



Downtown West



Improvement Standards

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1. Use of the Downtown West Improvement Standards

1.1. Standards and Specifications Applicable to the Project

The Downtown West Improvement Standards describe the standards and specifications used to evaluate horizontal improvements within the Downtown West PD Zoning District (or “Project area”). Unless otherwise described herein, the “standard specifications,” as defined in Chapter 19.08.400 of the City of San Jose (City) Municipal Code and otherwise referenced in Title 19 of said Code, applicable to the Downtown West Mixed-Use Project (“Project”), are the Standard Details and Standard Specifications, both as adopted by the City’s Public Works Department, and dated July 1992, subject to any generally-applicable modifications or amendments thereof adopted prior to the effective date of the Development Agreement by and between the City and Google LLC (referred to hereafter collectively as the “1992 Standards”). These Downtown West Improvement Standards incorporate the 1992 Standards by reference and supersede or modify certain terms of the 1992 Standards whereas described herein. The Downtown West Improvement Standards are to be used within the Project area for purposes of evaluating horizontal improvements, including horizontal improvements required as a condition of any approval and serve as the standard for the design and the evaluation of completeness of horizontal improvements, and for the eligibility of acceptance of improvements proposed for public dedication. To the extent that horizontal improvements (e.g., the utility corridors for district utilities referred to as “utilidors”) or horizontal improvement standards are not described in the 1992 Standards, this document identifies other sources of authority that provide standards for the evaluation of the subject improvements.

1.2. Permitting Procedures and Standards for District Systems & Stormwater

This document describes the permitting procedures and standards applicable to the Project’s proposed District Systems and stormwater management as described in the Project’s Infrastructure Plan (Exhibit to the Development Agreement by and between the City of San José and Google LLC, dated September 15, 2020, hereafter “Infrastructure Plan”).

1.3. Additional Improvements Not Described in the Downtown West Improvement Standards

To the extent that any improvement described in the Development Agreement or required as a condition of any approval incorporates engineering, materials or standards that are not contemplated by the 1992 Standards as superseded by the Downtown West Improvement Standards, the Director of the City of San Jose Public Works Department (“Public Works Director”), with respect to proposed public improvements, or the Director of the Department of Planning, Building, and Code Enforcement (“Planning Director”), with respect to proposed privately-owned improvements on privately-owned property, shall evaluate such improvements to determine completeness or eligibility for acceptance by the City (or public improvements), based on the following criteria:

1. The improvements are consistent with any applicable provisions of the City of San Jose Municipal Code, or other binding City regulatory document applicable to the Project;
2. The improvements reflect sound engineering, as may be evidenced by comparison to customary engineering practices or consistency with industry standards; and
3. The improvements do not pose a material risk to public health or safety.

1.4. Future Modifications to Ancillary Documents Providing Standards

These Downtown West Improvement Standards refer to certain ancillary documents to provide standards for horizontal improvements. Such ancillary documents are typically referred to herein by the name of the preparing agency, the name of the document, and the year the document was approved or most-recently amended (e.g., “*CalTrans Specification (2018)*”). It is anticipated that these ancillary documents may be amended or superseded in the future by the agencies responsible for their preparation and approval.

In the event that any standard from an ancillary document referenced herein is amended or superseded, the project applicant may submit a request to the City to authorize horizontal improvements that are consistent with an appropriate alternative standard. Such requests shall be submitted to, and approved by, the Public Works Director for public improvements or privately-owned improvements on public property, or the Planning Director with respect to privately-owned improvements on private property, provided that the proposed alternative standard: (1) is consistent with sound engineering practices, as may be evidenced by reference to industry standards; and (2) if applied, would not result in horizontal improvements that present a substantial risk to public health and safety.

2. Horizontal Improvements

2.1. Site Preparation

2.1.1. Grade-Level Site Preparation Standards

Site preparation work shall comply with the 1992 Standards and the *Caltrans Specifications (2018)*. If conflicts exist within the two documents, the *Caltrans Specifications (2018)* will govern the following criteria:

- Dust Control
- Mobilization
- Construction Area Traffic Control Devices
- Existing Facilities
- Clearing & Grubbing
- Watering
- Dust Palliative
- Earthwork
- Finishing Roadway

2.1.2. Sub-grade Site Preparation Standards

Section 21 of the 1992 Standards references *Caltrans Specification Section 19* with City modifications. The Project will use site-specific geotechnical reports to determine subgrade preparation requirements. In the absence of site-specific geotechnical information at the time of permit submission, the current *Caltrans Specification (2018)* will govern.

2.2. Structures

The following section describes the standards to be applied to the design of external structures located within the public right-of-way or within privately-owned open space areas not otherwise subject to evaluation under *Title 17 of the City of San Jose Municipal Code*.

Specific references are provided below to the relevant sections of the Downtown West Design Standards and Guidelines (DWDSG), an appendix to the EIR. Refer also to the general Standards and Guidelines outlined in the DWDSG Section 4.24.

