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WAKE COUNTY, NC 423
LAURA M RIDDICK
REGISTER OF DEEDS
PRESENTED & RECORDED ON
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Instrument Prepared By: Raleigh City Attorney's Office
Brief Description for Index: Athens Grove Subdivision
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Mail After Recording To: City Attorney's Office
P. O. Box 590
Raleigh, N.C. 27602

STATE OF NORTH CAROLINA

COUNTY OF WAKE

STORMWATER REPLACEMENT PROTECTION EASEMENT AND ACCESS MAINTENANCE AGREEMENT AND INSTALLMENT REPLACEMENT CONTRIBUTION

THIS STORMWATER REPLACEMENT PROTECTION EASEMENT AND ACCESS MAINTENANCE AGREEMENT AND INSTALLMENT REPLACEMENT CONTRIBUTION (the "Agreement") made this 7th day of April, 2008, by and between BGM INVESTMENT COMPANY, whose address and telephone number are: 815 Kildaire Farm Road, Cary, North Carolina 27511; 919-481-9000, (hereinafter referred to as "Developer") and ATHENS GROVE HOMEOWNERS ASSOCIATION, INC., a North Carolina non-profit corporation, whose address and telephone number are 815 Kildaire Farm Road, Cary, North Carolina 27511; 919-481-9000, (hereinafter referred to as the "Association") (Developer and Association collectively referred to as "Grantors"), with, to and for the benefit of the CITY OF RALEIGH, a municipal corporation of the State of North Carolina, whose address is P. O. Box 590, Raleigh, North Carolina 27602 (hereinafter referred to as the "Grantee" or the "City"). These parties shall hereinafter sometimes be referred to collectively as the "Parties", and individually as a "Party".

W I T N E S S E T H

WHEREAS, Developer is the owner in fee simple of that certain property situated in Wake County, North Carolina and more particularly described on Exhibit A; and

WHEREAS, the Property is located within the planning jurisdiction of the City and subject to certain stormwater quantity and quality requirements set forth in Part 10, Chapter 9, Article B, Division I, Raleigh City Code (the "RCC"), as may be amended from time to time; and

WHEREAS, as required by the City in connection with the development of the Property, the Developer shall install engineered stormwater control measures including stormwater detention ponds and associated appurtenances and vegetation (collectively,

the "Stormwater Control Measures") as shown on construction drawings prepared by Thompson & Associates, entitled "Site Plan, Athens Grove Subdivision S-10-06" and dated February 8, 2006 and signed by the Chief Engineer of the City on January 5, 2007, on portion of the Property as described on Exhibit B (the "Stormwater Areas"), for purposes of establishing a stormwater management system for the Property, and that Grantors assume specific maintenance, replacement, reconstruction and repair, responsibilities set forth in the RCC and with respect to the Stormwater Control Measures; and

WHEREAS, the Association shall have the right and easement to enter upon, over, across and under the Stormwater Areas for the purpose of inspecting operating, maintaining, , repairing, reconstructing, and replacing the Stormwater Control Measures; and

WHEREAS, these Stormwater Control Measures are required to comply with the RCC and that failure to maintain these Stormwater Control Measures is a violation of the RCC potentially subjecting each lot owner of the Property to significant daily civil penalties and other enforcement actions; and

WHEREAS, the City also requires that the Developer grant or dedicate to the Grantee an access and maintenance easement over and across the Stormwater Areas for the purposes of inspecting, maintaining, repairing, reconstructing and replacing the Stormwater Control Measures set forth in the RCC and this Agreement; and

WHEREAS, this Agreement has been procured in accordance with the requirements of N.C. General Statutes Chapter 143, Article 21, Part 1 and RCC §10-9027(c).

NOW, THEREFORE, for a valuable consideration, including the benefits Grantors may derive therefrom, the receipt of which is hereby acknowledged, the Parties hereby agree as follows:

1. RECITALS. The foregoing recitals shall constitute an integral part of this Agreement, and this Agreement shall be incorporated herein and made a part hereof.

2. GRANT OF EASEMENT. Grantors hereby dedicate, bargain, sell, grant, and convey unto the Grantee, its successors and assigns, a perpetual, non-exclusive and irrevocable right and easement over, under, through and across the Stormwater Areas and access through the Property to and from the Stormwater Areas for the purpose of permitting City inspection and, if deemed necessary, as determined by the City, maintenance, replacement, reconstruction, and repair of the Stormwater Control Measures and their appurtenances and vegetation, as more fully set forth herein and in the RCC (the "Protection Easement").

3. CONSTRUCTION AND MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES. The requirements pertaining to the Protection Easement are more fully set forth in Part 10, Chapter 9, Article B, Division I of the RCC. The Developer shall be responsible for the construction of the Stormwater Control Measures; and, prior to conveying control of the Stormwater Control Measures, their appurtenances and vegetation to the Association by deed or easement, the Developer will be responsible for the maintenance, repair, reconstruction and replacement thereof. Following the conveyance of the Stormwater Control Measures, to the Association, the Association and its members will be responsible for maintaining the Stormwater Control Measures, their appurtenances and vegetation in the manner specified herein and in strict compliance with the Stormwater Operations and Maintenance Manual and Budget attached hereto as Exhibit C which is incorporated herein by reference and made a part hereof (the "Maintenance Manual"). At all times, the Stormwater Control Measures shall perform as designed and shall at all times comply with all applicable laws, ordinances, regulations, rules and directives of governmental authorities.

4. GENERAL REPLACEMENT FUND. For purposes of insuring the availability of funds for the replacement and reconstruction of the Stormwater Control Measures for "Major Repairs" thereto (as specified in Article 4 of the Maintenance Manual) and any other repair work exceeding $22,727.00 dollars (one-third the initial construction cost of the Stormwater Control Measures), Developer shall establish an account (the "General Replacement Account") with the City. (Payments made to this account will be combined with payments from other similar Agreements). The General Replacement Account shall be funded initially by a lump sum contribution of the Developer (the "Initial Payment"), and thereafter by additional contributions of the Association. The Developer shall deliver the Initial Payment to the Engineering Department of the City at the earlier of:

(i) before the issuance of building permits for the construction of improvements on the Property; or
(ii) prior to the recordation of either any subdivision plat or any right-of-way dedication plat of any portion of the Property.

The Initial Payment shall be equal to $10,227.00 dollars (which is equal to fifteen percent (15%) of the estimated construction cost of the Stormwater Control Measures) plus $ 7,765.70 dollars as the first year's contribution to the General Replacement account as set forth in the schedule payments attached hereto as Exhibit D which is incorporated herein and made a part hereof. The Association shall pay to the City annual contributions to the General Replacement Account. Said payments by the Association to the City shall be made on or before July 1st of each year and shall be made in accordance with the schedule of payments set forth in Exhibit D.

With the consent of the City, funds deposited by the Grantors may be drawn out of the General Replacement Account for Major Repairs, repair work exceeding $ 22,727.00 dollars (one-third the initial construction cost), reconstruction and replacement of the Stormwater Control Measures as determined by the Association. Consent of the

City is to be given by its City Manager or his designee. Any funds withdrawn from the General Replacement Account shall be replaced by the Association, in accordance with the schedule of contributions specified by the City prior to the withdrawal of funds.

