subdivision Code or the request of the Subdivider.

3. Notification in Writing

The Director shall notify the Subdivider in writing of his or her findings and decision with regard to said Tentative Map. The Director also shall mail notice of the decision to all parties listed on the 300' Radius Map.

E. CONDITIONS OF APPROVAL

Conditions of Approval (COA) on a Tentative Map allow for the Director to approve and record a Final Map subject to the satisfactory completion of necessary and important tasks related to the subdivision and construction of improvements for the subdivision. Compliance with the COA are an important link in a long chain of tasks that culminate in a complete and successful development. COA typically include the requirement for the submission of materials or the completion of tasks by specified deadlines, various improvement plans, and construction permits⁵. If the Subdivider may not complete required public infrastructure at the time of Final Map Approval, the COA also shall address the following:

- Improvement Agreements
- Submission to the City of Irrevocable Offers of Real Property in Fee and/or Improvements (or rarely, Offers of Easements and Easement Agreements)
- Bonds to guarantee completion of and payment to contractors for future public improvements

1. Availability of Sufficient Water Supply

Unless a statutory exception applies or the Subdivider has previously satisfied this requirement as part of environmental review, subdivisions involving a proposed residential development of more than 500 dwelling units shall require proof to the satisfaction of the Director of Public Works that a sufficient water supply shall be

⁵ See Section V. Tentative Map Requirements, (D) Engineering Plans and Documents.

available.⁶ The Subdivider shall request proof from the San Francisco Public Utilities Commission (PUC) and submit to the Department written verification from the PUC within 90 days of the request.

2. Public Easements

To the extent that the design or improvements of a subdivision will conflict with easements acquired by the public at large, DPW shall condition approval to provide for alternate easements substantially equivalent to the ones previously acquired by the public along with any associated City actions necessary to accomplish this.⁷

3. Substantial Compliance with Tentative Map

Final Maps shall be in substantial compliance with an approved Tentative Map and any conditions of approval issued thereto.⁸

To assist the Department in confirming this requirement, the Subdivider shall submit to DPW a tracking document in spreadsheet form as pre-approved by the City and County Surveyor. The spreadsheet shall address how each COA has been or will be satisfied. The spreadsheet shall be submitted with the Final Map Checkprint. In the case of Phased Final Maps, the Subdivider also shall submit a tracking spreadsheet with any Deferred Materials Submittal, if and when such a Submittal is required.

4. Vesting Tentative Map

A condition for Vesting Tentative Maps shall be that the Subdivider provides a date-stamped copy of the Subdivision Regulations in effect on the date of approval of the

⁶ SMA Sec. 66473.7; see also subsection (i), excluding certain urbanized areas

⁷ SMA Sec. 66474

⁸ SMA Sec 66474.2

Vesting Tentative Map. DPW shall maintain a copy of this document in its files on the Subdivision.

5. Timing of Submittals for Multiple Phased Final Maps

Where a Subdivider has requested and obtained approval to submit multiple phased final maps, the Director of Public Works shall condition and address the timing of interim submittals such as Deferred Materials Submittals and Improvement Plans, to provide for efficient review by the various City agencies.

6. Other Conditions

Other concerns associated with the proposed subdivision shall be addressed through additional conditions as the Director of Public Works deems necessary. The City Engineer or the City and County Surveyor shall review conditions related to engineering or land surveying, as appropriate, to determine compliance with generally accepted engineering or surveying practices.

F. DEFERRED MATERIALS SUBMITTAL

Where Phased Final Maps are allowed under the Subdivision Code, the Subdivider shall submit to the Director of Public Works a Deferred Materials Submittal at the same time as and concurrent with each application for phase approval in accordance with local laws and rules related to phased approvals. The Deferred Materials Submittal shall update the Tentative Map with all items previously deferred and an explanation of any materially changed site conditions that would affect the Conditions of Approval.

The Subdivider shall prepare and submit a tracking spreadsheet addressing each condition

of approval, the estimated date and method of satisfaction, and what if any conditions are being satisfied, through the submittal of the Deferred Materials Submittal.

The Director of Public Works shall review the Deferred Materials Submittal and if the previously deferred information affects the prior Conditions of Approval, the Director of Public Works reserves the right to impose reasonable conditions necessary for the development and to refine, adjust, supplement, modify, and/or delete the Conditions of Approval to the extent consistent with the earlier approval.⁹

If the Subdivider fails to timely submit any deferred item in the Deferred Materials Submittal, the Director of Public Works shall return the Submittal to the Subdivider with a statement that identifies what materials are absent. As consistent with the applicable Subdivision Code, the Subdivider may request in writing the continued further deferral of these materials. The Director of DPW, in his or her sole discretion, may grant such additional deferral in writing and condition the deferral in a manner that he or she deems appropriate.

G. SUBMISSION OF FINAL MAP

Within 24 months¹⁰ after the approval or conditional approval of the Tentative Map or maps, and as that time may be extended according to applicable provisions of the

⁹ See also SMA Sec. 66474.3(f) which provides that, “[a]n approved or conditionally approved tentative map or vesting tentative map shall not limit a legislative body from imposing reasonable conditions on subsequent required approvals or permits necessary for the development...”

¹⁰ Refer to provisions of the applicable City Subdivision Code. In some cases, the Subdivision Code extends the initial life of a tentative map to 36 months.

Subdivision Map Act, the Subdivider shall prepare a Final Map in accordance with the Tentative Map as approved, and submit it to the Director of Public Works in the form of a Final Map Checkprint. Upon written request of the Subdivider, the Director of Public Works may grant an extension of time, in his or her sole discretion, and within the limits prescribed by the Subdivision Map Act. The Subdivider's failure to submit a Final Map within the applicable time limits shall result in the Tentative Map being automatically denied.

H. ACTION ON FINAL MAP

The Director shall forward all Final Maps or Parcel Maps associated with a Public Improvement Agreement to the Board of Supervisors for approval. After all required City approvals are completed, DPW shall record the Final Map in the County Recorder's Office.

I. PUBLIC IMPROVEMENTS, IMPROVEMENT AGREEMENTS, AND SECURITY

1. Form of Dedications

As set forth in the Subdivision Code and pursuant to the longstanding policy of the City, if the Subdivider constructs public right-of-way on private property, the Subdivider **shall dedicate such property to the City in fee simple through a grant deed**. The Director of Public Works may waive such a requirement and accept a public easement in lieu of fee ownership only for good cause and after consultation with the City Attorney's Office and any affected City department. The Subdivider shall request such a waiver in writing as early as possible in the subdivision process.

The property underlying the right-of-way proposed for dedication to the City for public

use within a subdivision shall be clearly labeled on the Tentative Map as “to be dedicated in fee to the City” or “to be dedicated as a public easement.” Where the property underlying improvements will remain privately owned but used for public purposes, the Subdivider, in consultation with DPW, shall determine whether the easement can be dedicated solely on the face of the map or requires an additional easement agreement with the City. If an easement agreement is required, the Board of Supervisors shall approve such easement agreement unless local law provides for an alternate form of approval. Privately owned improvements and other encroachments are generally precluded from occupying the public right-of-way. When such use is required, the Subdivider shall obtain a separate approval or permit from the appropriate City agency, board or commission in accordance with local law.

If required public improvements are not complete at the time of parcel map or final map approval, the Subdivider shall enter into a Public Improvement Agreement with the City in accordance with the applicable procedures of Subdivision Code Section 1651.

2. Security

- a. The requirements of this Section apply to all Public Improvement Agreements.
- b. The Director shall not sign or record a Final Map or Parcel Map until DPW has received and approved all improvement securities required herein in the form prescribed by the City pursuant to Government Code Section 66499 *et seq.*
- c. DPW shall require a performance bond or other acceptable security as provided in Section 66499 of the Government Code in the amount of 100 percent of the estimated cost of completion of the construction of the unfinished public improvements, as determined by the City Engineer, or installation of all public improvements, as determined by the City

Engineer, for all subdivisions to secure satisfactory performance of those obligations. As a guarantee of payment for the labor, materials, equipment and services required, a payment bond or other acceptable security shall be required for 50 percent of the estimated cost of completion of unfinished public improvements as the City Engineer determines. For purposes of the preceding sentences, the "estimated cost of completion" shall include all costs of remediating any hazardous materials as necessary to permit completion of the required public improvements.

- d. DPW shall release or reduce security upon completion of construction as follows:
 - i. DPW shall reduce security to 10 percent of the original amount for the purpose of guaranteeing repair of any defect in the improvements which occurs within one year of when:
 - 1) the Subdivider has completed the public improvements to the satisfaction of the Director; and
 - 2) the Clerk of the Board of Supervisors certifies that no claims by any contractor, subcontractor or person furnishing labor, materials or equipment for the required public improvements have been filed against the City prior to or within a 100-day period following completion of the public improvements.
 - ii. If any claims by any contractor, subcontractor or person furnishing labor, materials or equipment to the Subdivider have been filed against the City, then DPW shall reduce the performance security only to an amount equal to the amount of all such claims filed or to 10 percent of the original amount whichever is greater.

iii. DPW may reduce security in conjunction with completion of a portion of the public improvements to the satisfaction of the Director, to an amount that the Director determines; however, in no event shall DPW reduce the amount of the security below the greater of

- 1) the amount required to guarantee the completion of the remaining portion of public improvements and any other obligation imposed by the SMA, this Code or the Public Improvement Agreement; or
- 2) below 10 percent of the original amount of the security.

iv. DPW shall release security when all of the following have occurred:

- 1) One year has passed since the date of acceptance by the Board of Supervisors, or one year has passed since the date that all deficiencies that the Director identifies in the required public improvements have been corrected or waived in writing; and
- 2) If any claims identified in Subsection (d)(i)(2) have been filed against the City, all such claims have been satisfied or withdrawn, or otherwise secured.

V. TENTATIVE MAP REQUIREMENTS

A. GENERAL

It is the longstanding policy of the City that if the Subdivider constructs public improvements on private property, the Subdivider **shall dedicate such property to the City in fee simple through a grant deed**. The Director of Public Works may waive such a requirement and accept a public easement in lieu of fee ownership only for good cause and after consultation with the City Attorney's Office and any affected City department. The Subdivider shall request such a waiver in writing as early as possible in the subdivision process.

The property underlying the improvements proposed for dedication to the City for public use within a subdivision shall be clearly labeled on the Tentative Map as "to be dedicated in fee to the City" or "to be dedicated as a public easement." Where the property underlying improvements will remain privately owned but used for public purposes, the Subdivider, in consultation with DPW, shall determine whether the easement can be dedicated solely on the face of the map or requires an additional easement agreement with the City. If an easement agreement is required, the Board of Supervisors shall legislatively approve such easement agreement unless local law provides for an alternate form of approval. Privately owned improvements and other encroachments are generally precluded from occupying the public right-of-way. When such use is required, the Subdivider shall obtain a separate approval or permit from the appropriate City agency, board or commission in accordance with local law.

B. APPLICATION PACKET

The Application Packet containing detailed instructions, checklists and requirements for each particular type of subdivision of land is available in the most current and updated form is available at DPW's offices or on the DPW website.

C. CONTENTS OF TENTATIVE MAP

The following items are arranged in a checklist format for sheets in a typical Vesting Tentative Map submittal.