2.3. Retaining Walls

Retaining walls will comply be designed using materials that integrate with the design of the building, streetscape or open space that they are located within. Finishes could include colored concrete, masonry or stonework, as described in the preferred materials (Section 4.23) of the DWDSG.

Retaining walls shall be designed to comply with the following standards and guidelines:

- 1992 Standards
- *California Building Code* current at the time of permit submission
- *AASHTO LRFD Bridge Design Specifications*
- *California Amendments to the AASHTO LRFD Design Specifications*
- *Caltrans Memos to Designers*
- *Caltrans Standard Plans*
- *Caltrans Foundation Manual*
- *Caltrans Geotechnical Manual*

2.4. Fences

Existing fences between Los Gatos Creek and Downtown West shall be removed or replaced with wildlife-friendly fences as described in S4.7.7 of the DWDSG. These shall be constructed of timber or other earthen materials.

Fences shall comply with the following standards:

- 1992 Standards
- Cal/OHSA
- *ASCE 7 Minimum Design Loads for Buildings and Other Structures*

2.5. Signage

Signage structures shall be as described in Section 8.7 of the DWDSG. Signage structures shall comply with *AASHTO LRFD Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*.

2.6. Pavilions

Pavilions and other external structures are contemplated within the Open Spaces of the project. These could include band stands, stages/decks, screens, canopy structures, trellis structures and the like, as described in Section 4.10 of the DWDSG.

Such structures shall comply with:

- 1992 Standards
- *California Building Code* current at the time of permit submission
- *ASCE 7 Minimum Design Loads for Buildings and Other Structures*

2.7. Bus Shelters

Bus shelters shall comply with:

- 1992 Standards
- *California Building Code* current at the time of permit submission
- *ASCE 7 Minimum Design Loads for Buildings and Other Structures*
- *SCVTA Bus Stop and Passenger Facilities Standards (2010)*

2.8. Bicycle Lanes and Storage

Bicycle Lanes and Storage shall be designed to comply with:

- 1992 Standards
- *California Building Code* current at the time of permit submission
- Caltrans Bike Lane Standards
- Design Information Bulletin Number 89-01 Class IV Bikeway Guidance
- Current VTA Bike Locker Standards

2.9. Trash Enclosures

The 1992 Standards do not provide guidance on external waste enclosures. External trash enclosures will comply with all the requirements listed in the following documents:

- *City of San José Solid Waste Enclosure Area Guidelines for New Construction and Redevelopment Projects (2011)*

2.10. Los Gatos Creek

2.10.1. San Fernando Bridge

The existing San Fernando bridge will be replaced with a single span bridge, removing the existing piers located in the creek bed. The new bridge will contain a pathway for private utilities, beneath the road structure. The private utilities will be underslung in a manner that ensures they are not visible from the east or west approaches or from the bridge itself.

The bridge will be constructed of concrete or steel. Prefabricated options may be explored to minimize disruption during construction.

The bridge shall be designed to comply with:

- 1992 Standards
- *AASHTO LRFD Bridge Design Specifications*
- *California Amendments to the AASHTO LRFD Design Specifications*
- *Caltrans Seismic Design Criteria*
- *Caltrans Memo to Designers*
- *Caltrans Bridge Design Aids*

- *Caltrans Bridge Standard Details Sheets*
- *Caltrans Standard Plans*
- *Caltrans Foundation Manual*
- *Caltrans Geotechnical Manual*
- *Santa Clara Valley Water District Guidelines and Standards for Land Use Near Streams*

Bridge lighting shall comply with the

- *City of San José Public Streetlight Design Guide and its amendment Downtown Streetlight Guide Light Level Goals*
- *AASHTO LRFD Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*
- *Caltrans Standard Plans*

2.10.2. Pedestrian and Cycle Bridge over Los Gatos Creek

The project will deliver a new pedestrian and cycle bridge over Los Gatos Creek, linking the Creekside Walk at Autumn Street with the Los Gatos Creek East open space. The bridge will be a single span, with piers located outside of the TOB to the extent feasible. Prefabricated structures will be considered in order to minimize impact to the riparian corridor during construction.

The bridge will be constructed of mass timber, concrete or steel, or a combination of these. Refer to the DWDSG Standard S4.7.6.

It will be 12 feet in width, as described in the DWDSG Standard S4.15.4.

The bridge shall be designed to comply with:

- 1992 Standards
- *AASHTO LRFD Bridge Design Specifications*
- *California Amendments to the AASHTO LRFD Design Specifications*
- *AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges*
- *Caltrans Seismic Design Criteria*
- *Caltrans Memo to Designers*
- *Caltrans Bridge Design Aids*
- *Caltrans Bridge Standard Details Sheets*
- *Caltrans Standard Plans*
- *Caltrans Foundation Manual*
- *Caltrans Geotechnical Manual*
- *Santa Clara Valley Water District Guidelines and Standards for Land Use Near Streams*

Lighting to this bridge shall be as outlined in Section 8.4 of the DWDSG, and shall comply with:

- *City of San José Public Streetlight Design guide and its amendment Downtown Streetlight Guide Light Level Goals.*
- *AASHTO LRFD Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*
- *Caltrans Standard Plans (2018)*

2.10.3. Viewing Platform and Creekside Boardwalk

Viewing Platforms and a Creekside Boardwalk shall be included in Los Gatos Creek East as described in DWDSG S4.16.2 and S4.16.3. These shall be constructed of timber, concrete or other environmentally sensitive materials.

