

Photo Book of Storm Water Features





This book is not comprehensive and some storm water features may not have been included. The features pictured in this book may not always represent features installed.

© 2006 City of Charlotte Storm Water Services
Photo Book of Storm Water Features Version 1.2

Drainage Structures

A structure built to collect rain water from a storm event and direct it into a pipe for discharge into a channel, stream or pond.



Catch Basin



Drop Inlet in Pavement



Curb Inlet



Drop Inlet in Yard



Double Catch Basin



Elongated Throat

Drainage Structures

A structure built to collect rain water from a storm event and direct it into a pipe for discharge into a channel, stream or pond.



End Wall With Wing Walls



Head Wall - Concrete



Flared End Section (FES)



Head Wall - Concrete Block



Head Wall - Brick



Manhole

Drainage Structures

A structure built to collect rain water from a storm event and direct it into a pipe for discharge into a channel, stream or pond.



Pre-Cast Wing Wall



Slab Top Inlet

Retaining Walls

A retaining is a vertical, or nearly vertical, wall designed to support ground surfaces of differing elevations.



Gabion Wall



Modular Block Wall



Wrapped Earth

Pipes & Culverts

A culvert is a drainage pipe used to convey a stream through a road or embankment or may carry a stream for a long distance underground to a surface discharge location.



Bottomless Culvert - Arch



Corrugated Metal Pipe (CMP)



Bottomless Culvert - Three Sided



Double Reinforced Concrete Box Culvert (RCBC)



Corrugated Aluminum Pipe Arch (CAPA)



Driveway Culvert

Pipes & Culverts

A culvert is a drainage pipe used to convey a stream through a road or embankment or may carry a stream for a long distance underground to a surface discharge location.



High Density Polyethylene Pipe (HDPE)



Reinforced Concrete Pipe

Curb & Gutter



2' 6" Standard Curb and Gutter



Roadside Ditch



Valley Gutter

Channel & Pond Features



Articulated Block Matting



Double Wing Deflector



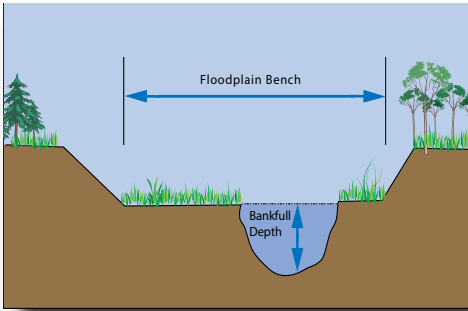
Coir Fiber Rolls



Floodplain Bench



Cross Vane



Floodplain Bench Diagram

Channel & Pond Features



Grade Control Structure



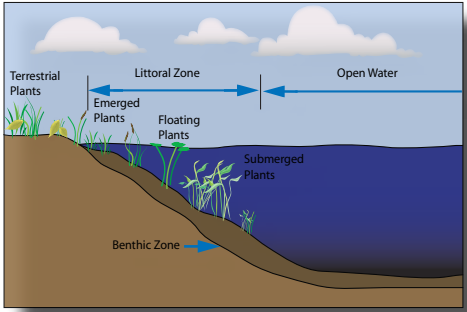
Meanders



Littoral Shelf



Pond



Littoral Shelf Diagram



Pond Outlet Structure with Trash Rack

Channel & Pond Features



Riffle Pool Sequence



Riser



Rip Rap



Root Wad



Rip Rap Toe



Soil Bioengineering - First Year
(Live Stakes)