Refer to the applicable Subdivision Code for additional items such as architectural plans that may be required for Vesting Tentative Maps or other requirements below that may be omitted from a Tentative Map that is not a "vesting" tentative map.

The contents of the Tentative Map application do not substitute for any required engineering documents such as grading plans, improvement plans or utility plans, but should be consistent with the design criteria for such documents as set forth in greater detail in the applicable engineering-specific Appendix attached hereto.

The Tentative Map shall be neatly drawn at a scale sufficiently large to present the required information clearly and accurately. All lettering and numerals on the drawings shall be legible from the bottom or right-hand side. In general, a tentative map shall contain the following information.

1. Cover Sheet

- a. Title stating: “Tentative Subdivision Map” or “Vesting Tentative Subdivision Map” or “Tentative Parcel Map” or “Vesting Tentative Parcel Map” or other title as authorized by the applicable Subdivision Code¹¹.
- b. Title stating the location, “San Francisco, California.”
- c. Include “condominium purposes” in Title if applicable and include the number of residential and/or commercial units proposed.
- d. Vicinity Map showing the project location within the region.
- e. Location Map showing the project extents.
- f. Project Data including:
 - i. Street address of project
 - ii. Assessor’s block and lot numbers
 - iii. Owner/Subdivider’s name and contact information
 - iv. Existing and proposed land use zoning
 - v. Project area in acres to the nearest hundredth acre
 - vi. Existing and proposed utility providers and contact information
- g. Legend showing abbreviations, symbology, and linetypes
- h. Name, address, “wet” seal and signature of the Surveyor (wet seal required on printed copy – electronic seal and signature acceptable for pdf copies - 16 CCR 411).
- i. Surveyor’s and/or Engineer’s Statement.

¹¹ a “Vesting” Tentative Map is subject to the requirements of SFSC§1333.2 and Gov. Code §66452.

Note: actual boundary survey only required for “vesting” maps. If the tentative map contains the work of more than one licensed professional, the map should indicate their respective responsibilities and portions of the map completed under their supervision.

- j. A notation superimposed over the Surveyor’s seal stating “preliminary” or “for examination only.”
- k. Sheet numbers: “Sheet ___ of ___” in the lower right corner of each sheet.
- l. Sheet size: 24” x 36” or 30” x 42” with a marginal line drawn 1” from all borders.
- m. Index containing a description of each sheet in the plan set.
- n. Basis of bearings, units of measurement, vertical and horizontal datum.
- o. Statements regarding existing use of property, proposed development, proposed improvements, design modifications and exceptions, retention of ownership in common areas, and whether use of multiple phased final maps is planned.
- p. A reference to environmental evaluation data on the appropriate Planning Department forms.

2. Existing Site Conditions

- a. The names of the adjacent subdivisions, or the record vesting information of adjacent parcels of land, and the Assessor’s block and lot numbers of adjacent parcels.
- b. Location, dimensions and approximate size of existing lots.
- c. The location of all existing buildings within the subdivision and on adjacent land which may be affected by the proposed subdivision.
- d. The location and names of all existing streets within or adjacent to the proposed subdivision, together with overall widths of roadways.

- e. The locations and widths of existing railroad right-of-way, MUNI right-of-way, sewer and other easements within or affecting the proposed subdivision.
- f. Location and dripline of large trees, 8" or larger diameter at breast height, within the proposed subdivision.
- g. Location of all existing visible surface utilities present at the proposed subdivision. Include: drain inlets, clean-outs, water valves, fire hydrants, gas valves, electrical and telephone vaults, utility poles, MUNI poles, street lights, traffic lights, and all other surface utilities fronting or within 25 feet of the subject property.
- h. Location of all existing visible sub-surface utilities present at the proposed subdivision. Include material, diameter and direction of flow (can be based on record information).
- i. Topography with contours delineated at 1' intervals; spot elevations may be added for flat sites as necessary to depict slope.
- j. Location of existing improvements including, building envelopes, sidewalks, top face of curb and flowline, driveways, and other improvements fronting public areas. Note the source (i.e. GIS records, aerial survey, field survey, etc.) and date of the above information and whether any significant changes occurred between then and the time of application.
- k. Note whether buildings or other improvements are to be demolished or preserved in the proposed subdivision development.
- l. North arrow (usually pointing to left or top of sheet), graphic scale, date of drafting, and a submission number, i.e. first submission, second submission, etc.

3. Proposed Parcelization (Lots, Parcels, or Units)

- a. Proposed streets within or adjacent to the proposed subdivision; indicate if proposed streets are to be public or private. If street names have not been selected and approved by the Department of Public Works, identifying letters may be used.
- b. Location, dimensions and approximate size of proposed lots.
- c. All parcels of land proposed to be dedicated for public use such as parks, open space, right-of-way, etc., together with the purposes, conditions, and limitations, if any. Note the party who will be the beneficiary of the offer of dedication if it is an entity other than the City, e.g. non-City governmental agency, Private Utility, Non-Profit, Homeowner's Assoc., etc.

4. Proposed Street Improvements

- a. Proposed streets within or adjacent to the proposed subdivision, together with overall widths of roadways and sidewalks. Indicate curb return radius. Indicate if proposed streets are to be public or private. If street names have not been selected and approved by the Department of Public Works, identifying letters may be used.
- b. Typical cross-sections of proposed and existing streets showing the full width of existing right-of-way and any proposed addition to or reduction in right-of-way.

5. Proposed Underground Utilities

- a. Layout of drainage and sanitary facilities and utilities, including alignments and grades thereof. Show manhole covers and other underground structures together with distance between them and direction of flow. Label separation distances between water mains and other sanitary facilities.

- b. Layout of all other existing and planned utility facilities which would serve the proposed subdivision such as electric, gas, potable water, reclaimed water, AWSS, telephone, cable TV, solar, etc.
- c. Layout of the street lighting and facilities for the fire alarm and police communications system.
- d. Show proposed connections between existing and proposed utilities, between interim sub-phases of proposed development, and proposed lateral service connections to future lots. Show any temporary interim facilities that will function prior to completion of proposed final improvements.
- e. Show location and size of all required easements and right-of-ways needed to serve the public or private utilities.
- f. Note any infrastructure improvements necessary to make the utility facilities operable, whether on-site or off-site, to be constructed together.
- g. Note the party responsible for ownership and maintenance of the actual infrastructure if that party differs from the proposed owner in fee.

6. Proposed Grading Plan

Note: A separate grading plan is required for planned cut/fill involving more than 1,000 C.Y. of earth. Such grading plan should be consistent with the design criteria for such plan as described in greater detail in the applicable engineering specific Appendix attached hereto.

- a. Label proposed pad grades, streets, and other proposed hard surfaces. Label areas of cut/fill.

- b. Note the location, height and type of proposed structural retaining walls.
- c. Include a statement on whether the site grading is impacted by any applicable environmental mitigation measures.

D. ENGINEERING PLANS AND DOCUMENTS

Improvement plans, utility plans and other required engineering plans and documents shall comply with the requirements of the applicable engineering specific Appendices attached hereto.

1. Appendix B

Technical Specifications Related To Engineering Documents Applicable City-Wide Unless Specified Otherwise In Subsequent Appendices

2. Other Appendices

Appendix C: Technical Specifications Related To Engineering Documents For Candlestick Point/Hunters Point Phase II Development. Or, such other appendices as may be subsequently adopted or amended hereto from time to time.

If the engineering plans and specifications related to the proposed public improvements are not addressed in the Appendices, the Subdivider shall rely on the requirements set forth in DPW's Standard Plans and Specifications and the other officially adopted regulatory standards of other City departments.

VI. DEFERRED MATERIALS SUBMITTAL

When a Subdivider requests both phased Final Maps and the deferral of application materials, and the Director of Public Works has approved such a request, DPW shall require the Subdivider to submit Deferred Materials Submittals prior to submittal of a Final Map Checkprint in accordance with Section IV. Subsection F. Such Submittal will graphically present the areas included within the proposed Final Map and include an overlay of all previously deferred items upon the approved tentative map. Additional information on the content and timing of Deferred Materials Submittals may be addressed in the conditions of approval of a tentative map.

VII. FINAL MAP

A. Conditions Satisfied

All applicable conditions of approval shall be satisfied prior to the recording of a Final Map. Public improvement requirements that are not satisfied prior to recording the Final Map shall be addressed and secured through a Public Improvement Agreement in accordance with the provisions of the applicable Subdivision Code and these Regulations. City approved Improvement Plans are a prerequisite to all Public Improvement Agreements.

B. Satisfaction of Conditions Documented

When submitting a Final Map Checkprint, the Subdivider shall prepare a tracking spreadsheet addressing each condition of approval, the date each was satisfied, and the method of satisfaction (actual compliance or future compliance by separate agreement and security).

C. Checkprint Submittal

Final Map Checkprints shall be submitted for review comments and redline corrections. Upon receipt of the requested revisions, the Subdivider shall revise and re-submit another Final Map Checkprint conforming with all requested changes.

Upon satisfactory review of the Final Map Checkprint, the Director of Public Works shall issue instructions for submittal of mylar copies of the Final Map for recording.

The content of Final Maps and Final Map Checkprints shall conform to the technical specifications described in Appendix A.

D. Map Certificates

The Final Map shall bear the following certificates or acknowledgments:

- a. A certificate, signed and acknowledged by all parties having any record title interest in the land subdivided, consenting to the preparation and recordation of the Final Map and an irrevocable offer of dedication for public use of the streets and easements shown.
- b. Notary's acknowledgment of signatures.
- c. Approval of the Director of Public Works and City Engineer.
- d. Approval as to form by the City Attorney.
- e. Certificate of the City and County Surveyor.
- f. Certificate of the Surveyor.
- g. Certificate(s) of the Clerk of the Board of Supervisors as to liens or taxes.
- h. Certificate of the Clerk of the Board of Supervisors approving the map and accepting and/or rejecting the offers of dedication.
- i. The Recorder's Certificate.
- j. Certificate of Compliance.

VIII. PARCEL MAP

The DPW review and approval process for Parcel Maps shall be the same as for Final Maps indicated in the previous section. Parcel Maps shall include the same information specified for a Final Map with the exception that required certificates may vary as listed below.

A Parcel Map shall bear the following:

- a. Certificate of the Surveyor.
- b. Certificate of the City and County Surveyor.
- c. A certificate signed and acknowledged by all parties having any record title interest in the real property subdivided, consenting to the preparation and recordation of the parcel map.

Note that when no offers of dedication are being made, then signature blocks for Trustees or Beneficiaries are not required to be shown.
- d. Notary's acknowledgment of signatures.
- e. The Recorder's Certificate.

Recommended standard forms of the above certificates and acknowledgments are available at DPW's offices or on the DPW website.

IX. RECORD OF SURVEY MAP

A Record of Survey (ROS) map may be filed for any purpose specified under applicable State law.

All recorded maps shall comply with the technical requirements specified in Appendix A,

A Record of Survey Map shall bear the following:

- a. Certificate of the Surveyor.
- b. Certificate of the City and County Surveyor.

- c. The Recorder's Certificate.

Recommended standard forms of the above certificates and acknowledgments are available at DPW's offices or on the DPW website.

X. ADDITIONAL REQUIREMENTS

A Tentative Map application shall be accompanied by the then current application fees as published and available at DPW's offices or on the DPW website.