These structures shall comply with:

- 1992 Standards
- *California Building Code* current at the time of permit submission
- *ASCE 7 Minimum Design Loads for Buildings and Other Structures*

3. Right of Way

3.1. Street Sections

The Project proposes the following modifications to the 1992 Standards to follow current design and construction standards as provided by Caltrans in the *Caltrans Standard Specifications (2018)* and *Caltrans Standard Plans (2018)*. The Project will comply with these updated and modified material standards.

Street designs proposed by the applicant as part of improvement plan submittals will be deemed acceptable so long as they substantially comply with street sections shown on the associated tentative map or vesting tentative map.

3.1.1. Modifications for Subbases and Bases

The current sections of the 1992 Standards are superseded by the *Caltrans Standard Specifications (2018)*:

- Lime Treatment (1992 Section 24). The Project will use *Caltrans Section 24*.
- Aggregate Subbase (1992 Section 25). The Project will use *Caltrans Section 25*.
- Aggregate Bases (1992 Section 26). The Project will use *Caltrans Section 26*.
- Cement Treated Bases (1992 Section 27). The Project will use *Caltrans Section 27*.
- Lean Concrete Base (1992 Section 28). The Project will use *Caltrans Section 28*.
- Treated Permeable Bases (1992 Section 29). The Project will use *Caltrans Section 29*.

Additional proposed specific modifications to the 1992 Standards are listed below:

- Aggregate Bases (1992 Section 26). The 1992 Standards list Class 1, 2 and 3 AB and one table for gradation and quality requirement. The Project will also remove the use of Class 1 AB as Caltrans no longer has a specification for this material. Additionally the Project will update Class 2 and Class 3 AB gradation and quality characteristics to match *Caltrans Standard Specifications (2018) Section 26*.
- Cement Treated Bases (1992 Section 27). The current City specification only allows a plant-mix method. The Project may utilize a road-mixed method on the roadbed or at a location off the roadbed to match current *Caltrans Standard Specifications (2018) Section 27*.

3.1.2. Modifications for Surfacing and Pavements

The current sections of the 1992 Standards are superseded by the *Caltrans Standard Specifications (2018)*:

- Bituminous Seals (1992 Section 37). The Project will use *Caltrans Section 37*.
- Asphalt Concrete (1992 Section 39). The Project will use *Caltrans Section 39*.
- Portland Cement Concrete Pavement (1992 Section 40). The Project will use *Caltrans Section 40*.
- Pavement Subsealing and Jacking (1992 Section 41). The Project will use *Caltrans Section 41*.
- Groove and Grind Pavement (1992 Section 42). The Project will use *Caltrans Section 42*

Additional proposed specific modifications to the 1992 Standards are listed below:

- Asphalt Concrete (1992 Section 39). The Project will use *Caltrans Standard Specifications (2018)* which will increase the allowable percentage of reclaimed asphalt pavement (RAP) in mixes from 15% to 25% for surface courses and 40% for base courses per the current *Caltrans Standard Specifications (2018)*. Additionally the Project will use Type A Hot Mix Asphalt per *Caltrans Standard Specifications (2018) Section 39-2.02*.

3.2. Materials

The Project proposes the following modifications to the 1992 Standards and to the City's Standard Details to follow with current material standards as provided by Caltrans in the *Caltrans Standard Specifications (2018)*. The Project will comply with these updated and modified standards.

3.2.1. Specification Modifications

The current sections of the 1992 Standards are superseded by the *Caltrans Standard Specifications (2018)*:

- Lightweight Portland Cement Concrete (1992 Section 89). The Project will use *Caltrans Sub-section 90-6* for lightweight concrete.
- Portland Cement Concrete (1992 Section 90). The Project will use *Caltrans Section 90* methodology and Caltrans minor concrete specification sub-section 90-2. The Project will comply with the Bay Area Low Concrete Code included as Appendix 1 hereto and incorporated by reference for PCC mix designs.
- *Asphalts (1992 Section 92)*. The Project will use *Caltrans Section 92*.
- Liquid Asphalts (Section 93). The Project will use *Caltrans Section 94*.
- Asphaltic Emulsions (Section 94). The Project will use *Caltrans Section 94*.

