

ENGINEERING DESIGN STANDARDS AND PROCEDURES

TABLE OF CONTENTS

INTRODUCTION.....	xvi
-------------------	-----

SECTION I - DESIGN STANDARDS

1.00 STREETS AND SIDEWALKS.....	1-1
1.01 PURPOSE.....	1-1
1.02 DESIGN STANDARDS - GENERAL.....	1-1
1.02.1 Basic Geometry.....	1-1
1.02.2 Design Speed.....	1-1
1.02.3 Right of Way and Paving Width.....	1-2
1.02.4 Vertical Alignment.....	1-2
1.02.5 Horizontal Alignment and Super-elevation.....	1-2
1.02.6 Maximum Street Grades.....	1-3
1.02.7 Pavement Design.....	1-3
1.02.7.1 Flexible Pavement Design.....	1-4
1.02.7.2 Rigid Pavement Design.....	1-6
1.02.8 Curbs and Gutters.....	1-8
1.02.9 Valley Gutters.....	1-9
1.02.10 Cross Slope.....	1-9
1.02.11 Sidewalks.....	1-9
1.02.12 Pedestrian Access Ramps.....	1-10
1.02.13 Driveway Approaches.....	1-11
1.02.14 Curb Return Radii.....	1-11
1.02.15 Private Improvements.....	1-12
2.00 SANITARY SEWERS AND PUMP STATIONS.....	2-1
2.01 PURPOSE.....	2-1
2.02 GENERAL DESIGN CONSIDERATIONS.....	2-1
2.02.1 Off-Site Flows.....	2-1
2.02.2 Sewer Study.....	2-2
2.02.2.A Sanitary Sewer System Capacity.....	2-2
2.02.2.A-1 Flow Rates for New Developments.....	2-2
2.02.2.B Peak Flow Factor.....	2-4
2.02.2.C Infiltration / Inflow.....	2-5
2.02.3 Sewer Alignment.....	2-5
2.02.4 Cover.....	2-5
2.02.5 Watertight Joints.....	2-6
2.02.6 Manhole Placement.....	2-6

2.02.7	Manhole Channel Design	2-6
2.02.8	Sewers in Streets and Easements	2-7
2.02.9	Anchor Blocks	2-7
2.02.10	Minimum Pipe Size	2-8
2.02.11	Minimum Slope	2-8
2.02.12	Manning's 'n' Value	2-9
2.02.13	Watertight Manhole Covers	2-9
	2.02.13.A Ventilation	2-9
2.02.14	Manhole Taps and Inverts	2-9
2.02.15	Manhole Drop Structures	2-9
2.02.16	Drop Across the Structure	2-9
2.02.17	Cleanouts	2-10
2.02.18	Service Laterals	2-10
2.02.19	DEQ and OSHD Rules Regarding Water Lines	2-10
2.02.20	Stream Crossing	2-11
2.02.21	Inverted Siphons	2-11
2.02.22	Trenchless Technologies	2-11
2.02.23	Side Sewer Repairs	2-14
2.02.24	Manhole Rehabilitation	2-15
2.02.25	Service Lines	2-15
2.03	PUMP STATIONS	2-15
2.03.1	Location and Site Selection	2-15
2.03.2	Flood Protection	2-16
2.03.3	Access for Maintenance Vehicles	2-16
2.03.4	Fire Protection	2-16
2.03.5	Site Piping Layout	2-16
2.03.6	Other Site Design Factors	2-16
2.03.7	Design Flow Rates	2-17
2.03.8	System Hydraulics	2-17
2.03.9	Number of Pumps	2-17
2.03.10	Pump Selection	2-17
2.03.11	Wet-wells	2-18
2.03.12	Grit, Grease, and Clogging Protection	2-19
2.03.13	Flow Measurement	2-19
2.03.14	Surge Analysis - General	2-20
	2.03.14.A Surge Modeling	2-20
	2.03.14.B Surge Protection Facilities	2-20
2.03.15	Odor and Noise Control	2-21
2.03.16	Odor Prevention	2-21
2.03.17	Noise Control	2-21
2.03.18	Operations and Maintenance	2-21
2.03.19	Reliability	2-21
	2.03.19.A Equipment Redundancy	2-22
	2.03.19.B Emergency Power	2-23
	2.03.19.B-1 Portable Engine Generators	2-23
	2.03.19.B-2 Permanent Engine Generators	2-23
	2.03.19.B-3 Fuel Storage	2-23