A Parcel Map or Final Map shall be accompanied by the following:

- a. A recording fee. Refer to the Office of the Assessor-Recorder for the current fee schedule.
- b. Title report or reports updated to within 45 days of recording.
- c. A tax certificate dated within 30 days of date of submittal.
- d. Any other item(s) requested by the mylar approval transmittal.
- e. A tracking spreadsheet document, signed by the Subdivider or Applicant, indicating how and when each Condition of Approval was satisfied.

A Parcel Map or Final Map, when applicable, shall also be accompanied by the following:

- f. Grant Deed: A deed(s) to the street areas, pedestrian ways, and other property to be dedicated to public use transferring the title in fee to the City and County of San Francisco. A title report covering the parcels dedicated shall be furnished showing the parcels to be free and clear of all encumbrances. This deed shall also be accompanied by an irrevocable offer of the property and a separate irrevocable offer of the proposed improvements referencing approved improvement plans. An interim temporary construction easement

shall be also offered by separate instrument such that the City can step into the shoes of the Subdivider in the event of a failure to complete construction of the improvements.

- g. Grant of Easement: If the Director of Public Works authorizes a public easement in lieu of a grant deed, the Subdivider shall submit the easement at this time unless the easement can be shown and dedicated solely on the face of the map. The easement to the City and County of San Francisco shall contain the regular conditions and restrictions shown in the City's standard form for easements.
- h. Improvement Agreements: A draft version of the Improvement Agreements applicable to the Final Map shall be submitted with a Checkprint and fully executed Improvement Agreements shall be required at least one week prior to recordation of a Final Map.
- i. Monument Bond: A bond in an amount that the City and County Surveyor determines is necessary to cover the cost of setting monuments if the monuments are to be set after the Final Map is recorded.

XI. SETTING MONUMENTS

The Surveyor shall set permanent survey monuments prior to the recordation of any map in such positions that another surveyor may readily retrace the lines of the survey or subdivision. The proposed number of monuments and their locations is subject to review and approval by the City and County Surveyor.¹²

¹² Refer to Appendix A. for additional details and requirements.

XII. REVISIONS AND CERTIFICATES OF CORRECTION

Upon written request of the Surveyor who prepared the map, the City and County Surveyor may allow a Final Map or Parcel Map, once submitted for recordation, to be recalled prior to recordation.

The request for a recall shall state the reason for the recall and the nature and extent of the revisions to be made.

No recorded Final Map or Parcel Map may be repeatedly amended with certificates of corrections.

Where the extent and occurrence of such corrections are excessive in the opinion of the City and County Surveyor, he or she shall require a new map to be filed and approved. A fee shall be charged, based on actual cost, for checking and processing of each certificate of correction.

XIII. SEVERABILITY

If any section, subsection, sentence or provision of these Regulations is ruled inconsistent with the provisions of other existing State or local statutes and declared void, such said section, subsection, sentence or provision shall not in any way invalidate or change any other portion or portions of these Regulations.

XIV. EFFECTIVE DATE

The provisions of these Regulations, as amended, shall become operative upon approval and adoption by the Director of Public Works.

APPENDIX A – TECHNICAL SPECIFICATIONS RELATED TO SURVEYS PERFORMED IN SAN FRANCISCO

I. GENERAL

Suggested guidelines for subdivision maps in San Francisco.

Although it is understood the County Surveyor is limited as to what can be required for a Record of Survey, following these Guidelines will be a substantial benefit in future years to the public and to the surveyors who may one day follow in our footsteps. This document does not provide an exhaustive discussion of the many unique situations that act to create these procedures. However, the City and County Surveyor is available to assist fellow Land Surveyor's or members of the public who wish to have a dialogue regarding these policies or who have any questions regarding their application.

Boundary surveys completed in San Francisco are subject to procedures unique to this City. The historical and physical realities of the City and County of San Francisco (CCSF) yield many unique situations which can be positively mitigated with the formalization of certain customs and consistent practices to promote and maintain reliable land records.

II. RETRACEMENT SURVEY POLICY

A. SURVEYS PRESUMED TO REFLECT DEED

When a surveyor submits a survey to the CCSF for review and the survey is a retracement of lands described by metes and bounds, the survey must clearly depict relationship to the deed of record.

B. EXCEPTIONS

The City and County Surveyor, on a case by case basis, may request evidence extrinsic to the record deed to support a boundary resolution. The following guidelines are found consistent with the historical practice of surveying in this community, but are not conclusive or meant to preclude any private property rights or any other rights of the City and County of San Francisco or the State of California.

1. Deed Calls at Variance from Long Occupation

If the physical occupation on the subject property is discrepant with the written deed and the Surveyor proposes a resolution based upon the physical occupation, the survey shall show the relationship (by dimensions on the survey map) between the resolved boundary location and the record deed location as required to comply with PLS Act Section 8764. At a minimum, the following should be addressed and included in the proposed resolution¹³:

- a. Title research that includes McEnerney deeds¹⁴ for the subject parcel and all adjoining.
- b. Field measurements documenting the location of the physical occupation of subject property, its adjoining, and present location of improvements along the full width of the

¹³ Professional Land Surveyor's (PLS) Act Sec. 8764(d) and (g), requires the submittal of specific requested information where surveys have been previously performed by others.

¹⁴ Research should extend back in time to a point of common ownership of the parent tract. Because land records prior to the 1906 fire were largely destroyed, the McEnerney decrees to establish title are often the earliest surviving documents of record in the City.

block together with a comparison of those locations shown on historical surveys as required by PLS Act Section 8764.¹⁵

- c. Evidence demonstrating that current occupation supports the historical evidence of occupation dating back to the era of the original McEnerny judgments. In such cases, the Surveyor may, consistent with his or her professional opinion, monument and hold as the property boundary either the record deed line or the occupation line. However, in doing so, the survey shall clearly state which of the two lines is purported to be the property boundary (deed or occupation).

Land Surveyors are not authorized to determine title or whether physical occupation has ripened into actual transfer of title. Land Surveyors are authorized to weigh all applicable evidence and opine on the location of the property boundary based on that evidence. If there exists physical evidence that is in contradiction to the title boundary, then the Surveyor must also show that additional information in an effort to memorialize all relevant survey evidence needed to conclude their opinion. In such a case, the use of extrinsic evidence may support the conclusion not that title changed, but rather that the reliably documented historical occupation is consistent with the actual intent of the

¹⁵ This would include but not be limited to the Block Diagrams on file with the City. Original City field notes dating from the era of the 1906 fire have been found to support the information portrayed on many of the Block Diagrams

parties as expressed in light of the circumstances¹⁶ of the 1906 earthquake and fire that necessitated the McEnerney deeds.¹⁷

2. Unwritten Rights

These cases are not correctable by the surveyor. They are characterized by relatively shorter (5+ years) occupation. An actual transfer of title may have occurred, but the City shall recognize such transfer only after formal judicial action (quiet title) or agreement between the concerned parties (lot line adjustment, grant of fee ownership, easement, etc.).

3. Defective Deeds

A deed is presumed to have a defect in cases where the discrepancy between the deed and occupation is explained from evidence other than historical occupation alone. Such cases include among others, problems created through the chronology of McEnerney judgments and subdivisions of property containing some deficiency. Such defects may be, but are not necessarily, correctable by the Surveyor. Such retracements shall be based on substantial record evidence that clearly explains why the evidence invariably supports the Surveyor's conclusion. The explanation may incorporate graphic and/or narrative formats and needs to reach a logical conclusion.

¹⁶ Fire destroyed most of the public records existing in 1906. However anecdotal evidence and fragments of surviving documents show that substantial portions of the City had been surveyed, platted, developed and occupied since the time of statehood.

¹⁷ Civ.Proc.Sec.2077 that establishes principles for construing doubtful or uncertain descriptions of real property

III. SURVEYS AND COMPUTATIONS

- a. As a basis for a recorded map, a Surveyor shall complete a final survey of the land to be subdivided. If the schedule of construction of pertinent improvements potentially conflicts with an anticipated boundary location, the Surveyor is encouraged to consult early with the City and County Surveyor's office to help resolve any boundary questions. To help mitigate delays in the development schedule, the Surveyor may submit a complete boundary survey for review and comments at the time of tentative map submittal or as early thereafter as possible.
- b. The Surveyor shall furnish to the Department closure calculations, in a form that the City and County Surveyor approves, that give bearings, distances, and coordinates, and shows the mathematical closure of lots. For calls to a remote point of commencement or ties to distant controlling monuments, the Surveyor shall provide a similar closure report that allows the ties shown on the map to be confirmed. Alternatively, the Surveyor may submit a least squares adjustment report, in a form that the City and County Surveyor approves, that is based on redundant observations.
- c. The Surveyor shall ensure that the exterior boundary and control ties for each block of the subdivision close.
- d. The Surveyor shall tie to all monuments, property lines, street and alley lines, and all easements or right-of-ways associated with a survey and that serve to perpetuate and preserve existing survey control.

- e. Surveys that show bearings shall tie to and have as a basis of bearings the CCSF-CS13¹⁸, another prior map of record that is referenced on the map, or as otherwise approved by the City and County Surveyor.

IV. DETAILS OF RECORD MAPS

- a. All Record Maps shall be clearly and legibly printed using permanent black ink on mylar film. All affidavits, certificates and acknowledgments shall be signed using a permanent black ink that dries without tracking or sticking onto adjacent sheets. The Subdivider or Applicant shall submit the Record Map to the City and County Surveyor for recording.
- b. All characters shall have a minimum text height of 1/10th of an inch at the plotted scale of the map. No lines or symbols shall cross through or obscure the printed characters and any such lines or symbols shall be trimmed or masked to preserve map legibility.
- c. The size of each sheet shall be 18 inches by 26 inches overall, with a marginal line drawn completely around each sheet leaving a blank margin one inch in width.
- d. A printed and graphic scale shall be shown on the map. The map must be sufficient to show all details clearly. Additional sheets may be employed to accomplish this purpose. Each sheet shall include a north arrow, the number of the sheet and the total number of sheets comprising the set, its relation to the adjoining sheets, and the basis of the bearings used.

¹⁸ City and County of San Francisco 2013 Coordinate System (CCSF-CS13), as established by that Certain Record of Survey 8080, recorded April 4, 2014 in Book EE of Survey Maps 147

- e. All survey and mathematical information and data necessary to locate all monuments and to locate and easily retrace any and all interior or exterior boundaries, including angles or bearings and distances for all straight lines shall be shown on the map. The map shall show radius, length and central angle of all curves. Non-tangent curves shall include additional curve elements such as chord length and chord bearing.
- f. Each block and lot shall be numbered. Lots on Final Maps shall use “lot” followed by Arabic numerals, i.e. “Lot 1”. Any lots on Final Maps dedicated to the public shall be designated with alphabetic letters, i.e. “Lot A”. Lots on Parcel Maps shall use “Parcel” followed by alphabetic letters, i.e. “Parcel A”. Contact the County Surveyor for naming conventions on Parcel Maps that will dedicate parcels to the public. The record map shall show angles or bearings and distances of each lot, block, and boundary line, except when bearings or distances of lot lines in any series of lots are the same. The map may omit such bearings or lengths from each interior parallel lot line of such series. The map shall show each required bearing and distance in full. Angular measurements shall be shown to the nearest arc second and distances shall be shown to the nearest hundredth of a foot using U.S. Survey Feet as the unit of measurement, unless otherwise approved by the City and County Surveyor. Where needed to simplify or compare measurements to earlier record documents (deeds calling to fractions of an inch), distances may be converted and shown to the nearest thousandth of a foot. In such case, the Surveyor shall place a cautionary note explaining why the increased precision is shown and that it is not intended to imply a more accurate measurement.