5. USE OF PROTECTION EASEMENT. The City, its officers, employees, contractors and agents may access the Property and enter the Stormwater Areas for purposes of exercising Grantee's rights hereunder. This Agreement shall in no way obligate the City to maintain, replace, reconstruct and repair the Stormwater Control Measures, and the City shall not be liable to any person, firm, partnership, company, corporation, governmental agency, or entity for the condition or operation of the Stormwater Control Measures. Further this Agreement shall in no way diminish, limit, or restrict the right of the City to enforce any of its ordinances as permitted by law.

6. DEFAULT. If the Developer or the Association or its members shall fail to comply with the foregoing requirements or any other obligations imposed herein, in the RCC or pursuant to the terms of the Declaration of Covenants, Conditions and Restrictions for the Property as the same may be amended from time to time in accordance with the terms thereof (the "Declaration"), the City, in its sole discretion, may perform such work and recover the costs thereof from either the General Replacement Account or from the Party who is then responsible for the performance of such requirements and obligations (hereinafter referred to as the 'Owner"); provided, however, that, except in cases of emergencies, the City will give the Owner a minimum of thirty (30) days prior written notice of and an opportunity to cure the Owner's default hereunder. If the City exercises its rights hereunder and maintains, repairs, reconstructs or replaces all or a portion of the Stormwater Control Measures, then following acceptance and payment of the work, the City shall deliver to the Owner written notice of the costs of such work, and the Owner shall pay all such costs within thirty (30) days after receipt of such notice. Any costs not paid by the Owner to the City within the thirty (30) day period shall be delinquent, and the Owner shall be considered in default of this Agreement. In the event of such default, the City may either bring an action at law against the Owner for the cost of the work, plus interest at the rate of eight percent (8%) per annum, collection costs, late payment charge of three hundred dollars ($300) during the first forty-five (45) days of default and five hundred dollars ($500) thereafter, and reasonable attorneys' fees or foreclose a lien against the Property, or both.

The Declaration shall grant the Association the right to impose assessments to pay any monies owed by the Association to the City pursuant to this Agreement; payment of such assessment being secured by a lien against all of the Property upon the filing of a claim of lien by the Association or by the City, as the assignee of the Association's lien rights. The granted lien rights shall be foreclosed in like manner as a mortgage on real estate pursuant to power of sale under Article 2A of Chapter 45 of the General Statutes from and after the time of recording a claim of lien in the Office of the Clerk of Superior Court of the County where the Property is situated, which claim shall state the description of the Property encumbered thereby, the name and address of the Association, the record owners of the encumbered Property at the time the claim of lien is filed, and the amount of the lien claim. The claim of lien shall be recordable any time after default, and the lien

shall continue in effect until all sums secured by the lien as herein provided shall have been fully paid. Such claims of lien shall include all sums that are due and payable when the claim of lien is recorded, plus interest at the rate set forth in the Declaration, but not to exceed eighteen percent (18%) per year, collection costs, and reasonable attorneys' fees. City lien claims shall be signed by the City Manager. Upon full payment of all sums secured by such claims of lien, the same shall be satisfied of record.

Any payment required by this Agreement which is not paid to the City within thirty (30) days after its due date shall be delinquent. In the event of such default, the City may bring an action against the Owner for nonpayment plus interest at a rate of eight percent (8%) per year, collection costs, a late payment charge of three hundred dollars ($300) during the first forty-five (45) days of default and five hundred dollars ($500) thereafter and attorney fees.

The remedies set forth herein are cumulative, the city may for example bring an action for collection and foreclose its lien claim.

7. RESERVATION BY RECORD OWNER. The Developer and the Association and its members, as applicable, shall in all other respects remain the owner of the Property, subject to the Protection Easement, and may make all lawful uses of the Property not inconsistent therewith.

8. NO WAIVER OF RIGHT. The Grantee does not waive or forfeit the right to take action to ensure compliance with the terms, conditions and purposes of this Agreement by a prior failure to act.

9. NOTICE. Written notice as required hereunder shall be provided to the City of Raleigh at P. O. Box 590, Raleigh, N.C. 27602, and to the Owner at 1815 Kildaire Farm Road, Cary, North Carolina 27511. Written notice shall be deemed received four (4) days following its deposit, first class mail, with the United States postal system. In the event notice to the Owner is returned, the City may notify the Owner at either (i) the mailing address provided to the Wake County Tax Assessor; or (ii) the registered agent of the Association on file with the Corporations Division of the Secretary of State's Office.

10. SUCCESSORS AND ASSIGNS. The designation of Developer, Association, Grantors and Grantee shall include the Parties, heirs, assigns, and successors to the Grantors.

11. AMENDMENT. All amendments to this Agreement made during the initial ten (10) year period following the date hereto (the "Initial Period") shall be executed in writing by the Parties or their respective successors and assigns, except that amendments made to the Exhibits to reflect phased developments, additional Stormwater Control Measures additional Stormwater Areas or additional payment to the City may be made without the consent of the Association. All amendments to this Agreement made after the Initial Period need not be executed by the Developer; but shall be executed in

writing by the Association and the Grantee or their respective successors and assigns. No Amendment to this Agreement shall become effective until executed by the appropriate parties, approved by the City Attorney and recorded in the office of the County Register of Deeds.

12. TERM. This Agreement shall continue as a servitude running in perpetuity with the Property.

TO HAVE AND TO HOLD the aforesaid rights, privileges and easements herein to the Grantee, its successors and assigns forever, and Grantors do covenant that Grantors are seized of said premises in fee or by easement and have the right to convey the same, and Grantors will warrant and defend such title to the same against claims of all persons whosoever.

IN WITNESS WHEREOF, the Parties have executed this Agreement and under seal as of the day and year first above written.

DEVELOPER:
BGM INVESTMENT COMPANY

By: _____ (SEAL)
Name: Colin MacNair, Jr.
Its: President (title)

ASSOCIATION:
ATHENS GROVE HOMEOWNERS ASSOCIATION, INC.

By: _____ (SEAL)
Name: Colin MacNair, Jr.
Its: President (title)

CITY OF RALEIGH

By: _____ (SEAL)
J. Russell Allen, City Manager

Attest: _____
City Clerk

NORTH CAROLINA

CITY/MANAGER

COUNTY OF WAKE ACKNOWLEDGEMENT

This is to certify that on the 11 day of April, 2008, before me personally came Gail G. Smith, with whom I am personally acquainted, who, being by me duly sworn, says that she is the City Clerk and Treasurer and J. Russell Allen is the City Manager of the City of Raleigh, the municipal corporation described in and which executed the foregoing; that she knows the corporate seal of said municipal corporation; that the seal affixed to the foregoing instrument is said corporate seal, and the name of the municipal corporation was subscribed thereto by the said City Clerk and Treasurer and that the said corporate seal was affixed, all by order of the governing body of said municipal corporation, and that the said instrument is the act and deed of said municipal corporation.

WITNESS my hand and official seal this the 11 day of April, 2008.

Valorie D. Lykes
Notary Public

(SEAL)

Valorie D. Lykes
Printed or Typed Name of Notary

My Commission Expires: 6/26/2010

VALORIE D. LYKES NOTARY * * * PUBLIC WAKE COUNTY, NC

NORTH CAROLINA

DEVELOPER

COUNTY OF WAKE ACKNOWLEDGMENT

I, the undersigned Notary Public, certify Colin MacNair, Jr. personally came before me this day, being personally known to me, and acknowledged he/she is the (title) President of BGM Investment Company(name of entity) a (circle one) corporation, limited liability company, general partnership, and that he/she as such officer being authorized to do so voluntarily executed the foregoing instrument on behalf of said entity.