2.03.19.B-4	Secondary Power Grid	2-24
2.03.20	Bypass Capability	2-24
2.03.21	Overflow Storage Capability	2-24
2.03.22	Alarms and Telemetry	2-25
2.04	SPECIAL DESIGN DETAILS - GENERAL	2-25
2.04.1	Electrical Design	2-25
2.04.1.A	Instrumentation	2-25
2.04.1.B	Alarms	2-25
2.04.1.C	Lighting	2-26
2.04.2	Water Supply	2-26
2.04.3	Corrosion Control	2-26
2.04.4	Temperature and Ventilation	2-26
2.04.5	Equipment Removal and Replacement	2-26
2.04.6	Accessibility	2-27
2.04.7	Valves and Piping	2-27
2.04.8	Wet-well/Drywell Pump Stations	2-27
2.04.9	Suction Lift Pump Stations	2-27
2.04.10	Submersible Pump Stations	2-28
2.04.11	Vertical Solids Handling Line Shaft Pumps	2-28
2.05	FORCE MAINS	2-28
2.05.1	Size	2-28
2.05.2	Velocity	2-28
2.05.3	Air Relief Valve	2-28
2.05.4	Blow-Offs	2-28
2.05.5	Termination	2-29
2.05.6	Construction Materials	2-29
2.05.7	Pressure Tests	2-29
2.05.8	Connections	2-29
2.05.9	Surge Control	2-29
2.05.10	Thrust Restraint	2-30
2.05.11	Pig Launch/Retrieval Facilities	2-30
3.00	STORMWATER QUALITY	3-1
3.01	STORMWATER QUALITY DESIGN STANDARDS	3-1
3.02	INTERIM DESIGN STANDARDS	3-1
3.03	STORMWATER QUALITY DESIGN CRITERIA	3-1
3.03.1	Water Quality Design Storm	3-2
3.03.2	Retention/Protection/Preference for Open Watercourses and Water Bodies	3-2
3.03.3	Water Quality Pollutants of Concern	3-2
3.03.3.A	Temperature Standard	3-2
3.03.3.B	Total Suspended Solids (TSS) Standard	3-2
3.03.3.C	DEQ Stormwater Discharge Benchmarks	3-2
3.03.4	Special Considerations for Higher-Risk Activities	3-3

3.03.4.A	BES <i>Stormwater Management Manual</i> , Chapter 9	3-3
3.03.4.B	Underground Injection Control (UIC)	3-3
3.03.4.C	Roof-mounted Equipment	3-4
3.03.4.D	Drinking Water Protection (DWP) Overlay District	3-4
3.03.5	Parking Lots / Paved Areas	3-4
3.03.6	Vegetative Treatment Requirements	3-4
3.03.7	Parking Lot Maintenance	3-5
3.04	BEST MANAGEMENT PRACTICES FOR PUBLIC STREET DESIGNS	3-5
3.05	WETLANDS BANKING	3-5
4.00	STORMWATER CAPACITY	4-1
4.01	PURPOSE	4-1
4.02	GENERAL DESIGN CONSIDERATIONS	4-1
4.03	ACCOUNTABILITY FOR DRAINAGE DESIGN	4-1
4.03.1	Drainage Study	4-2
4.03.2	Drainage Study Types	4-3
4.03.3	Hydrologic Calculations	4-4
4.03.4	Hydraulic Calculations	4-5
4.03.5	Design of Conveyance	4-6
4.04	DESIGN OF STORM SYSTEMS	4-6
4.05	CATCH BASIN/INLET DESIGN	4-9
4.06	AREA DRAINS AND DITCH INLETS	4-9
4.07	CONSTRUCTED CHANNELS	4-10
4.07.1	Roadside Ditches	4-11
4.08	OUTFALLS	4-11
4.09	DOWNSTREAM PROTECTION REQUIREMENT	4-11
4.10	CRITERIA FOR REQUIRING ON-SITE DETENTION	4-11
4.10.1	On-Site Detention Design Criteria	4-12
4.11	IMPERVIOUS AREA USED IN DESIGN	4-12
4.12	DETENTION POND DESIGN	4-12
4.13	USE OF PARKING LOTS FOR DETENTION	4-14
4.14	USE OF ROOFS FOR DETENTION	4-14