- g. The record map shall designate each street by the name that the Director of Public Works has authorized.
- h. The map shall show locations of all new monuments and shall describe them with sufficient detail so that they can be easily identified. Monuments not set at the time of the Final Map shall be labeled "To Be Set." A map amendment shall be subsequently filed after monuments are installed and as a condition of the release of associated security.
- i. The record map shall indicate exterior boundary of land to be subdivided by means of a bold border of such a character that it will not obliterate any figures or other data.

V. MONUMENTATION

Subdivider shall not place monuments located in pavement areas until construction of pavement is complete. If a Record Map is filed before pavements have been constructed, the City and County Surveyor shall require the Subdivider to post a bond with DPW in an amount the City and County Surveyor determines shall guarantee that the monuments will be set. The Subdivider is required to set all monuments within two years of the City Engineer's determination that the construction of pavement has been completed. The PLS or RCE number shall be affixed to monuments set by the survey per the PLS Act Section 8772.

Monuments shall consist of the following alternatives as approved by the City and County Surveyor:

- a. A granite or concrete monument, 5 x 5 inches at the top, 9 x 9 inches at the bottom and 30 inches long. Subdivider shall place a lead plug, one inch in diameter and two inches long, in the center of the top face and the exact monument point marked with a brass nail. The

Subdivider shall cap the monument with a cast-iron frame and cover, the design of which shall be approved by the City and County Surveyor.

- b. A surface metal disk countersunk and set flush in the surface of a concrete or rock structure of such a nature as to provide a permanent fixed and immovable reference point. The disk shall be composed of brass, bronze, or other comparable durable metal.
- c. Other sufficiently durable and identifiable monument as approved by the City and County Surveyor. Where feasible, the Subdivider shall place a 1/2" x 1/4" ceramic magnet below any monument to aid in future recovery and perpetuation of the monument.

VI. MONUMENT DESTRUCTION AND PROCEDURES FOR PRESERVATION

Survey monuments in the City are a valuable public resource that Subdividers and applicable governmental agencies shall preserve and perpetuate. Monuments form the tangible substance of land boundaries and perpetuate the horizontal and vertical location of land-related rights and responsibilities. The improper disturbance of survey monuments is illegal¹⁹ and may amount to a crime.²⁰

A. LOCATING MONUMENTS PRIOR TO CONSTRUCTION

¹⁹Bus. and Prof. Code Sec. 8771(b) requires that survey monuments in the public way be referenced before construction, their positions recorded, and if disturbed or destroyed, be reset and perpetuated – all under the supervision of a Surveyor and in cooperation with DPW. See also The Greenbook – Standard Specifications for Public Works Construction Sec. 2-9.1, reiterating the above and explaining that a contractor is to provide notice before disturbing a survey monument and bears the expense of replacing a disturbed monument.

²⁰ Penal Code Sec. 605 makes the malicious intentional destruction of survey marks a misdemeanor.

Prior to performing any construction within any public street, public easement, or other City owned property, a Surveyor shall locate and reference all survey monuments on a Corner Record form or Record of Survey. The construction zone within which a survey monument is presumed to be disturbed shall include any work done within 10 feet of a survey monument. If the proposed work will disturb any survey monument the City owns or sets, the Subdivider shall contact the City and County Surveyor at least two weeks prior to construction and submit a Monument Reference Request form and the appropriate fee. The form, instructions and amount of the fees are available on the DPW website.

Examples of City monuments and additional identifying information for City-owned monuments are available from DPW upon request.

B. REPLACING MONUMENTS AFTER CONSTRUCTION

When construction is substantially complete, but before certificate of final completion, the Applicant shall schedule an inspection of any monuments that existed prior to construction and within the construction zone. The Applicant shall reset and perpetuate any monuments that were disturbed or destroyed under the supervision of a Surveyor and file this information with the City and County Surveyor on a Corner Record or Record of Survey. If the monument was a survey monument that the City owns or set, the Applicant shall contact the City and County Surveyor at least two weeks prior to completion,

finalize the Monument Reference Request, and submit the appropriate fee per replaced monument. The form, instructions and amount of the fees are available on the DPW website.

VII. STANDARD FORMS AND AGREEMENTS FOR EASEMENTS AND FEE DEDICATIONS

All offers of dedication, grant deeds, and agreements to benefit the public shall be based on the standard forms available upon request from DPW. The content and form of all final offers, deeds and agreements shall be reviewed and approved by DPW, the City Attorney, and if required the Director of the Division of Real Estate and the Board of Supervisors prior to any City acceptance or recordation.

A. PRIVATE EASEMENTS BETWEEN PRIVATE PARTIES

A Surveyor shall locate private easements on all record maps and identify them on the face of the map in a note describing the use of the easement and listing the easement recording information. Note that the map notation of the easement and the corresponding information in the title report should match. A subdivision map may not be used to purport to create an easement benefiting a private party.

B. QUASI PUBLIC EASEMENTS

A Surveyor shall locate private easements intended to benefit a public entity in their proprietary capacity on the face of all record maps and label them "Private Easement for

Public Utilities" or as appropriate. These easements and agreements shall be in the form that the public entity, and if necessary, the City Attorney approves. The Subdivider shall submit a copy of the approved easement and if applicable, the approved easement agreement, with a Checkprint prior to recording the map. The Subdivider shall include a note describing the use of the easement and listing the easement's separate recording information on the face of the map. In the case of an easement not separately recorded, then the Subdivider shall provide a copy of the public entity's official written interim acceptance of easement to DPW at the time of submittal of a Checkprint.

C. PUBLIC EASEMENTS

With prior approval and when permitted by the Director²¹, the Subdivider shall irrevocably offer public easements to the City on behalf of the public in perpetuity. The Subdivider shall offer such easements for dedication to the City, but the City will not accept such easements until the City Engineer deems construction of associated improvements complete and the Board of Supervisors acts to accept the dedication. These easements shall be in the form acceptable to DPW and the City Attorney. The Subdivider shall submit a copy of the easement and easement agreement that the burdened property owner has executed with a Checkprint prior to recording the map. The Subdivider shall include a note making an irrevocable offer of the easement to the City,

²¹ Subdivision Regulations Sec. V (A), note the City's policy to require fee dedications. See also Sec. E, Conditions of Approval. Note that the PUC requires separate consent and approval for any easement for PUC utilities and may have additional requirements for depth of cover, minimum width and surface treatments not addressed in these Regulations.

describing the use of the easement, and listing the easement recording information on the face of the map. Examples of some public easements are available from DPW upon request.

D. PUBLIC DEDICATIONS IN FEE

The City generally requires dedications in fee for new public right-of-way associated with land development projects.

1. Completeness of Public Infrastructure

The City shall accept only full, complete, and functional public streets for purposes of City maintenance and liability. Full, complete, and functional streets include all the aerial, surface, and subsurface public improvements necessary for, and the full width and length of the public right-of-way from intersection to intersection necessary to safely operate the public street and all other components as designed in perpetuity. The Subdivider shall not offer public improvements to the City for purposes of City maintenance and liability unless the improvements include the full, complete, and functional public street. The City shall not accept temporary streets or other temporary public improvements. Where proposed public streets or other public improvements connect to private, temporary, or non-functional streets or street improvements, the Subdivider shall not offer such public improvements and the City shall not accept such public streets or street improvements for City maintenance and liability purposes unless the Director, after consultation with other affected City Agencies, approves or conditionally approves the proposed connections. The Director, on a case by case basis

and after consultation with other affected City Agencies, may grant an exception to these requirements.

2. Form and Process of Dedications of Land and Improvements

Dedications in fee shall be irrevocably offered to the City. In addition, the Subdivider shall include an irrevocable offer of interim easement such that the City can complete the Subdivider's public improvement obligation in the event of default at any time prior to the City's final acceptance of the fee dedication. In most instances, after Board of Supervisors approval and prior to recordation of the map, the Clerk of the Board of Supervisors shall accept the offer of easement if shown only on the map and reject the offer of fee dedication until the Subdivider completes the required public improvements. The Board of Supervisors shall accept the fee dedication (or easements that include an easement agreements) as part of subsequent legislation that will occur only after the City Engineer deems that the construction of associated improvements is complete, unless the Director determines that it is in the City's best interest to take such action earlier. All offers and dedications shall be in the form acceptable to DPW and the City Attorney and the Subdivider shall execute such offers and dedications prior to City approval. A copy of the approved offers and dedications shall be submitted with a Checkprint prior to recording the map. The Subdivider shall include a statement making the irrevocable offers of dedication to the City and describe the purposes of the dedications on the face of the map. Example documents of past dedications are available from DPW upon request.

VIII. EXEMPT CONVEYANCES

The Subdivision Map Act does not require that a parcel map or final map be filed for certain conveyances to or from a governmental agency, public entity, or public utility²². However, the Subdivision Map Act still applies to the division and it is the City and County Surveyor's longstanding policy to require that such conveyances be adequately memorialized. For each such exempt conveyance where parcel boundaries are newly created and not shown on any existing map of record, the authorized entity shall request a certificate of compliance from the City and County Surveyor for review and filing. Upon City and County Surveyor approval, which shall be issued on a case by case basis, the applicant shall prepare and simultaneously file a Record of Survey to memorialize the newly established boundaries and provide evidence of their physical locations.

²² SMA Sec. 66426.5 and Sec. 66428

APPENDIX B – TECHNICAL SPECIFICATIONS RELATED TO ENGINEERING DOCUMENTS

**APPLICABLE CITY-WIDE UNLESS ADDRESSED OTHERWISE IN
SUBSEQUENT APPENDICES OR OTHER REGULATIONS**

Note: These specifications continue those portions of the 1982 Subdivision Regulations related to engineering. The section numbering here commences with XII, in accordance with the 1982 regulations and for the convenience of users familiar with the older regulations. Users also should be aware of and familiarize themselves with more updated policies and procedures contained in the official design manuals, plans and specifications, rules, and other official policies adopted by the Department of Public Works, the Fire Department, the Public Utilities Commission, and other City and County of San Francisco agencies and departments.

XII. RECOMMENDED DESIGN OF STREETS, BLOCKS, AND LOTS

DPW has adopted the following standards of design for the layout of streets, blocks, and lots in the City and County of San Francisco and all tentative and Final Maps shall conform thereto except where unusual circumstances warrant exceptions.

In accordance with Administrative Code Chapter 98, DPW is guided by the following principles in the review and approval of street designs:

- a. Design of City streets shall be in keeping with the Urban Design Element of the City's General Plan;
- b. the City's Transit-First Policy;
- c. the Better-Streets Policy;
- d. engineering best practices in environmental planning and pedestrian-oriented, multi-modal street designs as adopted within the profession;
- e. incorporation of sustainable water management, hydraulic engineering, and landscape architecture techniques to promote safe and livable public improvements.

