

Section	Title	Description
n/a	Title Pages	Changed document title to 2016 Engineering Standards.
Part 1 – Design Standards		
1.01	Purpose	Added wording to clarify that when conflict exists between different documents that the most stringent shall apply.
2.05	Map Statements	Revised various statements such as, Owners, City Engineers, Surveyors, Notary, Trustee's and Community Development Director.
3.06	Street Cross Section	Several changes to section.
3.14	Slopes	Clarification of slope requirements.
3.15	ADA Accessibility Requirements	Include detectable warning surface color type; indicate utility poles and boxes to be located outside curb ramp boundary.
3.24	Street Name Signs	Update street sign reflectivity sheeting. Clarify street name sign location for various intersections; Reference section 10.13 for mast arm street name sign requirements at signalized intersections.
4.19	Trench Drains	This section has been deleted and all sections following have been renumbered.
5.06	Type of Pipe	Eliminate VCP for new SS improvements.
7.16	Backflow Prevention	Reduced Pressure device required on Commercial, Industrial & Landscape services.
7.18	Water Main Trench Cover	Added requirement for use of standardized offset-return for crossing under conflicting utilities.
10.03	Vehicle and Pedestrian Signal Types	Require City Engineer approval for the use of programmed visibility vehicle signals.
10.06	Vehicle Detector Layouts and Inputs	Deleted reference to Type B handhole. Added requirement for quadrapole loop on dedicated bike lanes. Added requirement for FLIR thermal detection for private roads.
10.7	Conduit	Add requirement for conduit stub ups to require bell ends or bushings and duct seal. Require additional 2" conduit for fiber optic cable.
10.09	Pull Boxes	Pull boxes, covers and extensions shall be quazite and not concrete; require concrete collar for boxes placed in a vehicular path.

Section	Title	Description
10.12	Traffic Signal Interconnect	Add requirement for radio interconnect whenever cable is not possible.
10.13	Mast Arm Street Name Signs	Update street name sign material/type.
10.16	Advance Flashing Beacons	Require that flashing beacons meet Caltrans and CAMUTCD requirements
10.17	Miscellaneous Appurtenances	Eliminate bicycle push buttons and require detector loops at approaches.
10.18	Preparation of Plans	Several changes to section including specifications for Hardware for Interconnect Systems and Thermal Detection.
12.03	Design	Bus shelters shall be bronze and design shall require approval by the City Engineer.
13.01	General	Added: 30% of trees must emit low BVOC per City Council Resolution. Reorganized paragraphs and added requirement that trees are planted bare root in favorable time of the year.
13.02	City Approved Tree List	Added BVOC trees.
13.03	Approved Street Tree List	Several revisions to the section.
Part 2 – Standard Details		
210, 211	Pipe Bedding and Trench Backfill...	Revised annotation for fabric use, added water main indicator tape. Eliminate the use of sand for sewer main bedding and backfill; Allow the use of ½” crushed rock for water main bedding and backfill.
213	Narrow Trench	Revised notes.
300	Vertical Curb, Gutter & Sidewalk	Revised notes, deleted reference to Concrete ¹ section.
301	Springlake Vertical Curb, Gutter & Sidewalk	Revised notes, deleted reference to Concrete section.
302	Vertical Curb, Gutter w/detached Sidewalk	Revised notes, deleted reference to Concrete section.
305	Low Profile Curb, Gutter and Sidewalk	Revised notes, deleted reference to Concrete section.

¹ Reference to the specific section for Concrete is a redundant requirement; contractors must still comply with the Section 6 requirements even if not stated in the detail.