WITNESS my hand and official stamp seal this the 7th day of April, 2008.

Dorothy Gordon Burrows
Notary Public

(SEAL)

DOROTHY GORDON BURROWS NOTARY PUBLIC WAKE COUNTY, NC

My Commission Expires: 1-4-2011

DOROTHY GORDON BURROWS
Printed or Typed Name of Notary

STATE OF NORTH CAROLINA

COUNTY OF WAKE

ASSOCIATION
ACKNOWLEDGMENT

I, the undersigned Notary Public do hereby certify that Colin MacNair, Jr., personally appeared before me this day, being personally known to me, and acknowledged that he/she is the (title) President of Athens Grove Homeowners Association, Inc., a corporation, and that he/she as such officer, being authorized to do so, voluntarily executed the foregoing instrument on behalf of said entity.

This the 1st day of April, 2008.

(SEAL) DOROTHY GORDON BURROWS NOTARY PUBLIC WAKE COUNTY, N

Dorothy Gordon Burrows
Notary Public

Dorothy Gordon Burrows
Printed or Typed Name of Notary

My Commission Expires: 1-4-2011

LIST OF EXIBITS

1.	Exhibit A	Recorded plat of the subdivision
2.	Exhibit B.	Drainage easement(s) shown on recorded plat
3.	Exhibit C.	Operations and Maintenance Manual and Budget – this document must first be approved by the City Engineering Department
4.	Exhibit D.	Schedule of payments listed year by year together with its present value, based on current value as determined by the City Finance Department. Construction cost of Stormwater Control Measures Prepared by engineer is attached to Exhibit D – this document Must first be approved by the City Engineering Department

A certified copy from the North Carolina Secretary of State of the Articles of Incorporation of the Homeowner's association, to be presented to the City with signed Agreement.

Exhibit "A"

BEING all of Lots 1 through 44 according to a plat entitled "**Subdivision Plat Athens Grove**" and recorded in Map Book 2008, Page 1554, Wake County Registry.

EXHIBIT B

Being all of those areas entitled "20' private drainage easement" located on Lot 43, between Lots 37 and 38 and between Lots 39 and 40, and that area entitled "35' private drainage easement" located between Lots 8 and 9 as shown on a plat entitled "**Subdivision Plat Athens Grove**" and recorded in Plat Book 2008, Page 154, Wake County Registry.

Exhibit C

Stormwater Operations & Maintenance Manual and Budget

ATHENS GROVE CLUSTER SUBDIVISON Raleigh, N.C.

Owner:
BGM Investment Company
1815 Kildaire Farm Road
Cary, NC 27511
#(919) 481-9000

Prepared by: Thompson & Associates, P.A.
Date: September 20, 2006
March 8, 2007
March 21, 2007
March 5, 2008

This manual establishes procedures for maintenance and operation of the Stormwater Control Measures for ATHENS GROVE SUBDIVISION in accordance with the City of Raleigh rules and regulations as set forth in the City of Raleigh Stormwater Management Design Manual and Raleigh City Code Part 10 Chapter 9.

1. NARRATIVE

Athens Grove Subdivision is a Cluster development and consists of three existing apartment buildings and 42 single family residential lots. The development requires two major stormwater release points. These drainage systems are not only designed to remove stormwater quickly from the lots and roads, but also to detain stormwater, and to control the stormwater release rate to offsite properties downstream from the development. The post-development runoff from the entire property for the 2 and 10 year storm will not exceed the pre-development level for the 2 year and 10 year storm.

Release Point #1:

Stormwater runoff (e.g. rain) from the roads, sidewalks and lots 1-4, 29-42, and 43-44 will be collected in the stormwater system to the south side of the development (between the lot line of lots 8 & 9). The surface water runs underground from a junction box at the right of way line into the detention device ((4) 54" high density polyethylene pipe (HDPE) in a 35' private drainage easement). These pipes inlet into a yard inlet. A 12" HDPE pipe outlets this yard inlet to ensure that the maximum allowable release rate from the property for the 2 and 10 year storm is not exceeded. The 12" HDPE discharges into the Bio-Retention Area located in the open space. Bio-Retention Areas use soils and vegetation in landscape areas to remove pollutants (e.g. nitrogen) from stormwater runoff and consists of a stone diaphragm, grassed level spreader and the landscaped area with the underdrain collection system.

Release Point #2:

Stormwater runoff (e.g. rain) from the roads, sidewalks and lots 18-29 will be collected in the stormwater system to the south side of the development (between lots 16 & 17 in the open space). The surface water runs underground from a junction box at the right of way line into the detention device ((3) 60" high density polyethylene pipe (HDPE) in a 32' private drainage easement). These pipes inlet into a yard inlet. A 6" HDPE pipe outlets this yard inlet to ensure that the maximum allowable release rate from the property for the 2 and 10 year storm is not exceeded. The 6" HDPE discharges into the Bio-Retention Area located in the open space. Bio-Retention Areas use soils and vegetation in landscape areas to remove pollutants (e.g. nitrogen) from stormwater runoff and consists of a stone diaphragm, grassed level spreader and the landscaped area with the underdrain collection system.

Since release point #2 contains a lot of offsite drainage that does not need to be detained or treated, a 30" HDPE "overflow" pipe is located above the 60" HDPE pipes and releases the additional offsite drainage.

Water from lots 5 –18 flows off the site into the surrounding properties untreated and undetained

.

For information on the entire stormwater system, including locations, depths and sizes of curb inlets and stormwater pipes please see the approved construction plans for Athens Grove Subdivision:

Sheet 5: Erosion Control & Storm Drainage Plan – Athens Grove Subdivision, prepared by Thompson & Associates, P.A., dated 12/05/2006 and approved by Chief Engineer on 12/12/2006.
Sheet 6: Erosion Control & Storm Drainage Schedules – Athens Grove Subdivision, prepared by Thompson & Associates, P.A., dated 12/05/2006 and approved by Chief Engineer on 12/12/2006.
For information on the managed (private and public easements) and permanently protected undisturbed open space areas please see sheet 18 of the approved construction plans and sheet 13 for the tree conservation map for Athens Grove Subdivision.

2. HIGH DENSITY POLYETHYLENE PIPES AS DETENTION DEVICES

2.1 Location of Pipes

- (4) 54" HDPE: Between lots #8 & #9 in a 35' private drainage easement. Pipes inlet out of junction box, run underground inside the 35' private drainage easement. (Maximum depth of pipe is 11.50 feet.). After ~90 linear feet the pipes outlet into a yard inlet. A 12" HDPE pipe outlet ensures the maximum allowable release rate. The 12" HDPE outlets directly into a dissipator and bio-retention area.

- (3) 60" HDPE: Between lots #16 & #17 in a 32' private drainage easement. Pipes inlet out of junction box, run underground inside the 35' private drainage easement. (Maximum depth of pipe is 11.0 feet.). After ~80 linear feet the pipes outlet into a yard inlet. A 6" HDPE pipe outlet ensures the maximum allowable release rate. The 6" HDPE outlets directly into a dissipator and bio-retention area.

