CITY OF ROSEVILLE DESIGN STANDARDS January 2020

Section 1 Purpose and Definitions

1 1	n ar pose and Deminitions	DD 1
1-1	Purpose	PD 1
1-2	Design Practice	PD 1
1-3	Definitions	PD <u>12</u>
	A. Applicant	PD <u>12</u>
	B. Building Division	PD <u>12</u>
	C. Cadastral Surveys	PD 2
	D. City	PD 2
	E. City Engineer	PD 2
	F. Community Design Guidelines	PD 2
	G. Construction Standards	PD 2
	H. Consulting Engineer	PD 2
	I. Contractor	PD 2
	J. Department of Environmental Utilities	PD <u>23</u>
	K. Department of Public Works	PD 2 3
	L. Developer	PD <u>23</u>
	M. Development	PD 2 3
	N. Development Services Department	PD 3
	O. Engineering Division	PD 3
	P. Environmental Utilities Director	PD 3
	Q. Fire Apparatus Access Roads	PD 3
	R. Fire Department	PD 3
	S. Fire Flow	PD 3
	T. Fire Prevention Standards	PD 3
	U. Grading Ordinance	PD <u>34</u>
	V. Improvements	PD <u>34</u>
	W. Laboratory	PD <u>34</u>
	X. California MUTCD	PD 4
	Y. Soils Reports	PD 4
	Z. Standard Drawings	PD 4
	AA. State	PD 4
	BB. State Highway Design Manual	PD 4
	CC. State Standard Plans	PD 4
	DD. State Standard Specifications	PD 4
	EE. State Traffic Manual	PD 4
	FF. Subdivision Ordinance	PD 4 <u>5</u>
	GG. Traffic Plans (Signal Plans)	PD 4 <u>5</u>
	HH. Water Efficient Landscape Requirements	PD 4 <u>5</u>
	II. Zoning Ordinance	PD <u>45</u>
	JJ. Trench Cut Ordinance	PD <u>45</u>

Section 2 General Requirements

2-1	Plans by an Appropriate Engineer	GR 1
2-2	Accepted Plans	GR 1
2-3	Reference to City Specifications and Standards	GR 1
2-4	Work in City Right of Way and Easements	GR 1
2-5	Submission of Public Improvement Plans	GR 2
	A. Development Projects	GR 2
	B. Subdivision	GR 2
2-6	Submission of Development Plans	GR 3
2-7	Submission of Rough Grading Plans	GR 4
	Submission of Electrical Design, Landscaping and	GR 4
	Irrigation Plans	
2-8	Submission of Final and parcel Maps	GR 5
2-9	Soils Reports	GR 6
2-10	Resubmittal Requirements	GR 6
2-11	Plan Check and Inspection Fees	GR 7
2-12	Plan Acceptance	GR 7
2-13	Expiration of Plans	GR 78
2-14	Improvement Plan Revision During Construction	GR 8
2-15	Record (As-Built) Plans	GR 9
2-16	Conflict, Errors, and Omissions	GR 9
2-17	Change In Consulting Engineer	GR 9
2-18	Other Agency Notification	GR <u>910</u>
2-19	Inspection Requirements	GR 10
2-20	Final Inspection	GR 10
2-21	Acceptance of Improvements	GR 10
2-22	Special Notices and Permits	GR 11
2-23	Grading Permits, Encroachment Permits, Improvement	GR 11
	Permits, and Subdivision Agreements	
	A. Grading Permits	GR 41 <u>12</u>
	B. Encroachment Permits	GR 12
	C. Improvement Permits	GR 13 14
	D. Subdivision Agreement	GR 14
2-24	Submission of Lot Line Adjustments	GR 15
2-25	Submission of Dedication By Separate Instrument	GR 16
2-26	Bridges and Other Structural Items	GR 16 17
	A. Private Improvements	GR 16 17
	B. Public Improvements	GR 17
2-27	Deviation from Standards	GR 17 18
	Section 3	
	Plan Sheet Requirements	
3-1	General	PS 1
3-2	Plan and Profile Sheets	PS 1
	A. Drafting Standards	PS 1