Section	Title	Description
310	Rolled Curb, Gutter and Sidewalk	Revised notes, deleted reference to Concrete section.
313	Curb Bulb-Out	Revised notes, deleted reference to Concrete section.
316	Construction Joints	Revised notes, deleted reference to Concrete section.
320	Type A Residential Driveway Vertical Curb	Revised notes, deleted reference to Concrete section.
325	Type B Residential Driveway Roll Curb	Revised notes, deleted reference to Concrete section.
330	Type C Commercial Driveway	Revised notes, deleted reference to Concrete section.
331	Type C (5 feet) Commercial Driveway	Revised notes, deleted reference to Concrete section.
332	Commercial Driveway with Curb and Gutter Separate from Sidewalk	Revised notes, deleted reference to Concrete section.
333	Residential Driveway with Curb and Gutter Separate from Sidewalk	Revised notes, deleted reference to Concrete section.
335	Type D Industrial Driveway	Revised notes, deleted reference to Concrete section.
342	Re-setting Ex. Utility Structures after Paving	Revised notes, deleted reference to Concrete section. Clarification that new iron is required when adjusting iron.
343	Bus Turn-Out	Revised notes, deleted reference to Concrete section.
345	Street Monument	Revised notes, deleted reference to Concrete section.
346	Control Network Monument for Walkways	Revised notes, deleted reference to Concrete section.
347	Control Network Monument for Non-Traffic Areas	Revised notes, deleted reference to Concrete section.
348	Control Network Monument for Traffic Areas	Revised notes, deleted reference to Concrete section.
355, 357	Curb Ramps	Revised notes, deleted reference to Concrete section.
360	Stamped Concrete	Revised notes, deleted reference to Concrete section.
400, 405, 410, 415	Curb Inlets & Bases	Revise Notes, change manufacture model reference.
425	Type I Storm Manhole	Revised notes, deleted reference to Concrete section.

Section	Title	Description
505	Residential Water and Sewer Services	Re-title, revise to require horizontal & vertical separation between water and sewer.
510	Special Sewer Lateral and Cleanout	Added Crushed rock under bricks.
512	Standard Sewer Lateral and Cleanout for Joint Trench Under Walk	Added Crushed rock under bricks.
513	Temporary Mainline Cleanout	Revised notes, deleted reference to Concrete section.
515	Standard Sewer Manhole	Revised to add 2' pipe section to accommodate differential settlement, re-arranged detail, edited notes.
518	Inside Sanitary Sewer Drop Manhole	Edited notes, re-arranged detail.
700	1½" and 2" Water Service Meter Box Location	Added passive corrosion protection.
703, 704	1 ½" Polyethylene Water Service, Meter...	New Details
705, 706	1½" and 2" Water Services, Meters...	Revised Notes, City installs AMR unit, delete 1" service 705-Added tracer wire, allow Type K & CTS fittings, note #9. 706-Added tracer wire, notes #9 & #10. Ball angle meter valve drawing to reflect correct valve (both). Added 1" Water Service Meters.
708	AMR Water Meter Dual Site Installation	Revised Notes, use of detail requires special permission.
710	1½" and 2" Water Service Taps	Revised Notes; added passive corrosion protection; added tap location for ARV.
715	3" and Larger Meter with Bypass	New Title; Major revisions to Detail; added 2" bypass; add tracer wire.
718	2" Curb Stop in Utility Box	New Detail (for 2" bypass in Detail 0715); Added note #6.
720	4" and Larger Water Connections...	Add Detail references for Meters and Backflows; show tracer wires.
725	Water Valve & Box	Show tracer wire and bonding jumper; Revised water valve box flush w/ pavement.

Section	Title	Description
727	Water Valve Box in Landscape Areas	Detail deleted – see Detail 725.
730, 735	Fire Hydrants...	Changed to wet barrel hydrant; add tracer wire; revise notes; Added break off check valve; note #4 & #5; revised dimensions.
740	Blowoff Hydrant	Add tracer wire; revise notes.
741	1” and 2” Air Release Valve	New Detail.
742	Water Main Crossing Under Utility	New Detail.
743	Wire Connections	New Detail.
744	Galvanic Anode Installation and Test Station	New Detail.
745	Water Distribution System Sampling Station	Revised detail to include Koraleen XLT Water Sampling Station(or approved equal).
750	Water Pipeline Thrust Restraint Blocks	Delete Concrete Note; Revise values for Tee w/Plug or Cross.
760	Backflow Prevention Assembly: 3” Dia. And Larger	Revised Title (3” and larger); deleted city landscape master valve; Added distance range for Backflow Device.
761	Backflow Prevention Assembly: Smaller than 3” Dia.	Revised Title (Smaller than 3”); deleted city landscape master valve; Added backflow clearance range.
915	Electrical Street Light Pull Box	Revise Notes; Change “bushing” to “End-Bell”.
916	Springlake Street Light, 10’ or 15’ Pole	Added Quattro (Light) and Hadco (Pole); revised base detail;
917	Springlake Street Light, 15’ Pole	Added Quattro (Light) and Hadco (Pole); revised base detail; 15’ pole only.
918	Springlake Street Light, 25’ Pole	Added Quattro (Light) and Hadco (Pole); revised base detail; 25’ pole only.
1305, 1306	Bollards	Revised notes, deleted reference to Concrete section.
1307	Decorative Bollard	New Detail.
13.09	Pulling Wire	Added requirement to include Maxcell fiber inner duct for conduits greater than 2”.