3.2.2. Standard Detail Modifications

- 1992 Standard Detail - R-2 to R-7: Concrete Curb and Gutter, Sidewalks ADA compliance. The 1992 Standards specify the maximum cross slope for sidewalk as 1/4" per ft which is slightly greater than 2%. The Project will comply with The Project will use *Caltrans Standard Specifications (2018)* which specifies a 1.4% maximum cross slope.
- 1992 Standard Detail R-6 - Residential Driveway Attached Sidewalk. The 1992 Standards allow a minimum sidewalk width of 3'. The Project will use a minimum sidewalk width of 4' for minimum for ADA compliance.
- 1992 Standard Detail R-12 - Traffic Island Walkway Detail. The 1992 Standards show a traffic edge with 18" wide concrete band groove in lieu of detectable warning surface / truncated

domes. The Project will follow revised details to use *Caltrans Standard Specifications (2018)* for ADA compliance.

4. Public & Franchise Utilities

4.1. City Sanitary Sewer Facilities

Any proposed utility work which connects to or affects the existing sanitary sewer system will comply with the 1992 Standards which covers the following areas:

- Pipe and Structures
- Trench Excavation, Bedding and Backfill
- Pipe Installation
- Pipeline Structures
- Acceptance Tests for Sanitary Sewers
- Cleaning Pipelines
- Sanitary Sewer Rehabilitation

Additionally proposed public improvements or connections to the existing system will comply with the *City of San José Sewer Design Guidelines (1991)* and the *Public Works Department Development Manual (2002)*. In the case of conflict between any of the *City of San Jose Sewer Design Guidelines (1991)*, the 1992 Standards, or the *Development Manual (2002)*, the most recent document shall control.

4.2. Municipal Water Systems

The 1992 Standards include specifications for Municipal Water design, but given the Project area is served by San José Water Company (SJWC), the *SJWC Standards* will apply to all water system work. SJWC will design & construct domestic water mains.

California Building, Fire & Plumbing Codes current at the time of permit submission will apply to laterals and govern other connection requirements.

4.3. PG&E Electrical Systems

The Project area is served with power from Pacific Gas and Electric (PG&E) and San José Clean Energy (SJCE). Electrical delivery for the Project is expected to be served from PG&E at transmission voltage (115kV) via a utility switching station to a Project area substation. The final ownership agreement for the substation will determine the permitting required for construction.

The PG&E infrastructure is evaluated in the Project's EIR. Construction permit approvals for undergrounding the existing 115 kV lines will be provided by the *PG&E Electric Design Manual (2018)*. Transition stations and undergrounding will be designed and permitted by PG&E directly as required, PG&E has certain permit exemptions for building electrical infrastructure. Following approval from the necessary agencies, PG&E will post a notice of construction.

4.4. City Telecommunications

The 1992 Standards provide guidance on copper telecommunications systems, as well as multimode fiber alternatives which are no longer deemed acceptable. Any modifications or upgrades to this system will follow the given standards. The applicant will install any City-dedicated fiber infrastructure required by the Development Agreement or as a condition of a development approval in accordance with the requirements of:

- ANSI/TIA/EIA - 758 : Customer-owned Outside Plant Telecommunications Cabling Standard
- ANSI/TIA/EIA - 568: Commercial Building Telecommunications Cabling Standard
- ANSI/TIA/EIA - 569: Commercial Building Standard for Telecommunication Pathways and Spaces
- ANSI/TIA/EIA - 606: The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
- ANSI/TIA/EIA - 607: Commercial Building Grounding and Bonding Requirements for Telecommunications
- TIA 590 - Standard for Physical Location and Protection of Below-Ground Fiber Optic Cable Plant
- ICEA S-87-640 - Optical Fiber Outside Plant Communications Cable; 4th Edition (2016)
- ISO/IEC IS 11801: Generic Cabling for Customer Premises
- BICSI: BICSI Telecommunications Cabling Installation Manual (CIM)
- BICSI: BICSI Telecommunications Distribution Methods Manual (TDMM)
- BICSI: BICSI Customer-Owned Outside Plant Design Manual (CO-OSP)

4.5. San José ITS Fiber

The 1992 Standards do not provide guidance on modern, single mode fiber systems. Fiber systems installed within the public ROW will comply with all requirements listed in the following documents:

- ANSI/TIA/EIA - 758 : Customer-owned Outside Plant Telecommunications Cabling Standard
- ANSI/TIA/EIA - 568: Commercial Building Telecommunications Cabling Standard
- ANSI/TIA/EIA - 569: Commercial Building Standard for Telecommunication Pathways and Spaces
- ANSI/TIA/EIA - 606: The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
- ANSI/TIA/EIA - 607: Commercial Building Grounding and Bonding Requirements for Telecommunications
- TIA 590 - Standard for Physical Location and Protection of Below-Ground Fiber Optic Cable Plant
- ICEA S-87-640 - Optical Fiber Outside Plant Communications Cable; 4th Edition
- ISO/IEC IS 11801: Generic Cabling for Customer Premises
- BICSI: BICSI Telecommunications Cabling Installation Manual (CIM)
- BICSI: BICSI Telecommunications Distribution Methods Manual (TDMM)
- BICSI: BICSI Customer-Owned Outside Plant Design Manual (CO-OSP)
- US DOT: National ITS Reference Architecture