These principles are intended to ensure continued quality of life, economic well-being, and environmental health in San Francisco. To support these guiding principles, DPW incorporates by reference Administrative Code Chapter 98 and the concepts of the Better Streets Plan into these Subdivision Regulations. DPW also recognizes the City's General Plan, Transportation Element, Urban Design Element, various Neighborhood Plans, and Neighborhood Streetscape Plans as additional objectives and policies that will guide development and assist City agencies when reviewing and approving street designs so that streets are safe and compatible for all users and modes of travel in specific areas of the City.

DPW notes the importance of the following excerpt from the Better Streets Plan:

“The pedestrian character and quality of place for a given street is determined as much by the design of the roadway between the curbs as by what happens on the sidewalk. Factors such as numbers of lanes, lane widths, design and posted speeds, number of directions (one-way or two-way), and how

the roadway is split among different travel modes (transit, bicycles, vehicles) exert a great influence on pedestrian safety and quality.”

Recognizing the need to apply sound engineering principles for street design in light of these broad policy goals, DPW encourages all designers and developers to consider the totality of these factors in the resulting proposed street designs.

Practical considerations also should include but are not limited to the relationships of intersecting and adjacent streets; roadway access for emergency vehicles; length of street segments; adjacent proposed development, occupant density, and residential or commercial nature of the occupation; type of building construction, height, and building access points for emergency service provisions; driveway cuts and location and type of private ingress and egress, inclusion of parks, mews, and pedestrian-only corridors, curb turning radii at public streets for various types of vehicles; crosswalk and curb location and design; sidewalk widths, sight lines for both pedestrians and vehicles; lane width and direction, parking lane locations and width; bicycle access and accommodations; pedestrian safety and disabled access and accommodations; accommodation of fixed street encroachments, such as trees and street furniture; stormwater management, flood analysis and hydraulic design; grading, soils analysis, liquefaction susceptibility; geotechnical suitability, soil permeability, slope stability, and ground water influences, etc.

In light of these factors and considerations, DPW establishes the following street design standards.

DPW with the input of other reviewing City Agencies may consider modifying these standards on a

case-by-case basis if the Subdivider or sponsoring City Agency presents adequate technical information that supports issuance of an exception to the standards or a design modification.

A. PUBLIC STREETS

The following design criteria governing the dimensions and grades of City streets is the result of the findings of an ongoing multi-department technical engineering review. Users are advised to consult with all affected City departments to verify that adequate safety and separation factors are properly addressed in any proposed new street design. These guidelines are intended to be consistent with the San Francisco Street Design Manual anticipated to be drafted and adopted in the future. These guidelines also are intended to be consistent with the National Association of City Transportation Officials' (NACTO) *Urban Street Design Guide*, and the NACTO *Urban Bikeway Design Guide*. Where topography, conservation of land use, or other public benefit overrides other factors, the Director of Public Works may grant an exception to these requirements. Prior to or concurrent with a tentative map application submittal, the Subdivider may request such an exception or design modification.

2. Definitions

- a. Street. The area between property lines dedicated to public right-of-way purposes, including Sidewalks, Curbs, Gutters and Roadway. All public streets require a minimum width of 40 feet.²³ There is no maximum width.

²³ Street and Highways Code Sec. 1805; see also Sec. 160

i. Sidewalk. The area between property line and face of curb or edge of Roadway as depicted on the official grade and dedication maps maintained by the Department of Public Works. The Sidewalk is composed of three general zones:

1) Frontage Zone. The frontage zone is the portion of the sidewalk located immediately adjacent to the property line, and provides shy distance from buildings, walls, fences, or property lines. It sometimes includes space for building-related features such as entryways and accessible ramps. It also may include landscaping as well as awnings, signs, news racks, benches, and outdoor café seating.

2) Pedestrian Zone. The pedestrian zone, situated between the frontage zone and the furniture zone, is the area dedicated to pedestrian movement and should be kept clear of all fixtures and obstructions. Within the pedestrian zone, the Pedestrian Access Route (PAR) is the path that provides continuous connections from the public right-of-way to building and property entry points, parking areas, and public transportation. DPW requires this pathway to comply with ADA guidelines and is intended to be a seamless pathway for persons with disabilities. As such, this route should be a firm, stable, and slip-resistant pavement. The PAR should be a minimum of 4 feet, but preferably at least 5 feet in width to provide adequate space for two pedestrians to comfortably pass or walk side by side and accommodate pedestrian traffic load. All transitions (e.g., from street to accessible ramp or accessible ramp to landing) must be flush and

in accordance with ADA guidelines. The design engineer shall propose a pedestrian zone width sufficient to accommodate the projected volume of users, subject to the approval of the City Engineer. In no case shall this zone be less than the width of the PAR.

3) Furniture Zone. The furniture zone is located between the curb and the pedestrian zone. To keep the pedestrian zone free of obstructions, the furniture zone should contain all fixtures, such as street trees, bus stops and shelters, parking meters, lamp posts, signs, bike racks, benches, waste receptacles, drinking fountains, and other street furniture.

ii. Roadway. The roadbed, the curb to curb area marking the travel way, is the area of the roadway typically reserved for the curb, curbside parking, and vehicular travel. In a Shared Street, it is that portion demarcated for use by vehicles. The type, quantity, and size of lanes shall be consistent with the requirements of Section B. Constituent Parts, below.

b. Alley. A Street with a Roadway not exceeding 25 feet in width. The overall right-of-way for an alley shall not exceed 40 feet in width or be less than 20 feet in width.²⁴ A standard alley shall have sidewalks on both sides of the roadway that are a minimum of 4 feet in width. These sidewalks shall be designed in accordance with ADA guidelines. DPW shall review and approve other types of alleys (such as Shared Streets) on a case by case basis after consultation with other affected City Agencies. DPW may approve an alley with a sidewalk on only one side on a case by case basis and after issuing an exception.

²⁴ California Vehicle Code Sec. 110; Street and Highways Code Sec. 1805.

B. CONSTITUENT PARTS

The Subdivider is required to dedicate to the City in fee simple ownership a public street of sufficient width to accommodate the sum of the individual components listed below. Subdivider shall demonstrate that streets have all necessary constituent parts and functionality prior to being offered for dedication. The following applies to public or private streets:

1. Traffic Lane

The standard automobile traffic lane shall be 10 feet wide. Recommended traffic lane on a truck, commercial or transit routes is 11 to 12 feet wide, depending on the number of lanes and their location.²⁵ The design of lane widths shall be a function of adjacency to oncoming lanes, parking lane or bicycle lane, and other special conditions such as design speed, curves, and traffic volumes. Streets shall have a minimum of two lanes of opposing traffic. The Director may approve a design modification to allow one-way streets on a case by case basis after consultation with affected City department. Subdivider shall consult with the appropriate City Agencies for additional specifications and requirements for streets that the City may classify and/or design as arterials or collector streets.²⁶

2. Sidewalks.

²⁵ San Francisco currently lacks "designated truck routes"; see MTA Memorandum from the City Traffic Engineer dated June 19, 2013 for additional information related to lane widths for streets with Muni vehicles and bicycle facilities.

²⁶ See California Highway Design Manual Chapter 40 – Federal Aid, and Chapter 60 – Nomenclature for additional information on funding and classification of state and federal highway systems.

Streets shall include sidewalk improvements on both sides of the roadway. Street sidewalk widths shall conform to the following or as the Better Streets Plan may be updated in the future.

Primary Land Use	Street Type	Sidewalk Minimum Width
COMMERCIAL	Downtown commercial	Per Downtown Plan
	Commercial throughway	15'
	Neighborhood commercial	15'
RESIDENTIAL	Downtown residential	15'
	Residential throughway	15'
	Neighborhood residential	12'
OTHER	Industrial	10'
	Mixed-use	15'
SPECIAL	Parkway	17'
	Park edge	24'
	Multi-way boulevard	15'
	Ceremonial	Varies
	Allev	9'
	Shared public way	NA
	Paseo	Varies

Note that additional accessibility requirements exist with technical specifications beyond the scope of these Regulations. DPW advises Subdividers a to contact the

DPW Disabilities Coordinator for specific provisions related to pavement materials, passenger loading zones, and path of travel for disabled persons.²⁷

3. Fire Department Operations.

- a. All streets shall provide a minimum clear width of 20 feet of travel way between obstructions. Obstructions may include parked vehicles, certain curbs greater than 6 inches in height²⁸ or any other fixed object that prevents emergency vehicular travel.
- b. For purposes of calculating the clear width of the travel way, such width may include any combination of the following:
 - i. That portion of any adjacent curbside parking space having a width greater than 7 feet,
 - ii. a bike lane or any other adjacent pavement capable of supporting emergency vehicles where such lane or pavement is separated from the vehicular lanes by paint striping (Class II) or a mountable curb being no more than 2 inches in height (Class I), or other forms of pavement separation that may vary in material type, color, and texture.
- c. Where adjacent buildings are greater than 40 feet in height and not of Type 1 (fire resistive) building construction, and the building entrance locations are not yet specified, the Director may require an operational width of at least 26 feet to accommodate Fire Department operational requirements along each street fronting such a building.
 - i. “Operational width” shall be the combined total of the clear width of the travel way together with those unobstructed portions of adjacent pavement or sidewalks (if

²⁷ See also *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way* as published by the United States Access Board.

²⁸ See San Francisco Fire Code Sec. 503.4, providing additional guidance on what may be considered an obstruction; see also Board of Supervisors Ordinance No. 116-13.

capable of supporting emergency vehicles).Reservation of portions of curbside parking for fire-only access or use of alternative mountable curb designs that allow for safe fire vehicle access to the sidewalk may accomplish this goal. The Fire Department, in consultation with other affected City agencies, may approve other proposals developed in the future.

- ii. In such cases, the Subdivider shall provide sufficient right-of-way width on all abutting sides of a proposed development block to accommodate the foreseeable street design alternatives.
- iii. Where DPW requires the portion of the block to have additional operational width (greater than 20 feet clear), the design engineer shall be locate this in segments along the building frontages with a maximum length of 200 feet for any one segment. Segments may have a minimum length of as little as 100 feet. The Subdivider shall ensure the existence of adequate space for emergency vehicles to pass each other and set up operations at the front entrance of the building. In addition, the design shall provide for meaningful traffic calming measures to ensure safe vehicle speeds along the street, including returning to the standard 20 foot travel way between widened segments. This provision shall not apply to blocks less than 200 feet in length.
- iv. Subdividers are encouraged to consult with the Fire Department early in the subdivision process in advance of when the Subdivider anticipates the construction of such buildings. Information such as building access points, size of building and type of building construction are essential elements needed for constructive agency review.

- v. Any decision to accommodate street widths having greater than 20 feet of travel way shall be approved by the Director only after consultation with and approval by an interagency working group composed of the Fire Department, the Municipal Transportation Agency, the Planning Department and any other affected city agency. When discussing the most appropriate widths of the travel way, the interagency working group shall consider such factors as the role and intended character of the street in the overall street network, the width of adjacent streets, the length of the street(s) in question, the anticipated traffic volume, and emergency and medical response.

4. Bicycle Lanes

All bicycle facilities shall meet or exceed the minimum lane widths provided in the *California Highway Design Manual*, the *California Manual on Uniform Traffic Control Devices*. Subdivider's shall design bicycle facilities in accordance with the *NACTO Urban Bikeway Design Guide*.