Section	Title	Description
1318, 1319	Concrete Mow Strips	Revised notes, deleted reference to Concrete section.
1320	Concrete Path	Revised notes, deleted reference to Concrete section.
1335	Tree Dripline(Single Tree)	New detail to replace “Tree Bubbler” detail.
1336	Tree Dripline(Single Tree)	New Detail
1337	Low Volume Control system for Tree Dripline	New Detail
Part 3 – Construction Specifications		
Section 1 – General Construction Requirements		
1.01-1.13	Varies	Renumbered Sections
1.01	General	New section.
1.04	Protection of Existing Utilities	Indicate Caltrans does not participate in USA and any damage to Caltrans facilities shall be the responsibility of the Contractor to repair.
1.05	Repair or Reconstruction of Existing Facilities	Several revisions to section.
1.06	Maintaining Traffic	Allow 10 days for review of TCP to match General Conditions review period on submittals. Added haul route as a submittal.
1.07	Traffic Safety	New section.
1.11	Site Control and Security	New section.
1.13	Inspection Requirements	Work performed without inspection is subject to removal. Added process to request weekend work. Contractor shall provide adequate time for inspector to check grade prior to placing AB, AC or PCC.
Section 2 – Subgrade Preparation		
2.02	Compacted Native Earth Subgrade	Clarification of options to use when encountering excessive moisture in subgrade; require top 12” below finished grade to be ripped and scarified.
2.03	Compacted AB Subgrade	Clarification of options to use when encountering excessive moisture in subgrade.
2.04	Acceptance Sampling and Testing of Subgrade	Require Contractor to protect aggregate base and subbase; Require proof rolling; Testing that is not completed in the presence of the City inspector shall be considered non-passing.

Section	Title	Description
Section 3 – Aggregate Materials		
3.02	Acceptance Sampling and Testing of AB	Testing that is not completed in the presence of the City inspector shall be considered non-passing.
3.03.E	Protection of Aggregate Base	New sub-section requiring contractor to protect AB; require proof rolling.
Section 4 – Hot Mix Asphalt		
4.01	Description	Final lift on all streets shall be 2” and Type A ½”. All other lifts shall be Type A ¾”.
4.03	Mix Design	Mix design shall be in accordance with Caltrans Section 39, ASTM D2041(Rice’s Method) and D1188.
4.04	Placement	Revised wording of paragraphs requiring completion of underground utility testing. Indicate over-paving onto the gutter is not allowed. Require 10 day cure time or reach 2,500psi when paving against PCC.
4.05	Compacting	New Section. AC compaction testing shall be per ASTM D2041; Rice’s Method.
4.06 – 4.10	Various	Renumbering of Sections
4.06	Adjustment of Iron	Clarification that new iron is required when adjusting iron.
4.08	Acceptance Sampling and Testing of HMA	Deliver certified copies of tests or work may be suspended. Added testing for sieve analysis, stabilometer value, theoretical max. density, HMA moisture content and air voids content.
Section 5 – Surface Treatments		
5.1-5.02	Varies	Revised entire section.
Section 6 – Portland Cement Concrete		
6.01	Concrete Construction	Changed aggregate specification from ASTM to Caltrans.
6.01.D	Concrete Construction	Eliminate the use of felt in expansion joints and change the width to 1/4”.
6.01.O	City Utility Markings In Curb	New section.
6.06.A	Detectable Warning Surfaces, All Construction	Changed color requirements by type of application.
Section 8 – Underground Pipeline Construction		