	B. Scale	PS 1
	C. Title Block	PS 1
	D. Orientation	PS 1
3-3	Title or General Information Sheet	PS 1
3-4	Street Plan and Profile Sheets	PS 4
3-5	Detail Sheets	PS 5
3-6	Parcel and Final Maps	PS 6
	A. Preparation and Form	PS 6
	B. Certificate Sheet	PS 7
	C. Information	PS 8
	D. Additional Data Required	PS 10
	E. Subdivision Agreement	PS 11
3-7	Property of City of Roseville	PS 11
	Section 4	
	Traffic Impact Studies	
4-1	General	TI 1
4-2	Purpose of Traffic Impact Studies	TI 1
4-3	Responsibility for Traffic Impact Studies	TI 1
4-4	Types of Traffic Impact Studies	TI 1
4-5	Traffic Study Format	TI 4
	A. Introduction	TI 4
	B. Project Trip Generation	TI 5
	C. Trip Distribution	TI <u>56</u>
	D. Traffic Assignment	TI 6
	E. Level of Service	TI 6
	F. Site Access	TI 6
	G. Traffic Signals	TI 1 <u>0</u> 4
	H. Traffic Accidents	TI 12
	I. On-Site Circulation	TI 12
	J. Report Documentation	TI 12
4-6	Preparation and Submittal Requirements	TI 12
	Section 5	
	Site Access	
5-1	General	SA 1
5-2	Driveway Locations on Minor and Primary Residential	SA 1
	Streets	
5-3	Driveway Location on Collector or Arterial Streets	SA 2
5-4	Number of Driveways Serving a Parcel or Site	SA 2
5-5	Right Turn Deceleration/Acceleration Lanes for	SA <u>3</u> 2
5-6	Driveways Left Turn Deceleration/Acceleration Lanes for	SA 3
J-0	Driveways	SA 3
5-7	Minimum Offset for Opposing Driveways	SA <u>34</u>
5- <i>1</i>	Restricted Turning Movements for Driveways	SA <u>34</u> SA 4
5 5	restricted rurning movements for Differencys	JA T

5-9	Signalized Driveways	SA 4 <u>5</u>
5-10	Minimum Required Throat Depth	SA <u>56</u>
	Section 6	
	Traffic Signals, Signs, and Striping	
6-1	Traffic Signal Needs Assessment	TS 1
6-2	Design Standards	TS 1
0 2	A. Signal Standard Types	TS 1
	B. Vehicle and Pedestrian Signal Types	TS 3
	C. Vehicle Signal Alignment	TS 4
	D. Number of Vehicle Signal Indications	TS 4
	E. Signal Phasing	TS 5
	F. Permissive Left Turn Phasing	TS 5
	G. Vehicle Detector Layout and Inputs	TS 5
	H. Traffic Signal Conductors	TS 78
	I. Traffic Signal Interconnect (SIC)	TS <u>910</u>
	J. Traffic Signal Conduit	TS 13 15
	K. Traffic Signal Pull Boxes	TS 14 <u>16</u>
	L. Pedestrian Push Button (PPB)	TS 15 17
	M. Intersection & Arterial Roundabout Safety	TS 15 17
	Lighting	10 10 <u>1.</u>
	N. Controller/Service Pad	TS 15 18
	O. Traffic Signs	TS 16 19
	P. Striping	TS 18 21
	Q. Right Turn Lanes	TS 20 24
	R. City Supplied Equipment	TS 21 24
	S. Contractor Supplied Equipment	TS 21 25
	T. Salvaged Equipment	TS 21 25
	U. Traffic Control	TS 22 26
	V. Signal Activation	TS 24 29
	W. Roadway Improvements	TS 25 29
6-3	Preparation of Plans	TS 26 30
	A. Title Sheet	TS 26 30
	B. Signal and Lighting Sheet	TS 26 31
	C. Interconnect Sheet	TS 27 32
	D. Signing and Striping Sheet	TS 27 32
	E. Intersection Lighting Sheet	TS 27 32
	Section 7	
	Streets	
7-1	Street Classes and Design Widths	ST 1
	A. 20-Foot Street (Alley)	ST 1
	B. Residential Streets	ST 1
	C. Collector/Industrial	ST 2
	D. Minor Arterial	ST 2
	E. Major Arterial	ST 2