4.6. City Storm Drainage

Any proposed modifications or connections to the existing sanitary sewer system will comply with the 1992 Standards which covers the following areas:

- Pipe and Structures
- Trench Excavation, Bedding and Backfill

- Pipe Installation
- Pipeline Structures
- Acceptance Tests for Sanitary Sewers
- Cleaning Pipelines

Additionally proposed public improvements or connections to the existing system will comply with the *City of San José Storm Drain Design Guidelines (1993)* and the *Public Works Department Development Manual (2002)*. In the case of any conflict between any of the 1992 Standards and these documents, the most recent document shall control.

A grading and drainage permit will be required for any installation of on-site storm drainage to be approved by the Public Works Department. The Project will provide materials as specified in the *City of San José Grading and Drainage Plan Checklist (2017)* for permit approval. Grading and drainage permits will not require additional City Council approval.

Storm drain lateral permitting will be covered as part of the Project's Construction Agreement and Street Improvement Plan, instead of individual lateral permits.

4.7. Stormwater Management in the Public ROW

Stormwater management requirements are not provided in the 1992 Standards. Stormwater treatment facilities located within private parcels will conform to all standards and requirements listed in the *San José Green Stormwater Infrastructure Plan (2019)*, which references the *SCVURPPP Green Stormwater Infrastructure Handbook (2019)*, and the *SCVURPPP C.3 Technical Guidance Handbook (2016)* for calculation methods and standard details.

All stormwater management best management practices will comply with the *CASQA BMP Handbooks for Construction, Industrial and New Development*. Additionally, they will comply with the California Water Board and Bay Area Municipal Permit requirements.

A conceptual Stormwater Control Plan (SCP) has been submitted as part of the Infrastructure Plan Sheets, and detailed SCPs will be submitted as part of future grading and drainage permits.

5. District Systems

5.1. Overview

The Project proposes a district-systems approach for wastewater, energy, and solid waste flows most efficiently, meaning that such services would be delivered through shared district-wide infrastructure, rather than individual and building-specific systems. Providing district systems and services enables local management of the Project's resource demands, thereby reducing burdens on existing municipal systems while increasing Project resiliency. Private district systems will conform to a combination of City of San José standards as well as additional location, state, and national standards which are utility-specific. If a utility system will not be regulated by the City of San José, the governing agency is detailed below.

Comprehensive descriptions of district utility systems are included in the Infrastructure Plan. Descriptions of such systems herein are summary in nature, and are not intended to controvert or modify any provision of the Infrastructure Plan.

5.2. Central Utility Plant and Water Reuse Facility

The Central Utility Plant (CUP) and Water Reuse Facility (WRF) will be housed in one or more buildings on private property and may be integrated within parcels also housing commercial, retail, or other use. The physical structure(s) of the CUP and WRF will be submitted for building permit in accordance with the City of *San José's Non-Residential Building Plan Review*. All documents as required in *City of San José Bulletin #232, New Buildings Plan Submittal Checklist* will be provided at the time of permit submission.

5.3. District Systems Distribution

The proposed Project will include new utility corridors (“utilidors”) that contain and convey private utilities to serve the Project area. These private utilities may include thermal systems (chilled and hot water), communications, electrical distribution, sanitary sewer collection, recycled water distribution, and automated waste collection, as described in the following subsections. Additionally, the utilidors could include additional clear space to allow for the movement of goods and other logistics operations.

The utilidors will be constructed as a combination of direct-bury trenches, utilities integrated within basement parking structures, or underground tunnel structures. When crossing Los Gatos Creek, the proposed utilidors may be constructed using a jack-and-bore method, or integrated into a proposed bridge structure.

5.3.1. Direct Bury Utilidor

In the direct bury method, no ‘utilidor’ structure will be constructed. Each district system will be installed based on 1992 Standards for trenching.

Utilities will be constructed in a phased manner which ensures adequate provisions for traffic to cross where required. Temporary utilities would be permitted as part of the individual parcels which they serve where required.

City approval of one or more *Major Encroachment Agreements* will be required for all direct bury segments within the public ROW. This Major Encroachment Agreement will require City Council Approval.

5.3.2. Parking-Integrated Utilidor

Where a private underground parking structure is available, the district systems utilities will be mounted on walls and ceilings. *California Building Code* current at the time of permit submittal will apply for all utility installation and related fencing or access structures. For individual utility-specific regulations, refer to the subsequent sections.

5.3.3. Utilidor Tunnel Structure

The tunnel structure will be constructed via cut and cover, and may require potholing to confirm the location of all existing utilities. Shoring may be required during construction. If groundwater is present, the proposed utilidor tunnel structure may require waterproofing and/or anchoring to prevent uplift.