5. Parking Lane

The width of a curbside parallel parking lane shall be 8 feet. SFMTA may approve on a case by case basis angled curbside parking designs.

6. Curb Intersection Radii and Turning Movements

Subdividers shall design intersections for and accommodate turning vehicles in accordance with the Better Streets Plan.²⁹

²⁹ <http://www.sfbetterstreets.org/find-project-types/pedestrian-safety-and-traffic-calming/traffic-calming-overview/curb-radius-changes/>

7. Sidewalk Extensions or Bulbs

Sidewalk extensions or bulbs into the roadway at intersection or midblock adjacent to parallel parking shall be 6 feet wide. The Director may approve on a case by case basis wider sidewalk extensions or bulbs where adjacent to angled parking.

8. Median

Any uncontrolled pedestrian crossing of four or more traffic lanes shall have a median or island not less than 6 feet wide in-between opposing traffic directions. The Director shall review on a case by case basis continuous medians that extend more than 400 feet in length or continue beyond a city block

9. Dead End Streets

In addition to all other applicable requirements, Subdivider shall ensure that all requirements of the San Francisco Fire Code are met.

10. Utility Separation

Utilities shall conform to the requirements of state law and the policies of the DPW and the SFPUC.³⁰ Refer to following diagrams³¹ of typical sub-surface utilities:

³⁰ Subdividers shall consult separately with Pacific Gas and Electric Company to determine separation requirements of natural gas or as appropriate for other utilities not addressed herein.

³¹ This diagram is illustrative of certain specifications set forth by the PUC and DPW. This diagram is subject to change and is subject to other technical specifications set forth in these appendices or other official policies that City department may adopt.

Diagram 1 - Subsurface utilities designed with a combined sewer system:

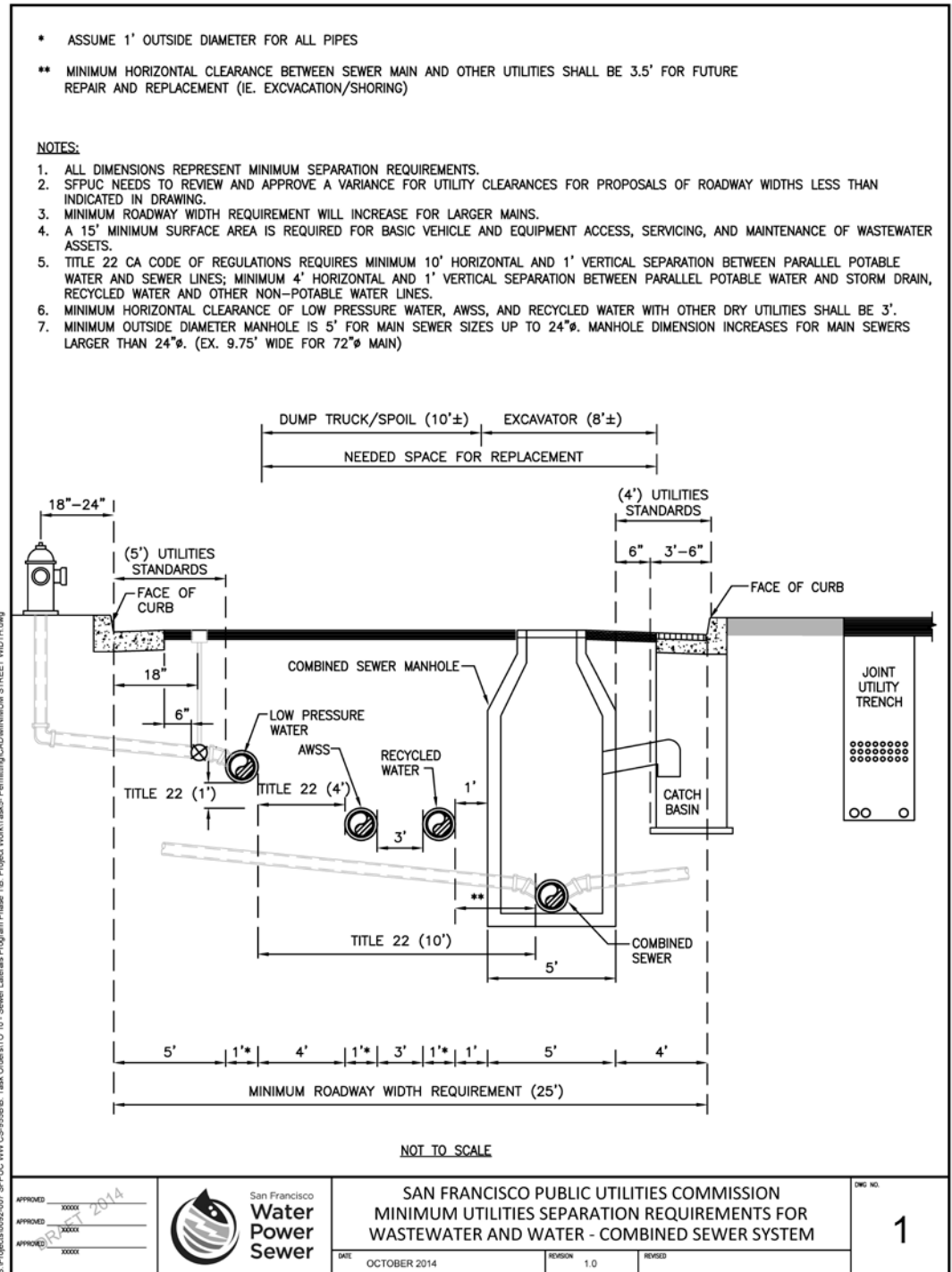
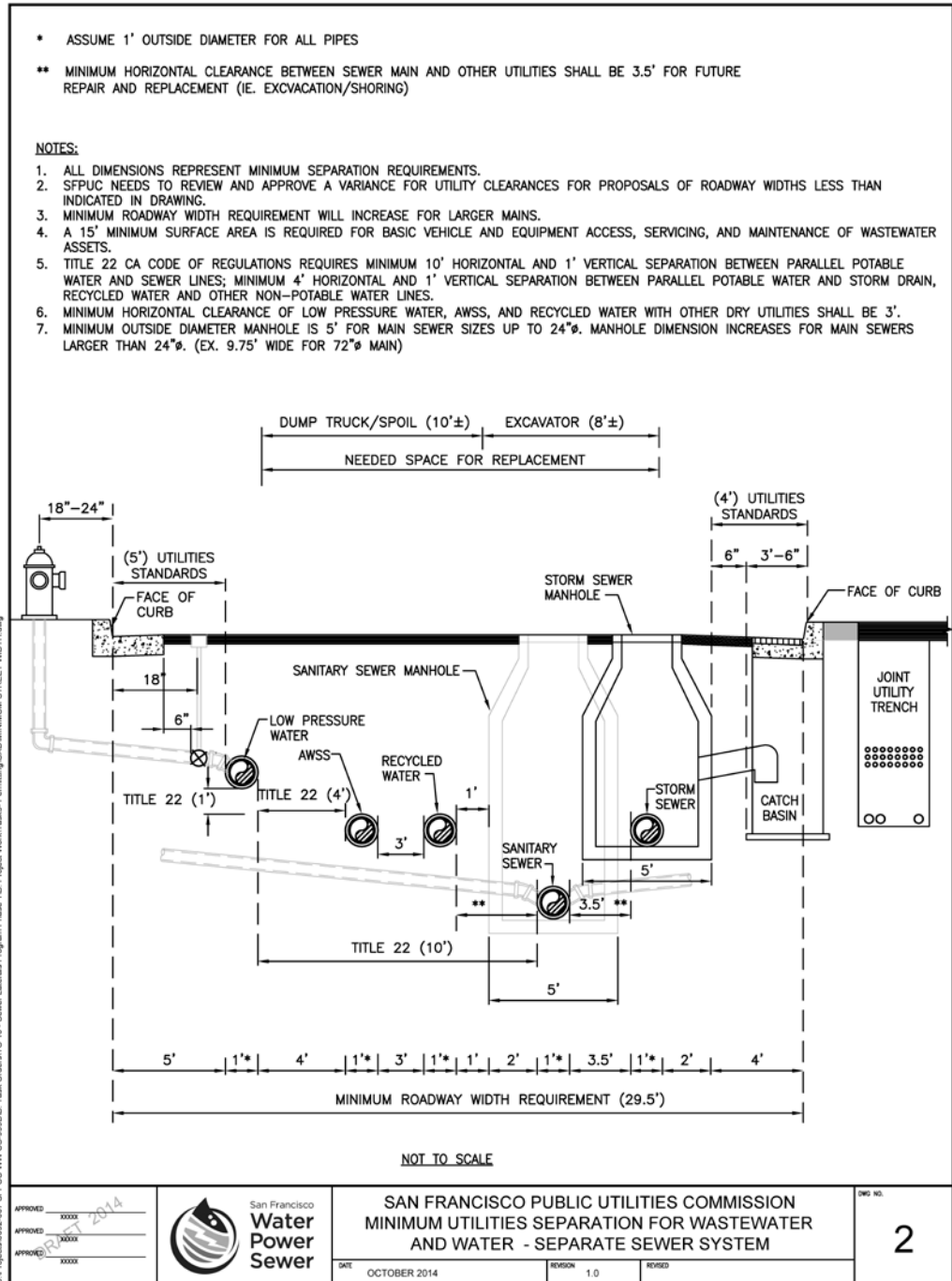


Diagram 2 - Subsurface utilities designed with a separated sewer system:



C. STREET GUIDELINES

1. Alignment

All streets shall, as far as practicable, align with existing streets. The Subdivider shall justify any deviations based on written environmental and design objectives.

2. Intersecting Streets

Intersecting streets shall meet at right angles or as nearly so as practicable.

3. Naming

Streets of a proposed subdivision which are in alignment with existing streets shall bear the names of the existing streets. The Department of Public Works shall approve names for all new streets.

4. Street Grades

DPW shall not approve street grades in excess of 17% except as an exception and under unusual conditions.

Streets having grades in excess of 14% shall require separate consultation with the Fire Department prior to use for fire access purposes.

No gutter grade shall be less than 0.5%. The Subdivider shall provide concrete on any pavement grade less than 1.0%.

The Subdivider shall connect all changes in street grades, the algebraic sum of which exceeds 1.5%, with vertical curves of DPW-approved length sufficient to provide safe stopping sight distances and good riding quality. All changes in street grades shall have an absolute value of the algebraic difference in grades which does not exceed fifteen percent (15%), regardless of any vertical curves.

The Director with the consent of the SFFD may approve of any design modification to this standard on a case-by-case basis.

5. Surface Drainage

- a. Subdivider shall grade streets to provide a continuous downhill path.
- b. At low end cul-de-sacs and sumps, in addition to sewer drainage facilities, Subdivider shall provide surface drainage channels in dedicated easements as relief of overflow to prevent flooding of adjoining property.
- c. Subdivider shall design street and drainage channel cross-sections to provide a transport channel for overland or surface flow in excess of the 5-years storm capacity of the sewer system. The channel capacity shall be the difference between the sewer capacity and the quantity of runoff generated by a 100-year storm as defined by the NOAA National Weather Service or by City-furnished data, applied over the tributary area involved.
- d. Subdivider shall round street curb intersections by a curve generally having a radius equivalent to the width of the sidewalk and the design shall be in accordance with the Better Streets Plan. While allowing vehicle movements for emergency vehicles, the Subdivider shall use the smallest possible radius.

