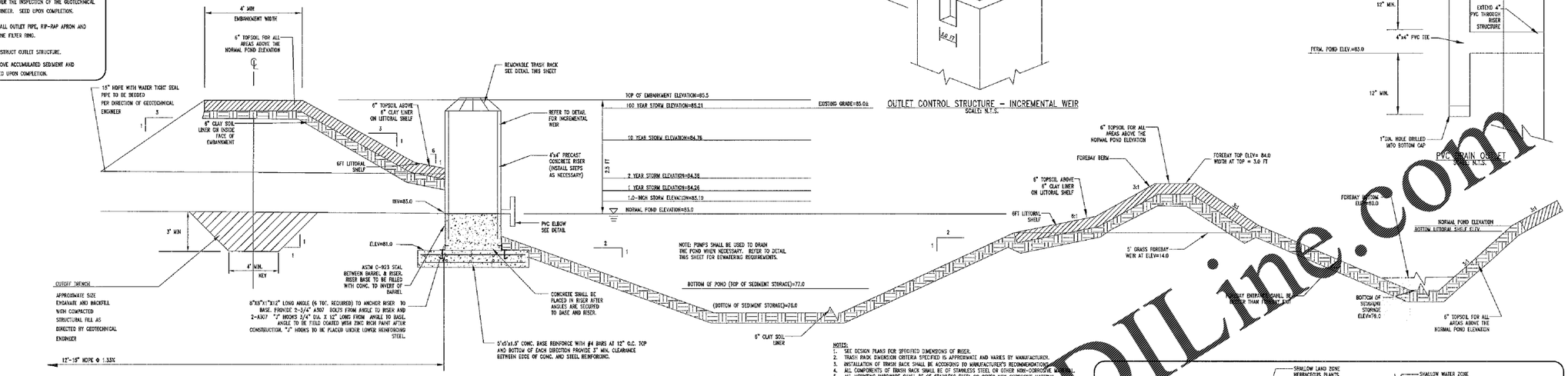
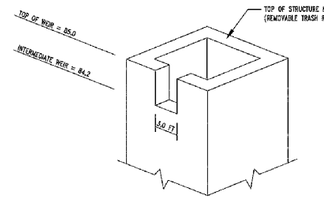
CONSTRUCTION SEQUENCE
FOR WET EXTENSION POND:

1. INSTALL EROSION CONTROLS.
2. CONSTRUCT DAM BASE AND AREAS BELOW THE NORMAL POOL. CONSTRUCTION TO BE PERFORMED UNDER THE INSPECTION OF THE GEOTECHNICAL ENGINEER. SEED UPON COMPLETION.
3. INSTALL OUTLET PIPE, RIP-RAP APRON AND STONE FILTER RING.
4. CONSTRUCT OUTLET STRUCTURE.
5. REMOVE ACCUMULATED SEDIMENT AND SEED UPON COMPLETION.

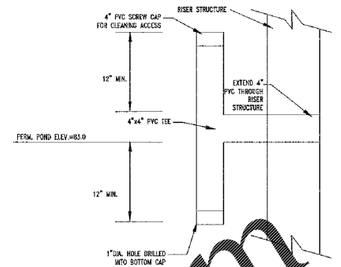


PROFILE OF WET POND DETENTION SYSTEM
SCALE: N.T.S.

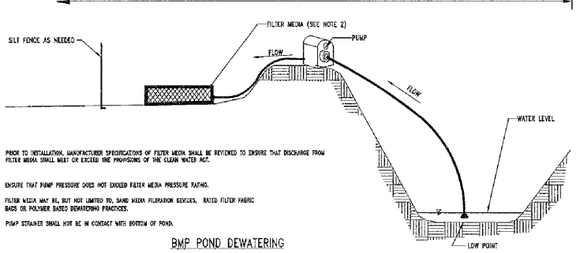


OUTLET CONTROL STRUCTURE - INCREMENTAL WEIR
SCALE: N.T.S.