2.2 Maintenance of Detention Pipes

2.2.1 Trash and Debris

Trash acts as a barrier to stormwater release and attracts unwanted pests. The pipes shall be kept clear of debris such as leaves, stones, large branches, loose bottles, cans, food containers and other forms of rubbish. Also, debris can also be gathered immediately down slope of the pipes causing localized damming. The pipes must be inspected after a 1" or more rainfall event over a 24 hour time period and cleared of debris immediately, but no less than four times a year.

2.2.2 Sedimentation and Dredging

Since the detention pipes will be constructed after the entire site is stabilized with a stable vegetative ground cover, there will be little to no sedimentation. However, the pipes should be inspected after the 1" or more rainfall event over a 24-hour time period and any sediment accumulation shall be removed to maintain proper function. Any left over sedimentation that was not flushed out must be swept from the pipe. The removed material must be hauled offsite to a suitable landfill site or mounded somewhere on site and stabilized with a ground cover sufficient to restrain erosion. The yard inlets can be lifted manually in order to flush out the entire pipes.

2.2.3 Erosion

Erosion occurs when the water concentrates causing failure of the vegetation or when vegetation dies and sets up the environment for rill erosion and eventually gullies from the stormwater runoff. The private drainage easement must be inspected especially after heavy rainfall events and after storms with 1 inches or more of rainfall over a 24-hour time period. Proper care of vegetative areas that develop erosion is required to prevent more serious damage to the easement. Rills and gullies shall be either filled with suitable soil compacted and then seeded and mulched. Methods described in 2.2.5 on vegetation shall be used to properly establish the grass surface. Where eroded areas are detected, the cause of the erosion shall be addressed to prevent a continued maintenance problem. Frequently, problems result from the concentration of runoff to one point instead of a uniform distribution of runoff. This can be corrected by regrading the eroded area, to more evenly distribute the runoff to areas not experiencing erosion problems.

2.2.4 Inspection of detention pipe

Pipes shall be inspected thoroughly each year. Pipes shall be visually inspected. Pipes must be inspected for proper alignment (sagging), elongation and displacement at the joints, cracks, leaks, surface wear, loss of protective coating, corrosion and blocking. Problems with conduits most often occur at joints and special attention must be given to them during inspection. Joints should be checked for gaps caused by elongation or settlement and loss of joint filler material. Open joints can permit erosion of the earthwork and possibly the piping of soil material through the joints. A depression in the soil surface over the pipe may be a sign that soil is being removed from around the pipe. Also, water should drain through the junction box and yard inlet and the pipes. If no water is draining or is seeping out from the toe of the slope, the pipes must be either cleaned out or replaced immediately.

2.2.5 Re-Seeding of slopes

The grass cover on the easement slopes must be kept healthy and stable at all times. Any rills or gullies shall be filled with suitable soil, compacted and then seeded and mulched. Periodic re-patching of some grass areas may be required to establish good ground cover on areas where the grass did not take or has been destroyed. Fertilizer (10-10-10) should be applied at a minimum rate of 1,000 pounds per acre.
The fertilized area shall be mulched with straw.

2.2.6 Maintenance Schedule

- After the area over the detention pipes is stabilized, inspections of the 35' & 32' private easement must be made quarterly. Often simple visual inspection is adequate.
- Area over the detention pipes (35' & 32' private drainage easement) to be inspected after the 1" or more storm event over a 24-hour time period.
- At least annually pipes and yard inlets must be flushed out.
- At least annually pipes and yard inlets must be checked for cracks and corrosion.
- Annual engineering inspection.

2.3 Operation

2.3.1 Record Keeping

Operation of the detention pipes must include recording of the following:

- Annual Inspection Report: A collection of written inspection reports shall be kept on record by the Athens Grove Homeowners' Association Inc. Annual inspections are to be performed by a qualified registered North Carolina Professional Engineer, Landscape Architect or Surveyor. Copies of the annual inspection report must be given to the Stormwater Management Section of the City of Raleigh's Public Works Department. Attached as Exhibits A and B (Athens Grove Inspection, Operations & Maintenance Forms for detention pipes and bio-retention areas, respectively) are the annual inspection report forms. Attached as Exhibit C is a copy of the Certification Statement that must be submitted with the annual report to the Stormwater Management Section of the City of Raleigh. The first annual inspection must be completed within one year from the date the as-built for the stormwater control measures was first certified under Raleigh City Code 10-9025(c) and each year thereafter on the anniversary date of said certification.
- Observations: All observations must be recorded. Where periodic inspections are performed following the 1" or more rainfall event over a 24-hour time period these inspections must be written down and kept on record by the Homeowners Association. Written records of maintenance and/or repairs must also be kept on record by the Homeowners Association.
- Maintenance: Written records of maintenance and/or repair shall be recorded on the inspection, operation and maintenance forms attached hereto as Exhibit A & B.

2.3.2 Other Operational Procedures

The Homeowners Association must maintain a complete and up-to-date set of plans (as-built drawings) and all changes made to the stormwater control measures over time shall be recorded on the as-built.

3. BIO-RETENTION AREAS

3.1 Location of Bio-Retention Areas

Bio-Retention Area #1 is located in the open space on the south side of the property. The Bio-Retention Area captures and temporarily stores the discharged stormwater from the 12" HDPE located between lot #'s 8 & 9 at the outlet of the detention pipes. The surface area measures 70'x35'. The outlet structure is an open throat catch basin with a 15" reinforced concrete pipe and a 5'x4'x12" class 'A' stone dissipater.

Bio-Retention Area #2 is located in the open space on the south side of the property. The Bio-Retention Area captures and temporarily stores the discharged stormwater from the 6" HDPE located between lot #'s 16 & 17 at the outlet of the detention pipes. The surface area measures 60'x35'. The outlet structure is an open throat catch basin with a 12" reinforced concrete pipe and a 4'x3'x12" class 'A' stone dissipater.

Bio-Retention Areas use soils and vegetation in landscaped areas to remove pollutants from stormwater runoff. Runoff flows to the "treatment area", consisting of a grass buffer strip for pre-treatment (level spreader), ponding area, organic or mulch layer, planting soil and vegetation. The filtered runoff is collected in an underdrain system and then released offsite.

3.2 Materials

3.2.1 Planting Soils

Planting soils must be sandy loam, loamy sand or loam texture with a clay content rating from 10 to 25%. The soil must have an infiltration rate of at least 0.5 inches per hour and a pH between 5.5 and 6.5. In addition, the planting soil should have a 1.5 to 3% organic content and a maximum 500-ppm concentration of soluble salts.

3.2.2 Mulch Layer

The mulch layer should consist of 2-4 inches of commercially available fine shredded hardwood mulch or shredded hardwood chips. Grass clippings, pine bark and pine straw are unsuitable for mulch. Mulch should be at least 6 months old (12 months is ideal), uniformly placed about 2-4 inches deep and added 1-2 times per year and completely removed/replaced once every two years.

3.2.3 Geotextile

Filter fabric must be permeable and placed between the planting soil bed and the gravel envelop. Use Class "C" – apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4632), puncture resistant (ASTM-D-4833).

3.2.4 Underdrain Piping

The underdrain collection system should be equipped with a 6 inch rigid schedile 40 PVC pipe or SDR35 or smooth wall corrugated plastic pipe in an 8 inch gravel layer. The pipe should have 3/8-inch perforations, spaced on 6-inch centers with a minimum of 4 holes per row. The pipe is spaced at a maximum of 10 feet on center, and a minimum grade of 0.5% must be maintained. The permeable filter fabric is placed between the gravel layer and the planting soil bed.