D. PRIVATE STREETS

Private streets shall have a minimum right-of-way width of 40 feet for through streets. Dead-end private streets shall have a minimum right-of-way width of 60 feet. The Subdivider shall consult with the Fire Department and Department of Building Inspection for all designs that might result in less than the minimum width.

E. BLOCKS

1. Length

Blocks shall not exceed 600 feet in length except under unusual conditions. If a Block is greater than 300 feet in length, the Subdivider shall attempt to incorporate a mid-block access generally near the mid-point of each block in accordance with the applicable provisions of the Planning Code.

2. Mid-Block Pedestrian Way

Where a City department or commission requires a mid-block pedestrian way for longer blocks, such pedestrian way shall have a minimum width of 10 feet and be located near the mid-point of each block. The grade of such pedestrian ways shall not exceed 15% unless the Subdivider provides steps that DPW approves as part of the design. The Subdivider should consult all latest laws and regulations, which may be in effect, governing accessibility and the design of pedestrian ways for the disabled.

3. Corners

Where block corners having an interior angle of 60 degrees or less are necessary and approved by the Director, the Subdivider shall round such corners by a curve having a radius of not less than ten feet. And, this radius shall be such that when added to the sidewalk width the aggregate shall not be less than 25 feet. In a business district the block corner may be chamfered in an angular fashion.

4. Block Numbers

The Assessor's Office shall approve all Block numbers.

F. LOTS

1. Dimensions

Lot dimensions shall conform with the City Planning Code.

2. Side Lines

The side lines of all lots shall be at right angles or radial to the street right-of-way line, to the extent practicable.

3. Setback Lines

Setback lines shall be consistent with the provisions of the General Plan.

4. Lot Numbers

The Assessor's Office shall approve all lot numbers.

G. STREET NETWORK DESIGN

In any planned unit development as defined in Planning Code Section 304 or other type of master plan area of equal or greater size, DPW shall prohibit more than one half of the total street network to include 26' minimum clear or larger street width, as counted by the number of block faces fronting on such streets. The Subdivider shall arrange and align such larger streets in these development areas to create a continuous network of emergency vehicle access streets and shall ensure that at least one side of each block fronts on such a street. The Director, only after consultation and agreement with the Fire Department, the Municipal Transportation Agency, the Planning Department and any other affected city agency, may allow more than two faces of any block to front on such larger streets.

XIII. STREET IMPROVEMENT REQUIRED

The Subdivider shall improve, or agree to improve, all streets, highways, or public ways that are a part of or adjacent to the subdivision. Such improvement shall include the necessary paving, curbs, sidewalks, catchbasins, manholes, sewers, side sewers, culverts, storm drains, sanitary sewers and various utilities such as gas, electric, telephone, water, fire protection and alarm, and lighting.³² All street improvements shall be in accordance with the requirements of the Department of Public Works and all other affected City Agencies with jurisdiction over public improvements. The Fire Department shall approve all water supplies for fire protection and alarm facilities. The SFPUC Bureau of Light, Heat and Power shall approve all street lighting facilities. All potable water supply mains, catch basins, manholes, sewers, side sewers, culverts, storm drains, and sanitary sewers shall be in accordance with rules and regulations of the San Francisco Public Utilities Commission. The Subdivider shall bear the difference in cost between a normal size main and that of any larger size main that the City may require because of the City's fire service needs. The City shall not refund any part of such additional cost. The Subdivider shall satisfy the SFPUC that such oversizing of the main will not be detrimental to water quality.

The Subdivider may obtain information regarding street lighting requirements from the Bureau of Light, Heat and Power of the Public Utilities Commission.

³² See also Sec. VII.(D)(1) Completeness of Public Infrastructure

The Subdivider may obtain information regarding requirements for fire alarm facilities and Police Communication system from the Department of Technology³³. If such improvements are not satisfactorily completed at the time the Final Map is filed, the Subdivider shall, prior to the approval of such map, enter into a Public Improvement Agreement with the Director of Public Works in accordance with the provisions set forth in these Regulations.

XIV. RECOMMENDED TYPES OF PAVEMENTS

Pavements and curbs shall be of the types hereinafter set forth and the Subdivider shall construct these improvements to the Standard Specifications of the Bureau of Engineering, Department of Public Works.

A. FOR LIGHT TRAFFIC

1. Grades over 17% (when approved)

An 8-inch concrete pavement.

2. Grades 17% to 0.5%

A pavement consisting of a 8-inch concrete base and a 2-inch asphalt concrete wearing surface, or

3. Also on grades 1.0% - 0.5%

The Subdivider shall construct a concrete gutter at least 1 foot wide and of the same thickness as adjoining pavement.

³³ At the time of adoption of these Regulations (2015), the point of contact at Department of Telecommunications and Information Services is Mike Denning, mike.denning@sfgov.com.

B. FOR HEAVY TRAFFIC

On streets likely to carry heavy loads or large volumes of traffic, the Subdivider shall design pavements according to and in compliance with DPW requirements.

C. COMMERCIAL AREAS

The Subdivider shall construct a concrete parking strip 8 inches thick and at least 8 feet wide adjacent to the curbs in all areas zoned for commercial purposes.

D. CURBS

The Subdivider shall construct standard concrete curbs adjacent to all pavements.

XV. RECOMMENDED STANDARDS OF DESIGN FOR SEWER SYSTEMS

A. GENERAL

The Subdivider shall design infrastructure to remove sewage and storm water from each lot or parcel of land, and to remove storm water from all roads, streets, and sidewalks.

At all sump or cul-de-sac locations, the Subdivider shall design (in addition to normal sewer connections), surface drainage channels to relieve overflows that could flood adjoining property. Subdivider shall dedicate easements for this purpose to the City if the SFPUC requires such easements.

B. SEWERS

1. Location

The Subdivider shall locate sewers in the center of streets, alleys, etc., unless the Director with the consent of the SFPUC approves an alternate design.

2. Depth and Cover

The minimum depth of sewers shall be 6 feet; provided, however, that the Director with the consent of the SFPUC may approve a shallower alternative. In no event shall the cover over sewers in street areas be less than four feet in order to distribute surface loads and to provide space for utility service facilities.

For sewers located in the rear of lots or in easements not subject to surface traffic, the minimum depth of trench shall be four feet. The Subdivider shall design surface drainage in these areas so that natural soil erosion does not result in a build-up of soil covering any manhole castings. The Subdivider may accomplish this with a design of the casting that rises slightly above the surrounding surface.

Sewers are designed to flow under surcharged conditions and, in the event of extreme storms, the surcharge may rise to the street for overland flow transport. In order to prevent backflow from the sewer main into improvements below street grade, the SFPUC prohibits gravity line from sources below the surface grade of adjacent streets to sewer mains. The Subdivider shall install backflow preventers in all properties below street grade. The SFPUC advises the installation of automatic sewage ejectors for any such drainage.

3. Types and Sizes

Sewers 6" to 21" in diameter shall be of vitrified clay pipe (VCP) (ASTM C-700 Extra Strength). Sewers 24" to 36" diameter may be of VCP (ASTM C-700 Extra Strength) with construction modifications, or of reinforced concrete pipe subject to the approval

of the Director with the consent of the SFPUC. Sewers larger than 36" diameter may be of monolithic reinforced concrete or of reinforced concrete pipe subject to the approval of the Director with the consent of the SFPUC.

In addition to circular shapes, the SFPUC may require egg-shaped, basket-handle, or rectangular sections for particular flow conditions.

Standard plans for most monolithic types of sewer sections are available from DPW and/or SFPUC. The Director with the consent of the SFPUC may consider the use of alternative pipe material for specific purposes and situations.

4. Joints

Vitreous Clay Pipe (VCP) sewers shall have bell and spigot joints with factory fabricated compression-type fittings (ASTM-C425). Reinforced Concrete Pipe (RCP) sewers shall have bell and spigot or other approved joints.

5. Alignment and Curves

All VCP or RCP sewers shall generally be laid using straight lines and grades between manholes.

In certain circumstances the Director with the consent of the SFPUC may permit curved sewers. Compound curves are prohibited. The degree of curvature shall conform to ASTM or other appropriate standards.

The Subdivider may lay monolithic concrete sewers on curves, provided the radius of curvature is made as large as practical and is not less than four times the diameter of the sewer.

6. Easement, Bedding and Piling

The Subdivider shall encase all 24" or larger diameter VCP sewers in reinforced concrete, or place them on a reinforced concrete or crushed rock foundation, in a manner that the Director with the consent of the SFPUC requires. The Subdivider shall encase or cradle all VCP sewers 15" or less in diameter, having 15 feet or more of cover, and all VCP sewer 18" or larger in diameter with 10 feet or more of cover in concrete. Encasement and concrete foundations shall be in accordance with Standard Plans.

The Subdivider shall encase all VCP sewers on grades of 30% or greater in reinforced concrete in accordance with Standard Plans, and place concrete against undisturbed ground.

Based on the soil conditions, the Director with the consent of SFPUC may require the Subdivider to place sewers on concrete foundations, encasement, and/or placement on pile foundations.

The Director with the consent of SFPUC may require encasement in areas of possible root intrusion or extreme infiltration.

C. MANHOLES

The Subdivider shall locate manholes preferably at intervals of 300 feet but not more than 350 feet and shall provide them at every change in size, grade, or alignment, at all

junctions of sewers (except side sewers), at ends of sewers, and where catchbasin culverts joint pipe sewers. On sewers with curved horizontal alignment, the Subdivider shall place manholes at intervals that the Director with the consent of the SFPUC approves.

The Subdivider shall construct manholes in accordance with Standard Plans unless the Director with the consent of the SFPUC approves otherwise.

D. TAPERS AND JUNCTION STRUCTURES

The SFPUC requires taper structures where a concrete sewer changes in size or shape.

The SFPUC requires junction structures where concrete sewers merge.

E. CULVERTS

The Subdivider shall construct culverts of VCP 10" in diameter. The Subdivider shall make connections to VCP sewers, and concrete pipe having a diameter less than 42", at manholes only and in accordance with Standard Plans. The Subdivider may make connections to brick sewers which are 3' x 5' or larger and to monolithic concrete sewers or concrete pipe sewers, 42" or more in diameter, directly into the sewer in accordance with Standard Plans and current City practice.

The Subdivider shall lay culvert inverts generally at a depth of three to four feet below pavement grade at the CB, with a fall towards the manhole or sewer of approximately 12 inches, but in no case at a grade of less than two percent.

1. Catchbasins

The Subdivider shall construct catchbasins (CB) at all corners of an intersection except at summit corners where the Subdivider shall located them in the gutter as to most effectively serve the adjacent drainage area.

The Subdivider shall space CB's or Storm Water Inlets (SWI's) not more than 600 feet apart. The Director with the consent of the SFPUC may require closer spacing and additional CB's and SWI's to effectively drain the pavement. The Director with the consent of the SFPUC may require the Subdivider to install multiple inlets.