Channel & Pond Features



Soil Bioengineering - Medium Growth



Swale - Concrete



Soil Bioengineering - Mature Growth



Swale - Grassed



Stilling Basin



Wetland BMP

Construction Equipment



Backfill Tamping with Jumping Jack



Crane



Backhoe



Drill Rig



Casing Pipe



Hydroseed Equipment

Construction Equipment



Micropile Bracket



Mini Front End Loader



Micropile Drill Rig



Pavement Milling Equipment



Mini Backhoe



Rock Hammer

Construction Equipment



Street Broom



Track Hoe



Trench Compactor

Installation Techniques



Bypass Pumping



Head Wall Under Construction



Curb-Gutter Installation



High Density Polyethylene Pipe (HDPE) Installation



Hand Dig Utility Conflicts



Hydroseed

Installation Techniques



Orange Construction Fence



Shoring



Permanent Erosion Control Matting



Silt Fence



Reinforced Concrete Pipe (RCP)
Installation



Temporary Erosion Control Matting

Installation Techniques



Temporary Rock Check Dam



Trench Box



Temporary Staging Area



Trenching in the Street



Tree Removal - Chipping

Miscellaneous



Guard Rail



Hand Rail



Rain Barrel

Problems



Blockage



Channel Erosion



Blockage Removal



Concrete in Stream



Channel Erosion



Corroded Metal Pipe

Problems



Corroded Metal Pipe



Failed Concrete Apron



Corroded Metal Pipe



Flooding - Bridge



Debris at Catch Basin



Flooding - House

Problems



Flooding - Road



Flooding - Yard



Sinkhole or Blowout

Drainage Structures3 - 5

Catch Basin 3

Curb Inlet..... 3

Double Catch Basin 3

Drop Inlet in Pavement 3

Drop Inlet in Yard..... 3

Elongated Throat..... 3

End Wall With Wing Walls 4

Flared End Section (FES) 4

Head Wall - Brick 4

Head Wall - Concrete..... 4

Head Wall - Concrete Block..... 4

Manhole..... 4

Pre-Cast Wing Wall 5

Slab Top Inlet..... 5

Retaining Walls6

Gabion Wall 6

Modular Block Wall 6

Wrapped Earth 6

Pipes & Culverts7 - 8

Bottomless Culvert - Arch..... 7

Bottomless Culvert - Three Sided 7

Corrugated Aluminum Pipe Arch (CAPA)..... 7

Corrugated Metal Pipe (CMP) 7

Double Reinforced Concrete Box Culvert (RCBC) 7

Driveway Culvert 7

High Density Polyethylene Pipe (HDPE)..... 8

Reinforced Concrete Pipe..... 8

Curb & Gutter9

2' 6" Standard Curb and Gutter 9

Roadside Ditch 9

Valley Gutter..... 9

Channel & Pond Features..... 10 - 13

Articulated Block Matting 10

Coir Fiber Rolls..... 10

Cross Vane 10

Double Wing Deflector..... 10

Floodplain Bench 10

Floodplain Bench Diagram 10

Grade Control Structure..... 11

Littoral Shelf..... 11

Littoral Shelf Diagram 11

Meanders..... 11

Pond 11

Pond Outlet Structure with Trash Rack..... 11

Riffle Pool Sequence..... 12

Rip Rap 12

Rip Rap Toe 12

Riser..... 12

Root Wad 12

Soil Bioengineering - First Year (Live Stakes) 12

Soil Bioengineering - Medium Growth..... 13

Soil Bioengineering - Mature Growth 13

Stilling Basin..... 13

Swale - Concrete 13

Swale - Grassed 13

Wetland BMP 13

Construction Equipment.....14 - 16

Backfill Tamping with Jumping Jack	14
Backhoe	14
Casing Pipe	14
Crane.....	14
Drill Rig.....	14
Hydroseed Equipment	14
Micropile Bracket.....	15
Micropile Drill Rig	15
Mini Backhoe	15
Mini Front End Loader	15
Pavement Milling Equipment	15
Rock Hammer	15
Street Broom	16
Track Hoe.....	16
Trench Compactor	16

Installation Techniques17 -19

Bypass Pumping	17
Curb-Gutter Installation.....	17
Hand Dig Utility Conflicts	17
Head Wall Under Construction.....	17
High Density Polyethylene Pipe (HDPE) Installation	17
Hydroseed.....	17
Orange Construction Fence	18
Permanent Erosion Control Matting	18
Reinforced Concrete Pipe (RCP) Installation.....	18
Shoring.....	18
Silt Fence	18
Temporary Erosion Control Matting.....	18
Temporary Rock Check Dam	19

Installation Techniques Cont'd17 -19

Temporary Staging Area 19

Tree Removal - Chipping 19

Trench Box 19

Trenching in the Street..... 19

Miscellaneous20

Guard Rail..... 20

Hand Rail 20

Rain Barrel 20

Problems21 - 23

Blockage 21

Blockage Removal..... 21

Channel Erosion..... 21

Concrete in Stream 21

Corroded Metal Pipe 21

Debris at Catch Basin 22

Failed Concrete Apron..... 22

Flooding - Bridge..... 22

Flooding - House 22

Flooding - Road..... 23

Flooding - Yard 23

Sinkhole or Blowout..... 23