NOTE: PUMPS SHALL BE USED TO DRAIN THE FOREBAY WHEN NECESSARY. REFER TO DETAIL THIS SHEET FOR DEWATERING REQUIREMENTS.



PVC DRAIN OUTLET
SCALE: N.T.S.



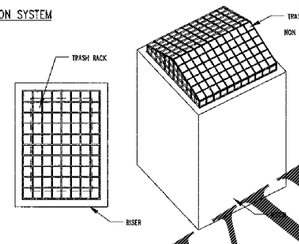
PRIOR TO INSTALLATION, MANUFACTURER SPECIFICATIONS OF FILTER MEDIA SHALL BE REVIEWED TO ENSURE THAT DISCHARGE FROM FILTER MEDIA SHALL MEET OR EXCEED BMP PROVISIONS OF THE CLEAN WATER ACT.

ENSURE THAT PUMP PRESSURE DOES NOT EXCEED FILTER MEDIA PRESSURE RATING.

FILTER MEDIA MAY BE, BUT NOT LIMITED TO, SAND MEDIA FILTRATION DEVICES, RATED FILTER FABRIC BAGS OR POLYMER BASED DEWATERING PRACTICES.

PUMP STRAINER SHALL NOT BE IN CONTACT WITH BOTTOM OF POND.

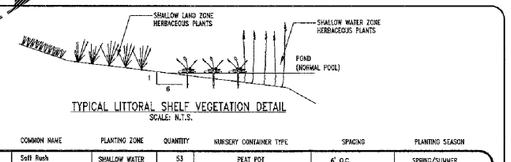
BMP POND DEWATERING



NOTE: TRASH RACK SHALL BE INSPECTED PERIODICALLY AND DEBRIS ON THE TRASH RACK IS TO BE REMOVED AND PROPERLY DISPOSED OF.

TRASH RACK DETAIL
SCALE: N.T.S.

NOTES:
1. SEE DESIGN PLANS FOR SPECIFIED DIMENSIONS OF RISER.
2. TRASH RACK DIMENSION CRITERIA SPECIFIED IS APPROXIMATE AND VARIES BY MANUFACTURER.
3. INSTALLATION OF TRASH RACK SHALL BE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
4. ALL COMPONENTS OF TRASH RACK SHALL BE OF STAINLESS STEEL OR OTHER NON-CORROSIVE MATERIAL.
5. ALL MOUNTING HARDWARE SHALL BE OF STAINLESS STEEL OR OTHER NON-CORROSIVE MATERIAL.



TYPICAL LITTORAL SHELF VEGETATION DETAIL
SCALES: N.T.S.

SCIENTIFIC NAME	COMMON NAME	PLANTING ZONE	QUANTITY	NURSERY CONTAINER TYPE	SPACING	PLANTING SEASON
Juncus effusus	Soft Rush	SHALLOW WATER	53	PEAT POT	6' O.C.	SPRING/SUMMER
Iris virginica	Blue Flag Iris	SHALLOW WATER	53	PEAT POT	6' O.C.	SPRING/SUMMER
Schoenoplectus tabernaemontani	Soft Stem Bulrush	SHALLOW WATER	53	PEAT POT	6' O.C.	SPRING/SUMMER
Eupatoriadelphus maculatus	Spotted Trumpetweed	SHALLOW LAND	53	PEAT POT	6' O.C.	SPRING/SUMMER
Eupatorium purpureum	Joe-Pye Weed	SHALLOW LAND	53	PEAT POT	6' O.C.	SPRING/SUMMER
Rhynchospora colorata	Starrush Whitetop	SHALLOW LAND	53	PEAT POT	6' O.C.	SPRING/SUMMER

TYPICAL LITTORAL SHELF PLANTING SCHEDULE

SEEDBED PREPARATION:

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL THREE INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO SIX INCHES DEEP.
3. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS, LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE SEEDING MIXTURE).
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED FOUR TO SIX INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RE-SEEDINGS WITHIN ONE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE MORE THAN 50% DAMAGED, RE-ESTABLISH FOLLOWING THE ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT SREC ENVIRONMENTAL ENGINEERS ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

LANDSCAPE NOTES:

ALL LANDSCAPING SHALL BE IN COMPLIANCE WITH THE NEEDED BMP REQUIREMENTS

LANDSCAPE CONTRACTOR SHALL PROVIDE A TWO-YEAR WARRANTY FOR BMP PLANTING SUBMAN/REPLACEMENT.

AT THE END OF THE FIRST YEAR AND AT THE END OF THE TWO-YEAR WARRANTY PERIOD, ALL PLANTS THAT DO NOT SURVIVE MUST BE REPLACED.

ESTABLISHMENT PROCEDURES, SUCH AS CONTROL OF UNWANT WEEDS, ANIMAL AND VANDAL DAMAGE, MULCHING, RE-STAKING, WATERING, AND WORK OR TREE PROTECTION REENACTMENTS, SHALL BE IMPLEMENTED TO THE EXTENT NEEDED TO ENSURE PLANT SURVIVAL. STAKING MUST BE REMOVED AFTER ESTABLISHMENT (APPROXIMATELY 12 MONTHS) TO PREVENT GIRDLING (STRANGLING) OF ALL WOODY PLANTS.

SOD WITHIN BMP AND SURROUNDING AREAS TO BE BERMUDA OR CENTIPEDE GRASS.

GRASS OR WILDFLOWER SEED MUST BE APPLIED AT THE RATES SPECIFIED BY THE SUPPLIERS. IF PLANT ESTABLISHMENT CANNOT BE ACHIEVED WITH SEEDING BY THE TIME OF SUBSTANTIAL COMPLETION OF THE STORMWATER FACILITY PORTION OF THE PROJECT, THEN THE CONTRACTOR SHALL PLANT THE AREA WITH WATERSAVER SOD, PLUGS, CONTAINER PLANTS, OR OTHER MEANS TO COMPLETE THE SPECIFIED PLANTING AND PROTECT AGAINST EROSION BEFORE WATER IS ALLOWED TO ENTER THE STORMWATER BMP FACILITY.

ALL MATERIALS SHALL BE ACQUIRED FROM AN APPROVED MIXED PLANT VENDOR. PLANT MATERIAL SHOULD BE PURCHASED FROM A LOCAL SOURCE TO ENSURE ADAPTABILITY. LOCAL VENDORS FOR THIS SITE INCLUDE:

- CAL-AC NATIVE PLANT NURSERY — 919-863-2508
- CROWDER FIELD NURSERY — 910-259-5061
- MC BURTON NURSERY — 919-731-7960
- PLANT DELIGHTS NURSERY — 919-772-4794
- SHINNEL NATIVE TREES — 910-567-3017