	F. Cul-de-Sac	ST 2
	G. Partial Width Streets	ST 3
	H. Private Streets	ST 3
	I. Gated Entryways	ST 3
7-2	Right-of-Way Width	ST 4 <u>5</u>
7-3	Roadway Signage and Striping	ST 5
7-4	Structural Section	ST 5
	A. Structural Street Sections at Signalized	ST 6
	Intersections	
7-5	Curb and Gutter Requirements	ST 6
	A. Type 1 Roll Curb and Gutter	ST 6
	B. Type 2 Vertical Curb and Gutter	ST 6 7
	C. Type 6 Modified V-Gutter	ST <u>67</u>
	D. Cross Gutters	ST 67
7-6	Sidewalk Requirements	ST <u>67</u>
	A. Width	ST 7
	B. Slopes	ST 7
	C. Radius	ST 78
	D. Pedestrian Curb Ramps	ST 7 8
	E. Sidewalk Barricades	ST 8
7-7	Pedestrian Walks and Bike Paths	ST 8
7-8	Roadway Profile Standards	ST 8
. 0	A. Grades	ST <mark>89</mark>
	B. Cross Slopes	ST 8 9
	C. Vertical Curves	ST 89
7-9	Intersections	ST 9
7-10	Offset Intersections	ST 9
7-11	Elbow Intersections	ST 9 10
7-12	Design Speed Sight Distances	ST 10
	A. Stopping Sight Distance	ST 10
	B. Sight Distances for Cars Entering Side Streets	ST 10
	or Driveways via Left Turn in	51 10
	C. Corner Sight Distances for Cars Exiting at	ST 11
	Intersections and Driveways	
7-13	Centerline Radii	ST 12
7-14	Driveways	ST 12 13
,	A. Types, Widths and Grades	ST 12
	B. Location	ST 13
	C. Sight Distance	ST 13 14
7-15	Bus Stops and Turnouts	ST 13 14
7-16	Developer Responsibility for Improvements to Streets	ST 14
7-17	Trenching in Existing Paved Roadways	ST 15
7-18	Street Names and Street Name Signs	ST 15 16
. 10	A. Location and Number Required	ST 15 <u>16</u> ST 15 16
7-19	Survey Monuments	ST 10 <u>10</u> ST 16 17
7-13 7-20	Benchmarks	ST 10 <u>17</u> ST 18
1 20	Denominans	21 10

Section 8 Domestic Water Supply System Design

8-1	Introduction	W 1
8-2	Design Criteria	W 1
8-3	Current Standards	W 1
8-4	Water Supply Quality	W 1
8-5	Water Supply Pressure	W 1
8-6	Flow Determination	W 2
8-7	Peaking Factors	W 2
8-8	Required Fire Flows	W 2
	A. Residential Areas	W 2
	B. Multi-Family Areas	W 3
	C. Commercial, Business, Industrial or School	W 3
	District Areas	•
8-9	Location in Existing Streets	W 3
8-10	Location in Unpaved Areas	W 3
8-11	Transmission System Design	W 3
	A. Transmission Main Location	W 4
	B. Transmission Main Appurtenances	W 4
	C. Corrosion Protection	W 4
	D. Insulating Flange Test Station	W 4
8-12	Distribution System Design	W 4
	A. Hydraulic Analysis	W 4
	B. Pipe Sizes	W 5
	C. Stubs	W 5
8-13	Water Main Location	W 5
	A. Location	W 6
	B. Vertical Elevation Change	W 7
	C. Cover	W 7
	D. Dead-End Mains	W 7
	E. Warranty Inspection of Water Main Stubs	W 7
	F. Public Lines in Commercial Development	W 7
8-14	Valves	W 7
	A. Locations	W 7
	B. Removal and Abandonment	W 8
	C. Valve Extension Stems	W 8
	D. Air Relief Valves	W 8
8-15	Hydrants and Blow-offs	W 8
	A. Location	W 8
	B. Spacing	W 9
	C. Cul-de-sacs and Dead-end Streets	W 9
	D. Valves	W 9
8-16	Water Service	W 9
	A. Location	W 9
	B. Curb Stamp	W 10
	C. Sizing	W 10
	D. Spacing	W 10