4.15	UNDERGROUND DETENTION FACILITIES	4-14
4.15.1	Detention Tanks.....	4-15
4.15.2	Detention Vaults.....	4-16
4.16	INFILTRATION FACILITIES	4-16
4.16.1	Overview.....	4-16
4.16.2	Underground Injection Control.....	4-17
4.16	LOW IMPACT DEVELOPMENT	4-18
5.00	TRAFFIC STANDARDS	5-1
5.01	PURPOSE	5-1
5.02	GENERAL DESIGN CONSIDERATIONS	5-1
5.02.1	Illumination.....	5-1
5.02.1.A	General.....	5-1
5.02.1.B	Design Standards.....	5-1
5.02.1.C	Street Light Spacing.....	5-3
5.02.1.D	Conduit Size.....	5-5
5.02.1.E	Conductor Size.....	5-6
5.02.2	Signals.....	5-6
5.02.2.A	General.....	5-6
5.02.2.B	Signal Design Standards.....	5-6
5.02.2.C	Induction Loops.....	5-7
5.02.2.D	Conduit.....	5-7
5.02.2.E	Junction Boxes.....	5-7
5.02.2.F	Power Source.....	5-7
5.03	BICYCLE FACILITIES	5-7
5.03.1	General.....	5-7
5.03.2	Design Standards.....	5-8
5.03.3	Bike Lanes.....	5-8
5.03.4	Bicycle Parking.....	5-8
5.03.5	Multi-Use Paths.....	5-8
5.03.6	Striping and Signing.....	5-9
5.04	ROUNDBABOUTS	5-9
5.05	MEDIANS	5-9
5.05.1	General.....	5-9
5.05.2	Median Location Criteria.....	5-9
5.05.3	Design Standards.....	5-10
5.05.3.A	Length of Median.....	5-10
5.05.3.B	Median Width.....	5-10
5.05.3.C	Median Openings.....	5-10
5.05.3.D	Median Types.....	5-10

5.05.3.E	Visibility.....	5-11
5.06	ROADSIDE FEATURES.....	5-11
5.06.1	General.....	5-11
5.06.2	Design Standards.....	5-11
5.06.3	Mailboxes.....	5-11
5.06.4	Roadside Traffic Barriers.....	5-11
5.06.5	Signing.....	5-11
5.07	MISCELLANEOUS.....	5-12
5.07.1	Turn Bay Lengths.....	5-12
5.07.2	Sight Distance.....	5-13
5.07.3	Bus Turnout.....	5-13
5.07.4	Bus Stop Locations.....	5-14
5.07.5	Bus Stop and Shelter Layout.....	5-17
5.08	CITY-OWNED PARKING LOT DESIGN.....	5-17
5.08.1	General.....	5-17
5.08.2	Throat Length.....	5-17
5.08.3	End Islands and Landscapes Areas.....	5-17
5.08.4	Perimeter Road.....	5-18
5.08.5	Parking Orientation.....	5-18
5.08.6	Parking Stall Width.....	5-18
6.00	STREET TREES.....	6-1
6.01	PURPOSE.....	6-1
6.02	GENERAL DESIGN CONSIDERATION.....	6-1
6.02.1	Existing Trees.....	6-1
6.02.2	New Street Trees.....	6-2
	6.02.2.A List of Acceptable Street Trees.....	6-2
6.02.3	Street Tree Size.....	6-5
6.02.4	Street Tree Location.....	6-5
6.02.5	Tree Planting Procedures and Establishment.....	6-5
7.00	HILLSIDE DEVELOPMENT.....	7-1
7.01	PURPOSE.....	7-1
7.02	WATER SUPPLY DISTRIBUTION.....	7-1
7.03	SANITARY SEWER.....	7-1
7.03.1	Logical Phasing.....	7-1
7.03.2	Hillside Plan Submittals.....	7-1
7.03.3	Geotechnical Engineering Representative.....	7-2
7.03.4	Springfield Development Code.....	7-2