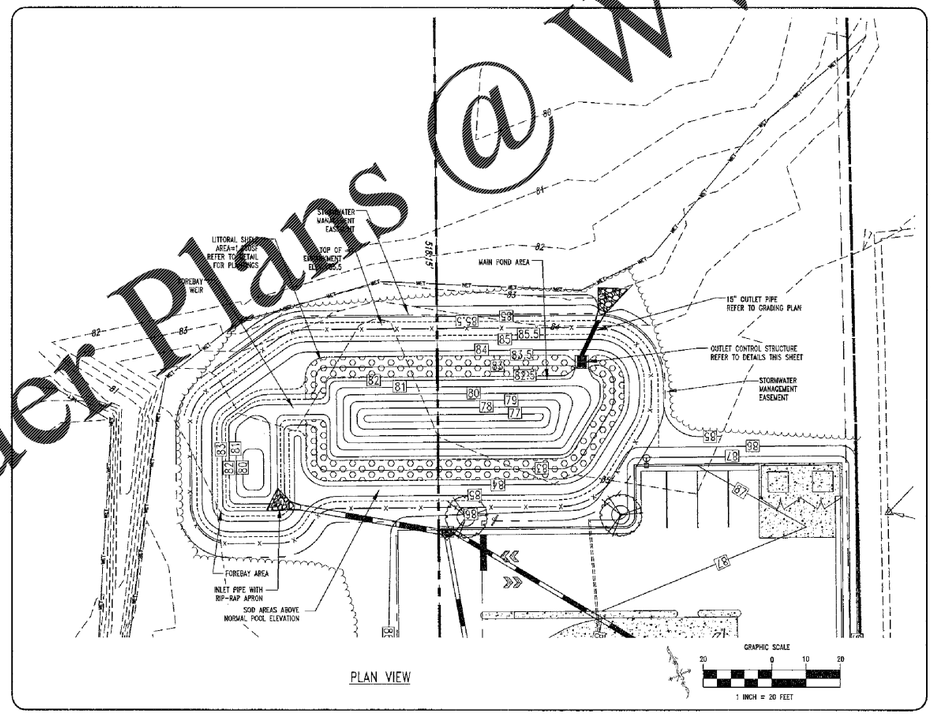
IMMEDIATELY AFTER THE WET DETENTION POND IS ESTABLISHED, THE PLANTS ON THE VEGETATED SHELF AND PERIMETER OF THE BASIN SHOULD BE WATERED ONCE WEEKLY IF NEEDED UNTIL THE PLANTS BECOME ESTABLISHED (GENERALLY SIX WEEKS)

NO PORTION OF THE WET DETENTION POND SHOULD BE FERTILIZED AFTER THE FIRST ANNUAL FERTILIZATION THAT IS REQUIRED TO ESTABLISH THE PLANTS ON THE VEGETATED SHELF.

LANDSCAPING NOTES:

1. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES REGARDING LANDSCAPING.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A HEALTHY STAND OF GRASS ON ALL SEEDED AREAS.
3. CONTRACTOR SHALL PROVIDE NATURAL TOPSOIL THAT IS FERTILE, FRIABLE, WITHOUT NOXIOUS WEEDS, WITHOUT SUBSOIL, AND OBTAINED FROM A WELL DRAINED, AVAILABLE SITE. IT SHALL NOT CONTAIN SUBSTANCES WHICH MAY BE TOXIC TO PLANT GROWTH. TOPSOIL SHALL BE SCREENED AND FREE FROM CLAY, LUMPS, STONES, ROOTS, PLANTS, OR OTHER SUBSTANCES 1" OR MORE IN DIAMETER. DEBRIS, OR OTHER MATERIALS WHICH MAY BE A HINDRANCE TO PLANTING OPERATIONS. TOPSOIL SHALL CONTAIN AT LEAST 4-5% ORGANIC MATTER BY WEIGHT AND HAVE A PH RANGE OF 5.5 TO 7.0.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE WATERING AND THE MAINTENANCE OF ALL LANDSCAPED AREAS UNTIL THE LATER OF: (a) THIRTY (30) DAYS AFTER THE PLANTING OF THE SEEDS AND SHRUBS, OR (b) THE DATE THAT SOME SPECIMEN IS ACCEPTED BY THE OWNER. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR REPLACEMENT OF THE BMP PLANTING MATERIALS DURING THE TWO-YEAR WARRANTY PERIOD AND SHALL REPLACE IF PLANTS ARE NOT ALIVE AT BEGINNING OF THE FIRST YEAR AND AT THE END OF THE SECOND YEAR OF THE WARRANTY PERIOD.
5. CONTRACTOR TO VERIFY QUANTITIES PRIOR TO COMMENCING WORK.
6. ANY DISTURBED AREAS NOT SCHEDULED FOR HARDSCAPE, PLANTINGS, OR MULCH SHALL BE SEEDED &AMP. REFER TO SITE PLAN FOR LOCATIONS OF AREAS TO BE SEEDED.
7. NO PLANT SUBSTITUTIONS ARE PERMITTED WITHOUT WRITTEN APPROVAL OF THE OWNERS REPRESENTATIVE.
8. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL SUB-BASE AND CONSTRUCTION DEBRIS; REMOVE COMPACTED SOIL AND ADD 18" NEW TOPSOIL, OR TILL AND AMEND THE TOP 18" OF EXISTING SOIL TO MEET TOPSOIL/PLANTING MIX STANDARDS FOR TREES.
9. ADJUST TREE PLANTING LOCATIONS TO AVOID UNDERGROUND UTILITIES. PLANT 10' FROM ALL UNDERGROUND UTILITIES (SEWER AND STORM DRAINAGE, GAS, WATER, PHONE, AND ELECTRICAL LINES)