	E. Service Taps	W 10
	F. Water Meters	W 10
8-17	Restraint	W 10
8-18	Work Near Existing Water Mains	W 10
	A. Water Mains 16 Inches and Larger	W 11
8-19	Water Improvement Plan Requirements	W 11
	A. Water Study	W 11
	B. General Requirements	W 11
	C. Layout Sheet	W 11
	D. Plan and Profile Sheet	W 12
	E. Detail Drawings	W 13
8-20	Record (As-Built) Plans	W 13
	Section 9	
	Sanitary Sewer Design	
9-1	Design Criteria	SS 1
9-2	Average Flow Determination	SS 1
9-3	Design Flow	SS 1
9-4	Pipe Capacity, Slope, Velocity, Size, Depth and Material	SS 3
	A. Main Sizes	SS 3
	B. Slope and Velocity	SS 3
	C. Capacity	SS 4
	D. Hydraulic Grade Line	SS 4
	E. Depth	SS 4
9-5	Sewer Location and Alignment Requirements	SS 4
	A. General	SS 4
	B. Location in New Subdivisions	SS 4
	C. Location in Existing Streets	SS 4
	D. Location in Unpaved Areas	SS 5
	E. Easements Sewer Lines	SS 5
	F. Public Lines in Commercial Developments	SS 5
	G. Water Well Clearance	SS 5
	H. Lines in Drainage Swales	SS 5
	I. Alignment	SS 5
	J. Sewer Main Stub	SS 6
9-6	Trench Loading Conditions and Pipe Design	SS 6
	A. Rigid Conduit Loading	SS 6
	B. Safety Factor	SS 6
	C. Bedding and Initial Backfill	SS 6
0.7	D. Special Pipe Strength Requirements	SS 6
9-7	Manhole Criteria	SS 6
	A. General	SS 7
	B. SpacingC. Invert Elevations	SS 7
		SS 7 SS 7
	D. Manhole Sizing E. Manhole Coating	SS 7
	E. Manhole CoatingF. Manhole Access	SS 7
	1. Mainon Access	DD 1

	G. Connection City Mains	SS 8
9-8	Drop Connection Criteria	SS 8
9-9	Mainline and Dip Transitions	SS 8
9-10		SS 8
	A. General	SS 8
	B. Sizing	SS 8
	C. Depth	SS 10
	D. Special Requirements in Developed Areas	SS 10
	E. Warranty Inspection of Sewer Main Stubs	SS 10
	F. Abandoning Existing Sewer Stubs	SS 11
	G. Grease Interceptor	SS 11
	H. Oil/Sand Interceptor	SS 11
	I. Automatic Car Wash	SS 11
9-1	1 0 0	SS 11
	A. General	SS 11
	B. Gravity Mains	SS 11
	C. Design	SS 12
0.1	D. Siphon	SS 12
9-13	0 0 1	SS 12
9-13	1	SS 12
	A. Location	SS 12
	B. Capacity	SS 12
	C. Wet Well	SS 13
	D. Pumps E. Station Pining	SS 13
	E. Station Piping	SS 13
	F. Odor Control	SS 13 SS 13
	G. Force Mains H. S.C.A.D.A.	SS 13
	I. S.C.A.D.A. I. Valves	SS 14
9-1	_	SS 14
9-1	A. Sewer Study	SS 14
	B. General Requirements	SS 14
	C. Layout Sheet	SS 14
	D. Plan and Profile Sheets	SS 15
	E. Detail Drawings	SS 16
	F. Connection to Existing Facilities Where Bypassing	SS 16
	or Stoppage of Existing Flow Will be Required	55 10
9-1		SS 16
9-1		SS 16
_		
	Section 10	
	Drainage	
10-	<u> </u>	DR 1
10-		DR 1
10-	J	DR 1
10-		DR 3
10-	U	DR 3

10-6	Drainage Easements	DR 3
10-7	Drainage Capacity/Design	DR 4
10-8	Design Peak Discharge Methods	DR 4
10-9	Unit Peak Discharge Method	DR 5
	A. Criteria	DR 5
	B. Response Time	DR 5
	C. Unit Peak Discharge	DR 6
	D. Infiltration Factor	DR 7
	E. Connecting Separately Connected Areas	DR 8
	F. Procedure	DR 8
10-10	Hydraulic Standards for Drainage Systems	DR 12
	A. Hydraulic Grade Line	DR 12
	B. Manning's Formula	DR 12
10-11	Street Inundation Requirements	DR 12
10-12	Closed Conduits	DR 13 14
	A. Size and Material	DR 13 14
	B. Cover Requirements	DR 13 14
	C. Alignment	DR 14
10-13	Manholes	DR 14
	A. Saddle Manholes	DR 15
	B. Covers	DR 15
10-14	Inlets	DR 15
10-15	Junction Boxes	DR 15 16
10-16	Inlet and Outlet Structures	DR 16
	A. Headwalls, Wingwalls, and Endwalls	DR 16
	B. Trash Racks and Access Control Racks	DR 16
10-17	Drainage Pumps	DR 16
	A. Design Requirements	DR 16
	B. Maintenance Requirements	DR 17
10-18	Channels and Outfall Design	DR 17
	A. Open Channel Design Requirements	DR 17
	B. Interceptor Ditches	DR 17 18
	C. Outfall Profiles	DR 18
	D. Fencing	DR 18
	E. Access Roads	DR 18
10-19	Cross Culverts and Bridges	DR 18 19
	A. Design Storm	DR 19
	B. Computation of Flow	DR 19
10-20	Detention and Retention Basins	DR 20
10-21	Access for Maintenance	DR 20
	Standard Hydraulic Calculation Sheet	DR 21
	Submittal Requirements – HEC-1 Studies	DR 22
	Submittal Requirements – HEC-2 Studies or HEC RAS	DR 26
	Floodplain Encroachment Compliance Statements	DB 3U