7.03.5	Public vs. Private Sanitary Sewer	7-2
7.03.6	Sewer Extensions	7-2
7.03.7	Sewer Boundary Mapping	7-2
7.03.8	Sewer Pump Stations	7-2
7.03.9	Hillside Design Considerations	7-2
7.03.10	Intercepted Groundwater Flow	7-3
7.03.11	Curved Sewers	7-3
7.04	STORM DRAINAGE	7-3
7.04.1	Springfield Development Code	7-3
7.04.2	Storm Sewer Laterals	7-3
7.04.3	Publicly Maintained Facilities	7-3
7.04.4	Storm Sewer Extensions	7-3
7.04.5	Site Drainage Analysis	7-3
7.04.6	Hillside Design Considerations	7-3
7.04.7	Trench Drainage Control	7-4
7.04.8	Curved Storm Sewer	7-4
7.04.9	Drainage Impact to Wetlands	7-4
7.04.10	Hillside Pavement Distress Study	7-4
7.04.11	Catch Basin Design	7-4
7.04.12	Drainage Approval	7-4
7.04.13	Water Flow at Curb Cuts	7-4
7.04.14	Agreement of Responsibilities	7-4
7.04.15	Water Quality Best Management Practices	7-4
7.04.16	Maintenance Vehicle Access	7-5
7.04.17	Storm Water Discharge Restrictions	7-5
7.04.18	Drainage Benches and Private Storm Systems	7-5
7.05	TRANSPORTATION	7-5
7.05.1	Temporary Dead End Streets	7-5
7.05.2	Right-of-Way Dedications	7-5
7.05.3	Slope Easements	7-5
7.05.4	Local Street Right-of-Way	7-6
7.05.5	Field Measured Cross Sections	7-6
7.05.6	Details and Typical Cross Sections	7-6
7.05.7	Secondary Access	7-6
7.05.8	Geometry	7-6
	7.05.8.A Basic Geometry	7-6
	7.05.8.B Combination Vertical and Horizontal Curves	7-6
7.06	GROUNDWATER CONTROL	7-6
7.06.1	Embankment Restrictions	7-6
7.06.2	Persistent Flow Conditions	7-6
7.06.3	Longitudinal Drainage Systems	7-7
7.06.4	Interception of Springs and Watercourses	7-7
7.07	TREE AND UNDERSTORY PRESERVATION	7-7
7.07.1	Tree or Understory Removal	7-7
7.07.2	Analysis of Urban Forester	7-7