1 STORMWATER MANAGEMENT SYSTEM DETAILS
NOT TO SCALE



PLAN VIEW

STORMWATER MANAGEMENT NOTES:

1. THE DEVELOPER OR HIS AGENT SHALL CONTACT THE DESIGN ENGINEER WHEN THE BEST MANAGEMENT PRACTICE(S) ARE CONSTRUCTED AND ABOUT TO BECOME OPERATIONAL SO A FINAL INSPECTION CAN BE PERFORMED TO DETERMINE COMPLIANCE WITH THE APPROVED PLAN CAN BE PERFORMED.
2. ANNUAL MAINTENANCE INSPECTION AND REPORT REQUIRED - THE OWNER OF A PERMITTED STRUCTURAL STORMWATER BMP/CONTROL SHALL ANNUALLY SUBMIT A MAINTENANCE AND INSPECTION REPORT FOR EACH BMP TO THE STORMWATER ADMINISTRATOR. ANNUAL INSPECTIONS SHALL BEGIN WITHIN ONE YEAR OF THE RECORDATION OF ANY DEED(S) SHOWING STORMWATER BMPs/CONTROL STRUCTURES.
3. UPON COMPLETION OF THE PROJECT, AND BEFORE A CERTIFICATE OF OCCUPANCY SHALL BE GRANTED, THE ENGINEER OF RECORD SHALL CERTIFY THAT THE COMPLETED PROJECT IS IN ACCORDANCE WITH THE APPROVED STORMWATER MANAGEMENT PLANS AND DESIGNS.
4. A FINAL INSPECTION OF THE SITE AND STORMWATER MANAGEMENT BMP/CONTROLS TO BE SCHEDULED WITH AND COMPLETED BY THE PROJECT ENGINEER.
5. MCDEQ AND THEIR ASSIGNS HAVE RIGHT TO ACCESS THE STORMWATER CONTROL(S) FOR INSPECTIONS OR MAINTENANCE AS NECESSARY.
6. THE ENGINEER'S CERTIFICATION OF COMPLETION WILL BE REQUIRED PRIOR TO THE FINAL PLAT OF CERTIFICATE OF OCCUPANCY. THE STORMWATER CONTROL IS TO BE INSPECTED TO ENSURE IT IS FUNCTIONING AS DESIGNED AND HAS FULL DESIGN VOLUME PRIOR TO ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY.
11. THE PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING THE STORMWATER CONTROL(S) ACCORDING TO THE APPROVED MAINTENANCE PLAN AND DIRECTION OF MCDEQ

STORMWATER MANAGEMENT DESIGN
WET DETENTION POND

RIVER BASIN:	CAPE FEAR
RECEIVING STREAM:	LOCKS CREEK
STREAM INDEX:	18-32
CLASSIFICATION:	C
LATITUDE/LONGITUDE:	35.010279, -78.829828