Tunnel construction will follow design guidelines as provided in the *US Department of Transportation Federal Highway Administration Technical Manual for Design and Construction of Road Tunnels - Civil Elements (2009)*. Additional interior access requirements including ventilation and lighting will be governed by *OSHA* requirements.

The utilidor will be constructed in a phased manner which ensures adequate provisions for traffic to cross where required. Temporary utilities would be permitted as part of the individual parcels which they serve where required.

City approval of one or more *Major Encroachment Agreements* will be required for all crossings of public ROW. This Major Encroachment Agreement will require City Council Approval.

5.3.4. Jack and Bore Utilidor

The jack and bore construction method may be used at proposed creek, train track, and ROW crossings.

Jack and bore construction will meet follow design guidelines as provided in the *US Department of Transportation Federal Highway Administration Technical Manual for Design and Construction of Road Tunnels - Civil Elements (2009)*. Additional interior access requirements including ventilation and lighting will be governed by *OSHA* requirements.

Protective measures will be required during construction to minimize disturbance of any existing utilities, and surface improvements including minimizing roadway pavement from lift or buckling. Future detailed assessments will be required prior to completion of the design to limit adverse impacts from this construction method. Construction of jacking pits will be similar to the cut and cover method and utilize similar types of equipment. Temporary shoring will likely be required for jacking pits. Groundwater control will be needed during excavation and jacking operations.

Additional coordination and permitting will be required through the *Joint Aquatic Resource Permit Application (JARPA)* process.

5.4. Wastewater Collection

The proposed private wastewater sewer collection system is a pressurized force main system which will be located within the utilidor to serve parcels within the Development Boundary. Private wastewater collection within the utilidor will be governed by *California Plumbing Code* current at the time of permit submission.

Any buildings which are not served by this private system will connect to the existing City-owned sewer system in the public ROW and will conform to public sanitary sewer requirements as listed in Section 4.1.

5.5. Water Reuse Facility

Up to two private district water reuse facilities (WRFs) are proposed to treat Project-generated site wastewater for reuse to meet non-potable demands. This facility will be located within a private parcel and will be permitted by the San Francisco Bay Regional Water Quality Control Board (“Regional Board”) and the State Water Resource Control Board (“State Water Board”) Division of Drinking Water (DDW). The Regional Board will issue the operational permit, or Order, while the State Water Board DDW will review the engineering report and provide technical comments on tertiary filtration and disinfection unit processes. The Santa Clara County Department of Public Health (DPH) may act in an advisory role.

The City of San José will issue a standard industrial wastewater discharge permit and the building permit.

The permit and approval requirements for the WRF are:

- *California Water Code, Section 7 (Porter-Cologne Act)*
- *California Health Laws Related to Recycled Water (“The Purple Book”)*
- *California Code of Regulations (CCR), Title 22, Division 4. Environmental Health*
- *California Plumbing Code (CPC)*
- *City of San José Wastewater Discharge Permit requirements for the discharge of wastewater treatment residuals*
- *Bay Area Air Quality Management District (BAAQMD) requirements*

5.6. Non-Potable Water Distribution

Treated non-potable water is proposed to be distributed to all or most Project development parcels through a private distribution system. The non-potable water pipe would be routed through the utilidor and connect to proposed buildings as a non-potable supply for water closet and urinal flushing. Where appropriate, separate laterals will be routed from the utilidor to outdoor landscape areas for irrigation. The non-potable water will also serve cooling towers located at the CUP(s) and other parcels if needed.

The distribution of the non-potable water will be subject to review by the Regional Board and the Division of Drinking Water similar to the WRF(s). The Regional Board administers Water Reclamation Requirements for Recycled Water Use under General Order WQ 2016-0068-DDW. It is likely that the Project would enroll in this Order under a Notice of Applicability (NOA) issued by the Regional Board.

The permit approval requirements for the distribution of non-potable recycled water are:

- *California Code of Regulations, Title 17, Division 1. State Department of Health Services*
- *California Code of Regulations, Title 22, Division 4. Environmental Health*
- *California Plumbing Code (CPC)*

5.7. District Thermal Systems

Thermal energy for the Project is proposed to be served from up to two central utility plants (CUPs). The CUPs would generate hot water and chilled water via mechanical equipment installed in the CUP. Hot water and chilled water would then be distributed to the majority of the buildings for cooling, heating, and domestic hot water preheat within the Project area via underground heating hot water and chilled water pipes located within the utilidor.

The mechanical equipment in the CUP will be submitted for plan review as part of the building permit process, following the requirements set for in *City of San José Bulletin #232, New Buildings Plan Submittal Checklist*. Connections to the thermal systems will be submitted as part of the building permit review process for the building in accordance with the requirements from the City of San José for Building Plan Submission in the Bulletin noted above.

Hydronic piping connecting throughout the site will be submitted as part of the utilidor approvals. Piping will comply with standards and regulations as described in the current version of *California Mechanical Code, Hydronic Piping* section at the time of permit submission.

