

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 Design Specifications	1-1
1.1 Permit Submittal Requirements.....	1-4
1.2 Operation and Maintenance Plan	1-6
1.3 Fee Schedule	1-7
2.0 Hydrology and Runoff Determination	2-1
2.1 General Design Criteria	2-1
2.2 Drainage Area Characteristics	2-1
2.3 Precipitation Data.....	2-3
2.4 Runoff Determination	2-6
3.0 Storm Sewer Collection System	3-1
3.1 General Design Criteria	3-1
3.2 Collection System	3-1
3.3 Conveyance System	3-17
3.4 Outlet Protection	3-23
4.0 Culverts and Bridges	4-1
4.1 Design Criteria	4-1
4.2 Culvert Flow	4-4
4.3 Culvert Selection and Design.....	4-12
5.0 Open Channel.....	5-1
5.1 General Design Criteria	5-1
5.2 General Design Recommendations.....	5-2
5.3 Channel Discharge	5-4
6.0 Storage Facilities	6-1
6.1 General Design Criteria	6-1
6.2 Design Recommendations	6-2
6.3 Onsite Detention	6-7
6.4 Hydraulic Design Methods	6-11
6.5 Debris and Sedimentation	6-14

TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE</u>
7.0	Best Management Practices – Structural Control	7-1
7.1	General Design Criteria	7-1
7.2	Site Consideration and Guidance.....	7-2
7.3	BMP Placement Strategy	7-10
7.4	BMP Maintenance	7-11
7.5	Design Guidelines and BMP Fact Sheets	7-13
7.6	Wetland Systems.....	7-14
7.7	Bioretention Areas	7-18
7.8	Permeable Pavement.....	7-22
7.9	Infiltration Trench.....	7-27
7.10	Filter Strip	7-30
7.11	Vegetated Swales	7-33
7.12	Sand Filter.....	7-36
7.13	Exfiltration Trench.....	7-39
7.14	Wet (Retention) Pond	7-42
7.15	Extended Detention Pond	7-46
8.0	Water Quality Analysis	8-1
8.1	General Design Criteria	8-1
8.2	Pollutant Types and Sources.....	8-2
8.3	Water Quality Impact.....	8-2
8.4	Pollutant Loading Analysis.....	8-3
9.0	Erosion and Sediment Control	9-1
9.1	Regulations	9-2
9.2	References.....	9-3
10.0	Low Impact Development	10-1
10.1	LID Strategies	10-1
11.0	References	11-1

LIST OF TABLES

<u>TABLES</u>	<u>PAGE</u>
1-1	Fee Schedule for Storm Water Plan Review1-8
2-1	Hydrologic Soils Groups (HSG) for Georgetown County2-3
2-2	Rainfall Depth (Inches) for Georgetown County2-4
2-3	Rainfall Intensity Coefficients for Georgetown County 2-5
2-4	Roughness Coefficients for Sheet Flow.....2-7
2-5	Rational Method Runoff Coefficient Frequency Factors..... 2-10
2-6	Recommended Runoff Coefficient “C” Values Rational Method 2-11
2-7	Rainfall Intensity for Georgetown County 2-12
2-8	Runoff Curve Number for Urban Areas and Agricultural Lands..... 2-15
2-9	Pond and Swamp Areas..... 2-18
3-1	Manning’s Roughness Coefficients “n” for Roadways and Gutters3-3
3-2	Manning’s Roughness Coefficients for Storm Sewers 3-19
3-3	Minimum Slope Required for Scouring Velocity 3-20
3-4	Maximum Velocity in Storm Sewers..... 3-20
4-1	Manning’s “n” Values4-2
4-2	Entrance Loss Coefficients.....4-6
5-1	Maximum Velocities for Comparing Lining Materials5-3
5-2	Maximum Velocities for Vegetative Channel Linings5-3
5-3	Manning’s Roughness Coefficients for Artificial Channels “n”5-4
5-4	Uniform Flow Values of Roughness Coefficient “n”5-5
5-5	Classification of Vegetative Covers as to Degrees of Retardance5-8
5-6	Permissible Shear Stresses for Riprap and Temporary Lining..... 5-11
7-1	Water Quality Volumetric Controls of Structural BMPs.....7-2
7-2	Screening Criteria for Selecting Structural BMPs7-3
7-3	Comparison of Pollutant Removal Efficiencies of Structural BMPs7-6
7-4	Structural BMP Preference..... 7-11
7-5	Wetland Zone Distributions for Storm Water Wetland Varieties 7-15
7-6	Porous Pavement Layers Design Criteria 7-24
8-1	Assumed BMP Phosphorus Removal Efficiency.....8-4

LIST OF FIGURES

<u>FIGURES</u>	<u>PAGE</u>
2-1 NRCS (SCS) Type III Unit Peak Discharge Graph	2-19
3-1 Ration of Frontal Flow to Total Gutter Flow	3-4
3-2 Typical Composite Gutter Section.....	3-5
3-3 Curb-Opening Inlet Interception Efficiency	3-10
3-4 Curb-Opening Inlets	3-13
3-5 Combination Inlet Flow Schematic	3-17
3-6 Design of Outlet Protection – Minimum Tailwater Conditions	3-25
3-7 Design of Outlet Protection – Maximum Tailwater Conditions	3-26
4-1 Types of Inlet Control.....	4-7
4-2 Types of Outlet Control.....	4-9
4-3 Critical Depth, d_c Circular Pipe.....	4-13
4-4 Critical Depth, d_c Rectangular Section	4-14
5-1 Manning’s “n” Values for Vegetated Channels	5-7
5-2 K_b Factor for Maximum Shear Stress on Channel Bends.....	5-13
5-3 Protection Length, L_p , Downstream of Channel Bend.....	5-14
6-1 Schematic of Storm Water Pond Design Features	6-4
6-2 Parking Lot Detention Schematic	6-9
6-3 Property Line Swale	6-10
6-4 Effect of Off-Stream Reservoir on Storm Runoff Hydrograph.....	6-12
7-1 Drainage Area Restrictions of Structural BMPs	7-7
7-2 Soil Restrictions of Structural BMPs.....	7-7
7-3 Site Restrictions of Structural BMPs	7-8
7-4 Hydrologic Benefits of Structural BMPs.....	7-8
7-5 Pollutant Control of Structural BMPs.....	7-9
7-6 Environmental and Aesthetic Amenity Contribution of Structural BMPs	7-9
7-7 Wetland System General Plan.....	7-17
7-8 Wetland System Profile.....	7-18
7-9 Bioretention Plan	7-21
7-10 Bioretention Profile.....	7-21
7-11 Typical Permeable Pavement Plan.....	7-26
7-12 Typical Permeable Pavement Profile.....	7-26
7-13 Infiltration Trench General Plan and Profile	7-29
7-14 Filter Strip General Plan	7-32
7-15 Filter Strip Profile	7-32
7-16 Vegetated Swale General Plan and Profile.....	7-35
7-17 Sand Filter General Plan.....	7-38
7-18 Sand Filter Profile	7-39
7-19 Exfiltration Trench Profile.....	7-42
7-20 Wet Pond Plan	7-45

7-21	Wet Pond Profile.....	7-45
7-22	Extended Detention Pond General Plan	7-48
7-23	Extended Detention Pond Profile.....	7-48
8-1	Assumed BMP Phosphorus Removal Efficiency.....	8-4