7.07.3	Forestry Consultant	7-7
7.07.4	Retainage of Trees	7-8
7.07.5	Oregon White Oaks	7-8
8.00	EROSION AND SEDIMENT CONTROL PLAN DESIGN	8-1
8.01	PURPOSE	8-1
8.02	DESIGNER RESPONSIBILITIES	8-1
8.03	PLAN PREPARATION	8-2
8.03.1	Data Collection	8-2
8.03.1.A	Soil Types	8-3
8.03.1.B	Precipitation Data	8-3
8.03.2	Erosion Prevention vs. Sediment Control	8-3
8.03.3	Assessing the Project Site	8-4
8.03.4	Five Basic Rules	8-5
8.03.5	Project Scheduling	8-5
8.04	ESCP - DETERMINE APPLICABLE DESIGN ELEMENTS	8-5
8.04.1	Clearing Limits	8-6
8.04.2	Sensitive Area Restrictions	8-6
8.04.3	Surface Water Control	8-7
8.04.4	Perimeter Protection	8-8
8.04.5	Sediment Retention	8-9
8.04.6	Cover Measures	8-9
8.04.7	Inlet Protection	8-10
8.04.8	Traffic Area Stabilization	8-10
8.04.9	Dust Control	8-10
8.04.10	Permanent Ground Cover	8-10
8.05	ESCP PLAN DESIGN	8-10
8.05.1	Base Map	8-11
8.05.2	Erosion and Sediment Control Design using BMP's	8-11
8.05.3	Complete Erosion and Sediment Control Plan	8-11
8.05.3.A	Plan Sheets	8-12
8.05.3.B	ESCP Detail Sheet(s)	8-13
8.06	EROSION CONTROL CONSTRUCTION NOTES	8-13
8.07	CONSTRUCTION SEQUENCE	8-14
8.08	NARRATIVE	8-15
8.09	ESCP REVIEW AND APPROVAL	8-16

EXHIBIT 8-1: NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

STORM WATER DISCHARGE PERMIT	8-17
8A.00 APPENDIX A - BEST MANAGEMENT PRACTICES	8A-1
8A.01 PURPOSE	8A-1
8A.02 EROSION PREVENTION	8A-2
8A.02.1 Preserve Natural Vegetation	8A-2
8A.02.2 Buffer Zone	8A-3
8A.02.3 Temporary and Permanent Seeding	8A-4
8A.02.4 Mulch	8A-8
8A.02.5 Hydraulic Applications	8A-9
8A.02.6 Sod	8A-10
8A.02.7 Matting	8A-12
8A.02.8 Plastic Sheeting	8A-14
8A.02.9 Dust Control	8A-15
8A.03 RUNOFF CONTROL	8A-16
8A.03.1 Construction Entrance	8A-17
8A.03.2 Tire Wash Facility	8A-18
8A.03.3 Construction Road/Parking Area Stabilization	8A-19
8A.03.4 Temporary Slope Drain	8A-20
8A.03.5 Outlet Protection	8A-23
8A.03.6 Surface Roughening	8A-24
8A.03.7 Check Dam	8A-26
8A.03.8 Diversion Dike/Diversion Swale	8A-28
8A.03.9 Grass-lined Swale	8A-30
8A.04 SEDIMENT CONTROL PRACTICES	8A-31
8A.04.1 Sediment Barrier	8A-32
8A.04.1.A Biofilter Bags - Sediment Barrier	8A-32
8A.04.1.B Straw Rolls (Wattles) - Sediment Barrier	8A-34
8A.04.1.C Brush Barrier - Sediment Barrier	8A-35
8A.04.1.D Filter Berm - Sediment Barrier	8A-36
8A.04.1.E Pre-Fabricated Barrier System - Sediment Barrier	8A-37
8A.04.2 Sediment Fence	8A-39
8A.04.3 Inlet Protection	8A-42
8A.04.4 Sediment Trap	8A-45
8A.04.5 Sediment Basin	8A-51
SECTION II - DRAFTING STANDARDS	
9.00 DRAFTING STANDARDS	9-1
9.01 SURVEY AND TOPOGRAPHIC INFORMATION	9-1
9.02 PUBLIC IMPROVEMENT PROJECT PLAN SET REQUIREMENTS	9-1
9.02.1 Sheet Size / Margins	9-1
9.02.2 Line Width	9-2