3.2.5 Stone Diaphragm & Gravel Envelop

Pea gravel for the stone diaphragm and gravel envelop must be ASTM D 448 size No. 6 (1/8" to ¼").

3.2.6 Dissipater

The dissipater at the outlet of the 15" RCP must measure 5'x4'x12" Class 'A' stone. The dissipater at the outlet of the 12" RCP must measure 4'x3'x12" Class 'A' stone.

3.2.7 Landscaping/Plant Material

Landscaping is critical to the performance and function of the Bio-Retention Area. A dense and vigorous groundcover should be established over the contributing pervious drainage area before runoff can be diverted into the facility.

- The Bio-Retention Area should be vegetated like a terrestrial forest ecosystem, with a mature tree canopy, subcanopy of understory trees, scrub layer and herbaceous ground cover. Three species of each tree and shrub should be planted.
- The tree-to-shrub ration should be 2:1 to 3:1. On average, trees must be spaced 8 feet apart. Plants should be placed at regular intervals to replicate a natural forest. Woody vegetation should not be planted at inflow locations.
- The minimum diameter for trees to be planted is 1 inch.
- Aesthetics and visual characteristics for all seasons should be a prime consideration, including a selection of evergreens to provide winter color.
- Species layout should generally be random and natural.

- Traffic and safety issues must be considered, so often dense plantings are not recommended.
- Existing and proposed utilities must be identified and considered.
- Native plant species should be specified over exotic or foreign species.
- Appropriate vegetation should be selected based on the zone of hydric tolerance.
- Trees should be planted primarily along the perimeter of the Bio-Retention Area.
- Noxious weeds should not be specified.
- Plant materials should conform to the American Standard Nursery Stock, published by the American Association of Nurserymen, and should be selected from certified, reputable nurseries.

3.2.8 Commonly used Species

Trees	Shrubs	Herbaceous Species
Acer rubrum Red Maple	*Aesculus pariviflora* Bottlebrush Buckeye	*Andropogon virginicus* Broomsedge
Betula nigra River Birch	*Aronia arbutifolia* Red Chokeberry	*Eupatorium peerpurea* Joe Pye Weed
Juniperus virginiana Eastern Red Cedar	*Fothergilla gardenii* Fothergilla	*Hemerocalis spp.* Day Lily
Koelreuteria paniculata Golden Rain Tree	*Hamamelis virginiana* Witch Hazel	*Iris pseudacorus* Yellow Iris
Nyssa sylvatica Black Gum	*Hypericum densiflorum* Common St. Johns Wort	*Lobelia cardinalis* Cardinal Flower
Platanus acerifolia London Plane-Tree	*Ilex glabra* Inkberry	*Panicum virgatum* Switchgrass
Platanus occidentalis Sycamore	*Ilex verticiillata* Winterberry	*Pennisetum alopecurooides* Fountaingrass
Quercus palustris Pin Oak	*Juniperus horizontalis* Creeping Juniper	*Rudbeckia laciniata* Greenhead Coneflower
Quercus phellos Willow Oak	*Lindera benzoin* Spicebush	*Scirpus cyperinus* Woolgrass
Salix nigra Black Willow	*Myrica pennsylvanica* Bayberry	*Veernonia gigantea* Ironweed

3.3 Maintenance of Bio-Retention Areas

3.3.1 Trash and Debris

Trash acts as a barrier to stormwater release and attracts unwanted pests. The bio-retention areas shall be kept clear of debris such as leaves, stones, large branches,

loose bottles, cans, food containers and other forms of rubbish. Also, debris can also be gathered at the open throat catch basin causing localized damming. The area must be inspected after a 1" or more rainfall event over a 24 hour time period and cleared of debris immediately, but no less than four times a year.

3.3.2 Soil Media

Since the Bio-Retention Areas will be constructed after the entire site is stabilized with a stable vegetative ground cover, there will be little to no sedimentation. However, the Bio-Retention Areas should be inspected after the 1" or more rainfall event over a 24-hour time period and any sediment accumulation shall be removed to maintain proper function. When the filtering capacity diminishes substantially (e.g. when water ponds on the surface for more than 24 hours), the top few inches of material must be removed and replaced with fresh material. The removed sediments should be disposed of in an acceptable manner (e.g. landfill).

3.2.3 Erosion

Erosion occurs when the water concentrates causing failure of the vegetation or when vegetation dies and sets up the environment for rill erosion and eventually gullies from the stormwater runoff. The private drainage easement must be inspected especially after heavy rainfall events and after storms with 1 inches or more of rainfall over a 24-hour time period. Proper care of vegetative areas that develop erosion is required to prevent more serious damage to the easement. Rills and gullies shall be either filled with suitable soil compacted and then seeded and mulched. Methods described in 3.2.5 on vegetation shall be used to properly establish the grass surface. Where eroded areas are detected, the cause of the erosion shall be addressed to prevent a continued maintenance problem. Frequently, problems result from the concentration of runoff to one point instead of a uniform distribution of runoff. This can be corrected by regrading, reseeding and stabilizing the eroded area, to more evenly distribute the runoff to areas not experiencing erosion problems.

3.2.4 Underdrain pipes

Collector pipe systems can become clogged. Therefore, pipe cleanouts are recommended to facilitate unclogging of pipes without disturbing the Bio-Retention Area. Pipes shall be inspected thoroughly each year. Also, water should drain through the open throat catch basin and the pipes. If no water is draining or is seeping out from the toe of the slope, the pipes must be either cleaned out or replaced immediately. Inlets should be inspected for signs of erosion after storms with 1 inches or more of rainfall over a 24-hour time period.

3.2.5 Re-Seeding of slopes

The grass cover on the easement slopes must be kept healthy and stable at all times. Any rills or gullies shall be filled with suitable soil, compacted and then seeded and mulched. Periodic re-patching of some grass areas may be required to establish good ground cover on areas where the grass did not take or has been destroyed. Fertilizer (10-10-10) should be applied at a minimum rate of 1,000 pounds per acre.
The fertilized area shall be mulched with straw.

3.2.6 Plants/Mulch

Dead or diseased plant material must be replaced. Areas devoid of mulch should be remulched on an annual basis.