Section 11 Grading

DS 9 of 12

Table of Contents

GR 1

GR 2

GR 2

GR 2

BK 56

BK 56

Rough Grading Plan Requirements GR 4 GR 4 GR 4 GR 4 A. Rolling Terrain Grading GR 4 **B.** Boundary Grading GR 4 C. Interior Grading GR 65 D. Retaining Walls GR 7 E. Grading Near Trees GR7 F. Stormwater Pollution Prevention plan (SWPPP) **GR 10** G. Mitigation Monitoring Requirement **GR 15** H. Certifying Pad Elevations **GR 15** I. Maintenance of Access to Utility Facilities **GR 16** Section 12 **Sound Barrier Design** 12-1 General SB 1 12-2 **Sound Studies** SB₁ **Location Requirements** 12-3 SB 1 12-4 **Design Requirements** SB₁ Section 13 **Bikeways** 13-1 General BK 1 13-2 Design Criteria BK 1 13-3 Plan Acceptance BK 1 13-4 Class I Bikeways (Bike Paths) BK 1 A. Width BK 12 B. Clearance to Obstructions BK 2 C. Signing and Delineation BK 2 D. Intersections with Roadways BK 3 E. Entry Control BK 3 F. Separation Between Bike Paths and Roadways BK 34 G. Design Speed BK 34 H. Grades **BK 4** I. Horizontal Alignment and Super elevation BK 4 J. Stopping Sight Distance BK 4 K. Lateral Clearance on Horizontal Curves BK 45 L. Vertical Curves BK 5 M. Structural Section BK 5

N. Drainage

O. Access Points

	P. Temporary Bike Path Closures	BK 6
	Q. Bike Bridges	BK 6
	R. Lighting	BK <u>67</u>
13-5	Bike Paths in Floodplains	BK <u>67</u>
13-6	Bike Bridges in Floodplains	BK 7
13-7	Class IA Sidewalk Bikeways	BK 78
13-8	Class II Bikeways	BK 78
	A. Signing and Pavement Markings	BK 8
	B. At-grade Intersection Design	BK 8
13-9	Class III Bikeways	BK 8
	Section 14	
	Recycled Water Infrastructure Design	
14-1	Determination of Use	RW 1
14-2	Design Information	RW 1
14-3	Current Standards	RW 1
14-4	Recycled Water Supply Quality	RW 2
14-5	Off-Site Recycled Water Facilities	RW 2
14-6	Private On-Site Recycled Water Facilities	RW 2
14-7	Water Supply Pressure	RW 2
14-8	Transmission System Design	RW 2
	A. Hydraulic Analysis	RW 2
	B. Specifications	RW 3
	C. Transmission Main Size	RW 3
	D. Transmission Main Location	RW 3
	E. Main Line Fittings and Connections	RW 5
	F. Recycled Water Transmission Main	RW 5
	and Appurtenances	
	G. Booster Pump Stations	RW 5
	H. Air and Vacuum Valves and Blow-Offs	RW 6
	I. Corrosion Protection	RW 6
	J. Insulating Flange Test Station	RW 6
	K. Warranty Inspection of Recycled Water Stubs	RW 6
14-9	Service Lines	RW 6
14-10	On-Site Recycled Water Facilities Design	RW 7
14-11	Determination to Use Recycled Water or Potable Water	RW 12
14-12	Design of Recycled Water Facilities With Temporary	RW 12
	Potable Water Service	
14-13	Backflow Prevention Devices	RW 12
14-14	Prohibition and Limitations	RW 13
14-15	Control of Runoff and Application Areas	RW 13
14-16	Minimum Depth to Top of On-Site Recycled Water	RW 14
1/17	Piping Data Paguirad on Plans	D\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
14-17	Data Required on Plans A. Meter Data	RW 14 RW 14
	B. Drinking Fountains	RW 14
	C. Irrigation Equipment Legend	RW 15
	o. migation Equipment Legend	ICAN 19

SW₂

SW 2

SW 2

SW 2

H. Back-up Lengths

J. Detail Drawings

K. Organics

I. Frontloading Compactors Enclosure