The permit and approval requirements for the mechanical equipment and associated connections at the CUP are:

- *Title 24, Part 4 - California Mechanical Code (Title 24)*
- *Title 24, Part 5 - California Plumbing Code (Title 24)*
- *Title 24, Part 6 - California Energy Code (Title 24)*
- *Title 24, Part 9 - California Fire Code/City of San Jose Fire Code*
- *Title 24, Part 11 - California Green Building Standards Code (CAL Green)*

5.8. Private Electrical and Microgrid

5.8.1. PG&E Enabling Works

PG&E will provide a 115kV switching station which in turn will serve a 115/ 21 or 12.47kV substation which provides distribution to the Project area. There are two possible scenarios in how PG&E will develop the switching station based on final sizing of the associated buildings. These options are:

- Provide a separate, independent building for both the PG&E switching station and Project area substation
- Provide a multi-story building that houses both the PG&E switching station and Project area substation
- Provide upgrades to San Jose A that allows for a traditional distribution service to the Project Area

If the PG&E switching station and Project substation are housed in separate buildings, relevant building permits as required will be submitted to and reviewed by the City of San José. If a switching station is installed and is a separate building to the customer substation, the switching station and equipment within the switching station will be designed and approved by PG&E.

If the switching station and customer substation are integrated within the consolidated CUP, a multi-story building will be developed to house both the PG&E infrastructure (in the basement and the street level) and the Project area substation (above the PG&E infrastructure). The footprint of the land requirements from PG&E, which includes access requirements are estimated at 150 feet x 110 feet. The minimum building size would be an estimated 110 feet x 55 feet x 40 feet tall with an additional basement of 12 feet. However, the customer substation may be sited on top of the switching station and therefore the physical size of the switching station may be 110 feet x 110 feet to match the dimensions of the customer substation. Access would be required to the building from street level. Only PG&E will be able to access their area of the building via their own access doors.

The customer substation would be housed on the building levels above the PG&E switching station. The building enclosure and non-electrical services will be submitted for approval by the City of San José through the building permit process for *Non-Residential New Construction*. Electrical equipment for the PG&E owned switching station will be designed and approved by PG&E and will be subject to design standards in *PG&E's Electrical and Gas Service Requirements (Greenbook)* and other relevant guidelines. Customer substation equipment will be submitted for approval by the City of San José through the building permit process for *Non-Residential New Construction*. Items of the customer substation such as protection settings will be designed in accordance with PG&E interconnection studies. The customer substation will be required to include the following:

- Gas insulated high voltage 115kV incoming switchgear, arranged in a redundant configuration with utility metering
- Two 45MVA, fan assisted transformers to provide redundant power to the district
- 21kV or 12.47kV distribution switchgear
- It is estimated that the customer substation would be approximately 110 feet x 110 feet and be 40 feet high.

If the Project is served from a traditional distribution service from PG&E, the proposed upgrades would include removing and replacing existing substation equipment. The 115kV open-air bus would be replaced with gas-insulated equipment. A new building would be erected on site to house both the 115 kV bus and the control room. Building size would be an estimated 110 feet x 55 feet x 40 feet tall.

5.8.2. Private Electrical Distribution

The Project includes renewable generation technologies including photovoltaic arrays and building-integrated photovoltaic products, as well the potential for storage technologies such as batteries.

The Project also includes localized 12.47/21 kV infrastructure from a dedicated transmission substation, described in 6.7.1 to connect the majority of the buildings within the development area in a microgrid with one or more connections to the PG&E transmission system. The Project's microgrid distribution would be housed within the proposed utilidor.

Electrical feeders connecting throughout the site will be submitted as part of the utilidor approvals. Individual electrical connections at each building will be submitted as part of the building permit review process for the building in accordance with the requirements from the City of San José for Building Plan Submission. Electrical equipment within the CUP will be submitted as part of the Building Plan Review and permit application for the CUP. As noted previously, substation equipment, if integrated with the CUP, will be reviewed and approved by PG&E.

The standards applicable to the review and approval of the electrical and microgrid systems are:

- *PG&E Electrical and Gas Service Requirements (Green Book)*
- *FAA 14 CFR Part 77 Regulations (Solar Panels, if considered a district asset)*
- *2019 California Fire Code/City of San Jose Fire Code (Batteries)*
- *NFPA 855 2020 Standard for the Installation of Stationary Energy Storage Systems*
- *Title 24, Part 3 - California Electrical Code (Title 24)*
- *Title 24, Part 6 - California Energy Code (Title 24)*
- *Title 24, Part 11 - California Green Building Standards Code (CAL Green)*
- *NFPA 30 - Flammable and Combustible Liquids*
- *NFPA 70 - National Electrical Code 2020*
- *NFPA 72 - Fire Alarm Code*
- *NFPA 101 - Life Safety Code*
- *NFPA 110 - Emergency and Standby Power Systems*
- *National Electrical Safety Code, ANSI C2*

5.9. Private Telecommunications

The Project includes the construction of communication and data utility systems to serve the development with singlemode fiber-optic cabling, undergrounding or removal of existing telecommunications fiber and copper in the Project area, provisions for communications connectivity to residential areas of the Project

including data connectivity and connectivity for cable-television and voice services, and provisions for installation of future 5G cellular service.