9.02.3	Line Weight	9-2
9.02.4	Descriptions and Detail Notes	9-2
9.02.5	Required Information	9-2
9.03	COVER SHEET	9-2
9.03.1	General Construction Notes	9-3
9.03.2	Symbol Legend	9-5
9.03.3	Vicinity Map	9-5
9.03.4	Site Map (including Sheet Index)	9-5
9.03.5	Assessment Plat	9-6
9.04	PLAN AND PROFILE VIEW SHEETS	9-6
9.04.1	Plan View	9-7
9.04.1.A	Drawing Scale	9-7
9.04.1.B	Required Information	9-7
9.04.1.B-1	Match Lines	9-7
9.04.1.B-2	Centerline and Stationing	9-8
9.04.1.B-3	Existing and Proposed Right of Way and Easements	9-8
9.04.1.B-4	Contour Lines	9-8
9.04.1.B-5	Existing and Proposed Utilities	9-8
9.04.1.B-6	Existing and Proposed Improvements	9-8
9.04.1.B-6a	Sewers	9-9
9.04.1.B-6b	Sidewalks	9-9
9.04.1.B-6c	Planter Strips	9-9
9.04.1.B-6d	Driveways	9-9
9.04.1.B-6e	ADA Ramps	9-9
9.04.1.B-6f	Curb and Gutter	9-9
9.04.1.B-6g	Pavement	9-9
9.04.1.B-6h	Trees	9-10
9.04.1.B-7	Curb Return Data	9-10
9.04.1.B-8	Horizontal Curve Data	9-10
9.04.1.B-9	Construction Notes	9-10
9.04.2	Profile View	9-11
9.04.2.A	Drawing Scale	9-11
9.04.2.B	Required Information	9-11
9.04.2.B-1	Match Lines	9-11
9.04.2.B-2	Centerline Stationing	9-12
9.04.2.B-3	Existing Ground Profile	9-12
9.04.2.B-4	Proposed TC or CL Profile, Elevations, and Slopes	9-12
9.04.2.B-5	Centerline Grade Break / Vertical Curve Data	9-12
9.04.2.B-5a	Grade Breaks	9-12
9.04.2.B-5b	Vertical Curves	9-12
9.04.2.B-6	Existing and Proposed Utilities	9-13
9.04.2.B-7	Existing and Proposed Improvements	9-13
9.04.2.B-7a	Sewers	9-13
9.04.2.B-8	Backfill Requirements	9-13
9.05	CONSTRUCTION DETAIL SHEETS	9-14
9.05.1	Drawing Scale	9-14

9.05.2	Required Information.....	9-14
9.05.3	Required Details.....	9-14
9.06	TRAFFIC PLAN SHEET(S)	9-15
9.06.1	Drawing Scale.....	9-15
9.06.2	Required Information.....	9-15
9.07	TRAFFIC DETAIL SHEET(S)	9-16
9.08	GRADING PLAN SHEET(S)	9-16
9.08.1	Drawing Scale.....	9-16
9.08.2	Required Information.....	9-16
9.09	EROSION AND SEDIMENT CONTROL PLAN SHEET(S)	9-16
10.00	ELECTRONIC ACCEPTANCE STANDARDS	10-1
10.01	PURPOSE	10-1
10.01.1	Accuracy.....	10-2
10.01.2	Consistency between Electronic Copy and Hard Copy.....	10-2
10.01.3	Electronic As-built Drawing Set.....	10-2
10.01.4	Referenced Information.....	10-3
10.01.5	Drawing Objects (Entities).....	10-3
10.01.6	Layering Conventions.....	10-4
10.01.7	Media.....	10-5
10.01.8	City Inventory Information and Definitions.....	10-5