POND DESIGN SUMMARY

DRAINAGE AREA TO POND:	1.75 ACRES
SITE IMPERVIOUS AREA TO POND:	0.63 ACRES
OFF-SITE DESIGN IMPERVIOUS AREA TO POND (SHARED ACCESS ROAD):	0.08 ACRES
FUTURE PARCELS IMPERVIOUS AREA:	0.54 ACRES
TOTAL DESIGN IMPERVIOUS AREA TO POND:	1.25 ACRES

	PRE-DEVELOPED	POST-DEVELOPED	POST DEVELOPED THROUGH POND
DRAINAGE AREA:	1.75 AC	1.75 AC	
CURVE NUMBER:	80.4	82.6	
TIME OF CONCENTRATION:	10 MIN	5 MIN	
1.0" STORM EVENT:		0.124 CFS	0.010 CFS
1-YEAR STORM EVENT:	1.086 CFS	2.067 CFS	0.201 CFS
2-YEAR STORM EVENT:	1.715 CFS	3.028 CFS	0.774 CFS
10-YEAR STORM EVENT:	4.037 CFS	7.175 CFS	3.944 CFS
100-YEAR STORM EVENT:	8.864 CFS	12.84 CFS	9.348 CFS

WET DETENTION STAGE/STORAGE TABLE

STAGE (FT)	ELEVATION (FT)	CONTOUR AREA (SF)	INCREMENTAL STORAGE (CF)	TOTAL STORAGE (CF)
0.0	83.0	3145	0	0
0.5	83.5	3845	1773	1773
1.0	84.0	4542	2122	3894
1.2	84.2 (WQv)	4740	928	4823
2.0	85.0	5500	4166	8938
2.5	85.5	6045	2898	11837

OPERATION & MAINTENANCE

BMP element:	Potential problems:	How it will remediate the problem:
The entire BMP	Trash/debris is present	Remove the trash/debris
The perimeter of the wet detention basin	Areas of bare soil and/or erosive gullies have formed	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide fence and a one-time fertilizer application
	Vegetation is too short or too long	Maintain vegetation at a height of approximately six inches.
The inlet device: pipe or swale	The pipe is clogged.	Locate the pipe, dispose of the sediment off-site.
	The pipe is crushed or otherwise damaged	Replace the pipe.
	Erosion is occurring in the swale.	Regrade the swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future erosion problems.
The forebay	Sediment has accumulated to a depth greater than the original design depth for sediment storage.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it to a location where it will not cause impacts to streams or the BMP.
	Erosion has occurred.	Provide additional erosion protection, such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand. If pesticide is used, wipe it on the plants rather than spraying.
The vegetated shelf	Best professional practices show that pruning is needed to maintain optimal plant health.	Prune according to best professional practices
	Plants are dead, diseased or dying.	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer application to establish the ground cover if it did not survive the first growth.
	Weeds are present.	Remove the weeds, preferably by hand. If pesticide is used, wipe it on the plants rather than spraying.
The main treatment area	Sediment has accumulated to a depth greater than the original design sediment storage depth.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it to a location where it will not cause impacts to streams or the BMP.
	Algal growth covers over 50% of the area.	Consult a professional to remove and control the algal growth.
	Cattails, phragmites or other undesirable plants cover 50% of the basin surface.	Remove the plants by wiping them with pesticide (do no spray)
The embankment	Shrubs have started to grow on the embankment.	Remove shrubs immediately.
	Evidence of rodent or beaver activity is present.	Use traps to remove animals and consult a professional to remove beavers.
	A tree has started to grow on the embankment. An annual inspection by an appropriate professional shows that the embankment needs repair, or replacing.	Consult a dam safety specialist to remove the tree. Make all needed repairs.
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the local NC Division of Water Quality Regional Office, or the 401 Oversight Unit at 919-733-1786

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REVISIONS:		
No.	Date	Desc.

Drawn
Checked
Approved

Project No. 009017
Date: October 9, 2019

Title
STORMWATER MANAGEMENT DETAILS

Sheet No.
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