The Subdivider shall construct CB's and SWI's, if approved by the Director and with the consent of the SFPUC, in accordance with Standard Plans.

2. Sewer Connections

The Subdivider shall install Y-and T-Branched or vitrified clay on all VCP sewers in locations described under Section 3. Side Sewers, to provide connections for side sewers. In general, they shall be 6 inches in diameter for residential districts, and 8 inches minimum in diameter for industrial and commercial districts.

3. Side Sewers

Unless the Director with the consent of the SFPUC permits otherwise, the Subdivider shall install side sewers in conjunction with construction of the main sewer and extend them beyond the curb.

The Subdivider shall install side sewers and space them as herein described. They shall generally be 6" in diameter for residential areas and 8" minimum in diameter for

industrial and commercial areas. The Subdivider shall lay them on a uniform grade upward from the main sewer to a point 12 inches beyond the curb line. In no case shall this grade be less than 1/4 inch per foot.

The upper end of the side sewer, at the curb, shall be of sufficient depth to provide adequate drainage for the property served and, in no case, shall the invert at the curb be less than four feet below curb grade. The Subdivider shall make openings in the existing sewer with a sharp cutting tool; and the Subdivider shall epoxy an approved saddle of appropriate size or strap it to the existing sewer. The Subdivider shall locate side sewers at the lowest elevation of the frontage of the property.

Where the street is to be paved before lot improvements are made, the Subdivider shall construct side sewers beyond the curb before the paving is started. The Subdivider shall close the upper end of each side sewer not in service when the work is backfilled with a vitrified clay stopper, marked with a redwood post, and marked with the letter "S" on the curb, all as specified in the Standard Specifications.

XVI. CAPACITY OF STORM AND COMBINED SEWERS DESIGN

Combined and storm water sewers shall 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.

In general in the design of a combined sewer, the Subdivider need not include sanitary flow and infiltration in computing sewer capacities. However, where a sanitary sewer diversion line,

interceptor, or pump discharge enters a combined sewer, the Subdivider shall include ultimate sanitary flow.

A. Minimum Size

Main sewers shall be a minimum of 12 inches in diameter unless the Director with the consent of the SFPUC approves otherwise.

B. Velocity and Invert Lining

The Subdivider shall design storm sewer for a minimum velocity of three feet per second when flowing full.

The Subdivider shall design combined sewers for a minimum velocity of two feet per second under average sanitary flow conditions (approximately four feet per second flowing full).

The Subdivider shall line the inverts of monolithic concrete sewers with vitrified brick or other approved material when the velocity under maximum sanitary flow conditions equals or exceed ten feet per second (approximately 20 feet per second flowing full).

C. Hydraulic Considerations

The Subdivider shall select sewer sizes so that the hydraulic grade line shall, in general, be four feet below the pavement or ground surface, and at no point less than two feet.

The Subdivider shall use tidal elevation in hydraulic computations, where applicable, which is -3.5', Old City datum. Subdividers shall consult with the City and County Surveyor for conversion information to the newer CS-13 Datum.

The Subdivider shall address in large sewers hydraulic losses in bends where the velocity is seven feet per second or more.

D. RUN-OFF

The Subdivider shall compute storm water run-off by the Rational Formula, as herein described, or such other methods as Director with the consent of the SFPUC determines to be City practice.

Rational Formula: $Q=ACR$, where

Q = Quantity of Run-off in cubic feet per second.

A = Drainage Area, tributary to the point under consideration, in acres.

C = Coefficient of Run-off = Ratio of Run-off to Rainfall.

R = Rate or Intensity of Rainfall in inches per hour.

(= c.f.s. per Acre) for the duration of rainfall corresponding to time of concentration.

1. Rainfall Rate

Rainfall Rate (R), or intensity, used in design shall be taken from the tabulation entitled "San Francisco Rainfall Rate Table 1941," Plan L-3903.4 dated February 1941, or subsequent revisions thereof, and is defined as a 5-year storm. The intensity, or rate, that the Subdivider uses at any point along the sewer line, shall be the intensity corresponding to the total time of concentration at that point.

2. Area

The Subdivider shall use the total area tributary to the point under consideration in design.

3. Coefficient of Run-off (C)

Coefficient of Run-off (C) for any area depends upon the type of development, character of the soil, slope and general topography, and the proportion of the area

occupied by improvements. The Subdivider shall use the coefficient in design that is in accordance with the values shown in Table I and shall be subject to the approval of the Director with the consent of the SFPUC.

4. Time of Concentration and Inlet Time

Time of concentration at any given point is the time required for the runoff from the most remote point in the drainage area to reach that point, and is equal to the inlet time plus the time of flow in the sewer to the point under consideration.

Inlet time is the time required for the water from the most remote point of the drainage area to reach the uppermost inlet of the sewer system. The inlet times that the Subdivider uses in design shall be in accordance with the values shown in Table I. For inlet times of less than five minutes, the Subdivider shall use the intensity of 3.13 inches per hour.

Coefficients of run-off and inlet times for various types of districts are shown in the following table. For those districts that do not fit into any of the categories below, the Subdivider shall submit proposed coefficients with rationale to the Director and the SFPUC for review and approval.

COEFFICIENTS OF RUN-OFF AND INLET TIMES

TABLE I

<u>Type of District</u>	Range of Values	Inlet Time in Minutes	
	<u>Run-Off Coeff. "C"</u>	<u>Slope 3% &</u> <u>Over</u>	<u>Slope Under 3%</u>
Commercial	.80 to .95	3	5
Industrial	.50 to .90	3-5	4-6
Apts. & Flats	.50 to .80	3	5
Residential (Attached Homes)	.45 to .70	4	6
Residential (Detached Homes)	.40 to .65	5	7
Suburban	.25 to .35	6	10

E. SELECTION OF SEWER SIZES

The Subdivider shall computed sewer sizes by the Kutter, or the Manning Formulas. The values for the coefficient of roughness "n" to be used for different types of sewers shall be as indicated below in Table II.

TABLE II

COEFFICIENT OF ROUGHNESS "n"

<u>Type of Sewer</u>	<u>Coefficient "n"</u>
Vitrified Clay Pipe	.013
Monolithic Concrete	0.13
Centrifugally Cast Concrete Pipe	0.12 - 0.13
Brick	0.15
Corrugated Iron	0.25

XVII. SANITARY FLOW CRITERIA IN THE CITY AND COUNTY OF SAN FRANCISCO DESIGN BASIS

Sanitary or interceptor sewers shall be designed to carry the ultimate maximum sanitary flow plus infiltration computed as hereinafter described. Sewers 12 inches to 18 inches in diameter shall have sufficient capacity to carry the computed design flow when running half full. Sewers larger than 18 inches shall have sufficient capacity to carry the computed flow when running 3/4 full.

A. MINIMUM SIZE

Sanitary main sewers shall be a minimum 12 inches in diameter the Director of Public Works with the consent of the SFPUC permits otherwise.

B. VELOCITY

The grade of sanitary sewers shall be such as to produce a minimum velocity of 2 to 2.5 feet per second under average sanitary flow conditions.

C. DEPTH

The Subdivider shall construct sanitary sewers at the minimum depths specified under Section XV. Recommended Standards of Design for Sewer Systems.

D. SELECTION OF SEWER SIZES

In determining sewer sizes the coefficient of roughness "n" to be used shall be as specified for various types of materials in Table II.

E. QUANTITY OF FLOW

Where no water use records are available, the maximum ultimate sanitary flow that the Subdivider uses in design shall be computed on the basis of 180 gallons per capita per day or 0.278 cubic feet per second per 1000 population. This maximum flow is predicated on an average ultimate flow of 100 gallons per capita per day. Where it is known that the average ultimate flow exceeds or will exceed 100 gallons per capita per day, the Subdivider shall adjust accordingly the maximum ultimate flow for purposes of the design.

The Director and the SFPUC shall give special design consideration to areas that include large water users or industries which discharge large quantities of industrial wastes, such as breweries, slaughter houses, canneries, etc., in regard to quantity and quality of sewerage.

Population - In the absence of actual census counts, or other data, the Subdivider shall assume population densities for purposes of ultimate sanitary flow computations within the limits shown in Table III. The Director with the consent of the SFPUC shall approve these computations.

TABLE III
POPULATION DENSITIES

<u>Type of District</u>	<u>Persons Per Acre</u>
Industrial	100 - 150
Commercial	100 - 150
Apartment Houses	150 - 200
Flats	80 - 100
Residential - Attached Houses	50 - 60
Residential - Detached Houses	40 - 50
Suburban	35

1. Infiltration

The Subdivider shall estimate infiltration to be added to the sanitary flow of pipe sewers between the limits of 0.001 second feet per acre, in the fairly high areas of the City with moderately heavy soil to 0.003 second feet per acre, in the low areas of the City where sewers are below the soil-water plane. In high areas with sandy soils, the Subdivider may disregard rates of infiltration.

2. Sanitary Diversions

In computing flows for sanitary diversion lines constructed to carry sanitary flow from a combined sewer to a treatment plant or pumping station, the Subdivider shall make an allowance for the first rains which flush debris from the streets. This allowance shall be equal to a run-off of 1/4 inches per 24 hours (= 0.01 inches per hour = 0.01

c.f.s. per acre) and the Subdivider shall add this to the maximum ultimate sanitary flow.

F. AUXILIARY WATER SUPPLY SYSTEM

For all Subdivision projects in the City, the Subdivider shall construct an Auxiliary Water Supply System (AWSS) to the satisfaction of the San Francisco Fire Department (SFFD), including but not limited to high pressure water mains and hydrants, cisterns, a Portable Water Supply Systems (PWSS), suction inlets and fireboat manifolds. The SFFD shall specify hydrant location spacing, but generally the Subdivider should site hydrants at street intersections to the extent practicable. The Director with the consent of the SFFD shall review and approve any design modification to this standard. The SFPUC shall design any AWSS features on behalf of the SFFD.

XVIII. POST CONSTRUCTION DRAWINGS

A. AS-BUILTS

The Contractor and Construction Manager shall sign and certify as-built plans. The Subdivider, Contractor or Construction Manager shall scan and provide electronic copies of the original redlined plans to the City Engineer and any other requesting City Agency.

B. RECORD DRAWINGS

Upon completion of improvements shown on a set of Improvement Plans, the Subdivider shall update the Improvement Plans with changes made during construction and provide the City with electronic files of the final record drawings and any reports

that the Improvement Plans, Standard Plans, or Standard Specifications require. The record drawings shall be a separate document and shall not contain references to construction submittals, instructional bulletins, or requests for information. The electronic files shall be in AutoCAD (.dwg), or ESRI (.shp, personal or file geodatabase) and/or PDF format or other form as approved by the City Engineer. The Subdivider shall deliver these to the City Engineer, City and County Surveyor, and any other requesting City Agency for a permanent record of the constructed improvements. Attributes and metadata of the constructed improvements shall be included. Pipe attributes shall include material, type and diameter information from DPW look up tables as Object Data or .shp or geodatabase files as applicable. Node attributes shall include Rim, Invert, and Node Type from DPW look up tables as Object Data or .shp or geodatabase files as applicable. Structures shall include Type attribute (i.e.; Diversion, Junction, Weir, Pump Station, etc.) from DPW look-up table as Object Data or .shp or Geodatabase files as applicable.