EXHIBIT 10-1: AS-BUILT LAYERING PROTOCOLS

EXHIBIT 10-2: LIST OF REQUIRED LAYERS FOR INFRASTRUCTURE COMPONENTS

EXHIBIT 10-3: CITY INVENTORY INFORMATION

SUPPLEMENT 10-1: AS-BUILT CHECK LIST

SUPPLEMENT 10-2: TYPICAL AS-BUILT DRAWING

SUPPLEMENT 10-3: CHAPTER 10 INTERNET LINKS

SECTION III - PROCEDURES

11.00 PRE-DESIGN	11-1
11.01 PURPOSE	11-1
11.02 JOB-SITE FIELD INVESTIGATION	11-1
11.03 ORDERING TESTS	11-1
11.04 UTILITY LOCATES	11-1
11.05 TOPOGRAPHIC NOTES	11-2
11.06 RESEARCH	11-2
11.07 PRE-DESIGN MEETING	11-3
11.08 SURVEY CONTROL	11-4
12.00 PUBLIC IMPROVEMENT PERMIT PROJECTS	12-1
12.01 PURPOSE	12-1
12.02 PERMIT APPLICATION PROCESS	12-1
12.03 PERMIT AGREEMENT	12-2
12.03.1 Developer Obligations of Permit	12-3
12.03.2 Developer's Engineer Obligations of Permit	12-3
12.03.3 City Obligations of Permit	12-3
12.04 PERMIT DEPOSIT	12-3
12.04.1 Deposit Submittal and Calculation	12-3
12.04.2 City Costs Recovered From Deposit	12-4
12.05 PLANS AND SPECIFICATIONS SUBMITTAL	12-4
12.05.1 Submittal Requirement	12-4
12.05.2 Permits from Other Agencies	12-5
12.05.3 Review and Approval	12-5
12.06 OTHER REQUIREMENTS BEFORE PERMIT IS ISSUED	12-6
12.06.1 Submittal Requirements	12-6
12.06.2 Bond	12-6
12.06.3 Contractor's Insurance Certificates	12-7
12.06.4 Temporary Traffic Control Plan	12-7
12.06.5 Construction Schedule	12-7

12.07	ENGINEER’S MANAGEMENT OF CONSTRUCTION	12-8
12.07.1	Inspection, Survey and Management of the Work.....	12-8
12.07.2	Non-performance of Inspector or Engineer.....	12-8
12.08	ACCEPTANCE OF PROJECT	12-9
EXHIBIT 12-1: PUBLIC IMPROVEMENT PROJECT PERMIT		
EXHIBIT 12-2: CONSTRUCTION PERMIT DEPOSIT FOR PUBLIC IMPROVEMENT PROJECTS		
EXHIBIT 12-3: UTILITY CONCURRENCE FORM		
EXHIBIT 12-4: PUBLIC IMPROVEMENT PROJECT PERFORMANCE BOND FORM		
EXHIBIT 12-5: HOLD HARMLESS AGREEMENT		
EXHIBIT 12-6: CONSTRUCTION INSPECTOR’S CHECKLIST		
EXHIBIT 12-7: WEEKLY STATUS REPORT FORM		
EXHIBIT 12-8: LDAP PERFORMANCE BOND		
EXHIBIT 12-9: SET ASIDE LETTER		
13.00	CITY CONTRACT PROJECTS	13-1
13.01	PURPOSE	13-1
13.02	PRELIMINARY DESIGN	13-1
13.02.1	Project Schedule.....	13-1
13.02.2	Check Print Circulated.....	13-1
13.02.3	Verification of Right-of-Way and Easements.....	13-2
13.02.4	Plans to Utilities.....	13-2
13.03	ENGINEER’S REPORT	13-2
13.04	NEIGHBORHOOD MEETING	13-2
13.05	PUBLIC HEARING	13-2
13.06	BID SOLICITATIONS	13-3
13.07	AWARD OF CONTRACT	13-3
13.08	CONSTRUCTION ADMINISTRATION	13-3

13.09 AS-BUILTS	13-3
13.10 FINAL PROJECT ACCEPTANCE AND BEGINNING OF WARRANTY PERIOD	13-3
13.11 END OF WARRANTY PERIOD	13-4
EXHIBIT 13-1: PROJECT CHECKLIST	
EXHIBIT 13-2: PROJECT ACCEPTANCE FORM	