Section	Title	Description
8.07	Bedding	Added reference to Detail 200. Bedding material for VCP and PVC Sewer and SD lines shall be ½” crushed rock. Polyethylene service lines shall be wrapped with 10mil vinyl tape.
8.08	Initial Backfill	Revised language, added reference to Detail 200.
8.09	Final Backfill	Revised language, added references to Details 200, 211, 213 and 214.
8.10	Compaction of Backfill	Clarify that Contractor is responsible for all compaction testing and retesting costs. Indicate frequency of backfill testing.
8.11	Slurry Cement	Added reference to Detail 213 and other minor changes.
8.12	HMA Placement	Add reference to Details 0210 and 0214.
8.13	Limits of Trench	New Section.
8.14-8.15	Various	Renumbering of sections.
8.15	Special Considerations for Streets Under Moratorium	Added requirement for surface seal of streets where many cuts/trenches are required as part of the work.
8.15A & 8.15B	Special Considerations for Streets Under Moratorium	Various edits to make section read better.
Section 9 – Street Lighting System Design		
9.16	Conduits	Require conduit from service pedestal to fist pull box to be 3” diameter.
Section 10 – Sanitary Sewer Collection System		
10.01	Sewer Pipe	New improvements shall be PVC. VCP and DIP may be used in other instances.
10.02B	Materials	Allow the use of 14’ laying length for SDR 26 PVC pipe.
10.02.L	Manhole Joint Sealant	New section.
10.02.M	Repair Couplings	New section.
10.05	Channel Sections (MH Bottoms)	Eliminate the use of VCP.
10.06	Sewer Joints	Revised language.
10.08	Capping and Stopping of Sewers....	Allow the use of slurry for use of abandoning sewer lines.

Section	Title	Description
10.09	Low Pressure Air Test	Clarify when acceptance testing is to take place. Add test duration time for low pressure air test.
Section 12 –Water Distribution System		
12.B	Water Distribution, PVC	C900 DR18 Pressure Class 235 for pipe 4”-12”, C905 DR18 Pressure Class 235 for pipe 14” and larger.
12.02.C	Submittals	Add submittal requirement for fabricated fittings and pipe testing certifications.
12.02.D	Fittings	Added requirement to meet NSF/ANSI Standard 61. Change 316 bolts to 304.
12.02.E	Valves, Valve Boxes and Valve Covers	Tees shall have at least 3 valves and crosses shall have at least 4 valves; Changed Christy G-3 valve box to Oldcastle G05.
12.02.F	Tapping Tee, Tapping Sleeve and Tapping Gate Valve	Changed Christy G-3 valve box to G-5.
12.02.G	Fire Hydrants	Revised to specify wet barrel hydrant Clow Model 960 and Clow Model LBI 400A break off check valve. Changed “school bus” yellow to “safety” yellow.
12.02.H	Water Services (1½” & 2”)	Deleted 1” size. If Polyethylene pipe is used, a swing joint is not required. Updated service saddle model numbers.
12.02H.e	Water Services (1½” & 2”)	Include Polyethylene pipe as acceptable; Add requirement for tracer wire.
12.02.H.g	Table – Meter Box and Lid...	Deleted 1” size boxes. Change 1 ½” FL36 box/lid to smaller FL30 box/lid.
12.02.H.h	Table – Meter Box and Lid for....Residential	Deleted 1” size boxes’ Update size, box and lid numbers; allow only galvanized steel lid for traffic boxes.
12.02.I	Water Services (3” and Larger)	Add table for acceptable 3” and larger water meter box’s and lids.
12.02.J	Water Meters	Revised meter requirements; Changed 1” meter to Model iPERL.
12.02.L	Flange, Bolts and Gaskets	Change 316 bolts to 304.
12.02.N	Mechanical Couplings	Change 316 bolts to 304.