3.2.7 Maintenance Schedule

Description	Method	Frequency	Time of Year
Inspect planting soil and repair erosion; clean up trash; flush underdrain pipes	Visual	Monthly	Monthly
Re-mulch any void areas	By hand	Whenever needed	Whenever needed
Remove previous mulch layer before applying new layer (optional)	By hand	Once every 2 times mulch is added	Spring
Add any additional mulch if necessary	By hand	Twice a year	Spring/Fall
Remove and replace all dead and diseased vegetation considered beyond treatment	Mechanical or by hand	Twice a year	March 15 to April 30 and October 1 to November 30
Water plant material at the end of each day for 14 consecutive days and after planting has been completed	By hand		Remove stakes only in the spring
Replace support stakes	By hand		Whenever needed
Replace any deficient stakes or wires	By hand		Whenever needed
Remove mulch from outlets and cleanouts	By hand		Monthly
Pruning and weeding to maintain appearance		As needed	
Mulch replacement when erosion is evident		As needed	
Inspect inflow and outflow points for clogging. Remove any sediment		Semi-annually	
Inspect filter strip for erosion or gullying. Re-seed or sod as necessary.		Semi-annually	Spring/Fall
Trees and shrubs should be inspected to evaluate their health and remove any dead or severely diseased vegetation	By hand	Semi-annually	Spring/Fall
The planting soils should be tested for pH to establish acidic levels. If the pH is below 5.2 , limestone should be applied. If the pH is above 7.0 to 8.0, then iron sulfate plus sulfur can be added to reduce the pH	By hand	Annually	Fall
Replace mulch over the entire area	By hand	2 to 3 years	Spring or Fall
Replace pea gravel diaphragm	By hand	2 to 3 years	Spring or Fall

3.3 Level Spreaders for Pre-Treatment

3.3.1 Location of Level Spreaders

L.S.#1: Located in the open space on the south side of the property, downstream from the outlet of the 12" HDPE pipe and its dissipater and the 12" stone diaphragm.

L.S.#2: Located in the open space on the south side of the property, downstream from the outlet of the 6" HDPE pipe and its dissipater and the 12" stone diaphragm.

3.3.2 Maintenance of Level Spreaders

3.3.2.1 Grass Type

Moisture tolerant grass seeds shall be applied at a rate of 10 pounds per acre. Types could be for example:

- Mixture of tall type fescue (e.g. chewing red fescue)
- Japanese millet
- Switch grass
- Rice

3.3.2.2 Vegetation

The drainage areas have a ground cover of water tolerant and erosion control resistant grass, which if properly maintained will prevent erosion of the slope and provide an easy surface for inspection. Level Spreader shall be maintained to keep grass cover dense and vigorous. Fertilizer should not be used but may be necessary before re-seeding of some bare areas. This should be done in October and April in order to establish good ground cover on areas where seed did not take or has been destroyed. Fertilizer (10-10-10) should be applied at a minimum rate of 1,000 pounds per acre.

3.3.2.3 Mowing

Grass mowing, and removing of weed vegetation will be necessary for proper maintenance of the area. Grass heights in the 4 to 6 inch range are recommended. Acceptable methods include the use of weed whips or power brush cutters and mowers.

3.3.2.4 Seeding & Re-Seeding

After the construction, level spreader area shall be tilled before grass cover is established. Before seeding, a ONE-TIME application of fertilizer (10-10-10 @ 1,000 #/ac) is allowed if necessary. The seed shall be evenly sown at a rate of three pounds per 10 pounds per acre. The seed should be covered with soil to the depth of approximately ¼". Immediately following the planting, the areas shall be mulched with straw. Periodic re-seeding of some grass areas may be required in October and April to establish good ground cover on areas where seed did not take or has been destroyed.

3.3.2.5 Trees and Shrubs

There are no trees and shrubs allowed within the Level Spreader areas and their drainage easements. All shrubs and trees shall be removed from private drainage easements.

3.3.2.6 Erosion

Erosion occurs when the water concentrates causing failure of the vegetation or when vegetation dies and sets up the environment for rill erosion and eventually gullies from the storm water runoff. These areas shall be inspected especially after the 1 inch rainfall or more over a 24 hour time period. Proper care of vegetative areas that develop erosion is required to prevent more serious damage to the level spreaders. Rills and gullies shall be filled with suitable soil compacted and then seeded. Methods described earlier on vegetation shall be used to properly establish the grass surface. Where eroded areas are detected, the cause of the erosion shall be addressed to prevent a continued maintenance problem. Frequently, problems result from the concentration of runoff to one point of the level spreader areas instead of a uniform distribution of runoff. This can be corrected by reshaping, to more evenly distribute the runoff to areas not experiencing erosion problems. Spreaders should be maintained to achieve sheet flow. Level Spreader MUST BE LEVEL (0% Slope).

3.3.2.7 Trash and Debris

Trash acts as a barrier to storm water infiltration and attracts unwanted pests. The level spreader areas shall be kept clear of debris such as leaves, stones, large branches, loose bottles, cans, food containers and other forms of rubbish. Debris immediately up slope of the Level Spreader shall be cleaned to prevent long-term clogging. Also, debris can also be gathered immediately down slope of the level spreader causing localized damming, forcing the Level Spreader to have concentrated flow. The areas should be inspected after a rainfall event of 1" or more over a 24 hour time period and cleared of debris immediately, but no less than four times a year.

3.3.2.8 Sedimentation and Dredging

Since the permanent level spreaders will be constructed after the entire site is stabilized with a stable vegetative ground cover, there will be little to none sedimentation. However, the level spreaders should be inspected after a rainfall event of 1" or more over a 24 hour time period and any sediment accumulation shall be removed to maintain original contours. The removed material shall be hauled offsite to a suitable landfill site or mounded somewhere on site and stabilized with a ground cover sufficient to restrain erosion.

3.3.2.9 Maintenance Schedule

- After site is stabilized, inspections should be made quarterly. Often simple visual inspection is adequate.
- Area to be inspected after a rainfall event of 1" or more over a 24 hour time period.
- At least annually, deposited sediment shall be removed to maintain original contours and grading. (0% slope)
- Mowing will be necessary when grass height exceeds 6 inches.

3.4 Operation

3.4.1 Record Keeping

Operation of the Bio-Retention Areas shall include recording of the following:

- Annual Inspection Report: A collection of written inspection reports shall be kept on record by Athens Grove Homeowners' Association Inc. Annual inspections are to be performed by a qualified registered North Carolina Professional Engineer, Landscape Architect or Surveyor. Copies of the annual inspection report must be given to the Stormwater Management Section of the City of Raleigh's Public Works Department. Attached as Exhibits A and B (Athens Grove Inspection, Operations & Maintenance Forms for detention pipes and bio-retention areas, respectively) are the annual inspection report forms. Attached as Exhibit C is a copy of the Certification Statement that must be submitted with the annual report to the Stormwater Management Section of the City of Raleigh. The first annual inspection must be completed within one year from the date the as-built for the stormwater control measures was first certified under Raleigh City Code 10-9025(c) and each year thereafter on the anniversary date of said certification.
- Observations: All observations must be recorded. Where periodic inspections are performed following the 1" or more rainfall event over a 24-hour time period these inspections must be written down and kept on record by the Homeowners

Association. Written records of maintenance and/or repairs must also be kept on record by the Homeowners Association.
- Maintenance: Written records of maintenance and/or repair shall be recorded on the inspection, operation and maintenance forms attached hereto as Exhibit A & B.

3.4.2 Other Operational Procedures

The Homeowners Association shall maintain a complete and up-to-date set of plans (as-built drawings) and all changes made to the grass ditch over time shall be recorded on the as-built.

4. MAJOR REPAIR

- Replacement of piping and landscaping.
- Any repair work costing $22,727.00 or more (1/3 initial construction cost of the stormwater control measures)

5. REPORTING AND ANNUAL INSPECTION

As per Raleigh City Code section 10-9028 an annual inspection of the stormwater control measures (detention pipes and Bio-Retention Areas) is required and must be performed by a qualified North Carolina registered Professional Engineer, Surveyor, or Landscape Architect.
Copies of the annual inspection report must be given to the Stormwater Management Section of the City of Raleigh's Public Works Department. Attached as Exhibits A and B (Athens Grove Inspection, Operations & Maintenance Forms for detention pipes and bio-retention areas, respectively) are the annual inspection report forms. Attached as Exhibit C is a copy of the Certification Statement that must be submitted with the annual report to the Stormwater Management Section of the City of Raleigh. The first annual inspection must be completed within one year from the date the as-built for the stormwater control measures was first certified under Raleigh City Code 10-9025(c) and each year thereafter on the anniversary date of said certification.