Wherever possible, the private telecommunications systems will be underground in buried conduits and pathways accessed by handholes and vaults placed at strategic locations. A ring topology is optimum for the commercial buildings with laterals feeding residential and support buildings and structures.

The 1992 Standards do not apply to private, non-City copper and fiber cabling and pathways. The standards applicable to the review and approval of the private telecommunications systems are:

- *Project sponsor telecommunications standards*
- *TIA/EIA-758 - Customer-Owned Outside Plant Telecommunications Cabling Standard*
- *BICSI - Outside Plant Design Reference Manual, 6th Edition (2018)*
- *ICEA S-87-640 - Optical Fiber Outside Plant Communications Cable; 4th Edition (2016)*
- *TIA-455 - General requirements for standard test procedures for optical fibers, cables, transducers, sensors, connecting and terminating devices, and other fiber optic components*
- *TIA-526 - Standard Test Procedures for Fiber Optic Systems*
- *TIA-568-C.3 (2008; Add 1 2011) Optical Fiber Cabling Components Standard*
- *TIA-590 (1997a) Standard for Physical Location and Protection of Below Ground Fiber Optic Cable Plant*

5.10. Automatic Waste Collection System / Solid Waste

The 1992 Standards do not provide guidance on automatic waste collection system (AWCS) requirements. This section discusses the standards that will regulate the AWCS and the management of waste.

The proposed AWCS option comprises a pressurized pneumatic pipe that runs horizontally below grade within the proposed utilidor. Primary AWCS horizontal piping throughout the site will be submitted as part of the utilidor approvals. Individual lateral connections at each building will be submitted as part of the building permit review process for the building in accordance with the requirements from the City of San José for Building Plan Submission.

To comply with the *Public Resources Code (PRC), Sections 44001 and 44002*, each AWCS terminal will require a CalRecycle Full Permit as a waste transfer station. The San José Planning, Building and Code Enforcement Department will act as CalRecycle's Local Enforcement Agency (LEA).

The automated waste collection systems is part of the site's solid waste management strategy, which requires compliance with the following regulations and guidance documents:

General

- *Assembly Bill 939 (California Integrated Waste Management Act) (1989)*
- *Title 24, Part 11 - California Green Building Standards Code (CAL Green)*

Container Size and Truck Access

- Coordination with the City's waste disposal franchisee

Waste Transfer Station

- *California Public Resources Code (PRC), Sections 44001 (1995)*
- *California Public Resources Code (PRC), Sections 44002 (2005)*

Commercial Recycling

- *Assembly Bill No. 341 (2011)*
- *Assembly Bill No. 1826 (2014)*

Waste Diversion

- *San José Zero Waste Strategic Plan (2008)*
- *Climate Smart San José (2014)*

Organic Waste

- *Senate Bill 1383 (2016)*

Material Recovery

- *Envision San José 2040 General Plan (2011)*
- *San Jose Urban Environmental Accords (2005)*

Solid Waste Management

- *San José Municipal Code Chapter 9, Part 10*

Construction Waste Diversion

- *San José Municipal Code Chapter 9, Part 15*

As the AWCS main piping network is contained within the utilidor, permitting for the AWCS system will follow the encroachment permitting process of the utilidor. Underground lateral connections to buildings will follow the permitting process for individual buildings. For instances where the AWCS piping network is direct bury, the process would follow the street improvement permitting process.

5.11. Private Storm Drainage

Private parcels will connect into the existing City-owned storm drain system for all proposed development. Storm drainage systems on private parcels will conform to all standards as listed in the 1992 Standards, the *City of San José Storm Drain Design Guidelines (1993)* and the *Public Works Department Development Manual (2002)*. In the case of any conflict between any of the 1992 Standards and these documents, the most recent document shall control.

5.12. Private Stormwater Management Systems

Stormwater management requirements are not provided in the 1992 Standards. Stormwater treatment facilities located within private parcels will conform to all standards and requirements listed in the *San José Green Stormwater Infrastructure Plan (2019)*, which references the *SCVURPPP Green Stormwater Infrastructure Handbook (2019)*, and the *SCVURPPP C.3 Technical Guidance Handbook (2016)* for calculation methods and standard details.

All stormwater best management practices will comply with the *CASQA BMP Handbooks for Construction, Industrial and New Development*. Additionally all stormwater BMPs will follow the California Water Board and the Bay Area Municipal Permit R2-2009-0074 regulations.

A conceptual Stormwater Control Plan (SCP) has been submitted as part of the Infrastructure Plan Sheets, and site-specific SCPs will be submitted as part of future grading and drainage permits.