Section	Title	Description
12.02.P	Tracer Wire	Cleaned up redundant statements; changed taping to 5' intervals. Deleted "non-ferrous" to required tracer wire on all mains; Contractor is responsible for continuity testing of tracer wire.
12.02.Q	Warning Tape	Changed warning tape requirements.
12.02.R	Marker Posts	Added section.
12.02.R 12.02.S	Installation of Pipe Polyethylene Encasement	Moved sections to 12.03 Pipe Installation and 12.04 Polyethylene Encasement.
12.05	Cathodic Protection	Added Section for passive cathodic protection.
12.06 to 12.14	Varies	Renumbered sections.
12.11	Testing of Mains	Clarified when testing of PVC is to occur.
12.12	Disinfection of Water Lines...	Add meter splitting to require disinfection.
12.13	Marker Posts	Added requirement to place markers at 200' intervals on mains in open fields. Move last sentence to 12.02.Q.
12.14	Abandonment of Water Facilities	New Section.
12.15	Water Well Abandonment and Construction	Moved from 12.14 to 12.15.
Section 13 – Electrical and Traffic Signals		
13.03	Maintaining Existing Electrical Facilities	Revised to require all electrical systems and devices to be maintained....
13.06	Conduits	Require 3" PVC Shedule 80 for conduits used for Micro Loop Sensors; require 24" cover for all conduit and several other revisions to the section.
13.07	Pull Boxes	Added traffic signal interconnect pull boxes shall be every 350ft. Pull boxes, covers and extensions shall be quazite and not concrete.
13.08	Conductors	Changed minimum wire size to No. 8. Added language for splicing in street light boxes. No aluminum wire shall be used.
13.11	Electric Service and Traffic Signal Controller	Several changes to this section.
13.15	Traffic Signal Equipment Functional Test	Added Fiber Testing Requirements.

Section	Title	Description
13.18	Salvage	Added “unless otherwise directed by the Engineer”
13.20	Microloop Detectors	Require 3” PVC Schedule 80 for conduits used for Micro Loop Sensors.
13.21	Street Lights	Add specifications for Contractor to install PG&E street light badging; Street light bases not set to grades shall be R&R and the use of leveling anchors shall not be permitted.
13.22	New section, “Fiber Optic Cable”	Add specifications for Fiber optic cable.
Section 14 – Uniform Standard for Installation of Signs		
14.02.B	Materials, Mounting Hardware	Revised language; Update sign retro-reflectivity requirements.
14.03	Sign Size	New Section; Renumbered the following sections.
Section 16 – Traffic Striping, Markings, Legends and Address Numbers		
16.01	Description	Minimum 48hr notification for inspection for layout and cat-tracking approval or markings and markers.
16.02	Thermoplastic	Require machine applied thermoplastic for lengths exceeding 8’ on traffic stripes; Torching of pavement to achieve higher temperatures is not permitted.
16.05	Removal of Striping, Legends and Markings	Several revisions to section including new temporary delineation and markers requirements.
16.06	Striping, Legend and Marking Partial Removal or Damage	New Section
16.07	Address Numbers	Moved from 16.06 to 16.07.
Section 17 – Fencing		
17.02 17.05	Various	Renaming and Renumbering of Sections.
Section 19 – Grading and Storm Water Quality Management		
19.05	Storm Water Quality Management	SWPPP BMPs are required to be maintained all year per current CGP and other changes.
19.05.H		NOT is submitted via state website.
Section 20 – Landscape Planting		
20.13J	Planting- General	Stacks shall be placed on the north side of plants.
20.15K	Planting Trees	Stacks shall be placed on the north side of plants.

Section	Title	Description
20.18-20.14	Various	Revised language; Renumbered and moved sections; Clarify plant establishment, maintenance and warranty timeframes.
Section 21 – Irrigation Systems		
21.13	Sprinklers, Driplines and Bubblers	Replaced tree bubblers with Techline CV dripline.
Section 24 – LED Street Lights		
24.04	Quality Control and Assurance	Table – revised initial lumens requirements.
24.14	Approved LED Street Lights	Table – revised model numbers; “D” is current model, corrected number of LED bulbs for 37 watt fixtures to 20.