6. BUDGET

Budget items should include:

(1) Mowing ($1,000/year)
(2) Trash removal ($500/year)
(3) Fertilizing and reseeding ($200/year)
(4) Annual inspection report ($2,000/year)
(5) Premiums for liability insurance of not less than one million dollars ($350/year)*
(6) Sediment removal from pipes (2 x $500 = 1,000/year)
(7) Annual General Replacement Account Distribution to the City of Raleigh ($7,765.70/year)**
(8) Total: $ 12,815.70/year

* Insurance amount to be confirmed by the home owners association
** Year 1 thru 5 amount.

Exhibit A (for manual)

Athens Grove Subdivision
Inspection, Operations & Maintenance Form
For Detention Pipes

Inspector:
Date:
Time:
Weather Conditions:
Location of pipes:

Pipes:

Type of Observation: (e.g. sediment, back up…)

Action: (e.g. repair, monitor, investigate)

General Comments: (Please mail to: City of Raleigh Stormwater Management Section, Public Works Department, P.O. Box 590, Raleigh, NC 27602)

Exhibit B (for manual)

Athens Grove Subdivision
Inspection, Operations & Maintenance Form
For Bio-RetentionArea

Inspector:
Date:
Time:
Weather Conditions:
Location of swale:

Grass Cover:

Type of Observation: (e.g. sediment, voided areas, rills, trash, puddles,…)

Action: (e.g. repair, monitor, investigate)

General Comments: (Please mail to: City of Raleigh Stormwater Management Section, Public Works Department, P.O. Box 590, Raleigh, NC 27602)

EXHIBIT C – Certification Statement (for manual)

Certification Statement:

I certify that the stormwater control measures and open space area referenced in this document have been maintained in conformance with the approved Stormwater Operations and Maintenance Manual and Budget. This certification is made based on personal observation of the site and review of the maintenance records.

Signed _____ Date:_____

(seal)

Note: Must be signed ,sealed and dated by a North Carolina Professional Engineer, Registered Landscape Architect or Professional Land Surveyor.

Exhibit D (for manual)
Cost Estimate - Stormwater BMP's
Athens Grove Subdivision

- High Density Polyethylene Pipes for detention system:

  4 x 80 l.f. of 54" HDPE @ $75.00 per l.f. = $24,000.00
  Junction Box, double wide = $2,000.00
  Yard Inlet, double wide = $2,000.00
  12 l.f. of 12" HDPE @ $15.00 per l.f. = $180.00
  Total = $28,180.00

- High Density Polyethylene Pipes for detention system:

  3 x 90 l.f. of 60" HDPE @ $85.00 per l.f. = $22,950
  Junction Box, double wide = $2,000.00
  Yard Inlet, double wide = $2,000.00
  12 l.f. of 6" HDPE @ $10.00 per l.f. = $120.00
  Total = $27,070.00

- Bio-Retention Area #1
  (includes stone diaphragm, level spreader construction, landscaping, plant soil, mulch, pea gravel, catch basin & outlet pipe)
  70'x35' = 2,450.00 s.f.x 3.00$/s.f. = $7,350.00
  Total = $7,350.00

- Bio-Retention Area #2
  (includes stone diaphragm, level spreader construction, landscaping, plant soil, mulch, pea gravel, catch basin & outlet pipe)
  60'x31' = 1,860.00 s.f.x 3.00$/s.f. = $5,580.00
  Total = $5,580.00

Based upon the above estimate, the installation and replacement cost for the stormwater BMP's associated with Athens Grove Subdivision will be approximately **$ 68,180.00**.

Exhibit E (for manual)
Payment Schedule for Replacement Account
For
Athens Grove Subdivision

Estimated total cost of BMP's for Athens Grove Subdivision: $ 68,180.00

1. Prior to plat recordation or issuance of construction permits, developer shall pay an initial fee of 15% of the initial construction cost:
$ 68,180.00 x (0.15) = $ 10,227.00

2. Two-thirds (2/3) of the total amount of the budget shall be deposited into the general replacement account with the City within the first 5 years:
$ 68,180.00 x (0.85) x (0.67) = $ 38,828.51 per 5 years
$ 38,828.51/5 = $ 7,765.70 per year

3. Within 10 years following the initial construction, the full amount shall be deposited into the general replacement account with the City:
$ 68,180.00 x (0.85) x (0.33) = $ 19,124.49 per 5 years
$ 19,124.49/5 = $ 3,824.90 per year

Payment Schedule over 10 Years for Athens Grove Subdivision

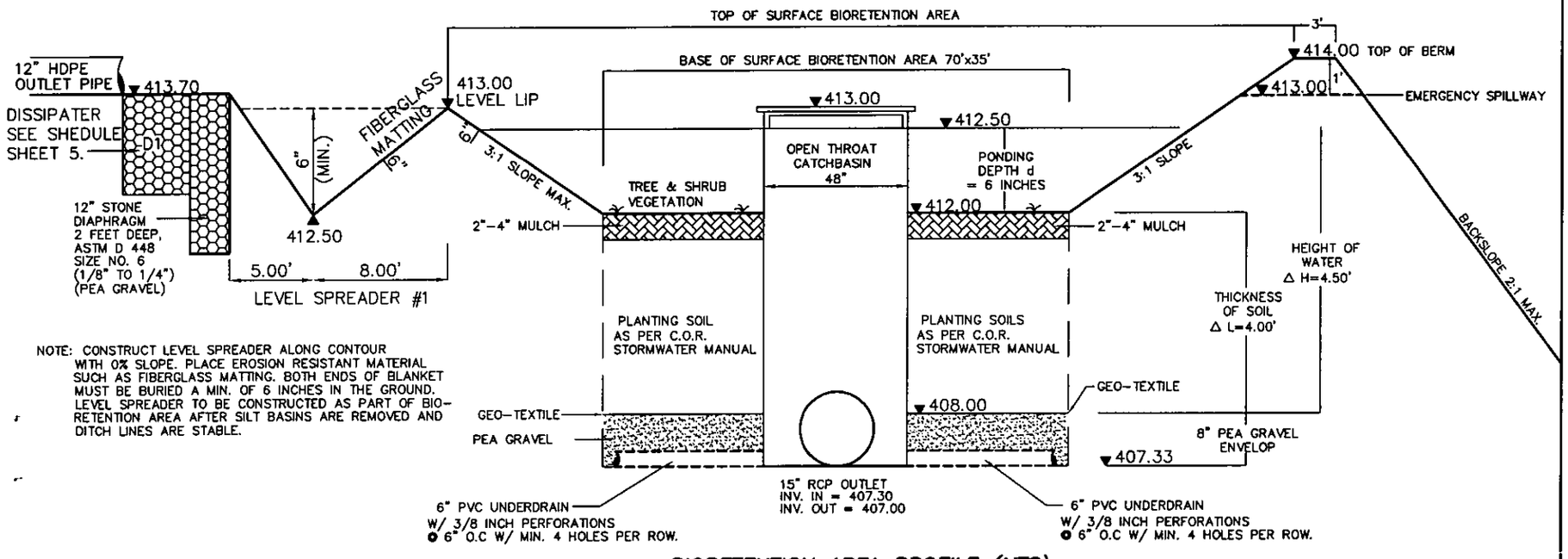
Year Number	Year	Annual Replacement Contribution
1	2008	$17,992.70
2	2009	$7,765.70
3	2010	$7,765.70
4	2011	$7,765.70
5	2012	$7,765.70
6	2013	$3,824.90
7	2014	$3,824.90
8	2015	$3,824.90
9	2016	$3,824.90
10	2017	$3,824.90

Exhibit F (for manual)

Bio-Retention Area Details

SCHEDULE FOR BIO-RETENTION AREAS #1

BIO-RETENTION	ELEV. @ OUTLET PIPE (HDPE)	SURFACE ELEVATION	SURFACE AREA (SA)	THICKNESS OF SOIL ΔL	PONDING DEPTH d	HEIGHT OF WATER ΔH	CONCRETE BOX	TOP OF BERM ELEVATION	DEPTH OF GRAVEL ENVELOP	UNDERDRAIN PIPE (S)	SANDFILTER OUTLET PIPE (PVC)	INLET ELEV.	OUTLET ELEV.
#1	413.70	412.00	2,450 SF.	4.00 FT.	6 IN.	4.50 FT.	48" x 48"	414.00	8 IN.	(1) 6" PVC	60 L.F. 15" PVC @ 0.50%	407.30	407.00

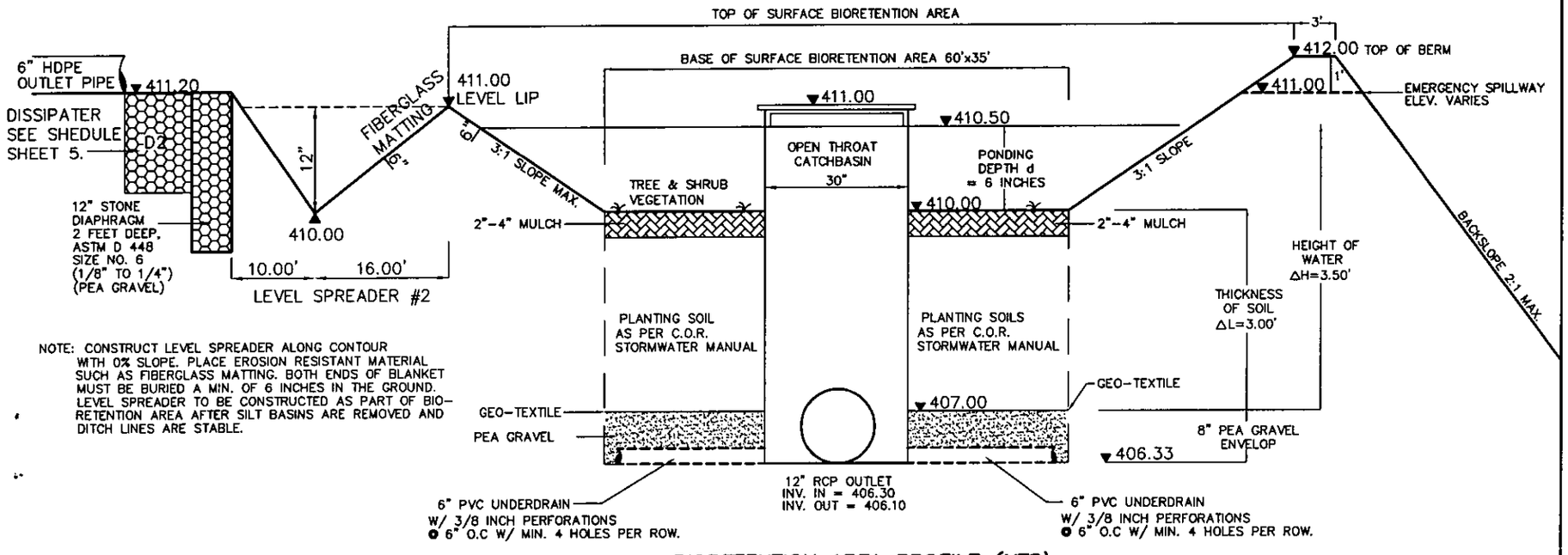


NOTE: CONSTRUCT LEVEL SPREADER ALONG CONTOUR WITH 0% SLOPE. PLACE EROSION RESISTANT MATERIAL SUCH AS FIBERGLASS MATTING. BOTH ENDS OF BLANKET MUST BE BURIED A MIN. OF 6 INCHES IN THE GROUND. LEVEL SPREADER TO BE CONSTRUCTED AS PART OF BIO-RETENTION AREA AFTER SILT BASINS ARE REMOVED AND DITCH LINES ARE STABLE.

BIORETENTION AREA PROFILE (NTS)

SCHEDULE FOR BIO-RETENTION AREA #2

BIO-RETENTION	ELEV. ⌀ OUTLET PIPE (HDPE)	SURFACE ELEVATION	SURFACE AREA (SA)	THICKNESS OF SOIL ΔL	PONDING DEPTH d	HEIGHT OF WATER ΔH	CONCRETE BOX	TOP OF BERM ELEVATION	DEPTH OF GRAVEL ENVELOP	UNDERDRAIN PIPE (S)	SANDFILTER OUTLET PIPE (PVC)	INLET ELEV.	OUTLET ELEV.
#2	411.20	410.00	1,821 SF.	3.00 FT.	6 IN.	3.50 FT.	30" x 30"	412.00	8 IN.	(1) 6" PVC	30 L.F. 12" PVC ⌀ 0.67%	406.30	406.10



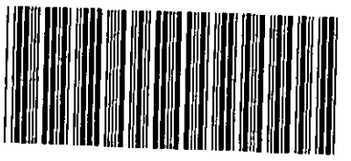
NOTE: CONSTRUCT LEVEL SPREADER ALONG CONTOUR WITH 0% SLOPE. PLACE EROSION RESISTANT MATERIAL SUCH AS FIBERGLASS MATTING. BOTH ENDS OF BLANKET MUST BE BURIED A MIN. OF 6 INCHES IN THE GROUND. LEVEL SPREADER TO BE CONSTRUCTED AS PART OF BIO-RETENTION AREA AFTER SILT BASINS ARE REMOVED AND DITCH LINES ARE STABLE.

BIORETENTION AREA PROFILE (NTS)

EXHIBIT D

Schedule of Annual Stormwater Control Replacement Payments
Athens Grove Subdivision

Year 1	$ 7,765.70 + $10,227.00 = $17,992.70
Year 2	7,765.70
Year 3	7,765.70
Year 4	7,765.70
Year 5	7,765.70
Year 6	3,824.90
Year 7	3,824.90
Year 8	3,824.90
Year 9	3,824.90
Year 10	3,824.90



BOOK:013206 PAGE:01829 - 01866

Yellow probate sheet is a vital part of your recorded document.
Please retain with original document and submit for rerecording.

Wake County Register of Deeds
Laura M. Riddick
Register of Deeds

This Customer Group
_____ # of Time Stamps Needed

This Document
_____ New Time Stamp
_____38_____ # of Pages

22.004-1/20/06